







Delaware Water Gap National Recreation Area – 294871

June 2020



Watergate Wetlands Restoration Project

Wetland Delineation Report

FINAL

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wsp





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EXECUTIVE SUMMARY

The National Park Service proposes to restore wetlands and the natural function of Van Campens Brook at the Watergate Recreation Site by removing artificial dams and human-made ponds and reestablishing the connection between Van Campens Brook and its floodplain. The project would result in a more natural and high-functioning wetland and riparian floodplain system, improved floodplain connectivity within the project area, and more natural fluvial dynamics in Van Campens Brook. In support of this effort, reference site (wetlands) and reference reach (stream) evaluations were conducted to understand the composition and function of regional habitats similar to those desired at the Watergate site.

After a desktop review of existing mapping, documents, and current site ecology, a wetland delineation was conducted to determine the jurisdictional boundaries of wetlands and open water areas in the project area between fall 2019 and winter 2020. The wetlands were delineated in accordance with the procedures outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). The Routine On-Site Inspection Methodology, as set forth in the manual, was employed.

Ninety-two wetlands and waters of the US were identified and delineated, including 43 wetlands and 49 water features. Delineated wetlands include palustrine forested, scrub/shrub, and emergent wetland areas, encompassing approximately 14.22 acres. Water features include palustrine unconsolidated bottom (state open water), upper perennial, intermittent, and ephemeral streams. Water features total 19,456 linear feet in the project area. Invasive plant species are prevalent throughout the project area, and hydrology has been altered from impoundments, dams, and old road culverts in many areas. This report would support the application for a New Jersey Department of Environmental Protection Letter of Interpretation verification.

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INTRODUCTION

The National Park Service (NPS) proposes to restore wetlands and the natural function of a stream and its floodplain by reversing human-made changes in and near the Watergate Recreation Site in Hardwick Township, Warren County, New Jersey. The project would compensate for temporary and permanent impacts on wetlands, floodplains, and ecosystem function caused by the construction, operation, and maintenance of a high-voltage transmission line and its 200-foot right-of-way within the Delaware Water Gap National Recreation Area (DEWA).

WSP USA, Inc. (WSP) was hired to perform predesign, schematic design, and design development, and provide construction documents and supplemental services for the NPS DEWA Watergate Wetlands Restoration Project (project) (figure 1 in appendix A). The principal project goal is to generate 33-credit acres of wetland mitigation through reestablishment of palustrine wetland habitat and hydraulic restoration of Van Campens Brook. The project would result in a more natural and high-functioning wetland and riparian floodplain system, improved floodplain connectivity in the project area, and more natural fluvial dynamics in Van Campens Brook.

The approximately 114-acre project area includes approximately 1.1 miles of Van Campens Brook and its associated floodplain, a New Jersey Department of Environmental Protection (DEP) Category 1 waterway and designated trout production stream whose contributing watershed is contained solely within NPS property. Historical modifications, including land clearing, grading, and damming of the brook to create a series of ponds, historical farming fields, and homestead sites (now a recreation site with a picnic area), substantially degraded on-site habitat, which was further impaired by non-native invasive vegetation throughout the project area. A regional map of the project area is shown on figure 1 (appendix A). A topographical map depicting the project area is shown on figure 2 (appendix A).

The report summarizes the data collected during field investigations and includes maps of identified wetlands and streams in the project area. The field examination included an assessment of site topography, soil characteristics, vegetation, and hydrologic characteristics of the project area. This report includes background information on the project area; the wetland delineation methodology; vegetation, soil, and hydrology found within the project area; a functional wetland assessment, and vegetation community mapping. Also included are figures that depict DEP wetlands, National Wetland Inventory (NWI) wetlands, and soil types. Supporting documentation of the completed wetland delineation is included in the appendices. Appendix A contains report figures, appendix B contains field data forms completed at each of the soil point locations; and appendix C contains representative site photographs.

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PROJECT AREA ECOLOGY

HYDROLOGY

The project area is located within the Van Campens Brook/Dunnfield Creek watershed (US Geological Survey Cataloging Unit 02040104240). The DEP Division of Watershed Management has divided watersheds in New Jersey into several Watershed Management Areas (WMAs). The project area is located in the Upper Delaware Watershed Management Area (WMA 01). WMA 01 drainage predominantly funnels to the Delaware River.

The project area includes numerous streams. Table 1 describes the streams and their associated surface water quality standards, as designated in New Jersey Administrative Code 7:9B, in the order they are crossed by the project from west to east. Surface waters are classified based on designated uses. Freshwaters are classified as FW1 (not subject to any human-made wastewater discharges) and FW2 waters (all other freshwaters). Freshwaters are further classified based on trout status, trout production (FW2-TP), trout maintenance (FW2-TM), and non-trout (FW2-NT). Trout production streams are used by trout for spawning or nursery purposes during their first summer; while trout maintenance streams support trout throughout the year. Category One (C1) waters are protected from any measurable change in water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. C1 waters are present in the project area, including Van Campens Brook, which is classified as FW2-TPC1.

GEOMORPHOLOGY/SOILS

The project area lies within the Valley and Ridge Physiographic Province within the Appalachian Mountain Range (Dalton 2003). This province is characterized by a series of long, uniform ridges, roughly oriented in a northeast to southwest direction, which are separated by continuous valley trains. Geologically, these features formed as a result of upthrust caused by tectonic plate collision, then were altered by glacial advancement and retreat. The ridges are indicative of belts of harder materials resistant to erosion, while the valleys separating the ridges indicate belts of softer materials more susceptible to erosion.

The Web Soil Survey of Warren County, New Jersey (USDA-NRCS 2020) (figure 3) indicates that the soils in the project area consist of 10 map units. A mapping unit is a grouping of soils by their natural landscape and soil patterns. Most soil mapping units shown on detailed soil maps are phases of soil series.

Wetland areas typically contain hydric soils. By definition, a hydric soil is one that is formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (59 *Federal Register* [FR] 113, July 13, 1994). In the Web Soil Survey, hydric ratings indicate the proportion of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit component or soil type, each of which is rated as hydric or not hydric. Map units that are composed predominantly of hydric soils may have small areas of minor non-hydric components in the higher positions on the landform, and map units that are composed predominantly of non-hydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit. The hydric rating in table 1 indicates the percentage of map units that meets the criteria for hydric soils.

TABLE 1. SOIL CHARACTERISTICS IN PROJECT AREA

Map Unit Symbol	Soil Mapping Unit Name	Drainage Characteristics	Depth to Seasonal High-Water Table (Inches)	Hydric Rating	Hydric Soil
ChwBc	Chippewa silt loam, 0 to 8% slopes, extremely stony	Poorly drained	8–20	90	Yes
FrdAb	Fredon-Halsey complex, 0 to 3% slopes, very stony	Somewhat poorly drained	22–44	40	Yes
HdxpBb	Hazen-Paulins Kill complex, 3 to 8% slopes, very stony	Well drained	>80	0	No
LacBc	Lackawanna cobbly fine sandy loam, 0 to 8% slopes, extremely stony	Well drained	14–36	0	No
LacCc	Lackawanna cobbly fine sandy loam, 8 to 15% slopes, extremely stony	Well drained	14–36	0	No
LacDc	Lackawanna cobbly fine sandy loam, 15 to 35% slopes, extremely stony	Well drained	14–36	0	No
OpnCh	Oquaga-Lackawanna complex, 8 to 15% slopes, very rocky	Somewhat excessively drained	20–39	0	No
OpnDh	Oquaga-Lackawanna complex, 15 to 35% slopes, very rocky	Somewhat excessively drained	20–39	0	No
WecBc	Wellsboro silt loam, 0 to 8% slopes, extremely stony	Moderately well drained	12–30	0	No
WecCc	Wellsboro silt loam, 8 to 15% slopes, extremely stony	Moderately well drained	12–30	0	No

SOURCE: USDA-NRCS 2019

ChwBc – Chippewa silt loam, 0 to 8% slopes, extremely stony: Chippewa, extremely stony, makes up 80% of the map unit and is listed as a hydric soil occurring on concave interdrumlins according to the US Department of Agriculture, Natural Resource Conservation Service (USDA-NRCS) Hydric Soil List. This component occurs in extremely stony slopes ranging from 0 to 8%. The parent material consists of fine-loamy till derived from limestone, sandstone, and shale. The depth to a restrictive layer is 8–20-inches to fragipan. This soil is in the poorly drained natural drainage class. The map unit consist of two minor components, each representing 10%, and one listed as hydric soil, Alden silt loam, extremely stony (occurring on concave interdrumlins).

FrdAb – Fredon-Hasley complex, 0 to 3% slopes, very stony: Fredon, very stony, makes up 50% of the map unit and is not listed as a hydric soil according to the USDA-NRCS Hydric Soil List. This component occurs in very stony concave drainageways, ranging from 0 to 3%. The parent material consists of coarse-loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale. The depth to a restrictive layer is 22–44 inches to strongly contrasting textural stratification. This soil is in somewhat poorly drained natural drainage class. Hasley, very stony, makes up 40% of the map unit and is listed as a hydric soil occurring in concave drainageways

ranging from 0 to 3%, according to the USDA-NRCS Hydric Soil List. The parent material consists of coarse-loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale. The map unit consists of one minor component, representing 10%, Hero, very stony (occurring on linear terraces).

HdxpBb – Hazen-Paulins Kill complex, 3 to 8% slopes, very stony: Hazen, makes up 60% of the map unit and is not listed as a hydric soil according to USDA-NRCS Hydric Soil List. Slopes generally range from 3 to 8%. Hazen is derived from coarse-loamy glaciofluvial deposits derived from limestone, sandstone, and shale parent material. The depth to a restrictive layer is more than 80-inches. This soil is in the well-drained natural drainage class. Paulins kill, very stony, makes up 35% of the map unit and is not listed as a hydric soil according to the USDA-NRCS Hydric Soil List. This component occurs in very stony concave/convex outwash deltas and valley trains. The parent material consists of loamy over sandy and gravelly glaciofluvial deposits derived from limestone, sandstone, and shale. The depth to a restrictive layer is more than 80-inches. This soil is in the well-drained natural drainage class. The map unit consists of one minor component, representing 5%, Otisville, very stony (occurring on convex outwash deltas and valley trains).

LacBc – Lackwanna cobbly fine sandy loam, 0 to 8% slopes, extremely stony: Lackawanna, extremely stony, makes up 85% of the map unit occurring on linear ground moraines. Slopes range from 0 to 8%. The parent material consists of coarse-loamy till derived from shale and/or coarse-loamy till derived from sandstone and siltstone. The depth to a restrictive layer is 14–36-inches to fragipan. This soil is in the well-drained natural drainage class. The map unit consists of two minor components: Wellsboro, extremely stony, representing 10% (occurring on linear ground moraines), and Oquaga, extremely stony, representing 5% (occurring on linear ground moraines).

LacCc – Lackwanna cobbly fine sandy loam, 8 to 15% slopes, extremely stony: Lackawanna, extremely stony, makes up 85% of the map unit occurring on linear ground moraines. Slopes range from 8 to 15%. The parent material consists of coarse-loamy till derived from sandstone and siltstone and/or coarse-loamy till derived from shale. The depth to a restrictive layer is 14–36-inches to fragipan. This soil is in the well-drained natural drainage class. The map unit consists of two minor components: Wellsboro, extremely stony, representing 10% (occurring on linear ground moraines), and Oquaga, extremely stony, representing 5% (occurring on linear ground moraines).

LacDc – Lackwanna cobbly fine sandy loam, 15 to 35% slopes, extremely stony: Lackawanna, extremely stony, makes up 85% of the map unit occurring on linear ground moraines. Slopes range from 15 to 35%. The parent material consists of coarse-loamy till derived from sandstone and siltstone and/or coarse-loamy till derived from shale. The depth to a restrictive layer is 14–36-inches to fragipan. This soil is in the well-drained natural drainage class. The map unit consists of two minor components: Wellsboro, extremely stony, representing 10% (occurring on linear ground moraines), and Oquaga, extremely stony, representing 5% (occurring on linear ground moraines).

OpnCh – Oquaga-Lackwanna complex, 8 to 15% slopes, very rocky: Oquaga, very rocky, makes up 55% of the map unit occurring on linear/or convex ground moraines. Slopes range from 8 to 15%. The parent material consists of loamy till derived from sandstone and siltstone and/or loamy till derived from shale. The depth to a restrictive layer is 20–39 inches to lithic bedrock. This soil is in somewhat excessively drained natural drainage class. Lackawanna, very rocky, makes up 30% of the map unit occurring on convex/linear ground moraines. Slopes range from 8 to 15%. The parent material consists of coarse-loamy till derived from sandstone and siltstone and/or coarse loamy till derived from shale. This soil is in the well-drained natural drainage class. The map unit consists of two minor components: Rock outcrop, representing 10% (occurring on linear/convex ground moraines), and Wellsboro, very rocky, representing 5% (occurring linear/convex ground moraines).

OpnDh – Oquaga-Lackwanna complex, 15 to 35%slopes, very rocky: Oquaga, very rocky, makes up 50% of the map unit occurring on linear/or convex ground moraines. Slopes range from 15 to 35%. The parent material consists of loamy till derived from sandstone and siltstone and/or loamy till derived from shale. The depth to a restrictive layer is 20–39-inches to lithic bedrock. This soil is in the somewhat excessively drained natural drainage class. Lackawanna, very rock, makes up 35% of the map unit occurring on convex/linear ground moraines. Slopes range from 15 to 35%. The parent material consists of coarse-loamy till derived from sandstone and siltstone and/or coarse loamy till derived from shale. This soil is in the well-drained natural drainage class. The map unit consists of two minor components: Rock outcrop, representing 10% (occurring on linear/convex ground moraines), and Wellsboro, very rocky, representing 5% (occurring linear/convex ground moraines).

WecBc – Wellsboro silt loam, 0 to 8% slopes, extremely stony: Wellsboro, extremely stony, makes up 85% of the map unit occurring on linear/convex ground moraines. Slopes range from 0 to 8%. The parent material consists of coarse-loamy till derived from shale and/or coarse-loamy till derived from sandstone and siltstone. The depth to restrictive layer is 1–30 inches to fragipan. This soil is in the moderately well-drained natural drainage class. The map unit consists of two minor components: Morris, extremely stony, representing 10% (occurring linear/convex ground moraines), and Lackawanna, extremely stony, representing 5% (occurring linear/convex ground moraines).

WecCc – Wellsboro silt loam, 8 to 15% slopes, extremely stony: Wellsboro, extremely stony, makes up 85% of the map unit occurring on linear/convex ground moraines. Slopes range from 8 to 15%. The parent material consists of coarse-loamy till derived from shale and/or coarse-loamy till derived from sandstone and siltstone. The depth to restrictive layer is 12–30 inches to fragipan. This soil is in the moderately well-drained natural drainage class. The map unit consists of two minor components: Morris, extremely stony, representing 10% (occurring linear/convex ground moraines), and Lackawanna, extremely stony, representing 5% (occurring linear/convex ground moraines).

UPLAND COMMUNITIES

The NPS *Classification and Mapping of Vegetation and Fire Fuel Models at Delaware Water Gap National Recreation Area: Volume 1 of 2* publication was used to classify project area upland communities (Perles et al. 2007). Ten communities were identified in the project area and are described below.

- **Built-up Land:** Built-up land is represented in the project area by buildings, paved areas, and mowed lawn.
- **Old Field:** Old field communities in the project area consist of fields that are no longer plowed, planted, or grazed and are dominated by a variety of grasses, goldenrods (*Solidago* spp.), and other forbs.
- **Red Maple - Sweet Birch Hardwood Forest:** These forest communities are dominated by red maple (*Acer rubrum*) and sweet birch (*Betula lenta*) and often contain a low diversity of other plant species.
- **Northeastern Modified Successional Forest:** Northeastern modified successional forests occur on former agricultural land and other disturbed or degraded sites in which early successional and weedy tree species have established. This association also often contains abundance invasive shrubs and herb species, as well as thick vines that twine through the canopy and understory. Invasive shrubs in the project area include multiflora rose (*Rosa multiflora*), Japanese barberry (*Berberis thunbergii*), and autumn olive (*Elaeagnus umbellata*).

