HanoverEngineering

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June 24, 2024

Ms. Bridges, Smithfield Sewer Authority Treasurer
Smithfield Sewer Authority
1155 Red Fox Road
East Stroudsburg, PA 18301

RE: Wetland and Waters Evaluation Report 115 Twin Falls Road Land Development Smithfield Township, Monroe County, PA SSA24-12

Dear Ms. Bridges:

On June 11, 2024, through June 13, 2024, Hanover Engineering Associates, Inc. evaluated the above-referenced project parcel for both Federal and State regulated wetlands and waters (i.e., lakes, ponds, streams, drainageways, etc.). The evaluation area consisted of a two and three tenths (2.3) acre parcel located at the intersection of Twill Falls Road (T-532) and Seven Bridge Drive (S.R 1019), for the proposed construction of an accessory use parking lot for a new Sewer Authority office facility, in Smithfield Township, Monroe County, Pennsylvania. Marshall Creek, that runs along the total width of the property to the Southeast, is designated by the Pennsylvania Department of Environmental Protection, as High Quality – Clear Water Fisheries (HQ-CWF). Please reference Attachment A – Delineation Map and Attachment C – Photographs for additional information. Within the project area to the North exists a small two car barn, as well as a two-story brick house, surrounded by upland-maintained lawns. The proposed project calls for the barn to be removed, and the house converted into office space. To the Southeast of the property, runs Marshall Creek, along the total edge of the property, with riparian buffers extending up hill. A small wetland system was identified within the floodplain Marshall Creek.

According to criteria set forth in the *Corps of Engineers Wetlands Delineation Manual* (USACE, 1987) including subsequent guidance documents and applicable regional supplements, the above-referenced project area was observed to **support** wetlands and watercourses, as defined by both the United States Army Corps of Engineers and/or Chapter 105, Title 25 Environmental Protection of the Pennsylvania Code.

The wetlands observed on-site were delineated in accordance with standards outlined in the Routine Determination Method, using alpha-numerically labeled fluorescent pink "WETLAND BOUNDARY" flagging. The Routine Determination Method requires the presence of three (3) mandatory technical criteria which must be met under normal conditions for an area to be classified as a wetland: hydric soils (wetland soils), dominance by hydrophytic vegetation (wetlands vegetation), and adequate hydrology (presence and/or evidence of water). The stream channels were delineated as regulated watercourses at the Ordinary High Water Mark boundaries, as defined by standard acceptable field indicators, using alpha-numerically labeled blue flagging. For a more detailed description of the methodology used to evaluate and delineate wetlands and Ordinary High Water Mark boundaries of waters, please see Attachment B – Methodology & Definitions. Our observations for each parameter can be found within Attachment D – Wetland Determination Data Forms.

The United States Army Corps of Engineers and the Pennsylvania Department of Environmental Protection have ultimate jurisdiction over wetlands and waters within the Commonwealth of Pennsylvania. A Jurisdictional Determination by the United States Army Corps of Engineers may be conducted to officially validate the findings and conclusions of Hanover Engineering. Jurisdictional Determinations are not generally required by Local, State, and Federal agencies as part of permit application reviews and other approvals associated with land development or changes in use. The findings of wetland evaluations are generally accepted for a period of five (5) years, after which time an updated evaluation should be conducted. Conditions may change, however, during this five-year period and may invalidate our findings. Therefore, if a Jurisdictional Determination is not conducted at the request of the client/landowner, Hanover Engineering will not assume responsibility for any unauthorized, future impacts to any wetlands or waters on the property.

If you have any questions require additional information, please call me at 610.691.5644

Respectfully,

HANOVER ENGINEERING

Environmental Technician

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Enclosure(s)

Attachment A – Delineation Map

KEY

Evaluation Area (wetlands and waters)

Wetlands

Wetland Determination Data Form – Sample Location

Waters of the U.S./waters of the Commonwealth

1. Hanover Engineering Associates, Inc. recommends that the flagged wetlands and waters boundaries be surveyed by a registered Professional Land Surveyor to ensure accurate representation of the wetland boundary. This survey should be completed prior to the design of any site improvements.
2. The wetlands and waters boundaries were delineated according to the *Corps of Engineers Wetlands Delineation Manual* (January 1987), subsequent guidance documents, and applicable Regional Supplements.
3. Hanover Engineering Associates, Inc. recommends, although it may not be required, that the wetlands and waters boundaries be verified by the United States Army Corps of Engineers through a formal Jurisdictional Determination process prior to any soils disturbance or site development activities.

