Wetland and Surface Water Delineation Report

Prepared for the:

SR 0228 Mars Railroad Bridge West Expansion

Seven Fields Borough, Adams and Cranberry Townships
Butler County, Pennsylvania

Prepared for:

pennsylvania
DEPARTMENT OF TRANSPORTATION

Pennsylvania Department of Transportation
Engineering District 10-0
2550 Oakland Ave.
Indiana, PA 15701

Prepared by:

MARKOSKY

3689 Route 711
Ligonier, PA 15658

March 2018

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INTRODUCTION

Representatives from The Markosky Engineering Group, Inc. conducted an aquatic resource investigation in April and December of 2017 for the SR 0228 Mars Railroad Bridge West Expansion Project. The project area is located in Adams and Cranberry Townships, and Seven Fields Borough, Butler County, Pennsylvania. This project consists of improving the existing SR 0228 roadway connecting Cranberry Township to Mars Borough. The project includes the replacement of the bridge over the CSX Railroad, extension of the arch culvert which carries Breakneck Creek under SR 0228, and reconstruction of approximately 7,000 feet of road. A Project Location Map illustrating the study area can be found in Appendix A.

The project area is located within the Breakneck Creek Watershed. The streams within the project area are classified according to 25 PA Code §93.9w (Water Quality Standards – Drainage List W). Breakneck Creek is managed for Warm Water Fishes (WWF). Kaufman Run is located within the Breakneck Creek Watershed however, is not individually listed therefore takes on the management designation of Breakneck Creek. Breakneck Creek and Kaufman Run are not listed as either "Stocked Trout Waters" or "Wild Trout Waters" by the Pennsylvania Fish and Boat Commission. (PFBC)

BACKGROUND INFORMATION FINDINGS

NATIONAL WETLAND INVENTORY (NWI)

A review of the United States Fish and Wildlife Service's Wetlands Mapper, NWI-V2 mapping determined that three NWI wetlands are present within the project study area. Two of the wetlands are described as a riverine, intermittent, streambed, seasonally flooded (R4SBC). The other NWI wetland is described as palustrine, unconsolidated bottom, permanently flooded, diked/impounded (PUBHh). The location and extent of the NWI wetlands are depicted on the Aquatic Resource Map in Appendix A of this report.

WEB SOIL SURVEY

Review of the USDA Web Soil Survey database for Butler County, Pennsylvania identified nineteen (19) soil map units within the project study area. Ten (10) of these soil map units are identified as hydric soils. Table 1 identifies the soil map units within the project study area and their associated hydric ratings. Project study area soil map unit boundaries can be found on the Aquatic Resource Map in Appendix A.

TABLE 1
Project Area Soil Map Units

Soil Map Unit	Soil Map Unit Abbreviation	Hydric Soil	Hydric Rating
Atkins Silt Loam, 0 to 3% Slopes, Frequently Flooded	At	Yes	85
Brinkerton Silt Loam, 3 to 8% Slopes	BrB	Yes	80
Cavode Silt Loam, 3 to 8% Slopes	ClB	Yes	5
Cavode Silt Loam, 8 to 15% Slopes	ClC	Yes	5
Clymer Loam, 3 to 8% Slopes	CmB	No	0
Cookport Loam, 8 to 15% Slopes	CoC	No	0
Ernest Silt Loam, 3% to 8% Slopes	ErB	Yes	5
Ernest Silt Loam, 8 to 15% Slopes	ErC	Yes	5
Gilpin-Weikert Channery Silt Loams, 3 to 8% Slopes	GoB	No	0
Gilpin-Weikert Channery Silt Loams, 8 to 15% Slopes	GoC	No	0
Gilpin-Weikert Channery Silt Loams, 15 to 25% Slopes	GoD	No	0
Gilpin-Wharton Silt Loams, 8 to 15% Slopes	GpC	No	0
Gilpin-Wharton Complex, 15 to 25% Slopes	GpD	No	0
Hazleton Channery Loam, 8 to 15% Slopes	HaC	No	0
Tilsit Silt Loam, 3 to 8% Slopes	TaB	No	0
Vandergrift-Cavode Silt Loams, 3 to 8% Slopes	VcB	Yes	2
Vandergrift-Cavode Silt Loams, 8 to 15% Slopes	VcC	Yes	5
Vandergrift-Cavode Silt Loams, 15 to 25% Slopes	VcD	Yes	2
Wharton Silt Loam, 3 to 8% Slopes	WaB	Yes	5

WETLAND IDENTIFICATION AND DELINEATION METHODOLOGY

The wetland identification and delineation was conducted in accordance with the methodology described in the *U.S. Army Corp of Engineers Wetland Delineation Manual*, *Technical Report Y-87-1* (Environmental Laboratory 1987) and the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*, *Version 2.0* (USACE 2012). The wetlands were classified utilizing the United States Fish and Wildlife Service (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). All wetland dataforms and photos collected for the project are attached.

WETLAND IDENTIFICATION FINDINGS

TABLE 2
Project Area Wetlands

Wetland Name	Classification	Size (Acres)
WL- 1A	PFO	0.01544
WL – 1B	PSS	0.06191
WL – 1C	PSS	0.15945
WL – 1D	PEM	0.02624
WL – 1E	PEM	0.06580
WL – 1F	PEM	0.01526
WL – 1G	PSS	0.17985
WL – 1H	PEM	0.11202
WL – 1I	PEM	0.03515
WL – 1J	PEM	0.03039
WL – 1K	PEM	0.01890
WL – 1L	PEM	0.02882
WL – 1M	PEM	0.08769
WL – 1N	PEM	0.01907
WL – 1O	PEM	0.01308

TABLE 2
Project Area Wetlands

Wetland Name	Classification	Size (Acres)
WI-1P	PEM	0.06622
WL-1Q	PSS	0.01477
WL-2A	PEM	0.04655
WL-2B	PFO	0.03962
WL-2C	PFO	0.01084
WL-2D	PEM	0.26543
WL-2E	PEM	0.06509
WL-2F	PEM	0.02121
WL-2G	PFO	0.11789

Utilizing the methodology described above, twenty-four (24) palustrine wetlands were identified and delineated within the project study area. Twenty wetlands are classified as palustrine emergent (PEM), three are (PSS), and one is palustrine forested (PFO). During field investigation a PSS wetland was observed within the NWI wetland (PUBHh). The most common indicators of hydrology within the project area wetlands are a saturated soil matrix with surface water and a high water table. The most prevalent hydrophytic vegetation observed within the wetland boundaries includes broad-leaf cattail (*Typha latifolia*), reed canary grass (*Phalaris arundinacea*), skunk cabbage (*Symplocarpus foetidus*), soft rush (*Juncus effusus*), sensitive fern (*Onoclea sensibilis*) and common wintercress (*Barbarea vulgaris*). Red maple (*Acer rubrum*), multiflora rose (*Rosa multiflora*), and morrow's honeysuckle (*Lonicera morrowii*) were common within the PFO and PSS wetlands respectively. The dominant vegetation located in the majority of the wetlands meets the Dominance Test and the Prevalence Index for Hydrophytic Vegetation. The soils observed within the project area wetlands usually displayed redox features within a depleted matrix. The location of all wetlands within the project area can be found on the Aquatic Resource Map included in Appendix A of this report. Please refer to Appendix B for dataforms containing detailed information about each resource. Refer to Appendix C to review photos of each resource.

SURFACE WATER IDENTIFICATION AND DELINEATION METHODOLOGY

The project study area surface waters were classified as either ephemeral, intermittent, or perennial according to the definitions set forth in 25 PA Code § 87.1. Field investigations were undertaken to document the physical characteristics of the evaluated surface waters and the presence or absence of fish species. A cursory characterization of the existing macroinvertebrate community was conducted by

physically turning suitable in-stream substrates and identifying the benthic macroinvertebrates observed to the level of order. All macroinvertebrates were identified in the field using Freshwater Macroinvertebrates of North America (Peckarsky, et al, 1990). A detailed macroinvertebrate survey was not conducted for the project. All stream data forms and photos collected for the project are attached.

SURFACE WATER IDENTIFICATION FINDINGS

TABLE 3
Project Area Streams

Stream Name	Classification	Bank Width (ft.)	Channel Depth (ft.)	Water Width (ft.)	Water Depth (in.)	Substrate Types	Macroinvertebrates
UNT-1A	Intermittent	1	.33	.67	1	Gravel, Sand, Silt	Gastropoda
UNT-1B	Perennial	2	1	1.5	1	Detritus, Gravel, Sand, Silt	Trichoptera Amphipoda
UNT–1C	Ephemeral	1.5	.33	-	-	Muck, Silt	None
UNT–1D	Perennial	9	3.5	7	10	Detritus, Muck, Sand, Silt	Coleoptera Hirudinea Fin Fish
UNT-1E	Perennial	4	2	3	2	Boulders, Cobble, Gravel, Sand	Coleoptera Gastropoda
UNT-1F	Intermittent	5	3	1	1	Clay, Muck, Silt	Hirudinea
UNT-1G	Perennial	12	7	1	2	Cobble, Gravel, Sand, Silt	Isopoda Coleoptera
UNT-1H	Perennial	7	1	5	3	Muck, Silt	Diptera Gastropoda
UNT-1I	Perennial	10	4	.83	1	Clay, Cobble, Gravel, Sand, Silt	Coleoptera Gastropoda
UNT-1J	Perennial	4	.83	2	2	Cobble, Detritus, Gravel, Muck, Silt	Trichoptera Diptera Hirundinea
Kaufman Run	Perennial	25	3	20	12	Boulders, Cobble, Gravel, Sand, Silt	Trichoptera Diptera Fin Fish
UNT-1L	Perennial	3	1	3	6	Boulders, Cobble, Gravel, Sand, Silt	Isopoda Gatropoda Hirudinea
UNT-2A	Intermittent	1	.5	.5	0.5	Detritus, Gravel, Sand	Coleoptera Hirudinea
UNT-2B	Perennial	12	2	7	3	Cobble, Detritus, Gravel, Sand, Silt	Trichoptera Hirudinea
UNT-2C	Ephemeral	2	.25	-	-	Detritus, Gravel, Sand	None

