

NEW JERSEY DEPARTMENT OF
TRANSPORTATION
ROUTE 23 ADAPTIVE TRAFFIC SIGNAL (ATS)
PROJECT
TRANSMISSION LINE PROJECT

WAYNE, PASSAIC COUNTY; REQUANNOCK, RIVERDALE, KINNELON &
BUTLER, MORRIS COUNTY, NJ

APPLICATION FOR
FRESHWATER WETLAND GENERAL PERMITS #2 AND #21,
AND WATER QUALITY CERTIFICATE

ENVIRONMENTAL REPORT

Submitted to:



New Jersey Department of Environmental Protection
Division of Land Use Regulation

Submitted by:
New Jersey Department of Transportation



Prepared By:
WSP USA, Inc.



November 2023

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PART I. INTRODUCTION

The project is located along the Route NJ 23 Arterial Road in Wayne Township, Passaic County, Pequannock Township, Riverdale Borough, Kinnelon Borough, and Butler Borough in Morris Counties (See Appendix A for the location map). This 11.5-mile-long N-S oriented project lies between MP 5.53 and MP 16.94. The roadway corridor intersects with the Interstate Freeway I-287 at MP 12.86 with an AADT of 67,000 vehicles south of I-287, and 43,000 vehicles north of I-287. There are eighteen (18) signalized intersections within the project limits. The NJDOT's Classification of Arterial Systems Technology (COAST) System identified the Route 23 project corridor as a high-ranking zone that can be improved using Adaptive Traffic Signal System Control (ATSC). Therefore, the purpose of the project is to provide safe and efficient traffic signal operations by adjusting signal timing in real time to serve various traffic demand scenarios thereby improving mobility and reducing traffic congestion. Refer to Figure 1 for a depiction of the project location.

This Environmental Report provides detailed information regarding the Project including project location, proposed activities, existing conditions, and proposed impacts are included in the Environmental Report. Proposed construction activities are shown on the Freshwater Wetland Permit Plans (separate attachment).

Under the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), the New Jersey Department of Environmental Protection (NJDEP) Division of Land Resource Protection (DLRP) regulates activities within freshwater wetlands, transition areas and State open waters. Proposed activities meet the requirements of an authorization under a general permit will require authorization under a Freshwater Wetland General pursuant to N.J.A.C. 7:7A-7.2 & 7.21.

NJDOT is applying to the NJDEP for the following permit approvals, authorizations and certification for activities associated with the Project.

- Freshwater Wetlands General Permits #2 & 21;
- Water Quality Certificate.

A separate report is being prepared for compliance with the statewide Flood Hazard Area Individual Permit issued to NJDOT February 15, 2023 to perform continued maintenance and repair of infrastructure located within the NJDOT roadway right(s)-of-way: Installation of underground ITS, electric, and communication utilities.

The Compliance Statement (submitted under separate cover) demonstrates the Project's compliance with the Freshwater Wetland Protection Act Rules for the Freshwater Wetland General Permits.

The northern portion of the project is located in the Highlands Planning Area. Under N.J.A.C. 7:38-2.4(b), the proposed project meets #2 - routine maintenance and operations, preservation, or repair of transportation systems by a State entity or local government unit provided such activity is confined to the existing footprint of development, and does not create new travel lanes or increase the length of an existing travel lane by more than 2,640 feet, not including tapers.

PART II. PROJECT DESCRIPTION

1.0 PROJECT LOCATION

The New Jersey Department of Transportation (NJDOT) is proposing to install fiber optic conduct, upgrade outdated traffic signal controllers and controller cabinets in order to collect improved traffic data on U.S. Route 23 from Milepost (MP) 5.53 to 16.94, located in the Wayne, Passaic County; and Pequannock, Riverdale, Kinnelon & Butler, Morris County.

The Project is shown on the U.S. Geologic Survey (USGS) topographic maps, 7.5-minute (1:24,000) quadrangle, as shown in *Figure 1*. The Project area centers on approximately a northing of 552,250 and easting of 774,524 New Jersey State Plane Feet. *Figure 2* shows the Project relative to local roads. Tax maps for the proposed Project are provided in *Appendix A*.

2.0 PROJECT DESCRIPTION

The New Jersey Department of Transportation (NJDOT) is proposing to upgrade outdated traffic signal controllers and controller cabinets in order to collect improved traffic data on U.S. Route 23, from Milepost (MP) 5.53 to 16.94.

The U.S. Route 23 project proposes to construct:

- System detectors on poles with concrete foundations
- New Camera Surveillance Systems poles (2) and Dynamic Message Sign (1)
- 5' diameter concrete ITS junction boxes inground
- Rigid metallic subsurface connecting conduit between system detectors/meter cabinets and junction boxes; and
- Installing RSUs (communication devices), changing detectors, and replacing signal controllers (computer within the traffic signal cabinet)
- Approximately 11.4 miles of fiber optic cable will be installed within the highway median to provide a communication system among the project infrastructure

All proposed project infrastructure would be installed within the NJDOT right-of-way (ROW). Structural work will be limited to the construction of support poles and foundations for system detectors, roadside unit equipment, camera surveillance system cameras, and dynamic message signs.

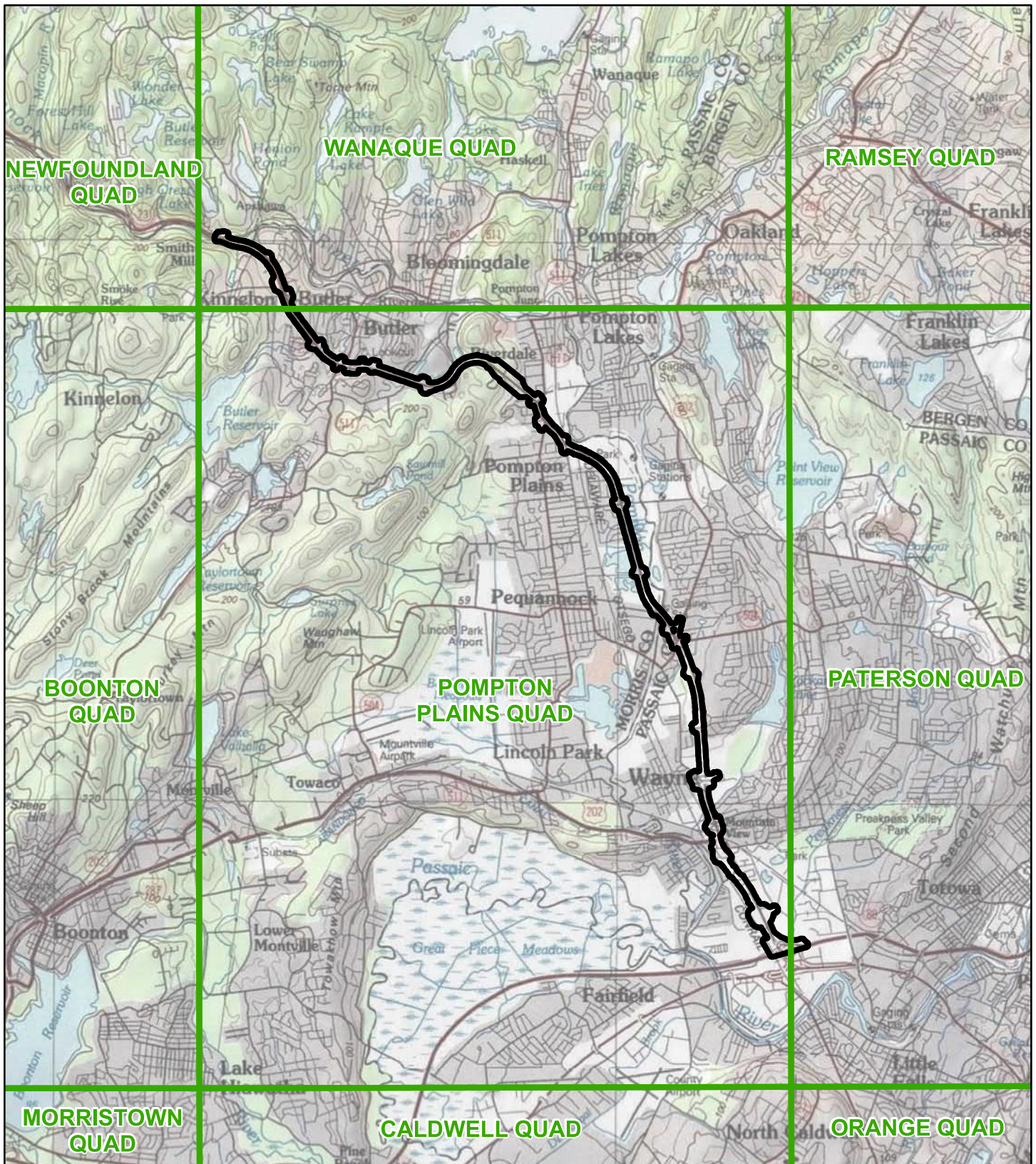
The NJ 23 project area is comprised of a 4-lane roadway, with adjacent parcels consisting mainly of developed commercial and residential areas.

CONSTRUCTION SCHEDULE

Construction of the Project is proposed to commence in early June 2024 to meet the in-service date of December 2024.

3.0 PROJECT PURPOSE

The purpose of this project is to implement Adaptive Traffic Signal (ATS) technology for eighteen (18) intersections within the project limits, which will adjust the timing intervals of the signal phases at each location to accommodate changing traffic patterns throughout the day and ease congestion. Existing traffic devices will be upgraded and new devices will be strategically deployed to provide the capability of implementing operations and maintenance strategies that maximize the safety, efficiency, and reliability of the traffic signal system and to address the project need with respect to safety, capacity, community, environment, operational improvements, and right of way impacts.



- Study Area
- USGS 24k Topo Quad Boundary

Sources:
Basemap (USGS)

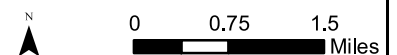
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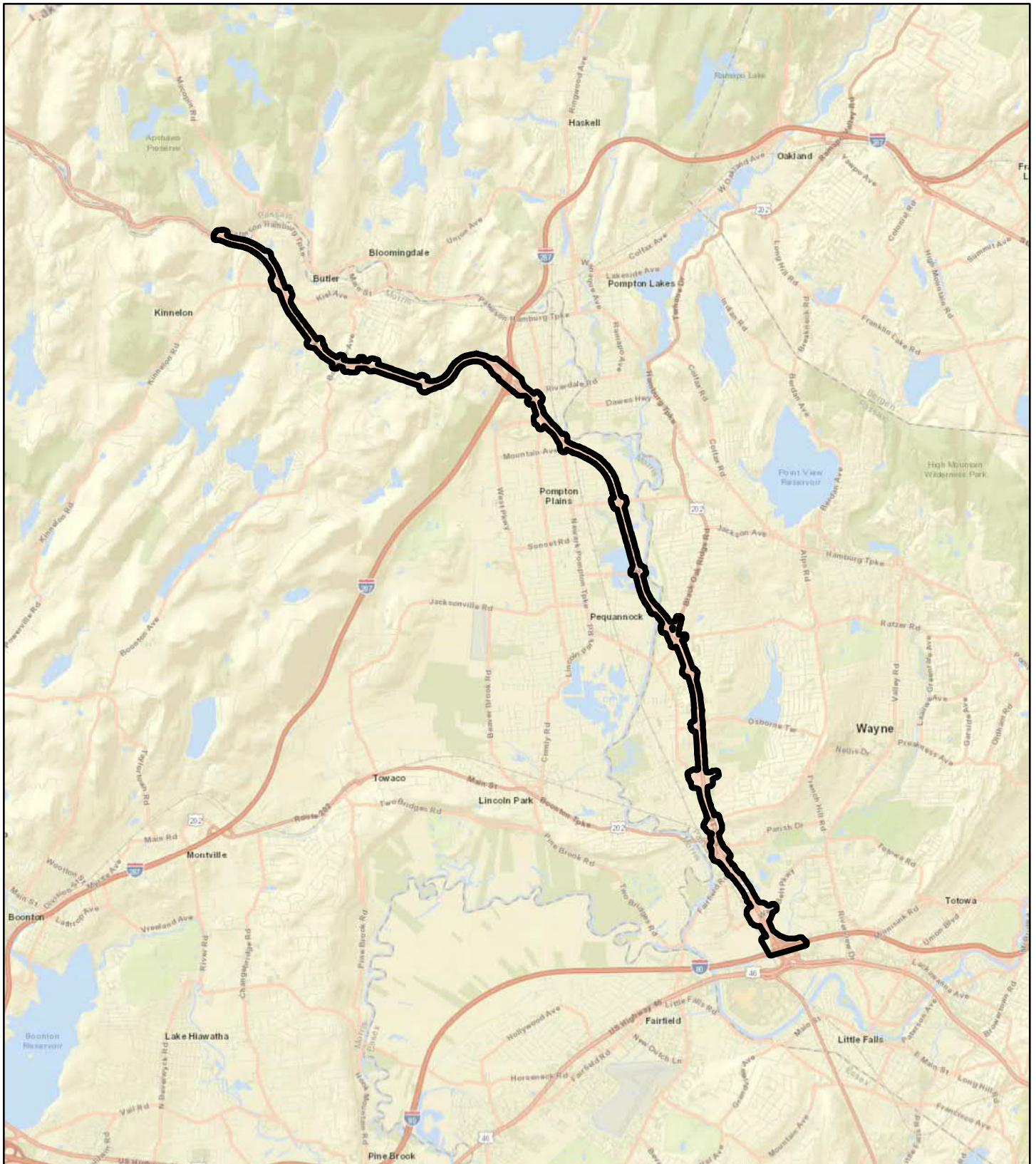
November 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 1. USGS Site Location





 Study Area

Sources:
Basemap (ESRI)

Coordinate System:
New Jersey State Plane
NAD 1983

November 2022



NJDOT ROUTE 23, RT 80 TO CR 694
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ATS C#1 MILEPOST 5.53 TO 16.94

Figure 2. Local Roads



0 0.75 1.5
Miles

PART III. EXISTING ENVIRONMENTAL CONDITIONS

1.0 GEOMORPHOLOGY

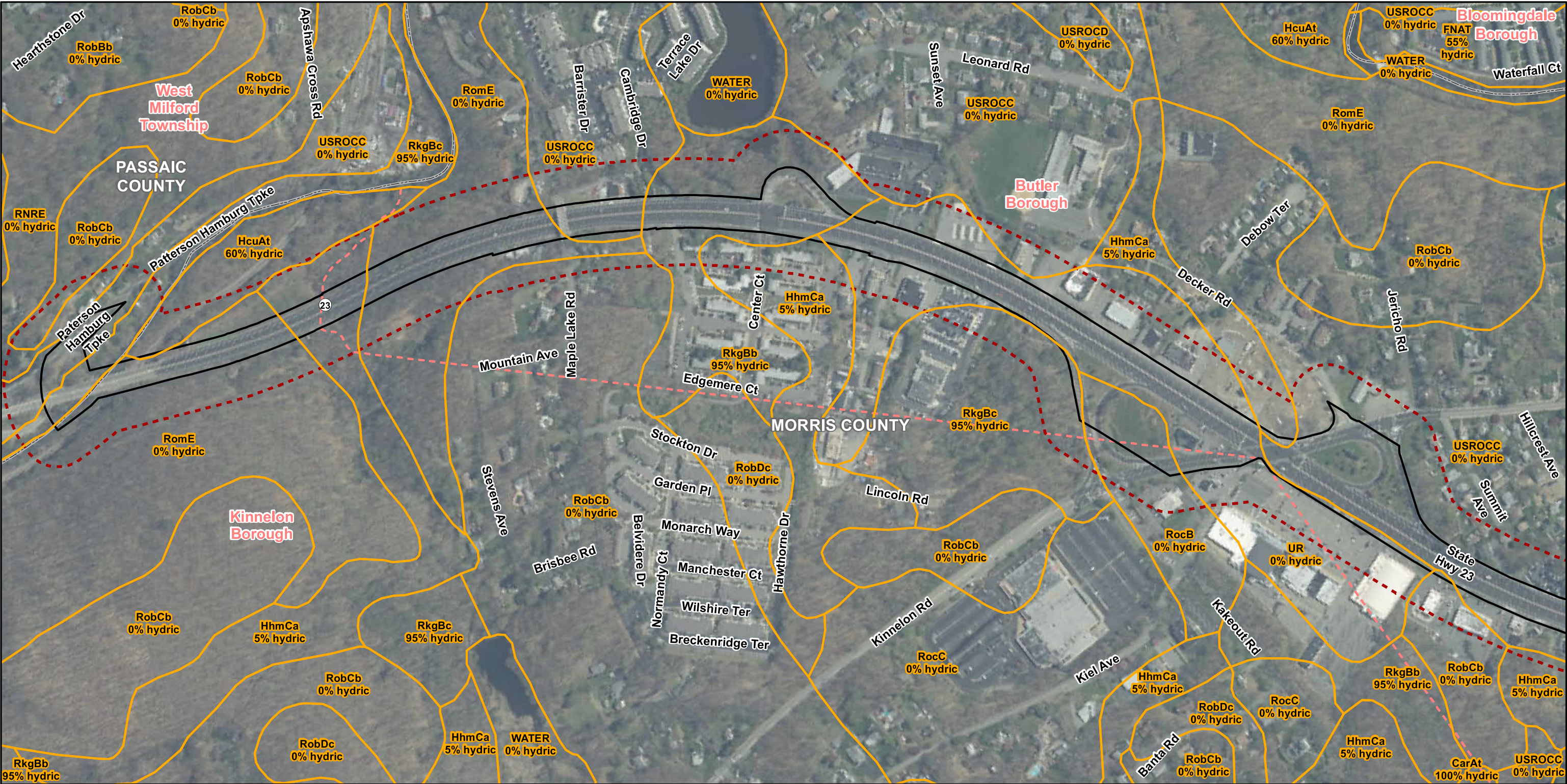
The northern half of the survey area (west of Interstate 287) is located within the Highlands physiographic province and the southern half of the survey area (east of Interstate 287 to I-80) is located within the Piedmont physiographic province. The Highlands province is mainly underlain by highly metamorphosed igneous and sedimentary rocks of Middle Proterozoic age (1.2 billion to about 900 million years old). There are also small areas of late Proterozoic age metasedimentary rocks and diabase dikes. Many of the elongate northeast trending valleys within the Highlands are underlain with sedimentary similar to those in the Valley and Ridge province. Middle Paleozoic sandstone and quartzite form some of the higher ridges in the Highlands. (Dalton 2003). The Piedmont province is underlain by slightly folded and faulted sedimentary rocks of Triassic and Jurassic age (240 to 140 million years old) and igneous rocks of Jurassic age. The Piedmont is primarily a low rolling plain divided by a series of higher ridges. Its width varies from about 16 miles at the New York border to over 30 miles at the Delaware River. Along the foot of the Highlands, the elevation ranges from 300 to 400 feet above sea level. The major linear ridges are underlain by igneous rocks (lava flows and diabase intrusive rocks) and have steep front faces with long back slopes. Elevations in the survey area range from approximately 170 to 500 feet between the two provinces.

2.0 SOILS

The USDA, NRCS Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>) and New Jersey GIS database indicate that soils within the survey area consist of 34 soil mapping units Figure 3. Soil exhibiting similar characteristics and falling within certain defined limits are classified together as a soil series. A soil series is a part of a soil's taxonomy that includes order, great group, subgroup, family and series. Soil phases are used for subdividing series into specific units that are significant for practical use and management (i.e. surface texture, slope, degree of erosion, stoniness). 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. There are 34 map units identified in the survey area listed in Table 1 below. By definition, a hydric soil is one that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, July 13, 1994). Therefore, hydric soils are typically found within wetlands.

3.0 HYDROLOGY

The survey area is located in three watersheds: the Pequannock River watershed (USGS Cataloging Unit 02030103050), the Pompton River watershed (USGS Cataloging Unit 02030103110), and the Passaic River Lower (Saddle to Pompton) watershed (USGS Cataloging Unit 02030103120). The NJDEP Division of Watershed Management has divided watersheds in New Jersey into several Watershed Management Areas. The survey area is located in two WMAS: the Pompton, Pequannock, Wanaque, Ramapo WMA (WMA 03) and the Lower Passaic and Saddle WMA (WMA 04). WMA 03 drainage predominantly funnels to the Pequannock River, which flows near and through the survey area twice. The Pequannock River drains to the Pompton River, and the Pompton River drains to the Passaic River west of the survey area (WMA 04). These watersheds are further divided into sub-watersheds (Table 2). A sub-watershed is a smaller drainage basin of a local stream that eventually drains to a central point of the larger watershed.