Attachment B – Methodology & Definitions

Regulatory Definition of "Wetlands"
The regulatory definition of "wetlands," according to the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE), is "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." This definition refers to the three essential characteristics of wetlands: hydrophytic vegetation, hydric soils, and wetland hydrology, which are described below in greater detail.

Methodology for Wetland Delineation
Hanover Engineering identifies and delineates wetlands and waters in accordance with the technical criteria set forth in both the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*, (January 1989) and the *Corps of Engineers Wetlands Delineation Manual* (January 1987), including subsequent guidance documents and applicable regional supplements. Currently in Pennsylvania, wetlands and waters are delineated only in accordance with the technical criteria set forth in the *Corps of Engineers Wetlands Delineation Manual* and approved, current Regional Supplements for applicable regions and subregions. Where differences exist between the *Corps of Engineers Wetlands Delineation Manual* and applicable Regional Supplement, the Regional Supplement is used. The Routine Determination Method, as described in the *Corps of Engineers Wetlands Delineation Manual*, is used for undisturbed conditions (or normal circumstances), by which the three mandatory technical criteria: Hydrophytic Vegetation, Hydric Soils, and Wetland Hydrology, must be met for an area to be classified as a wetland. Regional Supplements are used as necessary and applicable to better classify each of the three technical criteria. When delineating problem areas or disturbed wetlands, field indicators for one or more of the technical criteria may be absent. In such situations, the Problem Area Wetland Determination Procedures, as described in the *Corps of Engineers Wetlands Delineation Manual*, and Difficult Wetlands Situations section, as described in the applicable Regional Supplement, are used. The three technical criteria are presented below.

Hydrophytic Vegetation
Generally, the hydrophytic vegetation criterion is met when, under normal circumstances, obligate wetland (OBL), facultative wetland (FACW), and/or facultative (FAC) species, comprise greater than 50% of the dominant species for all vegetative strata. Hydrophytic vegetation includes species which, either through physiological or morphological adaptations, are adapted to life in saturated soil (anaerobic, without oxygen) conditions. The United States Army Corps of Engineers, in cooperation with other regulatory agencies, botanists and wetland experts, developed the *National Wetland Plant List*. This publication lists and classifies plant species into five basic groups, with respect to their frequency and affinity for growth in wet conditions. These groups, by indicator status, include:

- ⌘ obligate wetland species (OBL) - occur almost always in wetlands (>99%)
- ⌘ facultative wetland species (FACW) - occur in wetlands most of the time (67-99%)
- ⌘ facultative species (FAC) - equally likely to occur in wetlands and uplands (34-66%)
- ⌘ facultative upland species (FACU) - occur in uplands most of the time (67-99%)
- ⌘ obligate upland species (UPL) - occur almost always in uplands (>99%)

Applicable Regional Supplements are used for guidance on vegetation sampling and analysis and for further, region specific refinement of qualifying hydrophytic vegetation indicators required to meet the technical criterion.

Hydric Soils
According to the United States Department of Agriculture Natural Resources Conservation Service (NRCS), hydric soils are defined as "soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic (without oxygen) conditions in the upper part." For the purposes of this definition, the following assumptions must be made:

1) long enough is defined as at least 7 days
2) the growing season is the period when soil temperatures are above biologic zero (41°F)
3) anaerobic conditions are caused by the displacement of air by water
4) the upper part is the B horizon or root zone of the soil

Common field indicators of hydric soil conditions include but are not limited to:

- ⌘ low chroma matrices, either with or without redox concentrations
- ⌘ redox depleted or gleyed matrix
- ⌘ redox dark surface
- ⌘ oxidized rhizospheres (root channel oxidations)
- ⌘ iron or manganese concretions
- ⌘ leaching or streaking of organic material
- ⌘ high organic content in the upper part of the profile
- ⌘ sulfidic material
- ⌘ reducing (anaerobic) soil conditions
- ⌘ hydric soil indicators described in the applicable Regional Supplement

Soil colors are identified using *Munsell Soil Color Charts* (Kollomorgen Corporation, 1985).

Wetland Hydrology
Wetland hydrology is a permanent or periodic inundation, or soil saturation, which lasts at least one week during the growing season. This situation may occur along obvious areas, such as: lakes, streams, ponds, rivers, floodplains, and estuaries. While other, not so obvious areas which exhibit wetland hydrology, may include isolated depressions or slopes of varying steepness. A site's topography, soil permeability, and plant type and cover, all influence the effects of hydrology in both wetlands and uplands.

