



# Vortex Environmental, Inc.

ENVIRONMENTAL CONSULTANTS

December 4, 2023

Mr. Brent Good, RLA  
ELA Group, Inc.  
743 S. Broad Street  
Lititz, PA 17543

**RE: WETLAND INVESTIGATION ON THE CHIQUES CROSSING PROJECT; MOUNT JOY BOROUGH & RAPHO TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA**

Dear Brent:

Vortex Environmental, Inc. has conducted a wetland investigation within an approximately 38.0-acre study area for the Chiques Crossing Project located along Mt Joy-Manheim Road (SR 772) in Mount Joy Borough & Rapho Township, Lancaster County, Pennsylvania. The approximately 38.0-acre study area includes the main development parcel (Keller Tract), several adjacent residential and commercial properties along Mt. Joy – Manheim Road (SR 772) and some adjacent township property to the south of the Keller Tract. There are several existing dwellings, buildings, garages and out-buildings along the road frontage with Mt. Joy – Manheim Road (SR 772). The vegetation within the study area for the wetland investigation includes cultivated agricultural lands, mixed deciduous forest, mowed lawn, old field, emergent and forested wetlands. The Chiques Crossing Project is located south of Mt. Joy-Manheim Road (SR 772), east of its intersection with N. Barbara Street (Figure 1). The purpose of this investigation was to determine the presence or absence of "waters of the United States and Commonwealth" within the approximately 38.0-acre study area for the proposed apartment project. Waters of the United States and Commonwealth include lakes, ponds, reservoirs, swamps, marshes, wetlands, rivers and/or streams (including intermittent streams).

The study area is generally bounded to the north by Mt. Joy - Manheim Road (SR 772), residential and commercial properties, to the south by the Little Chiques Creek, to the east by mixed deciduous forest, residential and commercial properties, and to the west by the Little Chiques Creek, mixed deciduous forest and residential properties (Figure 2). Two (2) stream channels (Watercourses 1 and 2; Little Chiques Creek and an unnamed tributary) and three (3) associated wetland areas (Wetlands 1 - 3) were identified within the approximately 38.0-acre study area.

The investigation of the study area included examination of background materials and a field investigation. The background information examined included the Columbia East, PA 7.5-minute USGS topographic quadrangle, aerial photographs, and the U.S. Fish and Wildlife Service Wetlands Online Wetland Mapper. The field investigations were conducted on July 19 and August 2, 2022 by Bradley J. Gochner and Jacob DuBois of Vortex Environmental, Inc. The soils, hydrology, and vegetation within the study area were examined for wetland characteristics in accordance with the United States Army Corps of

Engineers Wetland Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region – Version 2.0 (April 2012).

### **Vegetation**

The vegetation within the study area consisted of cultivated agricultural lands, mixed deciduous forest, mowed lawn, old field, emergent and forested wetlands. The cultivated agricultural lands were observed in the central portion of the study area and consisted of corn fields. The mixed deciduous forest was observed along the floodplain of the Little Chiques Creek in the eastern and southern portions of the study area and within hedgerows along the perimeter of the study area. The mixed deciduous forest vegetation consisted of garlic mustard, ground ivy, Japanese stiltgrass, jewelweed, reed canary grass, frost grape, Japanese honeysuckle, unidentified blackberry, Virginia creeper, multiflora rose, poison ivy, Tartarian honeysuckle, American sycamore, black cherry, black locust, black walnut, box-elder, green ash, common hackberry and silver maple. The mowed lawn was observed in the northern portion of the site, adjacent to the existing dwellings, garages, out-buildings and driveways. The mowed lawn vegetation consisted of broad-leaved plantain, common chickweed, common dandelion, English plantain, field garlic, garlic mustard, ground ivy, Indian strawberry, Japanese stiltgrass, jewelweed, Kentucky bluegrass, unidentified fescue, smooth crabgrass, yellow nutsedge and white clover. The old field was observed scattered throughout the study area along the edges of the cultivated agricultural fields and mixed deciduous forest. The old field vegetation consisted of curled dock, unidentified fescue, orchard grass, hemp dogbane, Japanese stiltgrass, common milkweed, Canada thistle, Canada goldenrod, ragweed, Queen Anne's lace, red clover, timothy, Japanese honeysuckle, multiflora rose and poison ivy.

The three (3) wetland areas (Wetlands 1 - 3) were observed within the floodplain of the Little Chiques Creek. Wetland 1 was observed in the southeastern portion of the study area. Wetland 2 in the western portion and Wetland 3 in the northwestern portion of the study area. The three (3) wetland areas contained a combination of emergent and forested wetland habitats. The emergent and forested wetland vegetation consisted of Japanese stiltgrass, jewelweed, moneywort, reed canary grass, wood-nettle, multiflora rose, Japanese honeysuckle, spicebush, poison ivy, pin oak, silver maple, red maple, black walnut and box-elder.

### **Soils**

The NCSS Web Soil Survey for Lancaster County PA (USDA-SCS) (<http://websoilsurvey.nrcs.usda.gov/app>) indicates that six soil series including seven soil types; Hagerstown silt loam, HaA and HaB; Hagerstown silty clay loam, HbC; Hagerstown-Urban land complex, Hc; Nolin silt loam, Ne; Pits quarry, Qu; and Water, W; exist within the

study area (Figure 3). These soil series are not listed as having major hydric characteristics according to the Hydric Soils of the United States (USDA-SCS, 1987) and the "Hydric Soils of the State of Pennsylvania" (USDA-SCS, 1986). The Nolin silt loam soil series is listed as having possible inclusions of hydric characteristics. Hydric soils were observed within the three (3) wetland areas (Wetlands 1 - 3) identified within the approximately 38.0-acre study area during the field investigation.

### **Hydrology**

Hydrology within the study area is generally conveyed via overland sheet flow to the south and west, where it drains into the Little Chiques Creek (Watercourse 1). The small perennial stream channel (Watercourse 1) flows on-site along the northwestern corner, then drains to the south and east along the western and southern boundary of the study area. Watercourse 2 is an intermittent unnamed tributary to Watercourse 1 (Little Chiques Creek) in the west-central portion of the study area, south of Wetland 2.

