

Appendix B

Wetland Delineation Report

Waters of the United States
Jurisdictional Determination Report
And Wetland Delineation

For

Bureau of Waterways Engineering Project No. DGS 183-16
City of Titusville Flood Protection Project
Crawford County, Pennsylvania

Table of Contents

1. Purpose and Introduction
2. Site Description
3. Methods
4. Results
5. References
6. Appendix A

List of Figures

- Figure 1. Location Map
- Figure 2. Pennsylvania Physiographic Province and Church Run Watershed Location Map
- Figure 3. Church Run Watershed Boundary
- Figure 4. Proposed Detention Dam Location
- Figure 5. Routine Wetland Determination Map
- Figure 6. Wet Meadow at Site of Proposed Detention Dam
- Figure 7. Alder-Ninebark Wetland Understory

List of Tables

- Table 1. Plant Species List

1.0 Purpose and Introduction

The purpose of this investigation is to identify and delineate the boundaries of areas that meet the definition of Waters of the United States under Section 404 of the Clean Water Act. The need to determine these boundaries is based upon a proposed flood protection project consisting of a detention dam across Church Run in Crawford County, Pennsylvania. The proposed project will require Department of the Army authorization for the discharge of fill in Waters of the United States.

2.0 Site Description

Church Run in Crawford County, Pennsylvania (Figure 1); is a tributary to Oil Creek and drains an approximately 4.5 square mile area that is located in the Pittsburgh Low Plateau Section of Appalachian Plateaus Physiographic Province (Figure 2). Approximately 85 percent of the Church Run watershed is located in Oil Creek Township where landuse is predominantly forested or agricultural. Landuse in the remaining 15 percent of the watershed is urban and lies within the City of Titusville. The urban area in the City of Titusville represents the area affected by flooding (Figure 3). The site of the proposed detention dam is located just upstream of the City of Titusville boundary in Oil Creek Township (Figure 4). The limits of this investigation include the site of the proposed detention dam and the inundation limits of the maximum flood upstream of the dam (Figure 5).

Valley soils in the Church Run Watershed are primarily glacial drift of Illinoian age. Most soils encountered in test borings at the proposed detention dam site are sandy gravel or gravelly sand with minor fines. Two horizons of laminated clay were encountered in borings from the valley center to the right side of the valley. Springs are common along the right side of the valley near the base of its slope. Deep leaching of the glacial drift has occurred (Commonwealth of Pennsylvania, 1991).

Holly-Red Hook-Chenango association of soils occur along smaller streams in Crawford County. The Soil Survey of Crawford County identifies Holly series soils upstream of the City of Titusville limits where the proposed detention dam will be constructed. This series consists of deep, poorly drained to very poorly drained, nearly level soils located on floodplains (US Department of Agriculture Soil Conservation Service, 1979).

3.0 Methods

Preliminary data described in the Site Description were gathered utilizing information from USGS Quadrangles, aerial photographs taken in 1994, the Crawford County Soil Survey, PADCNR maps including the Physiographic Provinces of Pennsylvania, Pennsylvania Department of Environmental Protection eFacts Database, and information from preliminary Bureau investigations and documentation. Based upon a review of this information, a Routine Determination requiring an Onsite Inspection was required for delineating wetlands on this site. Wetland boundaries were determined in accordance with the 1987 Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-

1), hereafter referred to as the 1987 Manual, and subsequent revisions or guidance from Department of the Army Headquarters.

A Professional Licensed Surveyor completed a topographic and feature survey of the study site. The limits of the survey were roughly bounded by the maximum flood inundation upstream of the proposed detention dam (Figure 5). The Ordinary High Water (OHW) mark for Church Run and its tributaries was delineated during this survey. A computer aided design (CAD) map of the survey data was developed and used to illustrate OHW.