- Roadway ROW
- Study Area
- Soil Map Unit
- County Boundary
- Municipal Boundary

Page 1 of 9

Sources:
Imagery (ESRI)
Soils (USDA - NRCS)

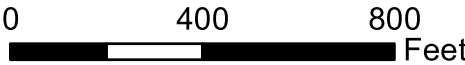
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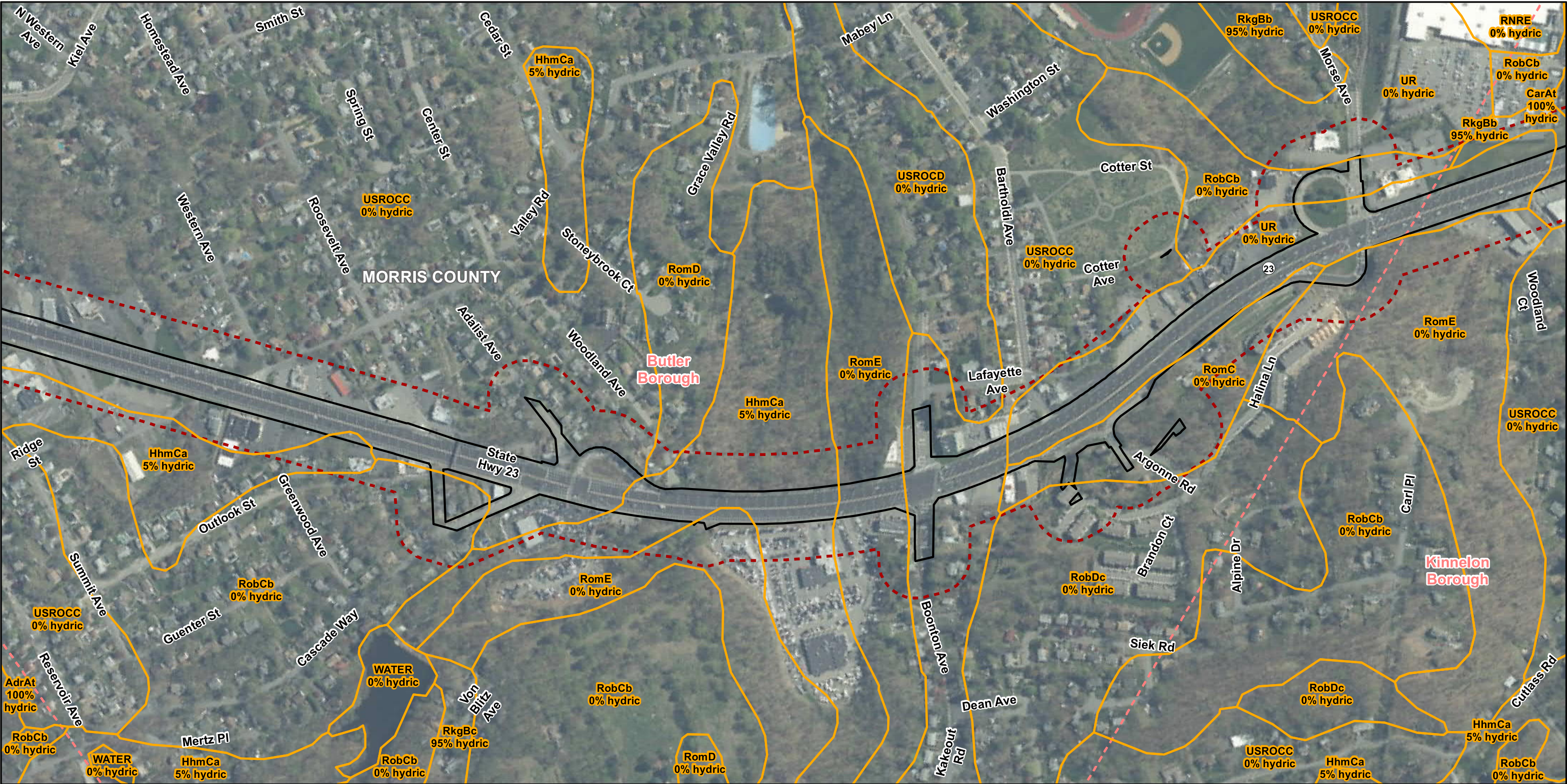
November 14, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 3. NRCS Soils





- Roadway ROW
- Study Area
- Soil Map Unit
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- Municipal Boundary

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Sources:
Imagery (ESRI)
Soils (USDA - NRCS)

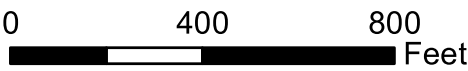
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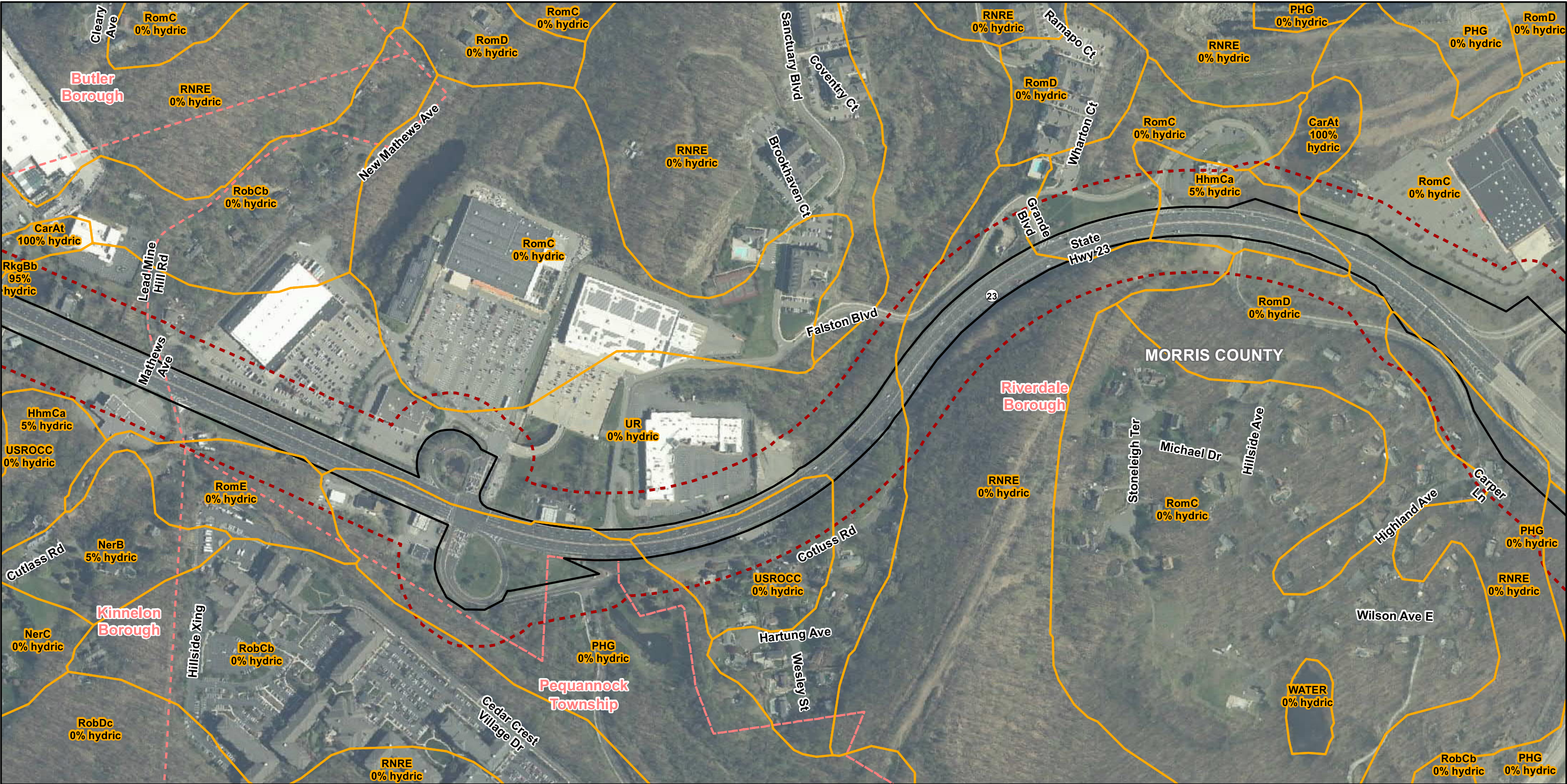
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Figure 3. NRCS Soils





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- Municipal Boundary

Page 3 of 9

Sources:
Imagery (ESRI)
Soils (USDA - NRCS)

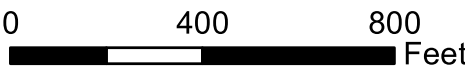
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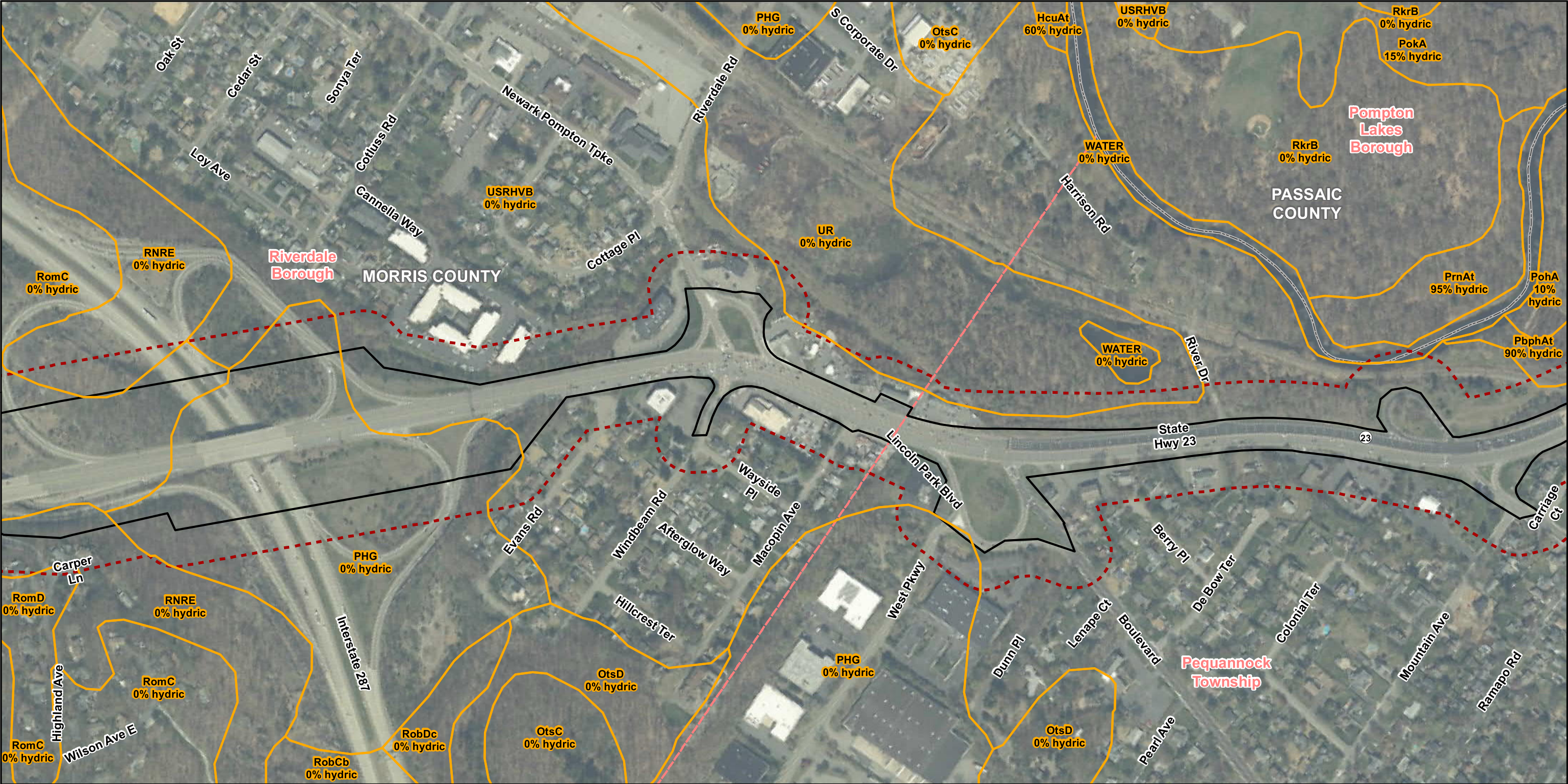
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Figure 3. NRCS Soils





- Roadway ROW
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- County Boundary
- Municipal Boundary

Page 4 of 9

Sources:
Imagery (ESRI)
Soils (USDA - NRCS)

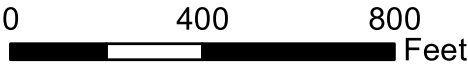
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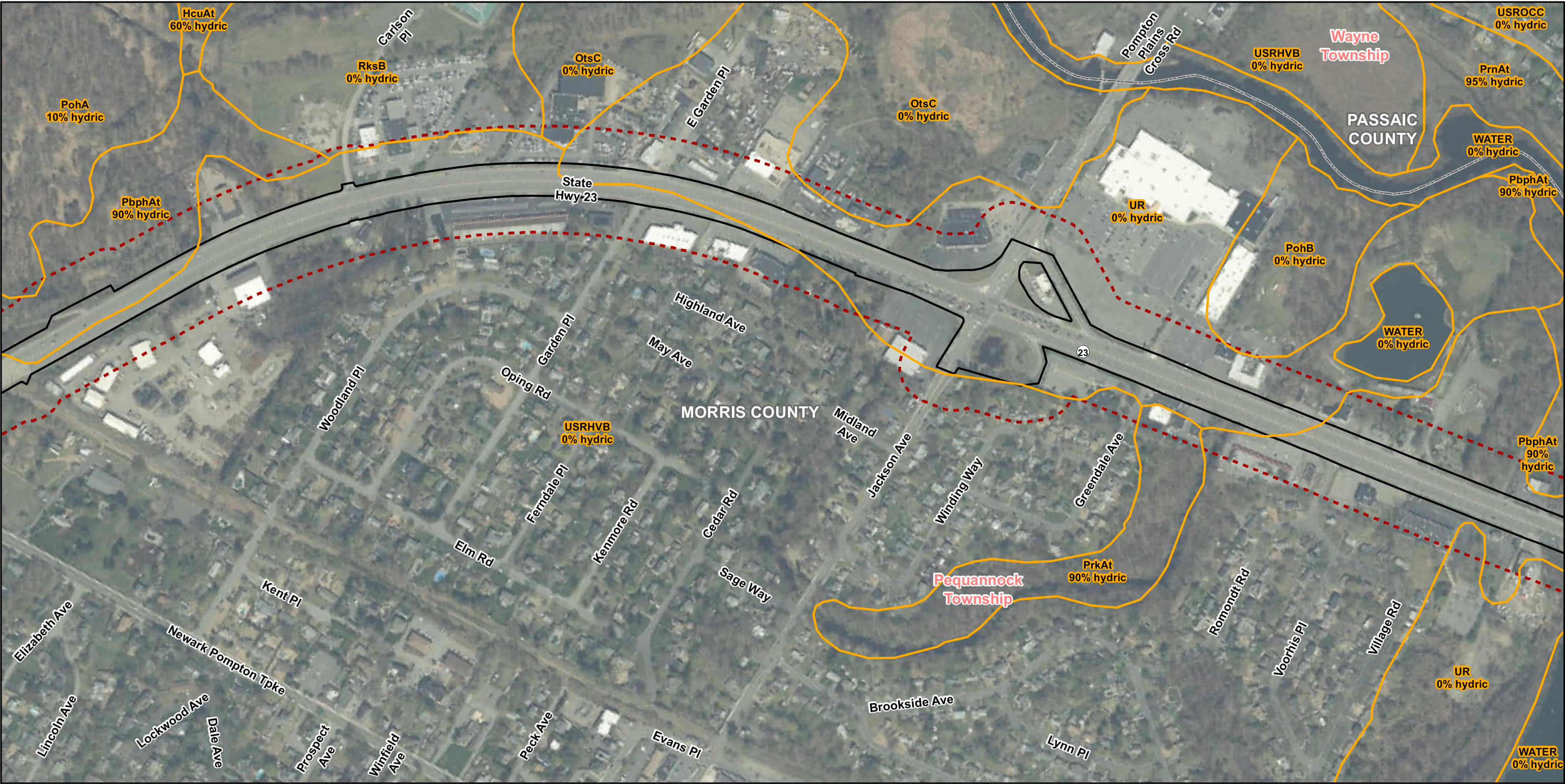
November 14, 2022



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ATS C#1 MILEPOST 5.53 TO 16.94

Figure 3. NRCS Soils





Roadway ROW Study Area Soil Map Unit County Boundary Municipal Boundary	Page 5 of 9		NJDOT ROUTE 23, RT 80 TO CR 694 (PATERSON HAMBURG TURNPIKE) ATS C#1 MILEPOST 5.53 TO 16.94 Figure 3. NRCS Soils 0 400 800 Feet
	Sources: Imagery (ESRI) Soils (USDA - NRCS)		
	Coordinate System: State Plane New Jersey NAD 1983		
	November 14, 2022		



- Roadway ROW
- Study Area
- Soil Map Unit
- County Boundary
- Municipal Boundary

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Sources:
Imagery (ESRI)
Soils (USDA - NRCS)

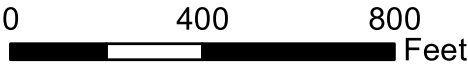
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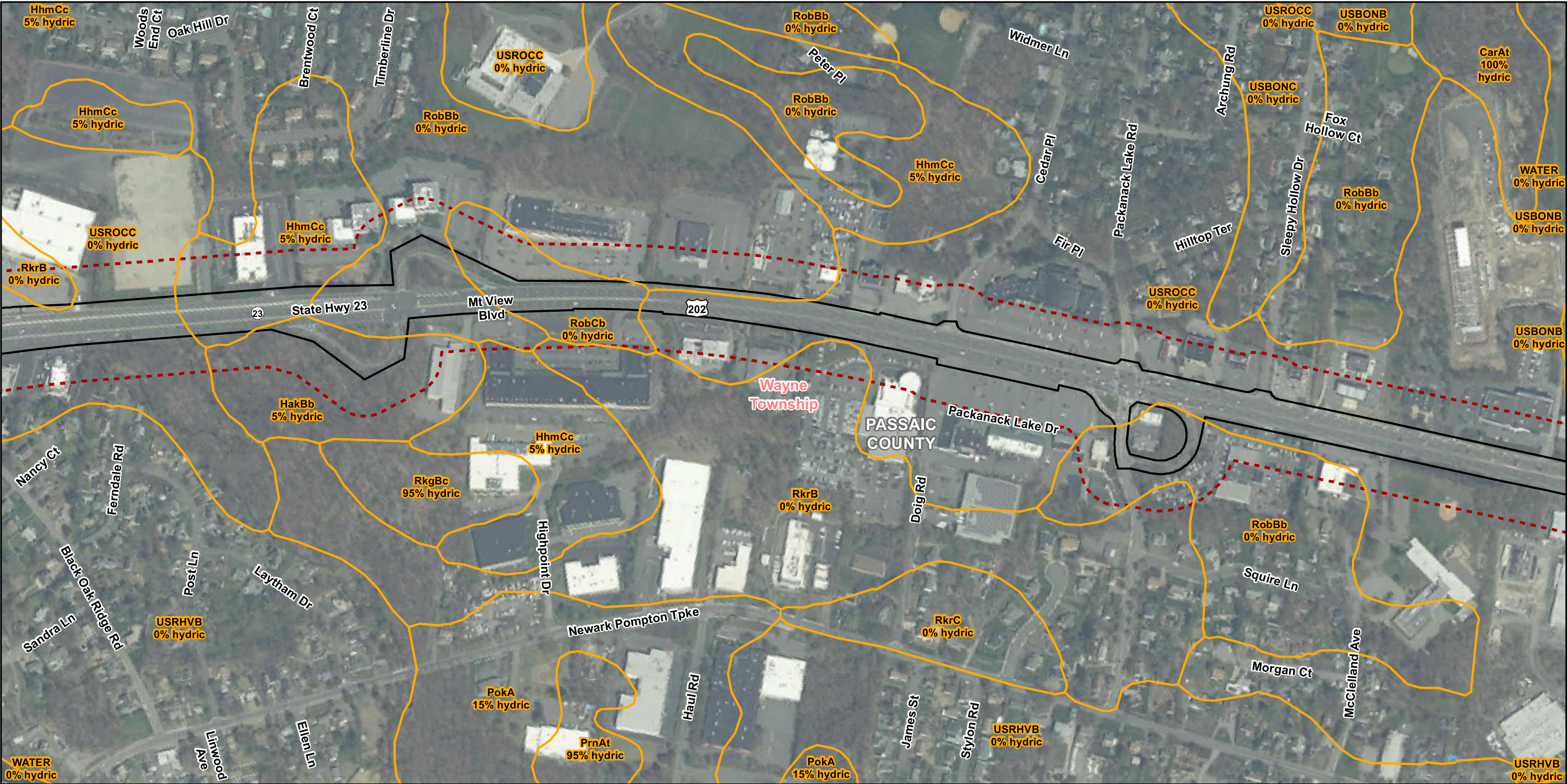
November 14, 2022



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ATS C#1 MILEPOST 5.53 TO 16.94

Figure 3. NRCS Soils





- Roadway ROW
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- Municipal Boundary

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Sources:
Imagery (ESRI)
Soils (USDA - NRCS)

