DEWA 251562 – Old Mine Road

Delaware Water Gap National Recreation Area, NJ

Wetland and Watercourse Delineation Report

Prepared for:

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1.0 PROJECT DESCRIPTION

The United States Department of the Interior National Park Service (USNPS) Denver Service Center Transportation Division (DSC) proposes to develop construction documents in support of pavement rehabilitation along three sections of Old Mine Road in the Delaware Water Gap National Park, in New Jersey. The location of the proposed three (3) segments of the project are summarized below (Figure 1):

Segment 1. Old Mine Road from Mile Post (MP) 6.0 (approximately 5.5 miles north from the Kittatinny Point Visitor Center) to MP 9.0 (approximately 1.1 miles north of the Poxono Boat Launch).

Segment 2. Old Mine Road from the intersection with Route 560 north 0.34 miles.

Segment 3. Old Mine Road from the intersection with Jager Road north to the intersection with Route 206 (approximately 3.0 miles).

Segment 1 runs through heavily forested habitats with occasional low lying depressional areas on the western side of Old Mine Road characterized by meadows. Forested habitats are typically dominated by red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), and American hornbeam (*Carpinus caroliniana*). Areas east of Old Mine Road typically rise in elevation while the western extent of the segment slops down towards the Delaware River.

Segment 2 is a relatively flat stretch of Old Mine Road. Segment 2 is characterized by forested habitats on the eastern side of Old Mine Road, while the western side of the road typically abuts open agricultural fields. Forested habitats are typically dominated by red maple.

Segment 3 is similar to Segment 1 although with less elevation change throughout. Segment 3 is typically comprised of forested habitats along both sides of Old Mine Road with occasional agricultural fields existing along the western side of the segment. Forested habitats are typically dominated by red maple.

2.0 METHODS

HDR Engineering, Inc. (HDR) delineated the boundaries of wetlands within the Project Area (a 150-ft buffer from the Old Mine Road centerline) in two phases, Desktop Review and Field Survey, as described below.

2.1 DESKTOP REVIEW

Prior to conducting the wetland delineation, relevant materials were reviewed, and are included as attachments for reference:

- New Jersey State Department of Environmental Protection (NJDEP) Land Use/Land Cover Map
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map
- U.S. Department of Agriculture (USDA) Natural Resources Conservation (NRCS) Web Soil Survey Custom Soil Resource Report (Appendix A)
- Federal Emergency Management Agency (FEMA) 2011 Preliminary Working Data Flood Insurance Rate Maps (PFIRM)

2.1.1. SITE HYDROLOGY

The Project Area runs parallel to the Delaware River within the Delaware Water Gap National Park. Generally, elevation is higher to the east sloping down to the Delaware River to the west. Water typically flowed from east to west throughout the three project segments. The project Area lies within the New Jersey Department of Environmental Protection's (NJDEP's) Watershed Management Area 1 (WMA-1) (Figure 2).

According to the NJDEP's *Surface Water Quality Standards (*N.J.A.C. 7:9B, adopted amendments N.J.A.C. 7:9B-1.14h), the 23 watercourses delineated within the Project Area flow into the Delaware River. These tributaries are classified FW2-NT. This classification is for freshwater waterways with designated uses including maintenance, migration, and propagation of the natural and established biota, migration of diadromous fishes, maintenance of wildlife, secondary contact recreation, and any other reasonable uses.

2.2 FIELD SURVEY

Between the 17 and 21 January 2015 the boundaries of the wetlands within the Project Site were delineated using the three-parameter methodology described in the 1987 United States Army Corps of Engineers (USACE) wetland delineation manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Northcentral and Northeast Region (USACE 2012). Watercourses were delineated using the indicators of the ordinary high water mark as described in 33 CFR 328.3 (USACE 1986). Sequentially numbered flags were placed to define the boundaries of the wetlands within the Project Site. The flag locations were marked as they were hung, using a Trimble GeoXR GPS unit.

FIGURE 1. PROJECT LOCATION MAP

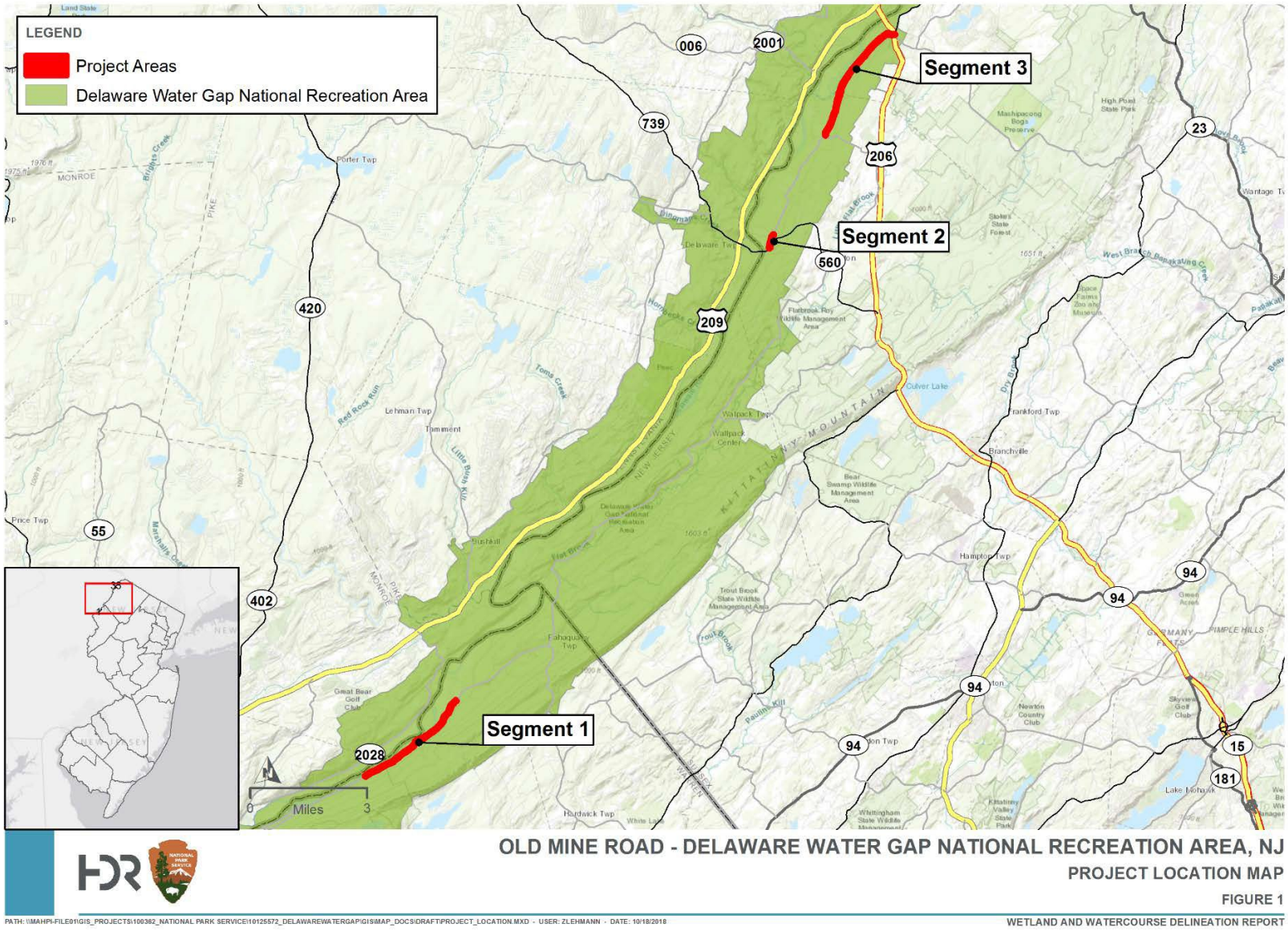
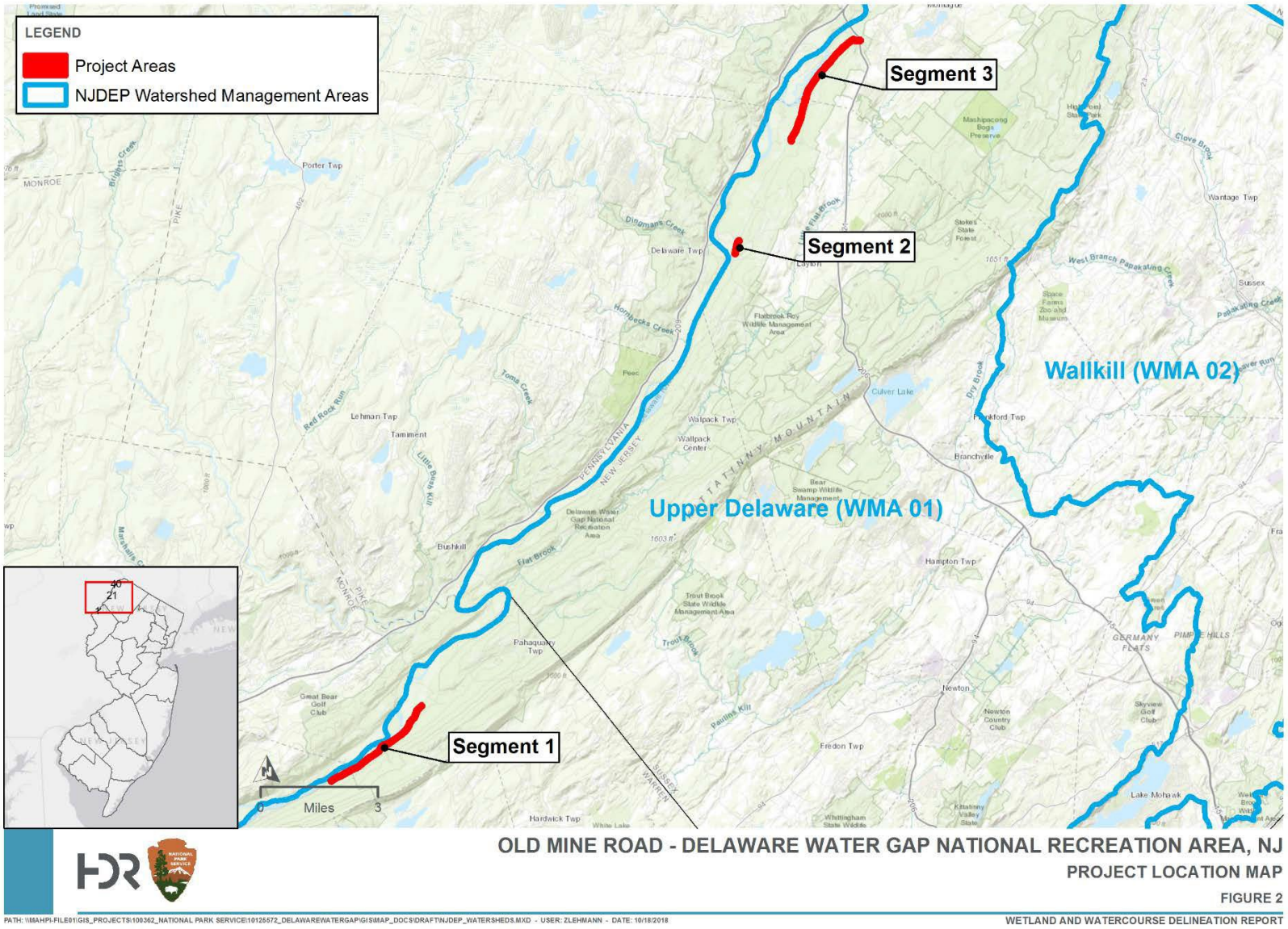


FIGURE 2. NJDEP WATERSHED MANAGEMENT AREAS



3.0 RESULTS

3.1 DESKTOP REVIEW RESULTS

Segment 1

The NJDEP Wetlands Land Use/Land Cover Map shows on-site wetlands classified as Deciduous Scrub/Shrub wetlands, which is consistent with the field survey results described below (Figure 3).

The USFWS NWI Map classifies the on-site wetlands in Segment 1 as Palustrine emergent persistent seasonally flooded/saturated (PEM1E) using the Cowardin (1979) classification system (Figure 4). These descriptions are consistent with the field survey results described below.

The USDA Web Soil Survey (WSS) report indicates the majority of soils within Segment 1 to be Lackawanna cobbly fine sandy loam, 15-35 percent slopes, and well drained (Appendix A). The Westbrook series consists of very deep, well drained soils on uplands. They formed in till derived from reddish sandstone, siltstone, and shale. Saturated hydraulic conductivity is moderately high or high in the mineral soil above the fragipan, and low or moderately low in and below the fragipan. The Lackawanna soils are consistent with the field survey results described below, coinciding with the upland soils upslope of Old Mine Road.

Soils downslope of Old Mine Road were reported in the WSS report as consisting mostly of Udifluvents, 0-3 percent slopes, and occasionally flooded. Udifluvents are typical of riverine floodplain soils and are wet most years. The Udifluvent soils are consistent with the field survey results described below, coinciding with depressional wetlands.

The 121.9 acre Segment 1's soil type, acreage and percent composition data is presented in Table 2. A U.S. Department of Agriculture Custom Soil Report, including a soil map, for the Project Area is provided in Appendix A.

Segment 2

The NJDEP Wetlands Land Use/Land Cover Map shows on-site wetlands classified as Deciduous Wooded Wetlands, which is not consistent with the field survey results described below (Figure 3).

The USFWS NWI Map did not depict any wetlands in Segment 2 (Figure 4). The lack of wetlands is consistent with the field survey results described below.

The WSS report indicates the soils of Segment 2 are split along Old Mine Road. Soils to the east of the road are dominated by (47.2%) Wallpack fine sandy loam with an Aeolian mantle, and 15-35 percent slopes (Appendix A). Wallpack soils are well drained, occurring primarily on drumlins and ridges. Wallpack soils are shallow or moderately deep to a fragipan and very deep to bedrock. They formed in till derived from sandstone, siltstone, shale, and limestone. Permeability is moderately rapid or moderate above the fragipan and moderately slow to very slow in the fragipan. Saturated hydraulic conductivity ranges from moderately low or moderately high above and below the fragipan and moderately low or low in the fragipan.

West of Old Mine Road soils are dominated by (45.1%) Hazen-Paulins Kill complex, with 3-8 percent slopes (Appendix A). Hazen-Paulins soils are well drained, having formed in stratified gravelly or cobbly glacial deposits. They are shallow and moderately deep to a lithologic discontinuity. The saturated hydraulic conductivity is moderately low to high in the solum and high or very high in the substratum. Flooding frequency ranges from none on high gradient areas to rare on some nearly level areas adjacent to streams.

The 15 acre Segment 2's soil type, acreage and percent composition data is presented in Table 2. A U.S. Department of Agriculture Custom Soil Report, including a soil map, for the Project Area is provided in Appendix A.

Segment 3

The NJDEP Wetlands Land Use/Land Cover Map shows on-site wetlands classified as Deciduous Wooded Wetlands and Deciduous Wooded Scrub/Shrub Wetlands, which is not consistent with the field survey results described below (Figure 3).

The USFWS NWI Map did not depict any wetlands in Segment 3 (Figure 4). The lack of wetlands is consistent with the field survey results described below.

Similar to Segment 2, the WSS report indicates the soils of Segment 3 are split along Old Mine Road with Wallpack fine sandy loam dominating (18.2%) the eastern portion of the segment and Colonie loamy fine sand and Hazen-Paulins Kill complex dominating (20.4% and 28.9% respectively) the western portion of the segment. Wallpack and Hazen soil descriptions are detailed in the above section. Colonie soils consist of very deep, well drained to excessively drained soils formed in glaciolacustrine, glaciofluvial, or eolian deposits dominated by find sand and very fine sand. Saturated hydraulic conductivity is high to very high in the mineral soil.

The 130.8 acre Segment 3's soil type, acreage and percent composition data is presented in Table 2. A U.S. Department of Agriculture Custom Soil Report, including a soil map, for the Project Area is provided in Appendix A.

TABLE 1. SOIL TYPES WITHIN SEGMENT 1

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AtcA	Atherton mucky silt loam, 0 to 3 percent slopes	3.7	3.0%
DefBr	Delaware fine sandy loam, 3 to 8 percent slopes, rarely flooded	5.6	4.6%
LacDc	Lackawanna cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony	30.1	24.7%
OpnDh	Oquaga-Lackawanna complex, 15 to 35 percent slopes, very rocky	2.9	2.4%
OprE	Oquaga-Rock outcrop complex, 35 to 60 percent slopes	21.1	17.3%
PduaCb	Paulins Kill-Hazen complex, 8 to 15 percent slopes, very stony	6.9	5.7%
PduoEb	Paulins Kill-Otisville complex, 25 to 60 percent slopes, very stony	18.3	15.0%
UccAs	Udifluvents, 0 to 3 percent slopes, occasionally flooded	17.7	14.6%
UnfB	Unadilla silt loam, 3 to 8 percent slopes	15.6	12.8%
WATER	Water	0.0	0.0%
Totals for Area of Interest		**121.9**	**100.0%**

* Note – Segment 1 is presented in this table as “AOI” = Area of Interest

TABLE 2. SOIL TYPES WITHIN SEGMENT 2

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CorB	Colonie loamy fine sand, 3 to 8 percent slopes	0.6	3.9%
HdxpBb	Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony	6.9	45.1%
LorDh	Lordstown-Wallpack complex, 15 to 35 percent slopes, very rocky	0.1	1.0%
ScoA	Scio silt loam, 0 to 3 percent slopes	0.4	2.8%
WabDb	Wallpack fine sandy loam, aeolian mantle, 15 to 35 percent slopes, very stony	7.3	47.2%
Totals for Area of Interest		**15.4**	**100.0%**

* Note – Segment 2 presented in this table as “AOI” = Area of Interest

TABLE 3. SOIL TYPES WITHIN SEGMENT 3

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CorB	Colonie loamy fine sand, 3 to 8 percent slopes	26.7	20.4%
DefBr	Delaware fine sandy loam, 3 to 8 percent slopes, rarely flooded	0.0	0.0%
HdxpBb	Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony	37.7	28.9%
LorCh	Lordstown-Wallpack complex, 8 to 15 percent slopes, very rocky	5.0	3.8%
LorD	Lordstown-Wallpack complex, 15 to 25 percent slopes	17.6	13.4%
LorDh	Lordstown-Wallpack complex, 15 to 35 percent slopes, very rocky	0.1	0.1%
PduaCb	Paulins Kill-Hazen complex, 8 to 15 percent slopes, very stony	4.7	3.6%
PduoEb	Paulins Kill-Otisville complex, 25 to 60 percent slopes, very stony	3.2	2.5%
VepCc	Venango silt loam, 8 to 15 percent slopes, extremely stony	0.2	0.2%
WabCb	Wallpack fine sandy loam, aeolian mantle, 8 to 15 percent slopes, very stony	23.8	18.2%
WabDb	Wallpack fine sandy loam, aeolian mantle, 15 to 35 percent slopes, very stony	10.2	7.8%
WacBc	Wallpack silt loam, 3 to 8 percent slopes, extremely stony	1.2	0.9%
WacDc	Wallpack silt loam, 15 to 35 percent slopes, extremely stony	0.3	0.2%
Totals for Area of Interest		**130.8**	**100.0%**

* Note – Segment 3 is presented in this table as “AOI” = Area of Interest

Federal Emergency Management Agency (FEMA) floodplain maps (FEMA 2011 Preliminary Work Map Data) showed that portions of each segment of the Project Area are within Zone A (1% annual chance flood level), Zone X (0.2% annual chance flood level), and the Floodway of the Delaware River (Figure 5). Portions of the Project Area within these zones are in areas where watercourses cross Old Mine Road or where Old Mine Road is in close proximity to the Delaware River.

3.2 WETLAND DELINEATION FIELD SURVEY RESULTS

Wetland 1 – The area delineated as Wetland 1 is a 0.51-acre palustrine, forested, broad-leaved deciduous wetland system that is dominated by *Acer rubrum, Lindera benzoin,* and *Microstegium vimineum* (Table 3 and Table 4). Wetland 1 is located in a depression between the elevated Old Mine Road and a natural occurring berm running parallel to the Delaware River. *Acer rubrum* and *Microstegium vimineum* have a Facultative (FAC) indicator status. *Lindera benzoin* has a Facultative Wetland (FACW) indicator status, thus providing a hydrophytic vegetation indicator (Prevalence Index 2.97). Soils in Wetland 1 were indicative of hydric soils due to the presence of a depleted matrix. Hydrology indicators included a high water table, saturation close to the surface, water marks, sediment deposits, drift deposits, and water-stained leaves. A summary of wetland indicators is provided in Table 3.

Wetland 2 – The area delineated as Wetland 2 is a 1.28-acre palustrine, emergent, persistent, wetland system that is dominated by *Elaeagnus umbellata, Onoclea sensibilis, Persicaria perfoliata,* and *Vitis labrusca* (Table 3 and Table 4). Wetland 2 lies within the same depressional topography as Wetland 1, but is separated from Wetland 1 by what appears to be a man-made culverted berm. While *Elaeagnus umbellata* was found in the observation point, it was only found on the edge of the sampling area, upslope from the area delineated as Wetland 2. *Elaeagnus umbellata* has an Upland (UPL) indicator status. *Onoclea sensibilis* has a Facultative Wetland (FACW) indicator status. *Persicaria perfoliata* and *Vitis labrusca* have a Facultative (FAC) and Facultative Upland (FACU) indicator status respectively thus providing a hydrophytic vegetation indicator (Prevalence Index 2.62). Soils in Wetland 2 were indicative of hydric soils due to the presence of black histic soil profile. Hydrology indicators included surface water, a high water table, saturation near the surface, and water-stained leaves. A summary of wetland indicators is provided in Table 3.

Wetland 3 – The area delineated as Wetland 3 is a 0.17-acre palustrine, non-persistent, irregularly flooded wetland system that is dominated by *Microstegium vimineum, Cyperus esculentus,* and *Impatiens capensis* (Table 3 and Table 4). Wetland 3 is a road side ditch bound on the east by steep slopes and on the west by Old Mine Road. *Microstegium vimineum* has a Facultative (FAC) indicator status. *Cyperus esculentus* and *Impatiens capensis* have a Facultative Wetland (FACW) indicator status, thus providing a hydrophytic vegetation indicator (Prevalence Index 2.67). Soils in Wetland 3 were indicative of hydric soils due to the presence of a depleted matrix. Hydrology indicators included surface water, a high water table, saturation close to the surface, water marks, and water-stained leaves. A summary of wetland indicators is provided in Table 3.

Wetland 4 – The area delineated as Wetland 4 is a0.21-acre palustrine, forested, broad-leaved deciduous wetland system that is dominated by *Acer rubrum, Lindera benzoin, Rosa multiflora, Microstegium vimineum, Impatiens capensis,* and *Pueraria montana* (Table 3 and Table 4). Wetland 4 is a depressional wetland downslope from Old Mine Road which is fed from seeps emanating from the toe of slope leading to Old Mine Road. *Acer rubrum* and *Microstegium vimineum* have a Facultative (FAC) indicator status. *Lindera benzoin* and *Impatiens capensis* have a Facultative Wetland (FACW) indicator status. *Rosa multiflora* and *Pueraria montana* have Facultative Upland (FACU) and Upland (UPL) indicator statuses respectively. This collection of dominant species provide a hydrophytic vegetation indicator (Prevalence Index 2.73). Soils in

Wetland 4 were indicative of hydric soils due to the presence of a depleted matrix. Hydrology indicators included a high water table, saturation near the surface, and water marks. A summary of wetland indicators is provided in Table 3.

Wetland 5 – The area delineated as Wetland 5 is a 0.33-acre palustrine, forested, broad-leaved deciduous wetland system that is dominated by *Microstegium vimineum* and *Cyperus esculentus* (Table 3 and Table 4). Wetland 5 is roadside ditch running along the eastern edge of Old Mine Road and continuing east up slope to a small wooded terrace area. *Microstegium vimineum* has a Facultative (FAC) indicator status and *Cyperus esculentus* has a Facultative Wetland (FACW) indicator, thus providing a hydrophytic vegetation indicator (Prevalence Index 2.61). Soils in Wetland 5 were indicative of hydric soils due to the presence of loamy mucky mineral soils in the ditch portion of the wetland, and a depleted matrix in the terraced portion of the wetland. Hydrology indicators included surface water, water marks, sparsely vegetated concave surfaces, and water-stained leaves. A summary of wetland indicators is provided in Table 3.

Wetland 6 – The area delineated as Wetland 6 is a 0.06-acre palustrine, non-persistent, wetland system that is dominated by *Acer rubrum, Lindera benzoin,* and *Microstegium vimineum* (Table 3 and Table 4). Wetland 6 is a roadside ditch running along the eastern edge of Old Mine Road and bounded to the east by steeping sloping sides. *Acer rubrum* and *Microstegium vimineum* have a Facultative (FAC) indicator status. *Lindera benzoin* has a Facultative Wetland (FACW) indicator status, thus providing a hydrophytic vegetation indicator (Prevalence Index 2.40). Soils in Wetland 6 were indicative of hydric soils due to the presence of a depleted matrix and redox depressions. Hydrology indicators included surface water, sediment deposits, and a sparsely vegetated concave surface. A summary of wetland indicators is provided in Table 3.

Wetland 7 – The area delineated as Wetland 7 is a 0.04-acre palustrine, forested, broad-leaved deciduous wetland system that is dominated by *Acer rubrum, Lindera benzoin,* and *Microstegium vimineum* (Table 3 and Table 4). Wetland 7 is a small depressional forested wetland fed by a culvert draining Wetland 6 and seepages originating from under Old Mine Road. *Acer rubrum* and *Microstegium vimineum* have a Facultative (FAC) indicator status. *Lindera benzoin* has a Facultative Wetland (FACW) indicator status, thus providing a hydrophytic vegetation indicator (Prevalence Index 2.93). Soils in Wetland 7 were indicative of hydric soils due to the presence of a depleted matrix and redox depressions. Hydrology indicators included surface water, sediment deposits, and a sparsely vegetated concave surface. A summary of wetland indicators is provided in Table 3.