Wetland boundaries were identified in the field and delineated using global positioning system (GPS) technology. The wetland boundaries and Routine Wetland Delineation Plot ID's were added to the CAD map. The accompanying maps depict all Waters of the United States within the study site. The maps and boundaries are illustrated using the Pennsylvania State Plane Coordinate System North Zone referenced to the 1983 North American Datum (NAD83).

4.0 Results

OHW associated with Church Run and its tributaries is well defined and recognizable in the field. The vegetation immediately upstream of the City limits, including the inundation limits from the proposed detention dam, is dominated by wetland species. Most of the dominant species in the wetland complex located upstream of the City limits are indigenous to Pennsylvania (Table 1). This wetland complex upstream of the City limits consists of two wetland types that are best described as palustrine emergent wetlands and palustrine scrub/shrub wetlands in accordance with the Cowardin classification system (1979). One vegetation community is an herbaceous wetland and the other is a palustrine shrubland in accordance with the classification and community descriptions developed by the Pennsylvania Natural Diversity Inventory (Fike, 1999).

The herbaceous wetlands are categorized as persistent emergent wetlands and can be further classified as wet meadow wetlands (Fike, 1999). Graminoids and sedges dominate the wet meadow (Figure 6). Cattle grazing and mowing during dry periods maintain the herbaceous wetland plant community by arresting the regeneration of woody vegetation. Absent grazing and mowing, the wet meadow would develop into a palustrine shrubland. The grazing and mowing maintenance has promoted the establishment of two non-indigenous and particularly troublesome plant species; *Ranunculus acris* (Common buttercup), and *Phalaris arundinaceae* (Reed-canary grass). Although less prevalent than Common buttercup in this wetland, Reed-canary grass is especially aggressive and may increase in abundance with continued grazing and mowing. *Cirsium arvense* (Canadian thistle) and *Cirsium vulgare* (Bull thistle) were identified in non-wetland areas adjacent to the wet meadow where the vegetation also is dominated by herbaceous plants. These two thistles are listed as Pennsylvania Noxious Weeds and subject to regulation under the Pennsylvania Noxious Weed Control Law.

The palustrine shrublands are categorized as broadleaf palustrine shrublands and can be further classified as alder-ninebark wetlands (Fike, 1999). Alders (*Alnus serrulata* or *A. incana*) are co-dominant shrubs with Ninebark (*Physocarpus opulifolius*) in this wetland complex. The understory dominant vegetation consists of Skunk cabbage (*Symplocarpus foetidus*), Ostrich fern (*Matteuccia struthiopteris*) and Fowl manna-grass (*Glyceria striata*) (Figure 7).

All of the wetlands located in the Church Run Watershed meet the definition of Exceptional value wetlands as defined by Chapter 105 of the Commonwealth of Pennsylvania Dam Safety and Encroachments Act (Chapter 105). The wetlands meet this definition because they are located in or along the floodplain of a wild trout stream, Church Run. This category of wetlands deserves special protection in accordance with the Chapter 105 regulations.

5.0 References

Commonwealth of Pennsylvania. 1991. Flood Protection Study, Church Run, City of Titusville, Crawford County-C20:3. Department of Environmental Resources, Bureau of Water Projects, Harrisburg, PA.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior-Fish and Wildlife Service, Washington, D.C.

Fike, J. 1999. Terrestrial and palustrine plant communities of Pennsylvania. PA Department of Conservation and Natural Resources, Harrisburg, PA.

United States Department of Agriculture Soil Conservation Service. 1979. Soil Survey of Crawford County, Pennsylvania.