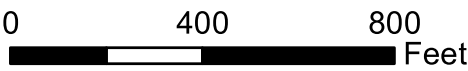
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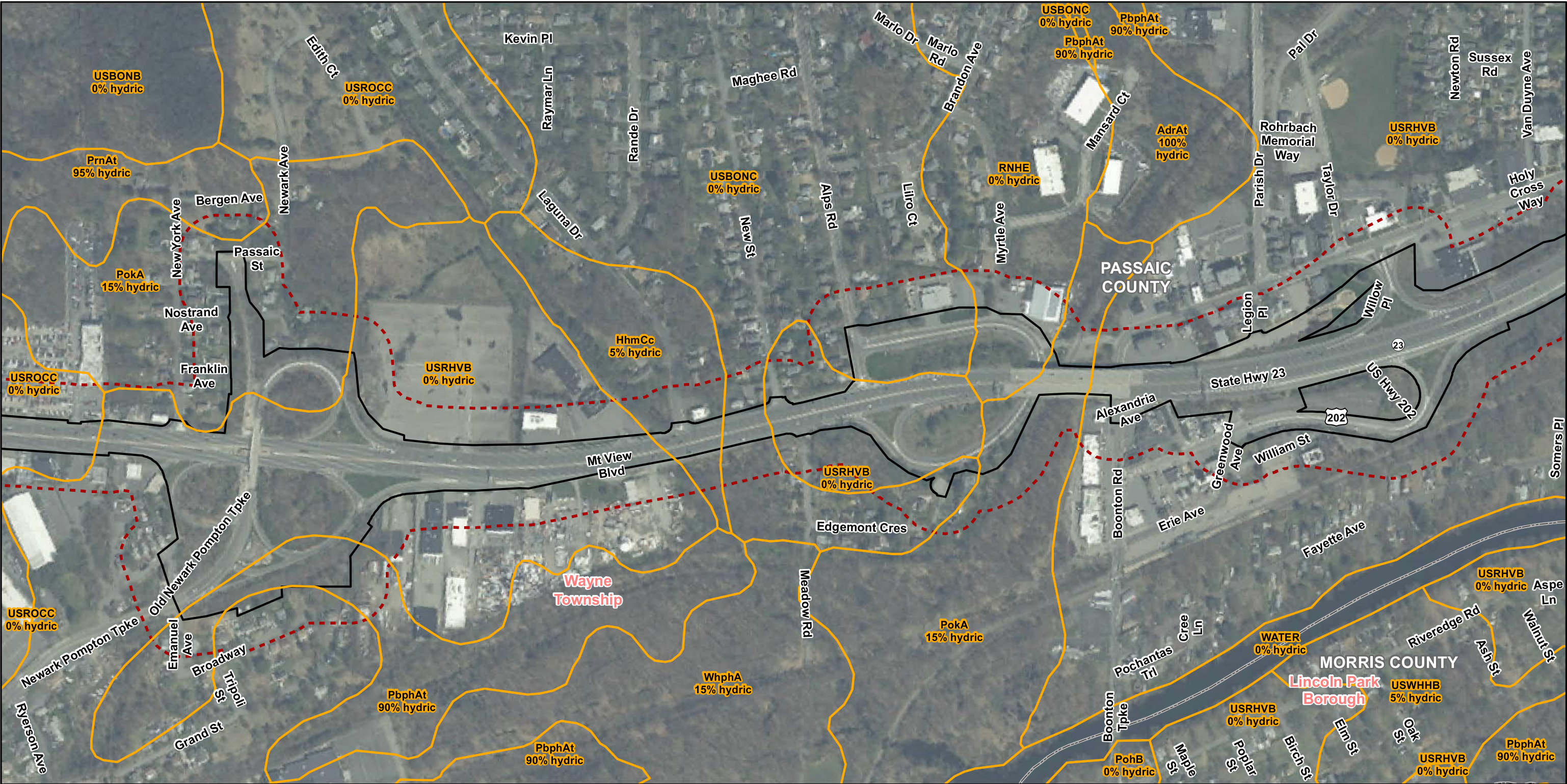
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Figure 3. NRCS Soils





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Sources:
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Soils (USDA - NRCS)

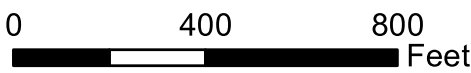
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Figure 3. NRCS Soils





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(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 3. NRCS Soils



0 400 800 Feet



Table 1. Soil Characteristics Within the Project Area

Map Unit	Soil Name	Drainage Class	Depth to Water Table (in.)	Depth to Restrictive Feature (in.)	Hydric
CarAt	Catden muck, 0 to 2 percent slopes, frequently flooded	Very poorly drained	0	>80	Yes
FNAT	Fluvaquents and Udifluvents, 0 to 3 percent slopes, frequently flooded	Poorly drained	0 to 12	>80	Yes
HakBb	Haledon loam, 0 to 8 percent slopes, very stony	Somewhat poorly drained	6 to 18	24 to 36 inches to fragipan	No
HcuAt	Hatboro-Codorus complex, 0 to 3 percent slopes, frequently flooded	Poorly drained	0 to 6	>80	Yes
HhmCa	Hibernia loam, 3 to 15 percent slopes, stony	Somewhat poorly drained	6 to 18	>80	No
HhmCc	Hibernia loam, 0 to 15 percent slopes, extremely stony	Somewhat poorly drained	6 to 18	18 to 30 inches to fragipan	No
OtsC	Otisville gravelly loamy sand, 3 to 15 percent slopes	Excessively drained	>80	>80	No
PbphAt	Parsippany silt loam, sandy loam substratum, 0 to 3 percent slopes, frequently flooded	Poorly drained	0 to 12	>80	Yes
PHG	Pits, sand and gravel	n/a	n/a	n/a	No
PohA	Pompton sandy loam, 0 to 3 percent slopes	Somewhat poorly drained	6 to 18	>80	No
PohB	Pompton sandy loam, 3 to 8 percent slopes	Somewhat poorly drained	6 to 18	>80	No
PokA	Pompton fine sandy loam, 0 to 3 percent slopes	Somewhat poorly drained	12	>80	No
PrkAt	Preakness sandy loam, 0 to 3 percent slopes, frequently flooded	Poorly drained	0 to 6	>80	Yes
PrnAt	Preakness silt loam, 0 to 3 percent slopes, frequently flooded	Very poorly drained	0	>80	Yes

TABLE 1 CONTINUED

Map Unit	Soil Name	Drainage Class	Depth to Water Table (in.)	Depth to Restrictive Feature (in.)	Hydric
RkgBb	Ridgebury stony loam, New Jersey Highlands, 0 to 8 percent slopes, very stony	Poorly drained	0 to 8	15 to 35 inches to fragipan	Yes
RkgBc	Ridgebury stony loam, New Jersey Highlands, 0 to 8 percent slopes, extremely stony	Poorly drained	0 to 8	15 to 35 inches to fragipan	Yes
RkrB	Riverhead sandy loam, 3 to 8 percent slopes	Well drained	28-41	>80	No
RkrC	Riverhead sandy loam, 8 to 15 percent slopes	Well drained	>80	>80	No
RksB	Riverhead gravelly sandy loam, 3 to 8 percent slopes	Well drained	>80	>80	No
RNHE	Rock outcrop-Holyoke complex, 15 to 45 percent slopes	Not rated	>80	0	No
RNRE	Rock outcrop - Rockaway complex, 15 to 35 percent slopes	Moderately well drained (Rockaway)	24 to 36 (Rockaway)	0 inches to lithic bedrock (Rock outcrop); 18 to 30 inches to fragipan (Rockaway)	No
RobBb	Rockaway sandy loam, 0 to 8 percent slopes, very stony	Moderately well drained	24 to 36	18 to 30 inches to fragipan	No
RobCb	Rockaway sandy loam, 8 to 15 percent slopes, very stony	Well drained	24 to 36	18 to 30 inches to fragipan	No
RobDc	Rockaway sandy loam, 15 to 25 percent slopes, extremely stony	Well drained	24 to 36	18 to 30 inches to fragipan	No
RocB	Rockaway gravelly sandy loam, 3 to 8 percent slopes	Well drained	24 to 36	18 to 30 inches to fragipan	No
RomC	Rockaway-Rock outcrop complex, 8 to 15 percent slopes	Moderately well drained (Rockaway)	24 to 36 (Rockaway)	18 to 30 inches to fragipan (Rockaway); 0 inches to lithic bedrock (Rock outcrop)	No

TABLE 1 CONTINUED

Map Unit	Soil Name	Drainage Class	Depth to Water Table (in.)	Depth to Restrictive Feature (in.)	Hydric
RomD	Rockaway-Rock outcrop complex, 15 to 25 percent slopes	Well drained	24 to 36 (Rockaway)	18 to 30 inches to fragipan (Rockaway); 0 inches to lithic bedrock (Rock outcrop)	No
RomE	Rockaway-Rock outcrop complex, 25 to 45 percent slopes	Moderately well drained (Rockaway)	24 to 36 (Rockaway)	16 to 39 inches to fragipan (Rockaway); 0 inches to lithic bedrock (Rock outcrop)	No
UR	Urban land	n/a	n/a	n/a	Unranked
USBONB	Urban land-Boonton complex, 0 to 8 percent slopes	Not rated	>80	0	No
USBONC	Urban land-Boonton complex, 8 to 15 percent slopes	Not rated	>80	0	No
USRHVB	Urban land-Riverhead complex, 3 to 8 percent slopes	Well drained (Riverhead)	>80 (Riverhead)	>80 (Riverhead)	No (Riverhead)
USROCC	Urban land-Rockaway complex, 3 to 15 percent slopes	Well drained (Rockaway)	24 to 36 (Rockaway)	18 to 30 inches to fragipan (Rockaway)	No (Rockaway)
USROCD	Urban land-Rockaway complex, 15 to 25 percent slopes	Well drained (Rockaway)	24 to 36 (Rockaway)	18 to 30 inches to fragipan (Rockaway)	No (Rockaway)

Source: USDA-NRCS. 2022
*Seasonal High Water Table

TABLE 2. SUB-WATERSHEDS LOCATED WITHIN THE PROJECT AREA

Sub-Watershed Name	Hydrologic Unit Code (HUC 14)	Watershed Name	Watershed Management Area
Pequannock River (below Macopin gage)	02030103050080	Pequannock River	Pompton, Pequannock, Wanaque, Ramapo (03)
Stone House Brook	02030103050070	Pequannock River	Pompton, Pequannock, Wanaque, Ramapo (03)
Pompton River	02030103110020	Pompton River	Pompton, Pequannock, Wanaque, Ramapo (03)
Preakness Brook/Naachtpunkt Brook	02030103120030	Passaic River Lower (Saddle to Pompton)	Lower Passaic and Saddle (04)
Passaic River Lower (pump station to Pompton River)	02030103120100	Passaic River Lower (Saddle to Pompton)	Lower Passaic and Saddle (04)

Surface waters are classified based on designated uses. Freshwater streams are classified as FW1 (not subject to any man-made wastewater discharges) and FW2 waters (all other freshwaters). Freshwater streams 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 the Pequannock River, the lower segment of Stone House Brook and additional tributaries to the Pequannock River, which are all classified as FW2-TPC1. The Pompton River is classified as FW2-NT, as are its tributaries, including Packanack Brook. Preakness Brook, which drains to the Passaic River and flows through the southern portion of the study area near I-80, is also classified as FW2-NT.

4.0 UPLAND VEGETATIVE COMMUNITIES

Based upon species composition, soils, and apparent hydrology noted during field investigation, five (5) upland vegetative communities were identified within the survey area including oak-tulip tree forest, beech-maple mesic forest, successional southern hardwoods, successional old field, and mowed lawn (Edinger et al. 2014). Vegetation observed within the survey area is listed in Table 3 along with the species' wetland indicator status. This is not a complete list of all vegetation present within the survey area, but provides an assessment of the dominant species observed. Photographs documenting the existing vegetative communities are included in Appendix B.

Oak-tulip tree forest is a mesophytic hardwood forest that occurs on moist, well-drained sites. Dominant tree species include red oak (*Quercus rubra*), tulip poplar (*Liriodendron tulipifera*), white oak (*Quercus alba*), American beech (*Fagus grandifolia*), and red maple (*Acer rubrum*). In the survey area, there is typically a subcanopy of small trees and tall shrubs dominated by dogwoods (*Cornus* spp.) and northern spicebush (*Lindera benzoin*). In the herb layer, stiltgrass (*Microstegium vimineum*) and garlic mustard (*Alliaria petiolata*) are the dominant species.

Beech-maple mesic forest is characterized as a northern hardwood forest with sugar maple (*Acer saccharum*) and American beech codominant. These forests occur on moist, well-drained, usually acid soils. Other tree/small tree species observed in the project area included white ash (*Fraxinus americana*), American hornbeam (*Carpinus caroliniana*), witch

hazel (*Hamamelis virginiana*), and dogwoods. The understory includes an abundance of tree seedlings, especially of sugar maple and American beech. Eastern hemlock (*Tsuga canadensis*) is present at a low density. Characteristic herbaceous species observed in the survey area included Christmas fern (*Polystichum acrostichoides*) and Pennsylvania sedge (*Carex pensylvanica*). Within extensive areas of beech-maple mesic forest, there are often associated small patches of hemlock-northern hardwood forest in steep ravines and gullies where eastern hemlock is locally dominant. This forest is limited to the northern end of the survey area.

Successional southern hardwood forest is a hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed. Characteristic tree and shrub species in the survey area include slippery elm (*Ulmus rubra*), white ash, red maple, hawthorns (*Crataegus* spp.), eastern red cedar (*Juniperus virginiana*), and tree of heaven (*Ailanthus altissima*). This forest is dominant throughout the survey area.

Successional old field is a meadow dominated by forbs and grasses that occurs on sites that have been cleared or plowed and then abandoned. Fields that are mowed at an interval that favors the reproduction of characteristic successional old field species are included here. Shrubs are present in the survey area, but collectively they have less than 50 percent cover in the community. In the survey area, dominant species included goldenrods (*Solidago* spp.), mugwort (*Artemisia vulgaris*), bluegrasses (*Poa* spp.), and raspberries (*Rubus* spp.). These habitats are located along the roadway or in cloverleaf infields.

Mowed lawn is characterized as residential, recreational, or commercial land, or unpaved airport runways in which the groundcover is dominated by clipped grasses and there is less than 30 percent cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50 percent cover. The groundcover is maintained by mowing and/or broadleaf herbicide application. Within the survey area, mowed lawn is prominent along the road shoulders of Route 23, along I-80, and around commercial businesses.

TABLE 3 - VEGETATION OBSERVED WITHIN THE SURVEY AREA

Scientific Name	Common Name	Wetland Indicator Status
<i>Acer negundo</i>	boxelder	FAC
<i>Acer platanoides</i>	Norway maple	UPL
<i>Acer rubrum</i>	red maple	FAC
<i>Acer saccharinum</i>	silver maple	FACW
<i>Acer saccharum</i>	sugar maple	FACU
<i>Ageratina altissima</i>	white snakeroot	FACU
<i>Agrostis stolonifera</i>	creeping bentgrass	FACW
<i>Ailanthus altissima</i>	tree of heaven	UPL
<i>Alliaria petiolata</i>	garlic mustard	FACU
<i>Allium vineale</i>	wild onion	FACU
<i>Alnus incana</i>	speckled alder	FACW
<i>Artemisia vulgaris</i>	mugwort	UPL
<i>Berberis thunbergii</i>	Japanese barberry	FACU
<i>Bromus ciliatus</i>	fringed brome	FACW

TABLE 3 CONTINUED

Scientific Name	Common Name	Wetland Indicator Status
<i>Campsis radicans</i>	trumpet creeper	FAC
<i>Carex pensylvanica</i>	Pennsylvania sedge	UPL
<i>Carex scoparia</i>	pointed broom sedge	FACW
<i>Carex</i> sp.	sedge	n/a
<i>Carex stricta</i>	tussock sedge	OBL
<i>Carex vulpinoidea</i>	fox sedge	OBL
<i>Carpinus caroliniana</i>	ironwood	FAC
<i>Carya ovata</i>	shagbark hickory	FACU
<i>Catalpa bignonioides</i>	southern catalpa	FACU
<i>Celastrus orbiculatus</i>	oriental bittersweet	UPL
<i>Cinna arundinacea</i>	sweet woodreed	FACW
<i>Cornus alba</i>	red osier dogwood	FACW
<i>Cornus amomum</i>	silky dogwood	FACW
<i>Echinochloa crus-galli</i>	large barnyard grass	FAC
<i>Eleocharis</i> sp.	spikerush	n/a
<i>Epilobium coloratum</i>	purple-leaved willow herb	OBL
<i>Erechtites hieraciifolius</i>	American burnweed	NI
<i>Erythronium americanum</i>	yellow trout-lily	UPL
<i>Eupatorium serotinum</i>	late-flowering thoroughwort	FAC
<i>Euthamia graminifolia</i>	lance-leaved goldenrod	FAC
<i>Fagus grandifolia</i>	American beech	FACU
<i>Fraxinus americana</i>	white ash	FACU
<i>Fraxinus pennsylvanica</i>	green ash	FACW
<i>Ilex opaca</i>	American holly	FACU
<i>Juncus bufonius</i>	toad rush	FACW
<i>Juncus effusus</i>	soft rush	OBL
<i>Juniperus virginiana</i>	eastern red cedar	FACU
<i>Lindera benzoin</i>	northern spicebush	FACW
<i>Liquidambar styraciflua</i>	sweet gum	FAC
<i>Liriodendron tulipifera</i>	tulip poplar	FACU
<i>Lonicera japonica</i>	Japanese honeysuckle	FACU
<i>Lonicera tatarica</i>	tatarian honeysuckle	FACU
<i>Lythrum salicaria</i>	purple loosestrife	OBL
<i>Malus</i> sp.	crab apple	n/a
<i>Microstegium vimineum</i>	Japanese stiltgrass	FAC
<i>Mikania scandens</i>	climbing hempvine	OBL
<i>Fagus grandifolia</i>	cinnamon fern	FACW
<i>Onoclea sensibilis</i>	sensitive fern	FACW
<i>Panicum dichotomiflorum</i>	fall panicgrass	FACW

TABLE 3 CONTINUED

Scientific Name	Common Name	Wetland Indicator Status
<i>Panicum virgatum</i>	switchgrass	FAC
<i>Persicaria hydropiper</i>	mild water pepper	OBL
<i>Persicaria hydropiperoides</i>	swamp smartweed	OBL
<i>Persicaria pensylvanica</i>	Pennsylvania smartweed	FACW
<i>Phalaris arundinacea</i>	reed canarygrass	FACW
<i>Phragmites australis</i>	common reed	FACW
<i>Picea abies</i>	Norway spruce	NI
<i>Pilea pumila</i>	clearweed	FACW
<i>Pinus strobus</i>	white pine	FACU
<i>Platanus occidentalis</i>	American sycamore	FACW
<i>Poa pratensis</i>	Kentucky bluegrass	FACU
<i>Polystichum acrostichoides</i>	Christmas fern	FACU
<i>Populus deltoides</i>	eastern cottonwood	FAC
<i>Prunus serotina</i>	black cherry	FACU
<i>Quercus alba</i>	white oak	FACU
<i>Quercus palustris</i>	pin oak	FACW
<i>Quercus rubra</i>	red oak	FACU
<i>Quercus velutina</i>	black oak	UPL
<i>Reynoutria japonica</i>	Japanese knotweed	FACU
<i>Rubus phoenicolasius</i>	wineberry	FACU
<i>Rosa multiflora</i>	multiflora rose	FACU
<i>Rumex verticillatus</i>	swamp dock	OBL
<i>Salix discolor</i>	pussy willow	FACW
<i>Salix nigra</i>	black willow	OBL
<i>Schizachyrium scoparium</i>	little bluestem	FACU
<i>Schoenoplectus pungens</i>	three-square	OBL
<i>Scirpus cyperinus</i>	woolgrass	OBL
<i>Securigera varia</i>	crown vetch	UPL
<i>Setaria sp.</i>	foxtail	n/a
<i>Solidago sempervirens</i>	seaside goldenrod	FACW
<i>Symphyotrichum lanceolatum</i>	white paniced aster	FACW
<i>Symplocarpus foetidus</i>	skunk cabbage	OBL
<i>Toxicodendron radicans</i>	poison ivy	FAC
<i>Trifolium repens</i>	white clover	FACU
<i>Typha latifolia</i>	broadleaf cattail	OBL
<i>Ulmus rubra</i>	slippery elm	FAC
<i>Urtica dioica</i>	stinging nettle	FAC
<i>Viburnum dentatum</i>	southern arrowwood	FAC
<i>Viburnum prunifolium</i>	blackhaw viburnum	FACU
<i>Vitis sp.</i>	grape	n/a

Key to indicator categories:

OBL: Obligate, 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: Upland, almost never occur in wetlands.

NI: Not found on national listings of plants occurring in wetlands.

Sources:

U.S. Army Corps of Engineers. 2020. National Wetland Plant List, version 3.5. <http://wetland-plants.usace.army.mil/> U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.

USDA, NRCS. 2022. The PLANTS Database (<http://plants.usda.gov>, 11/1/2022). National Plant Data Team, Greensboro, NC USA.

5.0 WETLAND AND OPEN WATER AREAS

A desktop review to determine the general location, extent and character of the wetlands expected to occur within the project area. Existing documentation was reviewed that included aerial photographs, USGS 7.5-minute topographic maps, soil surveys, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory, NJDEP Freshwater Wetland maps (Figure 4), and the USGS National Hydrography Dataset.

A total of 55 wetlands and 31 waters were mapped within the 150-foot survey area. Based on the field investigation, four classes of wetlands and five riverine designations were identified in the survey area using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). Areas of palustrine emergent wetland (PEM), palustrine scrub-shrub wetland (PSS), palustrine forested wetland (PFO), palustrine unconsolidated bottom (PUB), riverine lower perennial unconsolidated bottom (R2UB), riverine upper perennial rock bottom (R3RB), riverine upper perennial unconsolidated bottom (R3UB), riverine intermittent streambed (R4SB), and riverine ephemeral (R6) were identified and are defined below. See Table 3 for a summary of delineated features within the project area.