Wetland 8 – The area delineated as Wetland 8 is a 0.93-acre palustrine, emergent, persistent, wetland system that is dominated by *Acer rubrum, Impatiens capensis,* and *Carex stricta* (Table 3 and Table 4). Wetland 8 extends from a roadside ditch running along Old Mine Road's eastern edge (Watercourse 20). Wetland 8 connects to this ditch via a well-defined channel but becomes a more ambiguous depressional wetland shortly thereafter. Wetland 8 occupies a depressional area between Watercourse 20 and steep slopes to the east lying outside of the delineation's study area. *Acer rubrum* has a Facultative (FAC) indicator status; *Impatiens capensis* has a Facultative Wetland (FACW) indicator status; and *Carex stricta* has an Obligate (OBL) indicator status. Thus Wetland 8 has a hydrophytic vegetation indicator (Prevalence Index 2.07). Soils in Wetland 8 were indicative of hydric soils due to the presence of a depleted matrix and redox depressions.

Hydrology indicators included surface water, a high water table, saturation near the surface, water marks, and water-stained leaves. A summary of wetland indicators is provided in Table 3.

TABLE 4. SUMMARY OF INDICATORS FOUND AT OBSERVATION POINTS

Wetland Observation Point	Hydrology indicators	Dominant Vegetation (Indicator Status)	Hydric Soil Indicator
SEG1-OP1-WET	High Water Table, Saturation, Water Marks, Sediment Deposits, Drift Deposits, Water-Stained Leaves	*Acer rubrum* (FAC) *Lindera benzoin* (FACW) *Microstegium vimineum* (FAC)	Depleted Matrix
SEG1-OP2-WET	Surface Water, High Water Table, Saturation, Water-Stained Leaves	*Elaeagnus umbellata* (UPL) *Onoclea sensibilis* (FACW) *Persicaria perfoliata* (FAC) *Vitis labrusca* (FACU)	Black Histic
SEG1-OP3-WET	Surface Water, High Water Table, Saturation, Water Marks, Water-Stained Leaves, Aquatic Fauna	*Microstegium vimineum* (FAC) *Cyperus esculentus* (FACW) *Impatiens capensis* (FACW)	Depleted Matrix
SEG1-OP4-WET	High Water Table, Saturation, Water Marks	*Acer rubrum* (FAC) *Lindera benzoin* (FACW) *Rosa multiflora* (FACU) *Microstegium vimineum* (FAC) *Impatiens capensis* (FACW) *Pueraria montana* (UPL)	Depleted Matrix
SEG1-OP5-WET	Surface Water, Water Marks, Sparsely Vegetated Concave Surface, Water-Stained Leaves	*Microstegium vimineum* (FAC) *Cyperus esculentus* (FACW)	Loamy Mucky Mineral, Depleted Matrix

SEG1-OP6-WET	Surface Water, Sediment Deposits, Sparsely Vegetated Conclave Surface	*Acer rubrum* (FAC) *Lindera benzoin* (FACW) *Microstegium vimineum* (FAC)	Depleted Matrix, Redox Depressions
SEG1-OP7-WET	Surface Water, Sediment Deposits, Sparsely Vegetated Concave Surface	*Acer rubrum* (FAC) *Lindera benzoin* (FACW) *Microstegium vimineum* (FAC)	Depleted Matrix, Redox Depressions
SEG1-OP8-WET	Surface Water, High Water Table, Saturation, Water Marks, Water-Stained Leaves	*Acer rubrum* (FAC) *Impatiens capensis* (FACW) *Carex stricta* (OBL)	Depleted Matrix, Redox Dark Surface

OBL = Obligate wetland species
FACW= Facultative Wetland species
FAC = Facultative species
FACU= Facultative Upland species
UPL = Upland species
NI= No Indicator status

3.3 WATERCOURSE DELINEATION RESULTS

Twenty eight (28) watercourses and eight (8) freshwater wetlands exist within the Project Area. The location of each of these features is provided in Figure 6 and length and area of each watercourse and wetland are provided in Table 4. A wetland and watercourse verification survey was conducted by HDR in October 2022 in conjunction with a rare/invasive plant survey. There were no changes to the extent or Cowardin classification of the previously mapped resources.

TABLE 5. WATERS OF THE US LENGTHS, AREAS AND CLASSES WITHIN PROJECT AREA

Feature ID	Length (LF)	Area (SF)	Area (Acres)	Cowardin Class
Watercourse 1	300	2,872.26	0.07	RIUB1
Watercourse 2	300	1,549.25	0.04	RIUB1
Watercourse 3	300	2,092.59	0.05	RIUB1
Watercourse 4	300	2,423.02	0.06	RIUB1
Watercourse 5	300	712.25	0.02	RIUB1
Watercourse 6	300	8,423.03	0.19	RIUB1
Watercourse 7	300	4,335.08	0.10	RIUB1
Watercourse 8	300	4,127.45	0.09	RIUB1
Watercourse 9	300	5,829.97	0.13	R3UB1
Watercourse 10	300	2,183.41	0.05	R3UB1
Watercourse 11	300	768.46	0.02	RIUB1
Watercourse 12	300	4,420.18	0.10	RIUB1
Watercourse 13	300	587.40	0.01	RIUB1
Watercourse 14	300	5,951.82	0.14	RIUB1
Watercourse 15	300	375.98	0.01	RIUB1
Watercourse 16	300	725.25	0.02	RIUB1
Watercourse 17	300	5,574.09	0.13	RIUB1
Watercourse 18	300	3,738.55	0.09	RIUB1
Watercourse 19	300	5,651.30	0.13	RIUB1
Watercourse 20	300	50,538.32	0.23	RIUB1
Watercourse 21	300	4,399.89	0.10	R3UB1
Watercourse 22	300	6,665.34	0.15	RIUB1
Watercourse 23	300	4,581.14	0.11	R3UB1
Wetland 1		1,366.95	0.51	PFO1
Wetland 2		1,941.32	1.28	PEM1
Wetland 3		1,607.96	0.17	PEM2
Wetland 4		870.27	0.21	PFO1
Wetland 5		561.83	0.33	PFO1
Wetland 6		861.99	0.06	PEM2
Wetland 7		256.96	0.04	PFO1
Wetland 8		1,337.89	0.93	PEM1
Watercourse Total	7,500	87,980.87	2.02	
Ponded Areas Total	--	153,822.28	3.53	
Total Area of Waters of the United States	**7,500**	**241,803.16**	**5.55**	

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FIGURE 3. NJDEP WETLANDS MAPS