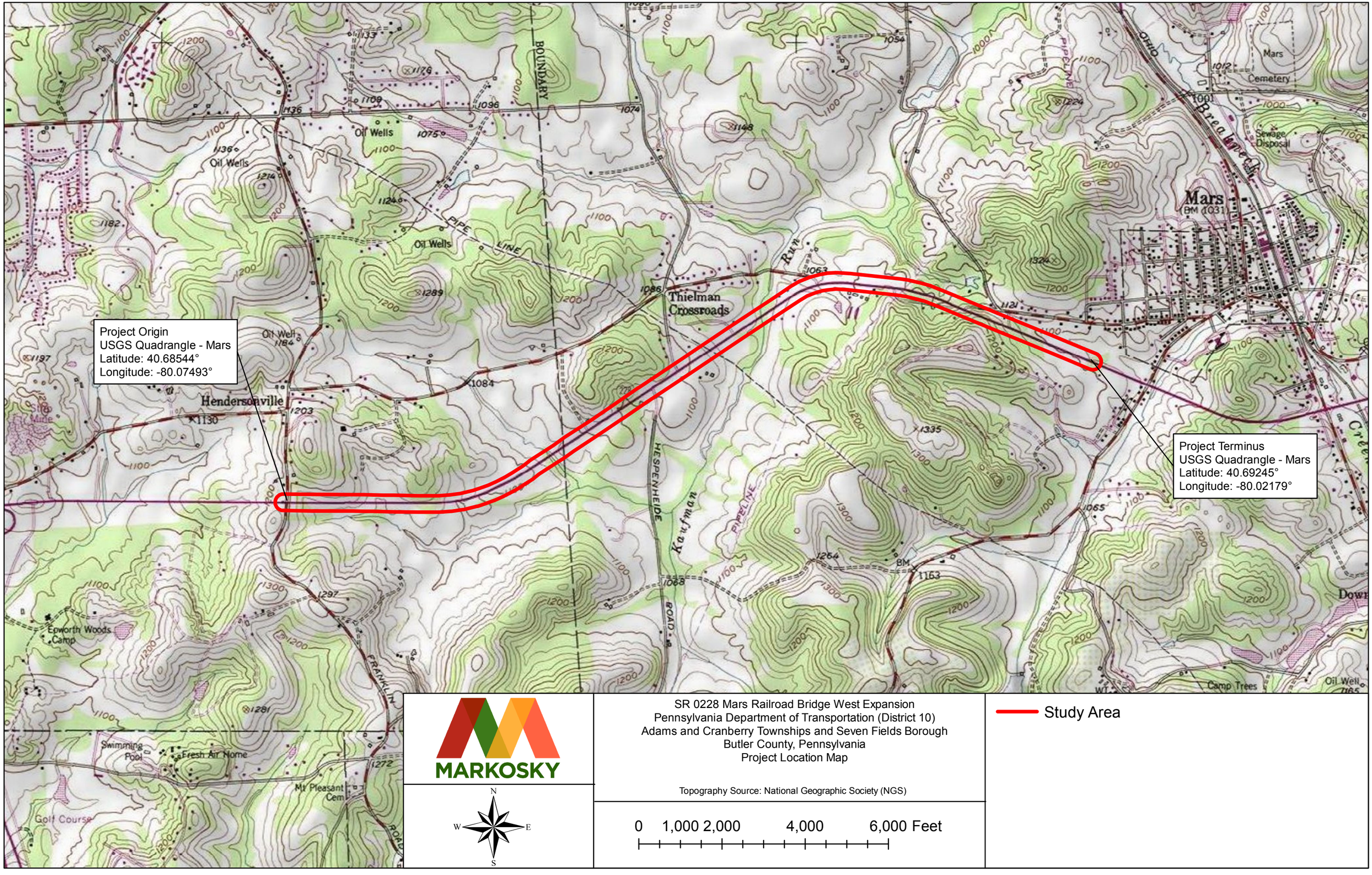
TABLE 3
Project Area Streams

Stream Name	Classification	Bank Width (ft.)	Channel Depth (ft.)	Water Width (ft.)	Water Depth (in.)	Substrate Types	Macroinvertebrates
UNT-2D	Perennial	5	5	1	2	Detritus, Gravel, Sand, Silt	Coleoptera Hirudinea
UNT-2E	Perennial	3	2	.83	3	Clay, Detritus, Gravel, Silt	Diptera Hirudinea Gastropoda Trichoptera
UNT-2F	Perennial	3	.5	1.5	1	Cobble, Gravel, Sand, Silt	Coleoptera Trichoptera
UNT-2G	Perennial	3	2	1	1	Cobble, Gravel, Sand, Silt	Diptera Gastropoda
UNT-2H	Intermittent	6	2	.67	1	Cobble, Detritus, Gravel, Sand, Silt	Diptera
UNT-2I	Intermittent	1	1	.33	.5	Detritus, Gravel, Muck, Sand, Silt	Hirudninea

Utilizing the methodology described above, twenty-one (21) jurisdictional watercourses were identified and investigated within the project study area. Fourteen (14) streams are perennial, five (5) streams are intermittent, and two (2) are ephemeral. During field investigations, a NWI wetland (R4SBC) was confirmed to be UNT-1D to Kaufman Run. Another NWI wetland (R4SBC) was confirmed to be Kaufman Run.

Streams identified included Kaufman Run (perennial), as well as perennial, intermittent and ephemeral streams that are unnamed tributaries to Breakneck Creek and Kaufman Run. The most common substrates among the streams within the project study area are cobble, detritus, gravel, sand, and silt. The macroinvertebrate orders found most commonly in suitable streams are *Hirudinea* (leech), *Trichoptera* (caddisfly), and *Diptera* (true fly). The majority of identified watercourses were carrying at least 1-inch of flow at the time of the field view. The location of all streams within the project area can be found on the Aquatic Resource Map included in Appendix A of this report. Please refer to Appendix B for dataforms containing detailed information about each resource. Refer to Appendix C to review photos of each resource.

APPENDIX A
Project Mapping



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SR 0228 Mars Railroad Bridge West Expansion
Pennsylvania Department of Transportation (District 10)
Adams and Cranberry Townships and Seven Fields Borough
Butler County, Pennsylvania
Project Location Map

Topography Source: National Geographic Society (NGS)

0 1,000 2,000 4,000 6,000 Feet

Study Area

Project Origin
USGS Quadrangle - Mars
Latitude: 40.68544°
Longitude: -80.07493°

UNT 1G to Kaufman Run
Perennial (WWF)
Latitude: 40.68517°
Longitude: -80.07386°

Wetland WL-1G (PSS)
Latitude: 40.68508°
Longitude: -80.07304°

UNT 1F to Kaufman Run
Intermittent (WWF)
Latitude: 40.68517°
Longitude: -80.07386°

Wetland WL-1F (PEM)
Latitude: 40.68511°
Longitude: -80.07153°

Wetland WL-1E (PEM)
Latitude: 40.68517°
Longitude: -80.07035°

Wetland WL-1H (PEM)
Latitude: 40.68560°
Longitude: -80.06955°

Wetland WL-1I (PEM)
Latitude: 40.68570°
Longitude: -80.06870°

UNT 1H to Kaufman Run
Perennial (WWF)
Latitude: 40.68565°
Longitude: -80.06847°

Wetland WL-1D (PEM)
Latitude: 40.68521°
Longitude: -80.06899°

UNT 1E to Kaufman Run
Perennial (WWF)
Latitude: 40.68513°
Longitude: -80.06875°

NWI Wetland (R4SBC)
Riverine Wetland

Franklin Rd
Route 228
Page 1
Page 2

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SR 0228 Mars Railroad Bridge West Expansion
Pennsylvania Department of Transportation (District 10)
Adams and Cranberry Townships and Seven Fields Borough
Butler County, Pennsylvania
Aquatic Resource Map
1 of 6

Aerial Photography Source: World Imagery (ESRI)

0 100 200 400 600 Feet

Wetland
Streams
Stream Sample Point
Wetland Sample Point
Upland Sample Point
Roadside Drainage
NWI Wetlands
Soils
Photo Locations
Topography
Study Area

Wetland WL-1M (PEM)
Latitude: 40.68782°
Longitude: -80.05794°

Wetland WL-1L (PEM)
Latitude: 40.68811°
Longitude: -80.05766°

NWI Wetland (R4SBC)
Riverine Wetland

UNT 1D to Kaufman Run
Perennial (WWF)
Latitude: 40.68771°
Longitude: -80.05753°

Wetland WL-1K (PEM)
Latitude: 40.68800°
Longitude: -80.05755°

Wetland WL-1C (PSS)
Latitude: 40.68756°
Longitude: -80.05727°

NWI Wetland (PUBHh)
Freshwater Pond

NWI Wetland (PUBHh)
Freshwater Pond

Wetland WL-1J (PEM)
Latitude: 40.68595°
Longitude: -80.06185°

NWI Wetland (R4SBC)
Riverine Wetland

NWI Wetland (R4SBC)
Riverine Wetland

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Route 228

Casino Creek Dr

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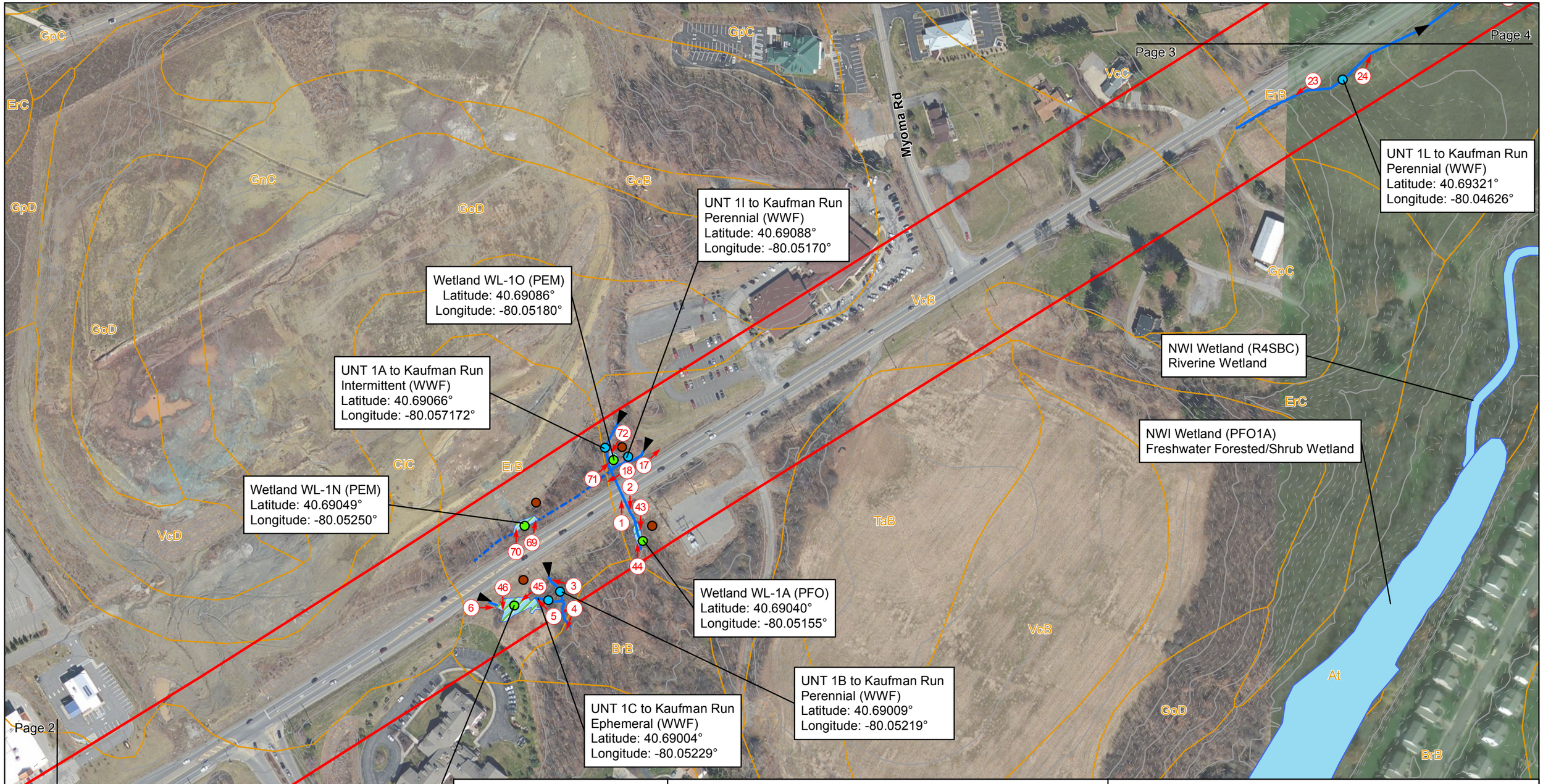
Aquatic Resource Map
2 of 6

Aerial Photography Source: World Imagery (ESRI)

0 100 200 400 600 Feet

Wetland
Streams
Stream Sample Point
Wetland Sample Point
Upland Sample Point
Roadside Drainage
NWI Wetlands
Soils
Photo Locations
Topography
Study Area



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SR 0228 Mars Railroad Bridge West Expansion
Pennsylvania Department of Transportation (District 10)
Adams and Cranberry Townships and Seven Fields Borough
Butler County, Pennsylvania
Aquatic Resource Map
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Aerial Photography Source: World Imagery (ESRI)

0 100 200 400 600 Feet

- Wetland
- Streams
- Stream Sample Point
- Wetland Sample Point
- Upland Sample Point
- Roadside Drainage
- NWI Wetlands
- Soils
- Photo Locations
- Topography
- Study Area

NWI Wetland (PFO1A)
Freshwater Forested/Shrub Wetland

NWI Wetland (R4SBC)
Riverine Wetland

Kaufman Run
Perennial (WWF)
Latitude: 40.69472°
Longitude: -80.04363°

Wetland WL-1Q (PSS)
Latitude: 40.69381°
Longitude: -80.04518°

UNT 1J to Kaufman Run
Perennial (WWF)
Latitude: 40.69380°
Longitude: -80.04628°

Wetland WL-2A (PEM)
Latitude: 40.69621°
Longitude: -80.04126°

Wetland WL-1P (PEM)
Latitude: 40.69436°
Longitude: -80.04369°

NWI Wetland (PUBHh)
Freshwater Pond

Fox Trot Dr.