Table 3. Summary of Delineated Features within the Project

Wetland/Stream Flag Series	Cowardin Classification	Anticipated NJDEP Resource Value Classification (Wetlands)	Surface Water Classification (Waters)	Acres within the Study Area (Wetlands)	Linear Feet within the Study Area (Streams)	Acreage within the NJDOT ROW (Wetlands)	Linear Feet within the NJDOT ROW (Streams)
Ditch 1	R6	--	N/A	0.282	547	0.206	539
Ditch 2	R6	--	N/A	0.126	377	--	--
Ditch 3	R6	--	N/A	0.061	182	--	--
NJDEP Stream 1	R3RB2	--	FW2-TPC1	0.706	842	0.321	357
NJDEP Wetland 1	PUB	Intermediate	--	0.019	0	--	--
NJDEP Wetland 10X	PUB/PFO	Intermediate	--	0.921	0	--	--
NJDEP Wetland 11X	PSS/PFO	Intermediate	--	3.256	0	--	--
NJDEP Wetland 12X	PFO	Intermediate	--	4.382	0	--	--
NJDEP Wetland 13X	PFO	Intermediate	--	0.371	0	--	--
NJDEP Wetland 14X	PFO	Intermediate	--	3.120	0	0.033	--
NJDEP Wetland 15X	PFO	Intermediate	--	0.074	0	--	--
NJDEP Wetland 16X	PFO	Intermediate	--	0.477	0	--	--
NJDEP Wetland 17X	PFO	Intermediate	--	0.463	0	--	--
NJDEP Wetland 18X	PFO	Intermediate	--	0.211	0	--	--
NJDEP Wetland 2	PUB	Intermediate	--	0.432	0	0.432	--
NJDEP Wetland 3	PFO	Exceptional	--	1.880	0	--	--
NJDEP Wetland 4	PFO	Exceptional	--	0.519	0	0.002	--
NJDEP Wetland 5	PFO	Exceptional	--	0.453	0	--	--
NJDEP Wetland 6	PFO	Exceptional	--	0.000	0	--	--
NJDEP Wetland 7X	PFO	Intermediate	--	1.103	0	--	--
NJDEP Wetland 8X	PEM	Intermediate	--	0.430	0	--	--
NJDEP Wetland 9X	PFO	Intermediate	--	1.934	0	--	--
Stream DFBX	R4SB3	--	FW2-TPC1	0.125	700	0.120	658
Stream DFC	R4SB3	--	FW2-TP	0.006	25	--	--

Table 3. Continued

Wetland/Stream Flag Series	Cowardin Classification	Anticipated NJDEP Resource Value Classification (Wetlands)	Surface Water Classification (Waters)	Acres within the Study Area (Wetlands)	Linear Feet within the Study Area (Streams)	Acreage within the NJDOT ROW (Wetlands)	Linear Feet within the NJDOT ROW (Streams)
Stream DFD	R4SB3	--	FW2-NT	0.002	52	--	--
Stream DFDX	R4SB3	--	FW2-NT	0.007	76	0.007	74
Stream DFE	R3RB2	--	FW2-TPC1	0.035	67	--	--
Stream DFG	R4SB3	--	FW2-NT	0.005	75	--	--
Stream DFHX	R4SB3	--	FW2-NT	0.001	25	0.001	25
Stream DFI	R3UB3	--	FW2-NT	0.013	165	--	3
Stream DFJ	R4SB5	--	FW2-NT	0.003	54	--	--
Stream DFJX	R4SB1	--	FW2-NT	0.188	615	0.183	615
Stream DFK	R3UB1	--	FW2-NT	0.012	75	--	--
Stream DFL	R3UB1	--	FW2-NT	0.008	86	--	--
Stream DFN	R4SB5	--	FW2-NT	0.005	89	0.001	23
Stream DFO	R4SB3	--	FW2-NT	0.021	325	--	--
Stream DFP	R6	--	N/A	0.002	51	--	--
Stream DFT	R3UB1/3	--	FW2-NT	0.021	40	--	--
Stream DFU	R3UB1/3	--	FW2-NT	0.009	39	--	--
Stream DFV	R3UB1	--	FW2-NT	0.039	99	--	--
Stream DFZ	R3UB1	--	FW2-NT/FW2- TPC1	0.019	36	--	--
Stream JBA	R4SB3	--	FW2-NT	0.010	77	0.004	22
Stream JBB	R2UB3	--	FW2-NT	1.234	537	0.079	22
Stream JBE	R3UB1	--	FW2-NT	0.022	74	0.007	17
Stream JBG	R3UB1	--	FW2-NT	0.013	54	0.004	20
Stream JBK	R6	--	N/A	0.094	859	0.000	4

Table 3. Continued

Wetland/Stream Flag Series	Cowardin Classification	Anticipated NJDEP Resource Value Classification (Wetlands)	Surface Water Classification (Waters)	Acres within the Study Area (Wetlands)	Linear Feet within the Study Area (Streams)	Acreage within the NJDOT ROW (Wetlands)	Linear Feet within the NJDOT ROW (Streams)
Stream DFD	R4SB3	--	FW2-NT	0.002	52	--	--
Stream DFDX	R4SB3	--	FW2-NT	0.007	76	0.007	74
Stream DFE	R3RB2	--	FW2-TPC1	0.035	67	--	--
Stream DFG	R4SB3	--	FW2-NT	0.005	75	--	--
Stream DFHX	R4SB3	--	FW2-NT	0.001	25	0.001	25
Stream DFI	R3UB3	--	FW2-NT	0.013	165	--	3
Stream DFJ	R4SB5	--	FW2-NT	0.003	54	--	--
Stream DFJX	R4SB1	--	FW2-NT	0.188	615	0.183	615
Stream DFK	R3UB1	--	FW2-NT	0.012	75	--	--
Stream DFL	R3UB1	--	FW2-NT	0.008	86	--	--
Stream DFN	R4SB5	--	FW2-NT	0.005	89	0.001	23
Stream DFO	R4SB3	--	FW2-NT	0.021	325	--	--
Stream DFP	R6	--	N/A	0.002	51	--	--
Stream DFT	R3UB1/3	--	FW2-NT	0.021	40	--	--
Stream DFU	R3UB1/3	--	FW2-NT	0.009	39	--	--
Stream DFV	R3UB1	--	FW2-NT	0.039	99	--	--
Stream DFZ	R3UB1	--	FW2-NT/FW2- TPC1	0.019	36	--	--
Stream JBA	R4SB3	--	FW2-NT	0.010	77	0.004	22
Stream JBB	R2UB3	--	FW2-NT	1.234	537	0.079	22
Stream JBE	R3UB1	--	FW2-NT	0.022	74	0.007	17
Stream JBG	R3UB1	--	FW2-NT	0.013	54	0.004	20
Stream JBK	R6	--	N/A	0.094	859	0.000	4

Table 3. Continued

Wetland/Stream Flag Series	Cowardin Classification	Anticipated NJDEP Resource Value Classification (Wetlands)	Surface Water Classification (Waters)	Acres within the Study Area (Wetlands)	Linear Feet within the Study Area (Streams)	Acreage within the NJDOT ROW (Wetlands)	Linear Feet within the NJDOT ROW (Streams)
Stream JBL	R3UB1	--	FW2-NT	0.025	236	0.001	16
Stream JBS	R4SB3	--	FW2-NT	0.036	145	--	--
Stream TSGX	R3UB3	--	FW2-NT	0.798	635	0.608	456
Wetland DFA	PSS/PFO	Ordinary	--	0.110	0	0.110	--
Wetland DFAX	PFO	Intermediate	--	0.015	0	0.015	--
Wetland DFB	PFO	Exceptional	--	0.667	0	--	--
Wetland DFCX	PEM/PFO	Intermediate	--	0.110	0	0.103	--
Wetland DFEX	PEM	Intermediate	--	0.025	0	0.025	--
Wetland DFF	PFO	Exceptional	--	0.061	0	--	--
Wetland DFFX	PEM	Intermediate	--	0.404	0	0.404	--
Wetland DFGX	PEM	Intermediate	--	0.673	0	0.673	--
Wetland DFH	PFO/PEM	Exceptional	--	0.601	0	0.007	--
Wetland DFIX	PEM	Intermediate	--	0.052	0	0.052	--
Wetland DFKX	PFO	Intermediate	--	0.151	0	0.059	--
Wetland DFLX	PFO	Intermediate	--	0.055	0	0.055	--
Wetland DFM	PEM	Intermediate	--	0.130	0	--	--
Wetland DFQ	PFO/PEM	Intermediate	--	0.086	0	--	--
Wetland DFR	PUB	Exceptional	--	0.008	0	0.004	--
Wetland DFS	PEM	Ordinary	--	0.379	0	0.379	--
Wetland DFW	PEM/PSS	Ordinary	--	0.445	0	0.445	--
Wetland DFX	PFO	Intermediate	--	0.098	0	0.002	--
Wetland DFY	PFO	Intermediate	--	0.063	0	--	--
Wetland JBC	PEM	Ordinary	--	0.067	0	0.067	--
Wetland JBD	PFO	Exceptional	--	2.353	0	--	--
Wetland JBF	PFO	Exceptional	--	0.086	0	0.003	--

Table 3. Continued

Wetland/Stream Flag Series	Cowardin Classification	Anticipated NJDEP Resource Value Classification (Wetlands)	Surface Water Classification (Waters)	Acres within the Study Area (Wetlands)	Linear Feet within the Study Area (Streams)	Acreage within the NJDOT ROW (Wetlands)	Linear Feet within the NJDOT ROW (Streams)
Wetland JBH	PFO	Exceptional	--	2.334	0	--	--
Wetland JBI	PEM	Exceptional	--	0.192	0	0.110	--
Wetland JBJ	PEM	Ordinary	--	0.239	0	0.239	--
Wetland JBM	PEM	Ordinary	--	0.085	0	--	--
Wetland JBN	PUB	Ordinary	--	0.098	0	--	--
Wetland JBO	PSS	Intermediate	--	0.014	0	--	--
Wetland JBP	PSS	Ordinary	--	0.048	0	0.048	--
Wetland JBQ	PEM	Exceptional	--	0.132	0	--	--
Wetland JBR	PEM	Ordinary	--	0.130	0	--	--
Wetland TSAX	PEM	Ordinary	--	0.090	0	0.090	--
Wetland TSBX	PEM	Ordinary	--	0.040	0	0.040	--
Wetland TSCX	PEM	Ordinary	--	0.071	0	0.071	--
Wetland TSDX	PEM	Ordinary	--	0.071	0	0.071	--
Wetland TSEX	PEM	Ordinary	--	0.028	0	0.028	--
Wetland TSFX	PFO	Intermediate	--	2.686	0	2.168	--
			Total	36.868	7259	7.274	2,851

PFO: palustrine forested wetland
PSS: palustrine scrub-shrub wetland
PEM: palustrine emergent wetland
PUB: palustrine unconsolidated bottom wetland
R2UB3: riverine lower perennial unconsolidated bottom, mud

R3UB1/3: riverine upper perennial unconsolidated bottom, cobble-gravel or mud
R3RB2: riverine upper perennial rock bottom, rubble
R4SB3/5: riverine intermittent streambed, cobble-gravel or mud
R6: riverine ephemeral

FW2: Waters designated as FW2 waters in the Department's Surface Water Quality Standards; general surface water classification applied to those fresh waters not designated as FW1 or Pinelands Waters.

NT: Fresh waters that have not been designated as trout production or trout maintenance.

TPC1: Trout production/Category 1 waters. Trout production, as designated by the Department's Surface Water Quality Standards, for use by trout for spawning or nursery purposes during their first summer. Category 1 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

Palustrine Emergent Wetland (PEM): Palustrine emergent wetlands are characterized by erect, rooted herbaceous hydrophytes, excluding mosses and lichens. These wetlands are usually dominated by perennial plants that is present for most of the growing season in most years. Dominant vegetation observed in the emergent wetlands identified within the survey area included common reed (*Phragmites australis*), broadleaf cattail (*Typha latifolia*), creeping bentgrass (*Agrostis stolonifera*), spikerush (*Eleocharis* sp.) and sedges (*Carex* spp.). In the emergent wetland areas, hydrology is associated with a seasonally high water table, surface saturation, and stormwater runoff from adjacent uplands. Following the Cowardin system (Cowardin et al., 1979), the hydroperiod of the palustrine emergent wetland systems in the survey area ranges from seasonally flooded to seasonally saturated.

Palustrine Scrub-Shrub Wetland (PSS): Palustrine scrub-shrub wetlands are dominated by woody vegetation that is less than 20 feet tall, including young trees, true shrubs, or trees and shrubs that are small or stunted because of environmental conditions. Vegetation observed in the scrub-shrub wetlands identified in the survey area include slippery elm, tatarian honeysuckle (*Lonicera tatarica*), and silky dogwood (*Cornus amomum*). Hydrology in these wetlands is associated with runoff from adjacent uplands and roadway, as well as a high water table. Following the Cowardin system, the hydroperiod of the scrub-shrub wetland systems in the survey area ranges from seasonally flooded to saturated.

Palustrine Forested Wetland (PFO): Palustrine forested wetlands are characterized by woody vegetation that is 20 feet or taller. Vegetation observed in the forested wetlands identified in the survey area include red maple, pin oak (*Quercus palustris*), green ash (*Fraxinus pennsylvanica*), American sycamore (*Platanus occidentalis*), northern spicebush, cinnamon fern (*Osmunda cinnamomea*), and skunk cabbage (*Symplocarpus foetidus*). Hydrology in the forested wetlands is associated with a high water table, riverine flow (floodplain), and runoff from adjacent uplands. The hydroperiod of the forested wetland systems in the survey area ranges from seasonally flooded to seasonally saturated.

Palustrine Unconsolidated Bottom (PUB): The unconsolidated bottom wetland class includes all wetland and deepwater habitats with at least 25 percent cover of particles smaller than stones, and a vegetative cover less than 30 percent. The wetlands associated with this habitat include ponds, with no vegetative cover. Hydrology is associated with a high water table, precipitation, and runoff from adjacent uplands. The hydroperiod of this unconsolidated bottom wetland system ranges from permanently flooded to semi-permanently flooded.

Riverine Lower Perennial (R2UB): Riverine lower perennial habitat is characterized by a low gradient and slow water velocity. There is no tidal influence and some water flows throughout the year. The substrate consists mainly of sand and mud. Oxygen deficits may occur and the fauna is composed mainly of species that reach their maximum abundance in still water, and true planktonic organisms are common. The gradient is lower than that of the upper perennial subsystem and the floodplain is well-developed. In the survey area, this habitat is represented by the Pompton River.

Riverine Upper Perennial Rock Bottom (R3RB): Riverine upper perennial habitat is characterized by high gradients and fast water velocity. There is no tidal influence, and some water flows throughout the year. The substrate in the survey area consists of rubble. The natural dissolved oxygen concentration is normally near saturation. The fauna is characteristic of running water, and there are few or no planktonic forms. The gradient is high compared to that of the lower perennial subsystem, and there is very little floodplain development. In the survey area, this habitat is represented by the Pequannock River and one of its tributaries at the northern end of the project.

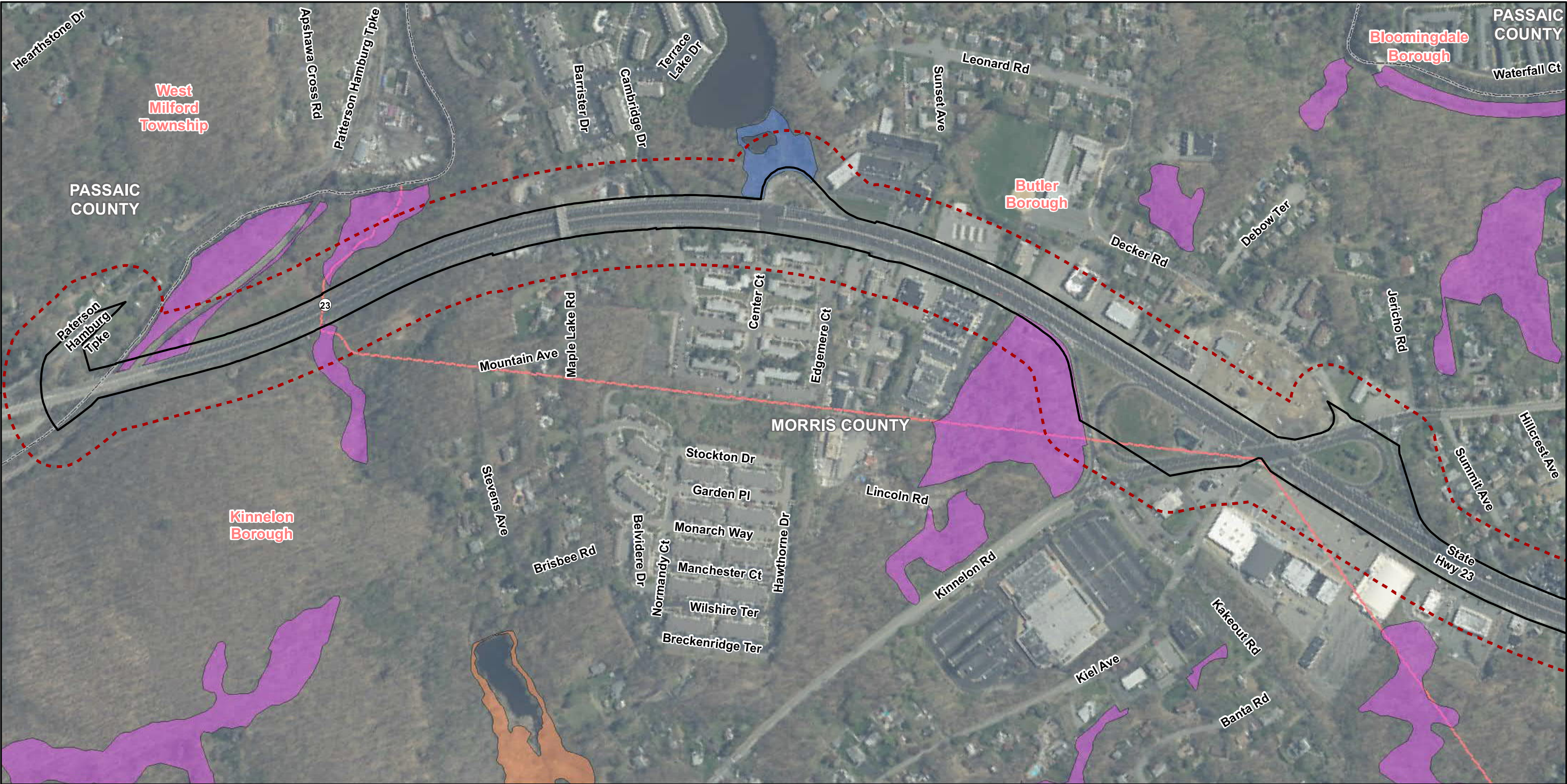
Riverine Upper Perennial Unconsolidated Bottom (R3UB): Riverine upper perennial habitat is characterized by high gradients and fast water velocity. There is no tidal influence, and some water flows throughout the year. The unconsolidated substrates in the survey area consist of cobble-gravel and mud. The natural dissolved oxygen concentration is normally near saturation. The fauna is characteristic of running water, and there are few or no planktonic forms. The gradient is high compared to that of the lower perennial subsystem, and there is very little floodplain development. In the survey area, this habitat is represented by Stonehouse Brook and larger tributaries.

Riverine Intermittent Streambed (R4SB): Riverine intermittent systems are characterized by flowing water for only part of the year. When water is not flowing, it may remain in isolated pools or surface water may be absent. In the survey area, substrate in these systems was classified as either cobble-gravel or mud.

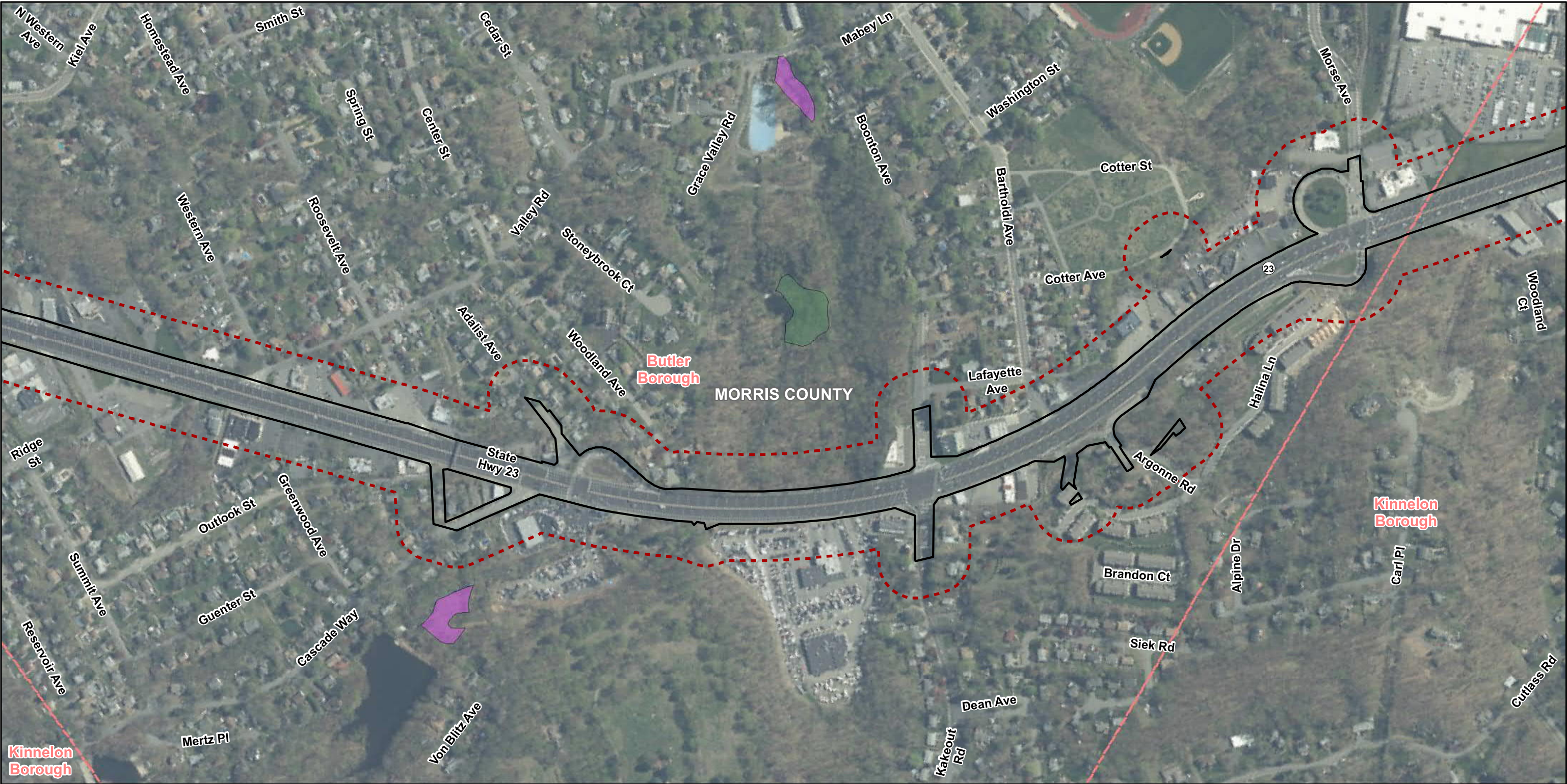
Riverine Ephemeral (R6): Riverine ephemeral systems only flow during or following precipitation events, only flowing for a short period. In the survey area, this habitat is represented by roadside ditches and ephemeral tributaries.