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-1



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-2



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-3



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-4



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-5



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-6



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-7



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-8



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-9



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-10



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-11



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-12



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-13



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-14



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-15



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-16



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-17



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-18



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-19



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-20



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-21



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-22



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-23



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-24



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-25



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-26



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-27



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-28



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-29



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-30



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-31



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-32



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-33



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-34



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-35



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-36



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-37



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-38



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-39



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-40



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NJDEP WETLAND MAP

FIGURE 3-41

FIGURE 4. NWI WETLANDS MAPS



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-1



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-2



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-3



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-4



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-5



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-6



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-7



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-8



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-9



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-10



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-11



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-12



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-13



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-14



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-15



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-16



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-17



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-18



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-19



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-20



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-21



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-22



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-23



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-24



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-25



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-26



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-27



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-28



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-29



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-30



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-31



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-32



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-33



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-34



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-35



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-36



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-37



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-38



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-39



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-40

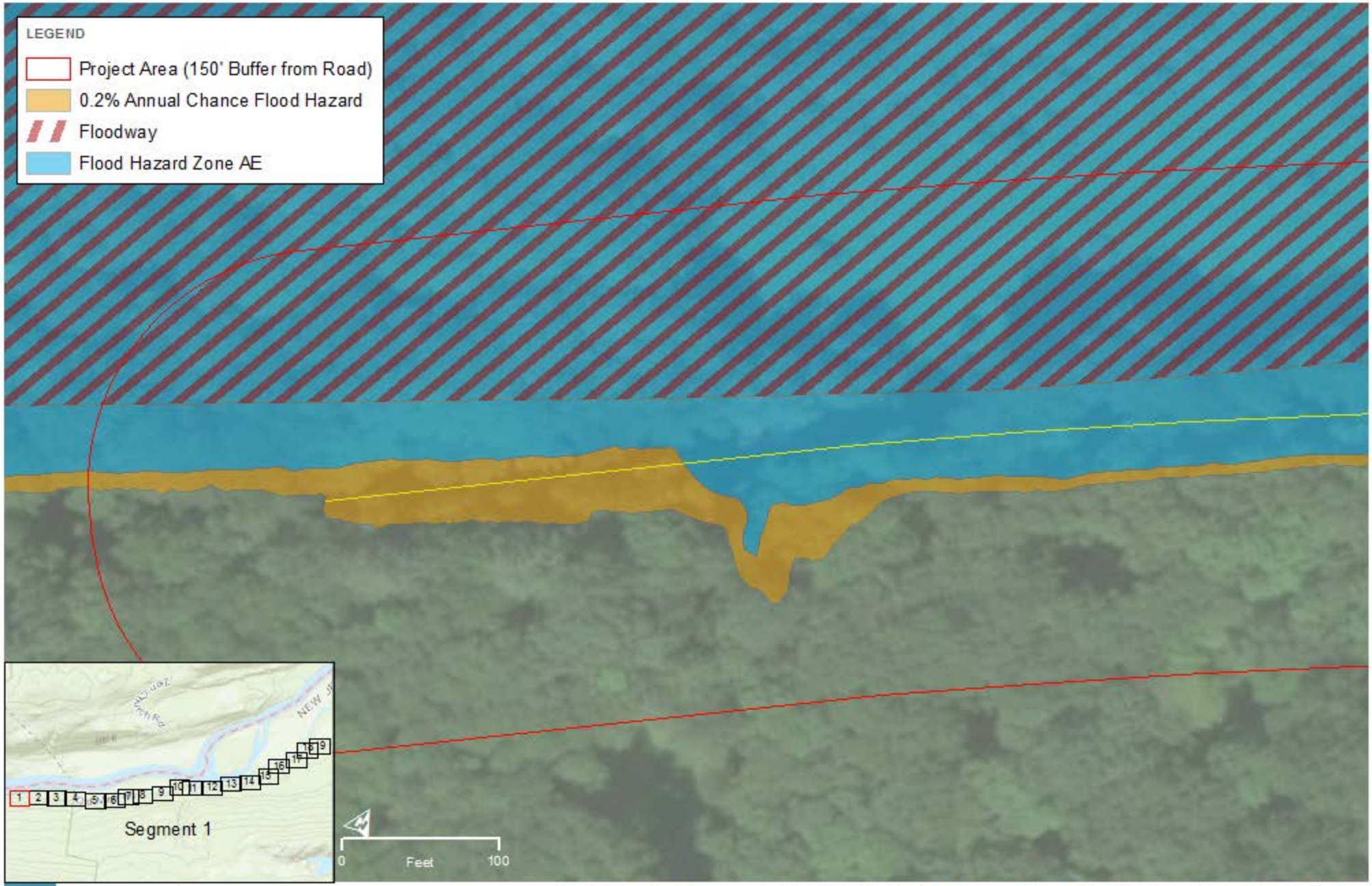


OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

NWI WETLAND MAP

FIGURE 4-41

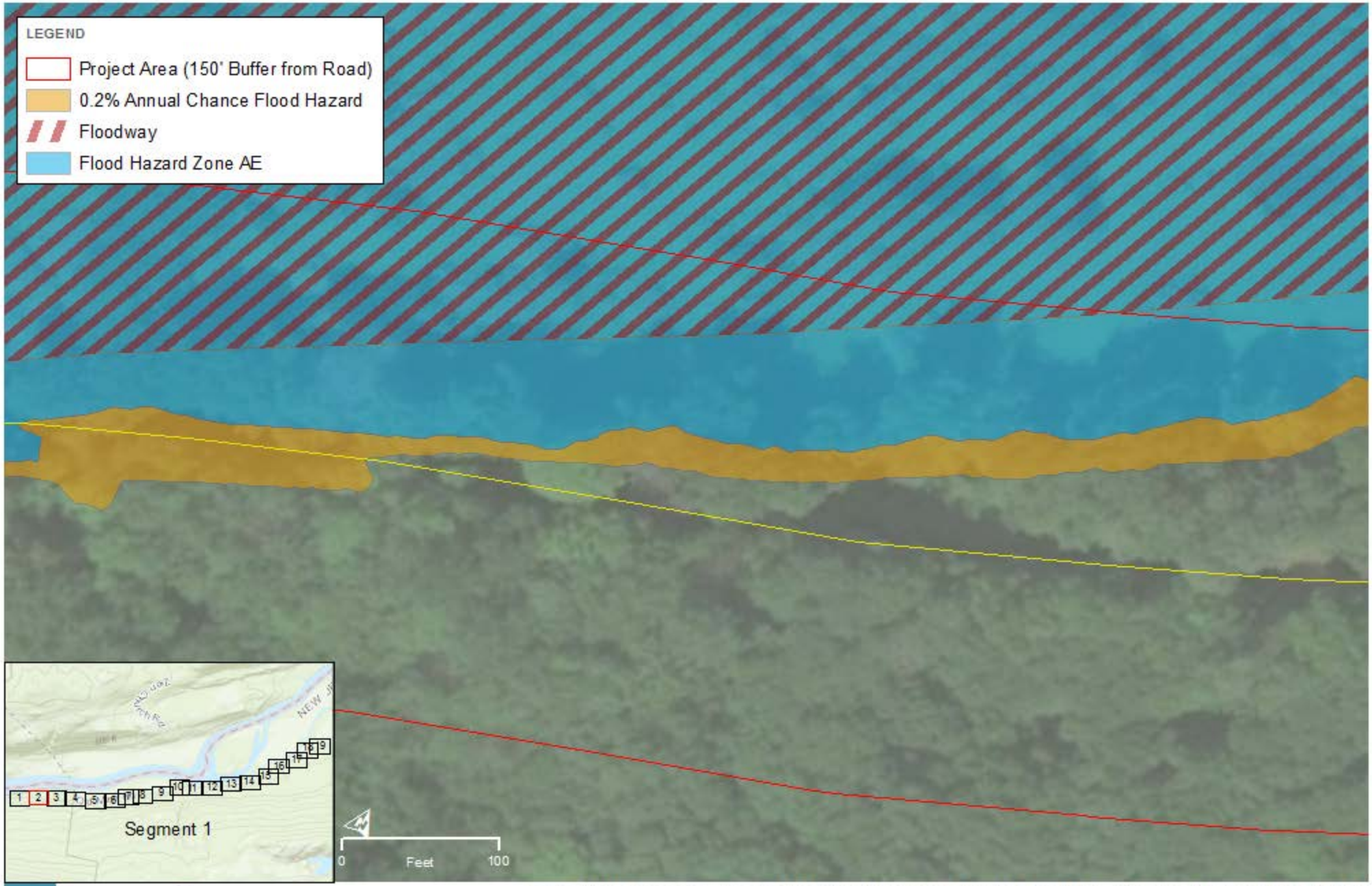
FIGURE 5. FEMA FLOOD HAZARD MAPS



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

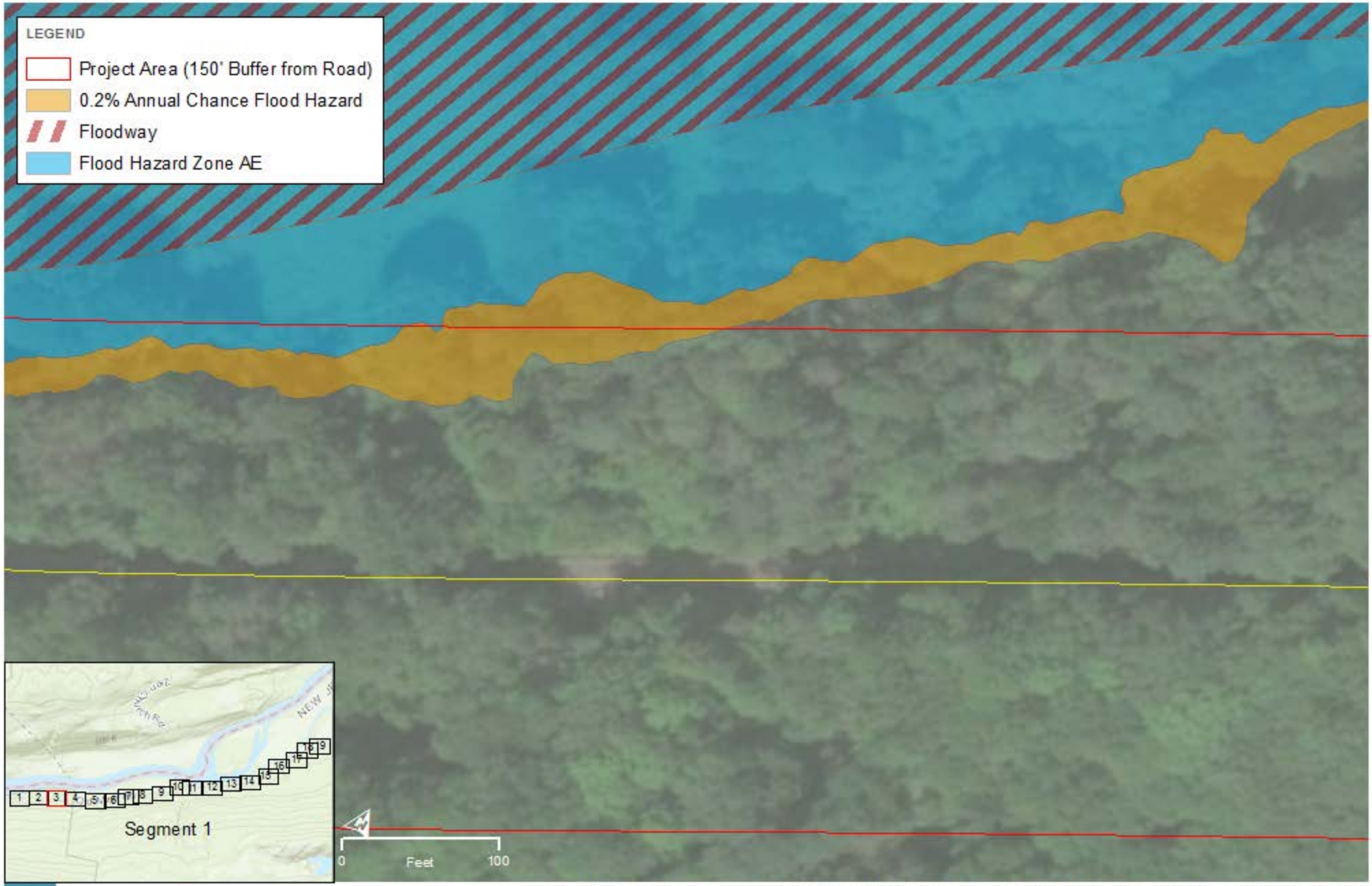
FIGURE 5-1



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

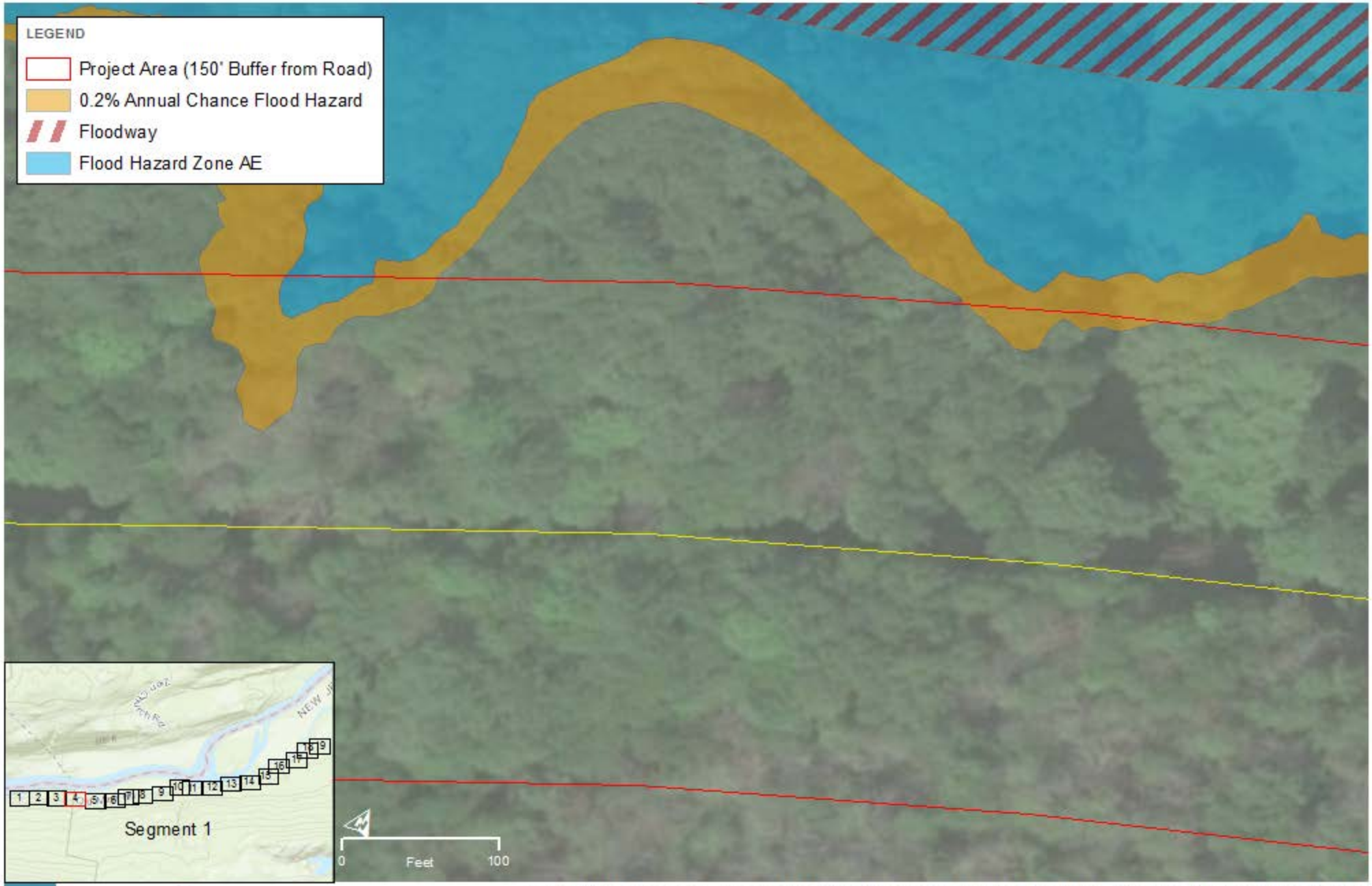
FIGURE 5-2



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

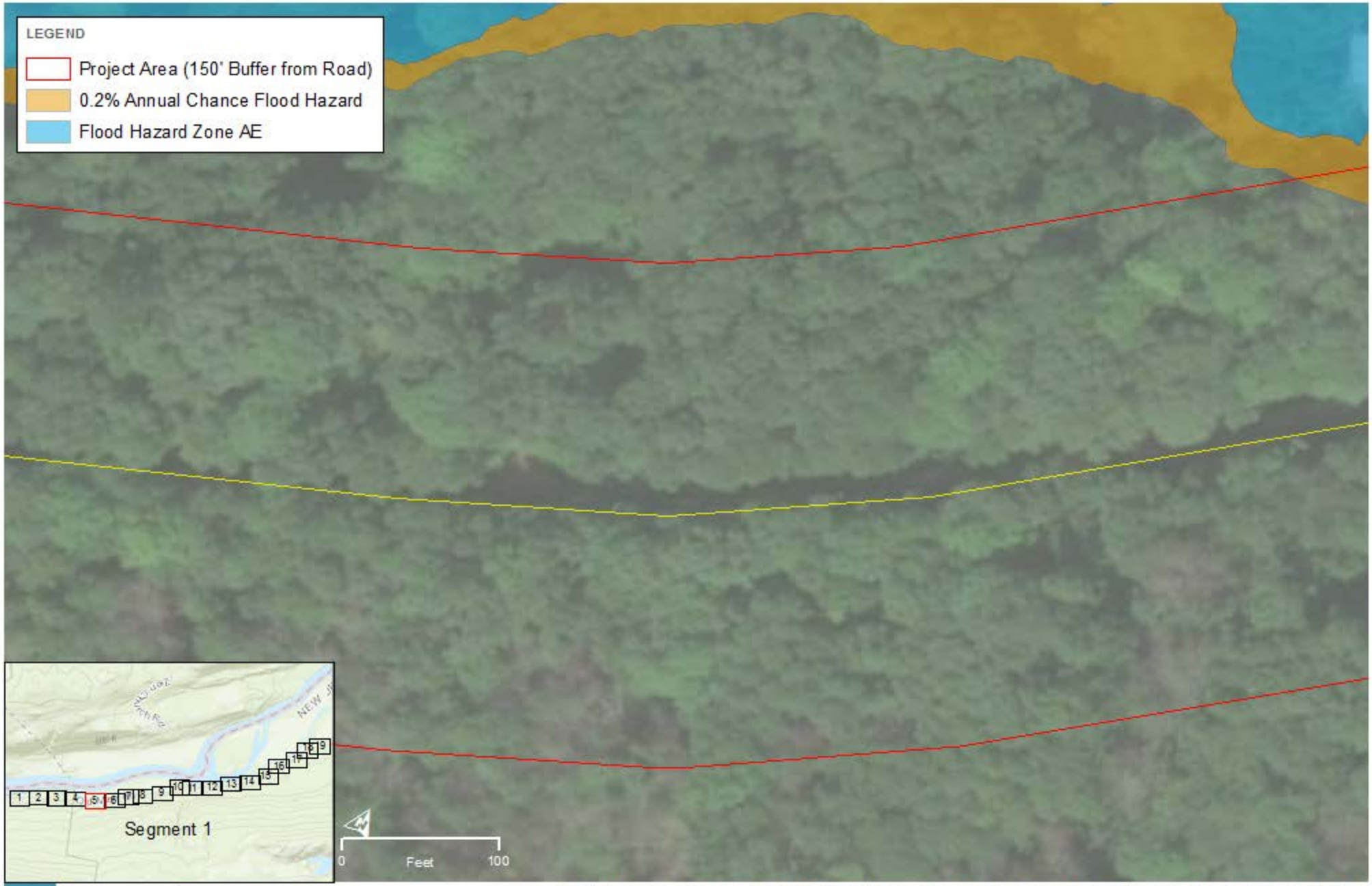
FIGURE 5-3



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

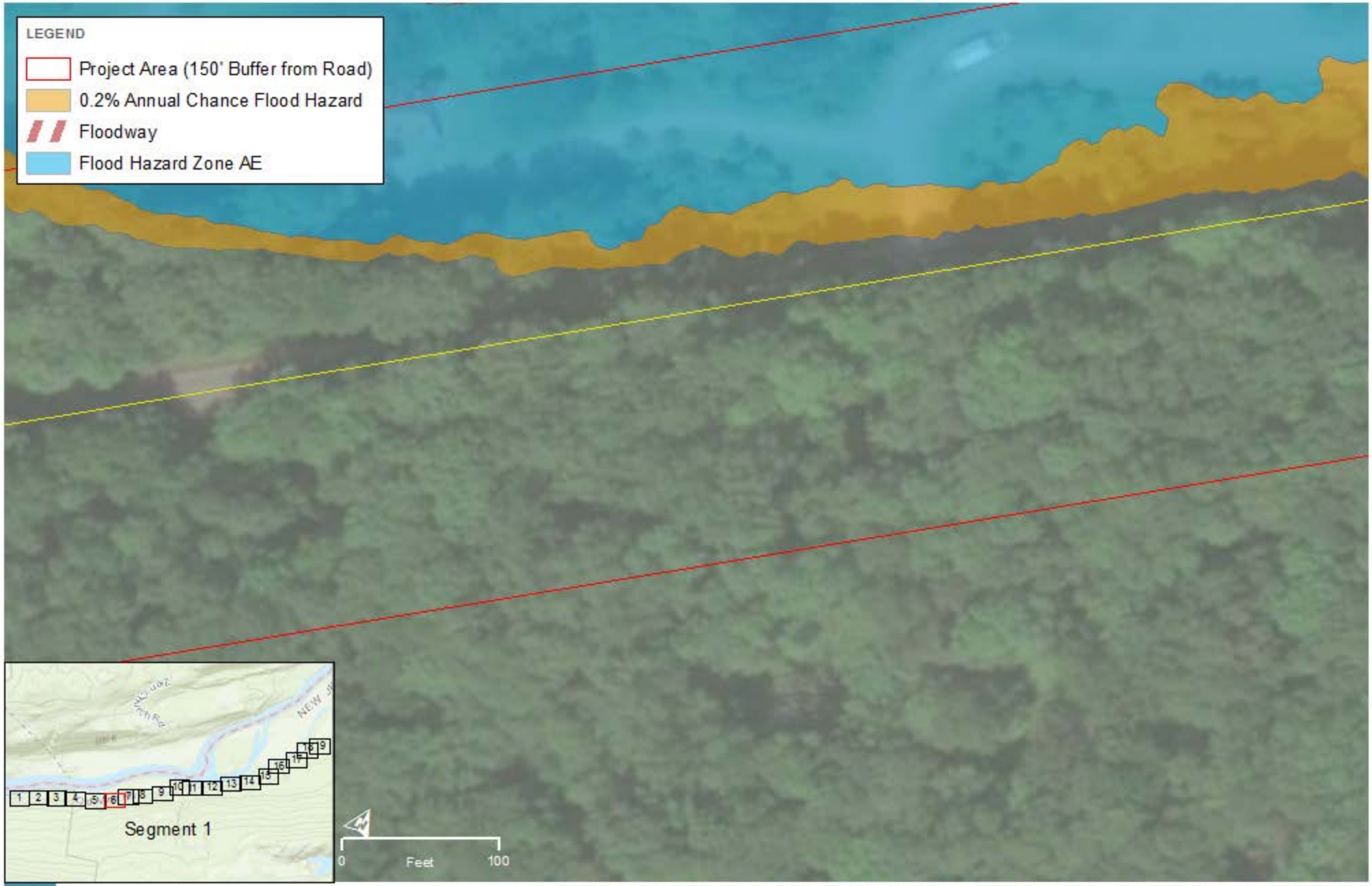
FIGURE 5-4



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

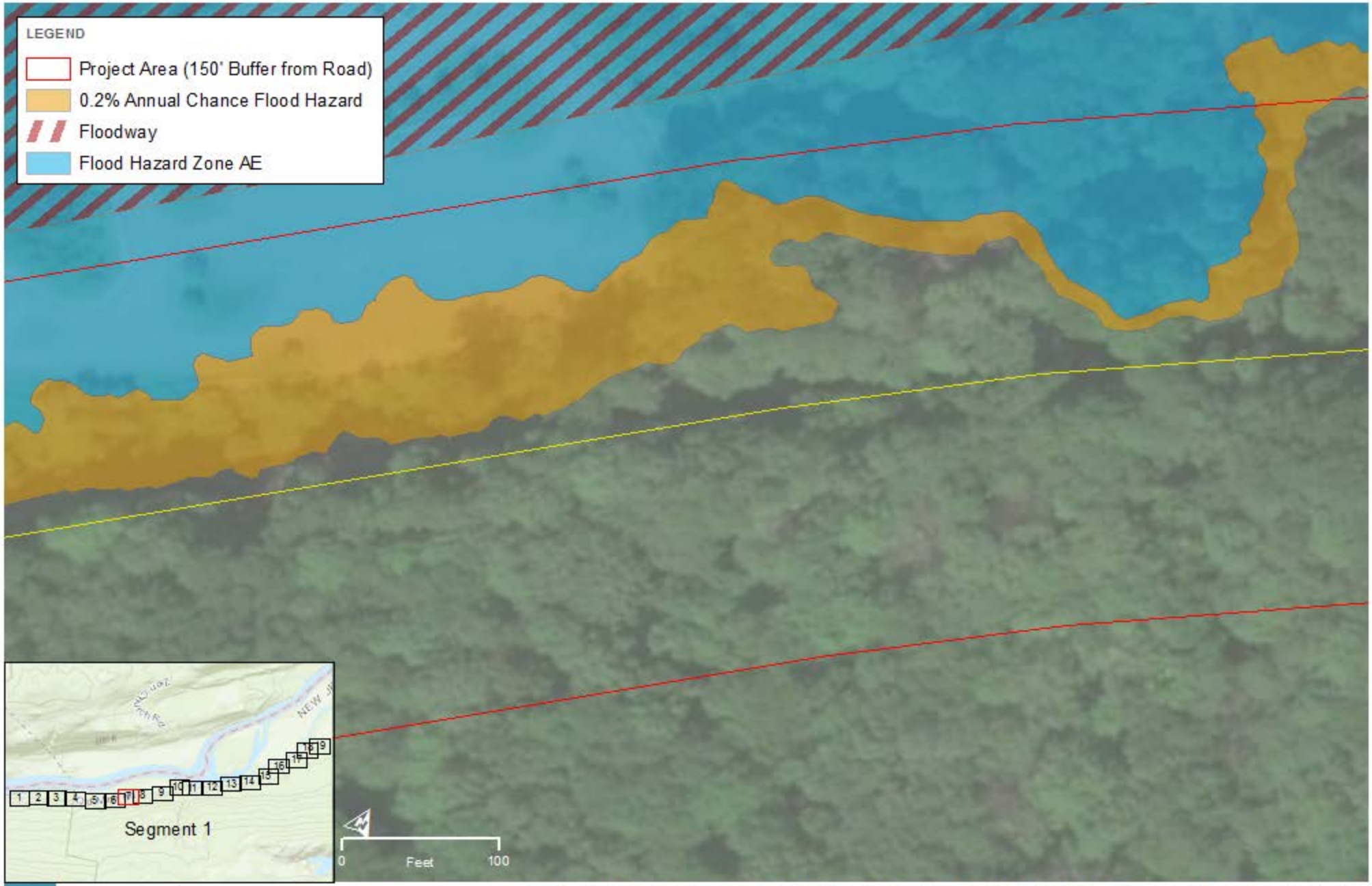
FIGURE 5-5



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

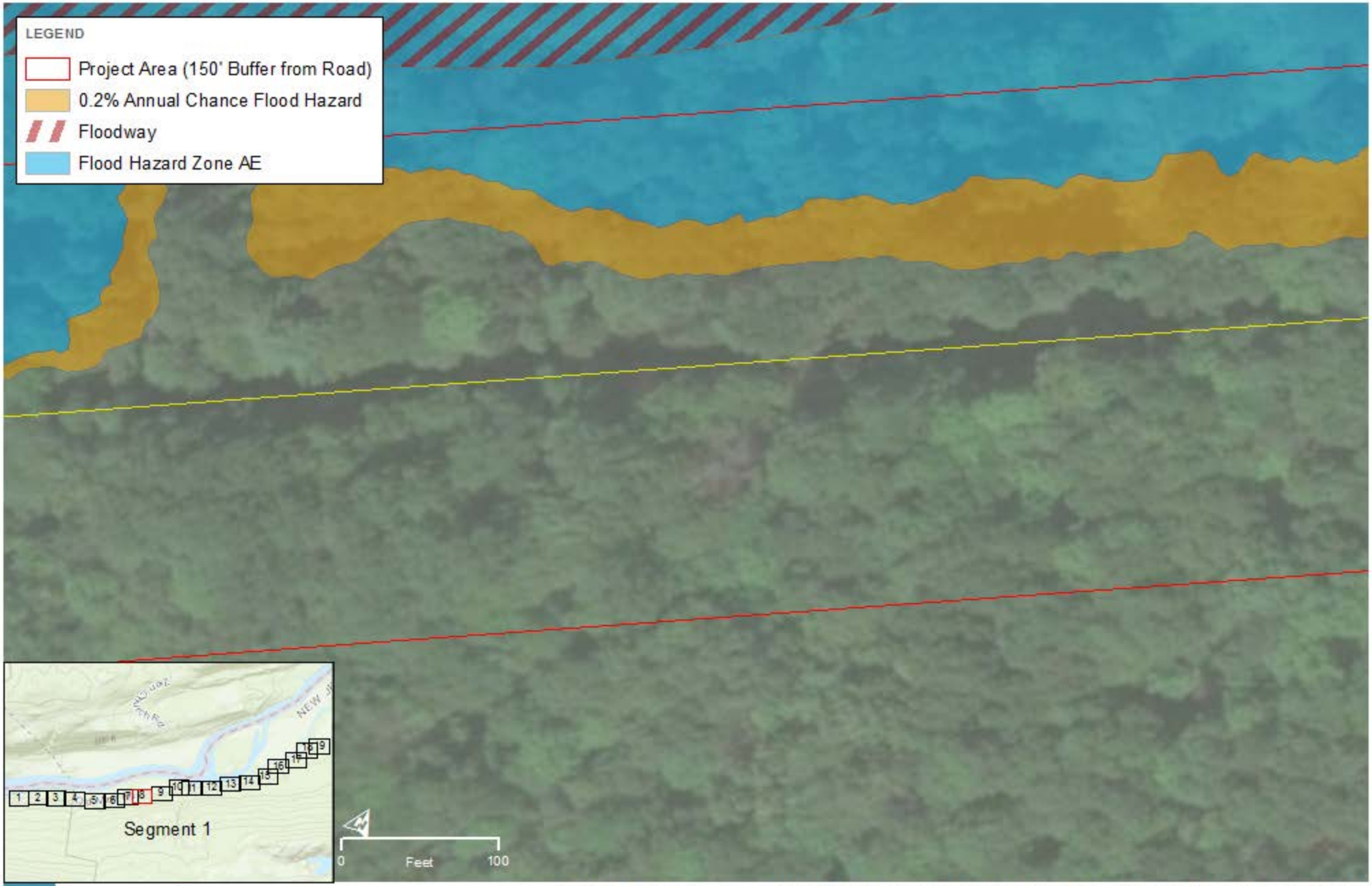
FIGURE 5-6



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

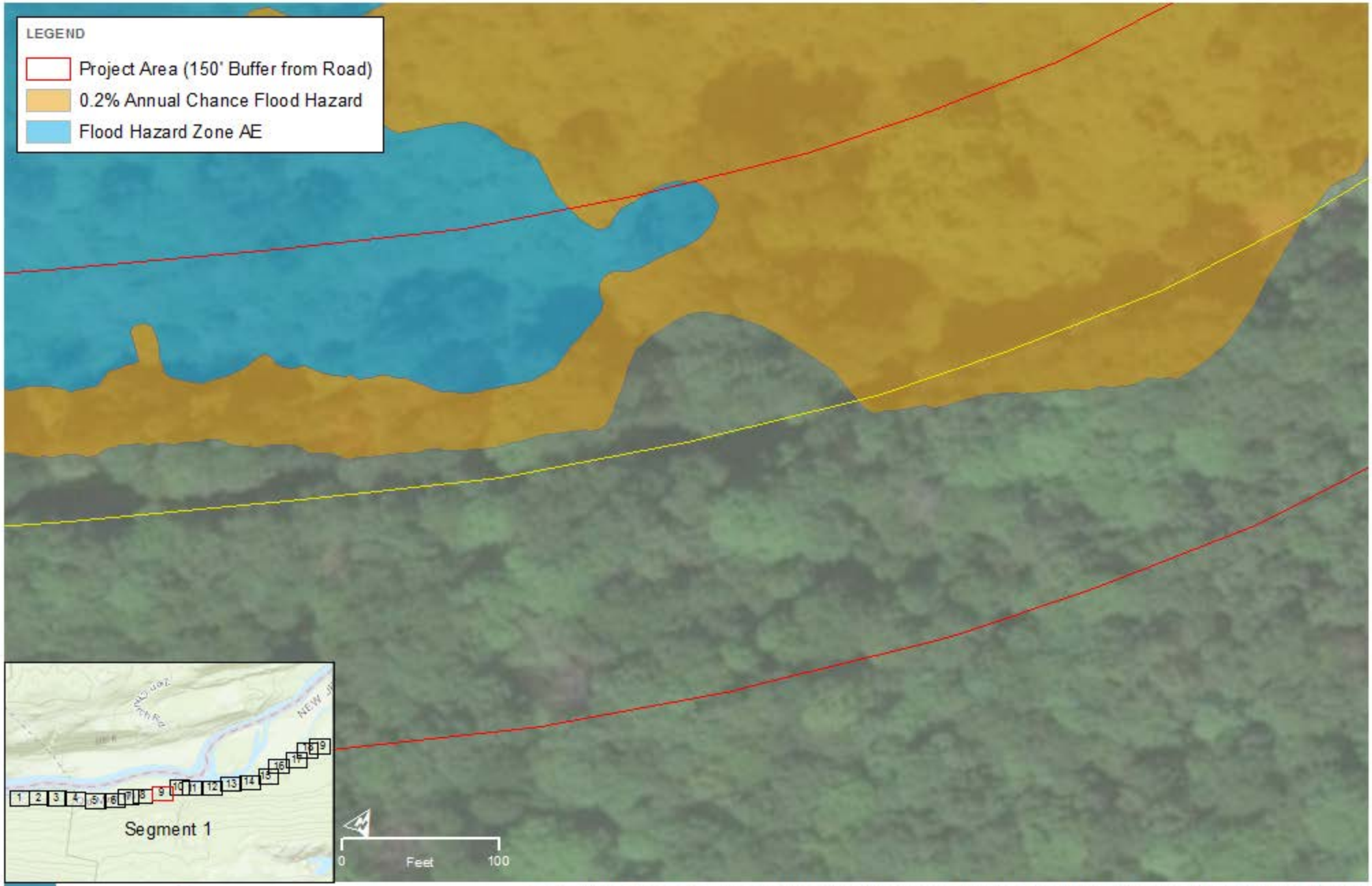
FIGURE 5-7



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

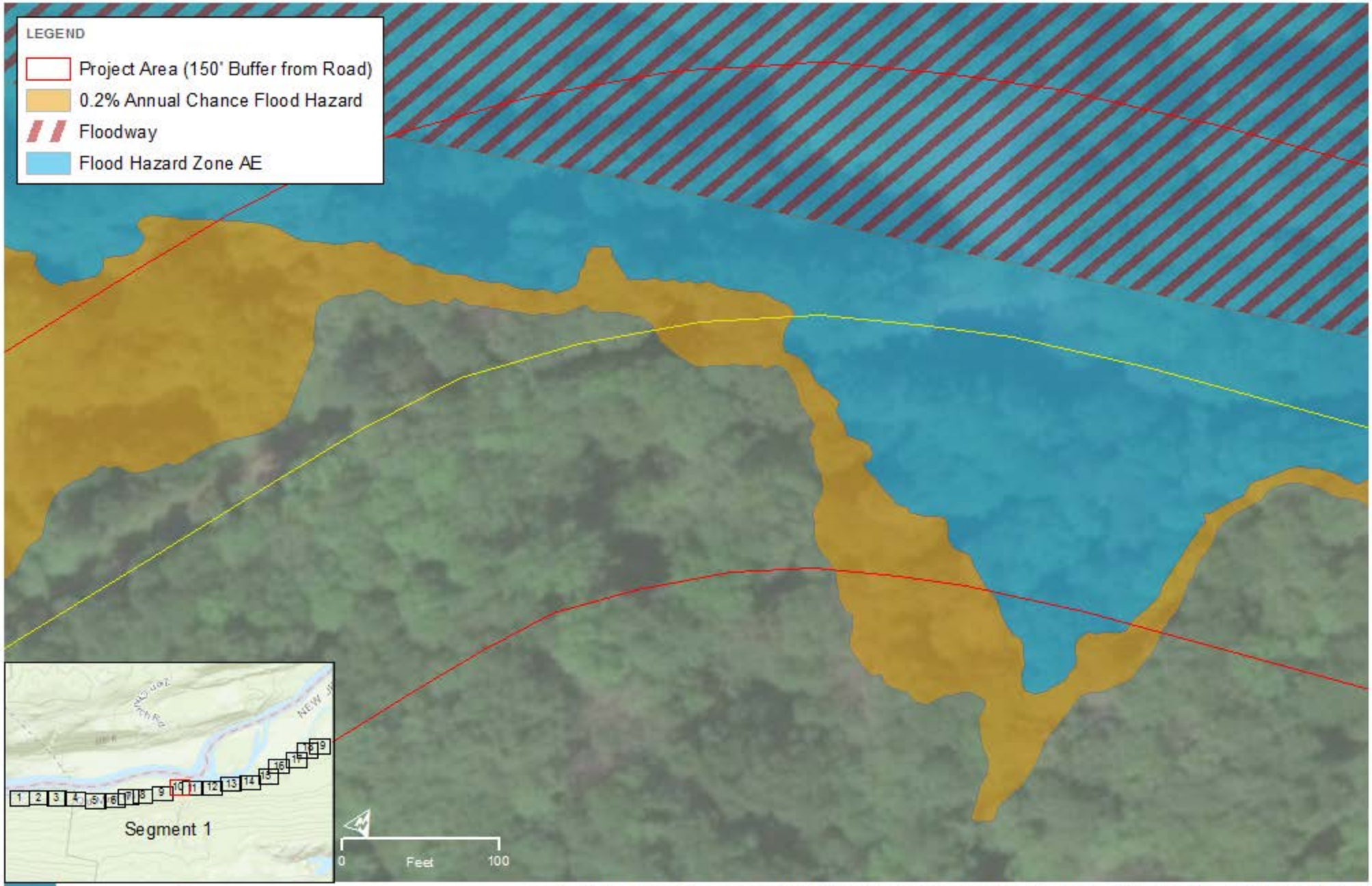
FIGURE 5-8



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

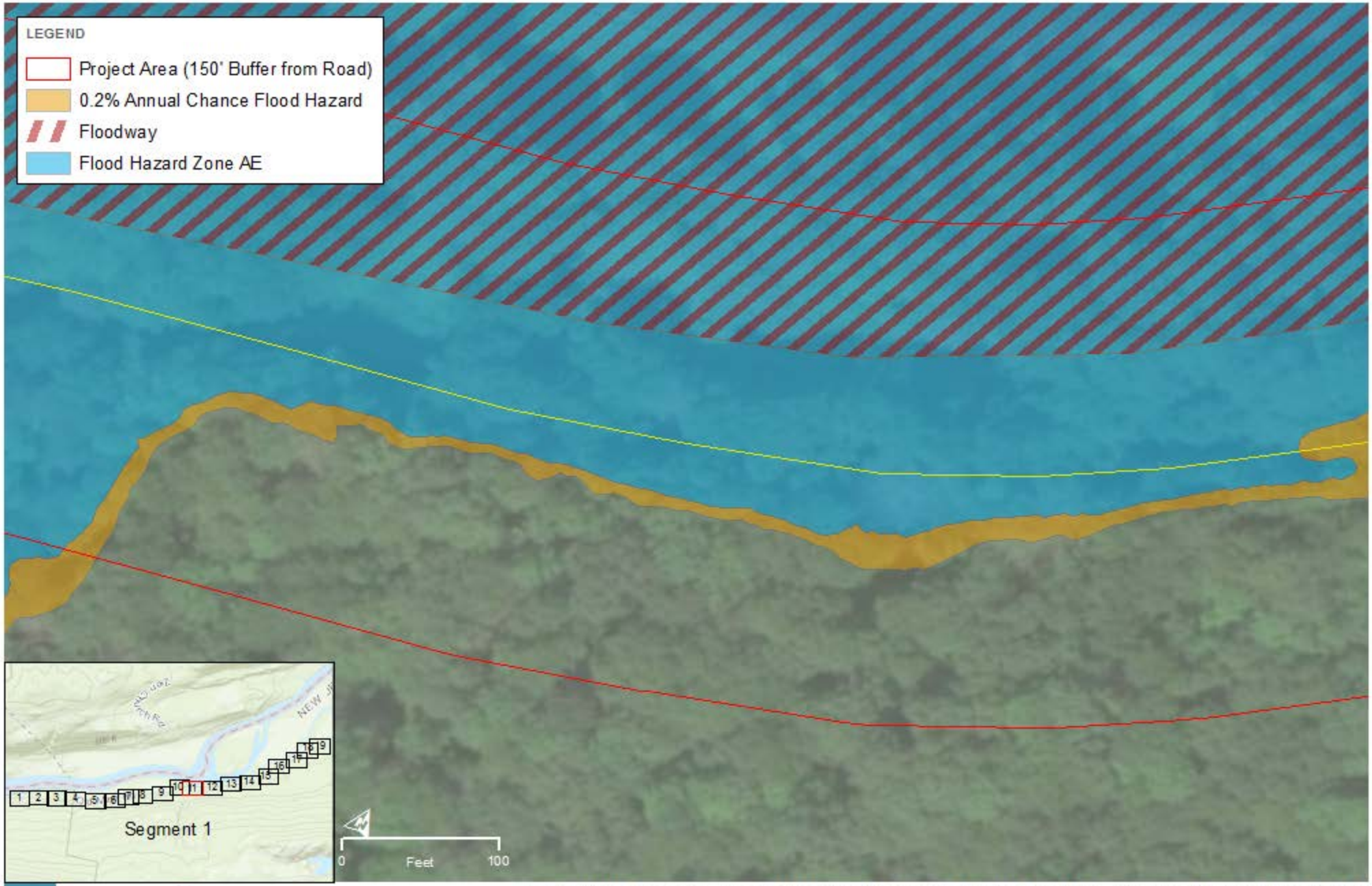
FIGURE 5-9



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

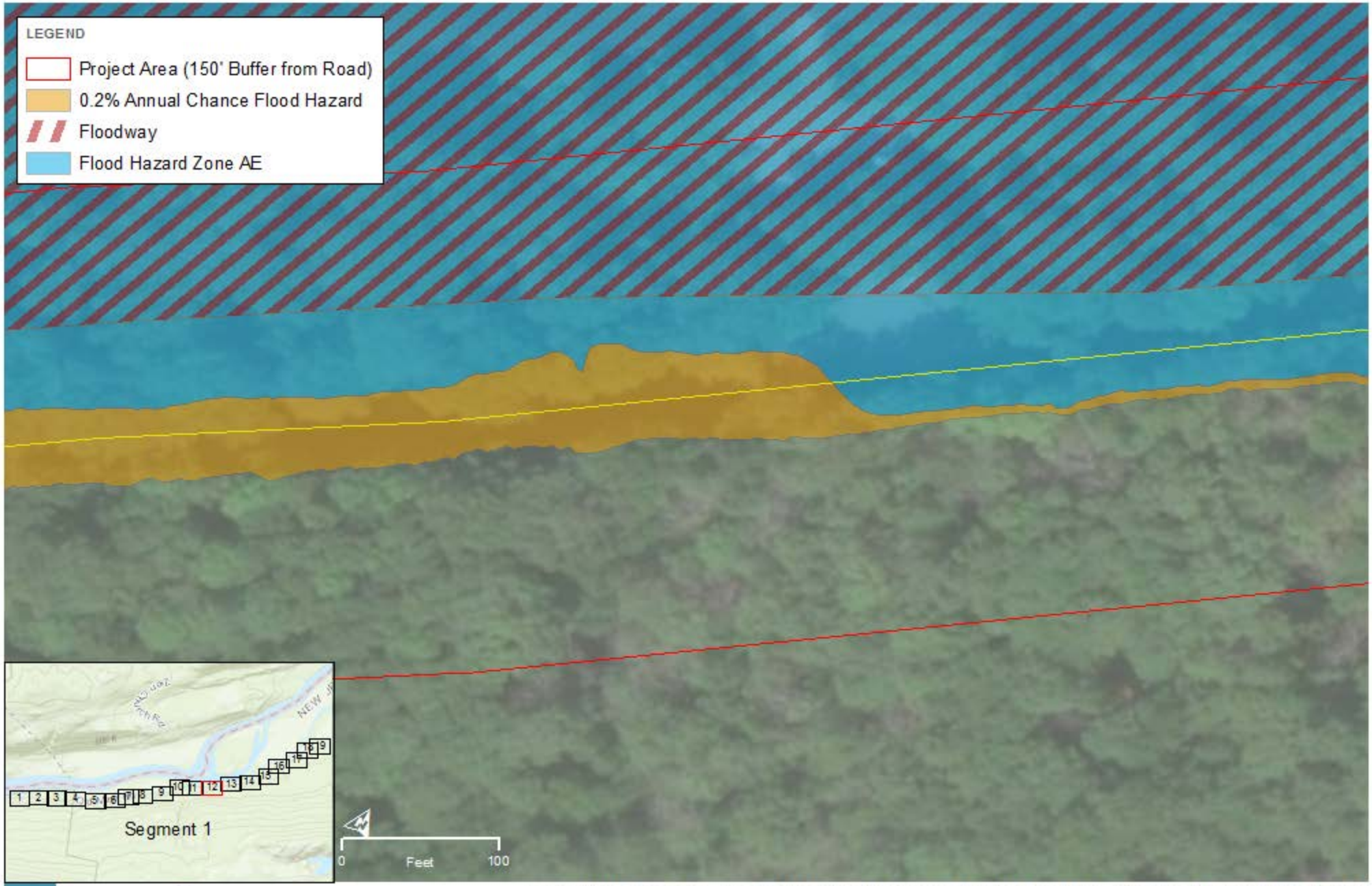
FIGURE 5-10



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

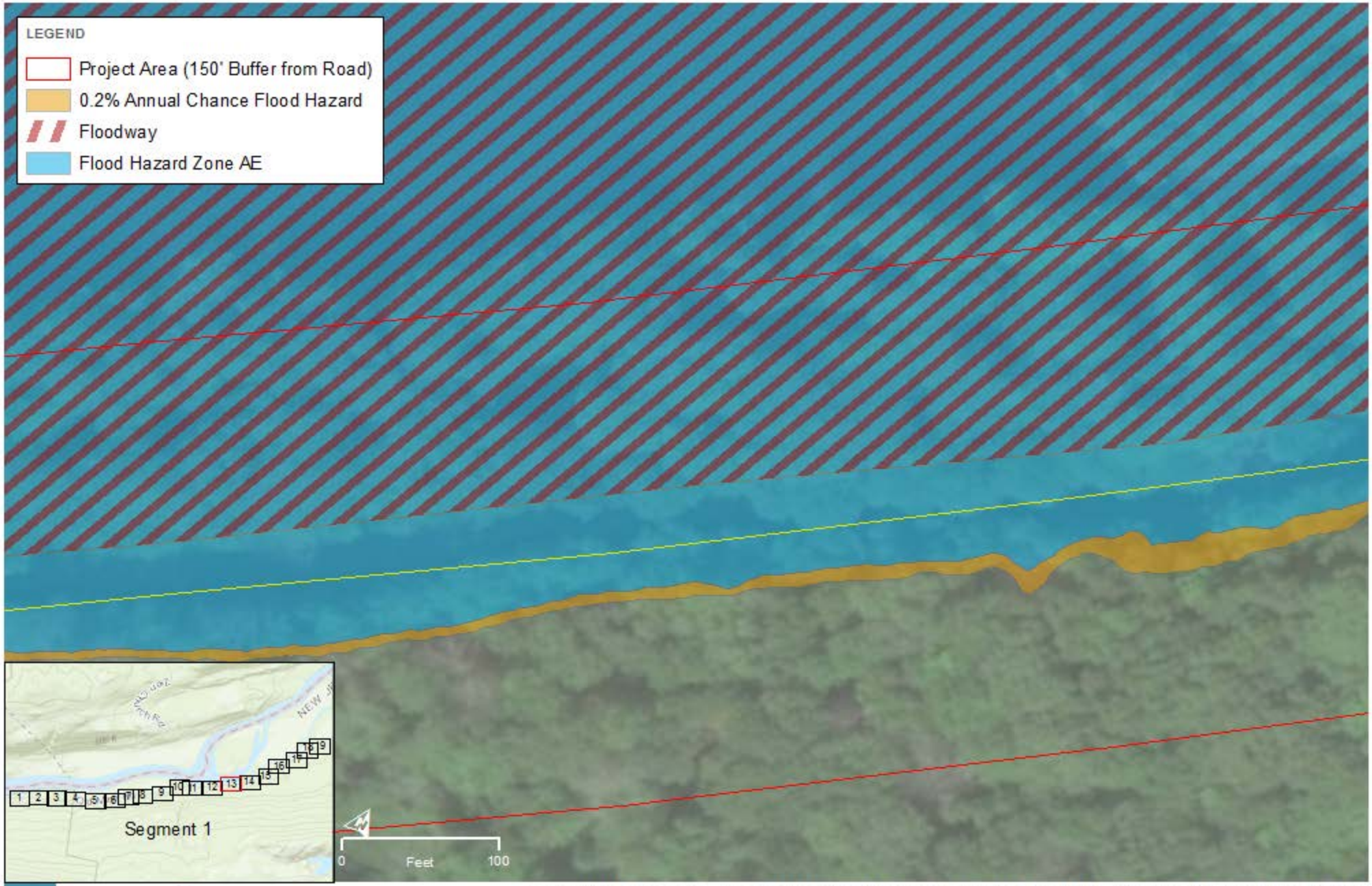
FIGURE 5-11