The three (3) wetland areas (Wetlands 1 - 3) are located within the floodplain of the Little Chiques Creek (Watercourse 1). Wetland 1 is located in the southeastern portion of the study area. Wetland 2 is located in the west-central boundary and Wetland 3 is located in the northwestern corner of the study area. Wetland 1 is associated with several persistent spring seeps, seasonal high groundwater elevations, overbank and floodplain flows from Watercourse 1, low-lying topography and poorly drained soils. Wetlands 2 and 3 are associated with seasonal high groundwater elevations, overbank and floodplain flows from Watercourse 1, low-lying topography and poorly drained soils. Primary indicators of wetland hydrology observed within the three (3) wetland areas included saturation in the upper 12 inches, water marks, water-stained leaves and oxidized root channels in the upper 12 inches of the soil profile. Secondary indicators of wetland hydrology included wetland drainage patterns and geomorphic position. The location of the two (2) regulated watercourses (Watercourses 1 and 2) and three (3) associated wetland areas (Wetlands 1 - 3) are shown on the attached wetland exhibit.

### **Conclusion**

Vortex Environmental, Inc. examined background information and conducted a field investigation to determine the presence or absence of "waters of the United States and Commonwealth" within the approximately 38.0-acre study area for the Chiques Crossing Project located along Mt. Joy-Manheim Road (SR 772) in Mount Joy Borough & Rapho Township, Lancaster County, Pennsylvania. The background information for the project did indicate the possibility of "waters of the United States and Commonwealth" within the study area. Vortex Environmental, Inc. conducted a wetland investigation, and observed two (2) regulated stream channels (Watercourses 1 and 2) and three (3) associated wetland areas (Wetlands 1 - 3) within the approximately 38.0-acre study area for the proposed apartment

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project. The location of these five (5) regulated features are shown on the attached wetland exhibit.

Based on the July 19 and August 2, 2022 field investigation, Vortex Environmental, Inc. concludes that five (5) "waters of the United States and Commonwealth" exist within the approximately 38.0-acre study area for the Chiques Crossing Project, including Watercourses 1 and 2 and Wetlands 1, 2 and 3.

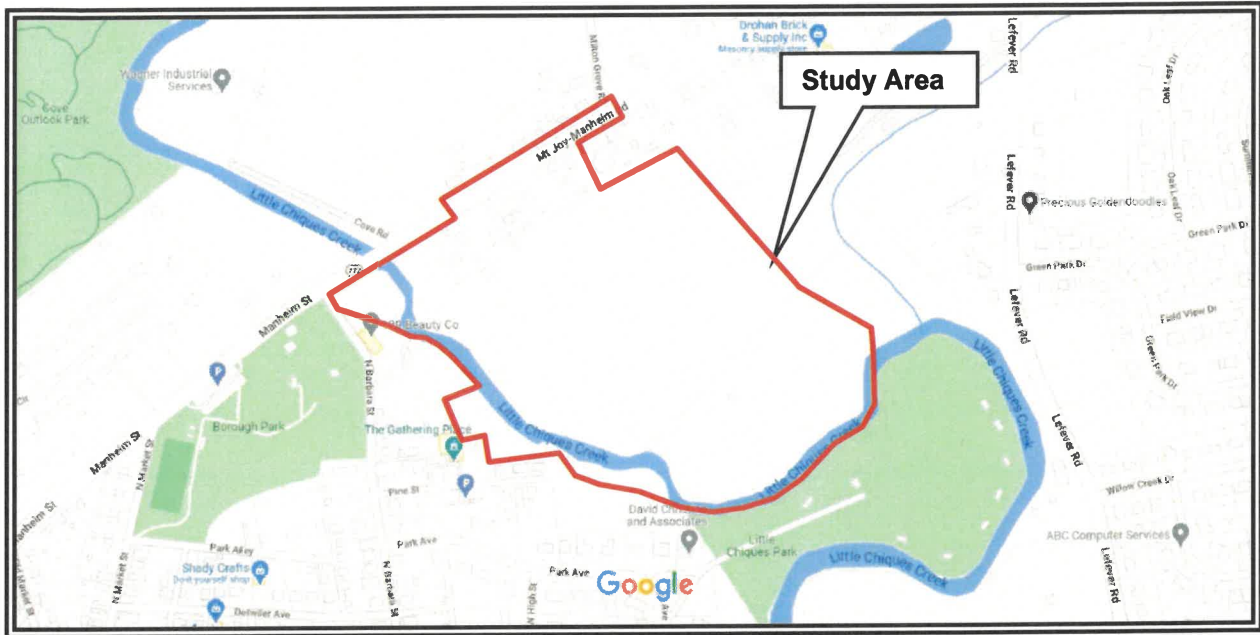
If there are any questions regarding this project, please feel free to contact me.