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SR 0228 Mars Railroad Bridge West Expansion
Pennsylvania Department of Transportation (District 10)
Adams and Cranberry Townships and Seven Fields Borough
Butler County, Pennsylvania
Aquatic Resource Map
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Aerial Photography Source: World Imagery (ESRI)

0 100 200 400 600 Feet

- Wetland
- Streams
- Stream Sample Point
- Wetland Sample Point
- Upland Sample Point
- Roadside Drainage
- NWI Wetlands
- Soils
- Photo Locations
- Topography
- Study Area

UNT 2A to Kaufman Run
Intermittent (WWF)
Latitude: 40.69639°
Longitude: -80.03411°

NWI Wetland (R4SBC)
Riverine Wetland

UNT 2B to Kaufman Run
Perennial (WWF)
Latitude: 40.69596°
Longitude: -80.03194°

UNT 2C to Kaufman Run
Ephemeral (WWF)
Latitude: 40.69571°
Longitude: -80.03160°

NWI Wetland (PUBHh)
Freshwater Pond

Wetland WL-2B (PFO)
Latitude: 40.69536°
Longitude: -80.03033°

NWI Wetland (PUBHh)
Freshwater Pond

UNT 2I to Breakneck Creek
Intermittent (WWF)
Latitude: 40.69536°
Longitude: -80.03170°

UNT 2D to Kaufman Run
Perennial (WWF)
Latitude: 40.69546°
Longitude: -80.03049°

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Beaver Street Ext.

SR 228

WaB GoB GoC GpC ErB VcB VcC VcD GoF GpD ClC ClB BrC

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SR 0228 Mars Railroad Bridge West Expansion
Pennsylvania Department of Transportation (District 10)
Adams and Cranberry Townships and Seven Fields Borough
Butler County, Pennsylvania
Aquatic Resource Map
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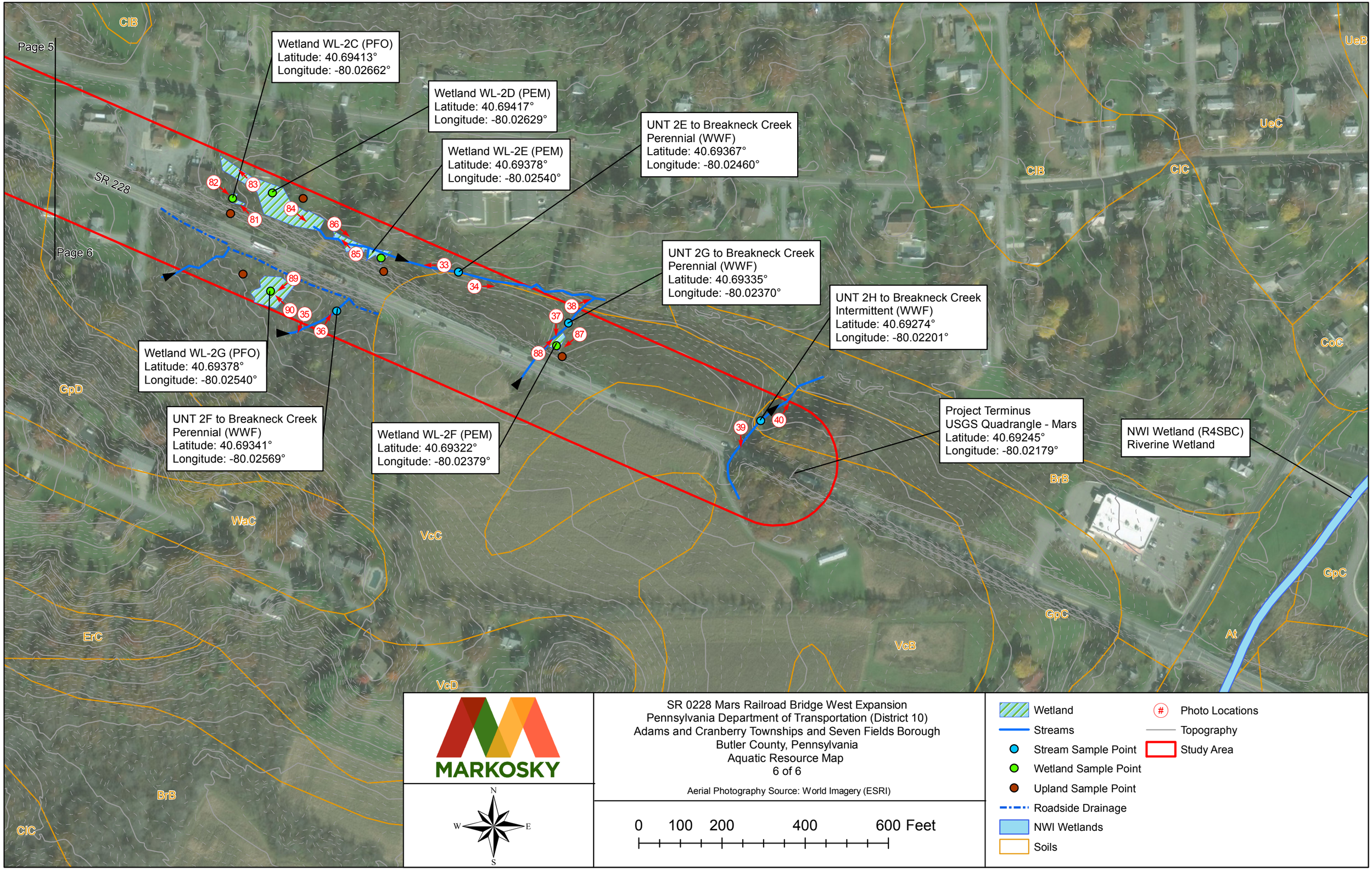
Aerial Photography Source: World Imagery (ESRI)

0 100 200 400 600 Feet

Wetland
Streams
Stream Sample Point
Wetland Sample Point
Upland Sample Point
Roadside Drainage
NWI Wetlands
Soils
Photo Locations
Topography
Study Area



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SR 0228 Mars Railroad Bridge West Expansion
Pennsylvania Department of Transportation (District 10)
Adams and Cranberry Townships and Seven Fields Borough
Butler County, Pennsylvania
Aquatic Resource Map
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Aerial Photography Source: World Imagery (ESRI)

0 100 200 400 600 Feet

- Wetland
- Streams
- Stream Sample Point
- Wetland Sample Point
- Upland Sample Point
- Roadside Drainage
- NWI Wetlands
- Soils
- Photo Locations
- Topography
- Study Area

APPENDIX B
Wetland and Stream Data Forms

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1A
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 2-5%
Lat 40.69040°
Long: -80.05155°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: VcB
NWI classification: PFO

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations

Surface Water Present? Yes X No Depth (inches) 0.5
Water Table Present? Yes No X Depth (inches) -
Saturation Present? Yes X No Depth (inches) 0-18
(Including capillary fringe)

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1A

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carya ovata* – shagbark hickory	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	10	Yes	FACU
2. *Lonicera morrowii* - morrow's honeysuckle	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus* - skunk cabbage	30	Yes	OBL
2. *Onoclea sensibilis* - sensitive fern	30	Yes	FACW
3. *Gramineae sp* - grass sp	30*	-	-
4. *Arctium minus* – lesser burdock	15	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75 = Total Cover		
50% of Total Cover:	37.5	20% of Total Cover:	15
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	30 x 1 =	30
FACW species	30 x 2 =	60
FAC species	0 x 3 =	0
FACU species	65 x 4 =	260
UPL species	0 x 5 =	0
Column Totals	125 (A)	350 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point WL 1A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	60	10YR 4/6	20	C	M	clay loam	
			5R 3/6	20				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1A
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 5-10% Lat 40.69050°
Long: -80.05153°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: VcB
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1A

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1A

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii - morrow's honeysuckle*	20	Yes	FACU
2. *Rosa multiflora* - multiflora rose	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Herb Stratum (Plot size: 5')			
1. *Solidago sp - goldenrod sp.*	40*	-	-
2. *Securigera varia* - crownvetch	20	Yes	UPL
3. *Impatiens capensis* – jewelweed	10	Yes	FACW
4. *Barbarea vulgaris* – common wintercress	10	Yes	FACU
5. *Alliaria petiolata* - garlic mustard	10	Yes	FACU
6. *Allium ursinum* - wild garlic	5	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	55 = Total Cover		
50% of Total Cover:	27.5	20% of Total Cover:	11
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	55	x 4 =	220
UPL species	20	x 5 =	100
Column Totals	85 (A)		340 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/4	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1B
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.69000°
Long: -80.05254°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ErB
NWI classification: PSS

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No ____	Depth (inches) 0.5"
Water Table Present?	Yes ____	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18"

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1B

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	20	Yes	FACU
2. *Cornus florida* - flowering dogwood	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
50% of Total Cover:	20	20% of Total Cover:	8
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	80	Yes	FACW
2. *Impatiens capensis* - jewelweed	10	No	FACW
3. *Barbarea vulgaris* – common wintercress	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of Total Cover:	50	20% of Total Cover:	20
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals	140 (A)		380 (B)

Prevalence Index = B/A = 2.714286

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 1B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	80	10YR 5/6	20	C	M	loam clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1B
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 2-5%
Lat 40.69015°
Long: -80.05247°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: ErB
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1B

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes _____	No X	Depth (inches) _____
Water Table Present?	Yes _____	No X	Depth (inches) _____
Saturation Present? (Including capillary fringe)	Yes _____	No X	Depth (inches) _____

Wetland Hydrology Present **Yes** _____ **No X**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1B

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	15	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	70*	-	-
2. *Crataegus sp* - hawthorn sp	20*	-	-
3. *Arctium minus* – common burdock	10	Yes	FACU
4. *Alliaria petiolata* - garlic mustard	10	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals	35 (A)		140 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/4	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

Disturbed soils

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1C
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): concave
Slope (%): 2%
Lat 40.68756°
Long: -80.05727°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: At
NWI classification: PSS

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present? Yes ____ No X Depth (inches) ____-____
Water Table Present? Yes ____ No X Depth (inches) ____-____
Saturation Present? Yes X No ____ Depth (inches) 0-18
(Including capillary fringe)

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1C

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Salix species* - willow species	30*	-	-
2. *Alnus serrulata* - smooth alder	20	Yes	FACW
3. *Cornus amomum* - silky dogwood	10	Yes	FACW
4. *Lonicera morrowii* - morrow's honeysuckle	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	35 = Total Cover		
50% of Total Cover:	17.5	20% of Total Cover:	7
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	80	Yes	FACW
2. *Solidago sp* - goldenrod sp.	20*	-	-
3. *Barbarea vulgaris* – common wintercress	10	No	FACU
4. *Typha latifolia* - broadleaf cattail	10	No	OBL
5. *Symplocarpus foetidus* - skunk cabbage	10	No	OBL
6. *Juncus effusus* - soft rush	5	No	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	115 = Total Cover		
50% of Total Cover:	57.5	20% of Total Cover:	23
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the willow and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point WL 1C

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	80	10YR 3/4	20	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 1C

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Floodplain | Local relief (concave, convex, none): none

Slope (%): 2% | Lat 40.68770° | Long: -80.05731°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: GoD | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1C

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1C

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Herb Stratum (Plot size: 5')			
1. *Solidago sp* - goldenrod sp.	50*	-	-
2. *Alliaria petiolata* - garlic mustard	10	Yes	FACU
3. *Securigera varia* - crownvetch	10	Yes	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	30 x 4 =	120
UPL species	10 x 5 =	50
Column Totals	40 (A)	170 (B)

Prevalence Index = B/A = 4.25

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1C

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1D
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Terrace
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.68521°
Long: -80.06899°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: BrB
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes	No X	Depth (inches) -
Water Table Present?	Yes	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No	Depth (inches) 0-18

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1D

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Phragmites australis* - Common Reed	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of Total Cover:	50	20% of Total Cover:	20
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 1D

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100	-	-	-	-	clay loam	
4-18	2.5Y 6/4	85	10YR 5/8	15	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1D
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Terrace
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.68533°
Long: -80.06905°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: BrB
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1D

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1D

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	10	Yes	FACU
2. *Alunus serrulata* - smooth alder	5	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	60*	-	-
2. *Dipsacus fullonum* – common teasel	5	Yes	FACU
3. *Crataegus sp* - hawthorn sp	5*	-	-
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5 = Total Cover		
50% of Total Cover:	2.5	20% of Total Cover:	1
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	5 x 1 =	5
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	15 x 4 =	60
UPL species	0 x 5 =	0
Column Totals	20 (A)	65 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and hawthorn species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1D

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/6	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 2

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1E
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Terrace
Local relief (concave, convex, none): concave
Slope (%): 0-2%
Lat 40.68517°
Long: -80.07035°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) -
Water Table Present?	Yes X	No ____	Depth (inches) 0-2
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1E