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

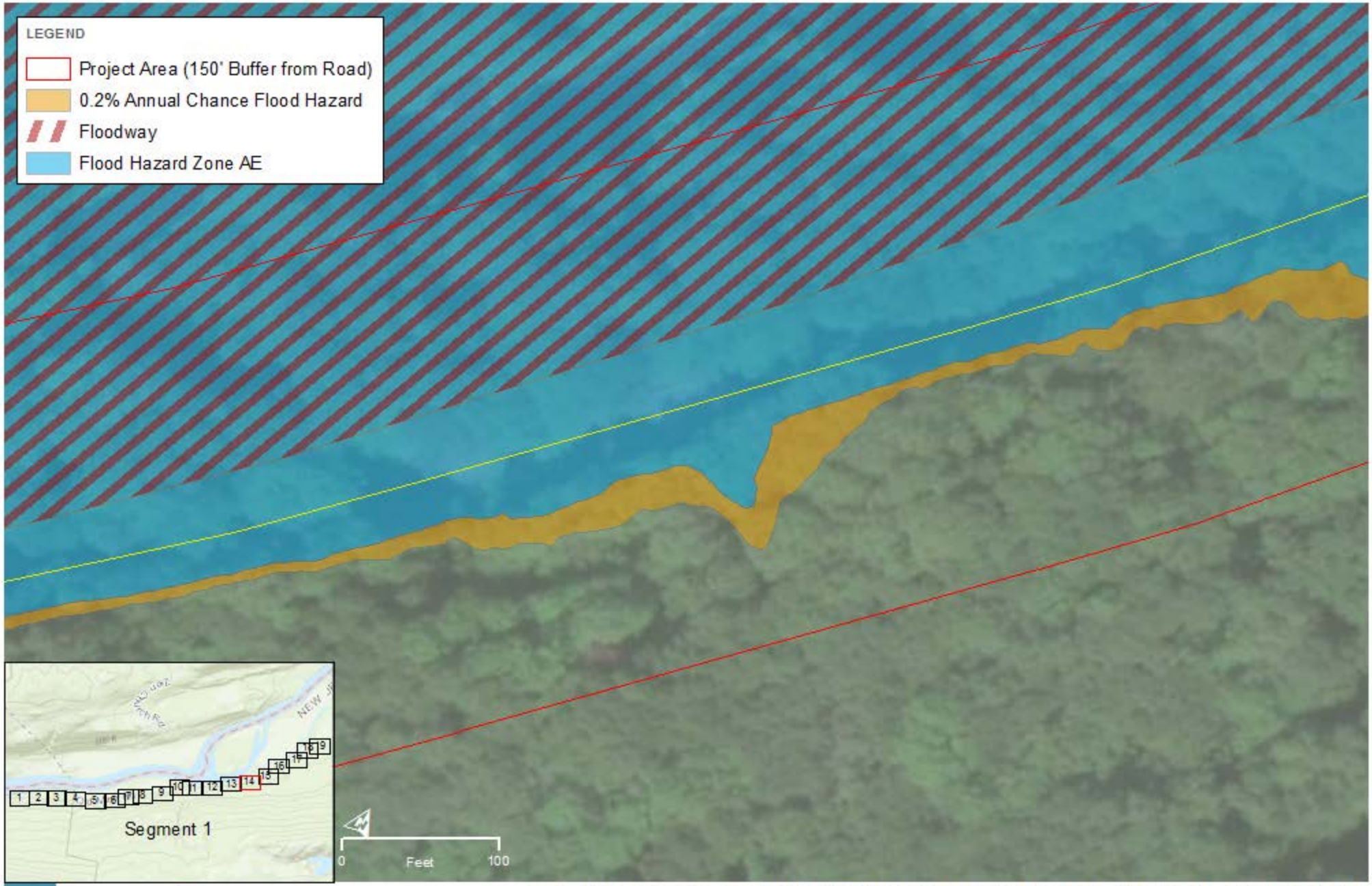
FIGURE 5-12



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

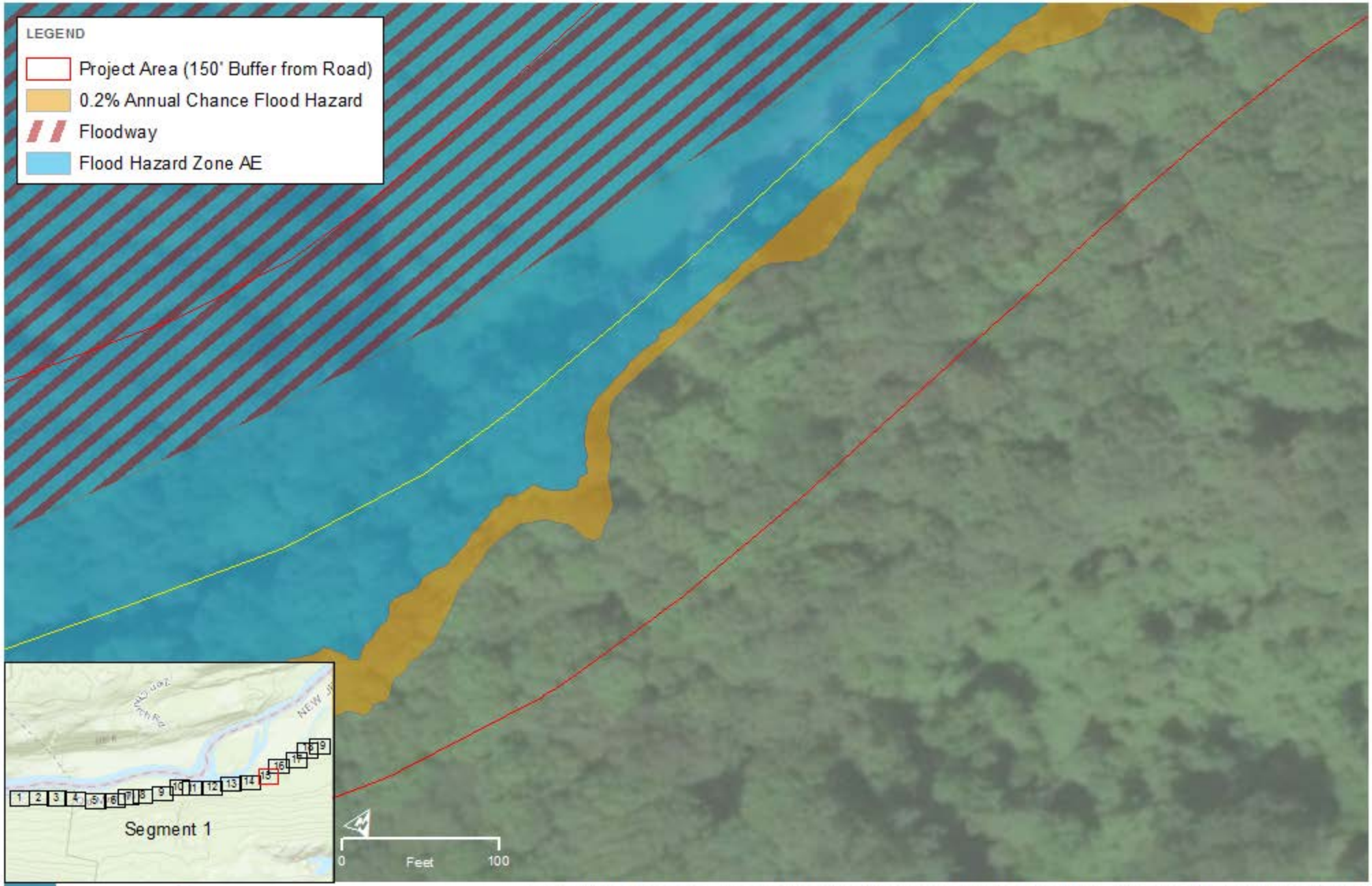
FIGURE 5-13



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

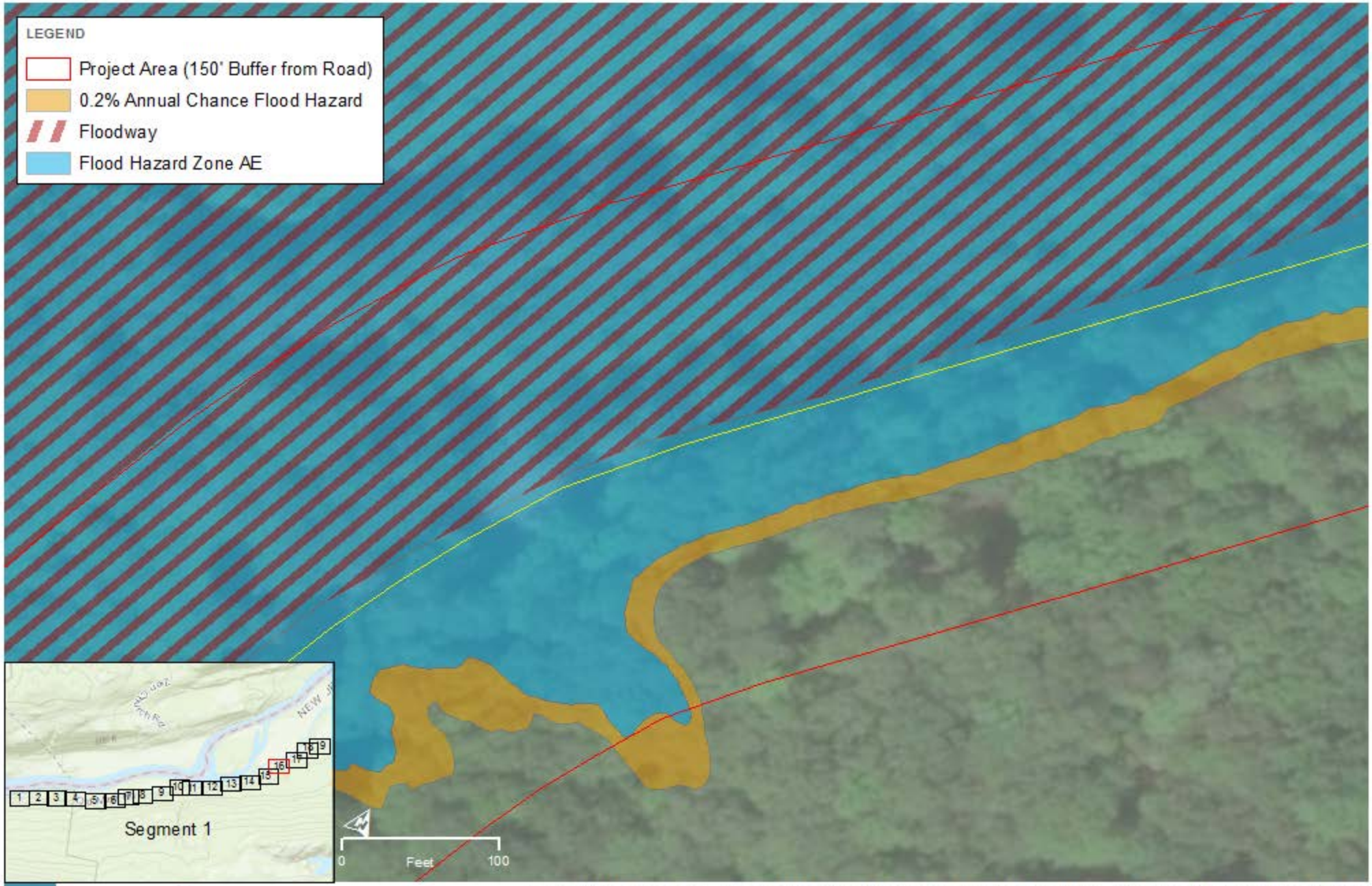
FIGURE 5-14



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

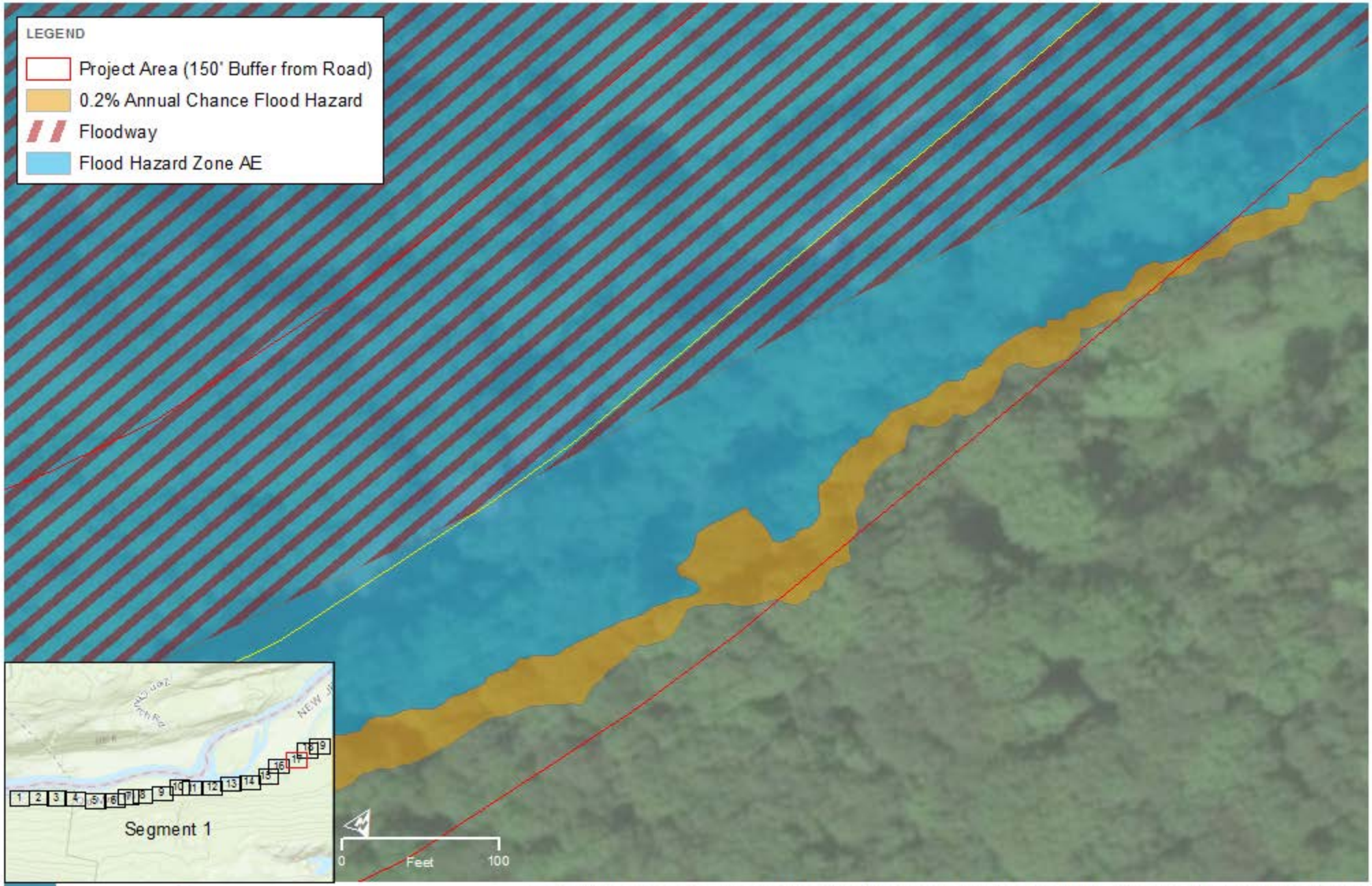
FIGURE 5-15



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

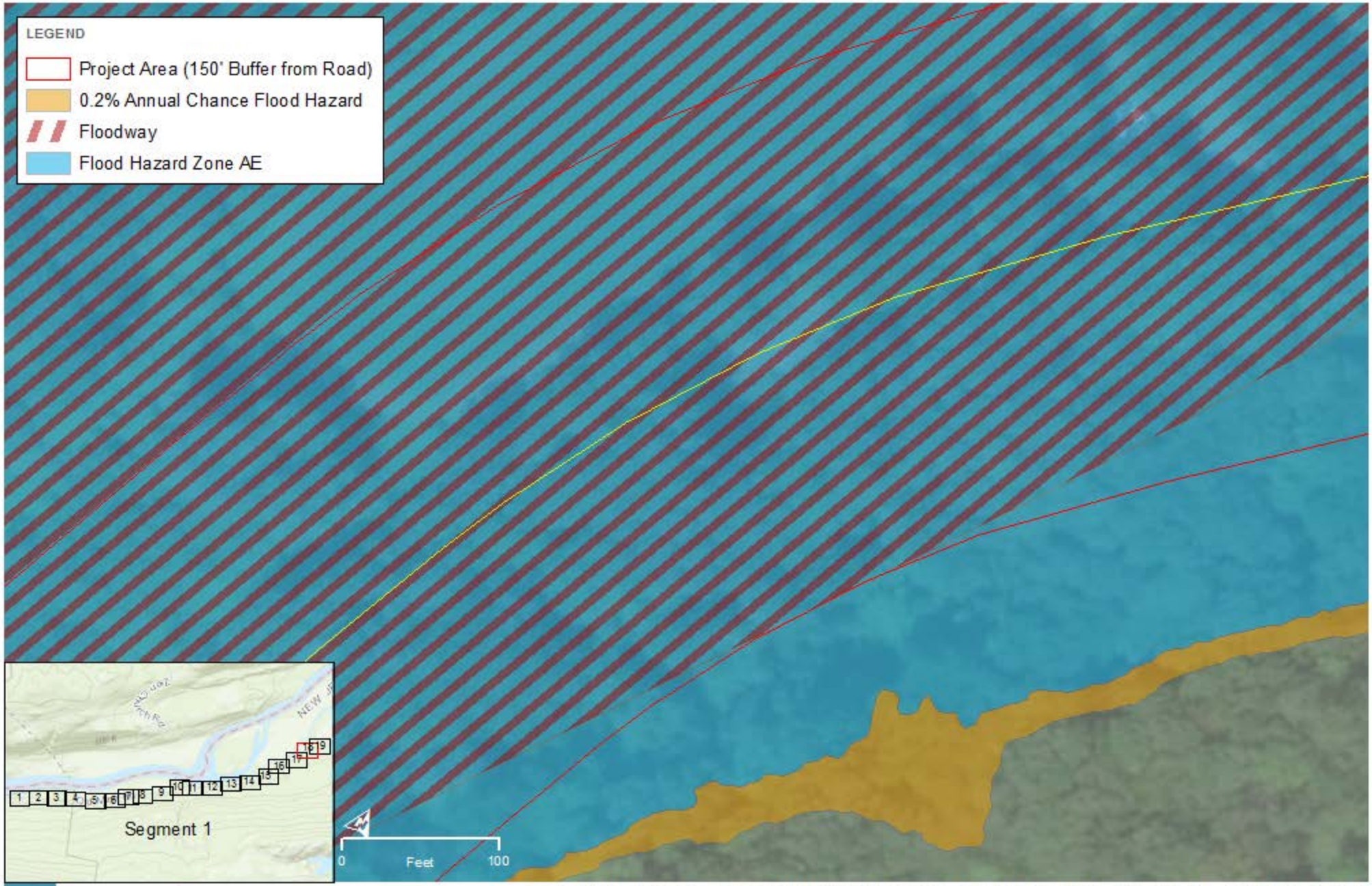
FIGURE 5-16



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

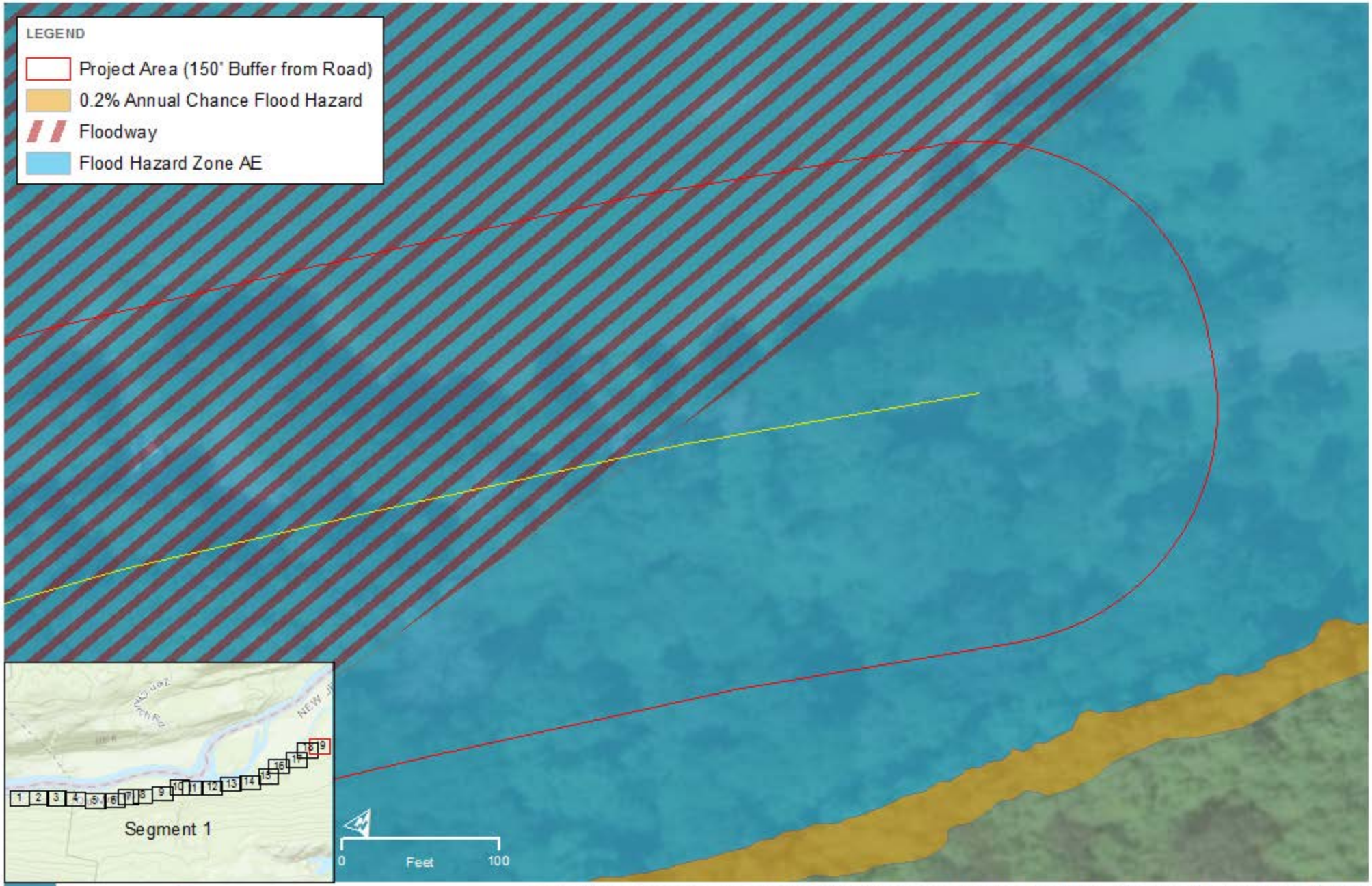
FIGURE 5-17



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-18



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

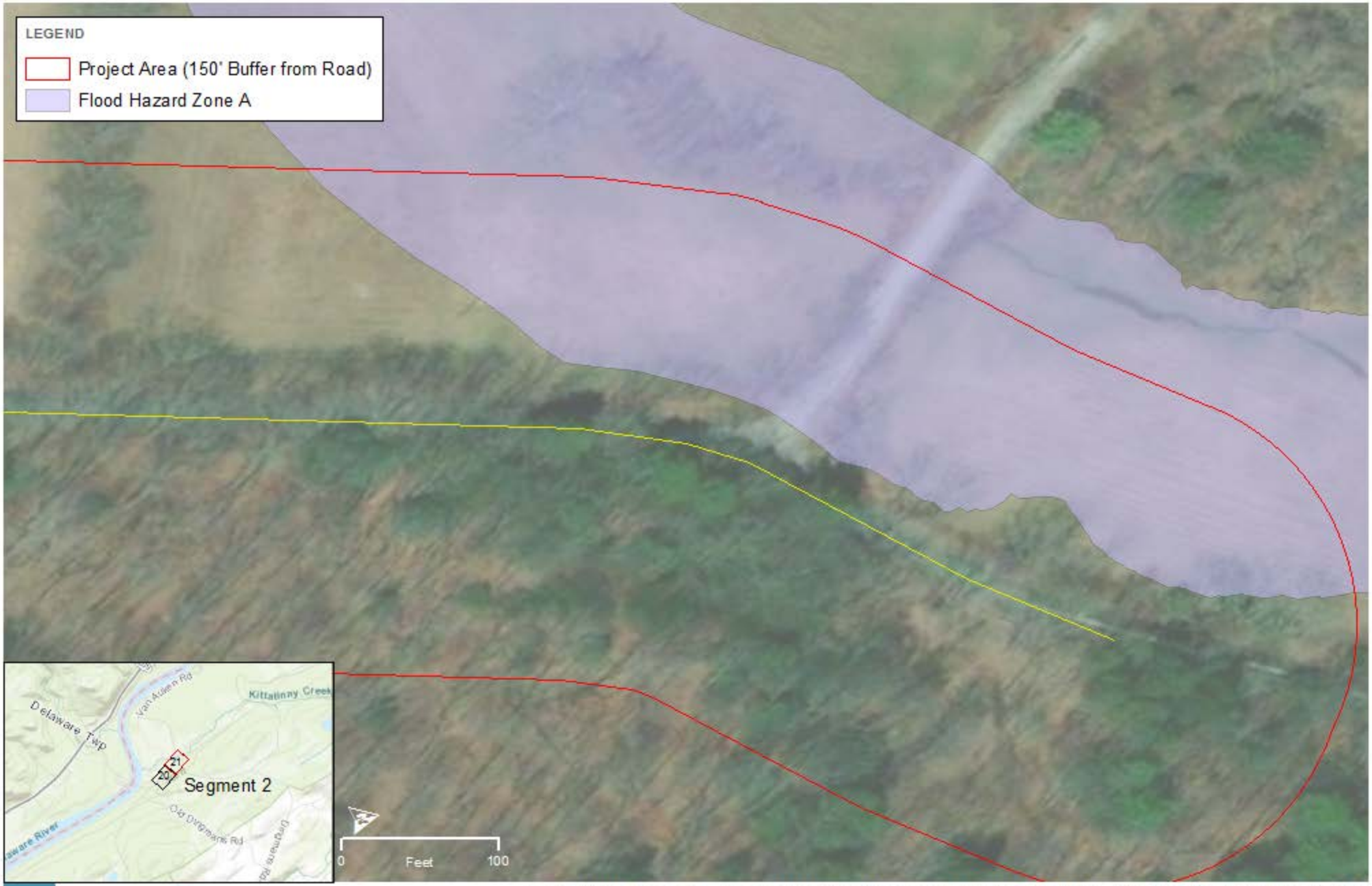
FIGURE 5-19



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-20



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-21



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-22



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-23



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-24



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-25



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-26



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-27



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-28



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-29



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-30



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-31



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-32



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-33



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-34



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-35



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-36



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-37



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-38



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

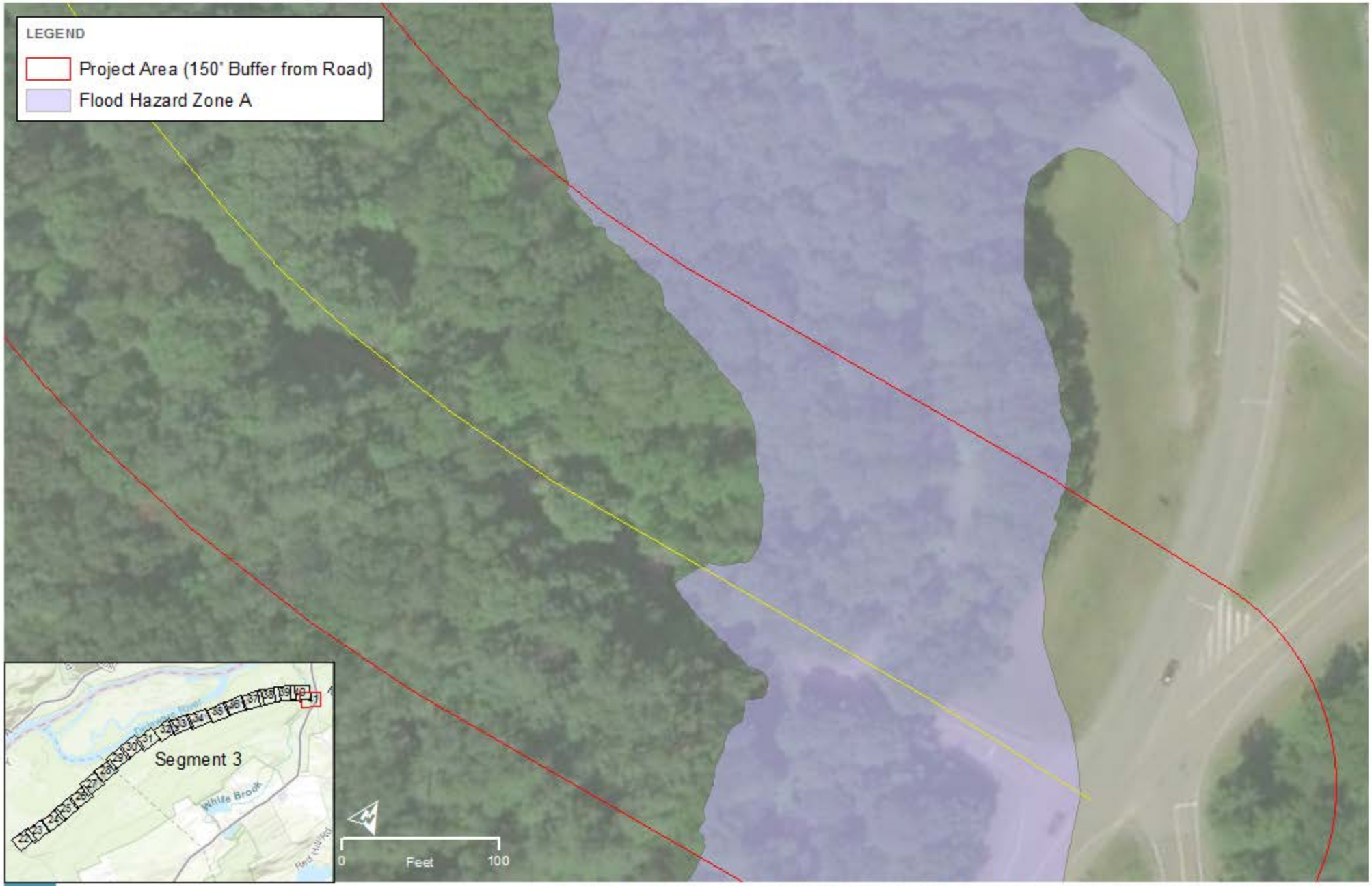
FIGURE 5-39



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-40

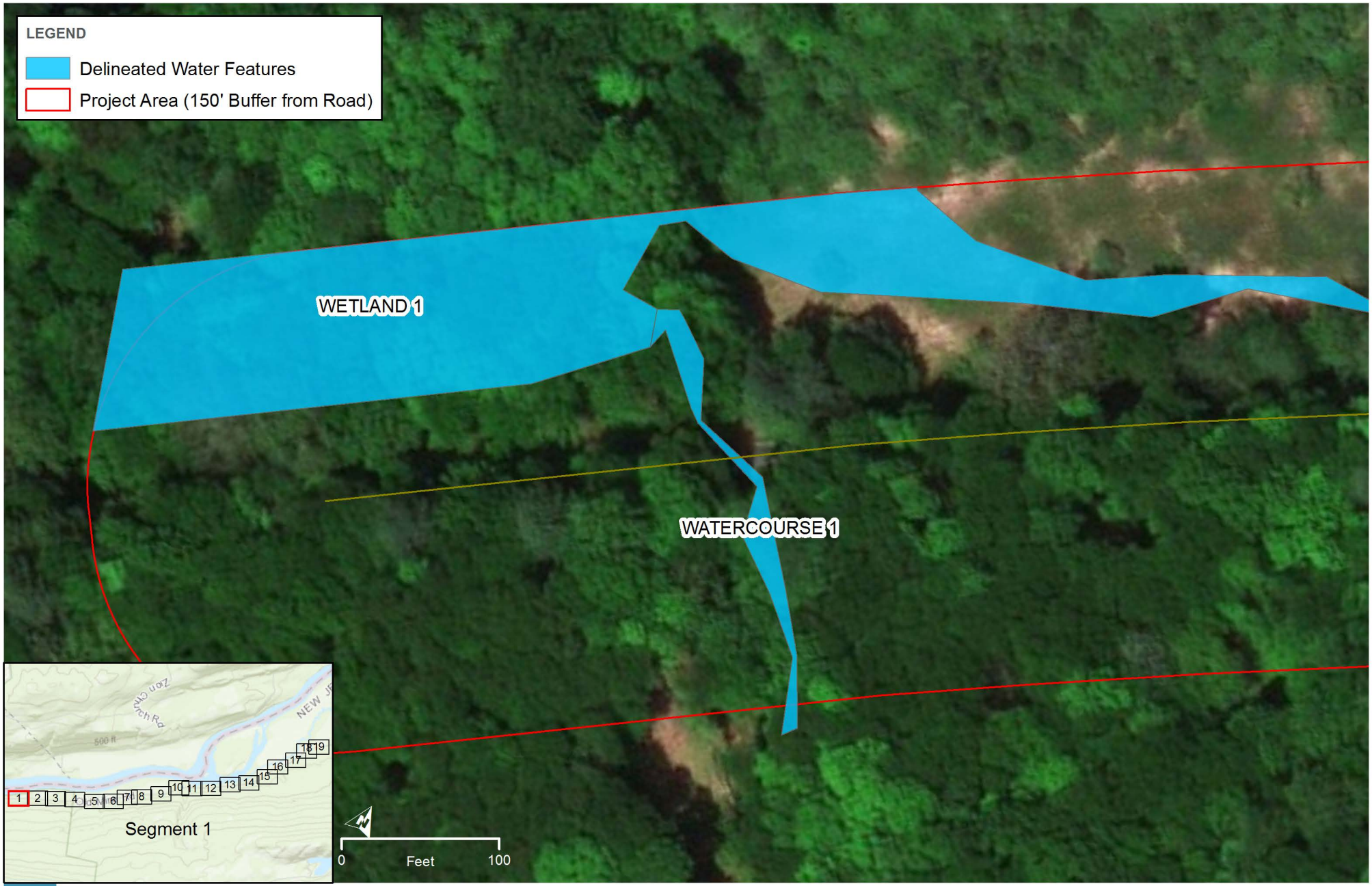


OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FEMA FLOOD HAZARD MAP

FIGURE 5-41

FIGURE 6. FIELD SURVEY WETLAND DELINEATION MAPS



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

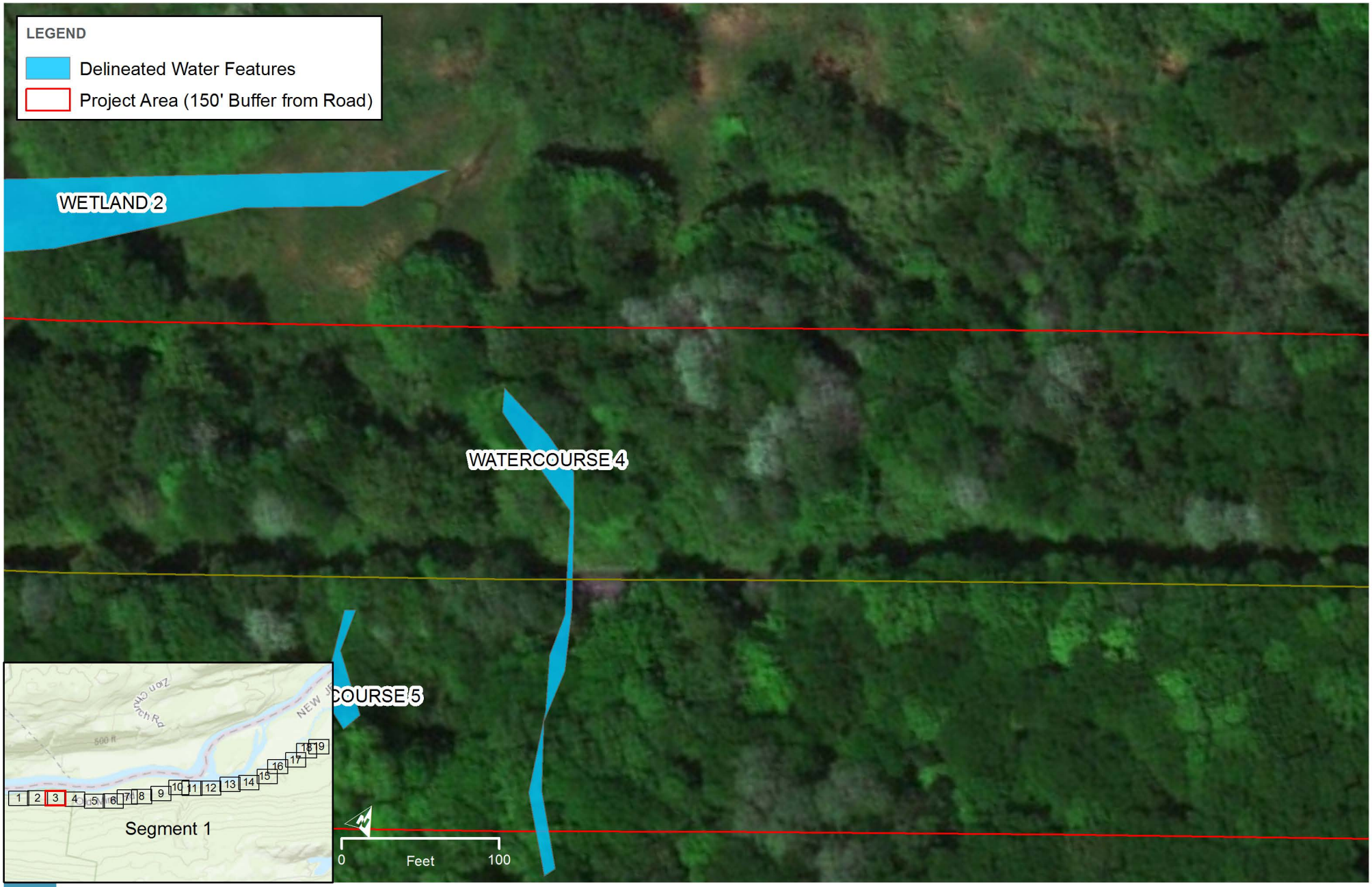
FIGURE 6-1



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-2



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-3



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-4



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-5



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-6



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-7



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-8



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-9



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-10



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-11



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-12



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-13



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-14



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-15



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

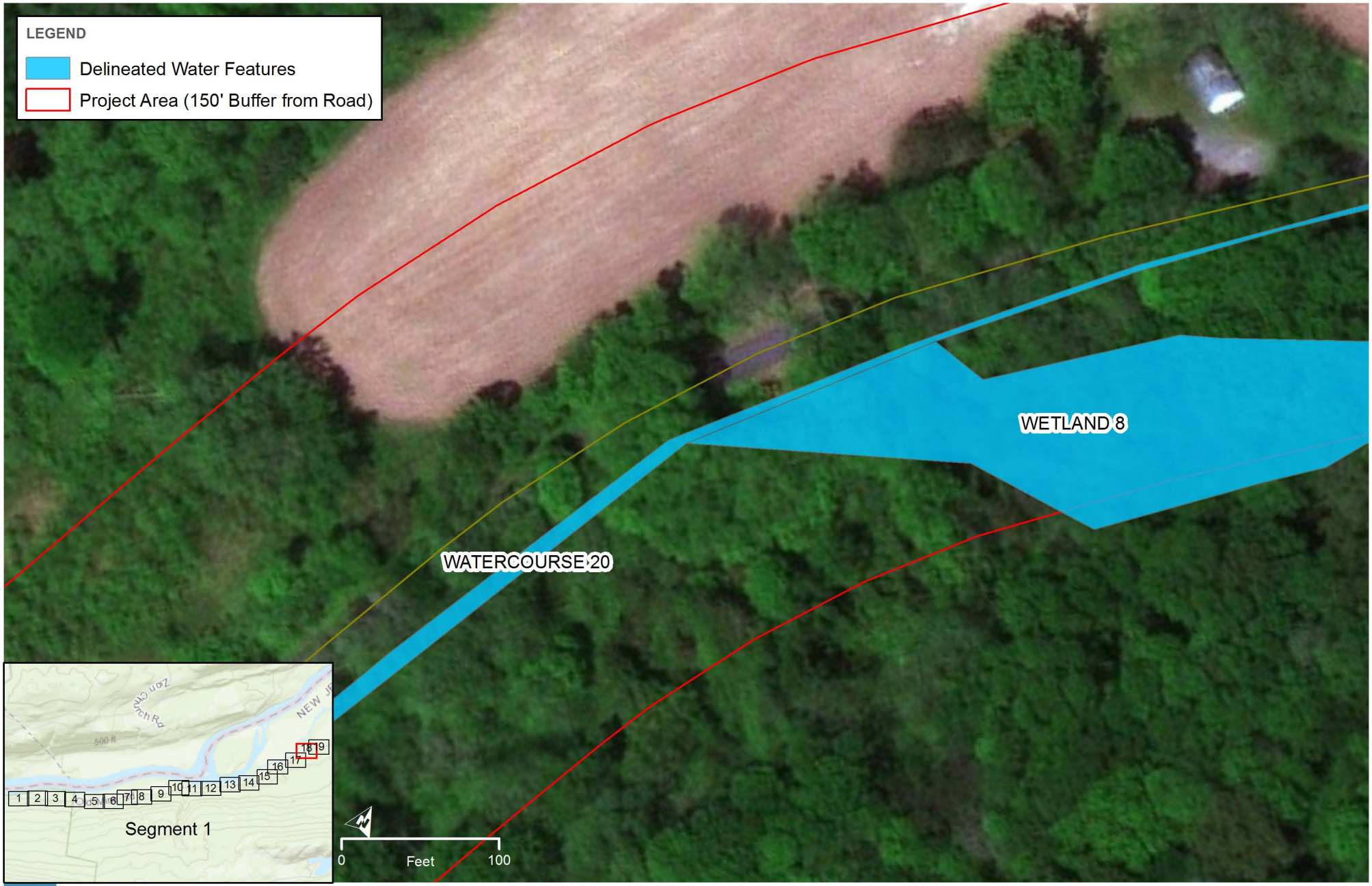
FIGURE 6-16



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-17



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-18



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-19



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-20



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-21



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-22



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-23



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

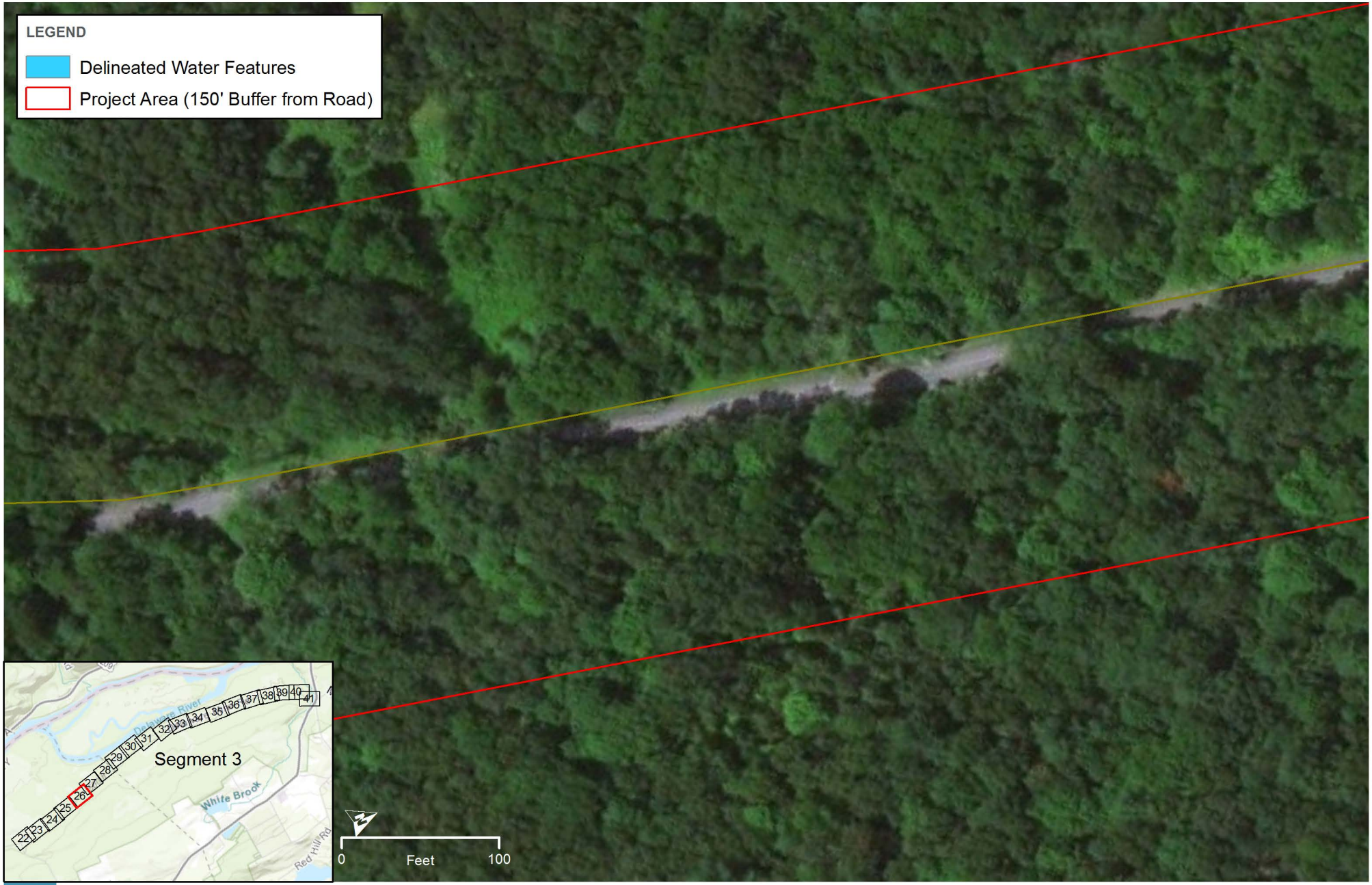
FIGURE 6-24



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-25



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-26



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

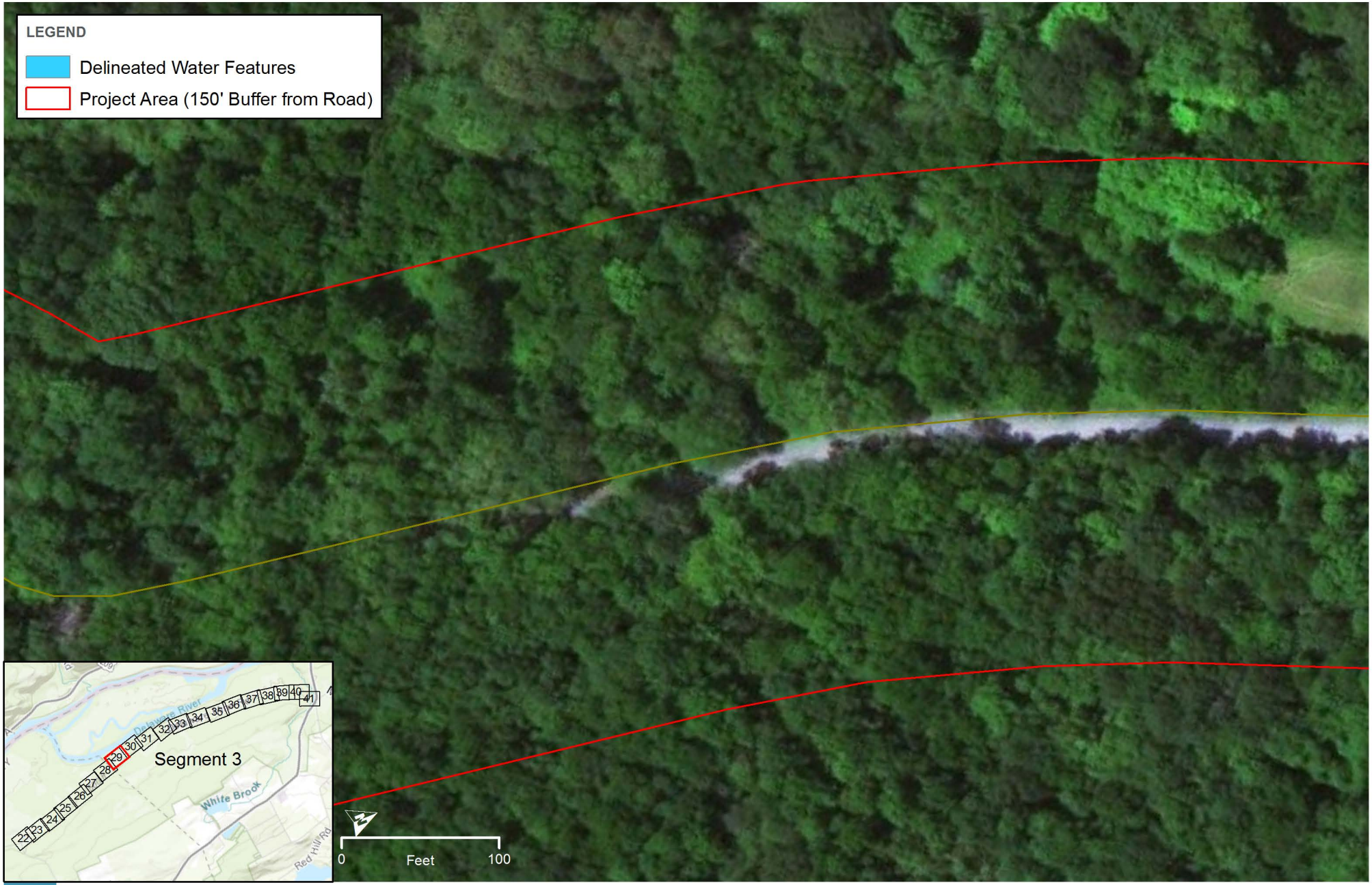
FIGURE 6-27



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-28



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-29



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

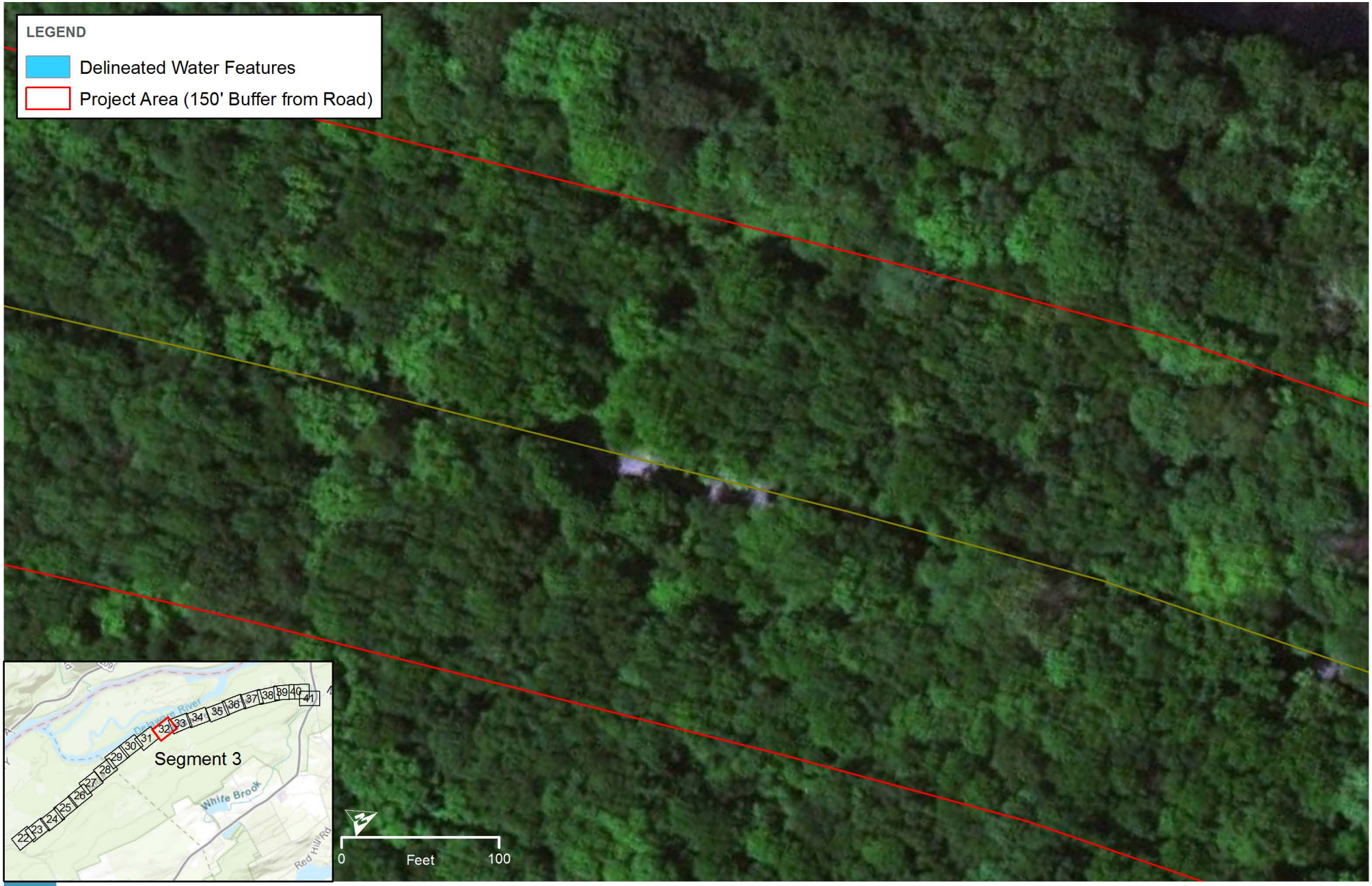
FIGURE 6-30



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-31



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-32



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-33



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-34



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-35



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-36



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-37



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-38



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-39



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-40



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY WETLAND DELINEATION MAPS

FIGURE 6-41

APPENDIX A

USDA NRCS WEB SOIL SURVEY CUSTOM SOIL RESOURCE REPORT

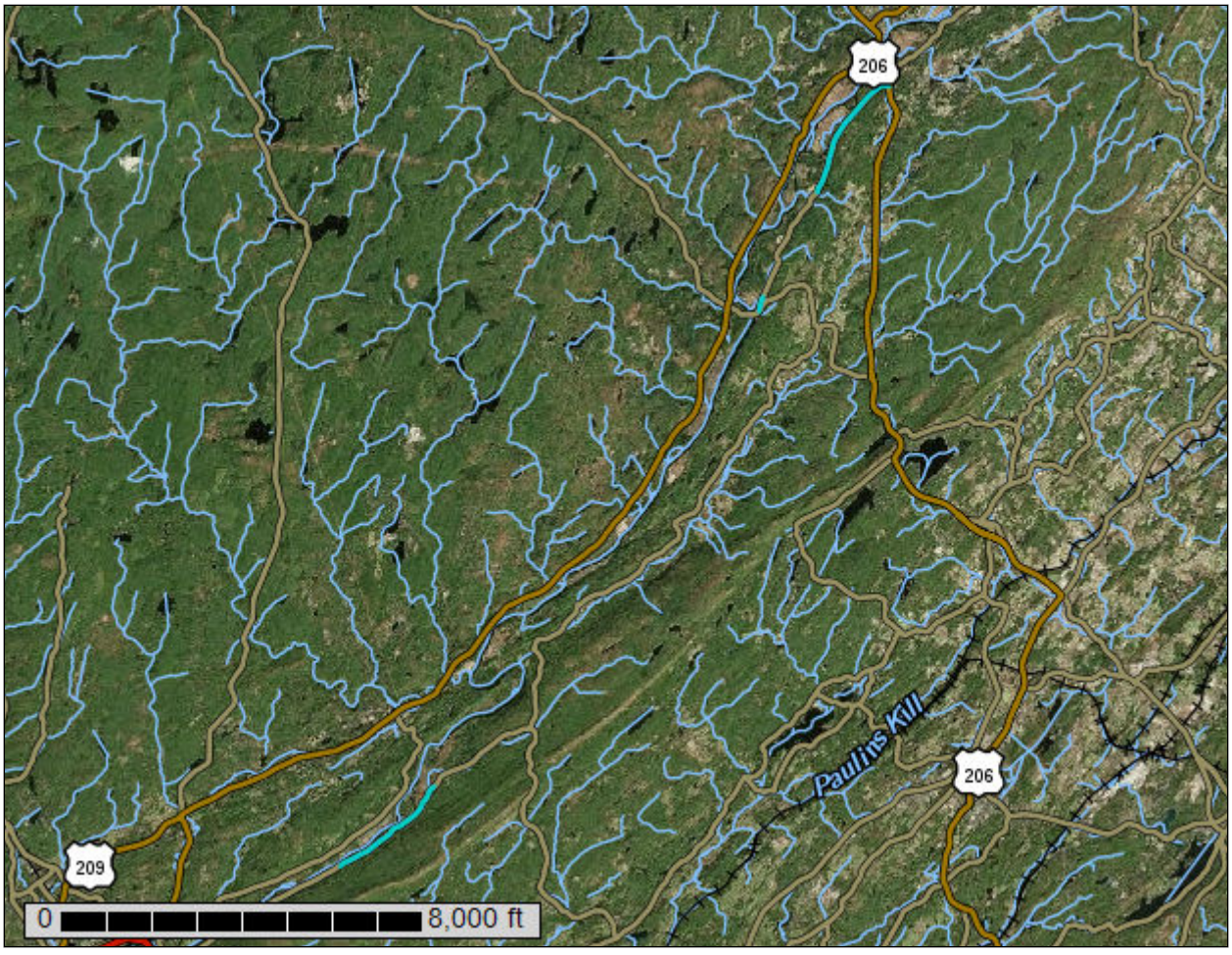
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Sussex County, New Jersey, and Warren County, New Jersey



October 10, 2018

Preface

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

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

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

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

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

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

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UccAs—Udifluvents, 0 to 3 percent slopes, occasionally flooded.....50
UnfB—Unadilla silt loam, 3 to 8 percent slopes.....51
WATER—Water.....52
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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

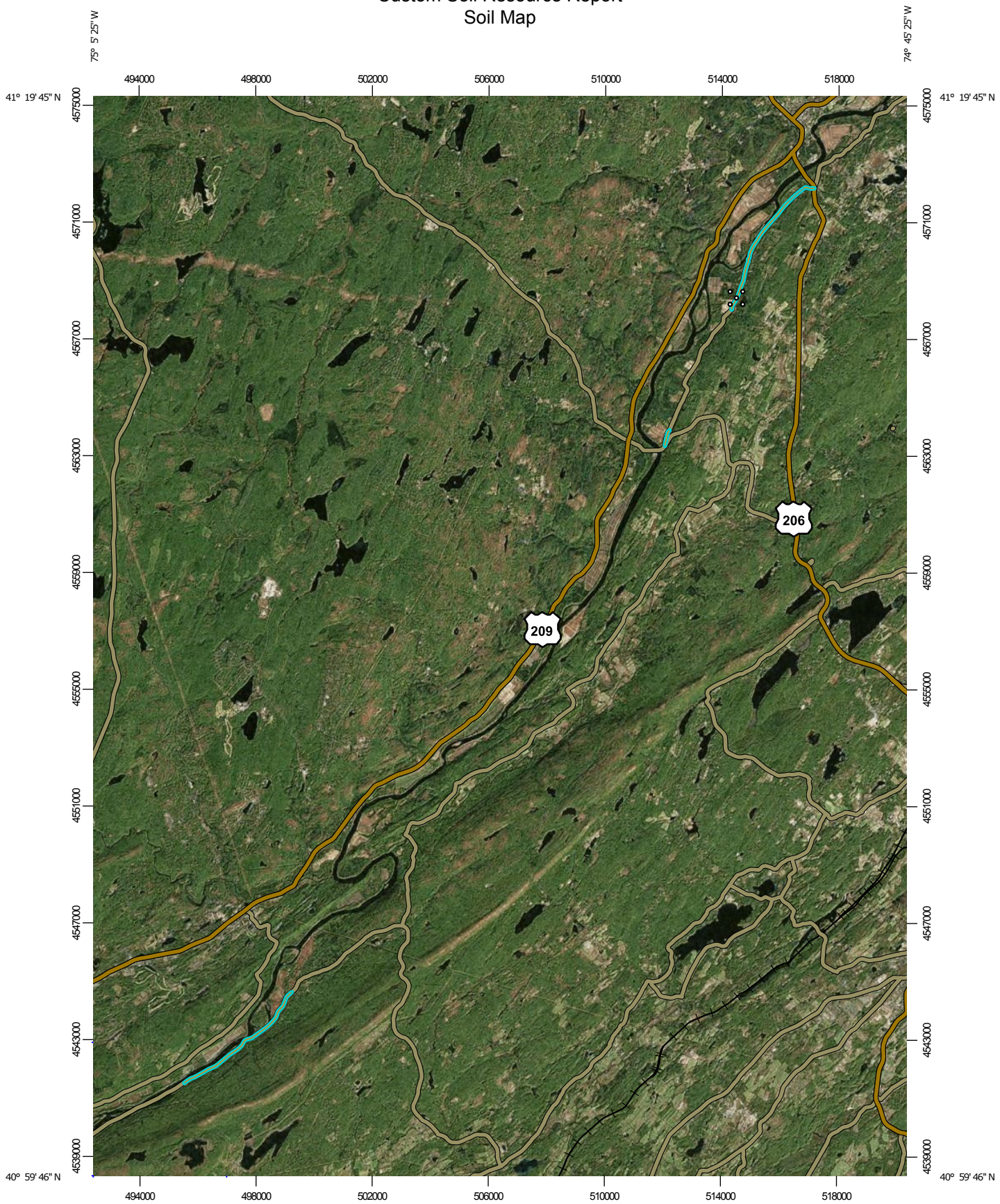
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:180,000 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 2500 5000 10000 15000

Feet
0 5000 10000 20000 30000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:24,000.

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

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