Appendix A

Data Forms - Routine Wetland Determination

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartranft</u>	Date: <u>6/16/05</u> County: <u>Crawford</u> State: <u>PA</u>						
Do Normal Circumstances exist on the site? Is the site significantly disturbed (Atypical Situation)? Is the area a potential Problem Area? (If needed, explain on reverse.)	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Yes <input type="radio"/></td> <td style="text-align: center;">No <input type="radio"/></td> </tr> <tr> <td style="text-align: center;">Yes <input type="radio"/></td> <td style="text-align: center;">No <input checked="" type="radio"/></td> </tr> <tr> <td style="text-align: center;">Yes <input type="radio"/></td> <td style="text-align: center;">No <input checked="" type="radio"/></td> </tr> </table>	Yes <input type="radio"/>	No <input type="radio"/>	Yes <input type="radio"/>	No <input checked="" type="radio"/>	Yes <input type="radio"/>	No <input checked="" type="radio"/>
Yes <input type="radio"/>	No <input type="radio"/>						
Yes <input type="radio"/>	No <input checked="" type="radio"/>						
Yes <input type="radio"/>	No <input checked="" type="radio"/>						
Community ID: _____ Transect ID: _____ Plot ID: <u>1</u>							

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex laevis</u>	<u>herb</u>	<u>Obl</u>	9. _____	_____	_____
2. <u>Symlocos foetidus</u>	<u>herb</u>	<u>Obl</u>	10. _____	_____	_____
3. <u>Solidago cf. rugosa</u>	<u>herb</u>	<u>FAC</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: This area is mowed and consists entirely of herbaceous plants. Adjacent unmowed area is a wooded wetland best described as Alder-Vinebank wetland

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: <u>10</u> (in.) Depth to Saturated Soil: _____ (in.)	
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): Holly silt loam Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquent Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>0</u>	<u>O</u>				
<u>1-2</u>	<u>A</u>	<u>10YR 3/3</u>			
<u>2-3</u>	<u>B₁</u>	<u>10YR 4/1</u>	<u>10YR 3/1</u>	<u>few-faint</u>	<u>fine silty loam</u>
<u>3-</u>	<u>B₂</u>	<u>10YR 4/1</u>	<u>7.5YR 7/6</u>	<u>many-prominent</u>	<u>fine loam</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input checked="" type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input checked="" type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Remarks:		

Approved by HQUSACE 3/92

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartman</u>	Date: <u>6/16/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>2</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex lurida</u>	<u>herb</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	10. _____	_____	_____
3. <u>Phalaris arundinacea</u>	<u>herb</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Carex leuivaginata</u>	<u>herb</u>	<u>OBL</u>	12. _____	_____	_____
5. <u>Fleocharis tenuis</u>	<u>herb</u>	<u>FACW+</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Area grazed and occasionally mowed

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: <u>10</u> (in.)	Remarks:

SOILS

Map Unit Name (Series and Phase): Holly silt loam Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquent Field Observations: _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u><1</u>	<u>O</u>				
<u>1-2</u>	<u>A₁</u>	<u>10YR 5/4</u>			
<u>2-5</u>	<u>A₂</u>	<u>10YR 5/2</u>	<u>10YR 5/6</u>		<u>Fibrous roots abundant</u>
<u>5-</u>	<u>B₁</u>	<u>10YR 5/1</u>	<u>10YR 5/8</u> <u>2.5YR 4/8</u>	<u>Pow - distinct oxidized poor lines</u> <u>Common - Prominent</u>	<u>S. Hy loam</u> <u>Silty loam</u>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)

Wetland Hydrology Present? Yes No (Circle)

Hydric Soils Present? Yes No (Circle)

Is this Sampling Point Within a Wetland? Yes No (Circle)

Remarks:

DATA FORM
 ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jessie Hartman</u>	Date: <u>6/16/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>3</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Solidago canadensis</u>	<u>herb</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Poa annua</u>	<u>herb</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 33%

Remarks: _____

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	Remarks: <u>lacking hydrology indicators</u>

SOILS

Map Unit Name (Series and Phase): Holly silt loam Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquent Field Observations: _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1	O				
1-6	A	10YR 3/4			
6-	B	10YR 5/8			Silt loam
					Silt loam