As stated in N.J.A.C 7:7A-3.2, NJDEP classifies freshwater wetlands by resource value. Resource value classifications of the wetlands delineated in the survey area are listed in Table 3 and range from exceptional to ordinary value. Wetlands identified as exception resource value wetlands are either documented as habitat for threatened or endangered species and/or discharge to FW-1 or FW-2 trout production waters or their tributaries.

The locations and boundaries of delineated wetlands and streams are shown on the Permit Plans. Color photographs were taken of each delineated wetland during the field survey and are presented in *Appendix B*. Completed wetland determination data forms documenting the soil, vegetative and hydrologic conditions are provided in *Appendix C*. Wetland delineation mapping can be found in Appendix D.



Roadway ROW Study Area County Boundary Municipal Boundary Deciduous Scrub/Shrub Wetlands Deciduous Wooded Wetlands Herbaceous Wetlands	Page 1 of 9		NJDOT ROUTE 23, RT 80 TO CR 694 (PATERSON HAMBURG TURNPIKE) ATS C#1 MILEPOST 5.53 TO 16.94 Figure 5. NJDEP Wetlands 0 400 800 Feet	
	Sources: Imagery (ESRI) Wetlands (NJDEP)			
	Coordinate System: State Plane New Jersey NAD 1983			
	November 17, 2022			



- | | | | |
|--|--------------------|--|--|
| | Roadway ROW | | Deciduous Wooded Wetlands |
| | Study Area | | Mixed Wooded Wetlands (Deciduous Dom.) |
| | County Boundary | | |
| | Municipal Boundary | | |

Page 2 of 9

Sources:
Imagery (ESRI)
Wetlands (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

November 17, 2022



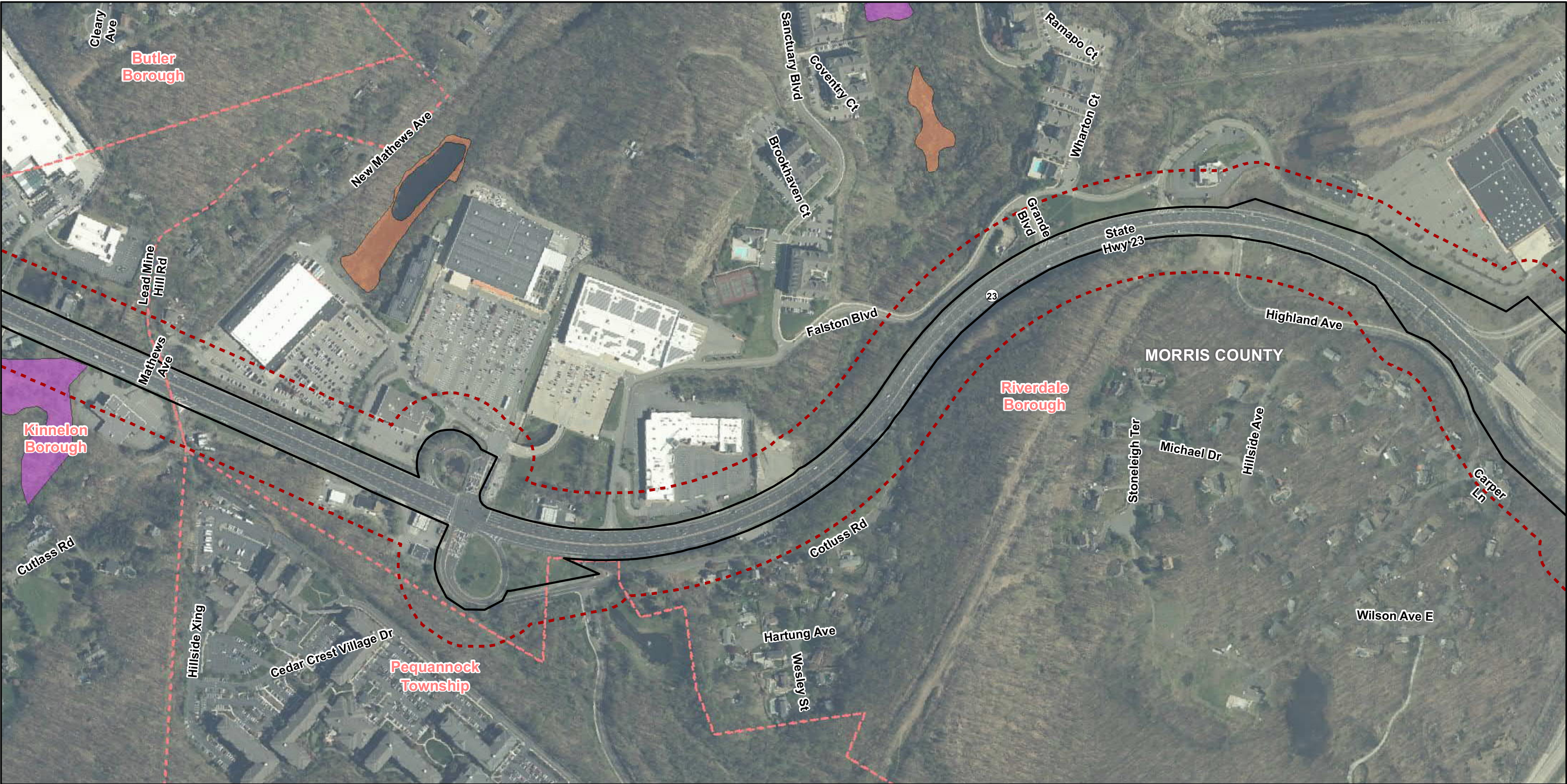
NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 5. NJDEP Wetlands



0 400 800 Feet





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|--|--------------------|--|---|
| | Roadway ROW | | Deciduous Wooded Wetlands |
| | Study Area | | Herbaceous Wetlands |
| | County Boundary | | Managed Wetland in Maintained Lawn Greenspace |
| | Municipal Boundary | | |

Page 3 of 9

Sources:
Imagery (ESRI)
Wetlands (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

November 17, 2022



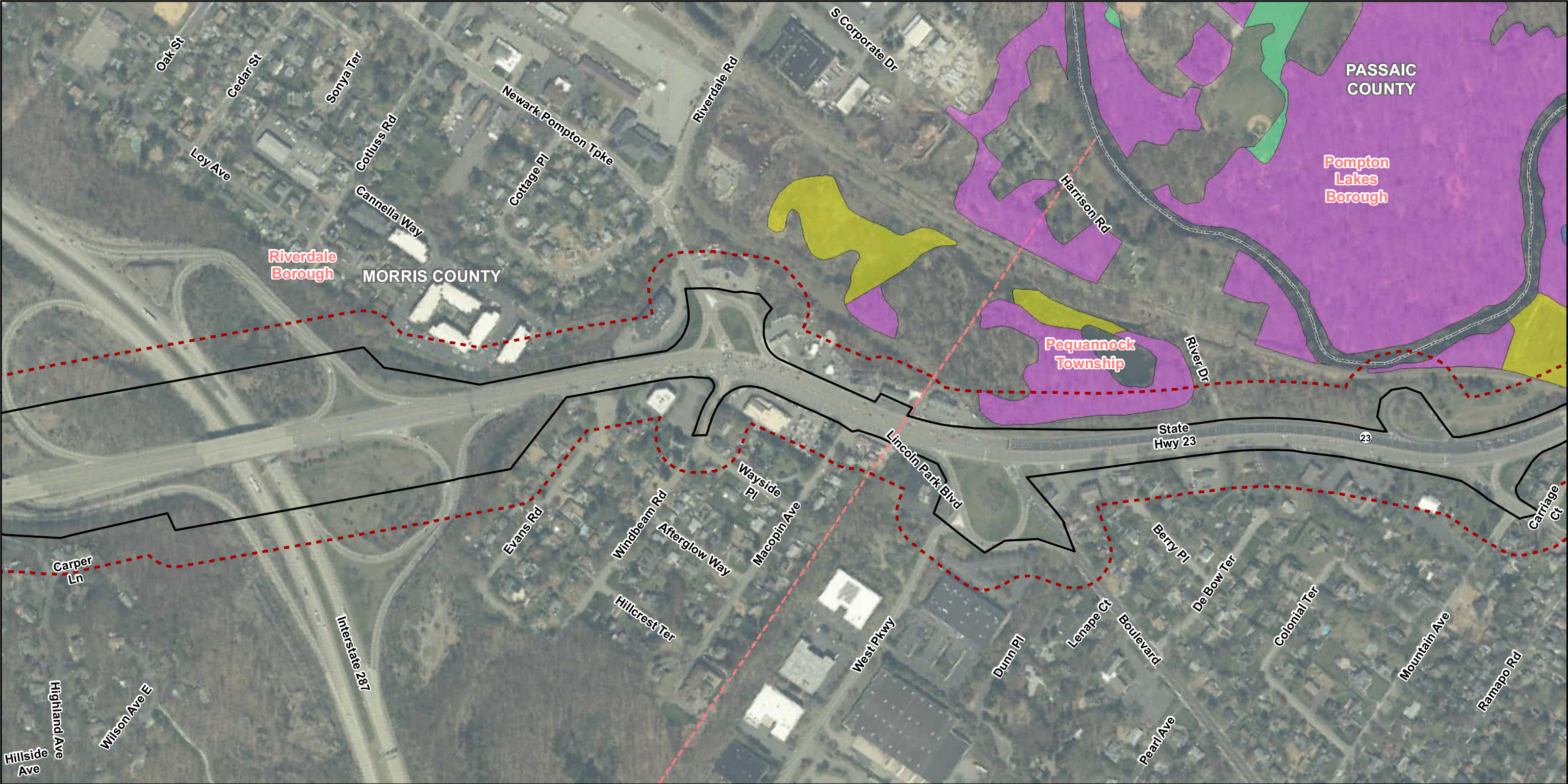
NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 5. NJDEP Wetlands



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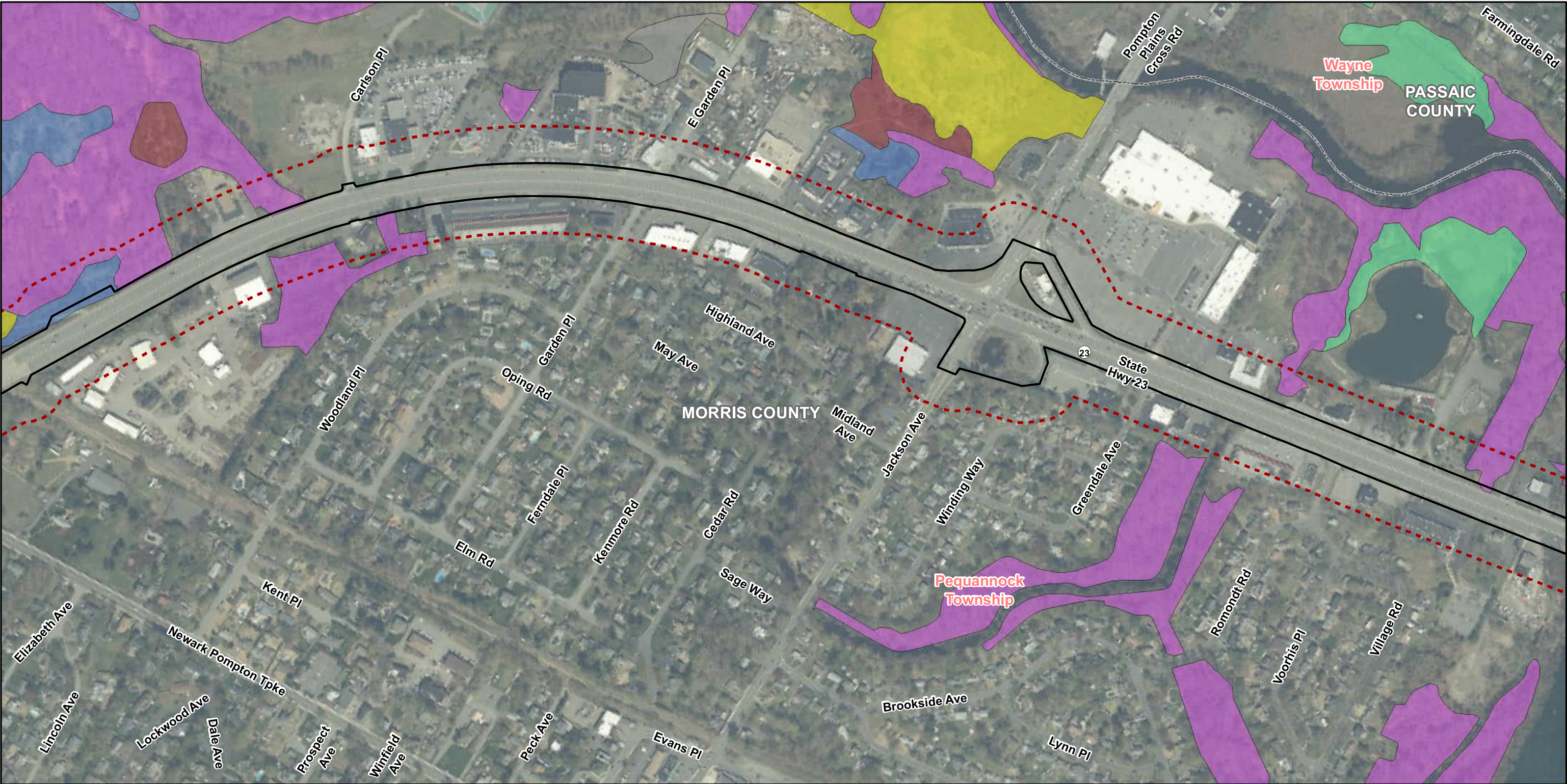
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|--|--------------------|--|---|
| | Roadway ROW | | Deciduous Scrub/Shrub Wetlands |
| | Study Area | | Deciduous Wooded Wetlands |
| | County Boundary | | Disturbed Wetlands (Modified) |
| | Municipal Boundary | | Managed Wetland in Built-Up Maintained Rec Area |



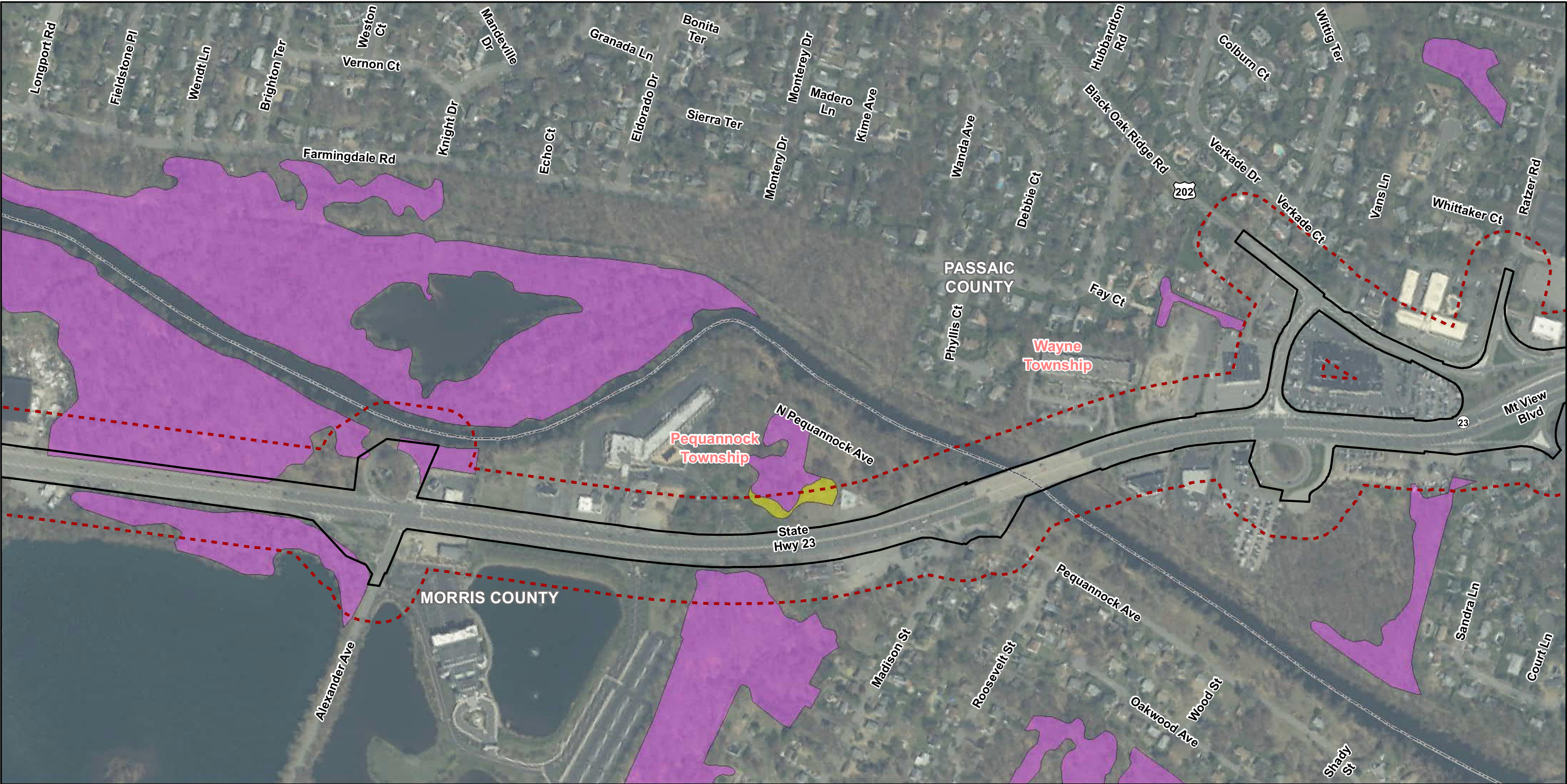
NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 5. NJDEP Wetlands





Roadway ROW Study Area County Boundary Municipal Boundary	Deciduous Scrub/Shrub Wetlands Deciduous Wooded Wetlands Disturbed Wetlands (Modified) Managed Wetland in Built-Up Maintained Rec Area Managed Wetland in Maintained Lawn Greenspace Mixed Scrub/Shrub Wetlands (Deciduous Dom.)	Page 5 of 9 Sources: Imagery (ESRI) Wetlands (NJDEP) Coordinate System: State Plane New Jersey NAD 1983 November 17, 2022		NJDOT ROUTE 23, RT 80 TO CR 694 (PATERSON HAMBURG TURNPIKE) ATS C#1 MILEPOST 5.53 TO 16.94 Figure 5. NJDEP Wetlands 0400800 Feet
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- Roadway ROW
- Study Area
- County Boundary
- Municipal Boundary

- Deciduous Wooded Wetlands
- Disturbed Wetlands (Modified)

Sources:
Imagery (ESRI)
Wetlands (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

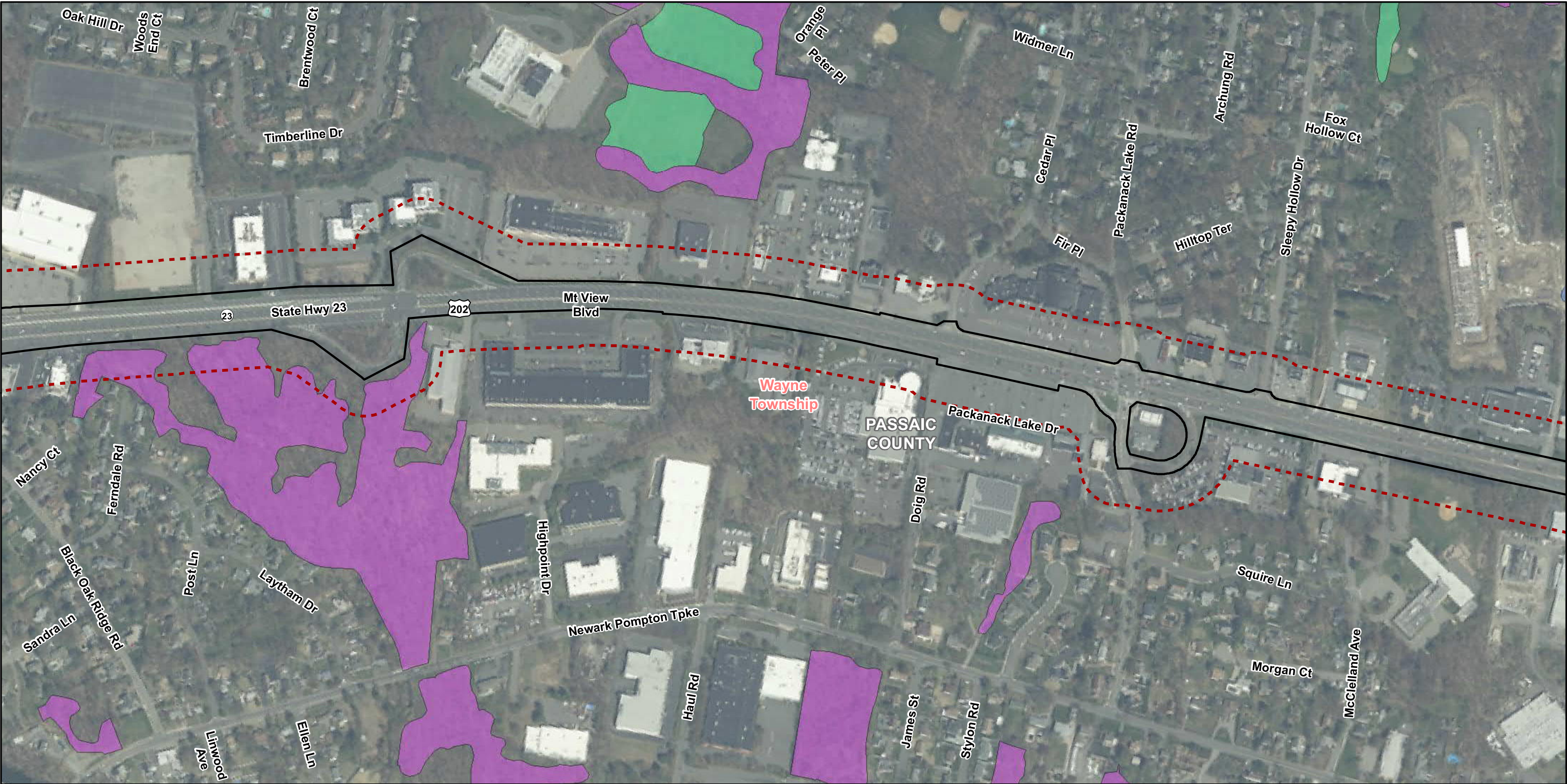
November 17, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 5. NJDEP Wetlands