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

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

Soil Survey Area: Sussex County, New Jersey
Survey Area Data: Version 15, Sep 14, 2018

Soil Survey Area: Warren County, New Jersey
Survey Area Data: Version 13, Sep 14, 2018

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jan 1, 1999—Dec 31, 2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CorB	Colonie loamy fine sand, 3 to 8 percent slopes	27.3	10.2%
DefBr	Delaware fine sandy loam, 3 to 8 percent slopes, rarely flooded	0.0	0.0%
HdxpBb	Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony	44.7	16.7%
LorCh	Lordstown-Wallpack complex, 8 to 15 percent slopes, very rocky	5.0	1.9%
LorD	Lordstown-Wallpack complex, 15 to 25 percent slopes	17.6	6.6%
LorDh	Lordstown-Wallpack complex, 15 to 35 percent slopes, very rocky	0.2	0.1%
PduaCb	Paulins Kill-Hazen complex, 8 to 15 percent slopes, very stony	4.7	1.7%
PduoEb	Paulins Kill-Otisville complex, 25 to 60 percent slopes, very stony	3.2	1.2%
ScoA	Scio silt loam, 0 to 3 percent slopes	0.4	0.2%
VepCc	Venango silt loam, 8 to 15 percent slopes, extremely stony	0.2	0.1%
WabCb	Wallpack fine sandy loam, aeolian mantle, 8 to 15 percent slopes, very stony	23.8	8.9%
WabDb	Wallpack fine sandy loam, aeolian mantle, 15 to 35 percent slopes, very stony	17.5	6.5%
WacBc	Wallpack silt loam, 3 to 8 percent slopes, extremely stony	1.2	0.5%
WacDc	Wallpack silt loam, 15 to 35 percent slopes, extremely stony	0.3	0.1%
Subtotals for Soil Survey Area		**146.2**	**54.5%**
Totals for Area of Interest		**268.1**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AtcA	Atherton mucky silt loam, 0 to 3 percent slopes	3.7	1.4%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DefBr	Delaware fine sandy loam, 3 to 8 percent slopes, rarely flooded	5.6	2.1%
LacDc	Lackawanna cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony	30.1	11.2%
OpnDh	Oquaga-Lackawanna complex, 15 to 35 percent slopes, very rocky	2.9	1.1%
OprE	Oquaga-Rock outcrop complex, 35 to 60 percent slopes	21.1	7.9%
PduaCb	Paulins Kill-Hazen complex, 8 to 15 percent slopes, very stony	6.9	2.6%
PduoEb	Paulins Kill-Otisville complex, 25 to 60 percent slopes, very stony	18.3	6.8%
UccAs	Udifluvents, 0 to 3 percent slopes, occasionally flooded	17.7	6.6%
UnfB	Unadilla silt loam, 3 to 8 percent slopes	15.6	5.8%
WATER	Water	0.0	0.0%
Subtotals for Soil Survey Area		**121.9**	**45.5%**
Totals for Area of Interest		**268.1**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the

scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

Sussex County, New Jersey

CorB—Colonie loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: b05b
Elevation: 400 to 1,800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Colonie and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colonie

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Post glacial sandy alluvium and/or sandy eolian deposits and/or glaciofluvial deposits

Typical profile

A - 0 to 2 inches: loamy fine sand
Ap - 2 to 11 inches: loamy fine sand
E - 11 to 24 inches: fine sand
E and Bt1 - 24 to 40 inches: fine sand
E and Bt2 - 40 to 62 inches: fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Delaware

Percent of map unit: 10 percent
Landform: Terraces

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unadilla

Percent of map unit: 10 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

DefBr—Delaware fine sandy loam, 3 to 8 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: b0c4
Elevation: 400 to 1,800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Delaware, rarely flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Delaware, Rarely Flooded

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Post glacial coarse-loamy alluvium

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap1 - 1 to 4 inches: fine sandy loam
Ap2 - 4 to 11 inches: fine sandy loam
Bw1 - 11 to 20 inches: fine sandy loam
Bw2 - 20 to 33 inches: fine sandy loam
BC - 33 to 41 inches: fine sandy loam
C1 - 41 to 56 inches: fine sandy loam
C2 - 56 to 60 inches: loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Colonie

Percent of map unit: 10 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unadilla

Percent of map unit: 10 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HdxpBb—Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh1r
Elevation: 400 to 800 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 131 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hazen, very stony, and similar soils: 60 percent
Paulins kill, very stony, and similar soils: 35 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hazen, Very Stony

Setting

Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex

Parent material: Coarse-loamy glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap - 1 to 10 inches: loam
Bt - 10 to 18 inches: sandy loam
2C1 - 18 to 29 inches: very stony loamy coarse sand
2C2 - 29 to 41 inches: very gravelly coarse sand
2C3 - 41 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

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

Description of Paulins Kill, Very Stony

Setting

Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap - 1 to 11 inches: gravelly loam
Bw - 11 to 20 inches: very gravelly coarse sandy loam
BC - 20 to 26 inches: extremely gravelly loamy coarse sand
2C1 - 26 to 45 inches: extremely gravelly coarse sand
2C2 - 45 to 51 inches: extremely gravelly coarse sand
2C3 - 51 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

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

Minor Components

Otisville, very stony

Percent of map unit: 5 percent
Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

LorCh—Lordstown-Wallpack complex, 8 to 15 percent slopes, very rocky

Map Unit Setting

National map unit symbol: nz5c
Elevation: 400 to 800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown, very rocky, and similar soils: 50 percent
Wallpack, very rocky, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown, Very Rocky

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: loam
E - 2 to 3 inches: fine sandy loam
Bw1 - 3 to 5 inches: loam
Bw2 - 5 to 17 inches: gravelly loam
Bw3 - 17 to 22 inches: gravelly loam
C - 22 to 36 inches: very gravelly fine sandy loam