- **Successional Shrubland:** Successional shrubland communities are the result of unmaintained old field habitat and are dominated by shrub species, often non-native. In the project area, shrubland is dominated by invasive plant species, including autumn olive, multiflora rose, hawthorn (*Crataegus* sp.), and bush honeysuckle (*Lonicera* sp.).
- **Sugar Maple - American Beech - Sweet Birch Forest:** These forest communities vary in composition from pure sugar maple (*Acer saccharum*) to a mixture of sugar maple, American beech (*Fagus grandifolia*), and sweet birch. These forests are usually found over calcareous bedrock. Maple and beech saplings are dominant in the understory with witch hazel (*Hamamelis virginiana*), American hornbeam (*Carpinus caroliniana*), and Japanese barberry (*Berberis thunbergii*). Characteristic groundcover includes wood ferns (*Dryopteris* spp.), Christmas fern (*Polystichum acrostichoides*), Japanese stilgrass (*Microstegium vimineum*), and partridge berry (*Mitchella repens*).
- **Eastern Hemlock - Northern Hardwood Forest:** These forest communities occur in ravines and north-facing lower slopes in which eastern hemock (*Tsuga canadensis*) is co-dominant with maples (*Acer* spp.) and birches (*Betula* spp.). This community is limited to the northeast boundary of the project area, south of Van Campens Brook.
- **Sugar Maple Floodplain Forest:** Sugar Maple Floodplain Forest communities are usually near monocultures of sugar maple. These communities are located along Van Campens Brook in the northeastern portion of the project area.
- **Conifer Plantation:** Conifer Plantation communities consist of planted native or non-native pines (*Pinus* spp.), spruce (*Picea* spp.), or tamarack (*Larix* spp.) stands. In the project area, conifer plantation communities include Scotch pine (*Pinus sylvestris*), white pine (*Pinus strobus*), Norway spruce (*Picea abies*), and tamarack stands.
- **Northern Red Oak - Mixed Hardwood Forest:** These forest communities are dominated by northern red oak (*Quercus rubra*), maples, birches, American hornbeam, northern spicebush (*Lindera benzoin*), and Japanese barberry.

Vegetation observed within the project area is listed in table 2. This is not a complete list of all vegetation present in the project area, but it provides an assessment of the common species observed.

TABLE 2. VEGETATION OBSERVED IN PROJECT AREA

Scientific Name	Common Name	Wetland Indicator Status
Acer rubrum	red maple	FAC
Acer saccharum	sugar maple	FACU
Achillea millefolium	common yarrow	FACU
Allium vineale	wild garlic	FACU
Alnus serrulata	speckled alder	OBL
Berberis thunbergii	Japanese barberry	FACU
Betula nigra	river birch	FACW
Bidens frondosa	devil's beggartick	FACW
Boehmeria cylindrica	smallspike false nettle	OBL
Carex crinita	fringed sedge	OBL

Scientific Name	Common Name	Wetland Indicator Status
Carex lurida	shallow sedge	OBL
Carex scoparia	broom sedge	FACW
Carex stricta	tussock sedge	OBL
Carex vulpinoidea	fox sedge	OBL
Carpinus caroliniana	American hornbeam	FAC
Carya ovata	shagbark hickory	FACU
Celastrus orbiculatus	Oriental bittersweet	UPL
Crataegus sp.	hawthorn	N/A
Dennstaedtia punctilobula	eastern hayscented fern	UPL
Dichanthelium acuminatum	tapered rosette grass	FAC
Dichanthelium clandestinum	deertongue	FACW
Dulichium arundinaceum	three-way sedge	OBL
Elaeagnus umbellata	autumn olive	UPL
Epilobium coloratum	purpleleaf willowherb	OBL
Equisetum arvense	field horsetail	FAC
Euthamia graminifolia	flat-top goldentop	FAC
Fagus grandifolia	American beech	FACU
Festuca rubra	red fescue	FACU
Fraxinus americana	white ash	FACU
Fraxinus pennsylvanica	green ash	FACW
Ilex verticillata	common winterberry	FACW
Impatiens capensis	jewelweed	FACW
Juncus canadensis	Canada rush	OBL
Juncus effusus	soft rush	OBL
Juniperus virginiana	eastern red cedar	FACU
Leersia oryzoides	rice cutgrass	OBL
Lonicera japonica	Japanese honeysuckle	FACU
Lonicera tatarica	tatarian honeysuckle	FACU
Lycopus americanus	American water horehound	OBL
Lythrum salicaria	purple loosestrife	OBL
Microstegium vimineum	Japanese stiltgrass	FAC
Mimulus ringens	Allegheny monkeyflower	OBL
Onoclea sensibilis	sensitive fern	FACW
Osmunda regalis	royal fern	OBL

Scientific Name	Common Name	Wetland Indicator Status
Phalaris arundinacea	reed canarygrass	FACW
Pinus strobus	eastern white pine	FACU
Platanus occidentalis	American sycamore	FACW
Poa pratensis	Kentucky bluegrass	FACU
Polygonum pensylvanicum	Pennsylvania smartweed	FACW
Polygonum sagittatum	arrowleaf tearthumb	OBL
Polystichum acrostichoides	Christmas fern	FACU
Potentilla simplex	common cinquefoil	FACU
Quercus rubra	red oak	FACU
Rosa multiflora	multiflora rose	FACU
Rubus allegheniensis	Allegheny blackberry	FACU
Rubus flagellaris	northern dewberry	FACU
Rubus phoenicolasius	wine raspberry	FACU
Salix nigra	black willow	OBL
Scirpus atrovirens	green bulrush	OBL
Scirpus cyperinus	woolgrass	OBL
Solidago canadensis	Canada goldenrod	FACU
Solidago rugosa	wrinkleleaf goldenrod	FAC
Spiraea latifolia	broad-leaf meadowsweet	FACW
Spiraea tomentosa	steeplebush	FACW
Symphyotrichum lateriflorum	calico aster	FAC
Thelypteris noveboracensis	New York fern	FAC
Thelypteris palustris	eastern marsh fern	FACW
Toxicodendron radicans	eastern poison ivy	FAC
Typha latifolia	broadleaf cattail	OBL
Vaccinium corymbosum	highbush blueberry	FACW
Vernonia noveboracensis	New York ironweed	FACW
Viburnum prunifolium	blackhaw	FACU

SOURCE: LICHVAR ET AL. 2016

KEY TO INDICATOR CATEGORIES:

OBL: OBLIGATE WETLAND, ALMOST ALWAYS OCCUR IN WETLANDS.
FACW: FACULTATIVE WETLAND, USUALLY OCCUR IN WETLANDS, BUT MAY OCCUR IN NON-WETLANDS.
FAC: FACULTATIVE, OCCUR IN WETLANDS AND NON-WETLANDS.
FACU: FACULTATIVE UPLAND, USUALLY OCCUR IN NON-WETLANDS, BUT MAY OCCUR IN WETLANDS.
UPL: OBLIGATE UPLAND, ALMOST NEVER OCCUR IN WETLANDS.
N/A: NOT AVAILABLE (GENUS IDENTIFICATION ONLY).

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WETLAND DELINEATION

METHODOLOGY

WSP reviewed existing documentation, including NRCS soils data, Warren County soil surveys, DEP wetland and NWI mapping, available site-specific topographic survey maps, and aerial photographs, to determine the general location, extent, and character of the wetlands expected to occur in the project area. According to the DEP wetlands mapping, six classes of wetlands were identified within the project area, including forested wetland, scrub-shrub wetland, herbaceous wetland, artificial lake, natural lake, and stream/canal. DEP/NWI mapped wetlands are shown on figure 4. Wetland habitats identified on NWI mapping and observed during field delineation have been categorized based on field observation using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). The NWI mapped identified four wetland types in the project area, as shown in figure 4, including palustrine scrub-shrub broad-leaved deciduous wetlands (PSS1), palustrine unconsolidated bottom permanently flooded wetland (PUBH), riverine upper perennial unconsolidated bottom (R3UB), and riverine unknown perennial unconsolidated bottom (R5UB).

Subsequent to the desktop review, WSP performed a wetland delineation to determine the jurisdictional boundaries of wetlands and open water areas in the project area. The wetlands were delineated in accordance with the procedures outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). The Routine On-Site Inspection Methodology, as set forth in the manual, was employed. Wetland delineations were performed at a time of year when the upper 18 inches of the soil was not frozen and there was sufficient vegetative cover to use the three-parameter approach. Wetlands, as defined in the Federal Manual, are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands thus possess three characteristics: (1) hydric soils, (2) wetland hydrology, and (3) hydrophytic vegetation.

Orange, biodegradable wetland delineation flags were marked with a unique alpha numeric code and hung at regular intervals of ≤ 50 feet per DEP guidelines around the perimeter of each identified wetland habitat and located using a sub-meter accurate Global Positional System (GPS) system (Trimble Geo 7X). Representative wetland test pits for each plant community type encountered within a wetland system were also similarly flagged and located as were representative upland test pit/plots. GPS-based coordinates were collected for wetland test pit and boundary flags between October 15, 2019, and January 15, 2020, using a Trimble Geo7X receiver in the WGS 1984 datum, in feet coordinates. A minimum of 4 satellite vehicles were tracked and, where possible, a maximum Position Dilution of Precision of 6 was maintained for each set and a minimum of 40 positions were taken at each point feature. The data were post–processed and differentially corrected using Pathfinder Office 5.60, and base data were downloaded from the CORS, SUSSEX COUNTY (NJSC), NEW JERSEY (ITRF00 (1997)-Derived from IGS08 (NEW)). The corrected data were then exported to shapefile format for polygon creation in ARCMAP 10.6.1. Following this procedure, 90% of the collected GPS data have accuracies ranging from 0 to 3.0 feet, using the above standards. No tests were done to confirm the X/Y direction accuracy during this investigation.

WSP delineated wetland and open water areas in the project area in October and November 2019. Streams were delineated in December 2019 and January 2020. The boundaries of wetlands were marked in the field by sequentially numbered flags and located using a Trimble Pro XRS Global Positioning System with Asset Surveyor to sub-meter accuracy. The centerline of small streams was

delineated with sequentially numbered flags. For streams larger than 5 feet in width, the top of bank was delineated on both sides.

DELINEATED WETLANDS

The delineated wetland boundaries are illustrated on figure 4. Field data sheets documenting the soil, vegetative, and hydrologic conditions are presented in appendix B, and representative photographs of the project area wetlands are included in appendix C.

Eighty-six jurisdictional features, including 43 wetland areas and 43 open water features, were delineated in the project area. Six non-jurisdictional ephemeral streams were also delineated, as defined in the "Definition of 'Waters of the United States'-Recodification of Pre-Existing Rules" final rule (FR 84: 56626–56671, Oct. 22, 2019). Based on the field investigation, four classes of wetlands and three riverine designations were identified in the project area using the Cowardin classification system (Cowardin et al. 1979). These wetlands are listed in table 3 and include palustrine forested wetland (PFO), palustrine scrub-shrub wetland (PSS), palustrine emergent wetland (PEM), palustrine unconsolidated bottom (PUB), riverine upper perennial (R3), riverine intermittent (R4), and riverine ephemeral (R6). In ecotones where one wetland type grades to another and in areas undergoing stages of succession, mixes of the classes occur. For example, there are PEM/PSS wetlands within the project area.

TABLE 3. SUMMARY OF WETLANDS DELINEATED IN THE PROJECT AREA

Wetland Type	Number of Wetland Areas	Acreage Within Project Area
PFO	26	2.63
PSS	22	4.54
PEM	37	7.05
Total	**85***	**14.22**

NOTES:
*SOME WETLAND AREAS CONTAIN MULTIPLE WETLAND HABITAT TYPES.
PFO = PALUSTRINE FORESTED WETLAND; PSS = PALUSTRINE SCRUB-SHRUB WETLAND; PEM = PALUSTRINE EMERGENT WETLAND

Forty-three wetland areas, encompassing approximately 14.12 acres, were identified and delineated. Some of the wetland areas continue offsite as part of larger wetland systems. The general characteristics of the delineated wetlands, including their approximate acreage within the project area boundary and their classification, are summarized in table 4. The wetlands identified and delineated in the project area are described below.

Twenty-six palustrine forested wetlands, 22 palustrine scrub-shrub wetlands, and 37 palustrine emergent wetlands were delineated in the project area, totaling 14.22 acres as summarized in table 4. The total of 85 wetland communities is greater than the 43 wetland areas delineated because many wetland areas consist of multiple wetland community types.

The project area has approximately 10 previously constructed dams and associated water features, representing a landscape that was historically altered from its natural state. Van Campens Brook was moved, straightened, or otherwise altered in addition to the impoundments that were placed upon it. These impoundments, many of which are now breached, stored water and prevented sediment transport. Upon breaching, the defined channels were eroded in the substrate of the former impoundments, and high, confining banks formed. In select locations, evidence of a buried hydric soil layer/leaf mats and organic matter are present, indicating potential relic wetlands within the

floodplain area. For the purposes of this study, the entire floodplain within the project area, ponds, impoundments, and other riparian areas can be considered as potential altered wetlands.

Invasive plant species including multiflora rose, Japanese barberry, Japanese stiltgrass (*Microstegium viminuem*), autumn olive, Oriental bittersweet (*Celastrus orbiculatus*), tatarian honeysuckle (*Lonicera tatarica*), Japanese honeysuckle (*Lonicera japonica*), and purple loosestrife (*Lythrum salicaria*) are prevalent throughout the project area, located in both uplands and wetlands (Snyder and Kaufman 2004).

Further detail about each delineated wetland is presented in table 4, including the Cowardin classification, acreage within the project area, and its approximate coordinates.