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|--|--------------------|--|---|
| | Roadway ROW | | Deciduous Scrub/Shrub Wetlands |
| | Study Area | | Deciduous Wooded Wetlands |
| | County Boundary | | Managed Wetland in Built-Up Maintained Rec Area |
| | Municipal Boundary | | Managed Wetland in Maintained Lawn Greenspace |

Page 7 of 9

Sources:
Imagery (ESRI)
Wetlands (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

November 17, 2022



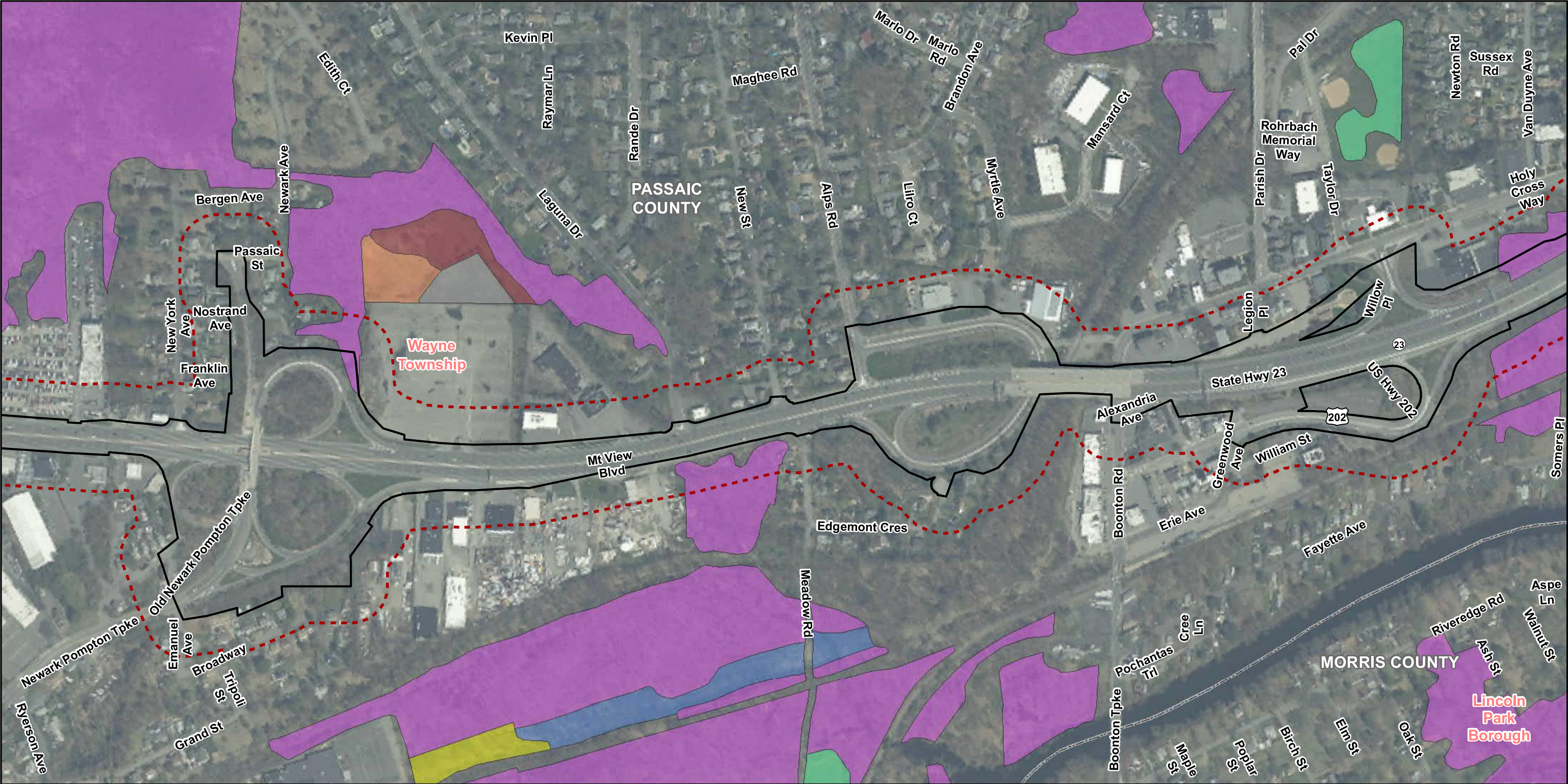
NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 5. NJDEP Wetlands



0 400 800 Feet





- Roadway ROW
- Study Area
- County Boundary
- Municipal Boundary

- Deciduous Scrub/Shrub Wetlands
- Deciduous Wooded Wetlands
- Disturbed Wetlands (Modified)
- Herbaceous Wetlands
- Managed Wetland in Built-Up Maintained Rec Area
- Managed Wetland in Maintained Lawn Greenspace
- Mixed Scrub/Shrub Wetlands (Deciduous Dom.)

Sources:
Imagery (ESRI)
Wetlands (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

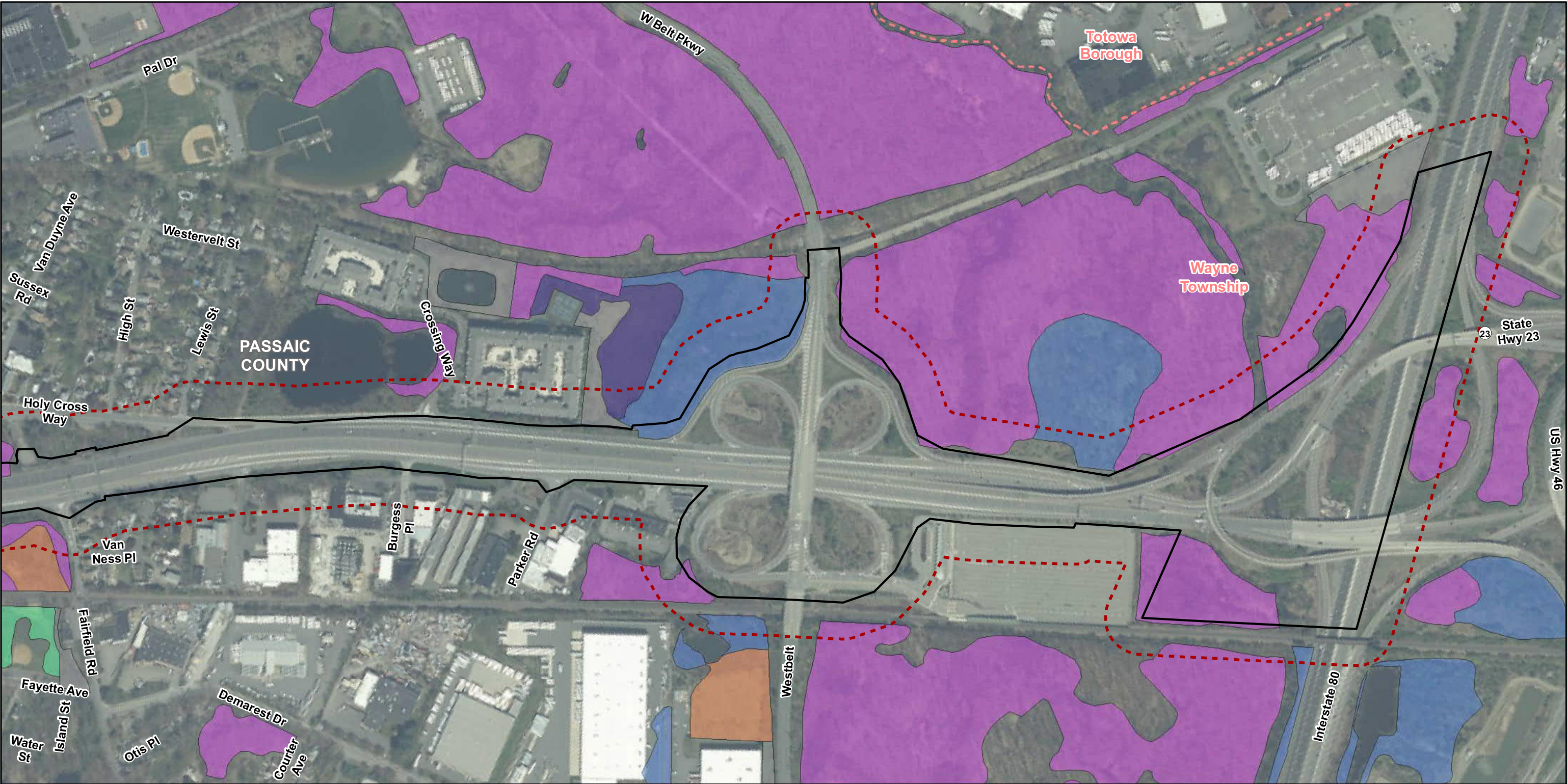
November 17, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 5. NJDEP Wetlands





- | | |
|--------------------|---|
| Roadway ROW | Deciduous Scrub/Shrub Wetlands |
| Study Area | Deciduous Wooded Wetlands |
| County Boundary | Herbaceous Wetlands |
| Municipal Boundary | Managed Wetland in Built-Up Maintained Rec Area |
| | Managed Wetland in Maintained Lawn Greenspace |
| | Phragmites Dominate Interior Wetlands |

Page 9 of 9

Sources:
Imagery (ESRI)
Wetlands (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

November 17, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 5. NJDEP Wetlands



0 400 800 Feet



6.0 THREATENED AND ENDANGERED SPECIES

WSP consulted the NJDEP NHP for information on any known occurrences of federal or state endangered, threatened, proposed, or candidate species of flora or fauna or any critical habitats known to support those species within the vicinity of the survey area. A letter from NHP, dated May 7, 2021, provides a list of special status species that are known to occur within the survey area and within the vicinity of the survey area (Table 4). Agency correspondence is provided in Appendix D.

Additionally, the NJDEP Landscape Project mapping (Figure 5) was referenced to identify any additional potential listed wildlife habitat within the 150-foot survey area. The Landscape Project geographic information system depicts critical wildlife habitat through the integration of species location data, land-use/land-cover, and species life history information. Any species not already identified by NHP as potentially occurring in the project area were included in Table 4.

WSP also obtained a resource list from the U.S. Fish and Wildlife Service (USFWS)'s Information, Planning, and Conservation System (IPaC) on November 10, 2022 (Appendix D). According to IPaC, five (5) federally listed species have the potential to occur in the project area (Table 4). Species habitat descriptions are provided below for Federal and State endangered and threatened species identified in the vicinity of the survey area.

TABLE 4 – ENDANGERED AND THREATENED SPECIES WITH THE POTENTIAL TO OCCUR IN THE SURVEY AREA

	Common Name	Scientific Name	Federal Status	State Status	Identifying Agency
Birds	bald eagle	<i>Haliaeetus leucocephalus</i>	*	E	NJ NHP/Landscape Project
	barred owl	<i>Strix varia</i>		T	NJ NHP/Landscape Project
	golden-winged warbler	<i>Vermivora chrysoptera</i>		E	NJ NHP/Landscape Project
	northern goshawk	<i>Accipiter gentilis</i>		E	NJ NHP/Landscape Project
	red-shouldered hawk	<i>Buteo lineatus</i>		E (B)	NJ NHP
Invertebrates	monarch butterfly	<i>Danaus plexippus</i>	Candidate		USFWS
Mammals	bobcat	<i>Lynx rufus</i>		E	NJ NHP/Landscape Project
	Indiana bat	<i>Myotis sodalis</i>	E	E	USFWS/NJ NHP/Landscape Project
	northern long-eared bat	<i>Myotis septentrionalis</i>	T		USFWS/NJ NHP/Landscape Project
	tricolored bat	<i>Perimyotis subflavus</i>	Proposed E		USFWS
Reptiles / Amphibians	bog turtle	<i>Clemmys muhlenbergii</i>	T	E	USFWS
	timber rattlesnake	<i>Crotalus horridus horridus</i>		E	NJ NHP/Landscape Project
	wood turtle	<i>Glyptemys insculpta</i>		T	NJ NHP/Landscape Project
Plants	small-flower halfchaff sedge	<i>Lipocarpus micrantha</i>		E	NJ NHP
	small whorled pogonia	<i>Isotria medeoloides</i>	T	E	USFWS

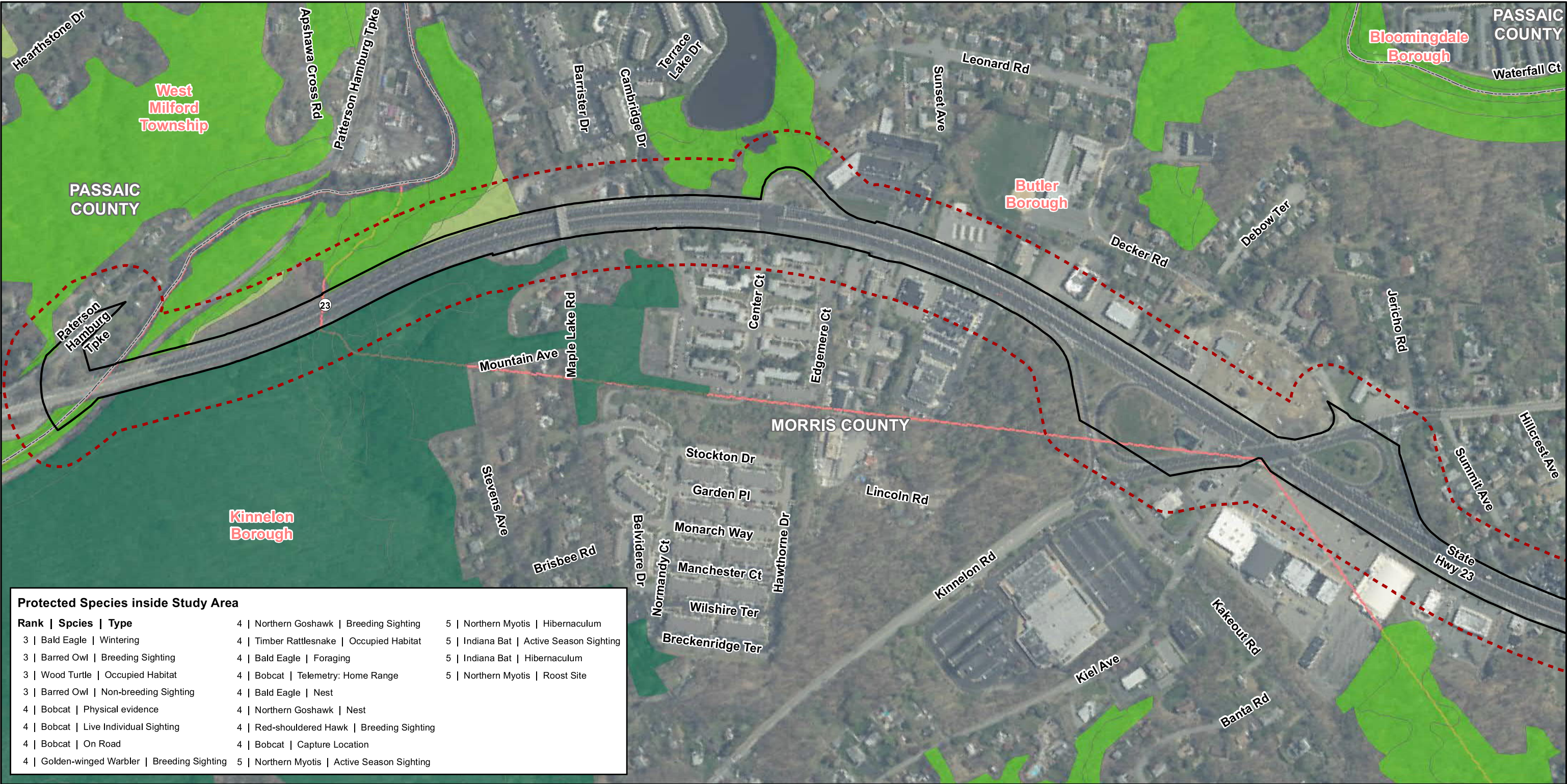
Explanation of Status Codes:

E: Endangered species

T: Threatened species

B: Breeding population

*Bald eagles are federally protected under the Bald and Golden Eagle Protection Act



- Roadway ROW
- Study Area
- County Boundary
- Municipal Boundary

- Rank 3 - State Threatened
- Rank 4 - State Endangered
- Rank 5 - Federally Listed

Sources:
Imagery (ESRI)
Landscapes (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

December 5, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

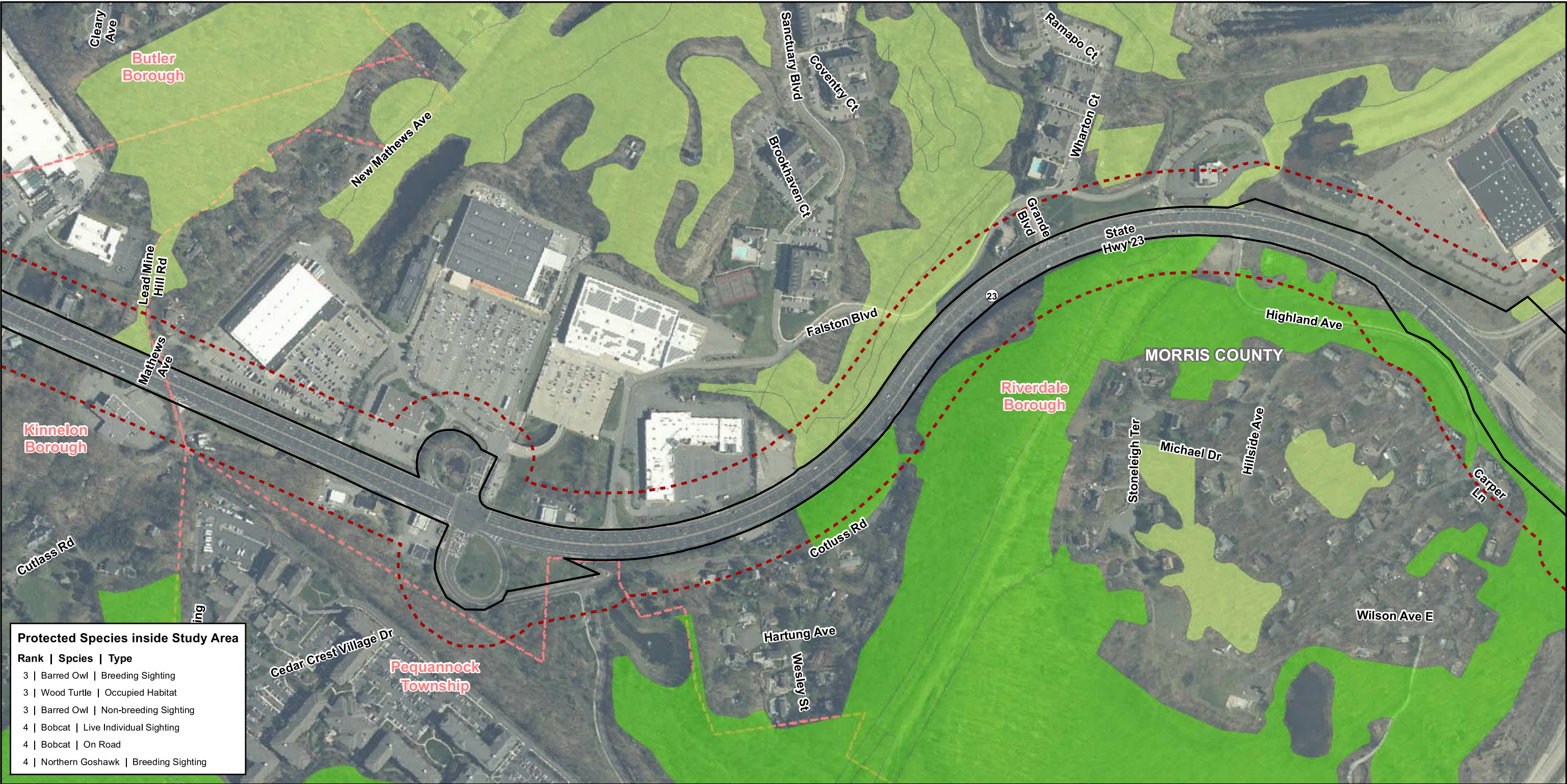
Figure 4. Landscape Project



0 400 800 Feet







Protected Species inside Study Area

Rank	Species	Type
3	Barred Owl	Breeding Sighting
3	Wood Turtle	Occupied Habitat
3	Barred Owl	Non-breeding Sighting
4	Bobcat	Live Individual Sighting
4	Bobcat	On Road
4	Northern Goshawk	Breeding Sighting