Sincerely,

**VORTEX ENVIRONMENTAL, INC.**

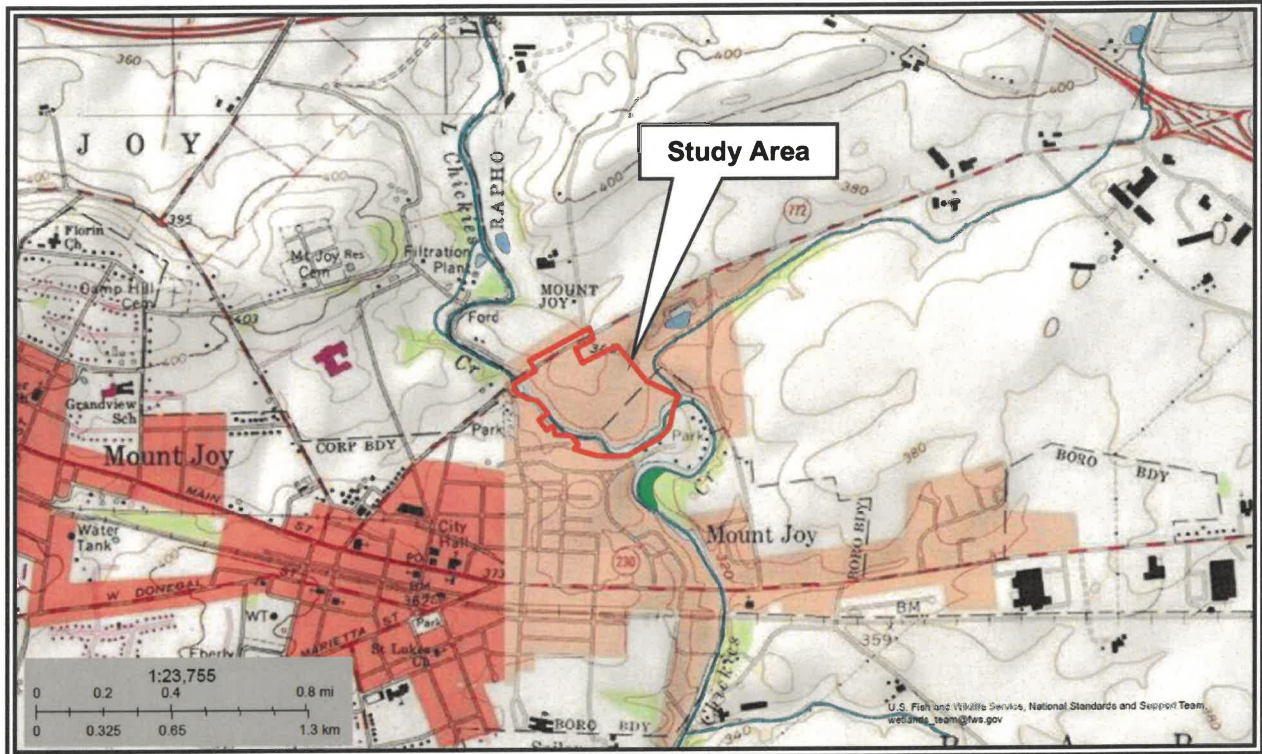


Bradly J. Gochnauer  
President



<p>Legend:          Project Boundary <span style="color: red; font-weight: bold;">———</span></p>	<p><b>NOT TO SCALE</b></p>
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**Figure 1:** Site Map for the Chiques Crossing Project  
 Google Maps  
[www.google.com](http://www.google.com)  
 Mount Joy Borough & Rapho Township, Lancaster County, PA



<p>Legend:          Project Boundary <span style="color: red; font-weight: bold;">———</span></p>	<p><b>NOT TO SCALE</b></p>
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**Figure 2:** USGS Map for the Chiques Crossing Project  
 Columbia East, PA, 7.5-minute USGS Topographic Quadrangle  
 2019  
 Mount Joy Borough & Rapho Township, Lancaster County, PA



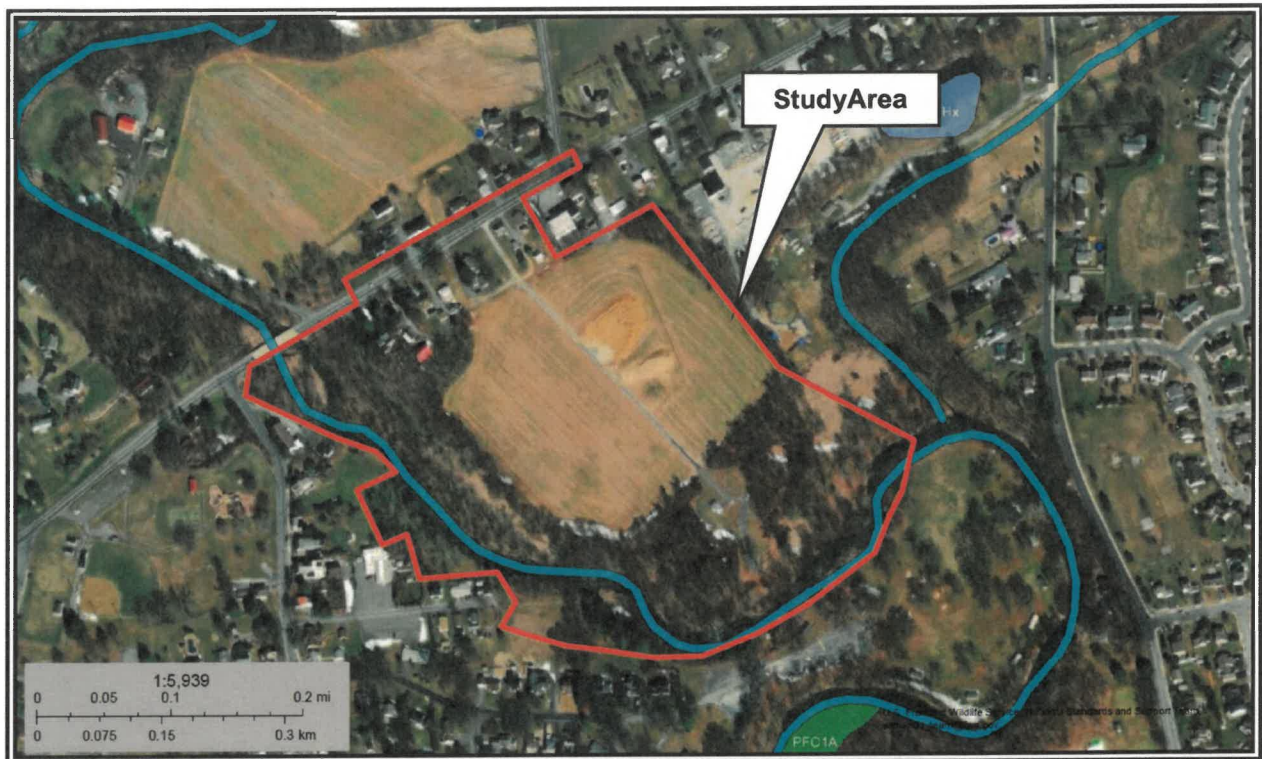
Legend:

Project Boundary



NOT TO SCALE

Figure 3: Soil Map for the Chiques Crossing Project  
 Online Web Soil Survey of Lancaster County, PA  
<http://websoilsurvey.nrcs.usda.gov/app>  
 Mount Joy Borough & Rapho Township, Lancaster County, PA



Legend:  
Project Boundary



NOT TO SCALE

Figure 4: NWI Map for the Chiques Crossing Project  
 U.S. Fish and Wildlife Service Wetlands Online Wetland Mapper  
<http://wetlandsfws.er.usgs.gov/NWI/index.html>  
 Mount Joy Borough & Rapho Township, Lancaster County, PA