TABLE 4. SUMMARY OF DELINEATED WETLANDS IN THE PROJECT AREA

Delineated Wetland	Flag Series	Cowardin Classification	Acreage in Project Area	Easting[1]	Northing[1]
A	DFAF	PEM1E	0.13	501716.813	4546391.71
B	DFD	PEM1B	0.24	501801.087	4546363.761
C	JBQ	PEM1B	0.12	501944.6004	4546484.015
D	WET14A	PEM1B	<0.01	501882.426	4546369.897
E	DFH	PEM1E, PSS1E	2.41	501971.87	4546302.663
F	JBAO	PEM1B	0.16	502066.7074	4546342.086
G	JBS, DFA	PEM1E, PSS1E	0.91	502174.944	4546537.667
H	WET27	PEM1E	0.02	502115.0438	4546282.456
I	WET26	PEM1E	0.05	502151.4237	4546279.326
J	JBI	PEM1E	0.25	502151.1685	4546231.479
L	JBJ	PFO1E	0.66	502202.086	4546267.091
N	JBO, JBP	PEM1E, PFO1E	0.50	502326.3762	4546373.674
O	JBM	PFO1E	0.04	502325.6622	4546273.872
P	JBAC	PEM1B	0.02	502366.5814	4546366.122
Q	DFAA	PFO1B	0.01	502306.1796	4546690.108
R	JBAB	PSS1B	0.15	502469.9352	4546634.44
S	JBZ	PEM1E, PSS1E, PFO1E	1.21	502454.2617	4546577.122
T	JBAM	PFO1E	0.03	502435.418	4546429.536
U	JBAD	PEM1E, PSS1E	0.23	502456.3531	4546455.415
V	JBAF	PEM1E, PFO1E	0.10	502523.3039	4546519.137
X	JBAR	PFO1E	0.29	502458.2473	4546380.491
Y	DFU	PEM1B	0.07	502649.7843	4546815.748
Z	DFG	PEM1E, PSS1E, PFO1E	1.53	502634.8889	4546695.726
AA	JBAG	PEM1E	0.03	502623.6366	4546512.967

Delineated Wetland	Flag Series	Cowardin Classification	Acreage in Project Area	Easting[1]	Northing[1]
AB	WET28	PSS1E	0.01	502636.8318	4546477.917
AC	WET28	PSS1E	0.01	502638.2208	4546470.995
AD	JBAG	PEM1E, PSS1E	0.60	502641.9009	4546532.34
AE	JBAH	PEM1E, PSS1E, PFO1E	1.15	502726.0235	4546543.203
AF	WET05	PFO1E	<0.01	502735.1189	4546630.717
AG	JBAJ	PFO1E	0.12	502738.4788	4546607.31
AH	JBAI	PFO1E	0.07	502762.8218	4546580.491
AI	WET06	PSS1E	0.07	502794.9876	4546669.564
AJ	WET30	PSS1E	0.08	502872.5963	4546648.147
AK	WET07	PFO1E	0.08	502842.6175	4546609.86
AL	WET29	PEM1E	0.02	502839.7546	4546578.294
AM	DFR	PEM1B	0.05	502838.6844	4546888.968
AN	DFP	PFO1E	0.19	502926.5361	4546889.992
AO	JBA	PSS1E, PFO1E	1.67	502912.2612	4546757.047
AP	JBB	PFO1E	0.43	502951.9273	4546832.88
AQ	JBC	PSS1B	0.02	502977.6288	4546821.556
AR	JBE	PEM1B	0.07	502973.3267	4546770.489
AS	JBD	PEM1E	0.13	502991.6355	4546755.118
CY	SOW-01	PEM1E	0.19	502293.3972	4546411.881
TOTAL			**14.12**		

NOTES:
PFO1 = PALUSTRINE FORESTED BROAD-LEAVED DECIDUOUS WETLAND; PSS1 = PALUSTRINE SCRUB/SHRUB BROAD-LEAVED DECIDUOUS WETLAND; PEM1 = PALUSTRINE PERSISTENT EMERGENT WETLAND; B = SATURATED WATER REGIME; E = SEASONALLY FLOODED/SATURATED WATER REGIME
[1]NORTHING AND EASTING COORDINATES REPRESENT THE CENTROID OF THE WETLAND POLYGON.

Palustrine Forested Broad-leaved Deciduous Wetlands (PFO): Forested wetlands are characterized by woody vegetation that is 20 feet tall or taller. Common dominant species observed in the broadleaved deciduous wetlands found in the project area include red maple, American sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), and river birch (*Betula nigra*). Understory plants often include highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), multiflora rose, Japanese barberry, asters (*Symphyotrichum* spp.), sedges (*Carex* spp.), and sensitive fern (*Onoclea sensibilis*). These wetlands generally occur on mineral soils or highly decomposed organic soils and exhibit hydrologic regimes ranging from seasonally flooded to seasonally saturated.

Palustrine Scrub/Shrub Broad-leaved Deciduous Wetlands (PSS1): Scrub/shrub wetlands are characterized by woody vegetation less than 20 feet tall, including true shrubs, young trees, and trees or shrubs that are small or stunted because of the environmental conditions. Common dominant vegetation in these wetlands in the project area includes speckled alder (*Alnus serrulata*), highbush

blueberry, steeplebush (*Spiraea tomentosa*), bush honeysuckles (*Lonicera* spp.), and multiflora rose. Herbaceous plants in these areas include false nettle (*Boehmeria cylindrica*), rice cutgrass (*Leersia oryzoides*), and sedges. These wetlands generally occur on mineral soils or highly decomposed organic soils and exhibit a seasonally flooded hydrologic regime.

Palustrine Emergent Wetlands (PEM1): Emergent wetlands are characterized as having vegetation that is erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. Emergent wetlands in the project area include both wet meadow habitats (seasonally saturated) and marsh (seasonally flooded), differentiated by dominant vegetation and hydrologic regimes. Persistent emergent wetland vegetation found in the project area at the time of delineation included woolgrass (*Scirpus cyperinus*), broad-leaf cattail (*Typha latifolia*), goldenrods (*Solidago* spp.), shallow sedge (*Carex lurida*), smartweeds (*Polygonum* spp.), purple loosestrife, Japanese stiltgrass, tussock sedge (*Carex stricta*), Allegheny monkeyflower (*Mimulus ringens*), and sensitive fern.

The surveyed boundaries of the wetlands are shown on figure 4. Each wetland has been assigned a name (e.g., A, B, C) and is identified by the flag series nomenclature used during the delineations (e.g., JBB).

During the wetland delineation, potential vernal pool features were only identified within wetland AK. Wetland AK is 0.08 acre and contains indicators of prolonged surface inundation such as buttressed tree trunks, water marks, and water-stained leaves. The wetland is located within the floodplain of Van Campens Brook and occasionally receives surface runoff from the stream. WSP also reviewed available listings of certified vernal pools and potential vernal habitat on the DEP GeoWeb application and confirmed that no vernal pools or vernal habitat were identified within or adjacent to the project area.

WATERS OF THE UNITED STATES/STATE

During field investigations, three riverine community types and one open water community type were observed—riverine upper perennial (R3), riverine intermittent (R4), riverine ephemeral (R6) and palustrine unconsolidated bottoms (PUB). The locations of delineated streams in the project area are shown on figure 4. Each stream was assigned a name (e.g., A, B, C) and identified by the flag series nomenclature used during the delineations (e.g., JBJ-S, JBJB-S).

The three riverine and one palustrine subsystem identified in the project area as waters of the United States/State, as classified by Cowardin et al. (1979) are described below.

Riverine Upper Perennial (R3): Perennial streams have flowing water year-round during a typical year; have a water table that is located above the stream bed for most of the year; and, are primarily fed by groundwater with runoff from rainfall providing a supplemental source of water for stream flow. Cowardin et al. (1979) additionally defines upper perennial streams as having high gradient and fast water velocity.

Van Campens Brook is the predominant upper perennial stream in the project area and is a high quality, cold water fishery that supports reproducing populations of native brook trout. It flows from northeast to southwest and intercepts many tributaries before leaving the project area, eventually flowing into the Delaware River south of the project area. Ten human-made dams have been constructed along the channel of Van Campens Brook in the project area. The stream is highly dynamic, with many large, deep pools in the stream that are contributed to by the dams. The substrate in Van Campens Brook consists of small to large cobbles, silt, and sand. Other perennial streams in the project area are tributaries to Van Campens Brook, some with high gradients. Substrate in these streams is predominantly cobble.

Riverine Intermittent (R4): Intermittent streams have flowing water during certain times of the year when groundwater provides water for stream flow, may not have any flow during dry periods, and have flow supplemented by runoff from rainfall. Many intermittent streams in the project area convey surface runoff and groundwater flow through wetland areas. Numerous hillside seeps carry flow to Van Campens Brook. Intermittent stream substrate in the project area includes mud, gravel, and cobble.

Riverine Ephemeral (R6): Ephemeral drainages have flowing water present only during and for a short duration after precipitation events in a typical year, have stream beds that are located above the water table year-round, and are primarily fed by runoff from rainfall. Cowardin et al. (1979) do not classify ephemeral streams. Ephemeral drainages in the project area range from roadside ditches to hillside runoff channels. The predominant substrate of ephemeral drainages in the project area is gravel/cobble.

Palustrine unconsolidated bottom (PUB): Palustrine unconsolidated bottom habitat is characterized by areas with less than 30% vegetative cover and at least 25% substrate cover by particles smaller than stones. In the project area, this habitat comprises permanently flooded ponds that vary in depth from 6 inches to 12 feet.

Five upper perennial stream segments, 33 intermittent stream segments, and 6 ephemeral stream segments were delineated in the project area, totaling 19,456 linear feet and summarized in table 5.

TABLE 5. SUMMARY OF STREAMS DELINEATED IN THE PROJECT AREA

Flow Regime	Number of Stream Segments	Acreage in Project Area	Linear Feet in Project Area
R3	5	3.58	9,032
R4	33	0.62	7,452
R6	6	0.06	1,183
PUB	5	10.92	1,789
Total	**49**	**15.18**	**19,456**

NOTES:
R3 = RIVERINE UPPER PERENNIAL; R4 = RIVERINE INTERMITTENT; R6 = RIVERINE EPHEMERAL; PUB = PALUSTRINE UNCONSOLIDATED BOTTOM

Further detail about each delineated stream segment is shown in table 6, including the Cowardin classification, linear feet within the project area, and approximate coordinates. WSP is of the opinion that all perennial and intermittent streams delineated in the project area are jurisdictional waters of the US. The six ephemeral streams serve as surface water-driven stormwater conveyance and are assumed to be non-jurisdictional, based on the 2019 Waters of the US' rule (FR 84: 56626–56671, Oct. 22, 2019). Portions of these ephemeral streams, however, are likely regulated by the State of New Jersey.

TABLE 6. WATERS DELINEATED IN THE PROJECT AREA

Delineated Water	Flag Series	Cowardin Classification	Acreage in Project Area	Linear Feet in Project Area	Easting[1]	Northing[1]
AT	DFAI-S	R6SB5A	<0.01	69.16	501594.7687	4546284.131
AU	DFAH-S	R6SB5A	<0.01	54.37	501631.3214	4546306.044
AV	DFAG-S, JBAQ-S	R4SB5C	0.01	286.84	501732.0955	4546324.776
AX	DFE-S, SOW-01	R3UB1H	3.12	6,570.00	502293.3972	4546411.881
AZ	DFAE-S	R6SB5A	<0.01	59.77	501779.0644	4546424.845
BA	DFAD-S	R6SB5A	0.01	221.73	501851.3601	4546488.806
BB	DFF-S, SOW-02	R4SB5C	0.15	894.24	501839.9277	4546327.138
BC	SOW-06	R4SB5C	<0.01	15.34	501889.2422	4546384.31
BD	SOW-09	PUB3Hh	7.79	1,029.49	502048.8132	4546463.031
BE	SOW-O5	R4SB3C	0.01	88.05	502077.6651	4546320.132
BF	SOW-04	R3UB1H	0.03	134.54	502097.6341	4546295.098
BG	JBR-S	R4SB5C	<0.01	180.85	502160.6502	4546631.598
BH	DFAC-S, JBV-S	R4SB5C	0.01	394.61	502217.676	4546631.24
BI	DFAB-S, JBT-S	R4SB5C	0.01	211.49	502231.5546	4546646.651
BJ	DFZ, JBY-S, DFB-S	R4SB5C	0.04	663.78	502228.8912	4546608.323
BK	DFY-S	R4SB5C	<0.01	48.05	502314.8909	4546687.591
BM	JBL-S, JBN-S	R4SB5C	<0.01	90.09	502339.5886	4546282.611
BN	SOW-29	PUB3Hh	0.12	135.15	502264.3015	4546340.136
BO	SOW-28	PUB3Hh	0.09	75.78	502304.8544	4546360.437
BP	SOW-19	PUB3Hh	2.82	447.59	502370.8943	4546453.378
BQ	JBAT-S, JBAS-S	R4SB5C	0.02	345.46	502436.1149	4546366.772
BR	DFX-S	R6SB5A	0.04	491.45	502472.2313	4546732.493
BS	JBAA-S	R4SB5C	<0.01	41.74	502470.0489	4546604.608
BT	JBAE-S	R4SB5C	0.07	295.01	502524.0069	4546517.534
BU	SOW-26	R4SB2C	0.01	122.82	502497.4683	4546419.158
BV	SOW-27	R4SB2C	0.01	84.01	502509.9733	4546416.188
BX	SOW-10	R4SB5C	0.03	199.66	502558.1667	4546598.15
BZ	SOW-20	PUB3Hh	0.10	100.74	502603.062	4546624.466
CA	DFW-S, JBAL-S	R6SB5A	0.01	286.18	502570.9852	4546705.38
CB	DFV-S, JBAK-S	R4SB5C	0.02	561.70	502629.6532	4546794.731

Delineated Water	Flag Series	Cowardin Classification	Acreage in Project Area	Linear Feet in Project Area	Easting[1]	Northing[1]
CC	SOW-11	R4SB2C	0.01	124.87	502647.057	4546463.692
CD	JBAU-S	R4SB2C	<0.01	12.92	502657.2799	4546453.398
CE	SOW-12	R4SB2C	0.05	497.02	502698.7277	4546539.831
CF	SOW-18	R3UB1H	0.34	1,025.07	502804.9966	4546639.765
CG	JBG-S, SOW-21	R4SB3C, R3UB1H	0.05	1,103.04	502825.9125	4546701.747
CH	SOW-14	R4SB3C	0.02	159.32	502789.8315	4546581.632
CI	SOW-13	R4SB3C	0.01	124.65	502817.527	4546568.682
CJ	SOW-22	R3UB1H	0.04	199.35	502843.712	4546633.446
CK	SOW-23	R4SB3C	<0.01	36.09	502839.1074	4546635.013
CL	SOW-24	R4SB3C	<0.01	52.37	502857.2335	4546642.496
CM	SOW-15	R4SB3C	0.01	98.23	502878.2255	4546595.148
CO	SOW-16, SOW-25	R4SB3C	0.02	137.48	502911.301	4546617.738
CP	CFS-S, JBA-S, JBI-S	R4SB5C	0.04	376.91	502882.8459	4546783.66
CQ	DFT-S	R4SB5C	0.01	360.97	502854.4496	4546878.518
CR	DFQ-S	R4SB5C	<0.01	63.81	502916.4055	4546888.428
CS	JBL-S	R4SB5C	0.03	592.13	502269.6298	4546267.532
CT	JBF-S	R4SB5C	0.01	147.42	502936.8676	4546794.116
CU	JBAN-S	R4SB5C	<0.01	31.02	502431.9418	4546415.30
CX	WET07	R4SB3C	0.02	113.43	502845.0481	4546602.00
TOTAL			**15.18**	**19,455.79**		

NOTES:
R3UB1 = RIVERINE UPPER PERENNIAL UNCONSOLIDATED BOTTOM COBBLE-GRAVEL; R4 = RIVERINE INTERMITTENT; R6 = RIVERINE EPHEMERAL; PUB = PALUSTRINE UNCONSOLIDATED BOTTOM; SB2=STREAMBED RUBBLE; SB3=STREAMBED COBBLE-GRAVEL; SB5=STREAMBED MUD; A=TEMPORARILY FLOODED WATER REGIME; C=SEASONALLY FLOODED WATER REGIME; H=PERMANENTLY FLOODED WATER REGIME; h=DIKED IMPOUNDED SPECIAL MODIFIER
[1]NORTHING AND EASTING COORDINATES REPRESENT THE CENTROID OF THE WATERS POLYGON.

CONCLUSIONS

The wetland delineation was based on the presence of hydrophytic vegetation, wetland hydrology, and hydric soils, as outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee on Wetland Delineation 1989). The wetland lines were flagged in the field and mapped using sub-meter accuracy global positioning system equipment. Report figures are provided in appendix A, field data forms are located in appendix B, and representative photographs are presented in appendix C.

Ninety-two wetlands and waters of the US were identified and delineated, including 43 wetlands and 49 water features. Delineated wetlands include palustrine forested, scrub/shrub, and emergent wetland areas, encompassing approximately 14.22 acres. Water features include palustrine unconsolidated bottom (SOWs), upper perennial, intermittent, and ephemeral streams. Water features total 19,456 linear feet in the project area. Invasive plant species are prevalent throughout the project area, and hydrology has been altered from impoundments, dams, and old road culverts in many areas.

Under NPS Director's Order 77.1 guidelines, all the wetlands and waters mapped as part of this effort would fall under NPS programmatic protection. It is the opinion of WSP that all mapped wetlands and waters in the project area will be jurisdictional under the State of New Jersey, except for the six mapped ephemeral streams, which only convey stormwater flow.