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	80	Yes	FACW
2. *Typha latifolia* - broadleaf cattail	20	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of Total Cover:	50	20% of Total Cover:	20
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 1E

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 5/1	95	10Y 4/6	5	C	M	silt loam	gritty
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 8

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 1E

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Terrace | Local relief (concave, convex, none): none

Slope (%): 0-2% | Lat 40.68528° | Long: -80.07008°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: ClC | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1E

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1E

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	40*	-	-
2. *Solidago sp* - goldenrod sp.	30*	-	-
3. *Alnus incana* - speckled alder	10	Yes	FACU
4. *Crataegus sp*- hawthorn sp	10*	-	-
5. *Dipsacus fullonum* – common teasel	5	Yes	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals	25 (A)		100 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass, goldenrod, and hawthorn species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1E

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/4	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 6

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1F
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.68511°
Long: -80.07153°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No	Depth (inches) 0.5
Water Table Present?	Yes	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No	Depth (inches) 0-18

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1F

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Salix species* - willow species	10*	-	-
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Typha latifolia* - broadleaf cattail	90	Yes	OBL
2. *Barbarea vulgaris* – common wintercress	5	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95 = Total Cover		
50% of Total Cover:	47.5	20% of Total Cover:	19
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the willow species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point WL 1F

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100	-	-	-	-	muck	thick organic matter
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- X Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 8

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1F
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 5-10% Lat 40.68517°
Long: -80.07134°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: ClC
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1F

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1F

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	10	Yes	FACU
2. *Alunus serrulata* - smooth alder	20	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	60*	-	-
2. *Securigera varia* - crownvetch	30	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	20 x 1 =	20
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	30 x 4 =	120
UPL species	10 x 5 =	50
Column Totals	60 (A)	190 (B)

Prevalence Index = B/A = 3.166667

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1F

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 5/6	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 8

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1G
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.68508°
Long: -80.07304°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PSS

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations

Surface Water Present? Yes X No Depth (inches) 0.5
Water Table Present? Yes X No Depth (inches) 2
Saturation Present? Yes X No Depth (inches) 0-18
(Including capillary fringe)

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1G

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Salix sp* - Willow sp	50*	-	-
2. *Lonicera morrowii - morrow's honeysuckle*	15	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Herb Stratum (Plot size: 5')			
1. *Typha latifolia* - broadleaf cattail	45	Yes	OBL
2. *Barbarea vulgaris* – common wintercress	10	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55 = Total Cover		
50% of Total Cover:	27.5	20% of Total Cover:	11
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	45 x 1 =	45
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	25 x 4 =	100
UPL species	0 x 5 =	0
Column Totals	70 (A)	145 (B)

Prevalence Index = B/A = 2.071429

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the willow species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point WL 1G

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	70	10YR 4/6	30	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Refusal Rock

Depth (inches): 12

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 1G

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Floodplain | Local relief (concave, convex, none): none

Slope (%): 0-2% | Lat 40.68513° | Long: -80.07259°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: ClC | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1G

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1G

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	15	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	80*	-	-
2. *Alliaria petiolata* - garlic mustard	10	Yes	FACU
3. *Ajuga reptans* – common bugle	10	Yes	UPL
4. *Taraxacum officinale* – common dandelion	5	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25 = Total Cover		
50% of Total Cover:	12.5	20% of Total Cover:	5
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	30 x 4 =	120
UPL species	10 x 5 =	50
Column Totals	40 (A)	170 (B)

Prevalence Index = B/A = 4.25

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1G

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/6	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1H
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.68560°
Long: -80.06955°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No ____	Depth (inches) 1
Water Table Present?	Yes ____	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1H

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0	= Total Cover	
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Typha latifolia* - broadleaf cattail	45	Yes	OBL
2. *Apocynum cannabinum* - dogbane	10	No	FACU
3. *Barbarea vulgaris* – common wintercress	10	No	FACU
4. *Rumex obtusifolius* – bitter dock	5	No	FACU
5. *Dipsacus fullonum* – common teasel	5	No	FACU
6. *Gramineae sp* - grass sp	20*	-	-
7. *Ranunclus repens* - creeping buttercup	15	Yes	FAC
8.			
9.			
10.			
11.			
12.			
	90	= Total Cover	
50% of Total Cover:	45	20% of Total Cover:	18
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0	= Total Cover	
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point WL 1H

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/1	80	5YR 4/6	20	C	PL	clay loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 7

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1H
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 2-5%
Lat 40.68569°
Long: -80.06936°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: ClC
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1H

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes _____	No X	Depth (inches) _____
Water Table Present?	Yes _____	No X	Depth (inches) _____
Saturation Present? (Including capillary fringe)	Yes _____	No X	Depth (inches) _____

Wetland Hydrology Present **Yes** _____ **No X**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1H

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - Grass sp	100*	-	-
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests. Due to the observed soil and water conditions, it is assumed that the grass species is an upland plant.

SOIL

Sampling Point UP 1H

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/4	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 10

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1I
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.68570°
Long: -80.06870°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: BrB
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No	Depth (inches) 1
Water Table Present?	Yes	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No	Depth (inches) 0-18

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1I

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Juncus effusus* - soft rush	30	Yes	FACW
2. *Typha latifolia* - broadleaf cattail	30	Yes	OBL
3. *Scirpus atrovirens* – green bulrush	5	No	OBL
4. *Solidago sp* - goldenrod sp.	5*	-	-
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 = Total Cover		
50% of Total Cover:	32.5	20% of Total Cover:	13
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point WL 1I

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	-	-	-	-	-	-	organic matter	
2-18	10YR 4/2	70	10YR 3/6	30	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1I
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.68568°
Long: -80.06888°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: GoD
NWI classification: Upland

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

Are Vegetation Y Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1I

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1I

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	40	-	-
2. *Solidago sp* - goldenrod sp	30	-	-
3. *Barbarea vulgaris* – common wintercress	10	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80 = Total Cover		
50% of Total Cover:	40	20% of Total Cover:	16
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1I

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/4	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 8

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.12.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1J
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.68595°
Long: -80.06185°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: GoC
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No ____	Depth (inches) 1"
Water Table Present?	Yes X	No ____	Depth (inches) 0"
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-4"

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1J

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Salix sp* - willow sp	5*	-	-
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Typha latifolia* - broadleaf cattail	85	Yes	OBL
2. *Barbarea vulgaris* – common wintercress	20	No	FACU
3. *Dipsacus fullonum* – common teasel	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115 = Total Cover		
50% of Total Cover:	57.5	20% of Total Cover:	23
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the willow species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point WL 1J

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

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: rock

Depth (inches): 4

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1J
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 2-5%
Lat 40.68600°
Long: -80.06170°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: GoC
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1J

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

Note: Hillside Seep

VEGETATION – Use scientific names of plants.

Sampling Point UP 1J

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Herb Stratum (Plot size: 5')			
1. *Solidago sp* - goldenrod sp.	40*	-	-
2. *Gramineae sp* - grass sp	30*	-	-
3. *Securigera varia* – crownvetch	30	Yes	UPL
4. *Andropogon virginicus* – broomsedge	10	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40 = Total Cover		
50% of Total Cover:	20	20% of Total Cover:	8
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	30	x 5 =	150
Column Totals	50 (A)		230 (B)

Prevalence Index = B/A = 4.6

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod and grass species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1J

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/4	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 8

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1K
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): concave
Slope (%): 0-2%
Lat 40.68800°
Long: -80.05755°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: GoD
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No	Depth (inches) 0.25
Water Table Present?	Yes	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No	Depth (inches) 0-18

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1K

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus amomum* - silky dogwood	20	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	60	Yes	FACW
2. *Juncus effusus* - soft rush	30	Yes	FACW
3. *Symplocarpus foetidus* - skunk cabbage	10	No	OBL
4. *Scirpus atrovirens* – green bulrush	10	No	OBL
5. *Barbarea vulgaris* – common wintercress	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115 = Total Cover		
50% of Total Cover:	57.5	20% of Total Cover:	23
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 1K

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/1	90	10YR 4/6	10	C	M	clay loam	gritty
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: rock

Depth (inches): 5

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 1K

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Floodplain | Local relief (concave, convex, none): none

Slope (%): 0-2% | Lat 40.68789° | Long: -80.05754°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: GoD | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1K

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1K

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	40	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
50% of Total Cover:	20	20% of Total Cover:	8
Herb Stratum (Plot size: 5')			
1. *Solidago sp* - goldenrod sp.	40*	-	-
2. *Gramineae sp* - grass sp	20*	-	-
3. *Crataegus sp* - hawthorn sp	20*	-	-
4. *Securigera varia* – crownvetch	20	Yes	UPL
5. *Barbarea vulgaris* – common wintercress	10	Yes	FACU
6. *Allium vineale* – wild garlic	5	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	35 = Total Cover		
50% of Total Cover:	17.5	20% of Total Cover:	7
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	55 x 4 =	220
UPL species	20 x 5 =	100
Column Totals	75 (A)	320 (B)

Prevalence Index = B/A = 4.266667

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod, grass, and hawthorn species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1K

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/4	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 6

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1L
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): concave
Slope (%): 0-2%
Lat 40.68811°
Long: -80.05766°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: GoD
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No	Depth (inches) 2
Water Table Present?	Yes X	No	Depth (inches) 4
Saturation Present? (Including capillary fringe)	Yes X	No	Depth (inches) 0-18

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1L

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Typha latifolia* - broadleaf cattail	80	Yes	OBL
2. *Phalaris arundinacea* - reed canary grass	15	No	FACW
3. *Symplocarpus foetidus* - skunk cabbage	5	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of Total Cover:	50	20% of Total Cover:	20
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 1L

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1	95	5YR 3/4	5	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1L
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.68814°
Long: -80.05744°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: GoD
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1L

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes _____	No X	Depth (inches) _____
Water Table Present?	Yes _____	No X	Depth (inches) _____
Saturation Present? (Including capillary fringe)	Yes _____	No X	Depth (inches) _____

Wetland Hydrology Present **Yes** _____ **No X**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1L

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	40	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
50% of Total Cover:	20	20% of Total Cover:	8
Herb Stratum (Plot size: 5')			
1. *Solidago sp* - goldenrod sp.	40*	-	-
2. *Gramineae sp* - grass sp	20*	-	-
3. *Crataegus sp* - hawthorn sp	20*	-	-
4. *Securigera varia* – crownvetch	20	Yes	UPL
5. *Barbarea vulgaris* – common wintercress	10	Yes	FACU
6. *Allium vineale* – wild garlic	5	Yes	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	35 = Total Cover		
50% of Total Cover:	17.5	20% of Total Cover:	7
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	55 x 4 =	220
UPL species	20 x 5 =	100
Column Totals	75 (A)	320 (B)

Prevalence Index = B/A = 4.266667

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod, grass, and hawthorn species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1L

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/4	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 6

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1M
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): concave
Slope (%): 0-2%
Lat 40.68782°
Long: -80.05794°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: At
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No	Depth (inches) 0.5
Water Table Present?	Yes X	No	Depth (inches) 6
Saturation Present? (Including capillary fringe)	Yes X	No	Depth (inches) 0-6

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1M

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Herb Stratum (Plot size: 5')			
1. *Typha latifolia* - broadleaf cattail	60	Yes	OBL
2. *Phalaris arundinacea* - reed canary grass	20	Yes	FACW
3. *Onoclea sensibilis* - sensitive fern	15	No	FACW
4. *Symplocarpus foetidus* - skunk cabbage	15	No	FACW
5. *Agrimonia parviflora* - small flowered agrimony	15	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	125 = Total Cover		
50% of Total Cover:	62.5	20% of Total Cover:	25
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL Sampling Point WL 1M

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 2.5/1	90	2.5Y 4/2	10	C	M	loam clay	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 6

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1M
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.68778°
Long: -80.05814°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: At
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1M

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1M

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	60	Yes	FACU
2. *Rosa multiflora* - multiflora rose	10	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
50% of Total Cover:	35	20% of Total Cover:	14
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	20*	-	-
2. *Solidago sp* - goldenrod sp.	20*	-	-
3. *Barbarea vulgaris* – common wintercress	10	Yes	FACU
4. *Ajuga reptans* – common bugle	5	Yes	FACU
5. *Allium vineale* – wild garlic	5	Yes	FACU
6. *Rumex crispus* - curly dock	5	Yes	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	25 = Total Cover		
50% of Total Cover:	12.5	20% of Total Cover:	5
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals	95 (A)		375 (B)

Prevalence Index = B/A = 3.947368

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod and grass species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1M