**DATA SHEETS**  
**(1 – 4)**

**WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont (DRAFT)**

Project/Site: Chiques Crossing Project City/County: Lancaster Sampling Date: 08/02/22  
 Applicant/Owner: ELA Group, Inc. State: PA Sampling Point: 1  
 Investigator(s): Bradly J. Gochbauer Section, Township, Range: Mount Joy Borough  
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave  
 Slope (%): 3% Lat: 40.115515 Long: -76.493319 Datum: UTM  
 Soil Map Unit Name: Ne NWI classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation N, Soil N, or 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			

Remarks: Emergent portion of Wetland 1 in the southeastern portion of the study area

**VEGETATION - Use scientific names of plants.**

Tree Stratum:(Plot Size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
2. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
3. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
4. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
5. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
6. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
7. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
8. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
9. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
<u>  </u> = Total Cover			
Sapling/Shrub Stratum:(Plot Size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora (Multiflora Rose)</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
3. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
4. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
5. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
6. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
7. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
8. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
9. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
<u>15</u> = Total Cover			
Herb Stratum:(Plot Size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Impatiens capensis (Jewelweed)</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>
2. <u>Phalaris arundinacea (Reed Canary Grass)</u>	<u>70</u>	<input checked="" type="checkbox"/>	<u>FACW</u>
3. <u>Laportea canadensis (Wood Nettle)</u>	<u>10</u>	<input type="checkbox"/>	<u>UPL</u>
4. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
5. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
6. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
7. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
8. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
9. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
<u>100</u> = Total Cover			
Woody Vine Stratum:(Plot Size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
2. <u>  </u>	<u>  </u>	<input type="checkbox"/>	<u>  </u>
<u>  </u> = Total Cover			

**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: 66% (A/B)

**Prevalence Index worksheet:**

Total % Cover of: Multiply by:

OBL species    x1=   

FACW species    x2=   

FAC species    x3=   

FACU species    x4=   

UPL species    x5=   

Totals: (A)    (B)   

Prevalence Index = B/A =   

**Hydrophotic Vegetation Indicators:**

Rapid Test for Hydrophotic Vegetation

Dominance Test is > 50%

Prevalence Index is 3.0 <sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

Hydrophytic Vegetation Present? Yes  No

Remarks:

**SOIL**

Sampling Point : 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type *	Loc**		
0-16	10YR 4/2	75	10YR 4/3	25	RM	M	Silt Loam	
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

\*1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

\*\*Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon
- Black Histic
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface
- Sandy Mucky Mineral (S1)(LRR N, MRLA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8)(MRLA 147, 148)
- Thin Dark Surface (S9)(MRLA 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) (MRLA 136, 122)
- Piedmont Floodplain Soils (F19)(MLRA 148)

**Indicators for Problematic Soils: \*\*\***

- 2cm Muck (A10) (MLRA147)
- Piedmont Floodplain Soils(F19)(MLRA 136, 147)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

\*\*\* Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed and problematic.

**Restrictive Layer (if observed):**

Type:

Hydric Soil Present? Yes  No

Depth:

Remarks:

**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 or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B13)
- Aquatic Fauna (B13)

- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres or Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two Required)

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

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): 2"  
 (Includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks: Emergent portion of Wetland 1

**WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont (DRAFT)**

Project/Site: Chiques Crossing Project City/County: Lancaster Sampling Date: 08/02/22  
 Applicant/Owner: ELA Group, Inc. State: PA Sampling Point: 2  
 Investigator(s): Bradly J. Gochbauer Section, Township, Range: Mount Joy Borough  
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none  
 Slope (%): 3% Lat: 40.114247 Long: -76.494753 Datum: UTM  
 Soil Map Unit Name: Ne NWI classification: UPL

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

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

Are Vegetation N, Soil N, or 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
<b>Remarks:</b> Mixed deciduous forest within the floodplain of the Little Chiques Creek (Watercourse 1) along the southwestern boundary of the study area					

**VEGETATION - Use scientific names of plants.**

Tree Stratum:(Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Juglans nigra (Black Walnut)</u>	35	<input checked="" type="checkbox"/>	FACU
2. <u>Fraxinus pennsylvanica (Green Ash)</u>	55	<input checked="" type="checkbox"/>	FACW
3. -	_____	<input type="checkbox"/>	-
4. -	_____	<input type="checkbox"/>	-
5. -	_____	<input type="checkbox"/>	-
6. -	_____	<input type="checkbox"/>	-
7. -	_____	<input type="checkbox"/>	-
8. -	_____	<input type="checkbox"/>	-
9. -	_____	<input type="checkbox"/>	-
90 = Total Cover			
Sapling/Shrub Stratum:(Plot Size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora (Multiflora Rose)</u>	25	<input checked="" type="checkbox"/>	FACU
2. <u>Lonicera tatarica (Tartarian Honeysuckle)</u>	35	<input checked="" type="checkbox"/>	FACU
3. -	_____	<input type="checkbox"/>	-
4. -	_____	<input type="checkbox"/>	-
5. -	_____	<input type="checkbox"/>	-
6. -	_____	<input type="checkbox"/>	-
7. -	_____	<input type="checkbox"/>	-
8. -	_____	<input type="checkbox"/>	-
9. -	_____	<input type="checkbox"/>	-
60 = Total Cover			
Herb Stratum:(Plot Size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Alliaria petiolata (Garlic Mustard)</u>	30	<input checked="" type="checkbox"/>	FACU
2. -	_____	<input type="checkbox"/>	-
3. -	_____	<input type="checkbox"/>	-
4. -	_____	<input type="checkbox"/>	-
5. -	_____	<input type="checkbox"/>	-
6. -	_____	<input type="checkbox"/>	-
7. -	_____	<input type="checkbox"/>	-
8. -	_____	<input type="checkbox"/>	-
9. -	_____	<input type="checkbox"/>	-
30 = Total Cover			
Woody Vine Stratum:(Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Parthenocissus quinquefolia (Virginia Creeper)</u>	15	<input checked="" type="checkbox"/>	FACU
2. -	_____	<input type="checkbox"/>	-
15 = Total Cover			

**Dominance Test worksheet:**

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

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

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Percent of Dominant Species That Are OBL, FACW, or FAC 18% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:          Multiply by:

OBL species          x1=         

FACW species          x2=         

FAC species          x3=         

FACU species          x4=         

UPL species          x5=         

Totals: (A)          (B)         

Prevalence Index = B/A =         

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is > 50%

Prevalence Index is 3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

Hydrophytic Vegetation Present? Yes  No

**Remarks:**

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type *	Loc**		
0-1	10YR 4/3	100	_____	_____	_____	_____	Organic	_____
1-16	10YR 4/6	100	_____	_____	_____	_____	Silt Loam	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

\*1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

\*\*Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon
- Black Histic
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface
- Sandy Mucky Mineral (S1) (LRR N, MRLA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8)(MRLA 147, 148)
- Thin Dark Surface (S9)(MRLA 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) (MRLA 136, 122)
- Piedmont Floodplain Soils (F19)(MLRA 148)

**Indicators for Problematic Soils: \*\*\***

- 2cm Muck (A10) (MLRA147)
- Piedmont Floodplain Soils(F19)(MLRA 136, 147)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

\*\*\* Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed and problematic.

**Restrictive Layer (if observed):**

Type:

Hydric Soil Present? Yes  No

Depth:

Remarks:

**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 or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B13)
- Aquatic Fauna (B13)

- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres or Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two Required)

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

**Field Observations:**

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

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

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

Wetland Hydrology Present? Yes  No

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

Remarks: Mixed deciduous forest.

**WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont (DRAFT)**

Project/Site: Chiques Crossing Project City/County: Lancaster Sampling Date: 08/02/22

Applicant/Owner: ELA Group, Inc. State: PA Sampling Point: 3

Investigator(s): Bradly J. Gochner Section, Township, Range: Rapho Township

Landform (hillslope, terrace, etc.): closed depression Local relief (concave, convex, none): concave

Slope (%): 3% Lat: 40.114937 Long: -76.497047 Datum: UTM

Soil Map Unit Name: Ne NWI classification: PFO1

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

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

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

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

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

Remarks: Forested portion of Wetland 2 along the west-central boundary of the study area

**VEGETATION - Use scientific names of plants.**

Tree Stratum:(Plot Size: 30' )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Juglans nigra (Black Walnut)</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>Acer negundo (Box-elder)</u>	<u>40</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
3. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
4. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
5. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
6. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
7. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
8. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
9. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
	<u>65 = Total Cover</u>		
Sapling/Shrub Stratum:(Plot Size: 15' )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rosa multiflora (Multiflora Rose)</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
3. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
4. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
5. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
6. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
7. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
8. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
9. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
	<u>15 = Total Cover</u>		
Herb Stratum:(Plot Size: 5' )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Microstegium vimineum (Japanese Stiltgrass)</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>Impatiens capensis (Jewelweed)</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>
3. <u>Lysimachia nummularia (Moneywort)</u>	<u>10</u>	<input type="checkbox"/>	<u>FACW</u>
4. <u>Phalaris arundinacea (Reed Canary Grass)</u>	<u>40</u>	<input checked="" type="checkbox"/>	<u>FACW</u>
5. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
6. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
7. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
8. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
9. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
	<u>95 = Total Cover</u>		
Woody Vine Stratum:(Plot Size: 30' )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
2. <u>  </u>	_____	<input type="checkbox"/>	<u>  </u>
	_____ = Total Cover		

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:          Multiply by:         

OBL species          x1=         

FACW species          x2=         

FAC species          x3=         

FACU species          x4=         

UPL species          x5=         

Totals:          (A)          (B)

Prevalence Index = B/A =         

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is > 50%

Prevalence Index is 3.0 <sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

Hydrophytic Vegetation Present? Yes  No

Remarks:

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type *	Loc**		
0-1	10YR 4/3	100					Organic	
1-16	10YR 4/2	80	10YR 4/3	20	RM	M	Silt Loam	

\*1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

\*\*Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon
- Black Histic
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface
- Sandy Mucky Mineral (S1) (LRR N, MRLA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8)(MRLA 147, 148)
- Thin Dark Surface (S9)(MRLA 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) (MRLA 136, 122)
- Piedmont Floodplain Soils (F19)(MLRA 148)

**Indicators for Problematic Soils: \*\*\***

- 2cm Muck (A10) (MLRA147)
- Piedmont Floodplain Soils(F19)(MLRA 136, 147)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

\*\*\* Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed and problematic.

**Restrictive Layer (if observed):**

Type:

Hydric Soil Present? Yes  No

Depth:

Remarks:

**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 or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B13)
- Aquatic Fauna (B13)

- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres or Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

**Secondary Indicators (minimum of two Required)**

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

**Field Observations:**

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

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

Saturation Present? Yes  No  Depth (inches): 3"

Wetland Hydrology Present? Yes  No

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

Remarks: Forested portion of Wetland 2

**WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont (DRAFT)**

Project/Site: Chiques Crossing Project City/County: Lancaster Sampling Date: 08/02/22  
 Applicant/Owner: ELA Group, Inc. State: PA Sampling Point: 4  
 Investigator(s): Bradly J. Gochbauer Section, Township, Range: Rapho Township  
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none  
 Slope (%): 4% Lat: 40.115750 Long: -76.498007 Datum: UTM  
 Soil Map Unit Name: Ne NWI classification: UPL

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

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

Are Vegetation N, Soil N, or 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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>			
<b>Remarks:</b> Mixed deciduous forest within the floodplain of the Little Chiques Creek along the western boundary of the study area					

**VEGETATION - Use scientific names of plants.**

Tree Stratum:(Plot Size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer negundo (Box-elder)</u>	<u>85</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
2. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
3. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
4. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
5. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
6. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
7. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
8. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
9. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
<u>85</u> = Total Cover			
Sapling/Shrub Stratum:(Plot Size: <u>15'</u> )		Dominant Species?	Indicator Status
1. <u>Rosa multiflora (Multiflora Rose)</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
3. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
4. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
5. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
6. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
7. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
8. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
9. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
<u>20</u> = Total Cover			
Herb Stratum:(Plot Size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Alliaria petiolata (Garlic Mustard)</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FACU</u>
2. <u>Glechoma headrace (Ground Ivy)</u>	<u>10</u>	<input type="checkbox"/>	<u>FACU</u>
3. <u>Microstegium vimineum (Japanese Stiltgrass)</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>
4. <u>Impatiens capensis (Jewelweed)</u>	<u>15</u>	<input type="checkbox"/>	<u>FACW</u>
5. <u>Phalaris arundinacea (Reed Canary Grass)</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FACW</u>
6. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
7. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
8. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
9. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
<u>90</u> = Total Cover			
Woody Vine Stratum:(Plot Size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
2. <u>"</u>	_____	<input type="checkbox"/>	<u>"</u>
_____ = Total Cover			