Roadway ROW Study Area County Boundary Municipal Boundary Rank 3 - State Threatened Rank 4 - State Endangered Rank 5 - Federally Listed	Page 3 of 9		NJDOT ROUTE 23, RT 80 TO CR 694 (PATERSON HAMBURG TURNPIKE) ATS C#1 MILEPOST 5.53 TO 16.94 Figure 4. Landscape Project	
	Coordinate System: State Plane New Jersey NAD 1983			
	December 5, 2022			0400800 Feet



Protected Species inside Study Area		
Rank	Species	Type
5	Northern Myotis	Active Season Sighting
3	Barred Owl	Breeding Sighting
3	Wood Turtle	Occupied Habitat
3	Barred Owl	Non-breeding Sighting
4	Bobcat	Live Individual Sighting
4	Bobcat	On Road
4	Northern Goshawk	Breeding Sighting
4	Bald Eagle	Foraging
4	Bald Eagle	Nest

Roadway ROW Study Area County Boundary Municipal Boundary	Rank 3 - State Threatened Rank 4 - State Endangered Rank 5 - Federally Listed	Page 4 of 9		NJDOT ROUTE 23, RT 80 TO CR 694 (PATERSON HAMBURG TURNPIKE) ATS C#1 MILEPOST 5.53 TO 16.94 Figure 4. Landscape Project 0400800 Feet
	Sources: Imagery (ESRI) Landscapes (NJDEP)			
	Coordinate System: State Plane New Jersey NAD 1983			
December 5, 2022				



Protected Species inside Study Area		
Rank	Species	Type
3	Wood Turtle	Occupied Habitat
4	Bald Eagle	Foraging
4	Bald Eagle	Nest
5	Northern Myotis	Active Season Sighting

	Roadway ROW		Rank 3 - State Threatened
	Study Area		Rank 4 - State Endangered
	County Boundary		Rank 5 - Federally Listed
	Municipal Boundary		

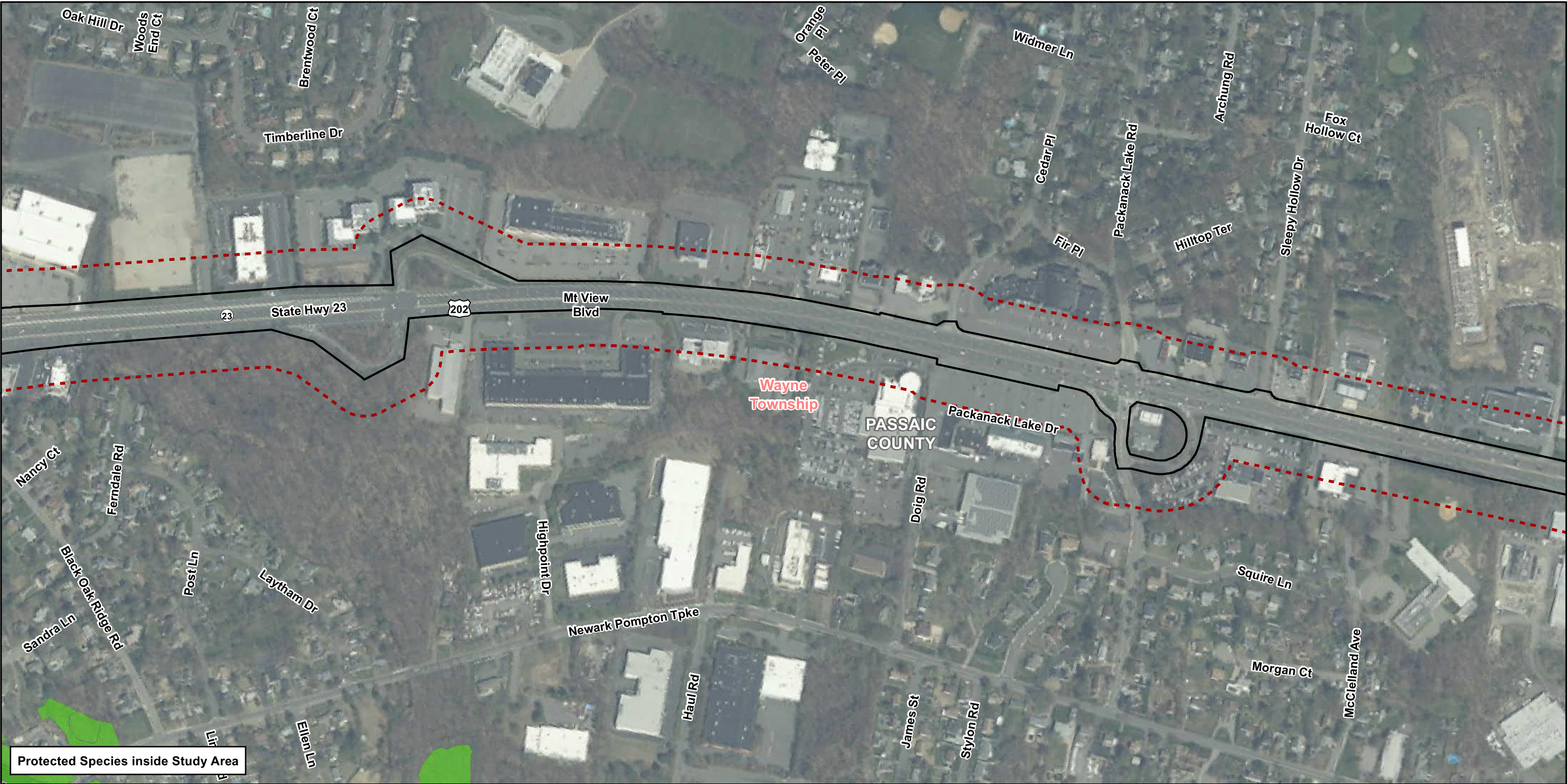


NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 4. Landscape Project







Protected Species inside Study Area

- | | |
|--------------------|---------------------------|
| Roadway ROW | Rank 3 - State Threatened |
| Study Area | Rank 4 - State Endangered |
| County Boundary | Rank 5 - Federally Listed |
| Municipal Boundary | |

Sources:
Imagery (ESRI)
Landscapes (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

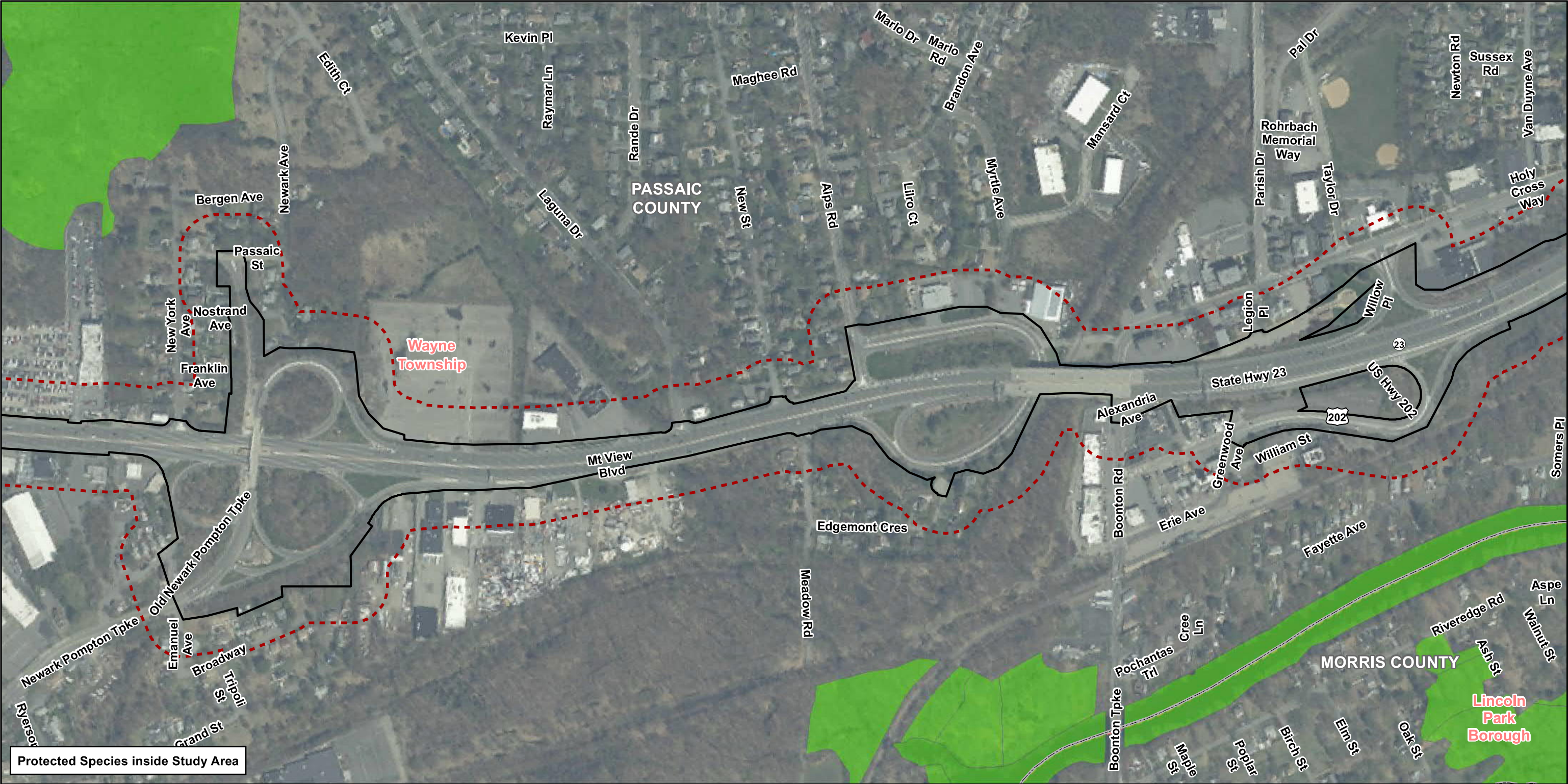
December 5, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 4. Landscape Project





Protected Species inside Study Area

- | | |
|--|---|
|  Roadway ROW |  Rank 3 - State Threatened |
|  Study Area |  Rank 4 - State Endangered |
|  County Boundary |  Rank 5 - Federally Listed |
|  Municipal Boundary | |

Sources:
Imagery (ESRI)
Landscapes (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

December 5, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 4. Landscape Project



0 400 800 Feet





Protected Species inside Study Area

- | | |
|--|---|
|  Roadway ROW |  Rank 3 - State Threatened |
|  Study Area |  Rank 4 - State Endangered |
|  County Boundary |  Rank 5 - Federally Listed |
|  Municipal Boundary | |

Page 9 of 9

Sources:
Imagery (ESRI)
Landscapes (NJDEP)

Coordinate System:
State Plane New Jersey
NAD 1983

December 5, 2022



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 4. Landscape Project



0 400 800 Feet



7.0 CULTURAL RESOURCES

A review of potential cultural resource areas within the project area was conducted via NJ GeoWeb. The Morris Canal Historic District (along the Pompton River), South of Pequannock Avenue, intersects the project area at the southern end near MP 9.65. One historic property, the Martin Berry House, is located in the project area near MP 11.05.

Proposed signaling devices SD-1-A, SD-1-B, SD-2-B, SD-2-B, SD-4-A, SD-4-B, SD-5-A, SD-5-B, SD-12-A and SD-12-B are located within historic archaeological site grid cells, which identify areas of expected archaeological sensitivity or known archaeological sites. The cells are labeled as "Identified" indicating that archaeological sites have likely been identified through cultural resource surveys or other documentation.

As the project is within the NJDOT right-of-way, anticipated impacts to historic resources is minimal. Coordination with SHPO, if required, will be conducted. A Highlands exemption is being requested.

PART IV. IMPACTS AND MITIGATION

1.0 PROPOSED WETLAND IMPACTS

Following extensive efforts to first avoid and then minimize impacts to regulated features, the proposed Project will result in permanent and temporary impacts to freshwater wetland transition areas; and temporary impacts to freshwater wetlands. Proposed impacts are summarized below and in Table 5. Impacts are shown on the Freshwater Wetland Impact Plans. Delineated wetlands are shown on the Wetland Delineation Plans in Appendix E.

Impacts to regulated areas can be authorized under a Freshwater Wetland General Permit #2 (Underground Utility Line) and #21 (Above Ground Utility Line). The Project's compliance with the Freshwater Wetland Protection Act Rules (N.J.A.C. 7:7A) is presented in the Compliance Statement.

TABLE 5 – SUMMARY OF WETLAND IMPACTS

PERMIT NAME	TRANSITION AREA TEMPORARY IMPACTS	TRANSITION AREA PERMANENT IMPACTS	FRESHWATER WETLAND TEMPORARY IMPACTS	FRESHWATER WETLAND PERMANENT IMPACTS
GP#2 Underground Utility Lines	0.930 AC	0.0 AC	0.005 AC	0.0 AC
GP#21 Aboveground Utility Lines	0.0 AC	0.001 AC	0.0 AC	0.0 AC

2.0 MITIGATION FOR PERMANENT IMPACTS

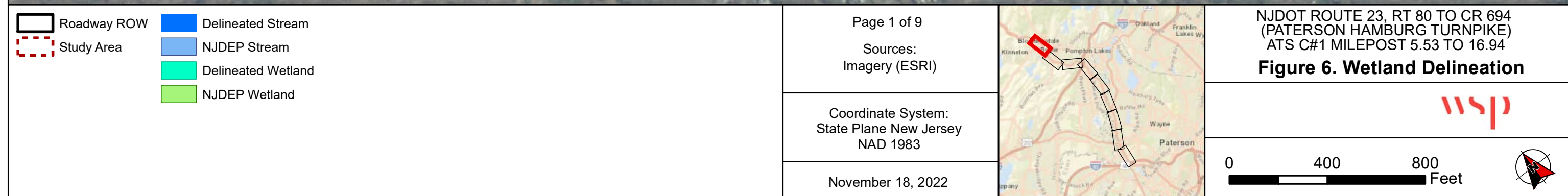
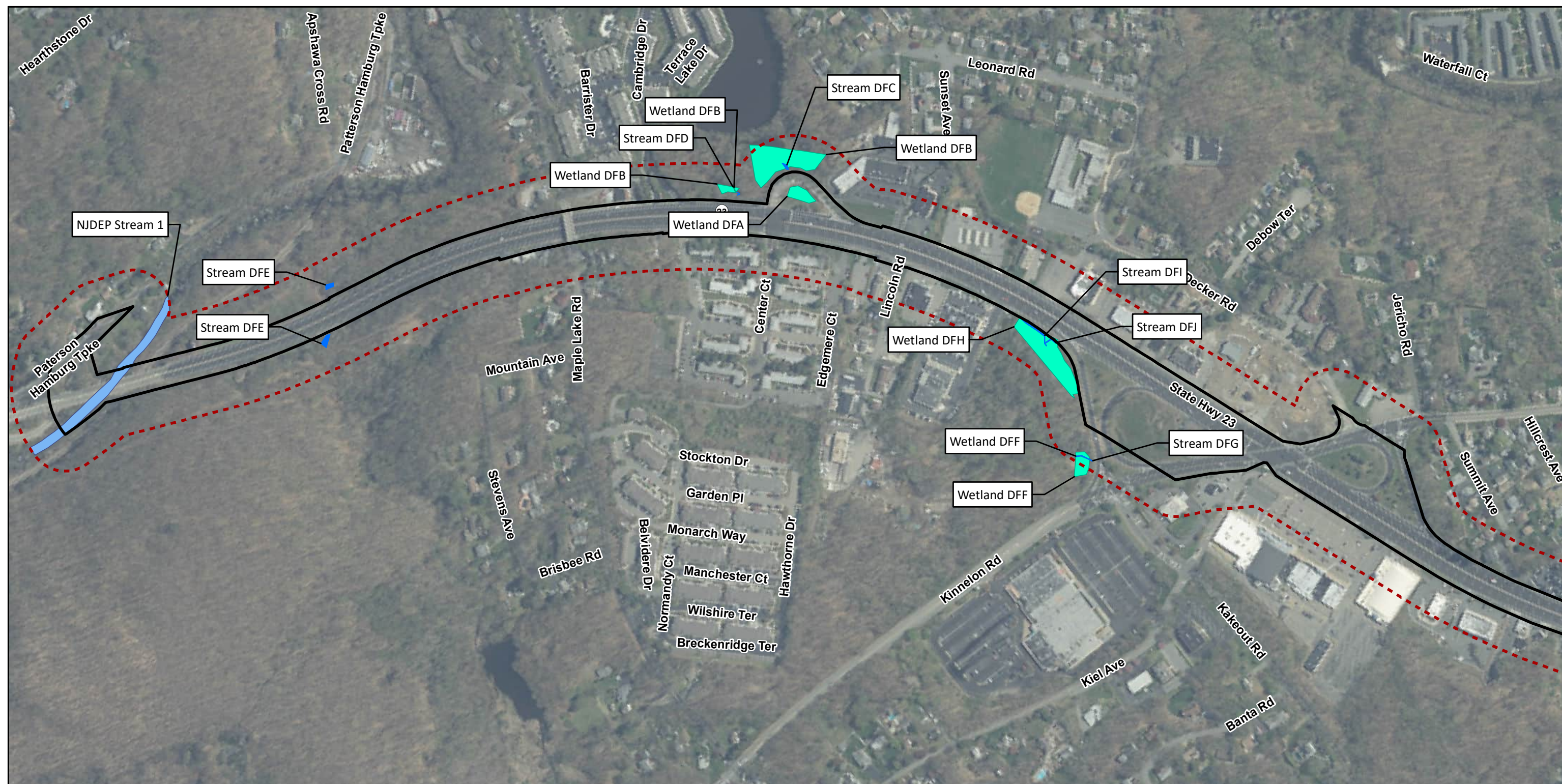
Pursuant to N.J.A.C. 7:7A-7.6(b) mitigation is required for all permanent loss and/or disturbance of 0.1 acre or greater of freshwater wetlands or State open waters. Mitigation is also required for permanent loss and/or disturbance of less than 0.1 acre of freshwater wetlands or State open waters unless the applicant demonstrates to the NJDEP that all activities have been designed to avoid and minimize impacts to wetlands.

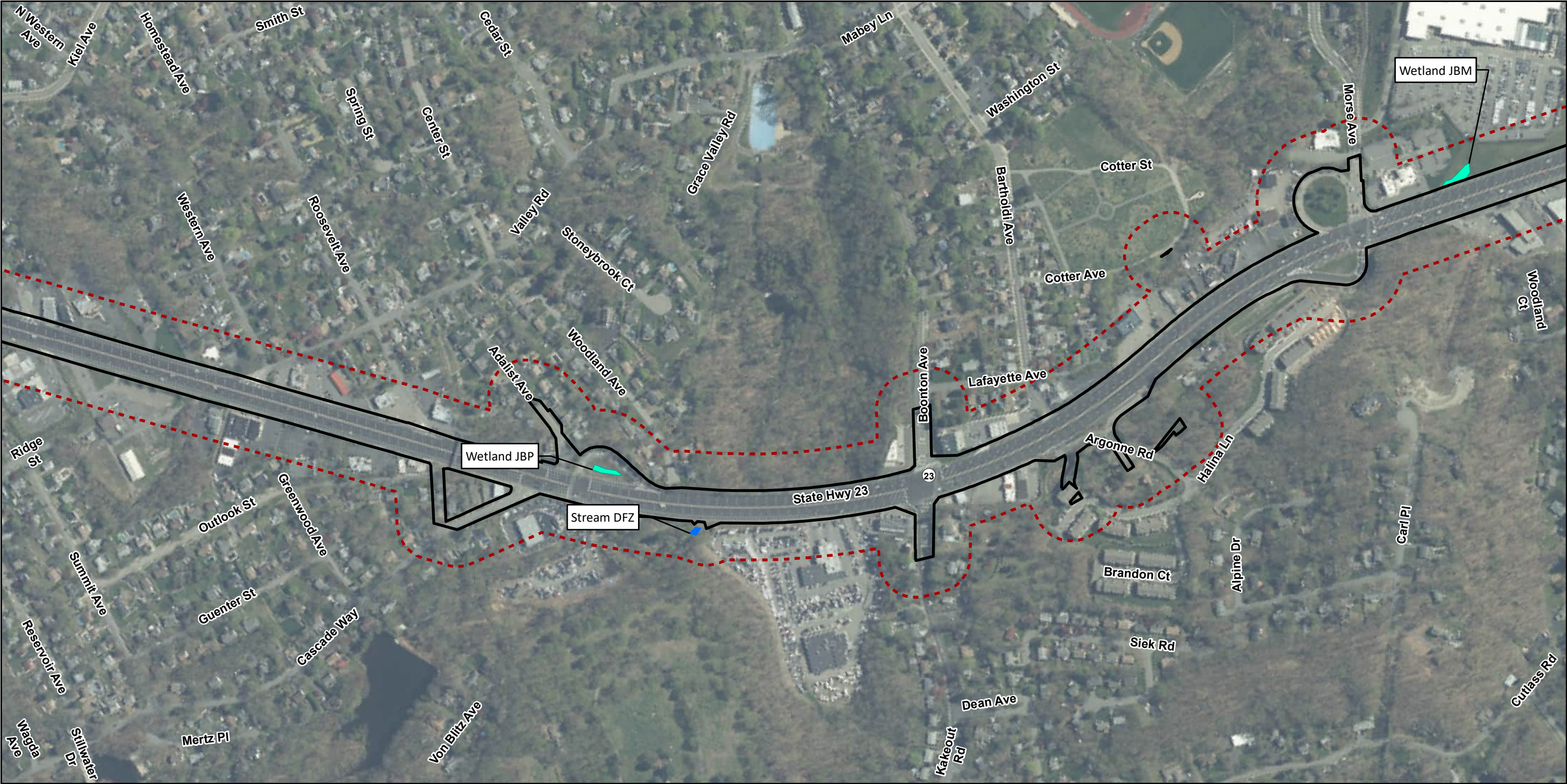
The proposed project will not result in permanent impact to freshwater wetlands; therefore, mitigation is not proposed as part of this project. For these reasons, no mitigation is being proposed.