This report contains information sufficient to obtain a DEP Letter of Interpretation (LOI) verification. A LOI verification application would be included as part of an application for a DEP Freshwater Wetlands General Permit 16 for creation, restoration, and enhancement of habitat and water quality functions and values. Permit plans depicting wetland boundaries, flag locations, and soil data points would be included with the LOI/General Permit application submission to DEP.

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ACRONYMS AND ABBREVIATIONS

C1	category one waters
FR	*Federal Register*
FW2	freshwater 2 waters
DEP	New Jersey Department of Environmental Protection
DEWA	Delaware Water Gap National Recreation Area
GPS	Global Positioning System
LOI	Letter of Interpretation
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
PEM	palustrine emergent wetland
PFO	palustrine forested wetland
Project	NPS DEWA Watergate Restoration Project
PSS	palustrine scrub-shrub wetland
PUB	palustrine unconsolidated bottom
R3	riverine upper perennial
R4	riverine intermittent
R6	riverine ephemeral
SOW	state open water
TM	trout maintenance waters
TP	trout production waters
WMA	watershed management area
WSP	WSP USA, Inc.

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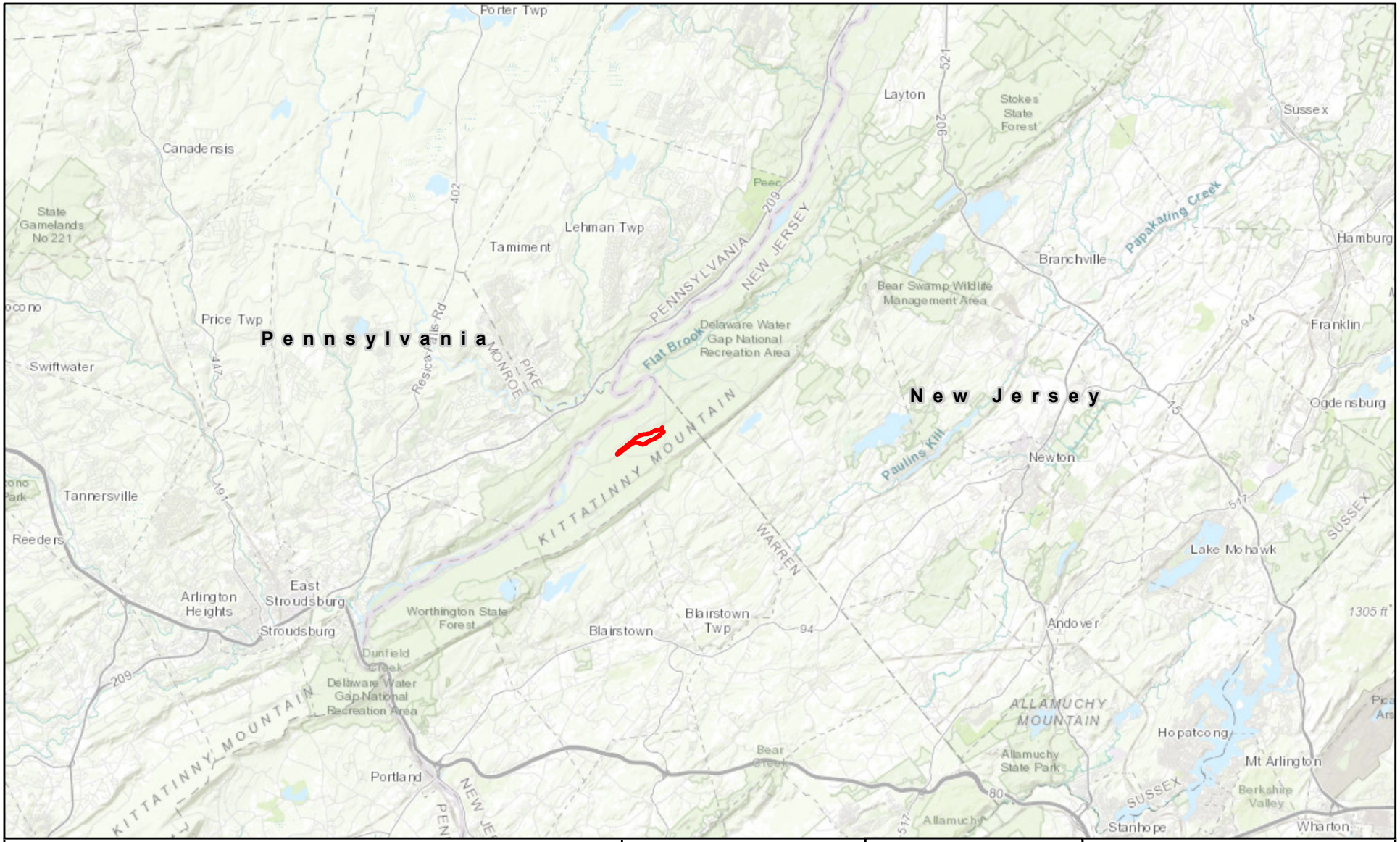
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APPENDIX A—REPORT FIGURES

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Project Area

Source: ESRI Topographic Map Service.

Coordinate System:
New Jersey State Plane
North American Datum 1983

June 2020

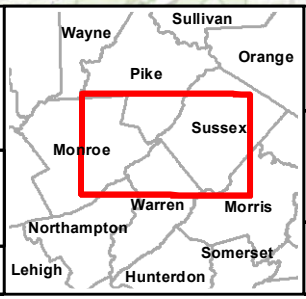


Figure 1
Regional Location
NPS DEWA-294871
Watergate Wetland Restoration

0 2 4 Miles

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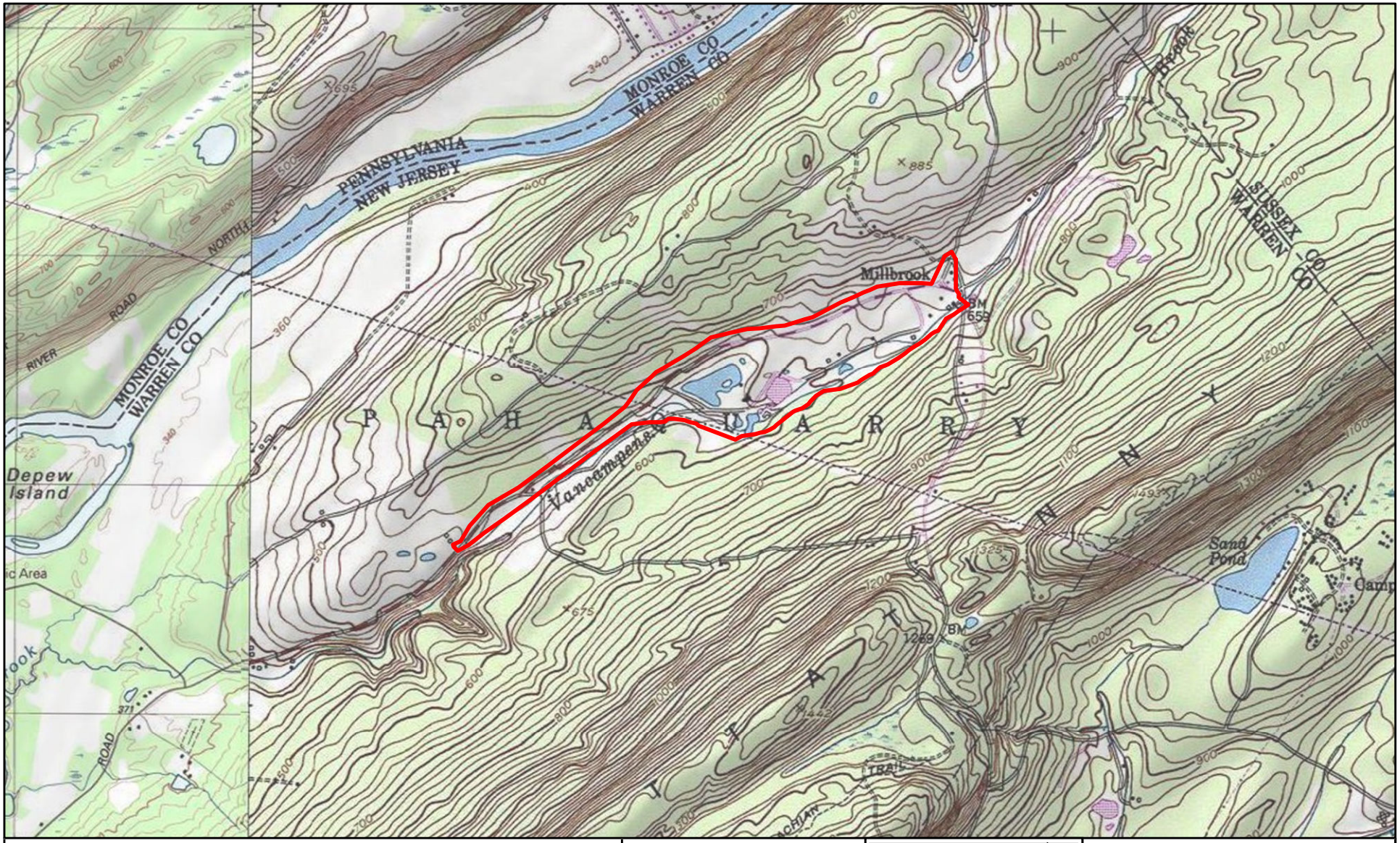
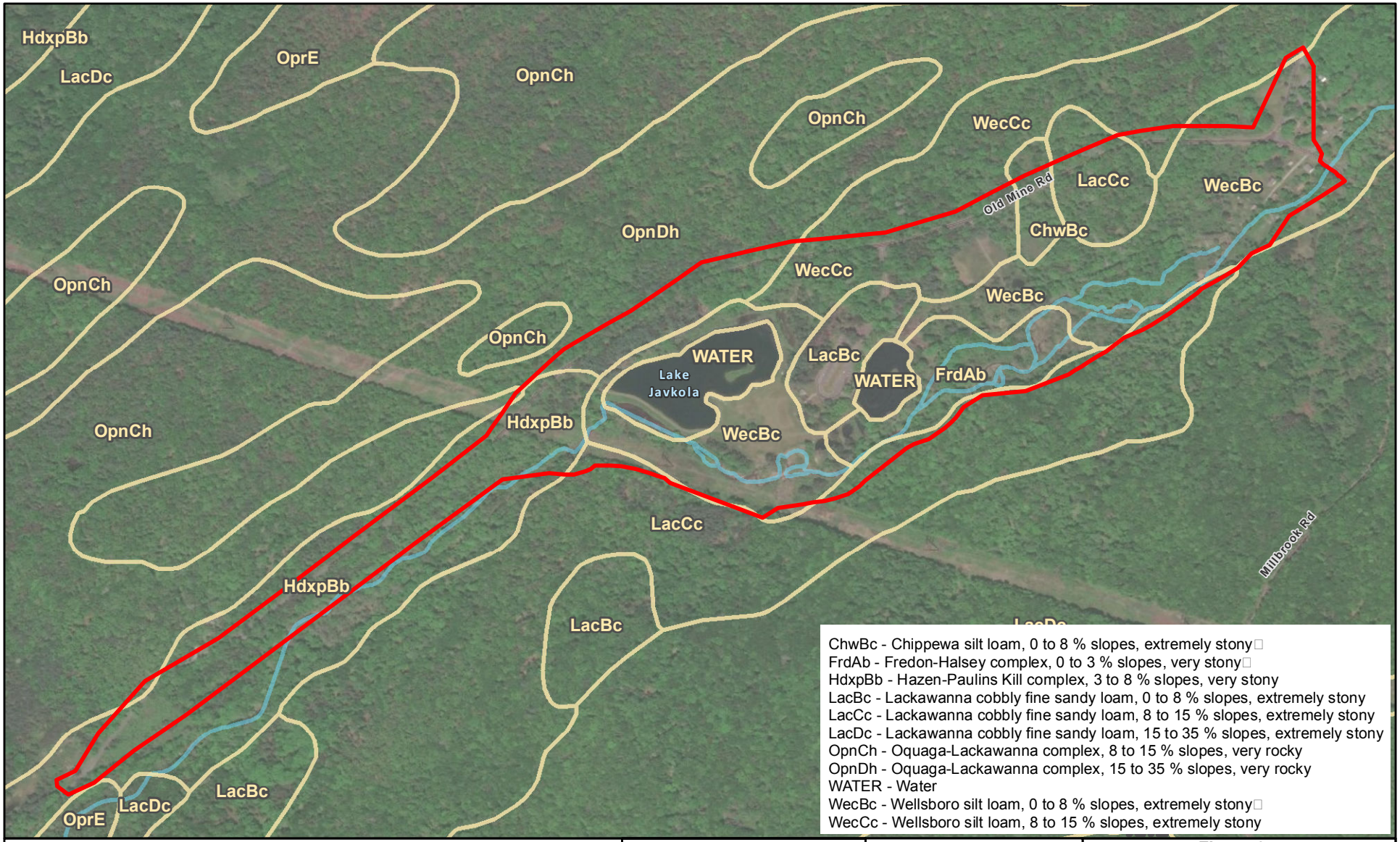


Figure 2
Site Topography
NPS DEWA-294871
Watergate Wetland Restoration



ChwBc - Chippewa silt loam, 0 to 8 % slopes, extremely stony
FrdAb - Fredon-Halsey complex, 0 to 3 % slopes, very stony
HdxpBb - Hazen-Paulins Kill complex, 3 to 8 % slopes, very stony
LacBc - Lackawanna cobbly fine sandy loam, 0 to 8 % slopes, extremely stony
LacCc - Lackawanna cobbly fine sandy loam, 8 to 15 % slopes, extremely stony
LacDc - Lackawanna cobbly fine sandy loam, 15 to 35 % slopes, extremely stony
OpnCh - Oquaga-Lackawanna complex, 8 to 15 % slopes, very rocky
OpnDh - Oquaga-Lackawanna complex, 15 to 35 % slopes, very rocky
WATER - Water
WecBc - Wellsboro silt loam, 0 to 8 % slopes, extremely stony
WecCc - Wellsboro silt loam, 8 to 15 % slopes, extremely stony

Project Area
Soil Boundary
Stream

Sources: ESRI Basemap Imagery; NRCS Web Soil Survey, 2019.