**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 \_\_\_\_\_ x1= \_\_\_\_\_

FACW species \_\_\_\_\_ x2= \_\_\_\_\_

FAC species \_\_\_\_\_ x3= \_\_\_\_\_

FACU species \_\_\_\_\_ x4= \_\_\_\_\_

UPL species \_\_\_\_\_ x5= \_\_\_\_\_

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

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

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is > 50%

Prevalence Index is 3.0 <sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

Hydrophytic Vegetation Present? Yes  No

**Remarks:**



**SOIL**

Sampling Point : 4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type *	Loc**		
0-1	10YR 4/3	100					Organic	
1-16	10YR 4/6	80	10YR 4/4	20			Silt Loam	

\*1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
 \*\*Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon
- Black Histic
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface
- Sandy Mucky Mineral (S1)(LRR N, MRLA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8)(MRLA 147, 148)
- Thin Dark Surface (S9)(MRLA 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) (MRLA 136, 122)
- Piedmont Floodplain Soils (F19)(MLRA 148)

**Indicators for Problematic Soils: \*\*\***

- 2cm Muck (A10) (MLRA147)
- Piedmont Floodplain Soils(F19)(MLRA 136, 147)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

\*\*\* Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed and problematic.

**Restrictive Layer (if observed):**

Type:  
Depth:

Hydric Soil Present? Yes  No

Remarks:

**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 or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B13)
- Aquatic Fauna (B13)

- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres or Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

**Secondary Indicators (minimum of two Required)**

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

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (Includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks: Mixed deciduous forest within floodplain

SITE PHOTOGRAPHS  
(A – U)



Photo A: Northwestern view of Watercourse 1 (Little Chiques Creek) along the southern boundary of the study area.

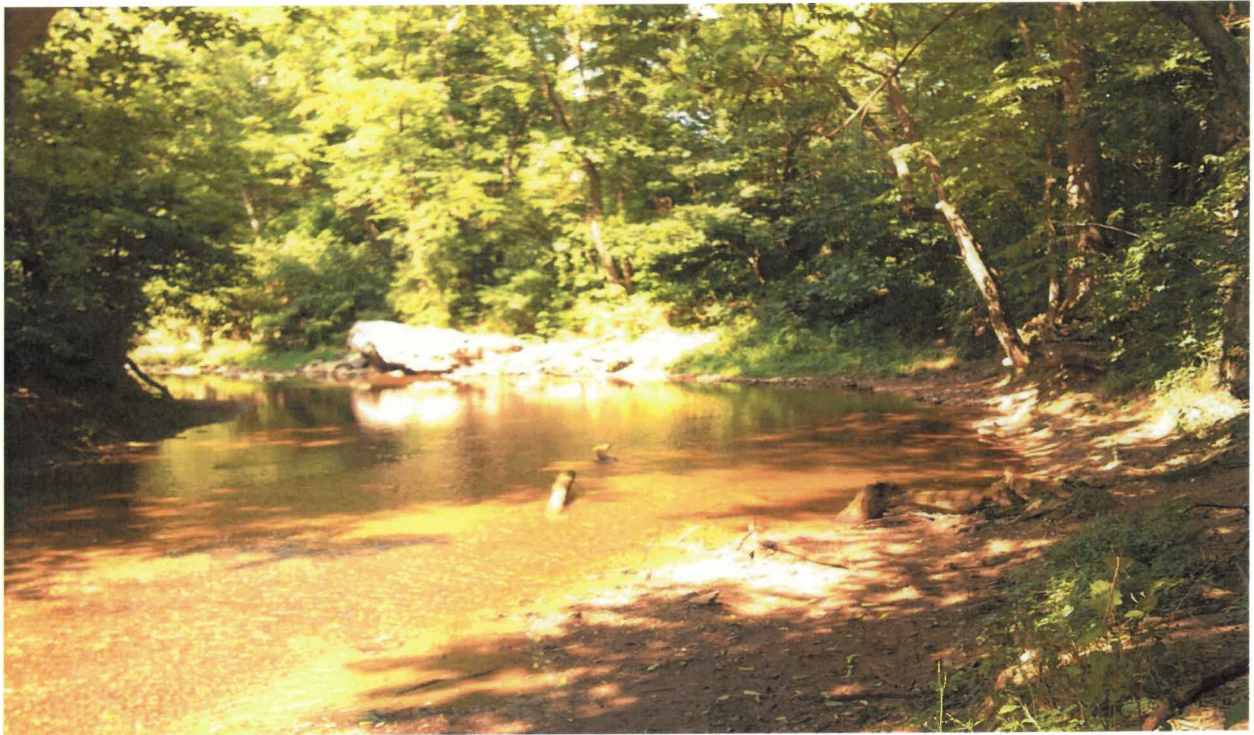


Photo B: Northern view of Watercourse 1 along the southern boundary of the study area.