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: The soil is representative of Braxville soils that are reported as inclusions in Holly series soils. Slightly higher topography from adjacent wetland.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle)	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle)	
Hydric Soils Present?	Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle)	
		Is this Sampling Point Within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle)
Remarks:		

DATA FORM
 ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartrant</u>	Date: <u>6/16/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>4</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carex laevivaginata</u>	<u>herb</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Carex atlantica</u>	<u>herb</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Juncus effusus</u>	<u>herb</u>	<u>FACW+</u>	11. _____	_____	_____
4. <u>Ranuncalis acris</u>	<u>herb</u>	<u>FACT</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: <u>10</u> (in.)	Remarks:

SOILS

Map Unit Name (Series and Phase): Hally silt loam

Taxonomy (Subgroup): Typic Fluvaquents

Drainage Class: poorly drained

Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
.1	O				
1-2	A	10YR 5/1			
2-11	B ₁	10YR 5/1	2.5YR 4/8	common/prominent	silty loam
11-	B ₂	10YR 6/2	10YR 6/8	common/prominent	silty loam

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)

Wetland Hydrology Present? Yes No (Circle)

Hydric Soils Present? Yes No (Circle)

Is this Sampling Point Within a Wetland? Yes No (Circle)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartman</u>	Date: <u>6/16/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>5</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Trifolium repens</u>	<u>herb</u>	<u>FACU-</u>	9. _____	_____	_____
2. <u>Poa annua</u>	<u>herb</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Eupatorium maculatum</u>	<u>herb</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	12. _____	_____	_____
5. <u>Rubus flagellaris</u>	<u>herb</u>	<u>FACU</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 40%

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase): Holly silt loam Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquent Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>.1</u>	<u>O</u>				
<u>1-6</u>	<u>A</u>	<u>10YR 3/4</u>			
<u>6-</u>	<u>B</u>	<u>10YR 5/8</u>	<u>7.5YR 6/8</u>	<u>few faint</u>	<u>Silt loam</u> <u>Silt loam</u>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Circle)	Is this Sampling Point Within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Circle)
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Circle)	
Hydric Soils Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Circle)	
Remarks:		

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartracht</u>	Date: <u>6/16/05</u> County: _____ State: _____
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>6</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Trifolium repens</u>	<u>herb</u>	<u>FACU-</u>	9. _____	_____	_____
2. <u>Poa annua</u>	<u>herb</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	11. _____	_____	_____
4. <u>Solidago canadensis</u>	<u>herb</u>	<u>FACU</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).			<u>25%</u>		
Remarks:					

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: _____ (in.)	
Remarks:	

SOILS

Map Unit Name (Series and Phase): Holly silt loam Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquent Field Observations: _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>.1</u>	<u>O</u>				
<u>.1-4</u>	<u>A</u>	<u>10YR 3/5</u>			
<u>4-</u>	<u>B</u>	<u>10YR 5/6</u>			<u>Silt loam</u>
					<u>Silt loam</u>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	<input checked="" type="radio"/> No (Circle)	
Wetland Hydrology Present?	Yes	<input checked="" type="radio"/> No (Circle)	
Hydric Soils Present?	Yes	<input checked="" type="radio"/> No (Circle)	
			Is this Sampling Point Within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:			

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: _____	Date: <u>6/17/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? Yes <input type="radio"/> No <input checked="" type="radio"/> Is the area a potential Problem Area? Yes <input type="radio"/> No <input checked="" type="radio"/> (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>7</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>herb</u>	<u>FAWT</u>	9. _____	_____	_____
2. <u>Carex lurida</u>	<u>herb</u>	<u>OBh</u>	10. _____	_____	_____
3. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	11. _____	_____	_____
4. <u>Mentha arvensis</u>	<u>herb</u>	<u>FACW</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: _____