Coordinate System:
New Jersey State Plane
North American Datum 1983

May 2020

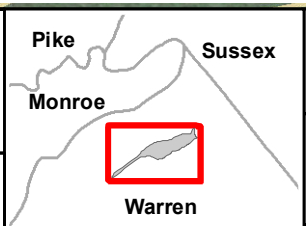
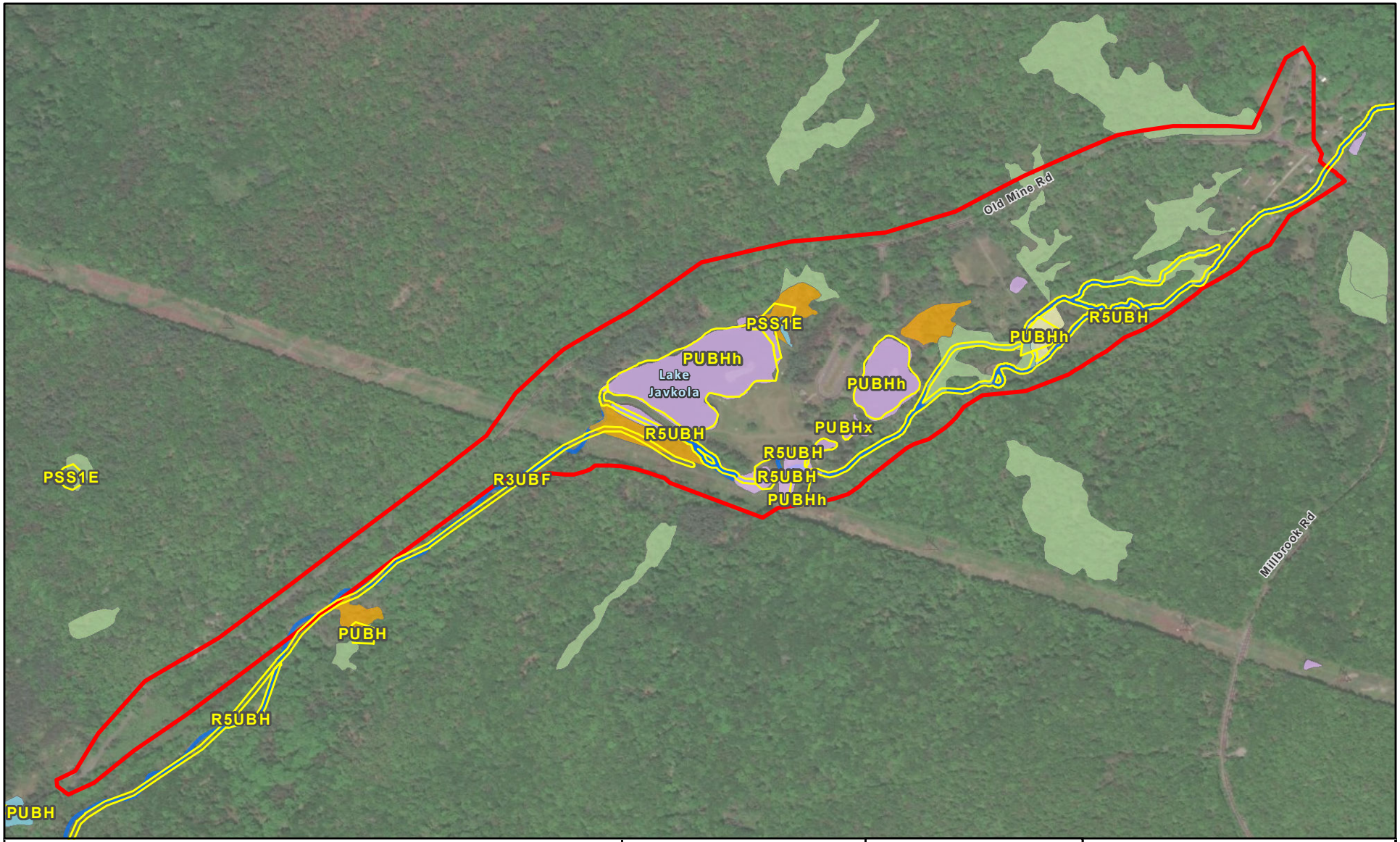


Figure 3
Soils Map
NPS DEWA-294871
Watergate Wetland Restoration

0 400 800 Feet

N



Project Area
Stream
NWI Wetland
Artificial Lake
Forested Wetland
Herbaceous Wetland
Natural Lake
Scrub/shrub Wetland
Stream/Canal

Sources:
ESRI Basemap Imagery;
NJDEP Landuse Landcover, 2015;
USFWS, NWI Wetlands, 2019.

Coordinate System:
New Jersey State Plane
North American Datum 1983

May 2020

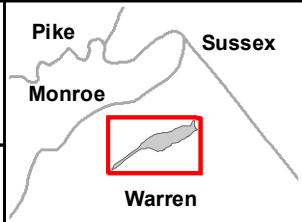
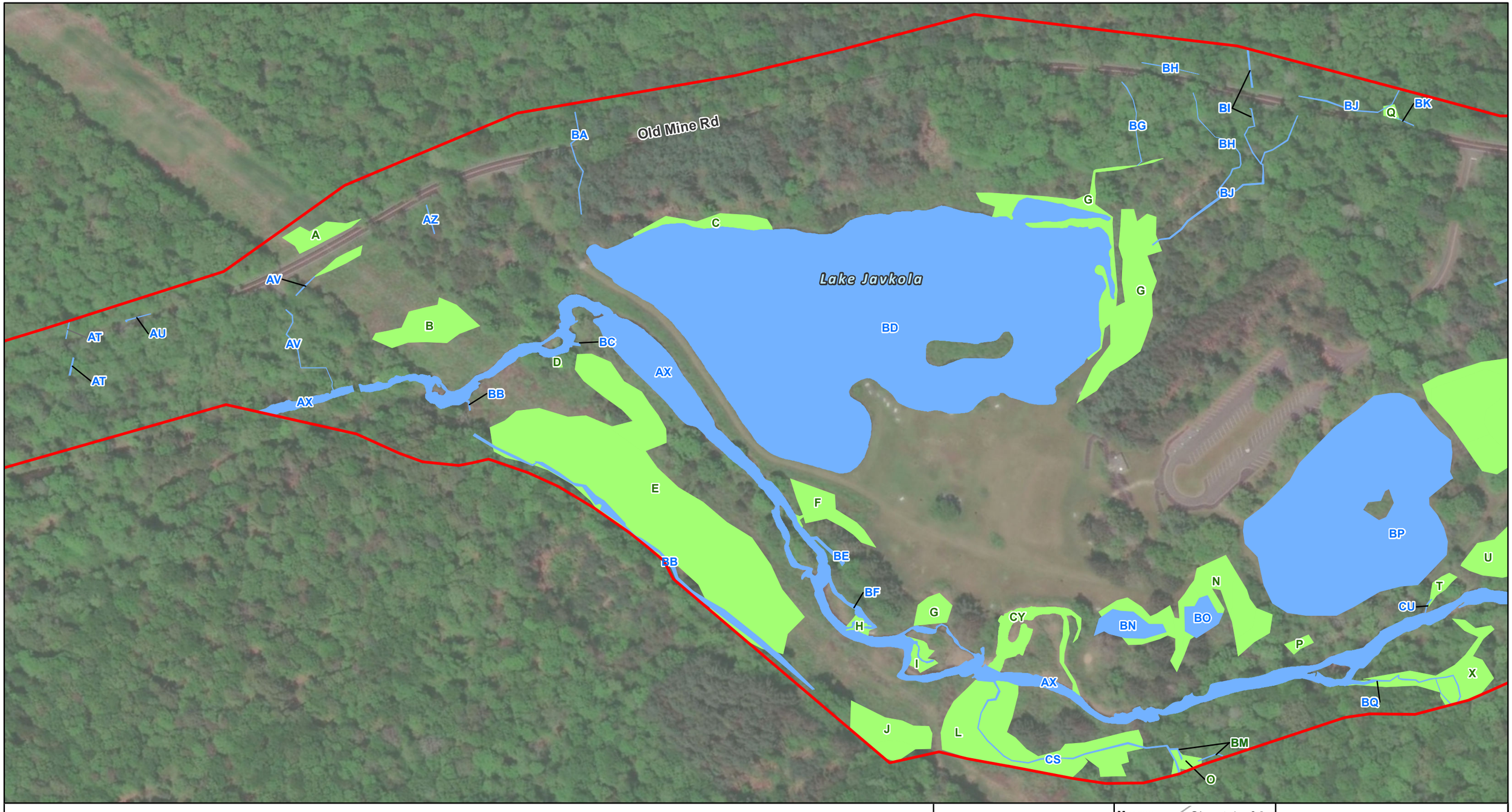


Figure 4
NJDEP/NWI Wetland Map
NPS DEWA-294871
Watergate Wetland Restoration

0 400 800 Feet



Project Area
Delineated Stream
Delineated Wetland

Sources:
ESRI Imagery Map Service.
WSP 2020.

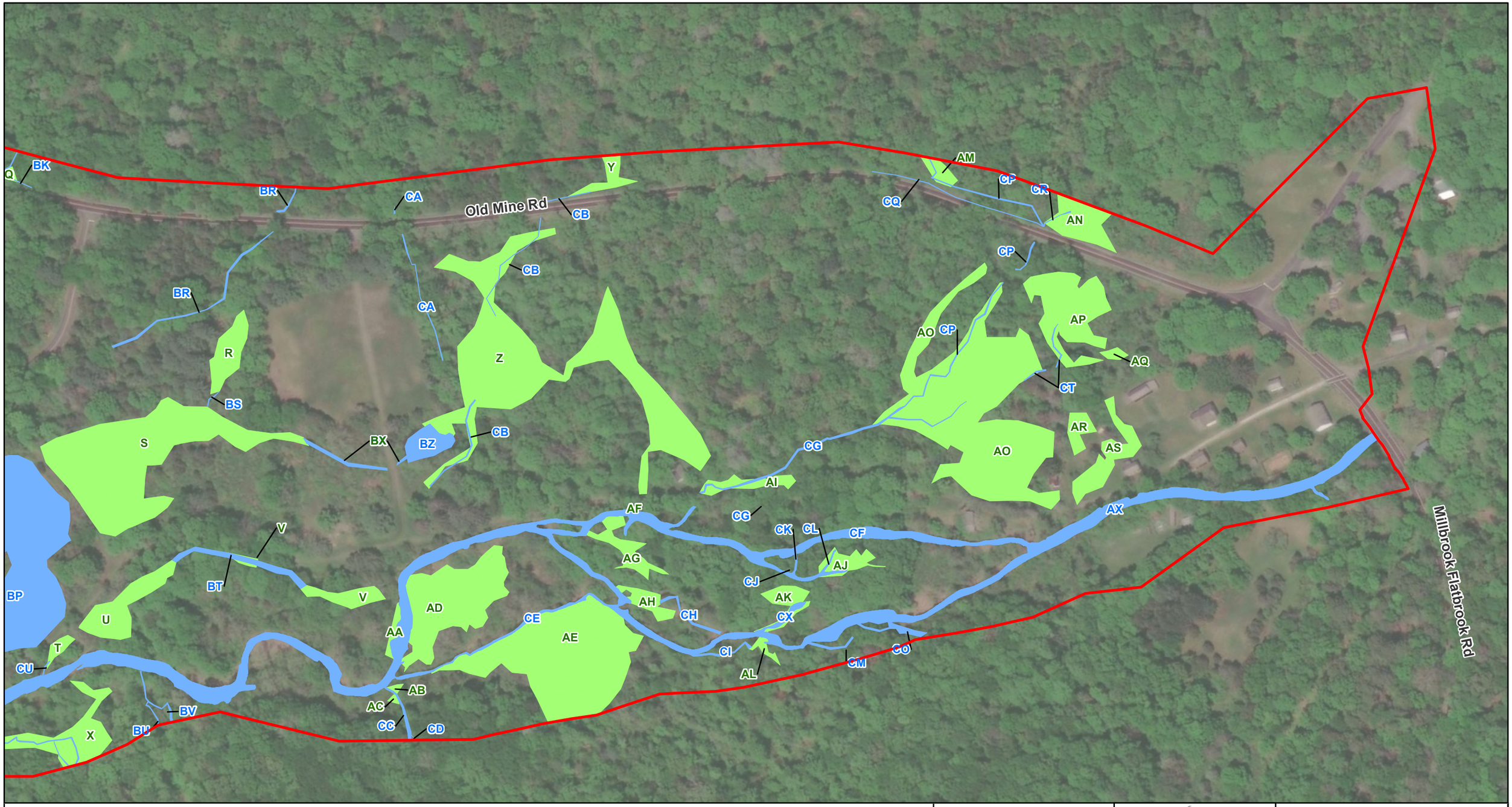
Coordinate System:
New Jersey State Plane
North American Datum 1983

June 2020

Monroe
Warren
1
2
Sheet 1 of 2

Figure 5 - Wetland Delineation
NPS DEWA-294871
Watergate Wetland Restoration

0 100 200 Feet



Project Area
Delineated Stream
Delineated Wetland

Sources:
ESRI Imagery Map Service.
WSP 2020.

Coordinate System:
New Jersey State Plane
North American Datum 1983

June 2020

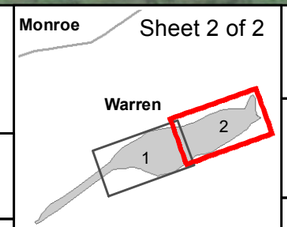


Figure 5 - Wetland Delineation
NPS DEWA-294871
Watergate Wetland Restoration

0 100 200 Feet

APPENDIX B—FIELD DATA FORMS

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DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate			**Date:**	1/15/2020
Applicant / Owner:	National Park Service			**County:**	Warren
Investigator:	D. Flynn, J. Baker			**State:**	New Jersey
Do normal circumstances exist on the site?		**Yes** X	**No**	**Wetland Flag:**	DFAF-Wet
Is the site significantly disturbed (Atypical situation)?		**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?		**Yes**	**No** X	**Northing:**	14915943.89
(explain on reverse if needed)				**Easting:**	1646047.314

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Phalaris arundinacea*	Herb	FACW	9			
2	*Epilobium coloratum*	Herb	OBL	10			
3	*Polygonum sagittatum*	Herb	OBL	11			
4	*Solidago rugosa*	Herb	FAC	12			
5				13			
6				14			
7				15			
8				16			

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

Remarks: Hydrophytic vegetation indicators are present.

HYDROLOGY

____ **Recorded Data (Describe In Remarks):**

____ **Stream, Lake, or Tide Gauge**
____ **Aerial Photographs**
____ **Other**

____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: 1 **(in.)**
Depth to Free Water in Pit: 1 **(in.)**
Depth to Saturated Soil: 0 **(in.)**

Wetland Hydrology Indicators

Primary Indicators:
X **Inundated**
X **Saturated in Upper 12”**
____ **Water Marks**
____ **Drift Lines**
____ **Sediment Deposits**
X **Drainage Patterns in Wetlands**

Secondary Indicators:
____ **Oxidized Roots Channels in Upper 12”**
____ **Water-Stained Leaves**
____ **Local Soil Survey Data**
____ **FAC-Neutral Test**
____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony **Drainage Class:** Well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-1		10YR 2/1		100%	Silt loam
1-10		10YR 4/2	10YR 5/2	DM 5%	Clay loam
			10YR 6/8	CM 2%	
			7.5YR 4/6	CPL 5%	
10-20+		10YR 5/2	10YR 4/2	DM 5%	Clay loam
			7.5YR 4/6	CM 5%	

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3- Depleted Matrix as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site: DEWA Watergate			**Date:** 10/15/2019
Applicant / Owner: National Park Service			**County:** Warren
Investigator: D. Flynn, J. Baker			**State:** New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:** DFA-Up
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**
Is the area a potential problem area?	**Yes**	**No** X	**Northing:** 14916536.08
(explain on reverse if needed)			**Easting:** 1647667.679

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Juniperus virginiana*	Tree	UPL	9			
2	*Elaeagnus umbellata*	Shrub	UPL	10			
3	*Celastrus orbiculatus*	Vine	UPL	11			
4	*Berberis thunbergii*	Herb	FACU	12			
5	*Microstegium vimineum*	Herb	FAC	13			
6	*Solidago rugosa*	Herb	FAC	14			
7	*Toxicodendron radicans*	Herb	FAC	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 43%

Remarks: Hydrophytic vegetation indicators are not dominant.