2R - 36 to 80 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 6.0 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

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

Description of Wallpack, Very Rocky

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: gravelly silt loam
AB - 2 to 5 inches: gravelly silt loam
Bt - 5 to 18 inches: gravelly silt loam
Btx - 18 to 24 inches: gravelly loam
BCtx1 - 24 to 42 inches: gravelly silt loam
BCtx2 - 42 to 60 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 6.0 percent
Depth to restrictive feature: 12 to 36 inches to fragipan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

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

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: Unranked

Cambridge, very rocky

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Chadakoin, very rocky

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

LorD—Lordstown-Wallpack complex, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: nz5k
Elevation: 400 to 800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown and similar soils: 50 percent
Wallpack and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown

Setting

Landform: Ridges

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: loam
E - 2 to 3 inches: fine sandy loam
Bw1 - 3 to 5 inches: loam
Bw2 - 5 to 17 inches: gravelly loam
Bw3 - 17 to 22 inches: gravelly loam
C - 22 to 36 inches: very gravelly fine sandy loam
2R - 36 to 80 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Wallpack

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Ap1 - 0 to 3 inches: silt loam
Ap2 - 3 to 9 inches: gravelly silt loam
Bt - 9 to 16 inches: gravelly silt loam
Btx1 - 16 to 25 inches: gravelly silt loam
Btx2 - 25 to 65 inches: very gravelly silt loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 12 to 36 inches to fragipan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Chadakoin

Percent of map unit: 10 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Cambridge

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

LorDh—Lordstown-Wallpack complex, 15 to 35 percent slopes, very rocky

Map Unit Setting

National map unit symbol: nkl9
Elevation: 400 to 800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Lordstown, very rocky, and similar soils: 50 percent
Wallpack, very rocky, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lordstown, Very Rocky

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: loam
E - 2 to 3 inches: fine sandy loam
Bw1 - 3 to 5 inches: loam
Bw2 - 5 to 17 inches: gravelly loam
Bw3 - 17 to 22 inches: gravelly loam
C - 22 to 36 inches: very gravelly fine sandy loam
2R - 36 to 80 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 6.0 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

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

Description of Wallpack, Very Rocky

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: gravelly silt loam
AB - 2 to 5 inches: gravelly silt loam
Bt - 5 to 18 inches: gravelly silt loam
Btx - 18 to 24 inches: gravelly loam
BCtx1 - 24 to 42 inches: gravelly silt loam
BCtx2 - 42 to 60 inches: gravelly loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 6.0 percent
Depth to restrictive feature: 12 to 36 inches to fragipan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

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

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: Unranked

Chadakoin, very rocky

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

PduaCb—Paulins Kill-Hazen complex, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh1t
Elevation: 400 to 800 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paulins kill, very stony, and similar soils: 60 percent
Hazen, very stony, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paulins Kill, Very Stony

Setting

Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap - 1 to 11 inches: gravelly loam
Bw - 11 to 20 inches: very gravelly coarse sandy loam
BC - 20 to 26 inches: extremely gravelly loamy coarse sand
2C1 - 26 to 45 inches: extremely gravelly coarse sand
2C2 - 45 to 51 inches: extremely gravelly coarse sand
2C3 - 51 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

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

Description of Hazen, Very Stony

Setting

Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap - 1 to 10 inches: loam
Bt - 10 to 18 inches: sandy loam
2C1 - 18 to 29 inches: very stony loamy coarse sand
2C2 - 29 to 41 inches: very gravelly coarse sand
2C3 - 41 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

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

Minor Components

Otisville, very stony

Percent of map unit: 5 percent
Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Colonie, very stony

Percent of map unit: 5 percent
Landform: Valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

PduoEb—Paulins Kill-Otisville complex, 25 to 60 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh1x
Elevation: 400 to 800 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Paulins kill, very stony, and similar soils: 50 percent
Otisville, very stony, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paulins Kill, Very Stony

Setting

Landform: Valley trains, outwash deltas

Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap - 1 to 11 inches: gravelly loam
Bw - 11 to 20 inches: very gravelly coarse sandy loam
BC - 20 to 26 inches: extremely gravelly loamy coarse sand
2C1 - 26 to 45 inches: extremely gravelly coarse sand
2C2 - 45 to 51 inches: extremely gravelly coarse sand
2C3 - 51 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 25 to 60 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

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

Description of Otisville, Very Stony

Setting

Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Glaciofluvial deposits derived from sandstone and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: gravelly sandy loam
Bw1 - 2 to 7 inches: very gravelly loamy sand
Bw2 - 7 to 11 inches: very gravelly loamy coarse sand
BC - 11 to 19 inches: very gravelly loamy coarse sand
C1 - 19 to 31 inches: extremely gravelly coarse sand
C2 - 31 to 43 inches: extremely gravelly coarse sand
C3 - 43 to 60 inches: stratified sand to loamy sand