3.0 MITIGATION FOR TEMPORARY IMPACTS

Temporary impacts to freshwater transition areas/wetlands are proposed as part of the Project's access and design requirements. Mitigation in the form of restoration of these areas will be completed upon completion of the proposed Project, as necessary.

Temporarily disturbed areas will be restored to their pre-existing conditions. All disturbed areas will be provided with a permanent vegetative cover in accordance with the standards for permanent vegetative cover provided in the *Standards for Soil Erosion and Sediment Control in New Jersey*. Depending upon the extent of disturbance, areas requiring revegetation will be seeded with grass (e.g., annual ryegrass) to stabilize disturbed soils and some areas will be allowed to naturally revegetate. If the disturbed area is located within a wetland, the area may be seeded with wetland seed mix to stabilize the ground and prevent erosion until natural vegetation is re-established.



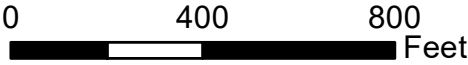


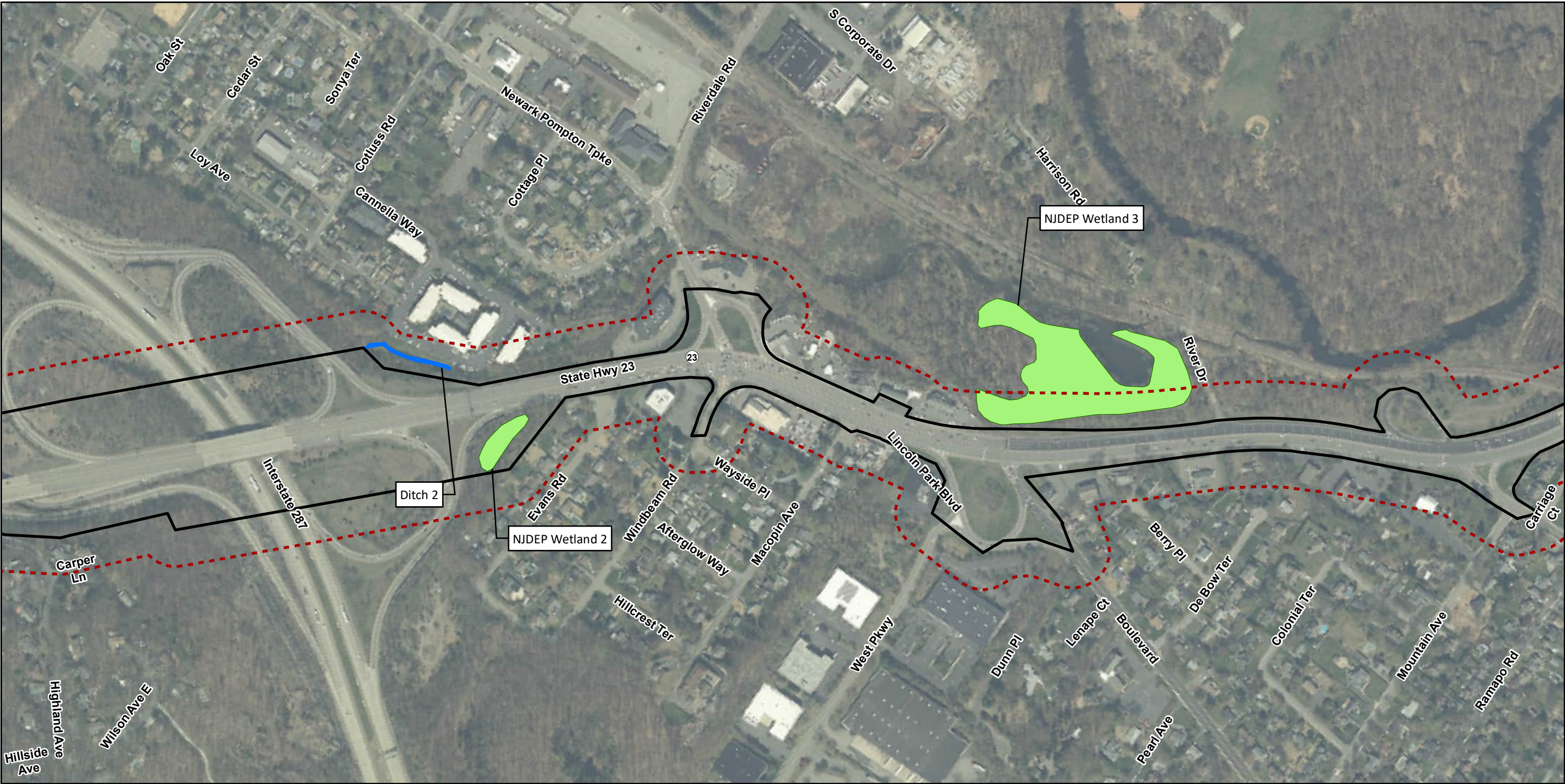
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|---|--|
|  Roadway ROW |  Delineated Stream |
|  Study Area |  NJDEP Stream |
| |  Delineated Wetland |
| |  NJDEP Wetland |



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 6. Wetland Delineation





- Roadway ROW
- Delineated Stream
- Study Area
- NJDEP Stream
- Delineated Wetland
- NJDEP Wetland



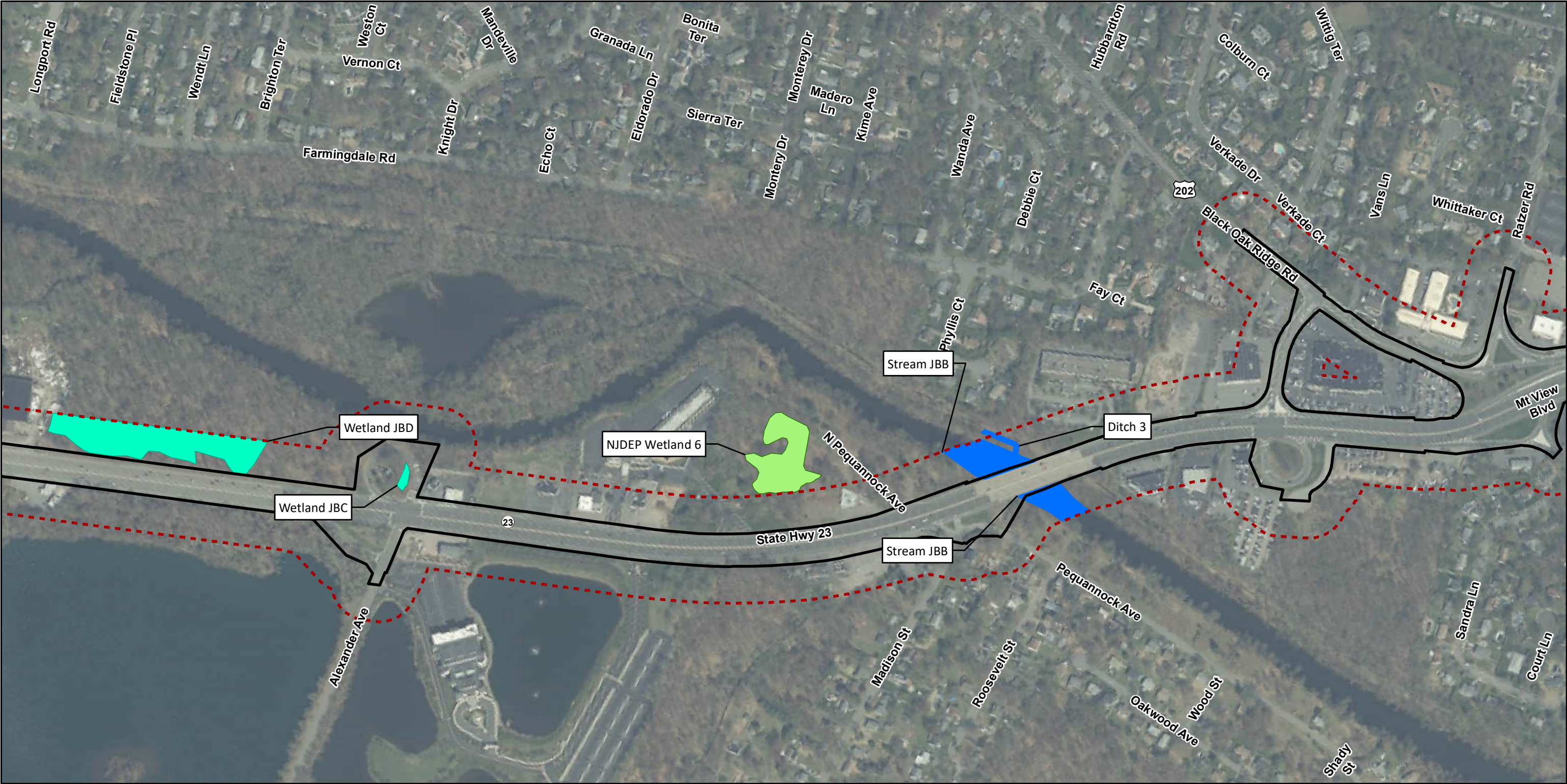
NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 6. Wetland Delineation



0 400 800 Feet



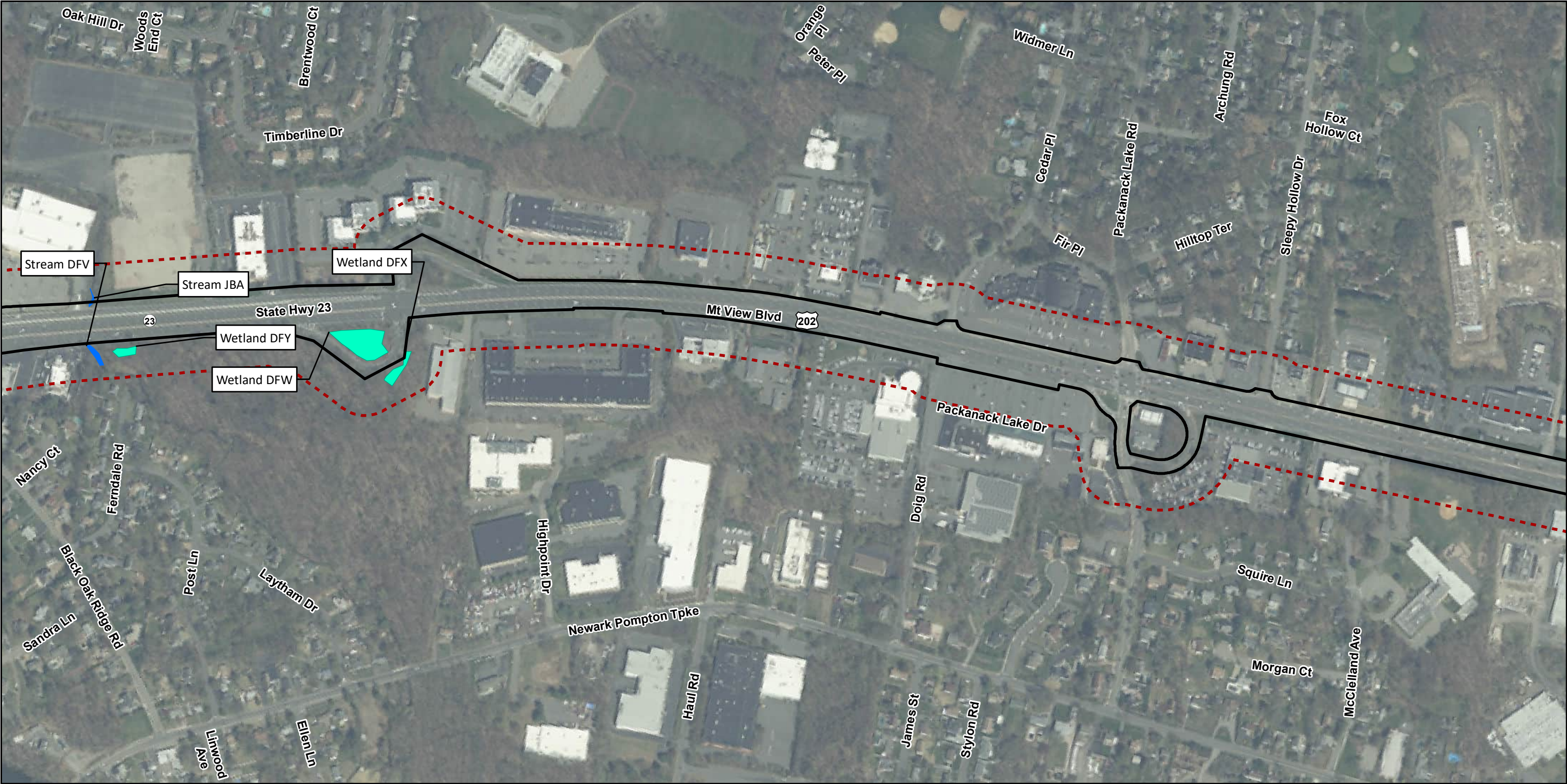


- Roadway ROW
- Study Area
- Delineated Stream
- NJDEP Stream
- Delineated Wetland
- NJDEP Wetland



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94
Figure 6. Wetland Delineation





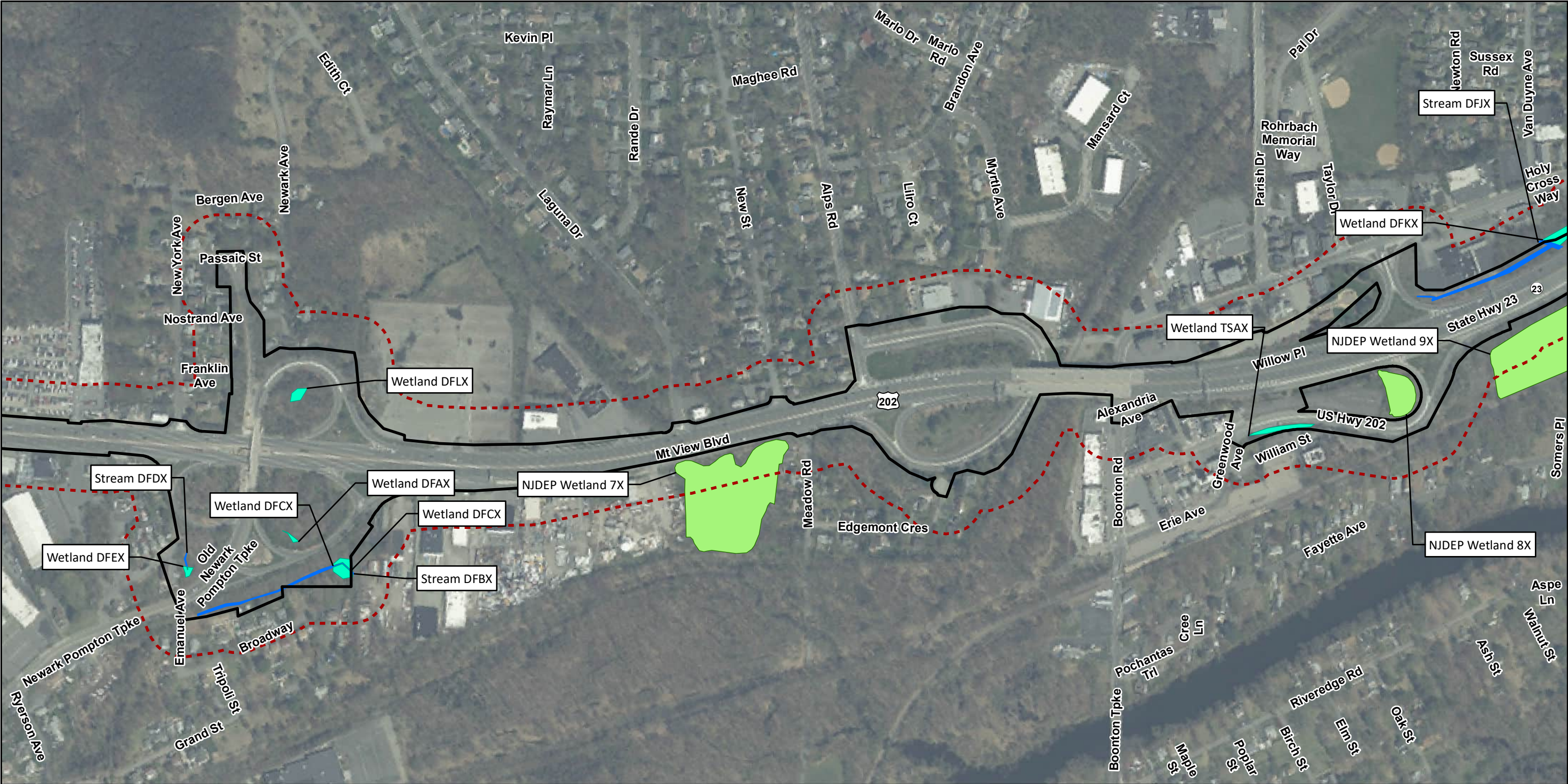
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|---|--|
|  Roadway ROW |  Delineated Stream |
|  Study Area |  NJDEP Stream |
| |  Delineated Wetland |
| |  NJDEP Wetland |



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 6. Wetland Delineation





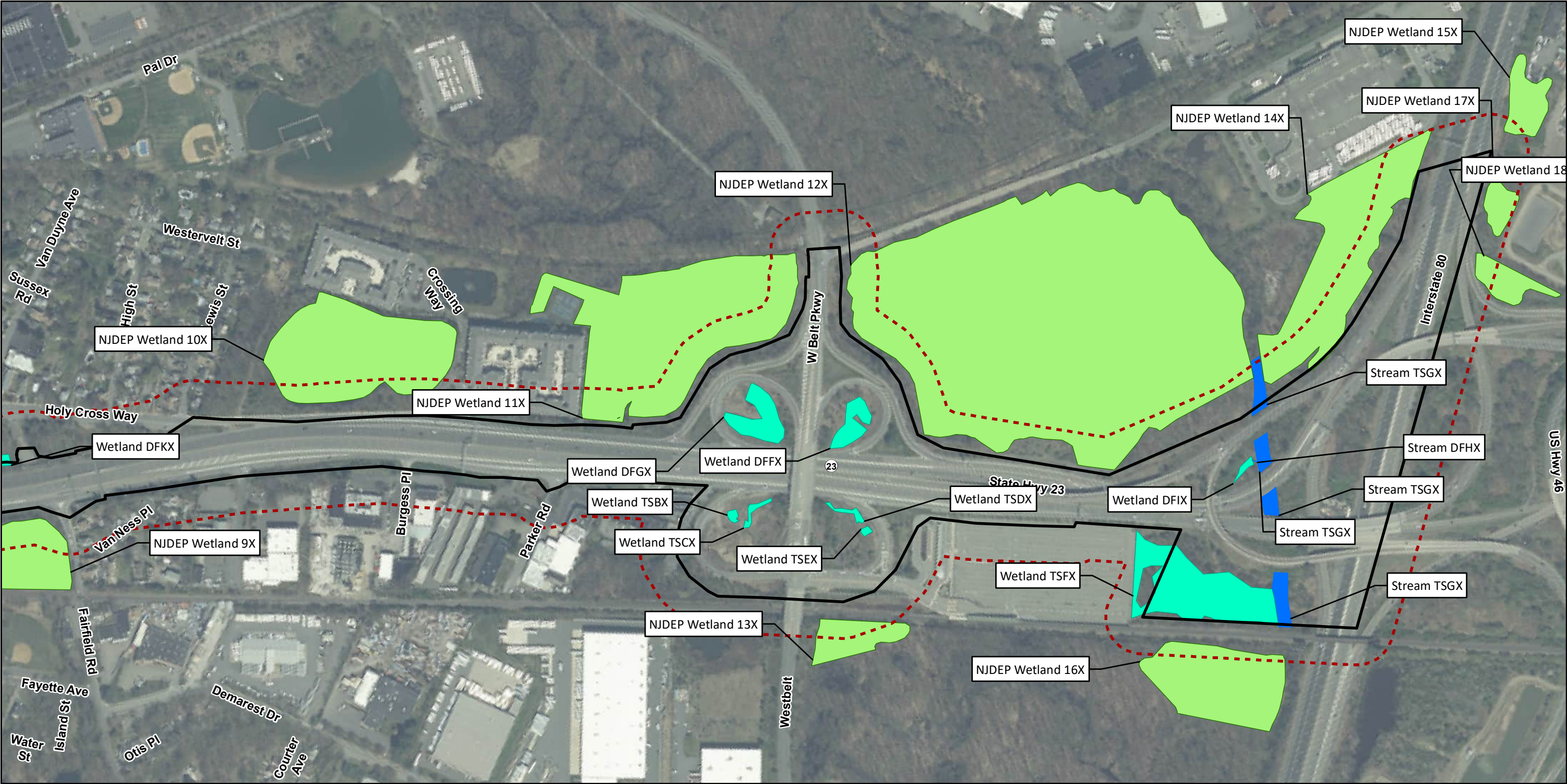
- Roadway ROW
- Study Area
- Delineated Stream
- NJDEP Stream
- Delineated Wetland
- NJDEP Wetland



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 6. Wetland Delineation





- | | |
|-------------|--------------------|
| Roadway ROW | Delineated Stream |
| Study Area | NJDEP Stream |
| | Delineated Wetland |
| | NJDEP Wetland |



NJDOT ROUTE 23, RT 80 TO CR 694
(PATERSON HAMBURG TURNPIKE)
ATS C#1 MILEPOST 5.53 TO 16.94

Figure 6. Wetland Delineation



0 400 800 Feet