HYDROLOGY

____ Recorded Data (Describe In Remarks):

- **____ Stream, Lake, or Tide Gauge**
- **____ Aerial Photographs**
- **____ Other**

____ No Recorded Data Available

Field Observations:

- **Depth of Surface Water:** ___-___ **(in.)**
- **Depth to Free Water in Pit:** ___-___ **(in.)**
- **Depth to Saturated Soil:** ___-___ **(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- **____ Inundated**
- **____ Saturated in Upper 12”**
- **____ Water Marks**
- **____ Drift Lines**
- **____ Sediment Deposits**
- **____ Drainage Patterns in Wetlands**

Secondary Indicators:

- **____ Oxidized Roots Channels in Upper 12”**
- **____ Water-Stained Leaves**
- **____ Local Soil Survey Data**
- **____ FAC-Neutral Test**
- **____ Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators were not observed.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		10YR 3/3		100%	Silt loam
8-14		7.5YR 4/2		100%	Silt loam
14		Auger refusal			Rocks/tree roots

Hydric Soil Indicators:

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

Remarks: Hydric soil indicators were not observed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **Yes** _____ **No** X
Wetland Hydrology Present? **Yes** _____ **No** X
Hydric Soils Present? **Yes** _____ **No** X

Is the Sampling Point Within a Wetland? **Yes** _____ **No** X

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were not observed.
This area does not satisfy the three wetland parameters and is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	10/15/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	DFA-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14916522.19
(explain on reverse if needed)			**Easting:**	1647609.104

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Phalaris arundinacea*	Herb	FACW	9			
2	*Scirpus cyperinus*	Herb	OBL	10			
3	*Polygonum sagittatum*	Herb	OBL	11			
4				12			
5				13			
6				14			
7				15			
8				16			

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

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- ____ **Stream, Lake, or Tide Gauge**
- X **Aerial Photographs**
- ____ **Other**

____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	-	**(in.)**
Depth to Free Water in Pit:	-	**(in.)**
Depth to Saturated Soil:	5	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- ____ **Inundated**
- X **Saturated in Upper 12”**
- ____ **Water Marks**
- ____ **Drift Lines**
- ____ **Sediment Deposits**
- ____ **Drainage Patterns in Wetlands**

Secondary Indicators:

- ____ **Oxidized Roots Channels in Upper 12”**
- X **Water-Stained Leaves**
- ____ **Local Soil Survey Data**
- ____ **FAC-Neutral Test**
- ____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-5		10YR 3/2	10YR 3/4	CPL 2%	Silt loam
5-12		10YR 4/1	10YR 5/6	CPL 5%	Clay loam
12-20+		10YR 5/2	2.5Y 6/6	CM 2%	Clay loam
			10YR 5/6	CPL 5%	
			10YR 4/2	DM 10%	
			5YR 5/3	CM 1%	

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3-Depleted Matrix as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate			**Date:**	10/21/2019
Applicant / Owner:	National Park Service			**County:**	Warren
Investigator:	D. Flynn, E. Lambert			**State:**	New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**		**Wetland Flag:**	DFD-Up
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X		**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		**Northing:**	14915843.8
(explain on reverse if needed)				**Easting:**	1646213.899

VEGETATION

Dominant Plant Species		Stratum	Indicator	Dominant Plant Species		Stratum	Indicator
1	*Dichanthelium acuminatum*	Herb	FAC	9			
2	*Rubus allegheniensis*	Herb	FACU	10			
3	*Dennstaedtia punctilobula*	Herb	UPL	11			
4	*Rubus flagellaris*	Herb	FACU	12			
5	*Solidago canadensis*	Herb	FACU	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 20%

Remarks: Hydrophytic vegetation indicators are not dominant.

HYDROLOGY

____ **Recorded Data (Describe In Remarks):**	**Wetland Hydrology Indicators**
	Primary Indicators:
____ **Stream, Lake, or Tide Gauge**	____ **Inundated**
____ **Aerial Photographs**	____ **Saturated in Upper 12”**
____ **Other**	____ **Water Marks**
	____ **Drift Lines**
____ **No Recorded Data Available**	____ **Sediment Deposits**
	____ **Drainage Patterns in Wetlands**
Field Observations:	**Secondary Indicators:**
	____ **Oxidized Roots Channels in Upper 12”**
Depth of Surface Water: ____-____ **(in.)**	____ **Water-Stained Leaves**
Depth to Free Water in Pit: ____-____ **(in.)**	____ **Local Soil Survey Data**
Depth to Saturated Soil: ____-____ **(in.)**	____ **FAC-Neutral Test**
	____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are not present.

SOILS

Map Unit Name (Series and Phase): Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony **Drainage Class:** Well drained

Taxonomy (Subgroup): **Confirm Mapped Type?** **Yes** X **No**

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4		10YR 5/4		100%	Silt loam
4-16		10YR 4/3	10YR 3/4	CM 2%	Silt loam
16-20+		10YR 5/6	10YR 4/3	CM 30%	Silt loam

Hydric Soil Indicators:

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

Remarks: Hydric soil indicators were not observed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** _____	**No** X	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** _____	**No** X	**Within a Wetland?**	**Yes** _____	**No** X
Hydric Soils Present?	**Yes** _____	**No** X			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were not observed.
This area does not satisfy the three wetland parameters and is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	10/21/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	DFD-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14915819.35
(explain on reverse if needed)			**Easting:**	1646273.923

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Mimulus ringens*	Herb	OBL	9			
2	*Euthamia graminifolia*	Herb	FAC	10			
3	*Juncus effusus*	Herb	OBL	11			
4	*Carex scoparia*	Herb	FACW	12			
5	*Dichanthelium acuminatum*	Herb	FAC	13			
6	*Carex vulpinoidea*	Herb	OBL	14			
7	*Vaccinium corymbosum*	Herb	FACW	15			
8				16			

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

Remarks: Hydrophytic vegetation indicators are dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- **Stream, Lake, or Tide Gauge**
- **Aerial Photographs**
- **Other**

No Recorded Data Available

Field Observations:

Depth of Surface Water:	-	**(in.)**
Depth to Free Water in Pit:	-	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- **Inundated**
- X **Saturated in Upper 12”**
- **Water Marks**
- **Drift Lines**
- **Sediment Deposits**
- **Drainage Patterns in Wetlands**

Secondary Indicators:

- **Oxidized Roots Channels in Upper 12”**
- **Water-Stained Leaves**
- **Local Soil Survey Data**
- **FAC-Neutral Test**
- **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony **Drainage Class:** Well drained

Taxonomy (Subgroup): **Confirm Mapped Type?** **Yes** X **No**

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		10YR 4/2	10YR 4/6	CPL 5%	Clay loam
8-16		10YR 6/2	10YR 5/6	CPL 10%	Clay loam
			10YR 4/2	DM 15%	
16-20+		10YR 6/2	10YR 5/8	CM 30%	Sandy clay loam
			10YR 4/2	DM 10%	

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3-Depleted Matrix as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No**	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No**	**Within a Wetland?**	**Yes** X	**No**
Hydric Soils Present?	**Yes** X	**No**			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate			**Date:**	10/22/2019
Applicant / Owner:	National Park Service			**County:**	Warren
Investigator:	D. Flynn, E. Lambert			**State:**	New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**		**Wetland Flag:**	DFG-Up
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X		**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		**Northing:**	14916826.54
(explain on reverse if needed)				**Easting:**	1649096.531

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Carpinus caroliniana*	Tree	FAC	9			
2	*Viburnum prunifolium*	Herb	FAC	10			
3	*Juniperus virginiana*	Tree	UPL	11			
4	*Carya ovata*	Tree	FACU	12			
5	*Pinus strobus*	Tree	FACU	13			
6	*Thelypteris noveboracensis*	Herb	FAC	14			
7	*Berberis thunbergii*	Herb	FACU	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 43%

Remarks: Hydrophytic vegetation indicators are not dominant.

HYDROLOGY

____ Recorded Data (Describe In Remarks):

- **____ Stream, Lake, or Tide Gauge**
- **____ Aerial Photographs**
- **____ Other**

____ No Recorded Data Available

Field Observations:

- **Depth of Surface Water:** ___-___ **(in.)**
- **Depth to Free Water in Pit:** ___-___ **(in.)**
- **Depth to Saturated Soil:** ___-___ **(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- **_____ Inundated**
- **_____ Saturated in Upper 12”**
- **_____ Water Marks**
- **_____ Drift Lines**
- **_____ Sediment Deposits**
- **_____ Drainage Patterns in Wetlands**

Secondary Indicators:

- **_____ Oxidized Roots Channels in Upper 12”**
- **_____ Water-Stained Leaves**
- **_____ Local Soil Survey Data**
- **_____ FAC-Neutral Test**
- **_____ Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are not present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4		10YR 3/3		100%	Silt loam
4		Auger refusal			Rock

Hydric Soil Indicators:

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

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **Yes** _____ **No** X
Wetland Hydrology Present? **Yes** _____ **No** X
Hydric Soils Present? **Yes** _____ **No** X

Is the Sampling Point Within a Wetland? **Yes** _____ **No** X

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were not observed.
This area does not satisfy the three wetland parameters and is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	10/22/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	DFG-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14916873.8
(explain on reverse if needed)			**Easting:**	1649051.255

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Typha latifolia*	Herb	OBL	9			
2	*Juncus effusus*	Herb	OBL	10			
3	*Onoclea sensibilis*	Herb	FACW	11			
4	*Vernonia noveboracensis*	Herb	FACW	12			
5	*Bidens frondosa*	Herb	FACW	13			
6	*Symphyotrichum* sp.	Herb	n/a	14			
7	*Thelypteris palustris*	Herb	FACW	15			
8	*Carex scoparia*	Herb	FACW	16			

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

Remarks: Hydrophytic vegetation indicators are dominant.

HYDROLOGY

_____ **Recorded Data (Describe In Remarks):**

_____ **Stream, Lake, or Tide Gauge**
_____ **Aerial Photographs**
_____ **Other**

_____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	-	**(in.)**
Depth to Free Water in Pit:	0	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

_____ **Inundated**
X **Saturated in Upper 12”**
_____ **Water Marks**
_____ **Drift Lines**
_____ **Sediment Deposits**
_____ **Drainage Patterns in Wetlands**

Secondary Indicators:

_____ **Oxidized Roots Channels in Upper 12”**
X **Water-Stained Leaves**
_____ **Local Soil Survey Data**
_____ **FAC-Neutral Test**
_____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Chippewa silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Poorly drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10		10YR 3/1		100%	Muck
10-20+		Gley 1-3/10Y	2.5Y 4/2	CM 5%	Clay

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F2-Loamy Gleyed Matrix as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate			**Date:**	10/28/2019
Applicant / Owner:	National Park Service			**County:**	Warren
Investigator:	D. Flynn, E. Lambert			**State:**	New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**		**Wetland Flag:**	DFH-Up
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X		**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		**Northing:**	14915558.84
(explain on reverse if needed)				**Easting:**	1647258.001

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Crataegus* sp.	Tree	n/a	9			
2	*Solidago rugosa*	Herb	FAC	10			
3	*Dichanthelium acuminatum*	Herb	FAC	11			
4	*Euthamia graminifolia*	Herb	FAC	12			
5	*Achillea millefolium*	Herb	FACU	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 75%

Remarks: Hydrophytic vegetation indicators are dominant, where identified.

HYDROLOGY

_____ **Recorded Data (Describe In Remarks):**

_____ **Stream, Lake, or Tide Gauge**
_____ **Aerial Photographs**
_____ **Other**

_____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water: ____-____ **(in.)**
Depth to Free Water in Pit: ____-____ **(in.)**
Depth to Saturated Soil: ____-____ **(in.)**

Wetland Hydrology Indicators

Primary Indicators:

_____ **Inundated**
_____ **Saturated in Upper 12”**
_____ **Water Marks**
_____ **Drift Lines**
_____ **Sediment Deposits**
_____ **Drainage Patterns in Wetlands**

Secondary Indicators:

_____ **Oxidized Roots Channels in Upper 12”**
_____ **Water-Stained Leaves**
_____ **Local Soil Survey Data**
_____ **FAC-Neutral Test**
_____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are not present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		7.5YR 3/3		100%	Clay loam
6		Auger refusal			Rock

Hydric Soil Indicators:

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

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **Yes** X **No** _____
Wetland Hydrology Present? **Yes** _____ **No** X
Hydric Soils Present? **Yes** _____ **No** X

Is the Sampling Point Within a Wetland? **Yes** _____ **No** X

Remarks: Wetland hydrology and hydric soil indicators were not observed.
This area does not satisfy all three wetland parameters and is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site: DEWA Watergate			**Date:** 10/28/2019
Applicant / Owner: National Park Service			**County:** Warren
Investigator: D. Flynn, E. Lambert			**State:** New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:** DFH-Wet PEM
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**
Is the area a potential problem area?	**Yes**	**No** X	**Northing:** 14915586.6
(explain on reverse if needed)			**Easting:** 1647169.092

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Carex lurida*	Herb	OBL	9			
2	*Alnus serrulata*	Shrub	OBL	10			
3	*Juncus canadensis*	Herb	OBL	11			
4	*Euthamia graminifolia*	Herb	FAC	12			
5	*Carex scoparia*	Herb	FACW	13			
6	*Mimulus ringens*	Herb	OBL	14			
7				15			
8				16			

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

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

____ **Recorded Data (Describe In Remarks):**		**Wetland Hydrology Indicators**	
		Primary Indicators:	
____ **Stream, Lake, or Tide Gauge**		X	**Inundated**
____ **Aerial Photographs**		X	**Saturated in Upper 12”**
____ **Other**		____	**Water Marks**
		____	**Drift Lines**
____ **No Recorded Data Available**		____	**Sediment Deposits**
		____	**Drainage Patterns in Wetlands**
Field Observations:		**Secondary Indicators:**	
		____	**Oxidized Roots Channels in Upper 12”**
Depth of Surface Water:	1 **(in.)**	X	**Water-Stained Leaves**
Depth to Free Water in Pit:	8 **(in.)**	____	**Local Soil Survey Data**
Depth to Saturated Soil:	0 **(in.)**	____	**FAC-Neutral Test**
		____	**Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		7.5YR 4/3	7.5YR 4/6	CPL 10%	Clay loam
8-16		5YR 4/4	10YR 5/6	CPL 25%	Loamy clay
16-20+		5YR 6/2	5YR 5/4	CM 10%	Loamy clay
			7.5YR 5/6	CM 30%	

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F8-Redox Depressions as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/6/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	DFH-Wet PSS
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14915824.08
(explain on reverse if needed)			**Easting:**	1646800.715

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Alnus serrulata*	Shrub	OBL	9			
2	*Vaccinium corymbosum*	Shrub	FACW	10			
3	*Lonicera tatarica*	Shrub	FACU	11			
4	*Spiraea tomentosa*	Shrub	FACW	12			
5	*Carex stricta*	Herb	OBL	13			
6	*Microstegium vimineum*	Herb	FAC	14			
7	*Onoclea sensibilis*	Herb	FACW	15			
8	*Symphyotrichum* sp.	Herb	FACU	16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 75%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

____ Recorded Data (Describe In Remarks):

- **____ Stream, Lake, or Tide Gauge**
- **____ Aerial Photographs**
- **____ Other**

____ No Recorded Data Available

Field Observations:

Depth of Surface Water:	1	**(in.)**
Depth to Free Water in Pit:	3	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12”**
- ____ **Water Marks**
- ____ **Drift Lines**
- ____ **Sediment Deposits**
- X **Drainage Patterns in Wetlands**

Secondary Indicators:

- ____ **Oxidized Roots Channels in Upper 12”**
- X **Water-Stained Leaves**
- ____ **Local Soil Survey Data**
- ____ **FAC-Neutral Test**
- ____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		7.5YR 4/2	7.5YR 4/3	CPL 3%	Silt loam
8-14		7.5YR 5/1	5YR 5/3	CM 40%	Silt loam
14		Auger Refusal			Rock

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3-Depleted Matrix as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site: DEWA Watergate			**Date:** 11/6/2019
Applicant / Owner: National Park Service			**County:** Warren
Investigator: D. Flynn, E. Lambert			**State:** New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:** JBAD-Up
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**
Is the area a potential problem area?	**Yes**	**No** X	**Northing:** 14916299.41
(explain on reverse if needed)			**Easting:** 1648517.85

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Carpinus caroliniana*	Tree	FAC	9	*Symphyotrichum ericoides*	Herb	FACU
2	*Acer saccharum*	Tree	FACU	10	*Rosa multiflora*	Herb	FACU
3	*Quercus rubra*	Tree	FACU	11			
4	*Elaeagnus umbellata*	Shrub	UPL	12			
5	*Fagus grandifolia*	Shrub	FACU	13			
6	*Berberis thunbergii*	Shrub	FACU	14			
7	*Polystichum acrostichoides*	Herb	FACU	15			
8	*Microstegium vimineum*	Herb	FAC	16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 20%

Remarks: Hydrophytic vegetation is not dominant.