Properties and qualities

Slope: 25 to 60 percent
Percent of area covered with surface fragments: 0.1 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

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

Minor Components

Hazen, very stony

Percent of map unit: 10 percent
Landform: Outwash deltas, valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

ScoA—Scio silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: nk3z
Elevation: 100 to 1,000 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Scio and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scio

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Post glacial coarse-silty alluvium

Typical profile

Ap1 - 0 to 6 inches: silt loam
Ap2 - 6 to 13 inches: silt loam
Bw1 - 13 to 23 inches: silt loam
Bw2 - 23 to 28 inches: silt loam
BC - 28 to 50 inches: silt loam
C1 - 50 to 59 inches: silt loam
C2 - 59 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Aeric endoaquepts, postglacial alluvium

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Unadilla

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

VepCc—Venango silt loam, 8 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: b0ch
Elevation: 400 to 1,000 feet

Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Venango, extremely stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Venango, Extremely Stony

Setting

Landform: Drumlins
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fine-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 6 inches: silt loam
Bw - 6 to 16 inches: silt loam
Btx1 - 16 to 22 inches: gravelly silty clay loam
Btx2 - 22 to 34 inches: gravelly silty clay loam
Btx3 - 34 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 5.0 percent
Depth to restrictive feature: 14 to 28 inches to fragipan
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

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

Minor Components

Nassau, extremely stony

Percent of map unit: 10 percent
Landform: Drumlins
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Manlius, extremely stony

Percent of map unit: 5 percent
Landform: Drumlins

Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

WabCb—Wallpack fine sandy loam, aeolian mantle, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: nkm7
Elevation: 400 to 800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wallpack, aeolian mantle, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wallpack, Aeolian Mantle, Very Stony

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian deposits over coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Ap - 2 to 8 inches: fine sandy loam
Bw1 - 8 to 14 inches: fine sandy loam
2Bw2 - 14 to 21 inches: fine sandy loam
2Bw3 - 21 to 26 inches: gravelly fine sandy loam
2BC1 - 26 to 31 inches: very gravelly fine sandy loam
2BC2 - 31 to 36 inches: very gravelly fine sandy loam
2BC3 - 36 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Moderate (about 8.9 inches)

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

Minor Components

Lordstown, very stony
Percent of map unit: 10 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Aquic dystrudepts, aeolian mantle, very stony
Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WabDb—Wallpack fine sandy loam, aeolian mantle, 15 to 35 percent slopes, very stony

Map Unit Setting
National map unit symbol: nkmc
Elevation: 400 to 800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition
Wallpack, aeolian mantle, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wallpack, Aeolian Mantle, Very Stony

Setting
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian deposits over coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Ap - 2 to 8 inches: fine sandy loam
Bw1 - 8 to 14 inches: fine sandy loam
2Bw2 - 14 to 21 inches: fine sandy loam
2Bw3 - 21 to 26 inches: gravelly fine sandy loam
2BC1 - 26 to 31 inches: very gravelly fine sandy loam
2BC2 - 31 to 36 inches: very gravelly fine sandy loam
2BC3 - 36 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 1.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

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

Minor Components

Lordstown, very stony

Percent of map unit: 10 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Aquic dystrudepts, aeolian mantle, very stony

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WacBc—Wallpack silt loam, 3 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: b0c8

Elevation: 400 to 1,500 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Wallpack, extremely stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wallpack, Extremely Stony

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: gravelly silt loam
AB - 2 to 5 inches: gravelly silt loam
Bt - 5 to 18 inches: gravelly silt loam
Btx - 18 to 24 inches: gravelly loam
BCtx1 - 24 to 42 inches: gravelly silt loam
BCtx2 - 42 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 6.0 percent
Depth to restrictive feature: 12 to 36 inches to fragipan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

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

Minor Components

Cambridge, extremely stony

Percent of map unit: 10 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lordstown, extremely stony

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WacDc—Wallpack silt loam, 15 to 35 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: b0cc
Elevation: 400 to 1,500 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Wallpack, extremely stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wallpack, Extremely Stony

Setting

Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: gravelly silt loam
AB - 2 to 5 inches: gravelly silt loam
Bt - 5 to 18 inches: gravelly silt loam
Btx - 18 to 24 inches: gravelly loam
BCtx1 - 24 to 42 inches: gravelly silt loam
BCtx2 - 42 to 60 inches: gravelly loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 6.0 percent
Depth to restrictive feature: 12 to 36 inches to fragipan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Low (about 3.2 inches)

Interpretive groups

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

Minor Components

Cambridge, extremely stony

Percent of map unit: 10 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lordstown, extremely stony

Percent of map unit: 5 percent
Landform: Ridges
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Warren County, New Jersey

AtcA—Atherton mucky silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 17j15
Elevation: 50 to 1,500 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Atherton, very poorly drained, and similar soils: 60 percent
Atherton, poorly drained, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atherton, Very Poorly Drained

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Post glacial fine-silty alluvium

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
Oe - 2 to 4 inches: moderately decomposed plant material
A - 4 to 8 inches: mucky silt loam
Bg1 - 8 to 10 inches: silt loam
Bg2 - 10 to 18 inches: silt loam
Bg3 - 18 to 29 inches: silt loam
BC1 - 29 to 32 inches: silt loam
BC2 - 32 to 41 inches: silt loam
C1 - 41 to 45 inches: fine sandy loam
C2 - 45 to 50 inches: loam
C3 - 50 to 60 inches: very fine sandy loam
C4 - 60 to 70 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Atherton, Poorly Drained

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Post glacial fine-silty alluvium

Typical profile

A - 0 to 6 inches: loam
Bg1 - 6 to 12 inches: loam
Bg2 - 12 to 30 inches: loam
2Cg1 - 30 to 40 inches: sandy clay loam
2Cg2 - 40 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Aeric endoaquepts, postglacial alluvium

Percent of map unit: 10 percent
Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

DefBr—Delaware fine sandy loam, 3 to 8 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 17j1f
Elevation: 400 to 1,800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Delaware, rarely flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Delaware, Rarely Flooded

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Post glacial coarse-loamy alluvium

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap1 - 1 to 4 inches: fine sandy loam
Ap2 - 4 to 11 inches: fine sandy loam
Bw1 - 11 to 20 inches: fine sandy loam
Bw2 - 20 to 33 inches: fine sandy loam
BC - 33 to 41 inches: fine sandy loam
C1 - 41 to 56 inches: fine sandy loam
C2 - 56 to 60 inches: loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Colonie

Percent of map unit: 10 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unadilla

Percent of map unit: 10 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

LacDc—Lackawanna cobbly fine sandy loam, 15 to 35 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: sw72
Elevation: 700 to 1,800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Lackawanna, extremely stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lackawanna, Extremely Stony

Setting

Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from sandstone and siltstone and/or coarse-loamy till derived from shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 3 inches: cobbly fine sandy loam
E - 3 to 7 inches: cobbly fine sandy loam
Bhs - 7 to 8 inches: cobbly fine sandy loam
Bw1 - 8 to 16 inches: stony loam
Bw2 - 16 to 24 inches: stony loam
Bx1 - 24 to 29 inches: stony fine sandy loam

Bx2 - 29 to 60 inches: very cobbly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 14 to 36 inches to fragipan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

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

Minor Components

Wellsboro, extremely stony

Percent of map unit: 10 percent
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Oquaga, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

OpnDh—Oquaga-Lackawanna complex, 15 to 35 percent slopes, very rocky

Map Unit Setting

National map unit symbol: sw1b
Elevation: 700 to 1,800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Oquaga, very rocky, and similar soils: 50 percent
Lackawanna, very rocky, and similar soils: 35 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga, Very Rocky

Setting

Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone and siltstone and/or loamy till derived from shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: channery loam
Bw - 4 to 20 inches: very channery loam
C - 20 to 25 inches: extremely channery loam
2R - 25 to 80 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

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

Description of Lackawanna, Very Rocky

Setting

Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy till derived from sandstone and siltstone and/or coarse-loamy till derived from shale

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 3 inches: cobbly fine sandy loam
E - 3 to 7 inches: cobbly fine sandy loam
Bhs - 7 to 8 inches: cobbly fine sandy loam
Bw1 - 8 to 16 inches: stony loam
Bw2 - 16 to 24 inches: stony loam
Bx1 - 24 to 29 inches: stony fine sandy loam
Bx2 - 29 to 60 inches: very cobbly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 14 to 36 inches to fragipan
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

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

Minor Components

Rock outcrop

Percent of map unit: 10 percent
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: Unranked

Wellsboro, very rocky

Percent of map unit: 5 percent
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

OprE—Oquaga-Rock outcrop complex, 35 to 60 percent slopes

Map Unit Setting

National map unit symbol: sw1d
Elevation: 700 to 1,800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Oquaga and similar soils: 60 percent
Rock outcrop: 25 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oquaga

Setting

Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till derived from sandstone and siltstone and/or loamy till derived from shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: channery loam
Bw - 4 to 20 inches: very channery loam
C - 20 to 25 inches: extremely channery loam
2R - 25 to 80 inches: bedrock

Properties and qualities

Slope: 35 to 60 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

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

Description of Rock Outcrop

Setting

Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Sandstone

Typical profile

R - 0 to 80 inches: bedrock

Properties and qualities

Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Arnot

Percent of map unit: 10 percent
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Lackawanna

Percent of map unit: 5 percent
Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

PduaCb—Paulins Kill-Hazen complex, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh1t
Elevation: 400 to 800 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paulins kill, very stony, and similar soils: 60 percent
Hazen, very stony, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paulins Kill, Very Stony

Setting

Landform: Outwash deltas, valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap - 1 to 11 inches: gravelly loam
Bw - 11 to 20 inches: very gravelly coarse sandy loam
BC - 20 to 26 inches: extremely gravelly loamy coarse sand
2C1 - 26 to 45 inches: extremely gravelly coarse sand
2C2 - 45 to 51 inches: extremely gravelly coarse sand

2C3 - 51 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

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

Description of Hazen, Very Stony

Setting

Landform: Outwash deltas, valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Parent material: Coarse-loamy glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Ap - 1 to 10 inches: loam
Bt - 10 to 18 inches: sandy loam
2C1 - 18 to 29 inches: very stony loamy coarse sand
2C2 - 29 to 41 inches: very gravelly coarse sand
2C3 - 41 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Otisville, very stony

Percent of map unit: 5 percent
Landform: Outwash deltas, valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Colonie, very stony

Percent of map unit: 5 percent
Landform: Valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

PduoEb—Paulins Kill-Otisville complex, 25 to 60 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2wh1x
Elevation: 400 to 800 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Paulins kill, very stony, and similar soils: 50 percent
Otisville, very stony, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paulins Kill, Very Stony

Setting

Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

Ap - 1 to 11 inches: gravelly loam
Bw - 11 to 20 inches: very gravelly coarse sandy loam
BC - 20 to 26 inches: extremely gravelly loamy coarse sand
2C1 - 26 to 45 inches: extremely gravelly coarse sand
2C2 - 45 to 51 inches: extremely gravelly coarse sand
2C3 - 51 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 25 to 60 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

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

Description of Otisville, Very Stony

Setting

Landform: Valley trains, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Glaciofluvial deposits derived from sandstone and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: gravelly sandy loam
Bw1 - 2 to 7 inches: very gravelly loamy sand
Bw2 - 7 to 11 inches: very gravelly loamy coarse sand
BC - 11 to 19 inches: very gravelly loamy coarse sand
C1 - 19 to 31 inches: extremely gravelly coarse sand
C2 - 31 to 43 inches: extremely gravelly coarse sand
C3 - 43 to 60 inches: stratified sand to loamy sand

Properties and qualities

Slope: 25 to 60 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

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

Minor Components

Hazen, very stony

Percent of map unit: 10 percent
Landform: Outwash deltas, valley trains
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

UccAs—Udifluvents, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: sw1v
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Udifluvents, occasionally flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udifluvents, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy alluvium

Typical profile

A - 0 to 3 inches: loamy sand
C1 - 3 to 16 inches: loamy sand
C2 - 16 to 22 inches: sandy loam
C3 - 22 to 27 inches: sandy loam
C4 - 27 to 32 inches: sandy loam
C5 - 32 to 60 inches: stratified loamy sand to sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 60 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Fluvaquents, occasionally flooded

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

UnfB—Unadilla silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: sw1z
Elevation: 400 to 1,800 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Unadilla and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Unadilla

Setting

Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Post glacial coarse-silty alluvium

Typical profile

Ap1 - 0 to 8 inches: silt loam
Ap2 - 8 to 14 inches: silt loam
Bw - 14 to 25 inches: silt loam
BC - 25 to 39 inches: silt loam
C - 39 to 60 inches: very fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Delaware

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Colonie

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

WATER—Water

Map Unit Setting

National map unit symbol: b0ks
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F

Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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APPENDIX B

WETLAND DELINEATION DATA SHEETS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP1-UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None Slope(%) 0-3

Subregion (LRR or MLRA): LRR-R Lat: 41.02511 Long: -75.05327 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: NONE

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? Are "Normal Circumstances" present? Yes X No

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

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

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

Remarks:
SEG1-OP1_UPL was taken on top of the ridgeline running parallel to the Delaware River.

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 along 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 Imag.(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: SEG1-OP1-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	100	Y	FAC
Fraxinus americana	10	N	FACU
Fagus grandifolia	1	N	FACU
	111	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Berberis thunbergii	5	Y	FACU
	5	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Cyperus esculentus	1	Y	FACW
Urtica dioica	1	Y	FAC
	2	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	101	x 3 =	303
FACU species	16	x 4 =	64
UPL species	0	x 5 =	0
Column Totals:	118 (A)		369 (B)

Prevalence Index = B/A= 3.13

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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: SEG1-OP1-UPL

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 to 3	10YR 3 / 4	100					CLAY LOAM	
3 to 5	10YR 2 / 2	100					CLAY LOAM	
5 to 20	10YR 3 / 6	100					CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP1-WET

Investigator(s): ZL JE Section, Township, Range S T R

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

Subregion (LRR or MLRA): LRR-R Lat: 41.025 Long: -75.05301 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: PEM1E

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes	X	No		
Wetland Hydrology Present?	Yes	X	No		If yes, optional Wetland Site ID Wetland 1

Remarks:

Wetland 1 is a depressional wetland situated between Old Mine Road and an elevated ridgeline running parallel to the Delaware River. Wetland 1 collects water from Watercourse 1 and likely is hydrologically connected to Wetland 2 via Culvert 2.

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 along 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 Imag.(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	X	No		Depth (inches):	3
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: SEG1-OP1-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	50	Y	FAC
Carpinus caroliniana	5	N	FAC
	55	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Lindera benzoin	5	Y	FACW
	5	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Microstegium vimineum	100	Y	FAC
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	155	x 3 =	465
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		475 (B)

Prevalence Index = B/A= 2.97

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

Sparse undercanopy cover.

SOIL

Sampling Point: SEG1-OP1-WET

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 to 20	10YR 4 / 2	100					CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP2_UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Concave Slope(%) 3-5

Subregion (LRR or MLRA): LRR-R Lat: 41.02628 Long: -75.05019 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

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

Remarks:
SEG1-OP2-UPL is located uplope from SEG1-OP2-WET towards Old Mine Road.

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 along 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 Imag.(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: SEG1-OP2_UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Diospyros virginiana	10	Y	FAC
Juniperus communis	5	Y	FACU
	15	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Elaeagnus umbellata	30	Y	UPL
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Microstegium vimineum	100	Y	FAC
Solidago altissima	60	Y	FACU
Impatiens capensis	1	N	FACW
	161	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Celastrus scandens	1	Y	FACU
Vitis labrusca	1	Y	FACU
	2	=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: 28.6% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	110	x 3 =	330
FACU species	67	x 4 =	268
UPL species	30	x 5 =	150
Column Totals:	208 (A)		750 (B)

Prevalence Index = B/A= 3.61

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 20	10YR 3 / 4	100					CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP2_WET

Investigator(s): ZL JE Section, Township, Range S T R

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

Subregion (LRR or MLRA): LRR-R Lat: 41.02639 Long: -75.05015 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: PEM1E

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Wetland Hydrology Present?	Yes	X	No	If yes, optional Wetland Site ID	Wetland 2

Remarks:

Wetland 2 is a long low lying meadow with likely hydrologic connection to Wetland 1. It is situated downslope from Old Mine Road and is fed by a number of watercourses running through culverts beneath Old Mine Road.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along 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 Imag.(C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	<1
Water Table Present?	Yes	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: SEG1-OP2_WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Elaeagnus umbellata	20	Y	UPL
	20	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Onoclea sensibilis	70	Y	FACW
Phragmites australis	15	N	FACW
Lythrum salicaria	5	N	OBL
Polygonum arifolium	1	N	UPL
	91	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Persicaria perfoliata	10	Y	FAC
Vitis labrusca	5	Y	FACU
	15	=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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	85	x 2 =	170
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species	21	x 5 =	105
Column Totals:	126 (A)		330 (B)

Prevalence Index = B/A= 2.62

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

Autumn olive observed at the extent of the observation area on the upslope side of the depressional area.

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 to 20	10YR 3 / 1	100					CLAY	Muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP3-UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): None Slope(%) 3-5

Subregion (LRR or MLRA): LRR-R Lat: 41.04098 Long: -75.02039 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

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

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 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 along 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 Imag.(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: SEG1-OP3-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Quercus rubra	50	Y	FACU
Fagus grandifolia	30	Y	FACU
Acer rubrum	20	Y	FAC
	100	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Rhododendron canescens	30	Y	FACW
Abies balsamea	5	N	FAC
	35	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Polystichum acrostichoides	1	Y	FACU
	1	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	25	x 3 =	75
FACU species	81	x 4 =	324
UPL species	0	x 5 =	0
Column Totals:	136 (A)		459 (B)

Prevalence Index = B/A= 3.38

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 3	10YR 2/1	100					SANDY CLAY LOAM	
3 to 13	10YR 4/6	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/18/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP3-WET

Investigator(s): ZL JE Section, Township, Range S T R

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

Subregion (LRR or MLRA): LRR-R Lat: 41.041 Long: -75.02049 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Wetland Hydrology Present?	Yes	X	No	If yes, optional Wetland Site ID	Wetland 3

Remarks:
Wetland 3 is a roadside ditch running along the eastern side of Old Mine Road and draining into a culvert which passes under the road.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] 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)
- [x] Water-Stained Leaves (B9)
- [x] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along 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 Imag.(C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	1
Water Table Present?	Yes	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:
Salamanders observed in wetland area

Remarks:

VEGETATION– Use scientific names of plants.

Sampling Point: SEG1-OP3-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Microstegium vimineum	80	Y	FAC
Cyperus esculentus	20	Y	FACW
Impatiens capensis	20	Y	FACW
	120	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		320 (B)

Prevalence Index = B/A= 2.67

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

Trees and shrubs, while nearby, were not in the wetland habitat

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 to 13	10YR 5/2	100					SANDY CLAY	Decomposed leaf material to depth of 8"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☑ **Restrictive Layer (if observed):**

Type: Rock/Asphalt

Depth (inches): 13

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/19/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP4-UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None Slope(%) 3-5

Subregion (LRR or MLRA): LRR-R Lat: 41.04203 Long: -75.01917 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

SUMMARY OF FINDINGS - Attach a 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 X**
Hydric Soil Present?	Yes		No	X	
Wetland Hydrology Present?	Yes		No	X	If yes, optional Wetland Site ID

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 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 along 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 Imag.(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: SEG1-OP4-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	60	Y	FAC
	60	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Lindera benzoin	30	Y	FACW
Berberis thunbergii	20	Y	FACU
	50	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Osmundastrum cinnamomeum	80	Y	FACW
Polystichum acrostichoides	10	N	FACU
Solidago altissima	1	N	FACU
	91	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron radicans	5	Y	FAC
	5	=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: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	110	x 2 =	220
FAC species	65	x 3 =	195
FACU species	31	x 4 =	124
UPL species	0	x 5 =	0
Column Totals:	206 (A)		539 (B)

Prevalence Index = B/A= 2.62

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 5	10YR 3 / 3	100					SANDY CLAY LOAM	
5 to 8	10YR 4 / 4	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☑ **Restrictive Layer (if observed):**

Type: Rock

Depth (inches): 8

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/19/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP4-WET

Investigator(s): ZL JE Section, Township, Range S T R

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

Subregion (LRR or MLRA): LRR-R Lat: 41.04205 Long: -75.01916 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes	X	No		
Wetland Hydrology Present?	Yes	X	No		If yes, optional Wetland Site ID Wetland 4

Remarks:

Wetland 4 is a small depressional wetland immediately downslope of Old Mine Road. It appears to be fed by two .culverts running underneath Old Mine Road.

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 along 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 Imag.(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	X	No		Depth (inches):	4
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: SEG1-OP4-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	30	Y	FAC
	30	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Lindera benzoin	30	Y	FACW
Rosa multiflora	15	Y	FACU
	45	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Microstegium vimineum	100	Y	FAC
Impatiens capensis	60	Y	FACW
	160	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Pueraria montana	5	Y	UPL
	5	=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: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	130	x 3 =	390
FACU species	15	x 4 =	60
UPL species	5	x 5 =	25
Column Totals:	240 (A)		655 (B)

Prevalence Index = B/A= 2.73

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 10	10YR 3/ 2	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☑ **Restrictive Layer (if observed):**

Type: Rock

Depth (inches): 10

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP5-UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Slope(%) 5-10

Subregion (LRR or MLRA): LRR-R Lat: 41.0246 Long: -75.01759 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

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

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 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 along 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 Imag.(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: SEG1-OP5-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Carya ovata	50	Y	FACU
Acer saccharum	30	Y	FACU
Carpinus caroliniana	30	Y	FAC
	110	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Osmundastrum cinnamomeum	20	Y	FACW
Polystichum acrostichoides	10	Y	FACU
	30	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	30	x 3 =	90
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	140 (A)		490 (B)

Prevalence Index = B/A= 3.50

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 3	10YR 2/1	100					SANDY CLAY LOAM	
3 to 10	10YR 3/6	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☑ **Restrictive Layer (if observed):**

Type: Rock

Depth (inches): 10

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/19/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP5-WET

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None Slope(%) 0-3

Subregion (LRR or MLRA): LRR-R Lat: 41.04269 Long: -75.01776 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes	X	No		
Wetland Hydrology Present?	Yes	X	No		If yes, optional Wetland Site ID Wetland 5

Remarks:

Wetland 5 has two distinct areas. The first is as a roadside ditch along the eastern edge of Old Mine Road. The second extends from the roadside area upslope to a small terrace area where clay soils appear to perch water for extended periods of time.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [x] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Sparsely Vegetated Concave Surface (B8)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along 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 Imag.(C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	1
Water Table Present?	Yes		No	X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):	

Wetland Hydrology Present? Yes X No

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

Soil core was very dry but seemed to be perching water at surface.

Remarks:

VEGETATION– Use scientific names of plants.

Sampling Point: SEG1-OP5-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Microstegium vimineum	90	Y	FAC
Cyperus esculentus	50	Y	FACW
Osmundastrum cinnamomeum	20	N	FACW
Maianthemum canadense	5	N	FACU
	165	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	90	x 3 =	270
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	165 (A)		430 (B)

Prevalence Index = B/A= 2.61

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 6	10YR 2/1	100					CLAY LOAM	Muck, fiberous

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☑ **Restrictive Layer (if observed):**

Type: Rock

Depth (inches): 6

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP6-UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): None Slope(%) 3-5

Subregion (LRR or MLRA): LRR-R Lat: 41.04415 Long: -75.01581 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

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

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 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 along 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 Imag.(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: SEG1-OP6-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	50	Y	FAC
Acer saccharum	50	Y	FACU
	100	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Lindera benzoin	10	Y	FACW
Berberis thunbergii	5	Y	FACU
	15	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Osmundastrum cinnamomeum	1	Y	FACW
	1	=Total Cover	
Vine Stratum			

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: 60.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	11	x 2 =	22
FAC species	50	x 3 =	150
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	116 (A)		392 (B)

Prevalence Index = B/A= 3.38

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- ___ Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 8	10YR 2/ 2	100					SANDY CLAY LOAM	
8 to 20	10YR 3/ 3	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP6-WET

Investigator(s): ZL JE Section, Township, Range S T R

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

Subregion (LRR or MLRA): LRR-R Lat: 41.04418 Long: -75.01592 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Wetland Hydrology Present?	Yes	X	No	If yes, optional Wetland Site ID	Wetland 6

Remarks:
Wetland 6 is a road side ditch running along Old Mine Road's eastern side.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along 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 Imag.(C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	2
Water Table Present?	Yes	X	No		Depth (inches):	4
Saturation Present? (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: SEG1-OP6-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Impatiens capensis	50	Y	FACW
Microstegium vimineum	40	Y	FAC
Osmundastrum cinnamomeum	10	N	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		240 (B)

Prevalence Index = B/A= 2.40

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 8	10YR 2 / 2	100					SANDY CLAY LOAM	
8 to 20	10YR 4 / 3	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/19/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP7-UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): None Slope(%) 3-5

Subregion (LRR or MLRA): LRR-R Lat: 41.04391 Long: -75.01654 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

SUMMARY OF FINDINGS - Attach a 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 X**
Hydric Soil Present?	Yes		No	X	
Wetland Hydrology Present?	Yes		No	X	If yes, optional Wetland Site ID

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 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 along 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 Imag.(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: SEG1-OP7-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	80	Y	FAC
	80	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Lindera benzoin	40	Y	FACW
Berberis thunbergii	20	Y	FACU
	60	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Persicaria maculosa	5	Y	FAC
Polystichum acrostichoides	5	Y	FACU
	10	=Total Cover	
Vine Stratum			

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: 60.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	85	x 3 =	255
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	150 (A)		435 (B)

Prevalence Index = B/A= 2.90

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 4	10YR 2 / 1	100					SANDY CLAY LOAM	
4 to 20	10YR 4 / 3	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/19/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP7-WET

Investigator(s): ZL JE Section, Township, Range S T R

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

Subregion (LRR or MLRA): LRR-R Lat: 41.04396 Long: -75.01656 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Wetland Hydrology Present?	Yes	X	No	If yes, optional Wetland Site ID	Wetland 7

Remarks:
Wetland 7 is a depressional wetland perched on a clay pan. The wetland accepts water from the opposite side of Old Mine Road via culverts.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [x] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Sparsely Vegetated Concave Surface (B8)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along 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 Imag.(C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	1
Water Table Present?	Yes		No	X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):	

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: SEG1-OP7-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	90	Y	FAC
	90	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Lindera benzoin	10	Y	FACW
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Microstegium vimineum	40	Y	FAC
	40	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	130	x 3 =	390
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	140 (A)		410 (B)

Prevalence Index = B/A= 2.93

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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: SEG1-OP7-WET

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 to 3	10YR 4 / 1	100					CLAY	
3 to 7	10YR 6 / 1	70	10YR 3/3	30	C	M	CLAY	
7 to 20	10YR 6 / 1	70	10YR 4/6	30	C	M	CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP8-UPL

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None Slope(%) 0-3

Subregion (LRR or MLRA): LRR-R Lat: 41.05161 Long: -75.01025 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

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

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 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 along 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 Imag.(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: SEG1-OP8-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer saccharum	80	Y	FACU
Diospyros virginiana	15	N	FAC
	95	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Berberis thunbergii	45	Y	FACU
	45	=Total Cover	
Herb Stratum			
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron radicans	15	Y	FAC
	15	=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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	125	x 4 =	500
UPL species	0	x 5 =	0
Column Totals:	155 (A)		590 (B)

Prevalence Index = B/A= 3.81

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test > 50%

___ Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 5	10YR 3 / 2	100					SANDY CLAY LOAM	
5 to 20	10YR 3 / 6	100					SANDY CLAY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

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

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Delaware Water Gap City/County: Sampling Date: 9/17/2018

Applicant/Owner: National Park Service State: NJ Sampling Point: SEG1-OP8-WET

Investigator(s): ZL JE Section, Township, Range S T R

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): None Slope(%) 0-3

Subregion (LRR or MLRA): LRR-R Lat: 41.05146 Long: -75.01022 Datum: NAD83

Soil Map Unit Name: Warren County, New Jersey (NJ041) NWI Classification: None

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? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present?	Yes	X	No		
Hydric Soil Present?	Yes	X	No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Wetland Hydrology Present?	Yes	X	No	If yes, optional Wetland Site ID	Wetland 8

Remarks:

Wetland 8 is a depressional wetland upstream from a watercourse and roadside ditch. The watercourse Wetland 8 drains into, tapers out losing its banks to become a wide depressional wetland that has open water pockets and tussocks throughout.