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/4	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: WL 1N

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Terrace | Local relief (concave, convex, none): concave

Slope (%): 2-5% | Lat 40.69049° | Long: -80.05250°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD83)

Soil Map Unit Name: ErB | NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No ____	Depth (inches) 1
Water Table Present?	Yes X	No ____	Depth (inches) 0
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1N

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	60*	-	-
2. *Symplocarpus foetidus* - skunk cabbage	30	Yes	OBL
3. *Impatiens capensis* - jewelweed	20	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50 = Total Cover		
50% of Total Cover:	25	20% of Total Cover:	10
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point WL 1N

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

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5)
____ 2 cm Muck (A10) **(LRR N)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)

____ Dark Surface (S7)
____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
____ Thin Dark Surface (S9) (**MLRA 147, 148)**
____ Loamy Gleyed Matrix (F2)
__X__ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
____ Umbric Surface (F13) (**MLRA 136, 122)**
____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

____ 2 cm Muck (A10) (**MLRA 147**)
____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type:

Depth (inches):

Hydric Soil Present? **Yes** __X__ **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 1N

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Hillslope | Local relief (concave, convex, none): none

Slope (%): 5-10% | Lat 40.69061° | Long: -80.69061°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: ErB | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1N

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1N

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Herb Stratum (Plot size: 5')			
1. *Solidago sp* - goldenrod sp.	40*	-	-
2. *Gramineae sp* - grass sp	40*	-	-
3. *Crataegus sp* - hawthorn sp	30*	-	-
4. *Potentilla simplex* - common cinquefoil	10	Yes	FACU
5. *Impatiens capensis* – jewelweed	10	Yes	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals	30 (A)		100 (B)

Prevalence Index = B/A = 3.333333

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod, grass, and hawthron species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1N

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1O
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.69086°
Long: -80.05180°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: VcB
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations

Surface Water Present? Yes X No Depth (inches) 1
Water Table Present? Yes X No Depth (inches) 0
Saturation Present? Yes X No Depth (inches) 0-18
(Including capillary fringe)

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1O

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	70	Yes	FACW
2. *Onoclea sensibilis* - sensitive fern	20	Yes	FACW
3. *Barbarea vulgaris* – common wintercress	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95 = Total Cover		
50% of Total Cover:	47.5	20% of Total Cover:	19
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL Sampling Point WL 1O

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

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5)
____ 2 cm Muck (A10) **(LRR N)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)

____ Dark Surface (S7)
____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
____ Thin Dark Surface (S9) (**MLRA 147, 148)**
____ Loamy Gleyed Matrix (F2)
__X__ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
____ Umbric Surface (F13) (**MLRA 136, 122)**
____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

____ 2 cm Muck (A10) (**MLRA 147**)
____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** __X__ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 1O

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Hillslope | Local relief (concave, convex, none): none

Slope (%): 5-10% | Lat 40.69095° | Long: -80.05175°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: VcB | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1O

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1O

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba* - white oak	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	10	Yes	FACU
2. *Alunus serrulata* - smooth alder	5	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Herb Stratum (Plot size: 5')			
1. *Solidago sp* - goldenrod sp.	30*	-	-
2. *Gramineae sp* - grass sp	15*	-	-
3. *Securigera varia* – crownvetch	15	Yes	UPL
4. *Rumex obtusifolius* - bitter dock	5	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	50 x 4 =	200
UPL species	15 x 5 =	75
Column Totals	65 (A)	275 (B)

Prevalence Index = B/A = 4.230769

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the goldenrod and grass species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point UP 1O

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/6	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1P
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): concave
Slope (%): 0-2%
Lat 40.69436°
Long: -80.04369°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: At
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes X	No ____	Depth (inches) 1
Water Table Present?	Yes ____	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1P

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus* - skunk cabbage	40	Yes	OBL
2. *Gramineae sp* - grass sp	20*	-	-
3. *Typha latifolia* - broadleaf cattail	10	Yes	OBL
4. *Onoclea sensibilis* - sensitive fern	10	Yes	FACW
5. *Barbarea vulgaris* – common wintercress	5	No	FACU
6. *Arctium minus* – lesser burdock	5	No	FACU
7. *Packera aurea* – golden ragwort	5	No	FACW
8. *Agrimonia parviflora - small flowered* agrimony	5	No	FACW
9.			
10.			
11.			
12.			
	80 = Total Cover		
50% of Total Cover:	40	20% of Total Cover:	16
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point WL 1P

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	70	5YR 4/4	30	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5)
____ 2 cm Muck (A10) **(LRR N)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)

____ Dark Surface (S7)
____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
____ Thin Dark Surface (S9) (**MLRA 147, 148)**
____ Loamy Gleyed Matrix (F2)
__X__ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
____ Umbric Surface (F13) (**MLRA 136, 122)**
____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

____ 2 cm Muck (A10) (**MLRA 147**)
____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type:

Depth (inches):

Hydric Soil Present? **Yes** __X__ **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.26.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 1P

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Floodplain | Local relief (concave, convex, none): none

Slope (%): 0-2% | Lat 40.69441° | Long: -80.04386°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: At | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1P

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1P

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - Grass sp	30*	-	-
2. *Securigera varia* – crownvetch	15	Yes	UPL
3. *Alliaria petiolata* - garlic mustard	10	Yes	FACU
4. *Barbarea vulgaris* – common wintercress	10	Yes	FACU
5. *Solidago sp* - goldenrod sp.	10*	-	-
6. *Dipsacus fullonum* – common teasel	5	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	40 = Total Cover		
50% of Total Cover:	20	20% of Total Cover:	8
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	50 x 4 =	200
UPL species	15 x 5 =	75
Column Totals	65 (A)	275 (B)

Prevalence Index = B/A = 4.230769

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1P

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/6	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 10

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 1Q
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc Floodplain
Local relief (concave, convex, none):
Slope (%): 0-2%
Lat 40.69381°
Long: -80.04518°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ErB
NWI classification: PSS

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes	No X	Depth (inches) -
Water Table Present?	Yes	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No	Depth (inches) 0-18

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 1Q

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus* - skunk cabbage	30	Yes	OBL
2. *Gramineae sp* - grass sp	30*	-	-
3. *Impatiens capensis* – jewelweed	20	Yes	FACW
4. *Solidago sp* - goldenrod sp.	10*	-	-
5. *Alliaria petiolata* - garlic mustard	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55 = Total Cover		
50% of Total Cover:	27.5	20% of Total Cover:	11
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point WL 1Q

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	60	10YR 4/4	40	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.26.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 1Q
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): none
Slope (%): 0-2%
Lat 40.69390°
Long: -80.04523°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: ErB
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 1Q

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- _____ Surface Soil Cracks (B6)
- _____ Sparsely Vegetated Concave Surface (B8)
- _____ Drainage Patterns (B10)
- _____ Moss Trim Lines (B16)
- _____ Dry-Season Water Table (C2)
- _____ Crayfish Burrows (C8)
- _____ Saturation Visible on Aerial Imagery (C9)
- _____ Stunted or Stressed Plants (D1)
- _____ Geomorphic Position (D2)
- _____ Shallow Aquitard (D3)
- _____ Microtopographic Relief (D4)
- _____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes _____	No X	Depth (inches) _____
Water Table Present?	Yes _____	No X	Depth (inches) _____
Saturation Present? (Including capillary fringe)	Yes _____	No X	Depth (inches) _____

Wetland Hydrology Present **Yes** _____ **No X**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 1Q

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30	= Total Cover	
50% of Total Cover:	15	20% of Total Cover:	6
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	80*	-	-
2. *Allium vineale* – wild garlic	5	Yes	FACU
3. *Impatiens capensis* – jewelweed	5	Yes	FACW
4. *Alliaria petiolata* - garlic mustard	5	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15	= Total Cover	
50% of Total Cover:	7.5	20% of Total Cover:	3
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0	= Total Cover	
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals	45 (A)		170 (B)

Prevalence Index = B/A = 3.777778

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 1Q

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/6	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.27.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: WL 2A

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Hillslope | Local relief (concave, convex, none): none

Slope (%): 0-2% | Lat 40.69621° | Long: -80.04126°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD83)

Soil Map Unit Name: VcC | NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Located within a stormwater structure

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present? Yes X No ____ Depth (inches) 1

Water Table Present? Yes X No ____ Depth (inches) 0

Saturation Present? Yes X No ____ Depth (inches) 0-18

(Including capillary fringe)

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 2A

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera morrowii* - morrow's honeysuckle	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	80	Yes	FACW
2. *Barbarea vulgaris* – common wintercress	10	No	FACU
3. *Impatiens capensis* – jewelweed	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of Total Cover:	50	20% of Total Cover:	20
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:		
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals	120 (A)		300 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 2A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/4	100	-	-	-	-	silt loam	woody debris
10-18	10YR 3/4	70	5GY 3/2	30	C	M	silt loam	silt deposit w/ gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Refusal rock

Depth (inches): 10

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.27.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 2A

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Hillslope | Local relief (concave, convex, none): none

Slope (%): 5-10% | Lat 40.69615° | Long: -80.04132°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: HaC | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 2A

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 2A

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum* – sugar maple	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	95*	-	-
2. *Cirsium arvense* – Canadian thistle	5	Yes	FACU
3. *Glechoma hederacea* – ground ivy	5	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

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 species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	40 x 4 =	160
UPL species	0 x 5 =	0
Column Totals	40 (A)	160 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 2A

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/6	100	-	-	-	-	silt loam	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 12

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.19.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 2B
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 5%-10%
Lat 40.69536°
Long: -80.03033°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PFO

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____ -
Water Table Present?	Yes ____	No X	Depth (inches) ____ -
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 2B

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum* – red maple	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	15	Yes	FACU
2. *Lonicera morrowii* - morrow's honeysuckle	15	Yes	FACU
3. *Cornus amomum* - silky dogwood	15	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	45 = Total Cover		
50% of Total Cover:	22.5	20% of Total Cover:	9
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	60	Yes	FACW
2. *Scirpus cyperinus* – woolgrass	15	No	FACW
3. *Barbarea vulgaris* – common wintercress	10	No	FACU
4. *Impatiens capensis* – jewelweed	10	No	FACW
5. *Equisetum arvense* – field horsetail	10	No	FAC
6. *Juncus effusus* - soft rush	5	No	FACW
7. *Lysimachia nummularia* - moneywort	5	No	FACW
8.			
9.			
10.			
11.			
12.			
	115 = Total Cover		
50% of Total Cover:	57.5	20% of Total Cover:	23
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 2B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100	-	-	-	-	silt loam	woody debris
5-18	10YR 4/2	60	5Y 4/2	40	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5)
____ 2 cm Muck (A10) **(LRR N)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)

____ Dark Surface (S7)
____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
____ Thin Dark Surface (S9) (**MLRA 147, 148)**
____ Loamy Gleyed Matrix (F2)
__X__ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
____ Redox Depressions (F8)
____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
____ Umbric Surface (F13) (**MLRA 136, 122)**
____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

____ 2 cm Muck (A10) (**MLRA 147**)
____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type:

Depth (inches):

Hydric Soil Present? **Yes** __X__ **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 2B
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 5-10% Lat 40.69523°
Long: -80.03030°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: ClC
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 2B

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 2B

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	15	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	40*	-	-
2. *Taraxacum officinale* – common dandelion	10	Yes	FACU
3. *Equisetum arvense* – field horsetail	10	Yes	FACU
4. *Securigera varia* – crownvetch	10	Yes	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	10	x 5 =	50
Column Totals	45 (A)		190 (B)

Prevalence Index = B/A = 4.222222

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 2B

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/4	100	-	-	-	-	silt loam	
Gravel Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Gravel

Depth (inches): 8

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 2C
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.69413°
Long: -80.02662°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PFO

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ___	No X	Depth (inches) -
Water Table Present?	Yes X	No ___	Depth (inches) 12
Saturation Present? (Including capillary fringe)	Yes X	No ___	Depth (inches) 0-18

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 2C

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus sp.* - apple sp.	30	Yes	-
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	40*	-	-
2. *Onoclea sensibilis* - sensitive fern	20	Yes	FACW
3. *Impatiens capensis* – jewelweed	20	Yes	FACW
4. *Ajuga reptans* - bugle	20	Yes	UPL
5. *Juncus effusus* - soft rush	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 = Total Cover		
50% of Total Cover:	32.5	20% of Total Cover:	13
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and apple species could not be properly identified due to lack of distinguishing characteristics,they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point WL 2C