HYDROLOGY

____ Recorded Data (Describe In Remarks):

- **____ Stream, Lake, or Tide Gauge**
- **____ Aerial Photographs**
- **____ Other**

____ No Recorded Data Available

Field Observations:

- **Depth of Surface Water:** ____-____ **(in.)**
- **Depth to Free Water in Pit:** ____-____ **(in.)**
- **Depth to Saturated Soil:** ____-____ **(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- **_____ Inundated**
- **_____ Saturated in Upper 12”**
- **_____ Water Marks**
- **_____ Drift Lines**
- **_____ Sediment Deposits**
- **_____ Drainage Patterns in Wetlands**

Secondary Indicators:

- **_____ Oxidized Roots Channels in Upper 12”**
- **_____ Water-Stained Leaves**
- **_____ Local Soil Survey Data**
- **_____ FAC-Neutral Test**
- **_____ Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are not present.

SOILS

Map Unit Name (Series and Phase): Fredon-Halsey complex, 0 to 3 percent slopes, very stony

Drainage Class: Somewhat poorly drained

Taxonomy (Subgroup):

Confirm Mapped Type? **Yes** X **No**

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10		7.5YR 3/3		100%	Silt loam
10-14		7.5YR 3/2	7.5YR 3/3	CM 30%	Sandy loam
14		Auger Refusal			Rock

Hydric Soil Indicators:

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

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** _____	**No** X	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** _____	**No** X	**Within a Wetland?**	**Yes** _____	**No** X
Hydric Soils Present?	**Yes** _____	**No** X			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were not observed.
This area does not satisfy the three wetland parameters and is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/6/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	JBAD-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14916163.3
(explain on reverse if needed)			**Easting:**	1648489.144

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Rosa multiflora*	Shrub	FACU	9			
2	*Alnus serrulata*	Shrub	OBL	10			
3	*Spiraea latifolia*	Shrub	FACW	11			
4	*Phalaris arundinacea*	Herb	FACW	12			
5	*Typha latifolia*	Herb	OBL	13			
6	*Boehmeria cylindrica*	Herb	OBL	14			
7	*Microstegium vimineum*	Herb	FAC	15			
8	*Lythrum salicaria*	Herb	OBL	16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 88%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

_____ **Recorded Data (Describe In Remarks):**

_____ **Stream, Lake, or Tide Gauge**
_____ **Aerial Photographs**
_____ **Other**

_____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	1-2	**(in.)**
Depth to Free Water in Pit:	-	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

X **Inundated**
X **Saturated in Upper 12”**
_____ **Water Marks**
_____ **Drift Lines**
_____ **Sediment Deposits**
_____ **Drainage Patterns in Wetlands**

Secondary Indicators:

_____ **Oxidized Roots Channels in Upper 12”**
X **Water-Stained Leaves**
_____ **Local Soil Survey Data**
_____ **FAC-Neutral Test**
_____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Fredon-Halsey complex, 0 to 3 percent slopes, very stony **Drainage Class:** Somewhat poorly drained

Taxonomy (Subgroup): **Confirm Mapped Type?** **Yes** X **No**

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		7.5YR 2.5/2		100%	Silt loam
8-20+		7.5YR 3/2		100%	Silt loam

Hydric Soil Indicators:

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

Remarks: Based upon the presence of hydrophytes and hydrology, it is assumed that the layers below the dark surface soil layers are depleted from the presence of water and that this would meet the A12 Thick Dark Surface indicator as listed in the USDA NRCS Field Indicators of Hydric Soils manual.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No**	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No**	**Within a Wetland?**	**Yes** X	**No**
Hydric Soils Present?	**Yes** X	**No**			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site: DEWA Watergate			**Date:** 11/6/2019
Applicant / Owner: National Park Service			**County:** Warren
Investigator: D. Flynn, E. Lambert			**State:** New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:** JBAO-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**
Is the area a potential problem area?	**Yes**	**No** X	**Northing:** 14915794.7
(explain on reverse if needed)			**Easting:** 1647224.209

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Rosa multiflora*	Shrub	FACU	9			
2	*Epilobium coloratum*	Herb	OBL	10			
3	*Thelypteris palustris*	Herb	FACW	11			
4	*Carex lurida*	Herb	OBL	12			
5	*Onoclea sensibilis*	Herb	FACW	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 80%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- ____ **Stream, Lake, or Tide Gauge**
- ____ **Aerial Photographs**
- ____ **Other**

____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	-	**(in.)**
Depth to Free Water in Pit:	10	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- ____ **Inundated**
- X **Saturated in Upper 12”**
- ____ **Water Marks**
- ____ **Drift Lines**
- ____ **Sediment Deposits**
- ____ **Drainage Patterns in Wetlands**

Secondary Indicators:

- ____ **Oxidized Roots Channels in Upper 12”**
- X **Water-Stained Leaves**
- ____ **Local Soil Survey Data**
- ____ **FAC-Neutral Test**
- ____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 8 to 15 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10		10YR 3/2	10YR 4/4	CPL 5%	Silt loam
10		Auger refusal			Rock

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F6 - Redox Dark Surface as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States manual, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/6/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	JBA-Up
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14917067.45
(explain on reverse if needed)			**Easting:**	1649924.456

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Juniperus virginiana*	Tree	UPL	9			
2	*Acer rubrum*	Tree	FAC	10			
3	*Quercus rubra*	Tree	FACU	11			
4	*Pinus strobus*	Tree	FACU	12			
5	*Betula* sp.	Tree	n/a	13			
6	*Elaeagnus umbellata*	Shrub	UPL	14			
7	*Vaccinium corymbosum*	Shrub	FACW	15			
8	*Rubus flagellaris*	Herb	FACU	16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 29%

Remarks: Hydrophytic vegetation is not dominant.

HYDROLOGY

____ Recorded Data (Describe In Remarks):

- **____ Stream, Lake, or Tide Gauge**
- **____ Aerial Photographs**
- **____ Other**

____ No Recorded Data Available

Field Observations:

- **Depth of Surface Water:** ____-____ **(in.)**
- **Depth to Free Water in Pit:** ____-____ **(in.)**
- **Depth to Saturated Soil:** ____-____ **(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- **_____ Inundated**
- **_____ Saturated in Upper 12”**
- **_____ Water Marks**
- **_____ Drift Lines**
- **_____ Sediment Deposits**
- **_____ Drainage Patterns in Wetlands**

Secondary Indicators:

- **_____ Oxidized Roots Channels in Upper 12”**
- **_____ Water-Stained Leaves**
- **_____ Local Soil Survey Data**
- **_____ FAC-Neutral Test**
- **_____ Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are not present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 8 to 15 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-4		7.5YR 3/2		100%	Silt loam
4-6		10YR 3/2		100%	Silt loam
6		Auger refusal			Rock

Hydric Soil Indicators:

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

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **Yes** _____ **No** X
Wetland Hydrology Present? **Yes** _____ **No** X
Hydric Soils Present? **Yes** _____ **No** X

Is the Sampling Point Within a Wetland? **Yes** _____ **No** X

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were not observed.
This area does not satisfy the three wetland parameters and is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/6/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	JBA-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14917174.98
(explain on reverse if needed)			**Easting:**	1649894.698

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Vaccinium corymbosum*	Herb	FACW	9	*Symphyotrichum* sp.	Herb	n/a
2	*Ilex verticillata*	Herb	FACW	10	*Leersia oryzoides*	Herb	OBL
3	*Rosa multiflora*	Herb	FACU	11			
4	*Spiraea latifolia*	Herb	FACW	12			
5	*Alnus incana*	Tree	FACW	13			
6	*Juncus effusus*	Herb	OBL	14			
7	*Carex stricta*	Herb	OBL	15			
8	*Onoclea sensibilis*	Herb	FACW	16			

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

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

_____ **Recorded Data (Describe In Remarks):**

_____ **Stream, Lake, or Tide Gauge**
_____ **Aerial Photographs**
_____ **Other**

_____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	1	**(in.)**
Depth to Free Water in Pit:	1	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

X **Inundated**
X **Saturated in Upper 12”**
_____ **Water Marks**
_____ **Drift Lines**
_____ **Sediment Deposits**
X **Drainage Patterns in Wetlands**

Secondary Indicators:

_____ **Oxidized Roots Channels in Upper 12”**
X **Water-Stained Leaves**
_____ **Local Soil Survey Data**
_____ **FAC-Neutral Test**
_____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 8 to 15 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		10YR 3/1	10YR 5/1	DM 10%	Silt loam
			7.5YR 4/6	CPL 15%	
6-18		7.5YR 5/2	7.5YR 5/1	DM 30%	Clay loam
			10YR 5/6	CPL 15%	
18+		2.5Y 5/2	2.5Y 5/6	CM 15%	Clay loam
			2.5Y 4/3	CM 20%	

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicators F6-Redox Dark Surface and F3-Depleted Matrix as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States manual Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate			**Date:**	11/6/2019
Applicant / Owner:	National Park Service			**County:**	Warren
Investigator:	D. Flynn, E. Lambert			**State:**	New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**		**Wetland Flag:**	JBD-Up
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X		**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		**Northing:**	14917189.1
(explain on reverse if needed)				**Easting:**	1650199.44

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Rubus allegheniensis*	Shrub	FACU	9			
2	*Rosa multiflora*	Shrub	FACU	10			
3	*Microstegium vimineum*	Herb	FAC	11			
4	*Poa pratensis*	Herb	FACU	12			
5	*Potentilla simplex*	Herb	FACU	13			
6	*Festuca rubra*	Herb	FACU	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 17%

Remarks: Hydrophytic vegetation is not dominant.

HYDROLOGY

____ Recorded Data (Describe In Remarks):

- **____ Stream, Lake, or Tide Gauge**
- **____ Aerial Photographs**
- **____ Other**

____ No Recorded Data Available

Field Observations:

- **Depth of Surface Water:** - **(in.)**
- **Depth to Free Water in Pit:** - **(in.)**
- **Depth to Saturated Soil:** - **(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- **____ Inundated**
- **____ Saturated in Upper 12”**
- **____ Water Marks**
- **____ Drift Lines**
- **____ Sediment Deposits**
- **____ Drainage Patterns in Wetlands**

Secondary Indicators:

- **____ Oxidized Roots Channels in Upper 12”**
- **____ Water-Stained Leaves**
- **____ Local Soil Survey Data**
- **____ FAC-Neutral Test**
- **____ Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are not present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-9		10YR 3/2	7.5YR 6/8	CM 20%	Silt loam
			7.5YR 4/3	CM 20%	
9-13		7.5YR 3/2	5YR 4/4	CM 40%	Silt loam
13		Auger refusal			Rock

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F6-Redox Dark Surface as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States manual, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** _____	**No** X	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** _____	**No** X	**Within a Wetland?**	**Yes** _____	**No** X
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology and hydrophytic vegetation indicators were not met.
This area does not satisfy all three wetland parameters and is considered upland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate			**Date:**	11/6/2019
Applicant / Owner:	National Park Service			**County:**	Warren
Investigator:	D. Flynn, E. Lambert			**State:**	New Jersey
Do normal circumstances exist on the site?	**Yes** X	**No**		**Wetland Flag:**	JBD-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X		**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		**Northing:**	14917134.95
(explain on reverse if needed)				**Easting:**	1650247.818

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Salix nigra*	Tree	OBL	9			
2	*Rosa multiflora*	Shrub	FACU	10			
3	*Phalaris arundinacea*	Herb	FACW	11			
4	*Epilobium coloratum*	Herb	OBL	12			
5	*Boehmeria cylindrica*	Herb	OBL	13			
6	*Solidago rugosa*	Herb	FAC	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 83%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

_____ **Recorded Data (Describe In Remarks):**

_____ **Stream, Lake, or Tide Gauge**
_____ **Aerial Photographs**
_____ **Other**

_____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	-	**(in.)**
Depth to Free Water in Pit:	-	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

_____ **Inundated**
X **Saturated in Upper 12”**
_____ **Water Marks**
_____ **Drift Lines**
_____ **Sediment Deposits**
_____ **Drainage Patterns in Wetlands**

Secondary Indicators:

_____ **Oxidized Roots Channels in Upper 12”**
X **Water-Stained Leaves**
_____ **Local Soil Survey Data**
_____ **FAC-Neutral Test**
_____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		10YR 2/1		100%	Silt loam
8-18		10YR 3/1	2.5Y 4/4	CPL 5%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F6-Depleted Dark Surface as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States manual, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/6/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	JBJ-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14915545.42
(explain on reverse if needed)			**Easting:**	1647929.717

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Acer rubrum*	Tree	FAC	9	*Equisetum arvense*	Herb	FAC
2	*Betula nigra*	Tree	FACW	10			
3	*Platanus occidentalis*	Tree	FACW	11			
4	*Vaccinium corymbosum*	Shrub	FACW	12			
5	*Elaeagnus umbellata*	Shrub	UPL	13			
6	*Rosa multiflora*	Shrub	FACU	14			
7	*Epilobium coloratum*	Herb	OBL	15			
8	*Onoclea sensibilis*	Herb	FACW	16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 78%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

____ Recorded Data (Describe In Remarks):

- **____ Stream, Lake, or Tide Gauge**
- **____ Aerial Photographs**
- **____ Other**

____ No Recorded Data Available

Field Observations:

- **Depth of Surface Water:** - (in.)
- **Depth to Free Water in Pit:** - (in.)
- **Depth to Saturated Soil:** 0 (in.)