Although wetland hydrology is the "driving force" which gives rise to wetland conditions, it is not necessarily a persistent factor, particularly in the uppermost boundary of a wetland. Consequently, field indicators which suggest a periodic, hydrologic influence are used. These field indicators include:

- ⌘ inundation or soil saturation
- ⌘ oxidized root channels (rhizospheres) of living plant roots
- ⌘ water marks
- ⌘ drift lines
- ⌘ water-borne sediment deposits
- ⌘ water-stained leaves
- ⌘ surface scoured areas
- ⌘ morphological plant adaptations
- ⌘ region specific hydrology indicators described in the applicable Regional Supplement

For the purposes of this evaluation, the Routine Determination Method was implemented, and for any atypical situations, the Problem Area Wetland Determination Procedures, as described in the *Corps of Engineers Wetlands Delineation Manual*, and Difficult Wetlands Situations section, as described in the applicable Regional Supplement were implemented. Hanover Engineering Associates, Inc. collected site specific data to determine wetland boundaries. These data included: soil texture, soil taxonomic classification, soil color, soil composition from 0 to 20 inches, vegetative species composition based on relative dominance, and evidence of surface or groundwater hydrology sufficient to support wetland conditions. These data were recorded at each observation point to document the vegetative, soil, and hydrologic conditions present. Soil samples were obtained using shovels and Dutch augers. The boundaries of all wetland areas identified during field evaluations were marked with alpha-numerically labeled, fluorescent pink or blue and white flagging bearing the labels "wetlands" or "wetland boundary."

Waters Evaluation and Delineation
Hanover Engineering delineates waters at their Ordinary High Water Mark (OHWM) boundaries, in accordance with the United States Army Corps of Engineers (USACE) Regulatory Guidance Letter No. 05-05 dated December 7, 2005. USACE defines the term "ordinary high water mark" for purposes of the CWA lateral jurisdiction at 33 CFR 328.3(e), which states: "The term *ordinary high water mark* means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." USACE also uses additional methods for estimating the line along the shore or streambank established by the fluctuations of water, including, but not limited to, lake and stream gage data, flood predictions, historic records of water flow, and statistical evidence. To the maximum extent practicable, USACE generally uses more than one physical indicator or other means for determining the OHWM. The following physical characteristics are considered when making an OHWM determination, to the extent that they can be identified and are deemed reasonably reliable:

- ⌘ Natural line impressed on the bank
- ⌘ Shelving
- ⌘ Changes in the character of soil
- ⌘ Destruction of terrestrial vegetation
- ⌘ Presence of litter and debris
- ⌘ Wracking
- ⌘ Vegetation matted down, bent, or absent
- ⌘ Sediment sorting
- ⌘ Leaf litter disturbed or washed away
- ⌘ Scour
- ⌘ Deposition
- ⌘ Multiple observed flow events
- ⌘ Bed and bank conditions present
- ⌘ Water staining
- ⌘ Change in plant community

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Attachment C – Photographs

Photo 1: Point X1 facing East

Photo 2: Point X1 facing West

Photo 3: Soils for Data point X1.

Photo 4: Point X2 facing East

Photo 5: Point X2 facing South

Photo 6: Soils for Data point X2

Photo 7: Point X3 facing East

Photo 8: Point X3 facing West

Photo 9: Soils for Data point X3.

Photo 10: Along Eastern edge of property, along Seven Bridge Rd. Facing South, flagging series OHW B1 (Left)-B3 (Right).

Photo 11: Facing West, over-looking wetland area, and flagging series OHW B9-B10

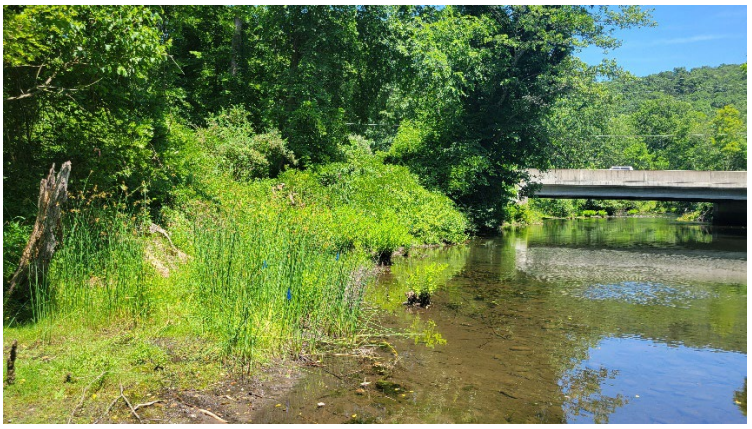

Photo 12: Facing East, looking down stream towards the mapped wetland and flagging series OHW B11-B12

Photo 13: Facing North, into the main wetland area, spring seep within wetland.