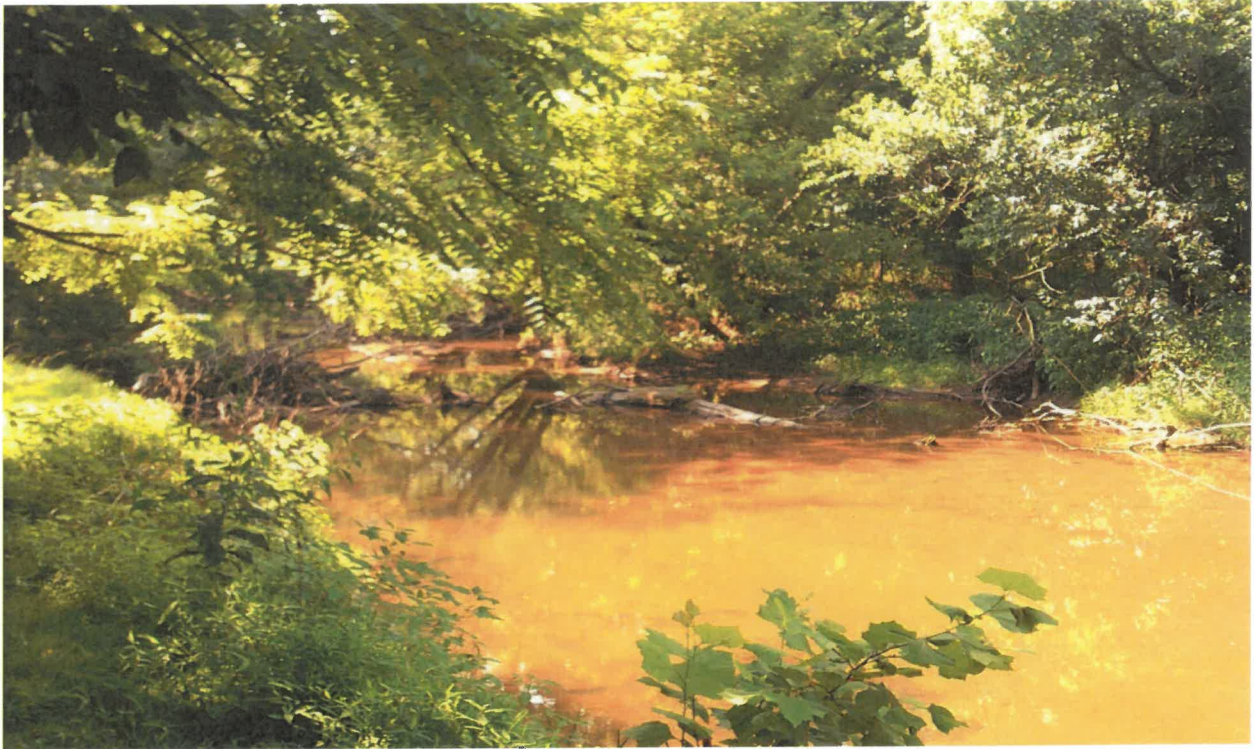


Photo C: Northeastern view of Watercourse 1 along the western boundary of the study area.



Photo D: Northwestern view of Watercourse 1 along the western boundary of the study area.



Photo E: Southeastern view of Watercourse 1 along the western boundary of the study area.



Photo F Northern view of the Wetland 3 and the existing bridge structure that carries Watercourse 1 under Mt. Joy-Manheim Road (SR 772).



Photo G: Southeastern view along the gravel driveway through the cultivated agricultural lands in the central portion of the study area.



Photo H: Western view of the mowed lawn, gravel driveway and cultivated agricultural lands in the northern portion of the study area.



Photo I: Northeastern view of the cultivated agricultural lands and forested hedgerow along the northern boundary of the study area.



Photo J: Northeastern view along Mt. Joy – Manheim Road (SR 772).



Photo K: Southwestern view along Mt. Joy – Manheim Road (SR 772), which forms the northern boundary of the study area.



Photo L: Southeastern view of the cultivated agricultural lands in the eastern portion of the study area.





Photo M: Northwestern view of the cultivated agricultural lands along the eastern boundary of the study area.



Photo N: Southeastern view of Wetland 1 in the southeastern portion of the study area.



Photo O: Southern view of Wetland 1 in the southeastern portion of the study area.



Photo P: Southern view of Wetland 1 in the in the southeastern portion of the study area.



Photo Q: Northern view of the mowed lawn in the southern portion of the study area.



Photo R: Western view of the mixed deciduous forest in the southern portion of the study area.



Photo S: Southeastern view of Wetland 2 along the west-central boundary of the study area.