Wetland Hydrology Indicators

Primary Indicators:

- **____ Inundated**
- **X Saturated in Upper 12”**
- **____ Water Marks**
- **____ Drift Lines**
- **____ Sediment Deposits**
- **X Drainage Patterns in Wetlands**

Secondary Indicators:

- **____ Oxidized Roots Channels in Upper 12”**
- **X Water-Stained Leaves**
- **____ Local Soil Survey Data**
- **____ FAC-Neutral Test**
- **____ Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		10YR 3/2		100%	Silt loam
8-12		10YR 4/1	7.5YR 4/3	CM 25%	Sandy loam
12-16		7.5YR 4/1	7.5YR 4/6	CPL 5%	Sandy loam
			10YR 4/4	CM 20%	
			2.5Y 5/6	CM 10%	
			5Y 5/1	DM 2%	
16		Auger Refusal			Rock

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3-Depleted Matrix as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States manual, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/6/2019
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	D. Flynn, E. Lambert	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	JBZ-Wet
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X	**Northing:**	14916573.64
(explain on reverse if needed)			**Easting:**	1648439.006

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Lonicera tatarica*	Shrub	FACU	9	*Lycopus americanus*	Herb	OBL
2	*Juncus effusus*	Herb	OBL	10			
3	*Scirpus atrovirens*	Herb	OBL	11			
4	*Scirpus cyperinus*	Herb	OBL	12			
5	*Mimulus ringens*	Herb	OBL	13			
6	*Symphyotrichum* sp.	Herb	n/a	14			
7	*Vernonia noveboracensis*	Herb	FACW	15			
8	*Dulichium arundinaceum*	Herb	OBL	16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 88%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

_____ **Recorded Data (Describe In Remarks):**

_____ **Stream, Lake, or Tide Gauge**
_____ **Aerial Photographs**
_____ **Other**

_____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	-	**(in.)**
Depth to Free Water in Pit:	-	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

_____	**Inundated**
X	**Saturated in Upper 12”**
_____	**Water Marks**
_____	**Drift Lines**
_____	**Sediment Deposits**
X	**Drainage Patterns in Wetlands**

Secondary Indicators:

_____	**Oxidized Roots Channels in Upper 12”**
X	**Water-Stained Leaves**
_____	**Local Soil Survey Data**
_____	**FAC-Neutral Test**
_____	**Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10		7.5YR 3/2	7.5YR 4/6	CPL 15%	Silt loam
10-20+		7.5YR 3/1	7.5YR 5/8	CPL 10%	Clay loam
			7.5YR 4/2	DM 20%	

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F6-Redox Dark Surface as listed in the USDA NRCS Field Indicators of Hydric Soils in the United States manual, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	10/30/2020
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	AB AC WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		
(explain on reverse if needed)				

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Platanus occidentalis***	Tree	FACW	9			
2	***Alnus serrulata***	Shrub	OBL	10			
3	***Typha latifolia***	Herb	OBL	11			
4	***Boehmeria cylindrica***	Herb	OBL	12			
5	***Carex crinita***	Herb	OBL	13			
6	***Rosa multiflora***	Shrub	FACU	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 83%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- **Stream, Lake, or Tide Gauge**
- **Aerial Photographs**
- **Other**

No Recorded Data Available

Field Observations:

Depth of Surface Water:	0.5	**(in.)**
Depth to Free Water in Pit:	4	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12"**
- **Water Marks**
- **Drift Lines**
- **Sediment Deposits**
- X **Drainage Patterns in Wetlands**

Secondary Indicators:

- **Oxidized Roots Channels in Upper 12"**
- **Water-Stained Leaves**
- **Local Soil Survey Data**
- **FAC-Neutral Test**
- **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Fredon-Halsey complex, 0 to 3 % slopes, very stony **Drainage Class:** Somewhat poorly drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** ____ **No** ____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-3		10YR 3/1			Silt loam
3-12		10YR 2/2	5YR 4/6	CM 5%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F6-Depleted Dark Surface as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? **Yes** X **No** ____
Wetland Hydrology Present? **Yes** X **No** ____
Hydric Soils Present? **Yes** X **No** ____

Is the Sampling Point Within a Wetland? **Yes** X **No** ____

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/6/2020
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	AF WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		
(explain on reverse if needed)				

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Leersia oryzoides***	Herb	OBL	9			
2	***Microstegium vimineum***	Herb	FAC	10			
3	***Polygonum sagittatum***	Herb	OBL	11			
4	***Osmunda regalis***	Herb	OBL	12			
5				13			
6				14			
7				15			
8				16			

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

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- **Stream, Lake, or Tide Gauge**
- **Aerial Photographs**
- **Other**

No Recorded Data Available

Field Observations:

Depth of Surface Water:	3	**(in.)**
Depth to Free Water in Pit:	0	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12"**
- **Water Marks**
- **Drift Lines**
- **Sediment Deposits**
- X **Drainage Patterns in Wetlands**

Secondary Indicators:

- **Oxidized Roots Channels in Upper 12"**
- **Water-Stained Leaves**
- **Local Soil Survey Data**
- **FAC-Neutral Test**
- **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name
(Series and Phase): Wellsboro silt loam, 0 to 8 % slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12+		10YR 4/1	7.5YR 4/6	CM 5%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3- Depleted Matrix as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	X	**No**	_____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes**	X	**No**	_____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes**	X	**No**	_____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/1/2020
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	AI WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		
(explain on reverse if needed)				

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Leersia oryzoides***	Herb	OBL	9			
2	***Microstegium vimineum***	Herb	FAC	10			
3	***Polygonum sagittatum***	Herb	OBL	11			
4	***Osmunda regalis***	Herb	OBL	12			
5				13			
6				14			
7				15			
8				16			

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

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- **Stream, Lake, or Tide Gauge**
- **Aerial Photographs**
- **Other**

No Recorded Data Available

Field Observations:

Depth of Surface Water:	3	**(in.)**
Depth to Free Water in Pit:	0	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12"**
- **Water Marks**
- **Drift Lines**
- **Sediment Deposits**
- X **Drainage Patterns in Wetlands**

Secondary Indicators:

- **Oxidized Roots Channels in Upper 12"**
- **Water-Stained Leaves**
- **Local Soil Survey Data**
- **FAC-Neutral Test**
- **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12+		10YR 4/1	7.5YR 4/6	CM 5%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3- Depleted Matrix as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site: DEWA Watergate	**Date:** 11/1/2020
Applicant / Owner: National Park Service	**County:** Warren
Investigator: J. Baker	**State:** New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:** AJ WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**
Is the area a potential problem area?	**Yes**	**No** X	
(explain on reverse if needed)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Microstegium vimineum***	Herb	FAC	9			
2	***Berberis thunbergii***	Shrub	FACU	10			
3	***Boehmeria cylindrica***	Herb	OBL	11			
4	***Impatiens capensis***	Herb	FACW	12			
5	***Polygonum pensylvanica***	Herb	FACW	13			
6	***Leersia oryzoides***	Herb	OBL	14			
7	***Carex vulpinoidea***	Herb	OBL	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 86%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- **Stream, Lake, or Tide Gauge**
- **Aerial Photographs**
- **Other**

No Recorded Data Available

Field Observations:

Depth of Surface Water:	1	**(in.)**
Depth to Free Water in Pit:	8	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12”**
- **Water Marks**
- **Drift Lines**
- **Sediment Deposits**
- X **Drainage Patterns in Wetlands**

Secondary Indicators:

- **Oxidized Roots Channels in Upper 12”**
- X **Water-Stained Leaves**
- **Local Soil Survey Data**
- **FAC-Neutral Test**
- **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** ____ **No** ____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10		7.5YR 3/1	10YR 4/6	CM 10%	Silt loam
10-20		7.5YR 3/2	10YR 4/4	CM 5%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F6- Redox Dark Surface as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes**	X	**No**	____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes**	X	**No**	____	**Within a Wetland?**	**Yes** X	**No** ____
Hydric Soils Present?	**Yes**	X	**No**	____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/1/2020
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	AK WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		
(explain on reverse if needed)				

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Acer rubrum***	Tree	FAC	9			
2	***Berberis thunbergii***	Shrub	FACU	10			
3	***Vaccinium corymbosum***	Shrub	FACW	11			
4	***Dichanthelium clandestinum***	Herb	FACW	12			
5	***Carex*** sp.	Herb	n/a	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 75%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- ____ **Stream, Lake, or Tide Gauge**
- ____ **Aerial Photographs**
- ____ **Other**

____ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	6	**(in.)**
Depth to Free Water in Pit:	--	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12"**
- X **Water Marks**
- ____ **Drift Lines**
- ____ **Sediment Deposits**
- ____ **Drainage Patterns in Wetlands**

Secondary Indicators:

- ____ **Oxidized Roots Channels in Upper 12"**
- X **Water-Stained Leaves**
- ____ **Local Soil Survey Data**
- ____ **FAC-Neutral Test**
- ____ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12+		10YR 4/2	5YR 4/6	CM 10%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3- Depleted Matrix as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

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

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

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

Is the Sampling Point Within a Wetland? **Yes** X **No** _____

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/1/2020
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	AL WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		
(explain on reverse if needed)				

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Microstegium vimineum***	Herb	FAC	9			
2	***Scirpus atrovirens***	Herb	OBL	10			
3	***Boehmeria cylindrica***	Herb	OBL	11			
4	***Dichanthelium clandestinum***	Herb	FACW	12			
5	***Carex crinita***	Herb	OBL	13			
6				14			
7				15			
8				16			

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

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

_ **Recorded Data (Describe In Remarks):**

_ **Stream, Lake, or Tide Gauge**
_ **Aerial Photographs**
_ **Other**

_ **No Recorded Data Available**

Field Observations:

Depth of Surface Water:	1	**(in.)**
Depth to Free Water in Pit:	6	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

X **Inundated**
X **Saturated in Upper 12”**
_ **Water Marks**
_ **Drift Lines**
_ **Sediment Deposits**
X **Drainage Patterns in Wetlands**

Secondary Indicators:

_ **Oxidized Roots Channels in Upper 12”**
X **Water-Stained Leaves**
_ **Local Soil Survey Data**
_ **FAC-Neutral Test**
_ **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): _____ **Confirm Mapped Type?** **Yes** X **No** _____

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10		5YR 4/2	10YR 7/7	CM 10%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3- Depleted Matrix as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No** _____	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No** _____	**Within a Wetland?**	**Yes** X	**No** _____
Hydric Soils Present?	**Yes** X	**No** _____			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	11/1/2020
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	H WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		
(explain on reverse if needed)				

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Scirpus atrovirens***	Herb	OBL	9			
2	***Solidago gigantea***	Herb	FACW	10			
3	***Scirpus cyperinus***	Herb	OBL	11			
4	***Juncus effusus***	Herb	OBL	12			
5	***Carex lurida***	Herb	OBL	13			
6				14			
7				15			
8				16			

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

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- **Stream, Lake, or Tide Gauge**
- **Aerial Photographs**
- **Other**

No Recorded Data Available

Field Observations:

Depth of Surface Water:	1	**(in.)**
Depth to Free Water in Pit:	--	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12”**
- **Water Marks**
- **Drift Lines**
- **Sediment Deposits**
- X **Drainage Patterns in Wetlands**

Secondary Indicators:

- **Oxidized Roots Channels in Upper 12”**
- **Water-Stained Leaves**
- **Local Soil Survey Data**
- **FAC-Neutral Test**
- **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): **Confirm Mapped Type?** **Yes** X **No**

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-10+		5YR 4/2	5YR 4/4	CM 5%	Silt loam

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3- Depleted Matrix as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No**	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No**	**Within a Wetland?**	**Yes** X	**No**
Hydric Soils Present?	**Yes** X	**No**			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

DATA FORM
ROUTINE WETLAND DETERMINATION

Project / Site:	DEWA Watergate	**Date:**	10/30/2020
Applicant / Owner:	National Park Service	**County:**	Warren
Investigator:	J. Baker	**State:**	New Jersey

Do normal circumstances exist on the site?	**Yes** X	**No**	**Wetland Flag:**	I WET
Is the site significantly disturbed (Atypical situation)?	**Yes**	**No** X	**Plot ID:**	
Is the area a potential problem area?	**Yes**	**No** X		
(explain on reverse if needed)				

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	***Platanus occidentalis***	Tree	FACW	9			
2	***Solidago gigantea***	Herb	FACW	10			
3	***Scirpus cyperinus***	Herb	OBL	11			
4	***Impatiens capensis***	Herb	FACW	12			
5	***Leersia oryzoides***	Herb	OBL	13			
6	***Alnus serrulata***	Shrub	OBL	14			
7	***Rosa multiflora***	Shrub	FACU	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC excluding FAC-). 86%

Remarks: Hydrophytic vegetation is dominant.

HYDROLOGY

Recorded Data (Describe In Remarks):

- **Stream, Lake, or Tide Gauge**
- **Aerial Photographs**
- **Other**

No Recorded Data Available

Field Observations:

Depth of Surface Water:	2	**(in.)**
Depth to Free Water in Pit:	--	**(in.)**
Depth to Saturated Soil:	0	**(in.)**

Wetland Hydrology Indicators

Primary Indicators:

- X **Inundated**
- X **Saturated in Upper 12"**
- **Water Marks**
- **Drift Lines**
- **Sediment Deposits**
- **Drainage Patterns in Wetlands**

Secondary Indicators:

- **Oxidized Roots Channels in Upper 12"**
- **Water-Stained Leaves**
- **Local Soil Survey Data**
- **FAC-Neutral Test**
- **Other (Explain in Remarks)**

Remarks: Wetland hydrology indicators are present.

SOILS

Map Unit Name (Series and Phase): Wellsboro silt loam, 0 to 8 percent slopes, extremely stony **Drainage Class:** Moderately well drained

Taxonomy (Subgroup): **Confirm Mapped Type?** **Yes** X **No**

Profile Description:

Depth (inches)	Horizon	Matrix Colors (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		5YR 4/2	5YR 4/4	CM 5%	Silt loam
8+		Auger refusal/cobble			

Hydric Soil Indicators:

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

Remarks: Meets hydric soil indicator F3- Depleted Matrix as listed in the USDA NRSC Field Indicators of Hydric Soils in the United States, Version 8.0.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	**Yes** X	**No**	**Is the Sampling Point**		
Wetland Hydrology Present?	**Yes** X	**No**	**Within a Wetland?**	**Yes** X	**No**
Hydric Soils Present?	**Yes** X	**No**			

Remarks: Wetland hydrology, hydrophytic vegetation, and hydric soil indicators were observed. This area satisfies the three wetland parameters and is considered a wetland.

APPENDIX C—SITE PHOTOGRAPHS

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WETLAND DELINEATION PHOTOGRAPHS



Photograph 1: A downstream view of stream AT, facing southwest.



Photograph 2: An upstream view of stream AU, facing northeast.



Photograph 3: An upstream view of stream AV, facing northwest.



Photograph 4: An upstream view of stream AX (Van Campens Brook), facing northeast.



Photograph 5: A downstream view of stream AZ, facing southeast.



Photograph 6: A downstream view of stream BA, facing southeast.



Photograph 7: An upstream view of stream BB, facing southeast.



Photograph 8: An upstream view of stream BG, facing northwest.



Photograph 9: A downstream view of stream BH, facing southeast.



Photograph 10: A downstream view of stream BI, facing southeast.



Photograph 11: A downstream view of stream BJ, facing south.



Photograph 12: A downstream view of stream BM, facing southwest.



Photograph 13: A downstream view of stream BQ, facing southwest.



Photograph 14: An upstream view of stream BR, facing northeast.



Photograph 15: An upstream view of stream BT, facing east.



Photograph 16: A downstream view of stream CA, facing southeast.



Photograph 17: An upstream view of stream CB, facing north.



Photograph 18: An upstream view of stream CD, facing southeast.



Photograph 19: A downstream view of stream CG, facing southwest.



Photograph 20: An upstream view of stream CP, facing north.



Photograph 21: A downstream view of stream CQ, facing east.



Photograph 22: An upstream view of stream CR, facing north.



Photograph 23: An upstream view of stream CS, facing north.



Photograph 24: An upstream view of stream CT, facing northeast.



Photograph 25: An upstream view of stream CU, facing north.



Photograph 26: A view of wetland A, facing west.



Photograph 27: A view of wetland AA, facing southeast.



Photograph 28: A view of wetland AE, facing northeast.



Photograph 29: A view of wetland AG, facing southeast.



Photograph 30: A view of wetland AH, facing southwest.



Photograph 31: A view of wetland AM, facing west.



Photograph 32: A view of wetland AN, facing northwest.



Photograph 33: A view of wetland AO, facing north.



Photograph 34: A view of wetland AP, facing north.



Photograph 35: A view of wetland AQ, facing northeast.



Photograph 36: A view of wetland AR, facing west.



Photograph 37: A view of wetland AS, facing north.



Photograph 38: A view of wetland B, facing southeast.



Photograph 39: A view of wetland C, facing southwest.



Photograph 40: A view of wetland E (emergent wetland), facing west.



Photograph 41: A view of wetland E (scrub-shrub wetland), facing northwest.



Photograph 42: A view of wetland F, facing northwest.



Photograph 43: A view of wetland G, facing northwest.



Photograph 44: A view of wetland J, facing east.



Photograph 45: A view of wetland L, facing north.



Photograph 46: A view of wetland N, facing west.



Photograph 47: A view of wetland P, facing northeast.



Photograph 48: A view of wetland Q, facing northwest.



Photograph 49: A view of wetland R, facing south.



Photograph 50: A view of wetland S, facing northeast.



Photograph 51: A view of wetland T, facing south.



Photograph 52: A view of wetland U, facing northeast.



Photograph 53: A view of wetland V, facing northeast.



Photograph 54: A view of wetland Y, facing northwest.



Photograph 55: A view of wetland Z (emergent wetland), facing northwest.



Photograph 56: A view of wetland Z (scrub-shrub wetland), facing west.

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