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100	-	-	-	-	silt loam	
10-18	10YR 5/4	60	10YR 4/6	40	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

____ Histosol (A1)
____ Histic Epipedon (A2)
____ Black Histic (A3)
____ Hydrogen Sulfide (A4)
____ Stratified Layers (A5)
____ 2 cm Muck (A10) **(LRR N)**
____ Depleted Below Dark Surface (A11)
____ Thick Dark Surface (A12)
____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
____ Sandy Gleyed Matrix (S4)
____ Sandy Redox (S5)
____ Stripped Matrix (S6)

____ Dark Surface (S7)
____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
____ Thin Dark Surface (S9) (**MLRA 147, 148)**
____ Loamy Gleyed Matrix (F2)
____ Depleted Matrix (F3)
____ Redox Dark Surface (F6)
____ Depleted Dark Surface (F7)
__X__ Redox Depressions (F8)
____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
____ Umbric Surface (F13) (**MLRA 136, 122)**
____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

____ 2 cm Muck (A10) (**MLRA 147**)
____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
____ Very Shallow Dark Surface (TF12)
____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type:

Depth (inches):

Hydric Soil Present? **Yes** __X__ **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.27.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 2C

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Hillslope | Local relief (concave, convex, none): none

Slope (%): 2-5% | Lat 40.69404° | Long: -80.02666°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: ClC | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 2C

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 2C

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus sp* - apple sp	30*	-	-
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Herb Stratum (Plot size: 5')			
1. *Alliaria petiolata* - garlic mustard	5	Yes	FACU
2. *Rubus allegheniensis* - blackberry	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Woody Vine Stratum (Plot size: 30')			
1. *Vitis sp* - grape sp	5*	-	-
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	30 x 4 =	120
UPL species	0 x 5 =	0
Column Totals	30 (A)	120 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the apple and grape species could not be properly identified due to lack of distinguishing characteristics,they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 2C

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100	-	-	-	-	silt/loam/gravel	
Gravel Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Gravel

Depth (inches): 10

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 2D
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.69417°
Long: -80.02629°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) -
Water Table Present?	Yes X	No ____	Depth (inches) 0
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 2D

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
50% of Total Cover:	2.5	20% of Total Cover:	1
Herb Stratum (Plot size: 5')			
1. *carex frankii* - Frank's sedge	50	Yes	OBL
2. *Barbarea vulgaris* – common wintercress	15	No	FACU
3. *Impatiens capensis* – jewelweed	15	No	FACW
4. *Gramineae sp* - grass sp	10*	-	-
5. *Juncus effusus* - soft rush	10	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
50% of Total Cover:	45	20% of Total Cover:	18
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	50 x 1 =	50
FACW species	25 x 2 =	50
FAC species	0 x 3 =	0
FACU species	20 x 4 =	80
UPL species	0 x 5 =	0
Column Totals	95 (A)	180 (B)

Prevalence Index = B/A = 1.894737

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point WL 2D

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 2.5/2	100	-	-	-	-	silt loam	
6-18	2.5Y 3/1	90	10YR 4/6	10	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 2D
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 2-5%
Lat 40.69416°
Long: -80.02604°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: ClC
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 2D

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes _____	No X	Depth (inches) _____
Water Table Present?	Yes _____	No X	Depth (inches) _____
Saturation Present? (Including capillary fringe)	Yes _____	No X	Depth (inches) _____

Wetland Hydrology Present **Yes** _____ **No X**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 2D

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Herb Stratum (Plot size: 5')			
1. *Solidago sp* - goldenrod sp.	15*	-	-
2. *Impatiens capensis* – jewelweed	10	Yes	FACW
3. *Alliaria petiolata* - garlic mustard	5	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15 = Total Cover		
50% of Total Cover:	7.5	20% of Total Cover:	3
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals	45 (A)		160 (B)

Prevalence Index = B/A = 3.555556

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass species could not be properly identified due to lack of distinguishing characteristics, it was not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 2D

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/4	100	-	-	-	-	silt loam / gravel	
Rock Refusal								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: Rock

Depth (inches): 10

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 2E
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Floodplain
Local relief (concave, convex, none): concave
Slope (%): 0-2%
Lat 40.69378°
Long: -80.02540°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations

Surface Water Present? Yes ___ No X Depth (inches) -
Water Table Present? Yes X No ___ Depth (inches) 8
Saturation Present? Yes X No ___ Depth (inches) 0-18
(Including capillary fringe)

Wetland Hydrology Present **Yes X** **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 2E

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus sp* - apple sp	20	Yes	-
2.			
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Carex sp* - sedge sp	15*	-	-
2. *Juncus effusus* - soft rush	20	Yes	FACW
3. *Symplocarpus foetidus* - skunk cabbage	20	Yes	OBL
4. *Onoclea sensibilis* - sensitive fern	20	Yes	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 = Total Cover		
50% of Total Cover:	30	20% of Total Cover:	12
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the sedge and apple species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point WL 2E

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	90	7.5YR 3/4	10	C	M	silt loam	
4-18	5Y 2.5/1	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.27.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 2E

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Floodplain | Local relief (concave, convex, none): none

Slope (%): 0-2% | Lat 40.69368° | Long: -80.02532°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: ClC | NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 2E

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 2E

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	30	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
50% of Total Cover:	15	20% of Total Cover:	6
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	10*	-	-
2. *Solidago sp* - goldenrod sp.	10*	-	-
3. *Alliaria petiolata* - garlic mustard	10	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10 = Total Cover		
50% of Total Cover:	5	20% of Total Cover:	2
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals	40 (A)		160 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 2E

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/3	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 2F
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.69322°
Long: -80.02379°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: VcC
NWI classification: PEM

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) -
Water Table Present?	Yes ____	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 2F

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			-
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea* - reed canary grass	95	Yes	FACW
2. *Impatiens capensis* – jewelweed	15	No	FACW
3.			
4.			
5.			-
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110 = Total Cover		
50% of Total Cover:	55	20% of Total Cover:	22
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

SOIL

Sampling Point WL 2F

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/2	100	-	-	-	-	silt loam	
14-18	10YR 4/2	80	10YR 3/6	20	C	PL	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: UP 2F
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): none
Slope (%): 2-5%
Lat 40.69315°
Long: -80.02376°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD 83)
Soil Map Unit Name: VcC
NWI classification: Upland

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

Upland for WL 2F

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 2F

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
50% of Total Cover:	10	20% of Total Cover:	4
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	40*	-	-
2. *Solidago sp* - goldenrod sp.	20*	-	-
3. *Dipsacus fullonum* – common teasel	20	Yes	FACU
4. *Alliaria petiolata* - garlic mustard	10	Yes	FACU
5. *Barbarea vulgaris* – common wintercress	10	Yes	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40 = Total Cover		
50% of Total Cover:	20	20% of Total Cover:	8
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	60 x 4 =	240
UPL species	0 x 5 =	0
Column Totals	60 (A)	240 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

_____ 1 - Rapid Test for Hydrophytic Vegetation

_____ 2 - Dominance Test is >50%

_____ 3 - Prevalence Index is ≤3.0[1]

_____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation[1]

(Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

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

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

*Since the grass and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point UP 2F

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/3	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

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

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion
City/County: Butler
Sampling Date: 4.27.17
Applicant/Owner: Pennsylvania Department of Transportation District 10-0
State: PA
Sampling Point: WL 2G
Investigator(s): PEG, ALB
Section, Township, Range: Adams
Landform (hillslope, terrace, etc. Hillslope
Local relief (concave, convex, none): concave
Slope (%): 2-5%
Lat 40.69378°
Long: -80.02540°
Subregion (LRR or MLRA): LRR Central and Eastern Mountains
Datum: North American Datum 1983 (NAD83)
Soil Map Unit Name: ClC
NWI classification: PFO

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

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) -
Water Table Present?	Yes ____	No X	Depth (inches) -
Saturation Present? (Including capillary fringe)	Yes X	No ____	Depth (inches) 0-18

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point WL 2G

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum* - red maple	50	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	50 = Total Cover		
50% of Total Cover:	25	20% of Total Cover:	10
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Herb Stratum (Plot size: 5')			
1. *Carex sp* - sedge sp	20*	-	-
2. *Juncus effusus* - soft rush	20	Yes	FACW
3. *Impatiens capensis* – jewelweed	10	Yes	FACW
4. *Phalaris arundinacea* - reed canary grass	5	No	FACW
5. *Onoclea sensibilis* - sensitive fern	10	Yes	FACW
6. *Gramineae sp* - grass sp	20*	-	-
7.			
8.			
9.			
10.			
11.			
12.			
	45 = Total Cover		
50% of Total Cover:	22.5	20% of Total Cover:	9
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	0 x 1 =	0
FACW species	0 x 2 =	0
FAC species	0 x 3 =	0
FACU species	0 x 4 =	0
UPL species	0 x 5 =	0
Column Totals	0 (A)	0 (B)

Prevalence Index = B/A = #DIV/0!

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes X** **No ____**

Remarks: (Include photo numbers here or on a separate sheet.)

*Since the sedge and grass species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL

Sampling Point WL 2G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 3/2	100	-	-	-	-	silt loam	
4-18	5Y 5/2	70	7.5YR 5/8	30	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountain and Piedmont

Project/Site: SR 0228 Mars RR Bridge West Expansion | City/County: Butler | Sampling Date: 4.27.17

Applicant/Owner: Pennsylvania Department of Transportation District 10-0 | State: PA | Sampling Point: UP 2G

Investigator(s): PEG, ALB | Section, Township, Range: Adams

Landform (hillslope, terrace, etc. Hillslope | Local relief (concave, convex, none): none

Slope (%): 2-5% | Lat 40.69378° | Long: -80.02653°

Subregion (LRR or MLRA): LRR Central and Eastern Mountains | Datum: North American Datum 1983 (NAD 83)

Soil Map Unit Name: ClC | NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N Soil N Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N Soil N Hydrology N naturally problematic? (if needed explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No X**
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

Upland for WL 2G

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ True Aquatic Plants (B14)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- ____ FAC-Neutral Test (D5)

Field Observations

Surface Water Present?	Yes ____	No X	Depth (inches) ____
Water Table Present?	Yes ____	No X	Depth (inches) ____
Saturation Present? (Including capillary fringe)	Yes ____	No X	Depth (inches) ____

Wetland Hydrology Present **Yes** ____ **No X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point UP 2G

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rosa multiflora* - multiflora rose	30	Yes	FACU
2. *Lonicera morrowii* - morrow's honeysuckle	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		
50% of Total Cover:	25	20% of Total Cover:	10
Herb Stratum (Plot size: 5')			
1. *Gramineae sp* - grass sp	30*	-	-
2. *Ambrosia artemisiifolia* - common ragweed	5	Yes	FACU
3. *Solidago sp* - goldenrod sp	10*	-	-
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5 = Total Cover		
50% of Total Cover:	2.5	20% of Total Cover:	1
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
5.			
6			
	0 = Total Cover		
50% of Total Cover:	0	20% of Total Cover:	0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals	55 (A)		220 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1]

(Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

*Since the grass and goldenrod species could not be properly identified due to lack of distinguishing characteristics, they were not used in the Hydrophytic Vegetation Tests.

SOIL Sampling Point UP 2G

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators).