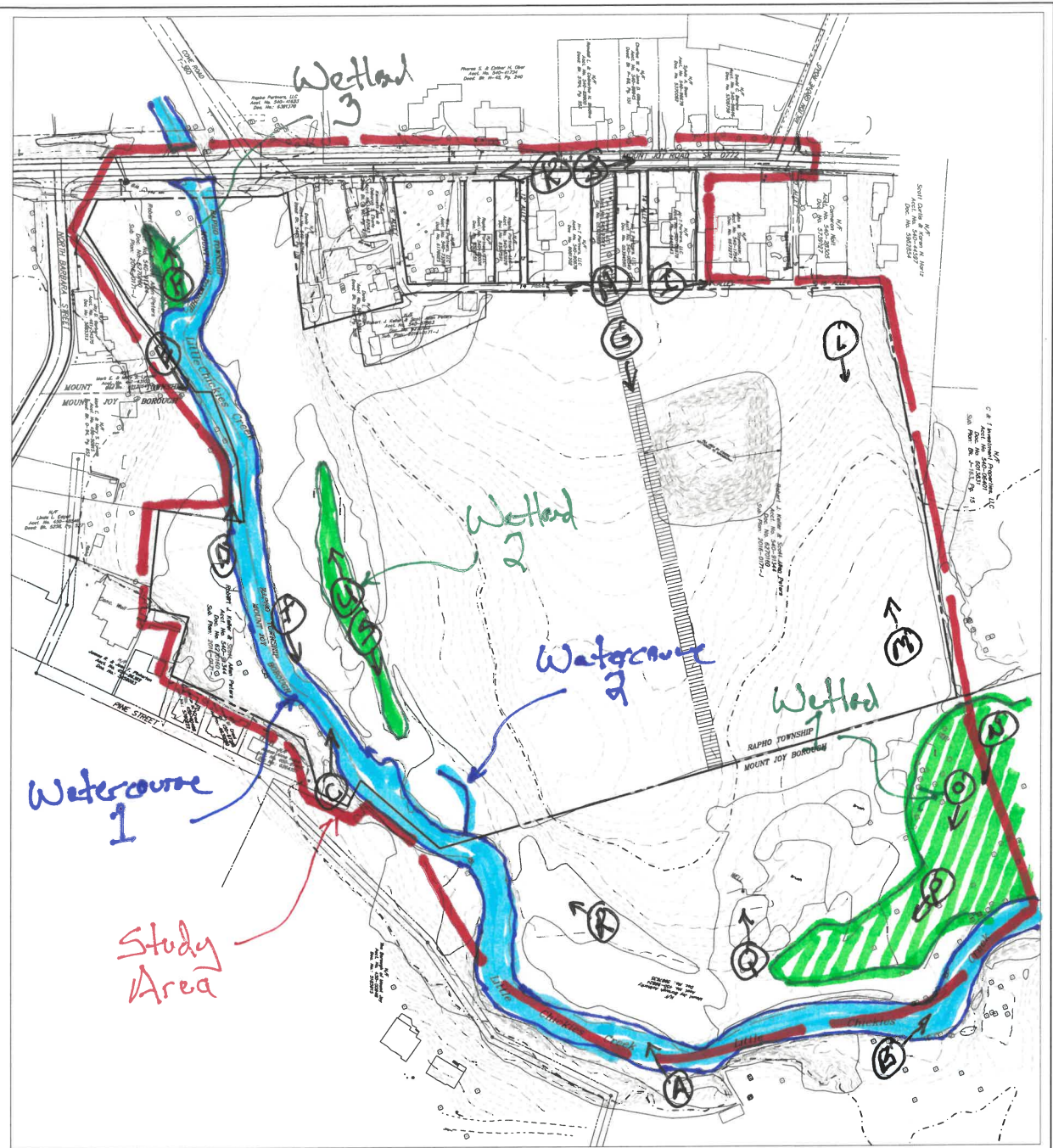


Photo T: Eastern view of Watercourse 1 along the southwestern boundary of the study area.



Photo U: Northwestern view of Wetland 2 along the west-central boundary of the study area.

WETLAND EXHIBIT



Wetland 3  
Wetland 2  
Wetland 1  
Watercourse 2  
Watercourse 1  
Study Area

- Notes:**
1. This survey was prepared without the benefit of a title opinion. The survey does not constitute an acknowledgment of the accuracy of the information shown. The survey does not constitute a warranty of the accuracy of the information shown. The survey does not constitute a warranty of the accuracy of the information shown.
  2. All underground utility locations shown on this plan are approximate and are not to be used for construction purposes. The locations of all underground utilities should be verified by the utility companies.
  3. Conduits System: PA State Route, South Zone - 3702.
  4. Benchmark is a Penn Del Nail set in the Southwest corner of the adjacent Elevation 1382.04 MAREKS Datum.
  5. A Pennsylvania One Call was made on October 25, 2022. Utility Numbers assigned:  
 Mount Joy Township: 20222881979  
 Mount Joy Power: 20222881980  
 Mount Joy Sewer: 20222881981
  6. A new Pa One Call must be made prior to any construction or excavation.
  7. Wetland boundaries were identified and confirmed by Water Environmental, Inc. 8/24/2022.
  8. Parcel 100 Now Township performed by Gerald R. McGinnis, P.E. as documented in a 10/27/2017 Township Study.

**Legend:**

- Boundary
- Easement
- Right of Way
- Utility
- Wetland
- Watercourse
- Survey Point
- Iron Pipe
- New (as noted)
- (Utility) Pipe (as noted)

BOUNDARY & TOPOGRAPHIC SURVEY  
 SHEET NO. 1 OF 2  
 DATE: 08/25/2022  
 KELLER TRACT  
 RAPHO TOWNSHIP & MOUNT JOY BOROUGH LANCASTER COUNTY, PA

**WEBER SURVEYORS**  
 931 STONY BATTERY ROAD  
 LANDISVILLE, PENNSYLVANIA 17538  
 Phone (717) 898-9488  
 Fax (717) 898-9567

CLIENT: \_\_\_\_\_  
 MANAGER: \_\_\_\_\_  
 DESIGN BY: P.A.S. / CHD BY: R.O.W.  
 DRAWING REFERENCE: F:\UNIVERSITY\BAK-ANR00-CO-STATE PLANE  
 XREFS: \_\_\_\_\_  
 SCALE: 1" = 30'  
 30 15 0 30 60

SURV. CHIEF: DPM	DRAWN BY: P.A.S.
DESIGN BY: P.A.S.	CHD BY: R.O.W.
DRAWING REFERENCE: F:\UNIVERSITY\BAK-ANR00-CO-STATE PLANE	
XREFS: _____	

NO.	DATE	REVISION

## RESUME



## **BRADLY J. GOCHNAUER**

### EXPERIENCE

2004-Present	Vortex Environmental, Inc. President
2003	RETTEW Associates, Inc. Senior Biologist
1997-2002	Vortex Environmental Partner
1993-1997	Landstudies, Inc. Environmental Scientist

Mr. Gochnauer has been involved in environmental research and consulting for eighteen (18) years. He has conducted environmental studies throughout Pennsylvania, Maryland, Delaware, and New Jersey.

Mr. Gochnauer has conducted wetland delineations using the Federal Manual for Identifying and Delineating Jurisdictional Wetlands and analysis of soils, vegetation, and hydrology to determine the extent of regulatory jurisdiction. He has compiled and prepared numerous state and federal permit applications for a variety of residential commercial and industrial projects.

Mr. Gochnauer has prepared many wetland mitigation and wetland restoration plans. He has designed several stream stabilization and stream corridor enhancement projects. He has also been involved in the restoration of dredge spoil areas. Mr. Gochnauer managed the biological control program for Purple Loosestrife in the State of Pennsylvania. Mr. Gochnauer has been certified by the Maryland Department of Natural Resources as a qualified professional to perform and review Forest Stand Delineations, and Forest Conservation Plans as per the requirements of COMAR 08.19.06.01.

### EDUCATION

The Pennsylvania State University, State College, PA.  
Bachelor of Science - Environmental Resource Management, 1992.

### CONTINUING EDUCATION

PAEP, Phase I Bog Turtle Program, 2003, 2004  
SAIC, Freshwater Wetland Construction, 1999  
Pennsylvania State University; Construction of Treatment Wetlands; 1995  
Maryland DNR; Forest Conservation and Stormwater Workshop; 1995  
Rutgers State University of New Jersey; Stabilization and Restoration of  
Disturbed Sites, 1995  
Pennsylvania State University; Stormwater Runoff and Water Quality Management  
Conference, 1994  
Glen Flora Preserve; Carex, Gramineae, and Composite identifications; 1994.