HYDROLOGY

Wetland Hydrology Indicators:

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

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] 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)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along 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 Imag.(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):	0-4
Water Table Present?	Yes	X	No		Depth (inches):	2
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: SEG1-OP8-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	40	Y	FAC
	40	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Impatiens capensis	80	Y	FACW
Carex stricta	30	Y	OBL
	110	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	80	x 2 =	160
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	150 (A)		310 (B)

Prevalence Index = B/A= 2.07

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test > 50%
- X Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants 3in.(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 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.)

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 to 20	10YR 3 / 1	100					CLAY	Oxidized rhizospheres

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated 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) (LRR P, S, T)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

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

☐ **Restrictive Layer (if observed):**

Type: _____

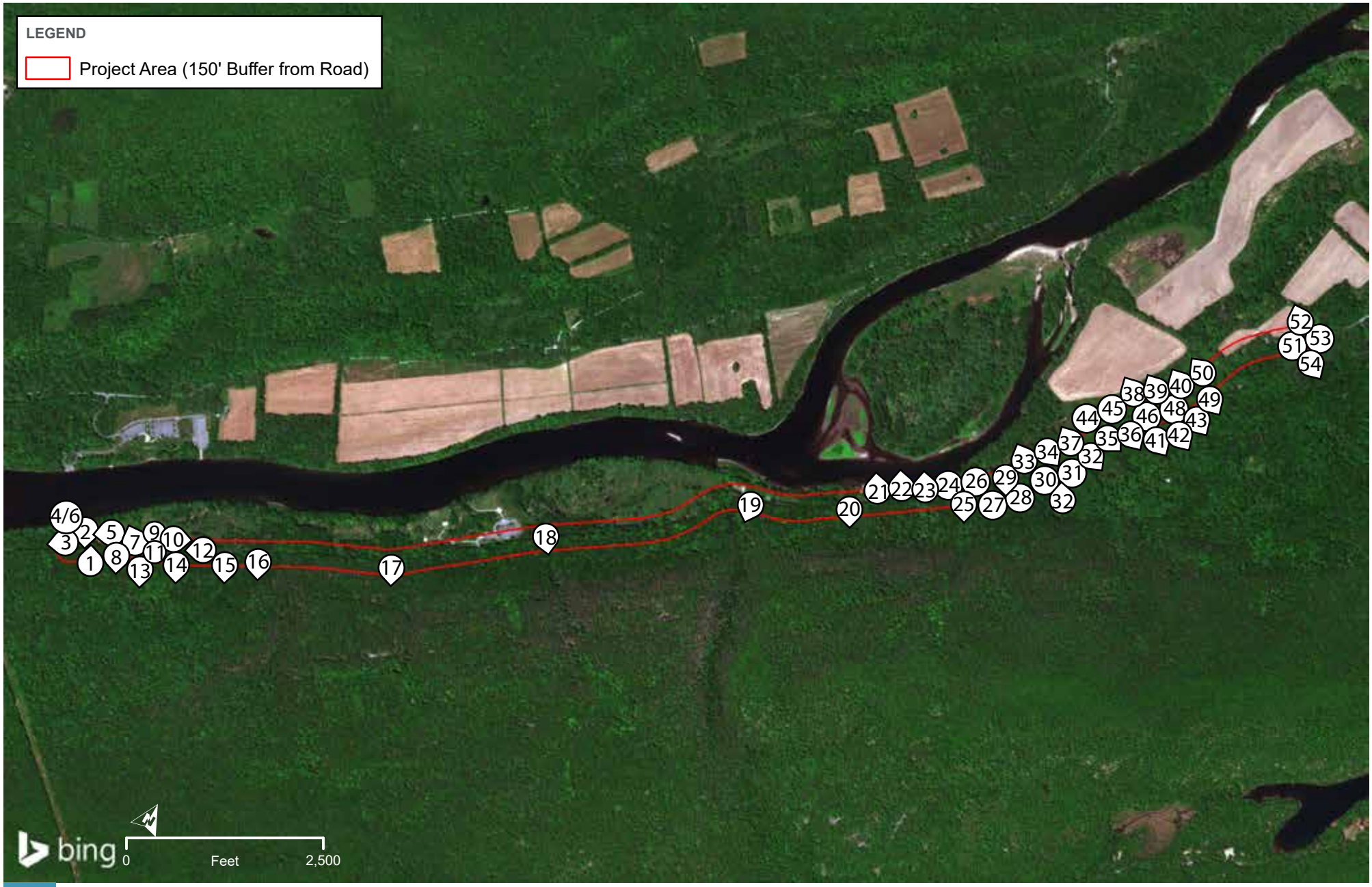
Depth (inches): _____

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

Remarks:

APPENDIX C

SITE PHOTOGRAPHS



OLD MINE ROAD - DELAWARE WATER GAP NATIONAL RECREATION AREA, NJ

FIELD SURVEY PHOTOLOCATION LOG

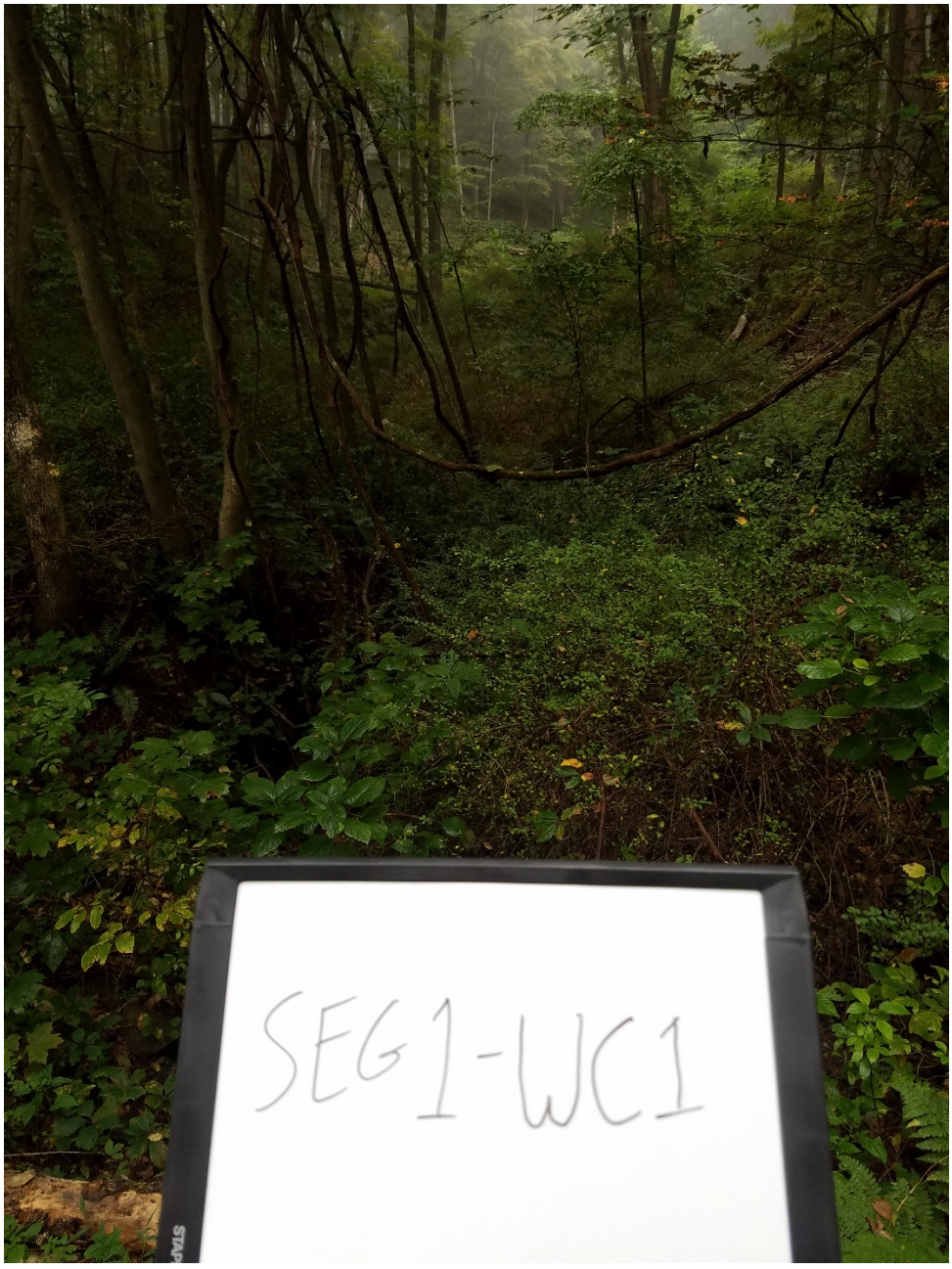
FIGURE 1

Delaware Water Gap

Watercourse and Wetland Delineation –

Site Photographs

Figure 1. Segment 1 Watercourse 1 Looking East from Old Mine Road



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Figure 2. Culvert 1 Conveying Watercourse 1



Figure 3. Wetland 1 Looking South from Wetland Observation Point 1

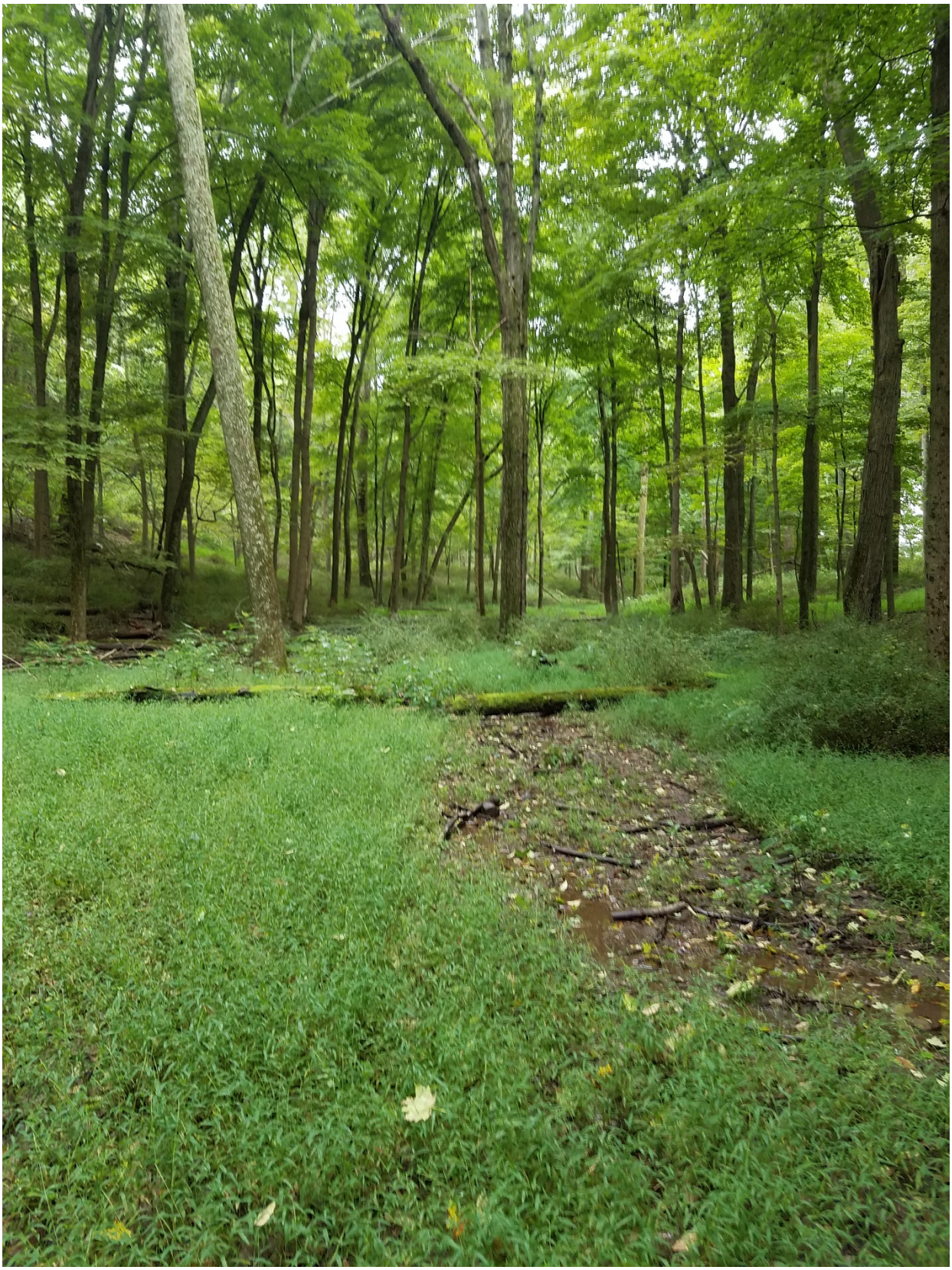


Figure 4. Soil Core from Wetland Observation Point 1



Figure 5. Wetland 1 Looking West from Upland Observation Point 1



Figure 6. Soil Core from Upland Observation Point 1



Figure 7. Wetland 1 Viewed from Old Mine Road



Figure 8. Watercourse 2 Looking East from Old Mine Road



Figure 9. Soil Core from Wetland Observation Point 2



Figure 10. Wetland 2 Looking North from Wetland Observation Point 2



Figure 11. Soil Core from Upland Observation Point 2



Figure 12. View of Transition Area Near Upland Observation Point 2



Figure 13. Watercourse 3 Viewed from Old Mine Road



Figure 14. Watercourse 4 Viewed from Old Mine Road



Figure 15. Watercourse 5 Viewed from Old Mine Road



Figure 16. Watercourse 6 Viewed from Old Mine Road



Figure 17. Watercourse 7 Viewed from Old Mine Road



Figure 18. Watercourse 8 Viewed from Old Mine Road



Figure 19. Watercourse 9 Viewed from Old Mine Road



Figure 20. Drainage Structure Found Along Watercourse 9



Figure 21. Watercourse 6 Viewed from Old Mine Road



Figure 22. Watercourse 7 Looking at Old Mine Road



Figure 23. Watercourse 8 Looking at Old Mine Road



Figure 24. Soil Core from Wetland Observation Point 3



Figure 25. View of Wetland 3 from Old Mine Road



Figure 26. Soil Core from Upland Observation Point 3



Figure 27. Soil Core from Wetland Observation Point 4



Figure 28. Soil Core from Upland Observation Point 4

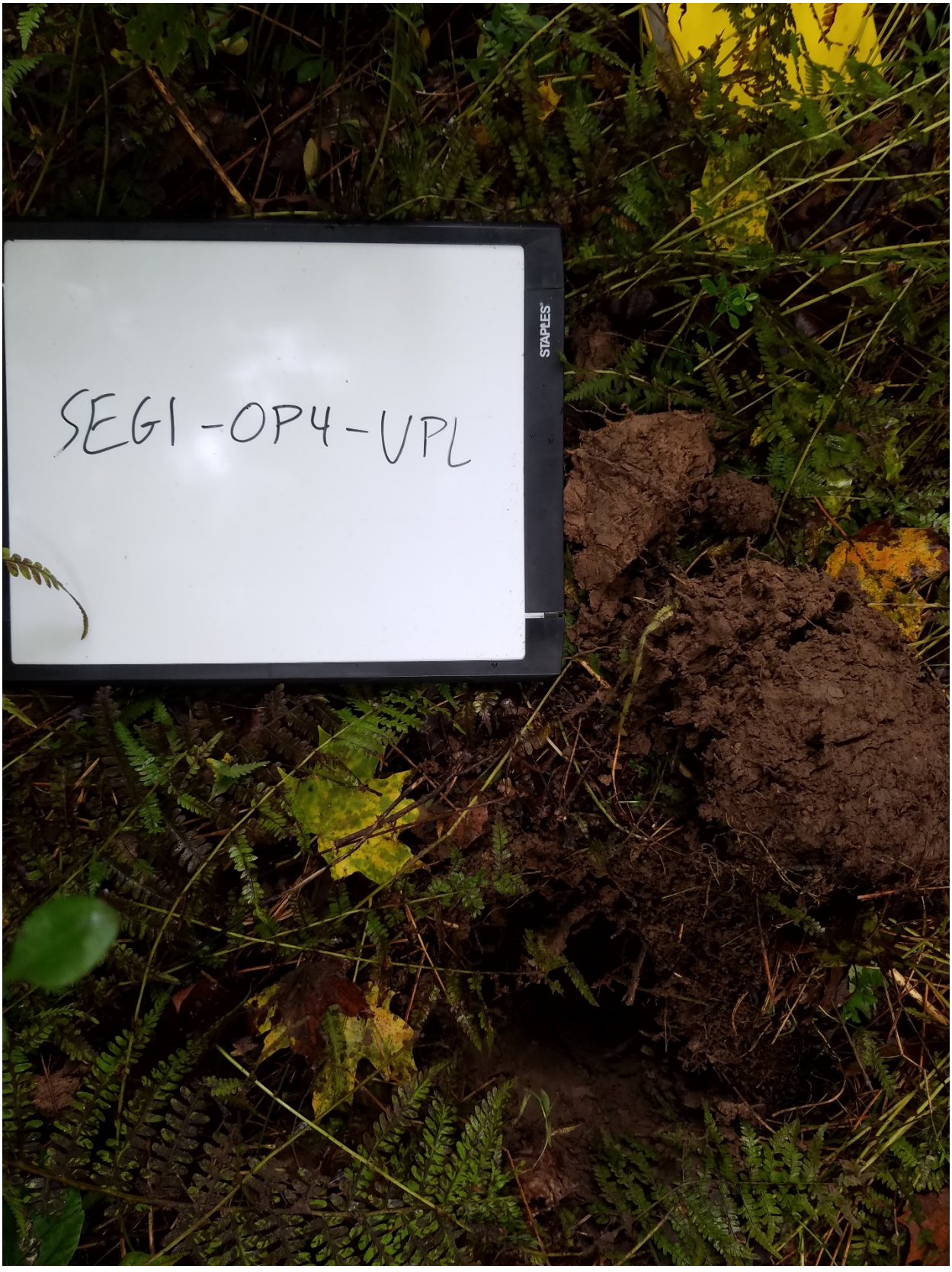


Figure 29. View of Wetland 5 Looking West from Toe of Slope from Old Mine Road



Figure 30. Soil Core from Wetland Observation Point 5



Figure 31. Soil Core from Upland Observation Point 5



Figure 32. View of Wetland 5 Terraced Area Looking West from Upslope



Figure 33. View of Watercourse 9 from Old Mine Road



Figure 34. View of Watercourse 10 from Old Mine Road



Figure 35. View of Watercourse 11 from Old Mine Road



Figure 36. View of Watercourse 12 from Old Mine Road



Figure 37. View of Watercourse 13 from Old Mine Road



Figure 38. View of Watercourse 14 from Old Mine Road



Figure 39. View of Watercourse 15 from Old Mine Road



Figure 40. View of Watercourse 16 from Old Mine Road



Figure 41. View of Watercourse 17 from Old Mine Road



Figure 42. View of Watercourse 18 from Old Mine Road



Figure 43. View of Watercourse 19 from Old Mine Road



Figure 44. Soil Core from Wetland Observation Point 6



Figure 45. Soil Core from Upland Observation Point 6



Figure 46. Soil Core from Wetland Observation Point 7



Figure 47. View of Wetland 7 from Toe of Slope at Bottom of Old Mine Road



Figure 48. Soil Core from Upland Observation 7



Figure 49. View of Watercourse 19 from Old Mine Road

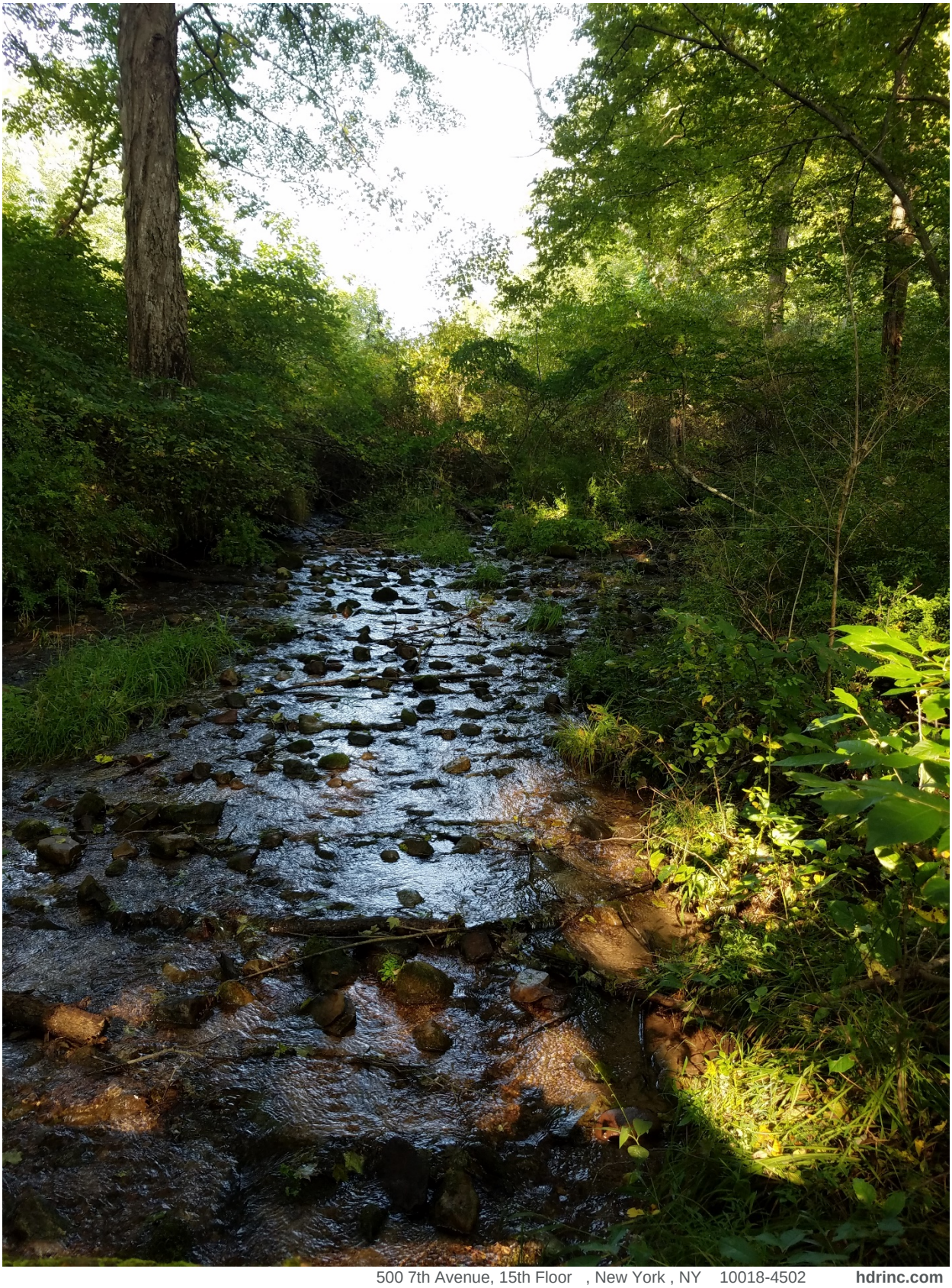


Figure 50. View of Watercourse 22 from Old Mine Road



Figure 51. Soil Core from Wetland Observation 8



Figure 52. View of Wetland 8 Looking East



Figure 53. Soil Core from Upland Observation 8



Figure 54. View of Area Nearby Upland Observation 8