HYDROLOGY

<p>___ Recorded Data (Describe in Remarks):</p> <p style="padding-left: 20px;">___ Stream, Lake, or Tide Gauge</p> <p style="padding-left: 20px;">___ Aerial Photographs</p> <p style="padding-left: 20px;">___ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: <u>3</u> (in.)</p> <p>Depth to Saturated Soil: <u>0-surface</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p style="padding-left: 20px;">___ Inundated</p> <p style="padding-left: 20px;"><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p style="padding-left: 20px;">___ Water Marks</p> <p style="padding-left: 20px;">___ Drift Lines</p> <p style="padding-left: 20px;">___ Sediment Deposits</p> <p style="padding-left: 20px;">___ Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p style="padding-left: 20px;"><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p style="padding-left: 20px;">___ Water-Stained Leaves</p> <p style="padding-left: 20px;"><input checked="" type="checkbox"/> Local Soil Survey Data</p> <p style="padding-left: 20px;">___ FAC-Neutral Test</p> <p style="padding-left: 20px;">___ Other (Explain in Remarks)</p>
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): Kolby silt + loam Drainage Class: poorly drained
 Taxonomy (Subgroup): Typic Fluvaquent Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>.1</u>	<u>O</u>				
<u>.1-5</u>	<u>A</u>	<u>10YR 5/1</u>	<u>10YR 5/8</u>	<u>Few/prominent</u>	<u>Silty loam</u>
<u>5-</u>	<u>B</u>	<u>10YR 5/1</u>	<u>10YR 5/8</u>	<u>Many/prominent</u>	<u>Silty loam</u>

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List
<input checked="" type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Listed on National Hydric Soils List
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartman ft</u>	Date: <u>6/17/05</u> County: _____ State: _____
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? Yes <input type="radio"/> No <input checked="" type="radio"/> Is the area a potential Problem Area? Yes <input type="radio"/> No <input checked="" type="radio"/> (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>8</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Phalaris arundinacea</u>	<u>herb</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	10. _____	_____	_____
3. <u>Mentha arvensis</u>	<u>herb</u>	<u>FACW</u>	11. _____	_____	_____
4. <u>Solidago canadensis</u>	<u>herb</u>	<u>FACU</u>	12. _____	_____	_____
5. <u>Dactylis glomerata</u>	<u>herb</u>	<u>FACU</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 60%

Remarks: _____

HYDROLOGY

<p>___ Recorded Data (Describe in Remarks):</p> <p style="margin-left: 20px;">___ Stream, Lake, or Tide Gauge</p> <p style="margin-left: 20px;">___ Aerial Photographs</p> <p style="margin-left: 20px;">___ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p style="margin-left: 20px;">___ Inundated</p> <p style="margin-left: 20px;">___ Saturated in Upper 12 Inches</p> <p style="margin-left: 20px;">___ Water Marks</p> <p style="margin-left: 20px;">___ Drift Lines</p> <p style="margin-left: 20px;">___ Sediment Deposits</p> <p style="margin-left: 20px;">___ Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p style="margin-left: 20px;">___ Oxidized Root Channels in Upper 12 Inches</p> <p style="margin-left: 20px;">___ Water-Stained Leaves</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> Local Soil Survey Data</p> <p style="margin-left: 20px;">___ FAC-Neutral Test</p> <p style="margin-left: 20px;">___ Other (Explain in Remarks)</p>
<p>Remarks: _____</p>	

SOILS

Map Unit Name (Series and Phase): Holly silt loam Drainage Class: poorly drained

Taxonomy (Subgroup): Typic Fluvaquent Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>.1</u>	<u>O</u>				
<u>.1-6</u>	<u>A</u>	<u>10YR 4/6</u>			
<u>6-</u>	<u>B</u>	<u>10YR 4/6</u>	<u>10YR 6/8</u>	<u>Few/Faint</u>	<u>Silt loam</u> <u>Silt loam</u>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: The soil characteristics are representative of Brackville soils that are reported as inclusions in Holly series soil topography is slightly higher than adjacent wetland.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	
Hydric Soils Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	
		Is this Sampling Point Within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/> (Circle)
Remarks:		