Photo 14: Facing South towards the down stream section of the mapped wetland.

Attachment D – Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 115 Twin Falls Road Land Development City/County: Monroe County Sampling Date: 6.11.2024

Applicant/Owner: Smithfield Sewer Autharity State: PA Sampling Point: X1

Investigator(s): Dashiell Reasinger Section, Township, Range: Smithfield Township

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 8-12

Subregion (LRR or MLRA): LRR R Lat: 41.034669 Long: -75.125321 Datum: NAD83

Soil Map Unit Name: Bec Benson rock outcrop complex, 8-25 percent slope NWI classification:

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

Sparsely vegitated clearing on plateau of terrace.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: X1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	20	Yes	Facu
2. Acer rubrum	10	Yes	Fac
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Lonicera morrowii	20	Yes	Facu
2. Rosa multiflora	15	Yes	Facu
3. Fraxinus americana	10	Yes	Facu
4.			
5.			
6.			
7.			
	45	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Circaea Canadensis	20	Yes	Facu
2. Grass species	15	Yes	Obl-Upl
3. Stellaria media	8	No	Facu
4. Alliaria periolata	5	No	Facu
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	48	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	0	= 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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No X

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

SOIL Sampling Point: X1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	7.5YR32	10					GrSaSi	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks: Refusal at 15" due to course fragments

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 115 Twin Falls Road Land Development City/County: Monroe County Sampling Date: 6.11.2024

Applicant/Owner: Smithfield Sewer Autharity State: PA Sampling Point: X2

Investigator(s): Dashiell Reasinger Section, Township, Range: Smithfield Township

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): 0-3

Subregion (LRR or MLRA): LRR R Lat: 41.034894 Long: -75.124638 Datum: NAD83

Soil Map Unit Name: Wb Wayland silty clay loam, 0-3 percent slope NWI classification:

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

Vegetative shrubland uplands, disturbed by local road running North/South next to sample location

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: X2

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	15	Yes	Facu
2. Acer negundo	10	Yes	Fac
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Artemisia vulgaris	70	Yes	Upl
2. Asclepias syriaca	30	Yes	Upl
3. Alliaria periolata	10	No	Facu
4. Solidago canadensis	10	No	Facu
5. Rosa multiflora	5	No	Facu
6. Phleum pratense	5	No	Facu
7. Arctium minus	5	No	Facu
	135	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Glechoma hederacea	40	Yes	Facu
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No X

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

SOIL Sampling Point: X2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR32	100					SaSi	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Refusal at 14" due to course fragments

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 115 Twin Falls Road Land Development City/County: Monroe County Sampling Date: 6.11.2024

Applicant/Owner: Smithfield Sewer Autharity State: PA Sampling Point: X3

Investigator(s): Dashiell Reasinger Section, Township, Range: Smithfield Township

Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): None Slope (%): 0-3

Subregion (LRR or MLRA): LRR R Lat: 41.034744 Long: -75.124995 Datum: NAD83

Soil Map Unit Name: Wb Wayland silty clay loam, 0-3 percent slope NWI classification:

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

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

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

Vegetative area along creek bank.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 0
Water Table Present?	Yes X	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

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

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Schoenoplectus tabernaemontani	30	Yes	Obl
2. Onoclea sensibilis	20	Yes	Facw
3. Lythrum salicaria	15	No	Obl
4. Impatiens capensis	10	No	Obl
5. Verbena hastata	10	No	Facw
6. Cornus amomum	5	No	Facw
7.			
	90 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Grass species	35	Yes	Obl-Upl
2. Callitriche stagnalis	15	Yes	Obl
3. Myosotis scorpioides	10	No	Obl
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	_____ = 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: 4 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

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

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

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

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

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

SOIL Sampling Point: X3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR21	100					SaCl	saturated
10-12	2.5YR2.5	70	10YR21	30	D	M	C	saturated

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
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- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Refusal at 12' due to water.