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100	-	-	-	-	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ 2 cm Muck (A10) **(LRR N)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7)
- ____ Polyvalue Below Surface (S8) (**MLRA 147, 148)**
- ____ Thin Dark Surface (S9) (**MLRA 147, 148)**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Iron-Manganese Masses (F12) (**LRR N, MLRA 136)**
- ____ Umbric Surface (F13) (**MLRA 136, 122)**
- ____ Piedmont Floodplain Soils (F19) (**MLRA 148**)
- ____ Red Parent Material (F21)(**MLRA127,147**)

Indicators for Problematic Hydric Soils[3]:

- ____ 2 cm Muck (A10) (**MLRA 147**)
- ____ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ____ Very Shallow Dark Surface (TF12)
- ____ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed)

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** **X**

Remarks:

SURFACE WATER SURVEY

STREAM NAME: **UNT 1A** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
	BOULDERS 10 IN	X	SAND
	COBBLE (2.5-10 IN)	X	SILT
X	GRAVEL (<2.5 IN)		MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: _____ **INTERMITTENT STREAM:** X **EPHEMERAL:** _____

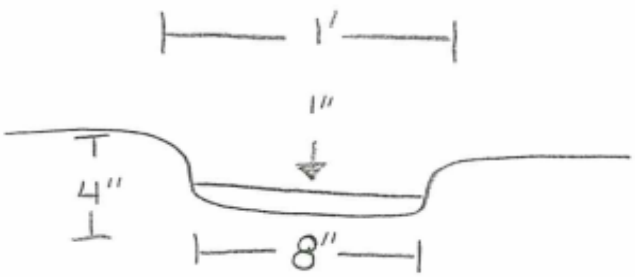
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)	**X**	GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **1'** WATER WIDTH **8"** NO WATER _____

CHANNEL DEPTH **4"** WATER DEPTH **1"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1B** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
	BOULDERS 10 IN	X	SAND
	COBBLE (2.5-10 IN)	X	SILT
X	GRAVEL (<2.5 IN)		MUCK
X	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

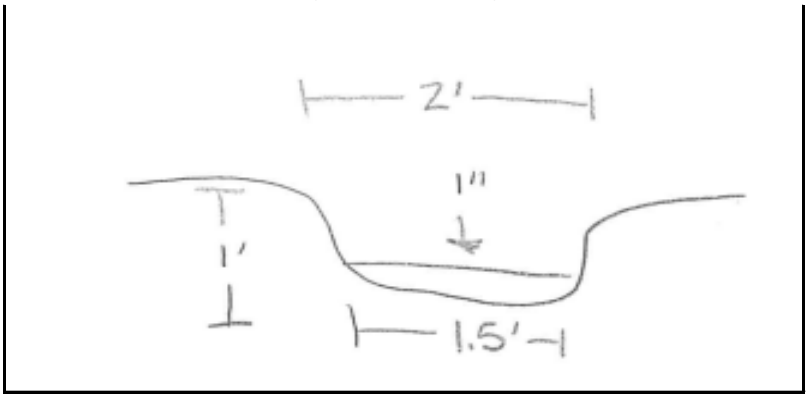
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)	**X**	AMPHIPODA (Scud)
X	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)		GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **2'** WATER WIDTH **1.5'** NO WATER _____

CHANNEL DEPTH **1'** WATER DEPTH **1"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1C** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
	BOULDERS 10 IN		SAND
	COBBLE (2.5-10 IN)	X	SILT
	GRAVEL (<2.5 IN)	X	MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: _____ **INTERMITTENT STREAM:** _____ **EPHEMERAL:** X

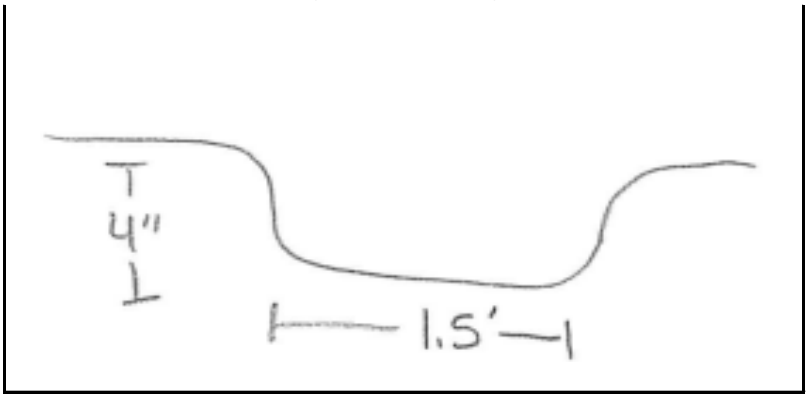
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)		GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
X	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **1.5'** WATER WIDTH **-** NO WATER **X**

CHANNEL DEPTH **4"** WATER DEPTH **-**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1D** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
	BOULDERS 10 IN	X	SAND
	COBBLE (2.5-10 IN)	X	SILT
	GRAVEL (<2.5 IN)	X	MUCK
X	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

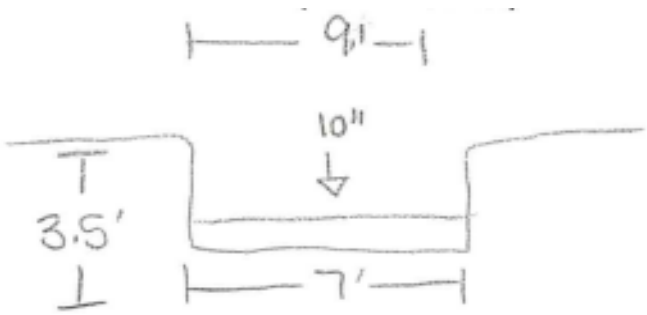
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)	**X**	COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)		GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)	**X**	HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES	**X**	FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **9'** WATER WIDTH **7'** NO WATER _____

CHANNEL DEPTH **3.5'** WATER DEPTH **10"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1E** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
X	BOULDERS 10 IN	X	SAND
X	COBBLE (2.5-10 IN)		SILT
X	GRAVEL (<2.5 IN)		MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

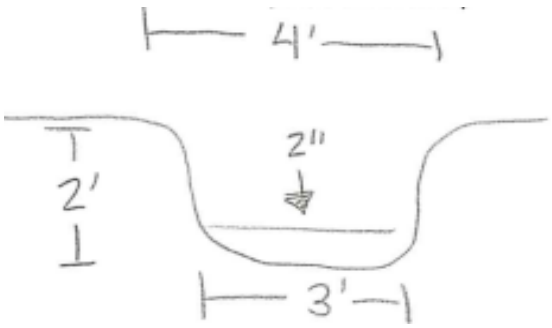
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)	**X**	COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)	**X**	GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **4'** WATER WIDTH **3'** NO WATER _____

CHANNEL DEPTH **2'** WATER DEPTH **2"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1F** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK	X	CLAY
	BOULDERS 10 IN		SAND
	COBBLE (2.5-10 IN)	X	SILT
	GRAVEL (<2.5 IN)	X	MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: _____ **INTERMITTENT STREAM:** X **EPHEMERAL:** _____

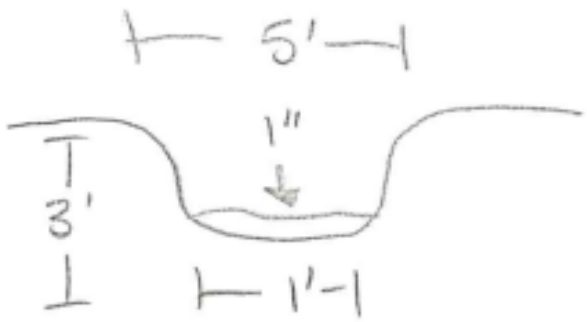
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)		GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)	**X**	HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **5'** WATER WIDTH **1'** NO WATER _____

CHANNEL DEPTH **3'** WATER DEPTH **1"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1G** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
	BOULDERS 10 IN	X	SAND
X	COBBLE (2.5-10 IN)	X	SILT
X	GRAVEL (<2.5 IN)		MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

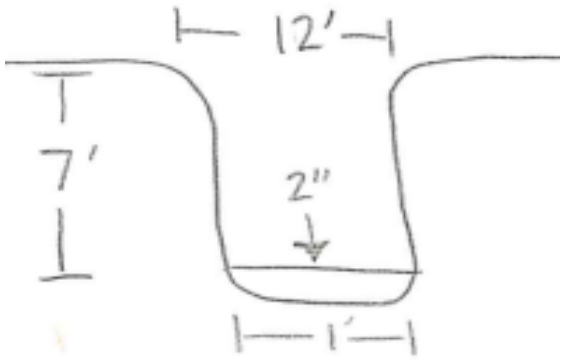
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)	**X**	COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)		GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)
X	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **12'** WATER WIDTH **1'** NO WATER _____

CHANNEL DEPTH **7'** WATER DEPTH **2"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1H** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
	BOULDERS 10 IN		SAND
	COBBLE (2.5-10 IN)	X	SILT
	GRAVEL (<2.5 IN)	X	MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

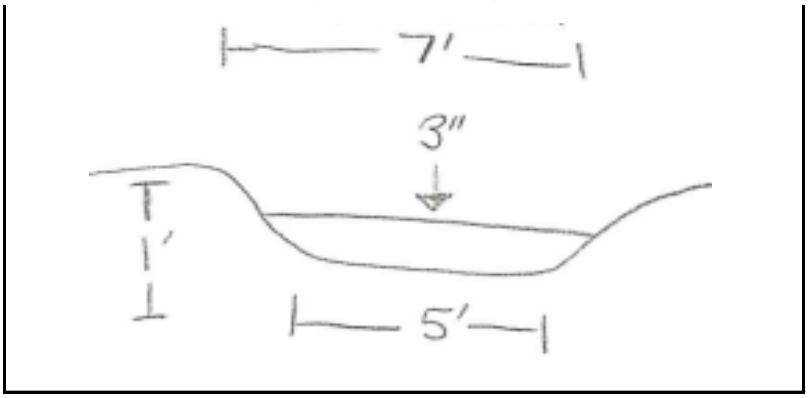
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)	**X**	GASTROPODA (Snail)
X	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **7'** WATER WIDTH **5'** NO WATER _____

CHANNEL DEPTH **1'** WATER DEPTH **3"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1I** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK	X	CLAY
	BOULDERS 10 IN	X	SAND
X	COBBLE (2.5-10 IN)	X	SILT
X	GRAVEL (<2.5 IN)		MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

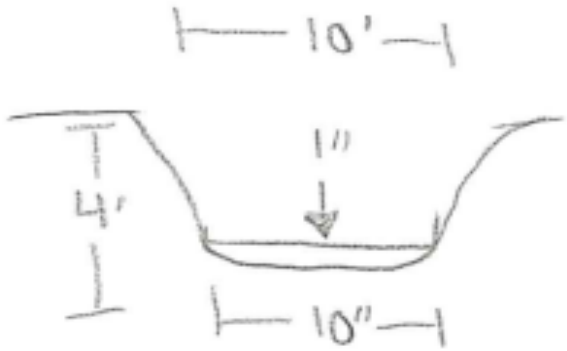
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)	**X**	COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)	**X**	GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **10'** WATER WIDTH **10"** NO WATER _____

CHANNEL DEPTH **4'** WATER DEPTH **1"**

SURFACE WATER SURVEY

STREAM NAME: **UNT 1J** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
	BOULDERS 10 IN		SAND
X	COBBLE (2.5-10 IN)	X	SILT
X	GRAVEL (<2.5 IN)	X	MUCK
X	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

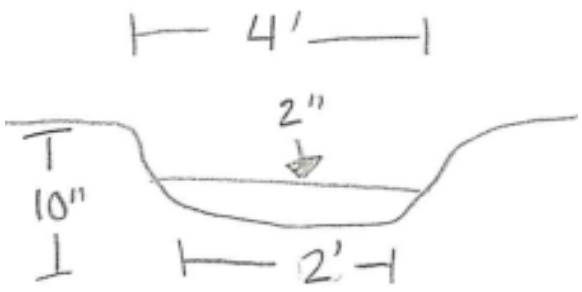
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
X	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)		GASTROPODA (Snail)
X	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)	**X**	HIRUDINEA (Leech)
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **4'** WATER WIDTH **2'** NO WATER _____

CHANNEL DEPTH **10"** WATER DEPTH **2"**

SURFACE WATER SURVEY

STREAM NAME: **Kaufman Run** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Breakneck Creek** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
X	BOULDERS 10 IN	X	SAND
X	COBBLE (2.5-10 IN)	X	SILT
X	GRAVEL (<2.5 IN)		MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

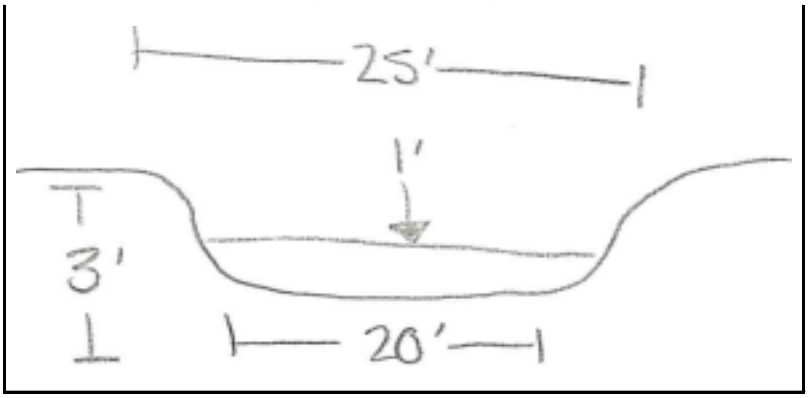
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)	
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)	
X	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)	
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)	
	HEMIPTERA (Leafhoppers)		GASTROPODA (Snail)	
X	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)	*Algae
	ODONATA (Dragonfly, Damselfly)		HIRUDINEA (Leech)	
	ISOPODA (Sowbug)		BIVALVIA (Molluscs)	
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)	
	NO MACRONIVERTEBRATES	**X**	FIN FISH	

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH	**25'**	WATER WIDTH	**20'**	NO WATER	
CHANNEL DEPTH	**3'**	WATER DEPTH	**1'**		

SURFACE WATER SURVEY

STREAM NAME: **UNT 1L** PROJECT: **SR 0228 Mars Bridge**

DRAINAGE BASIN: **Kaufman Run** INVESTIGATORS: **PEG, ALB**

DATE: **4.26.17**

PHYSICAL PARAMETERS:

SUBSTRATE TYPES:

	BEDROCK		CLAY
X	BOULDERS 10 IN	X	SAND
X	COBBLE (2.5-10 IN)	X	SILT
X	GRAVEL (<2.5 IN)		MUCK
	DETRITUS		OTHER

PERENNIAL STREAM: X **INTERMITTENT STREAM:** _____ **EPHEMERAL:** _____

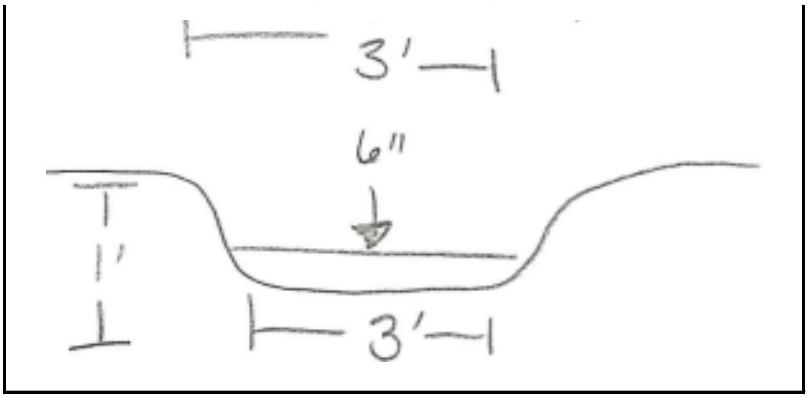
MACROINVERTEBRATES:

	EPHEMEROPTERA (Mayfly)		LEPIDOPTERA (Moth)
	NEUROPTERA (Lacewings)		AMPHIPODA (Scud)
	TRICHOPTERA (Caddisfly)		COLEOPTERA (Water Beetle)
	PLECOPTERA (Stonefly)		MEGALOPTERA (Hellgrammite)
	HEMIPTERA (Leafhoppers)	**X**	GASTROPODA (Snail)
	DIPTERA (True Fly)		PLANARIIDAE (Flatworm)
	ODONATA (Dragonfly, Damselfly)	**X**	HIRUDINEA (Leech)
X	ISOPODA (Sowbug)		BIVALVIA (Molluscs)
	DECAPODA (Crayfish)		HYDRACHNIDIA (Mites)
	NO MACRONIVERTEBRATES		FIN FISH

CROSS SECTIONAL DIAGRAM

(NOT TO SCALE)

LEFT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)



RIGHT DESCENDING BANK (FT) (include primary and secondary banks in the drawing)

WIDTH (FT)

(TOP OF BANK TO TOP OF BANK)

BANK WIDTH **3'** WATER WIDTH **3'** NO WATER _____

CHANNEL DEPTH **1'** WATER DEPTH **6"**

APPENDIX C
Resource Photographs

Photo 1: UNT 1A - Facing Upstream (4.26.17)

Photo 2: UNT 1A - Facing Downstream (4.26.17)

Photo 3: UNT 1B - Facing Upstream (4.26.17)

Photo 4: UNT 1B - Facing Downstream (4.26.17)

Photo 5: UNT 1C - Facing Upstream (12.20.17)

Photo 6: UNT 1C - Facing Downstream (12.20.17)

Photo 7: UNT 1D - Facing Upstream (4.26.17)

Photo 8: UNT 1D - Facing Downstream (4.26.17)

Photo 9: UNT 1E - Facing Upstream (4.26.17)

Photo 10: UNT 1E - Facing Downstream (4.26.17)

Photo 11: UNT 1F - Facing Upstream (4.26.17)

Photo 12: UNT 1F - Facing Downstream (4.26.17)

Photo 13: UNT 1G - Facing Upstream (4.26.17)

Photo 14: UNT 1G - Facing Downstream (4.26.17)

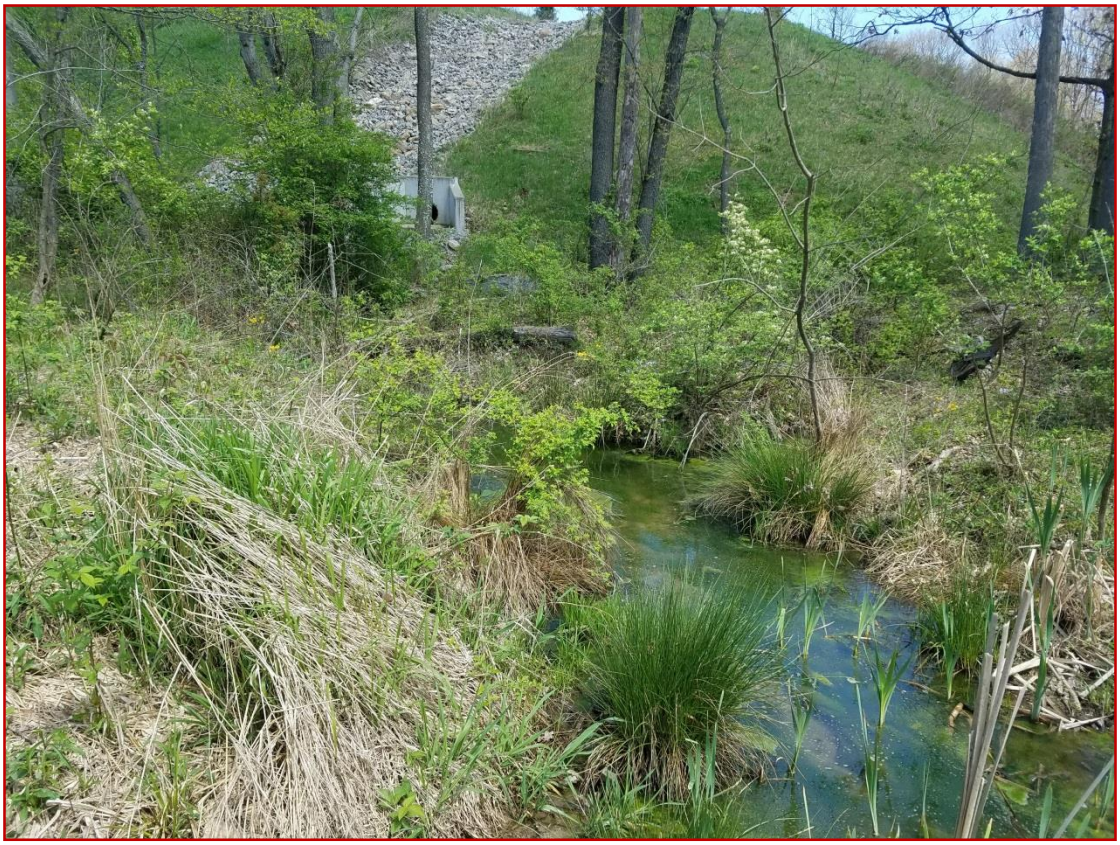


Photo 15: UNT 1H - Facing Upstream (4.26.17)

Photo 16: UNT 1H - Facing Downstream (4.26.17)

Photo 17: UNT 1I - Facing Upstream (4.26.17)

Photo 18: UNT 1I - Facing Downstream (4.26.17)

Photo 19: UNT 1J - Facing Upstream (4.26.17)

Photo 20: UNT 1J - Facing Downstream (4.26.17)

Photo 21: Kaufman Run - Facing Upstream (4.26.17)

Photo 22: Kaufman Run - Facing Downstream (4.26.17)

Photo 23: UNT 1L - Facing Upstream (4.26.17)

Photo 24: UNT 1L - Facing Downstream (4.26.17)

Photo 25: UNT 2A - Facing Upstream (4.27.17)

Photo 26: UNT 2A - Facing Downstream (4.27.17)

Photo 27: UNT 2B - Facing Upstream (4.27.17)

Photo 28: UNT 2B - Facing Downstream (4.27.17)

Photo 29: UNT 2C - Facing Upstream (4.27.17)

Photo 30: UNT 2C - Facing Downstream (4.27.17)

Photo 31: UNT 2D - Facing Upstream (4.27.17)

Photo 32: UNT 2D - Facing Downstream (4.27.17)

Photo 33: UNT 2E - Facing Upstream (4.27.17)

Photo 34: UNT 2E - Facing Downstream (4.27.17)

Photo 35: UNT 2F - Facing Upstream (4.27.17)

Photo 36: UNT 2F - Facing Downstream (4.27.17)

Photo 37: UNT 2G - Facing Upstream (4.27.17)

Photo 38: UNT 2G - Facing Downstream (4.27.17)

Photo 39: UNT 2H - Facing Upstream (4.27.17)

Photo 40: UNT 2H - Facing Downstream (4.27.17)

Photo 41: UNT 2I - Facing Upstream (12.19.17)

Photo 42: UNT 2I - Facing Downstream (12.19.17)

Photo 43: WL-1A – Facing South (4.26.17)

Photo 44: WL-1A – Facing North(4.26.17)

Photo 45: WL-1B – Facing Southwest (4.26.17)

Photo 46: WL-1B – Facing South 4.26.17)

Photo 47: WL-1C – Facing South (4.26.17)

Photo 48: WL-1C – Facing West (4.26.17)

Photo 49: WL-1D – Facing East (4.26.17)

Photo 50: WL-1D – Facing North (4.26.17)

Photo 51: WL-1E – Facing West (4.26.17)

Photo 52: WL-1E – Facing South (4.26.17)

Photo 53: WL-1F – Facing South (4.26.17)

Photo 54: WL-1F – Facing Southeast (4.26.17)

Photo 55: WL-1G – Facing East (4.26.17)

Photo 56: WL-1G – Facing West (4.26.17)

Photo 57: WL-1H – Facing North (4.26.17)

Photo 58: WL-1H – Facing East (4.26.17)

Photo 59: WL-1I – Facing Northwest (4.26.17)

Photo 60: WL-1I – Facing East (4.26.17)

Photo 61: WL-1J – Facing North (4.26.17)

Photo 62: WL-1J – Facing Southeast (4.26.17)

Photo 63: WL-1K – Facing South (4.26.17)

Photo 64: WL-1K – Facing West (4.26.17)

Photo 65: WL-1L – Facing Northwest (4.26.17)

Photo 66: WL-1L – Facing West (4.26.17)

Photo 67: WL-1M – Facing Northwest (4.26.17)

Photo 68: WL-1M – Facing South (4.26.17)

Photo 69: WL-1N – Facing North (4.26.17)

Photo 70: WL-1N – Facing North (4.26.17)

Photo 71: WL-1O - Facing Northeast (4.26.17)

Photo 72: WL-1O - Facing Southwest (4.26.17)

Photo 73: WL-1P - Facing Northwest (4.26.17)

Photo 74: WL-1P - Facing Southeast (4.26.17)

Photo 75: WL-1Q - Facing Northwest (4.26.17)

Photo 76: WL-1Q - Facing Southeast (4.26.17)

Photo 77: WL-2A - Facing Southeast (4.27.17)

Photo 78: WL-2A - Facing Northwest (4.27.17)

Photo 79: WL-2B - Facing Southwest (4.27.17)

Photo 80: WL-2B - Facing Northeast (4.27.17)

Photo 81: WL-2C - Facing Northwest (4.27.17)

Photo 82: WL-2C - Facing Southeast (4.27.17)

Photo 83: WL-2D - Facing Northwest (4.27.17)

Photo 84: WL-2D - Facing Southeast (4.27.17)

Photo 85: WL-2E - Facing Northwest (4.27.17)

Photo 86: WL-2E - Facing Southeast (4.27.17)

Photo 87: WL-2F - Facing Southwest (4.27.17)

Photo 88: WL-2F - Facing Northeast (4.27.17)

Photo 89: WL-2G – Facing Southwest (12.20.17)

Photo 90: WL-2G - Facing Northwest (12.20.17)