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartman et</u>	Date: <u>6/16/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>9</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Phalaris arundinaceae</u>	<u>herb</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Mentha arvensis</u>	<u>herb</u>	<u>FACW</u>	10. _____	_____	_____
3. <u>Juncus effusus</u>	<u>herb</u>	<u>FACW+</u>	11. _____	_____	_____
4. <u>Carex laevivaginata</u>	<u>herb</u>	<u>OBL</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: <u>12</u> (in.) Depth to Saturated Soil: <u>6</u> (in.)	Remarks:

SOILS

Map Unit Name (Series and Phase): Holly silty clay loam Drainage Class: very poorly drained
 Taxonomy (Subgroup): Typic Fluvaquent Field Observations: _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>.1</u>	<u>O</u>				
<u>.1-7</u>	<u>A</u>	<u>10YR 3/3</u>	<u>10YR 5/7</u>	<u>Few/faint</u>	<u>Silty clay loam</u>
<u>7</u>	<u>B</u>	<u>10YR 7/2</u>	<u>10YR 5/8</u>	<u>many/prominent</u>	<u>Silty clay loam</u>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: Oxidized poor linings and root channels are prevalent in A horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	(Circle)
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	(Circle)
Hydric Soils Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	(Circle)
Is this Sampling Point Within a Wetland?		<input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks:		

SOILS

Map Unit Name (Series and Phase): Holly silty clay loam Drainage Class: very poorly drained

Taxonomy (Subgroup): Typic Fluvaquent Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
.1	O				
.1-7	A	10YR 3/3	10YR 5/7	Few/faint	Silty clay loam
7	B	10YR 7/2	10YR 5/8	many/prominent	Silty clay loam

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: Oxidized poor linings and root channels are prevalent in A horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Remarks:		

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartman</u>	Date: <u>6/16/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>10</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Phalaris arundinaceae</u>	<u>herb</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Solidago canadensis</u>	<u>herb</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 66%

Remarks: Area is mowed seasonally/periodically.

HYDROLOGY

<p>___ Recorded Data (Describe in Remarks):</p> <p style="margin-left: 20px;">___ Stream, Lake, or Tide Gauge</p> <p style="margin-left: 20px;">___ Aerial Photographs</p> <p style="margin-left: 20px;">___ Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p style="margin-left: 20px;">___ Inundated</p> <p style="margin-left: 20px;">___ Saturated in Upper 12 Inches</p> <p style="margin-left: 20px;">___ Water Marks</p> <p style="margin-left: 20px;">___ Drift Lines</p> <p style="margin-left: 20px;">___ Sediment Deposits</p> <p style="margin-left: 20px;">___ Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p style="margin-left: 20px;">___ Oxidized Root Channels in Upper 12 Inches</p> <p style="margin-left: 20px;">___ Water-Stained Leaves</p> <p style="margin-left: 20px;"><input checked="" type="checkbox"/> Local Soil Survey Data</p> <p style="margin-left: 20px;">___ FAC-Neutral Test</p> <p style="margin-left: 20px;">___ Other (Explain in Remarks)</p>
Remarks: _____	

SOILS

Map Unit Name (Series and Phase): Holly silt loam

Taxonomy (Subgroup): _____

Drainage Class: Very poorly drained

Field Observations: _____

Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>.1</u>	<u>O</u>				
<u>1-9</u>	<u>A</u>	<u>10YR 3/3</u>			
<u>9-</u>	<u>B</u>	<u>10YR 6/4</u>	<u>10YR 6/8</u>	<u>few - faint</u>	<u>Silty loam</u>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: _____

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)

Wetland Hydrology Present? Yes No (Circle)

Hydric Soils Present? Yes No (Circle)

Is this Sampling Point Within a Wetland? Yes No (Circle)

Remarks: _____

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartrant</u>	Date: <u>6/17/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>11</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Mentha arvensis</u>	<u>herb</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Ranunculus acris</u>	<u>herb</u>	<u>FACT</u>	10. _____	_____	_____
3. <u>Carex laciniata</u>	<u>herb</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Solidago cf. rugosa</u>	<u>herb</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Phalaris arundinacea</u>	<u>herb</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks:

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: _____ (in.) Depth to Free Water in Pit: _____ (in.) Depth to Saturated Soil: <u>< 12</u> (in.)	Remarks:

SOILS

Map Unit Name (Series and Phase): Holly silty clay loam Drainage Class: Very poorly drained

Taxonomy (Subgroup): Typic Fluvaquents Field Observations Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
.1	O				
.1-3	A	10YR 4/4			
3-8	B ₁	10YR 4/1	2.5 YR 4/6	common/distinct	Silty loam
8-	B ₂	10YR 5/2	10YR 8/2 2.5 YR 4/6	many/prominent	silty clay loam sandy clay loam

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks: Sand in B₂ horizon > 50%

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)

Wetland Hydrology Present? Yes No

Hydric Soils Present? Yes No

Is this Sampling Point Within a Wetland? Yes No (Circle)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Titusville Flood Protection Project</u> Applicant/Owner: <u>City of Titusville</u> Investigator: <u>Jeffrey Hartcraft</u>	Date: <u>6/22/05</u> County: <u>Crawford</u> State: <u>PA</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input type="radio"/> Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? <input type="radio"/> Yes <input checked="" type="radio"/> No (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: <u>12</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Poa annua</u>	<u>herb</u>	<u>FACU</u>	9. _____	_____	_____
2. <u>Ranunculus acris</u>	<u>herb</u>	<u>FAC+</u>	10. _____	_____	_____
3. <u>Solidago canadensis</u>	<u>herb</u>	<u>FACU</u>	11. _____	_____	_____
4. <u>Rubus flagellaris</u>	<u>herb</u>	<u>FACU</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 25%

Remarks:

HYDROLOGY

<p><input type="checkbox"/> Recorded Data (Describe in Remarks):</p> <p style="margin-left: 20px;"><input type="checkbox"/> Stream, Lake, or Tide Gauge</p> <p style="margin-left: 20px;"><input type="checkbox"/> Aerial Photographs</p> <p style="margin-left: 20px;"><input type="checkbox"/> Other</p> <p><input checked="" type="checkbox"/> No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: _____ (in.)</p> <p>Depth to Free Water in Pit: _____ (in.)</p> <p>Depth to Saturated Soil: _____ (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input checked="" type="checkbox"/> Local Soil Survey Data</p> <p><input type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
<p>Remarks:</p>	

SOILS

Map Unit Name (Series and Phase): Holly silt loam

Taxonomy (Subgroup): Typic Fluvaquent

Drainage Class: poorly drained
 Field Observations
 Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>1"</u>	<u>O</u>				
<u>1-3</u>	<u>A</u>	<u>10YR 3/5</u>			
<u>3-</u>	<u>B</u>	<u>10YR 5/8</u>			<u>silt loam</u>
					<u>silt loam</u>

Hydric Soil Indicators:

- Histosol
- Histic Epipedon
- Sulfidic Odor
- Aquic Moisture Regime
- Reducing Conditions
- Gleyed or Low-Chroma Colors
- Concretions
- High Organic Content in Surface Layer in Sandy Soils
- Organic Streaking in Sandy Soils
- Listed on Local Hydric Soils List
- Listed on National Hydric Soils List
- Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes No (Circle)
 Wetland Hydrology Present? Yes No (Circle)
 Hydric Soils Present? Yes No (Circle)

Is this Sampling Point Within a Wetland? Yes No (Circle)

Remarks: