

## Watershed Improvement Plan

### Phase 1 - Watershed Inventory Report

Borough of Carteret

Middlesex County, New Jersey

Permit Number: NJG0152544



Submitted to:

**Borough of Carteret**  
Memorial Municipal Building  
61 Cooke Avenue  
Carteret, NJ 07008





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## Acronyms & Definitions

### Acronyms

- **BMP** – *Best Management Practice*
- **DO** – *Dissolved Oxygen*
- **EPA** – *U.S. Environmental Protection Agency*
- **GIS** – *Geographic Information System*
- **HUC 14** – *Hydrologic Unit Code 14*
- **MS4** – *Municipal Separate Storm Sewer System*
- **MTD** – *Manufactured Treatment Device*
- **NJPDES** – *New Jersey Pollutant Discharge Elimination System*
- **NJ-WET** – *New Jersey Watershed Evaluation Tool*
- **TDS** – *Total Dissolved Solids*
- **TMDL** – *Total Maximum Daily Load*
- **TSS** – *Total Suspended Solids*
- **WIP** – *Watershed Improvement Plan*

### Definitions

- **HUC 14 (Hydrologic unit code 14)** - An area within which water drains to a particular receiving surface water body, also known as a sub watershed, which is identified by a 14-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geological Survey. (see *N.J.A.C. 7:9B*)
- **Municipal separate storm sewer (MS4)** - A conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains, as defined in more detail at *N.J.A.C. 7:14A-1.2*.
- **Outfall** - Any point source which discharges directly to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.
- **Storm Drain Inlet** - The point of entry into the storm sewer system.
- **Stormwater** - Water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, and is captured by separate storm sewers or other sewage or drainage facilities or is conveyed by snow removal equipment.
- **Stormwater Facility** - Stormwater infrastructure including, but not limited to, catch basins, infiltration basins, detention basins, green infrastructure (GI), filter strips, riparian buffers, infiltration trenches, sand filters, constructed wetlands, wet basins, bioretention systems, low flow bypasses, Manufactured Treatment Devices (MTDs), and stormwater conveyances.
- **Stormwater Management Basin** - Stormwater management basin as defined in *N.J.A.C. 7:8*.
- **Stormwater Management Measure** - Stormwater management measure as defined in *N.J.A.C. 7:8*.
- **Stormwater Runoff** - Water flow on the surface of the ground or in storm sewers, resulting from precipitation.



- **Total Maximum Daily Load (TMDL)** - Total maximum daily load formally established pursuant to Section 7 of the Water Quality Planning Act (*N.J.S.A. 58:11A-7*) and Section 303(d) of the Clean Water Act, *33 U.S.C. §§12512 et seq.* A TMDL is the sum of individual waste load allocations for point sources, load allocations for nonpoint sources of pollution, other sources such as tributaries or adjacent segments, and allocations to a reserve or margin of safety for an individual pollutant.
- **Waters of the State** - The ocean and its estuaries, all springs, streams and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction (see *N.J.A.C. 7:9B-1.4*).



## Acknowledgements

The Borough of Carteret Watershed Inventory Report has been prepared by French and Parrello Associates of 1800 Route 34, Suite 101, Wall Township, NJ 07719.

Funding for this project was generously provided by the Borough of Carteret.

## Introduction

### Location

The Borough of Carteret is in Middlesex County, in northeastern New Jersey. Carteret was incorporated as a township by an act of the New Jersey Legislature on April 11, 1906. According to the US Census Bureau, the township has a total area of 4.4 square miles. The borough lies along the Arthur Kill waterway, across from Staten Island, and is part of the New York metropolitan area. The official municipal address is 61 Cooke Avenue, Carteret, NJ 07008.

The Borough encompasses 4.4 square miles of land in the northeastern part of Middlesex County, bounded by the Rahway River to the north, with Linden on the other side of the river; the Arthur Kill and state boundary to the East; and Woodbridge Township to the West and South. Carteret was first established as the Borough of Roosevelt on April 11, 1906, formed from parts of Woodbridge Township following a referendum approved on May 22, 1906. The Borough's name was officially changed to Carteret on November 7, 1922. The Borough can be described as a waterfront or port town which sits at an elevation of about 13 feet. The official municipal address is **61 Cooke Avenue, Carteret, NJ 07008**.

### Population & Demographics

As of the 2020 U.S. Census, Carteret has a population of 25,326, with a density of about 5755.90 people per square mile. The borough is generally characterized as a suburban community within the New York metropolitan area, situated along the Arthur Kill waterway across from Staten Island. Carteret features a mix of residential neighborhoods, commercial areas, and public parks, with strong industrial and shipping activity due to its waterfront location. Major transportation routes serving the borough include the New Jersey Turnpike (Interstate 95) and several county roads, providing connectivity to regional destinations. Carteret continues to focus on redevelopment and waterfront improvements, enhancing its role as a growing hub for both residential living and economic activity.

The racial makeup of the Borough was 27.6 percent White, 16.2 percent African American, 0.7 percent Native American, 22.9 percent Asian, 0.03 percent Pacific Islander, 19.9 percent from other races, and 12.7 percent from two or more races. Hispanic or Latino of any race were 36.9 percent of the population. 25.4 percent of the population were under the age of 20, 14.4 percent from 20 to 29, 20.9 percent from 30 to 44, 26.7 percent from 45 to 64, and 12.5 percent were 65 years of age or older. The median age is 39.3 years.



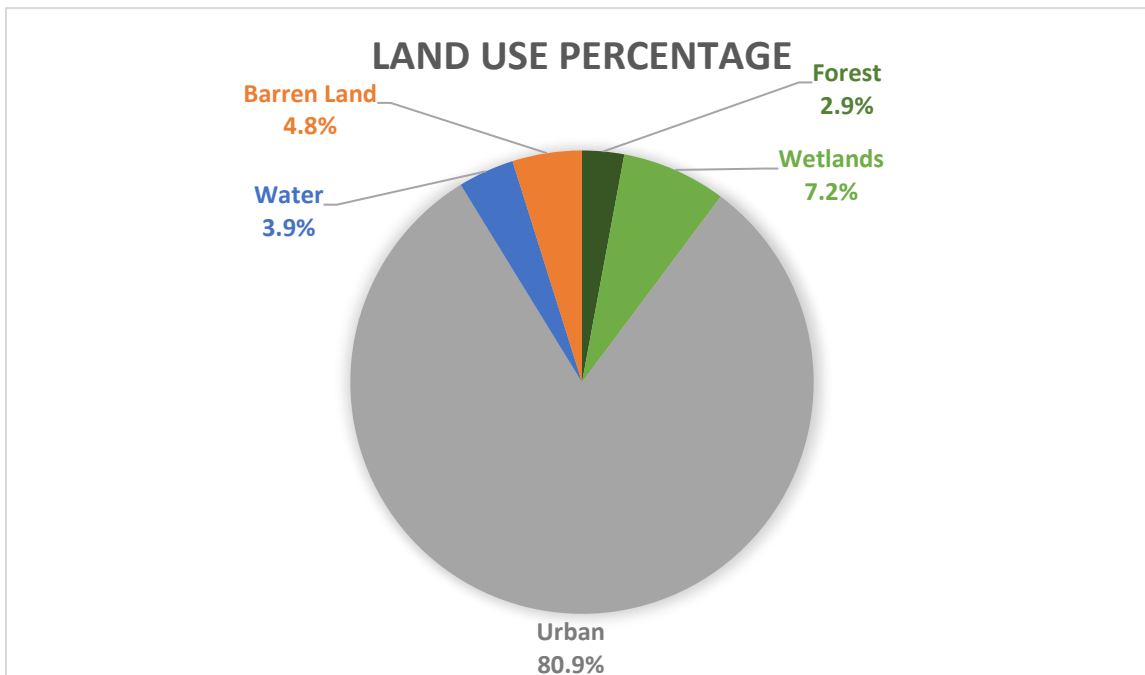
### Land Use

The Borough of Carteret is characterized by a mix of residential neighborhoods, commercial corridors, and industrial areas. Carteret’s zoning classifications include residential, commercial, and industrial districts, supporting its suburban and urban character. Most residential development consists of single-family homes and multi-family housing within established neighborhoods, while non-residential development is concentrated along major transportation routes such as the New Jersey Turnpike. Carteret features waterfront industrial uses along the Arthur Kill, interspersed with commercial and residential areas. The Borough has a high degree of impervious cover, with land primarily dedicated to housing, businesses, and public facilities, complemented by parks and open spaces.

The land use of the Borough of Carteret is described as follows:

- Barren Land: 139.8 acres (4.8%)
- Forest: 84.4 acres (2.9%)
- Urban: 2,336.3 acres (80.9%)
- Water: 113.1 acres (3.9%)
- Wetlands: 210.3 acres (7.2%)

**Figure 1: Borough of Carteret Land Use Distribution Chart**





### Subwatersheds within or Bordering The Borough of Carteret

The Borough of Carteret is in 4 HUC14 Subwatersheds, as follows:

**Table 1: Subwatersheds within or Bordering Carteret Borough**

Subwatershed Common Name	HUC 14
Morses Creek/ Piles Creek	02030104030010
Arthur Kill waterfront (below Grasselli)	02030104050120
Woodbridge Creek	02030104050110
Rahway River (below Robinsons Branch)	02030104050100

### Areas Prone to Flooding in Carteret Borough

Carteret is affected by both fluvial (river related) and tidal (coastal) flooding. According to FEMA flood mapping, the Rahway River is a designated regulatory floodway which runs along the northern border of the Carteret Borough all the way until it feeds into the Arthur Kill. This floodway path has flood hazard areas south of the entire floodway. This occurs from the northwestern border of Carteret past I-95, until reaching the Arthur Kill. The entire northeast portion of Carteret is considered a flood hazard area which spans as far south as Sunnyside Drive. This flood hazard area continues south along the Arthur kill and covers a large portion in between Coolidge Avenue and Roosevelt Avenue.

In addition to the floodways, several stream networks within the Borough are subject to flood hazard area regulations.

- **Arthur Kill Tributary:** Between Lafayette Street and Salt Meadow Road
- **Deep Creek and Deep Creek Tributary:** Between Salt Meadow Road and Dole Packaged Goods
- **Rahway River Tributary:** Multiple Locations along the Rahway River
- **Cross Creek:** Between Interstate 95 and Potters Island
- **Rophs Creek and Rophs Creek Tributary:** Between Interstate 95 and Cross Creek
- **Caseys Creek:** Near Joseph Medwick Park

Following the implementation of New Jersey’s Inland Flood Protection Rule on July 17, 2023, an additional area is now regulated under the FEMA 1% Annual Chance Flood plus 3 feet standard. This area is the Woodbridge Creek Tributary which is adjacent to the NJ Turnpike.

Carteret Borough is also affected by Tidal flooding, which occurs when high tides overflow onto normally dry land. This occurs at multiple locations across the township that all have streams that begin at the Arthur Kill . The entire eastern border of Carteret has flood hazard areas that reach as far inland as Interstate 95. There are also flood hazard areas that occur adjacent to the Rahway River, which extends along the entire northern border of Carteret.



**Purpose of Watershed Improvement Plan**

The Watershed Improvement Plan- Phase 1 for the Borough of Carteret aims to serve as a tool to make informed decision-making, planning, and support sustainable watershed management strategies aimed to maintain suburban character and protect water resources.



## **Public Participation**

Engaging stakeholders fosters open communication and collaboration. Connecting with them early and consistently helps uncover diverse perspectives, build trust and credibility within the community, and empower informed decision-making

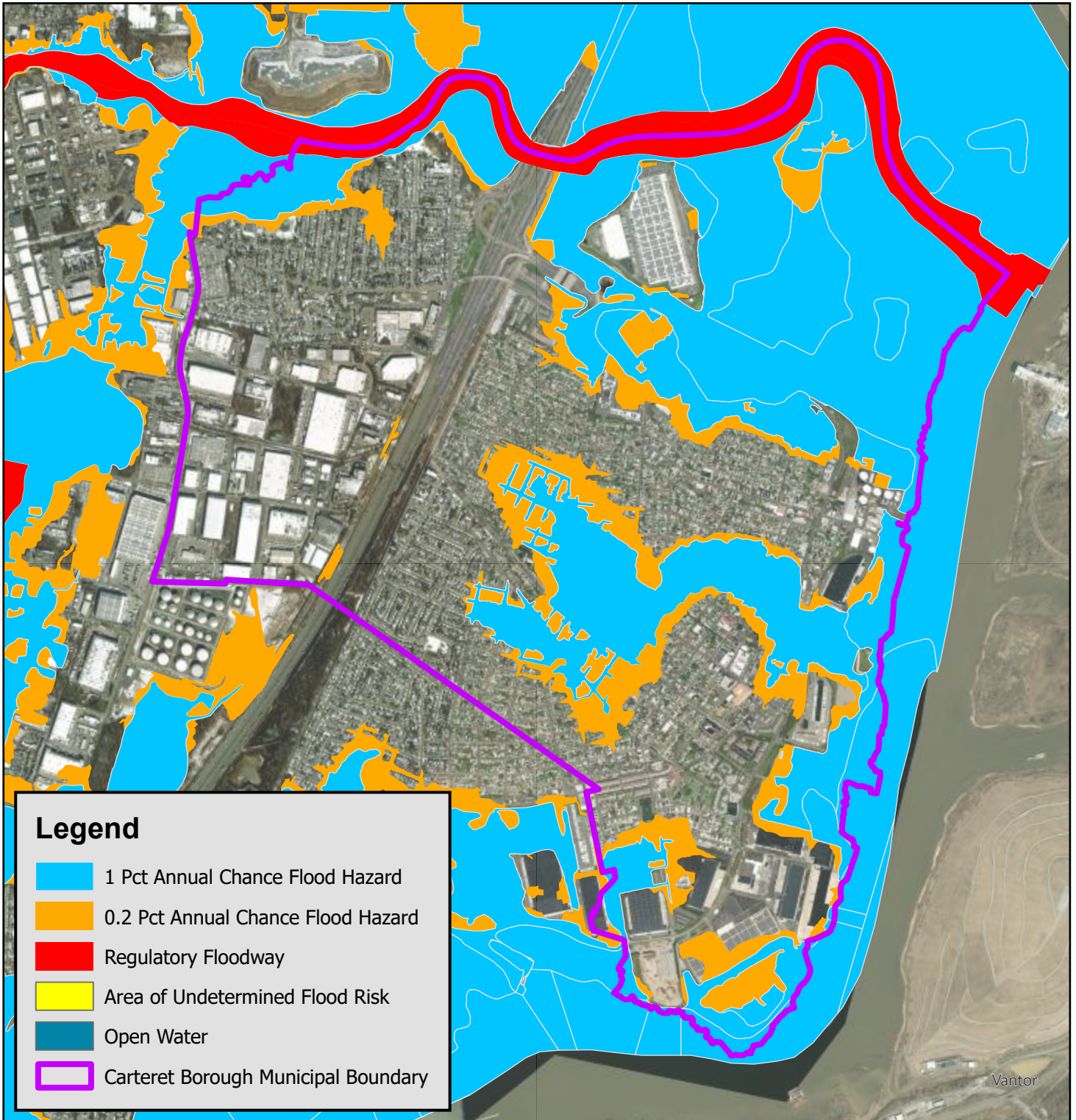
### **Stakeholders**

An open-public meeting will be scheduled semi-annually to connect with the stakeholders starting in early 2026. The first meeting will discuss the contents of this report, future phases of the Watershed Improvement Plan. It is intended to discuss the implications of the Watershed Improvement Plan with the following stakeholders:

- Borough Committee Members
- Planning & Zoning Board Members
- Residents and Business Owners
- Engineering and Planning Officials
- Neighboring municipalities
- Environmental Committee

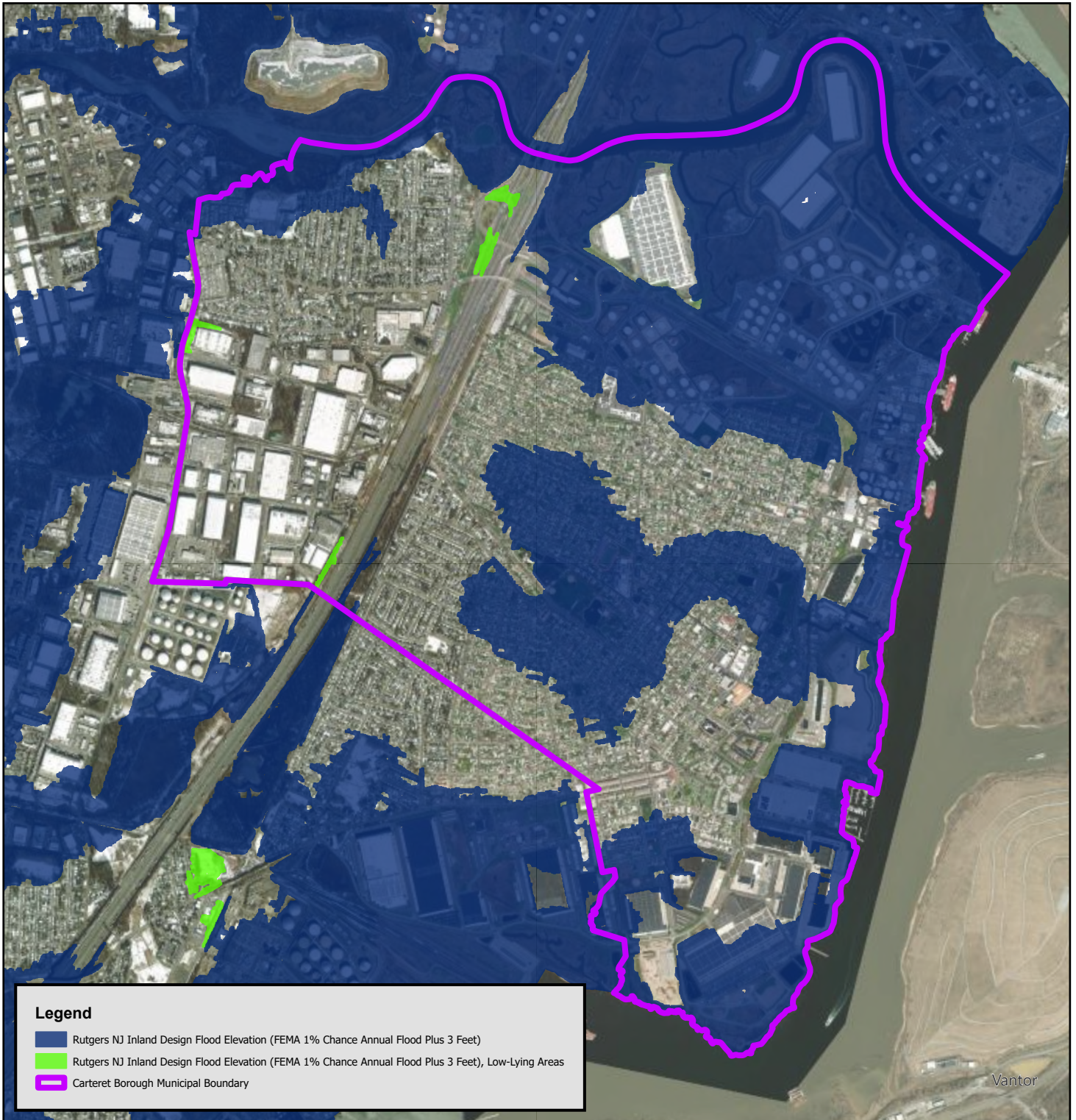


**FEMA FLOOD MAP: FIGURE 2**



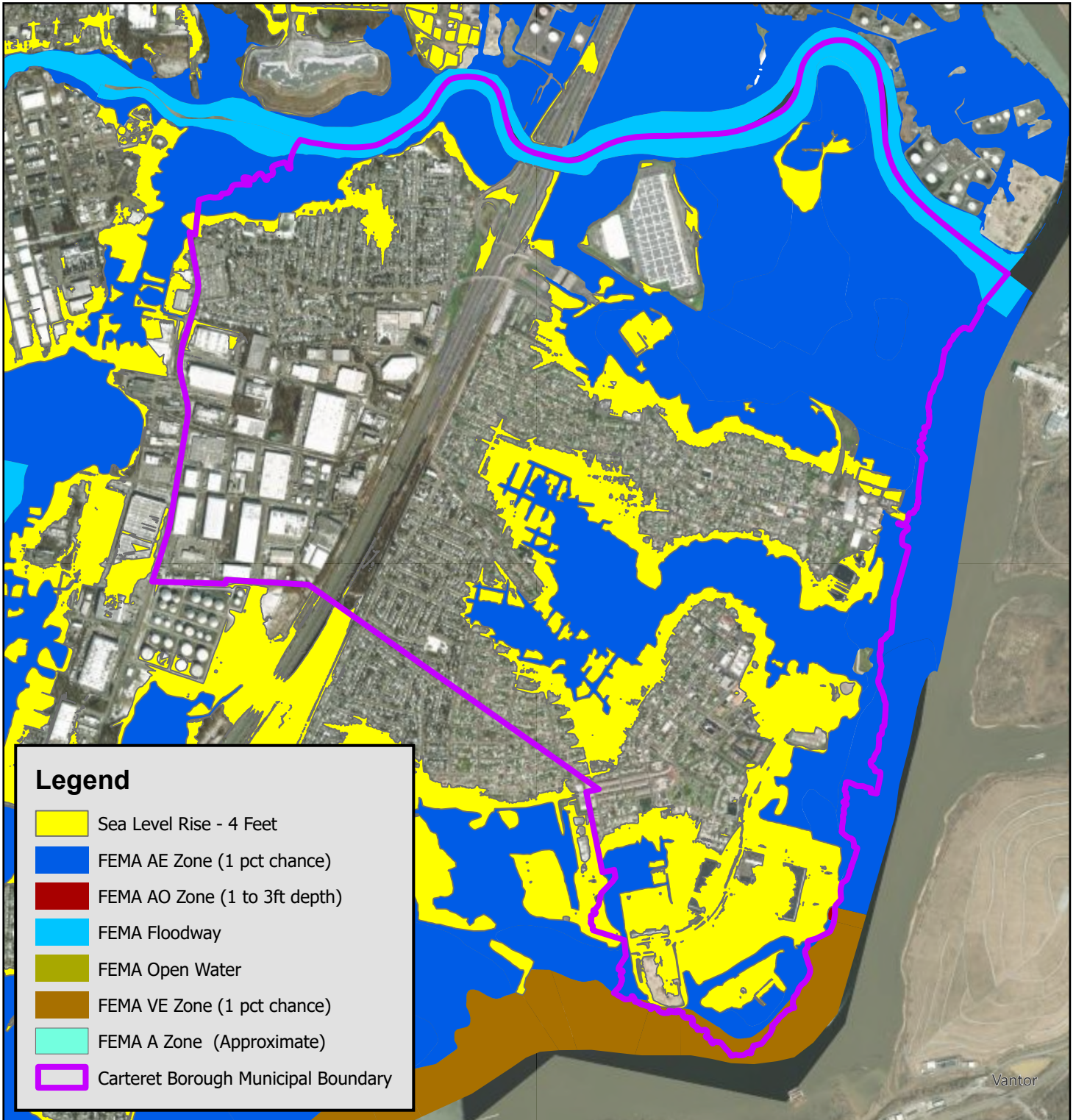


**NJ INLAND DESIGN FLOOD MAP: FIGURE 3**





**TIDAL CLIMATE ADJUSTED FLOOD ELEVATION MAP: FIGURE 4**





## Stormwater Outfalls

French & Parello Associates utilized ESRI’s Field Maps application to access the stormwater inventory map via cellular devices with GPS enabled, Trimble TDC600 GIS tablets with GPS enabled, or Emlid Reach RS3 RTK GNSS receivers receiving real-time corrections from the Alpha RTK network, which covers New Jersey to ensure the highest possible accuracy. ESRI’s Field Maps software was configured with the features listed above and allowed users to verify existing assets as well as add new ones through a data entry form. In accordance with the NJDEP’s template geodatabase schema, each distinct stormwater asset type required several mandatory fields to be completed, which were incorporated into the Field Maps application’s form.

The Borough owns and operates 20 outfalls visually identified in August 2024. Tables 2 through 5 summarize their discharge locations & Associated Water Quality Classification.

**Table 2: Stormwater Outfalls Owned/ Operated by Permittee**

Subwatershed Common Name	HUC 14	# Outfalls that discharge into watershed
Morses Creek/ Piles Creek	02030104030010	0
Arthur Kill waterfront (below Grasselli)	02030104050100	5
Woodbridge Creek	02030104050110	2
Rahway River (below Robinsons Branch)	02030104050120	9

**Table 3: Receiving Surface Waters**

Surface Waters Receiving Outfall Runoff	# Outfalls that discharge Surface Water
Caseys Creek	1
Cross Creek	1
Noes Creek	5
Rahway River	6
Rahway River tributary	1
Woodbridge Creek tributary	2

**Table 4: Water Quality Classification**

Water Quality Classification	# Outfalls that discharge to each water quality classification
SE3	14
FW2-NT/SE3	2



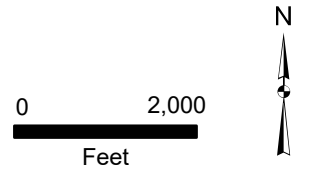
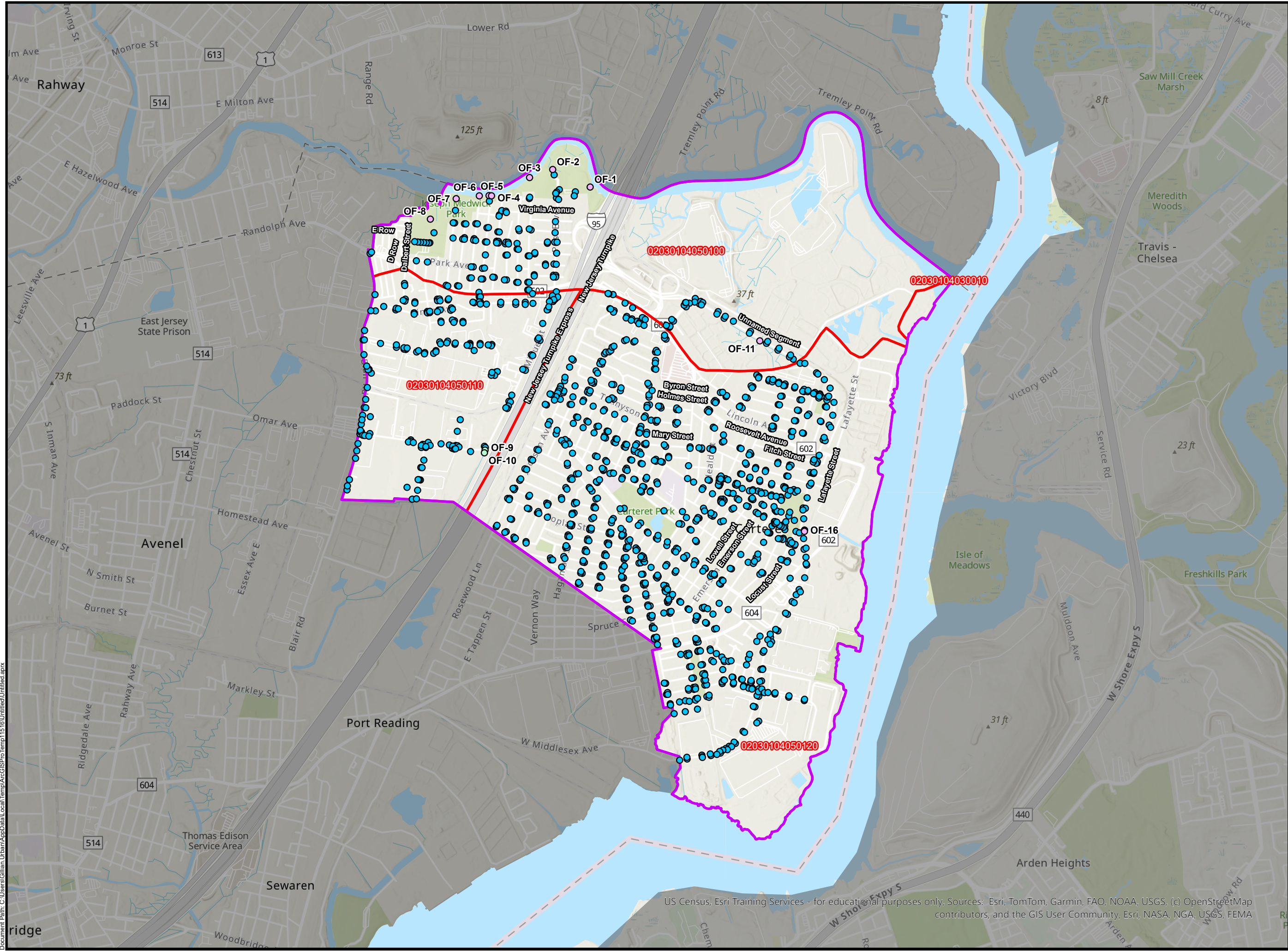
**Table 5: Receiving Surface Water Bodies & Water Quality Classification**

<b>Outfall ID</b>	<b>Receiving Surface Water Body</b>	<b>Water Quality Classification</b>
OF-1	Rahway River	SE3
OF-2	Rahway River tributary	SE3
OF-3	Rahway River	SE3
OF-4	Rahway River	SE3
OF-5	Rahway River	SE3
OF-6	Rahway River	SE3
OF-7	Rahway River	SE3
OF-8	Caseys Creek	SE3
OF-9	Woodbridge Creek tributary	FW2-NT/SE3
OF-10	Woodbridge Creek tributary	FW2-NT/SE3
OF-11	Cross Creek	SE3
OF-12	Noes Creek	SE3
OF-13	Noes Creek	SE3
OF-14	Noes Creek	SE3
OF-15	Noes Creek	SE3
OF-16	Noes Creek	SE3

**CARTERET BOROUGH MS4 INLETS AND OUTFALLS MAP**

**Legend**

- Inlets
- Outfalls
- FW2-NT/SE3
- SE3
- HUC 14 Zones
- Carteret Municipal Boundary








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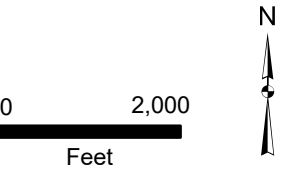
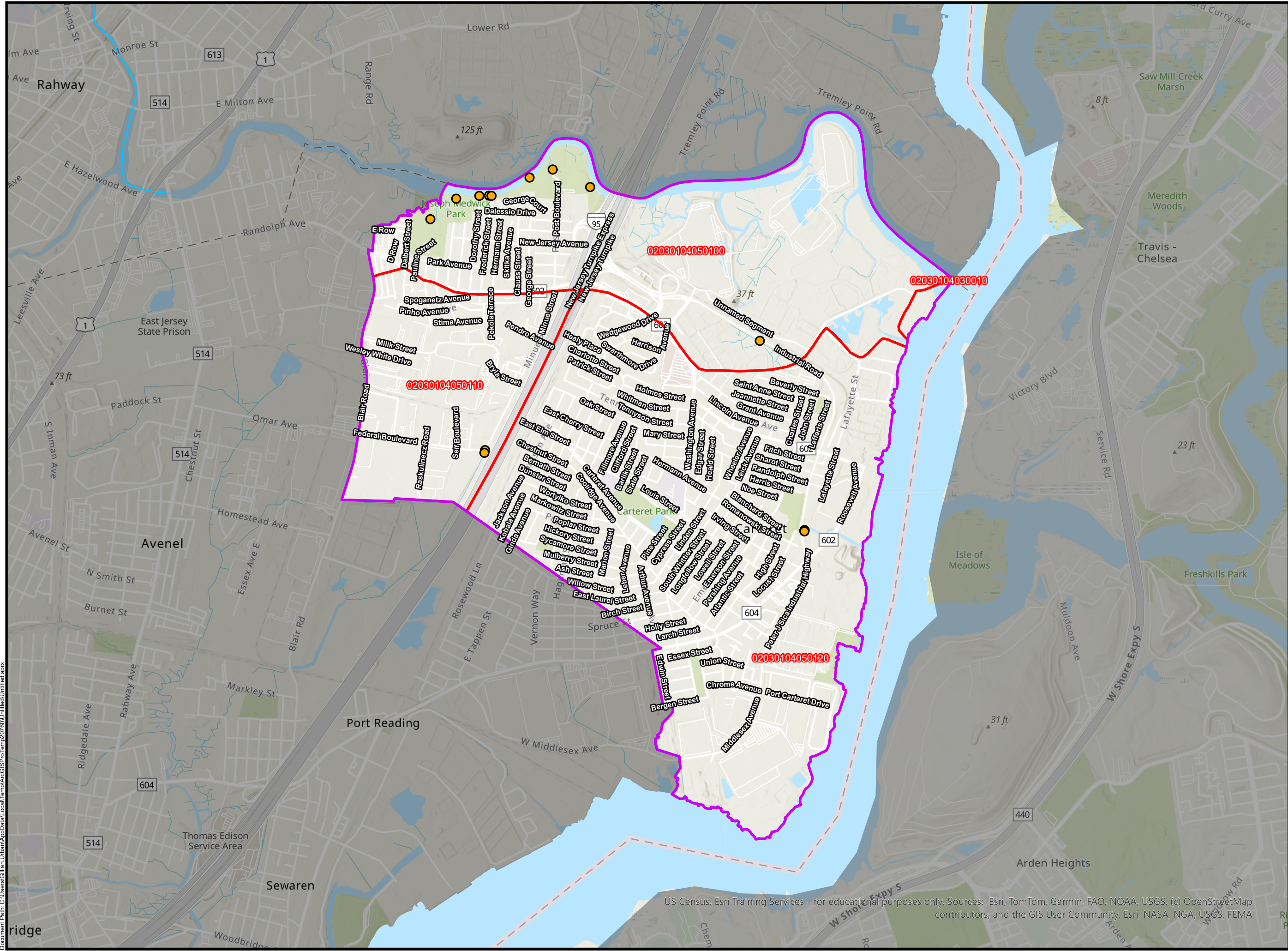
**FIGURE: 5**

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**CARTERET BOROUGH MS4  
C1 STREAMS AND  
TROUT WATERS MAP**

**Legend**

-  Outfalls
-  Trout Waters
-  C1 Streams
-  HUC 14 Zones
-  Carteret Municipal Boundary



US Census, Esri Training Services - for educational purposes only. Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Esri, NASA, NGA, USGS, FEMA

**FIGURE: 6**



### Stormwater Interconnections

The Borough has identified fifty-three (53) interconnection points between its MS4 system and adjacent jurisdictions, including Middlesex County and privately owned systems. This information was obtained in the field by visual inspection in August 2024 and is listed in the following table with type of connection and upstream and downstream entities.

**Table 6: Interconnection into and from the Permittee’s MS4**

ID	Type	Upstream Entity	Downstream Entity
IC-01	Inlet	Middlesex County	Carteret Borough
IC-02	Inlet	Carteret Borough	Middlesex County
IC-03	Manhole	Carteret Borough	Carteret Borough
IC-04	Inlet	Carteret Borough	Carteret Borough
IC-05	Inlet	Carteret Borough	Private
IC-06	Inlet	Carteret Borough	Middlesex County
IC-07	Manhole	Carteret Borough	Middlesex County
IC-08	Manhole	Carteret Borough	Middlesex County
IC-09	Inlet	Carteret Borough	Private
IC-10	Inlet	Middlesex County	Middlesex County
IC-11	Inlet	Carteret Borough	Middlesex County
IC-12	Inlet	Carteret Borough	Private
IC-13	Inlet	Middlesex County	Carteret Borough
IC-14	Inlet	Middlesex County	Private
IC-15	Inlet	Carteret Borough	Private
IC-16	Inlet	Carteret Borough	Carteret Borough
IC-17	Inlet	Carteret Borough	Carteret Borough
IC-18	Inlet	Carteret Borough	Middlesex County
IC-19	Inlet	Carteret Borough	Middlesex County
IC-20	Manhole	Private	Middlesex County
IC-21	Manhole	Carteret Borough	Middlesex County
IC-22	Inlet	Carteret Borough	Private
IC-23	Inlet	Carteret Borough	Carteret Borough
IC-24	Inlet	Woodbridge Township	Woodbridge Township
IC-25	Manhole	Carteret Borough	Middlesex County
IC-26	Inlet	Carteret Borough	Middlesex County
IC-27	Inlet	Carteret Borough	Carteret Borough
IC-28	Inlet	Carteret Borough	Middlesex County
IC-29	Inlet	Middlesex County	Middlesex County

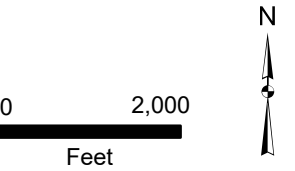
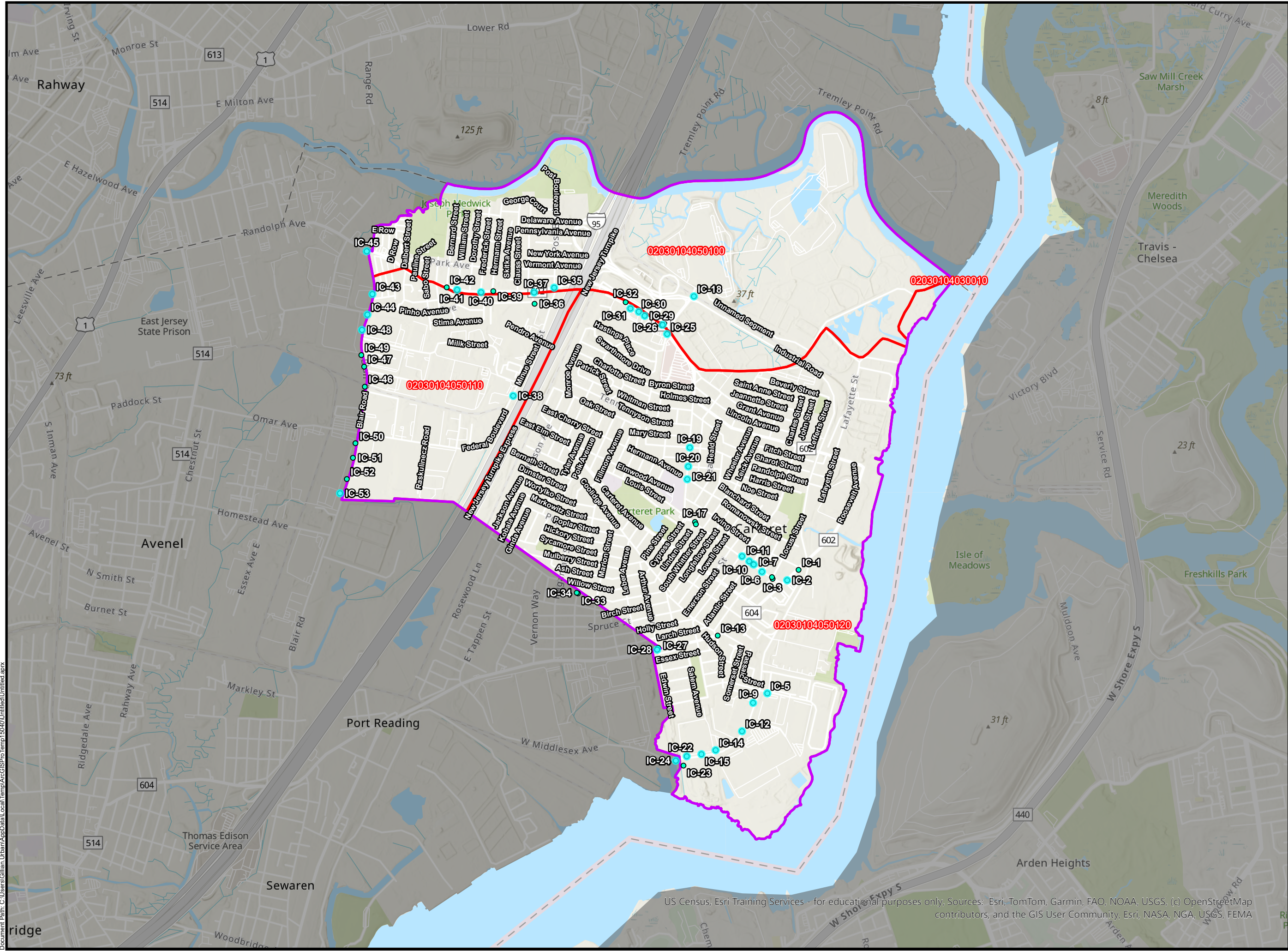


<b>ID</b>	<b>Type</b>	<b>Upstream Entity</b>	<b>Downstream Entity</b>
IC-30	Inlet	Woodbridge Township	Middlesex County
IC-31	Inlet	Woodbridge Township	Private
IC-32	Inlet	Carteret Borough	Carteret Borough
IC-33	Inlet	Private	Carteret Borough
IC-34	Inlet	Carteret Borough	Carteret Borough
IC-35	Manhole	Carteret Borough	Middlesex County
IC-36	Inlet	Middlesex County	Carteret Borough
IC-37	Inlet	Carteret Borough	Middlesex County
IC-38	Inlet	Carteret Borough	Turnpike Authority
IC-39	Manhole	Middlesex County	Carteret Borough
IC-40	Inlet	Carteret Borough	Middlesex County
IC-41	Manhole	Carteret Borough	Middlesex County
IC-42	Inlet	Carteret Borough	Carteret Borough
IC-43	Inlet	Woodbridge Township	Woodbridge Township
IC-44	Manhole	Woodbridge Township	Woodbridge Township
IC-45	Inlet	Carteret Borough	Woodbridge Township
IC-46	Inlet	Woodbridge Township	Carteret Borough
IC-47	Inlet	Woodbridge Township	Carteret Borough
IC-48	Inlet	Woodbridge Township	Woodbridge Township
IC-49	Inlet	Woodbridge Township	Carteret Borough
IC-50	Inlet	Carteret Borough	Carteret Borough
IC-51	Inlet	Middlesex County	Carteret Borough
IC-52	Inlet	Carteret Borough	Carteret Borough
IC-53	Inlet	Carteret Borough	Woodbridge Township

**CARTERET BOROUGH MS4 INTERCONNECTIONS MAP**

**Legend**

- Collector
- Interconnection
- HUC 14 Zones
- Carteret Municipal Boundary



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**FIGURE: 7**



## Drainage Area Delineations

The watershed inventory report includes delineation of drainage areas for interconnections and outfalls, which were determined manually. A visual analysis of each outfall system was conducted, taking into account the contributing inlet systems and the Borough’s USGS topographic maps. While the delineation process is not entirely precise—since it assumes that surface grading reflects the general behavior of the land, it nonetheless provides a useful understanding of the drainage areas.

**Table 7: Outfall and Interconnection Drainage Areas**

Drainage Area ID	Drainage Area (acres)	Interconnection or Outfall	Primary Contributing Area Type
DA-01	12.33	OF-1	Residential
DA-02	3.90	OF-2	Residential
DA-03	6.44	OF-3	Residential
DA-04	79.13	OF-4	Residential
DA-05	0.35	OF-5	Residential
DA-06	88.22	OF-6	Residential
DA-07	21.98	OF-7	Residential
DA-08	14.28	OF-8	Residential
DA-09	4.01	OF-9	Industrial
DA-10	16.57	OF-10	Industrial
DA-11	21.38	OF-11	Residential/Commercial
DA-12	711.25	OF-12	Residential
DA-13	711.67	OF-13	Residential
DA-14	711.55	OF-14	Residential
DA-15	711.23	OF-15	Residential
DA-16	711.19	OF-16	Industrial
DA-17		OF-17	Industrial
DA-18		OF-18	Industrial
DA-19		OF-19	Industrial
DA-20		OF-20	Industrial/Residential
DA-21		CB-153 (Interconnection)	Residential
DA-22		CB-265 (Interconnection)	Industrial
DA-23		CB-270 (Interconnection)	Industrial
DA-24		CB-337 (Interconnection)	Industrial
DA-25		CB-1098 (Interconnection)	Residential
DA-26		CB-1261 (Interconnection)	Industrial



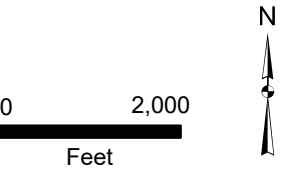
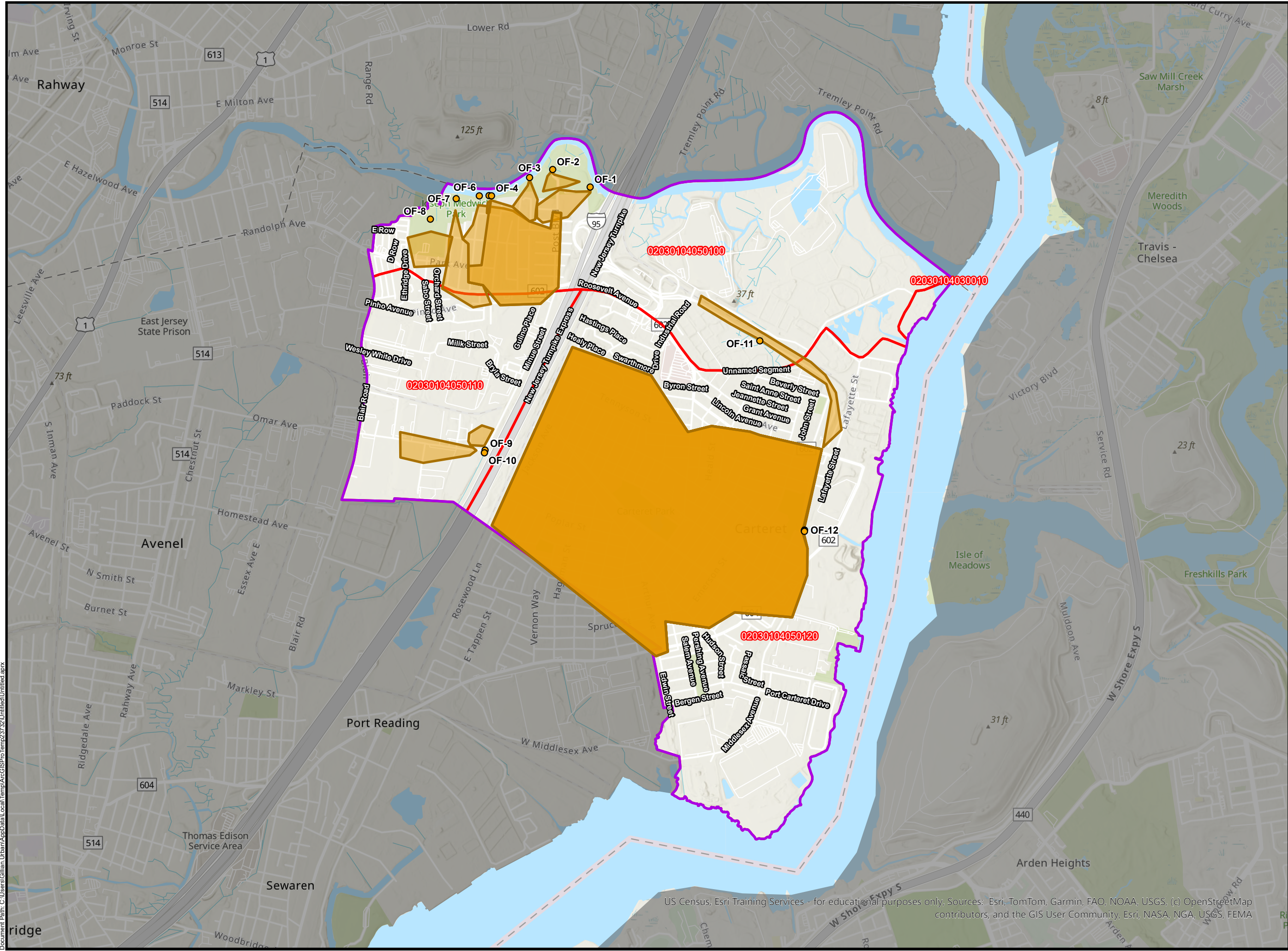
<b>Drainage Area ID</b>	<b>Drainage Area (acres)</b>	<b>Interconnection or Outfall</b>	<b>Primary Contributing Area Type</b>
DA-27		GDP-10 (Interconnection)	Industrial
DA-28		MH-111 (Interconnection)	Residential

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**CARTERET BOROUGH MS4 DRAINAGE AREAS MAP**

**Legend**

- Outfalls
- Drainage Areas
- HUC 14 Zones
- Carteret Municipal Boundary



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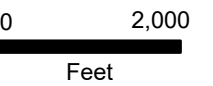
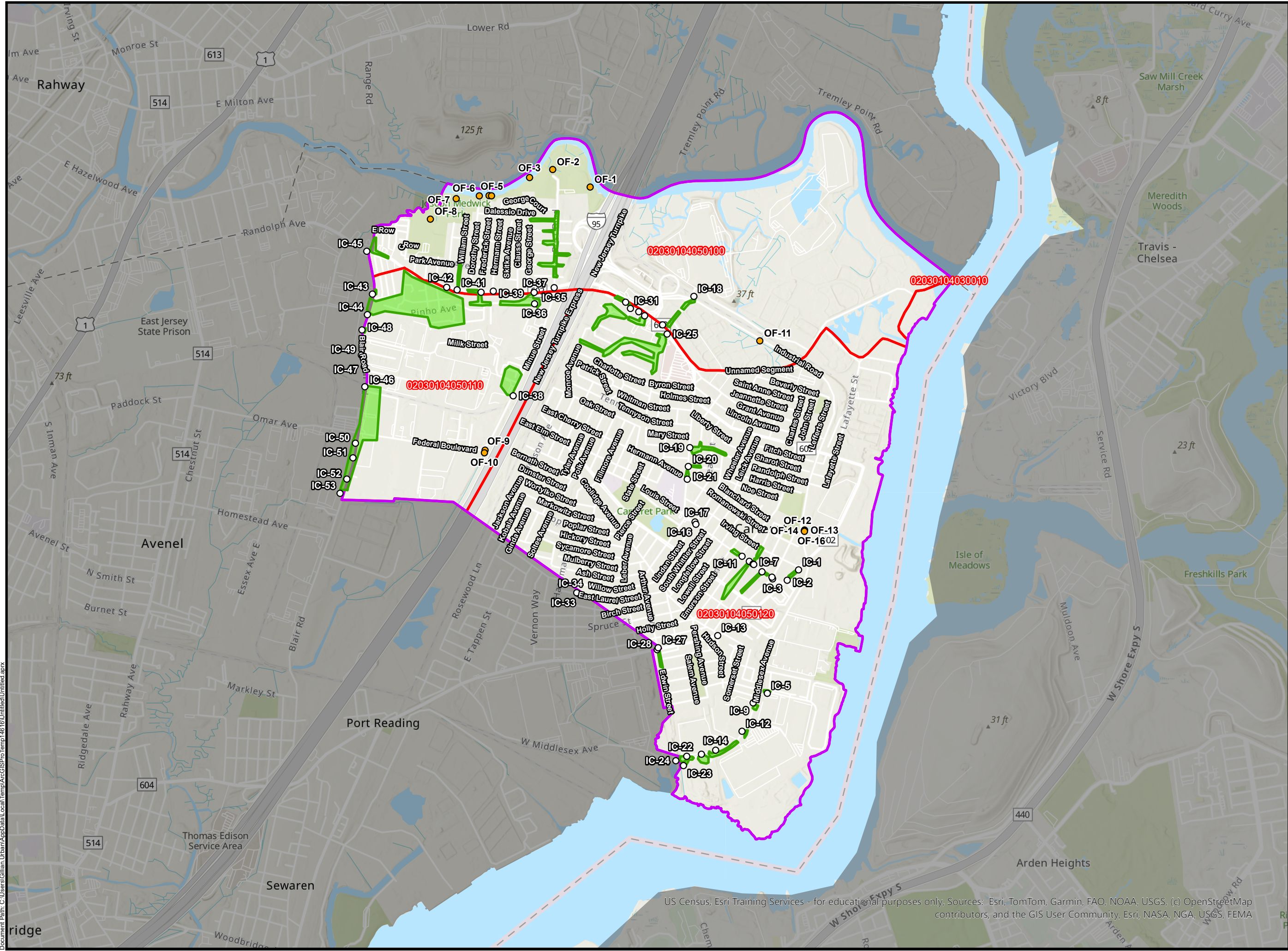
**FIGURE: 8**

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**CARTERET BOROUGH MS4 INTERCONNECTION DRAINAGE AREAS MAP**

**Legend**

- Outfalls
- Interconnections
- Interconnection Drainage Areas
- HUC 14 Zones
- Carteret Municipal Boundary



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**FIGURE: 9**



## TMDLs and Water Quality Impairments

The NJDEP has created a TMDL Look-Up Tool to find applicable TMDLs for each municipality. This tool can be found at <https://www.nj.gov/dep/dwq/msrp-tmdl-rh.htm>.

According to NJDEP's water quality assessment data, no Total Maximum Daily Loads (TMDLs) have been established for any of the four HUC 14 subwatershed within Carteret. However, all four subwatersheds are identified as impaired for some or all of the following parameters—Benzo(a)pyrene, a polycyclic aromatic hydrocarbon (PAH), polychlorinated biphenyls (PCBs) found in fish tissue, Phosphorous/Total Phosphorous, and Total Dissolved Solids (TDS). Only Morses Creek/Piles Creek subwatershed is known to have all four impairments and the other three subwatersheds have just Benzo(a)pyrene and PCBs. Using the [Pollutants of Concern \(pollutants-of-concern.pdf\)](#) documentation, they are as follows:

### Benzo(a)pyrene

Benzo(a)pyrene is a member of a group of chemicals known as polycyclic aromatic hydrocarbons (PAHs) and which is a known hazardous substance that can cause cancer and other adverse health effects in humans. It is released into the air via both natural sources (such as forest fires) and anthropogenic sources including stoves and furnaces burning fossil fuels (especially wood and coal), crude oils, shale oils, coal tars, motor vehicle exhaust, cigarettes, and various industrial combustion processes (HSDB, 2012) (ATSDR, 1995). Several studies have reported that stormwater runoff into receiving waters from asphalt treated with coats of coal-tar emulsion seal could account for a large proportion of PAHs in many watersheds (Rowe and O'Connor, 2011; Van Metre and Mahler, 2010; Mahler et al., 2005). The major sources of nonoccupational exposure are ingestion of contaminated food and water, as well as tobacco products, and inhalation of polluted air.

### Polychlorinated Biphenyls (PCBs)

The term 'PCBs' (Polychlorinated Biphenyls) represents a broad class of toxic industrial chemicals first discovered and synthesized in the late 19th century. Their novel chemical properties led to widespread industrial production and usage peaking between the 1930's and late-1960's. Some products may continue to contain PCBs, including electrical equipment, motor and hydraulic oils, oil-based paint, and some plastics. The recognition of PCB associated health hazards were first noted in the 1960's and their production finally banned in 1979. PCBs can accumulate in the leaves and above-ground parts of plants and food crops. They are also taken up into the bodies of small organisms and fish. As a result, people who ingest fish may be exposed to PCBs that have bioaccumulated in the fish they are ingesting. Their oily nature allows them to accumulate in fatty animal tissues and bioaccumulate up the global food chain where they contribute to organ damage and carcinogenesis in higher-tiered species. PCBs are easily carried away as TSS by stormwater runoff from products containing the compounds which are exposed to stormwater and known and unknown contaminated areas. PCBs have a moderate level of volatility, which means that their vapors are also readily carried aloft by the wind. They are then deposited on exposed surfaces via air deposition.

### Phosphorous/Total Phosphorous

Phosphorus is a key nutrient for plant growth and is often the limiting nutrient in a freshwater setting. Total phosphorous is the sum of particulate and dissolved phosphorous which includes the total amount of phosphorous in both organic and inorganic forms. High concentrations of phosphorus in receiving waters may result from stormwater runoff due to poor agricultural practices, urban areas, leaking septic systems, illicit discharges or SSOs.



Additional stormwater runoff sources of phosphorous include the breakdown of plant and leaf litter (including grass clippings), soil particles, pet and animal waste, fertilizer from lawns, and atmospheric deposition of phosphorus particles. Contribution from runoff from lawns and roads accounts for the greatest loading in many receiving waters. An excess of phosphorus into a water body can have a detrimental effect on designated uses related to both public health and aquatic health. For instance, too much phosphorus in a surface water can cause increased growth of algae and large aquatic plants (a process called eutrophication) causing significant swings in pH and dissolved oxygen, which can in turn result in the violation of surface water quality criteria for these parameters and adversely affect the aquatic community. Additionally, high levels of phosphorus can also lead to HABs, that produce toxins which can be harmful to human and animal health. The presence of excessive plant biomass can also interfere with other designated uses, such as swimming or boating. When algae are present in large amounts, drinking water purveyors must also increase the use of disinfectants and oxidants to treat the algae, which can lead to an increase in disinfection byproducts such as trihalomethanes, listed as likely carcinogens by EPA.

### **Total Dissolved Solids (TDS)**

Total Dissolved Solids (TDS) is the measure of the concentration of dissolved inorganic substances, such as calcium, chlorides nitrate, phosphorus, iron, sulfur, and other ion particles, in water that can pass through a filter with pores of approximately 0.002 cm. TDS differs from TSS in that TSS particles will not pass through the same filter. TDS affects aquatic and human health by altering the water balance in the cells of organisms. For instance, when an aquatic organism is placed in water with very low TDS, such as distilled water, it will swell up because water will tend to move into its cells, which have a higher concentration of solids. Conversely, an organism placed in water with high TDS will shrink somewhat because the water in its cells will tend to move out. This will in turn affect the organism's ability to maintain the proper cell density, making it difficult to keep its position in the water column by causing it to float up or sink down to depths to which it is not adapted, and it might not survive. High concentrations of TDS may also cause adverse health effects due to the chemicals making up the TDS, make drinking water unpalatable and cause additional adverse health effects on people who are not used to drinking such water. Levels of TDS that are too high or too low can also adversely affect industrial processes that use raw water. TDS is discharged into the receiving waters via stormwater as the runoff picks up various substances on the ground surface, such as salts and brine solutions used for de-icing of motor vehicle surfaces and walkways, fertilizers, motor vehicle parts and fluids, illicit connections, and soil particles through erosion.

### **MS4 permit conditions that regulate these parameter:**

- Pet Waste Ordinance
- Wildlife Feeding Ordinance
- Litter Control Ordinance
- Improper Disposal of Waste Ordinance
- Yard Waste Ordinance
- Street Sweeping Program
- Herbicide Application Management
- Roadside Vegetative Waste Management
- Roadside Erosion Control
- Inspection and Maintenance of Stormwater Facilities
- BMPs at Municipal Maintenance Yards
- Stream Scouring Program
- Illicit Discharge Detection and Elimination Program

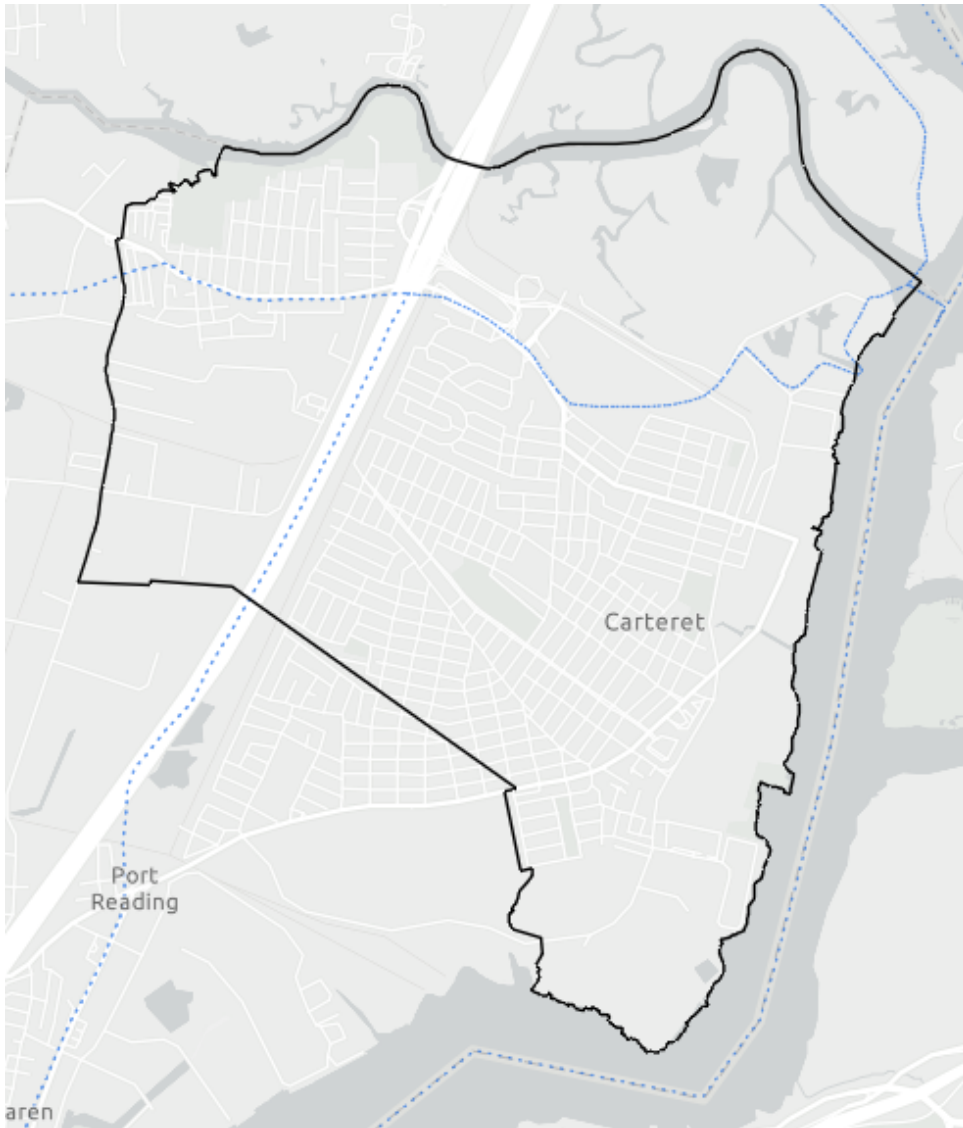


**Table 8: TMDL & Impairments for HUC14's within the Borough of Carteret as of October 2025**

<b>HUC 14</b>	<b>Subwatershed Name</b>	<b>TMDLS</b>	<b>Impairments</b>
02030104030010	Morses Creek/Piles Creek		Benzo(a) pyrene (PAHs) PCBs in Fish Tissue Phosphorous/Total Phosphorous Total Dissolved Solids
02030104050120	Arthur Kill waterfront (below Grasselli)		Benzo(a) pyrene (PAHs) PCBs in Fish Tissue
02030104050110	Woodbridge Creek		Benzo(a) pyrene (PAHs) PCBs in Fish Tissue
02030104050100	Rahway River (below Robinsons Branch)		Benzo(a) pyrene (PAHs) PCBs in Fish Tissue



Figure 10: Borough of Carteret TMDL Map – No TMDL’s



**TMDL (Streamsheds)**

Polychlorinated Biphenyls (PCBs)

Total Phosphorus

Volatile Organic Compounds (VOCs)

Total Suspended Solids

**TMDL (Streamsheds) Pre-2008**

Fecal Coliform

Total Phosphorus

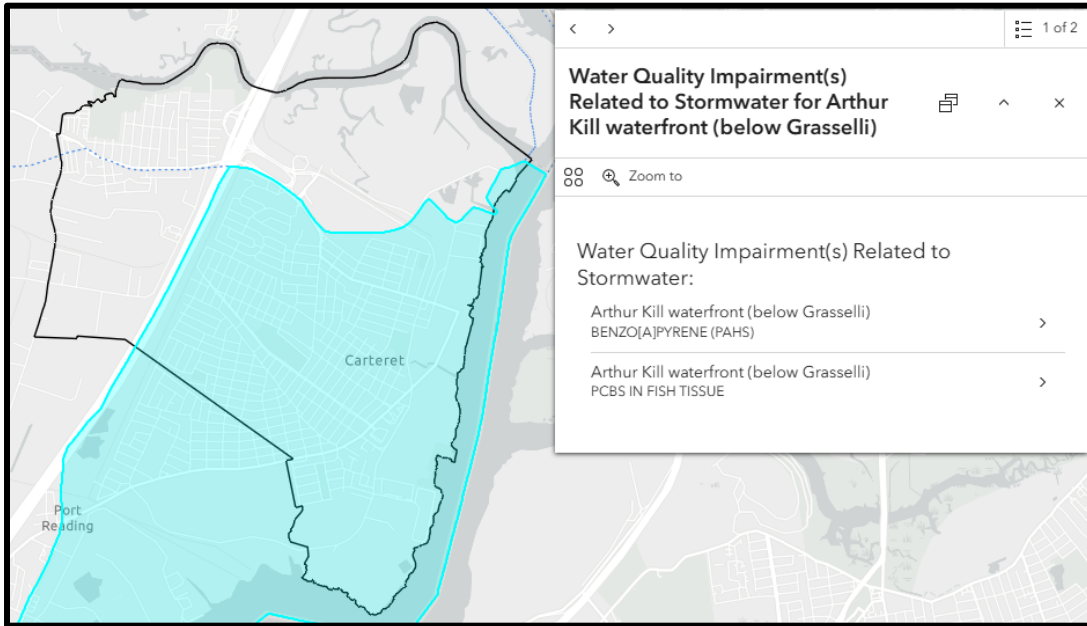
**TMDL (Lakesheds)**

Fecal Coliform

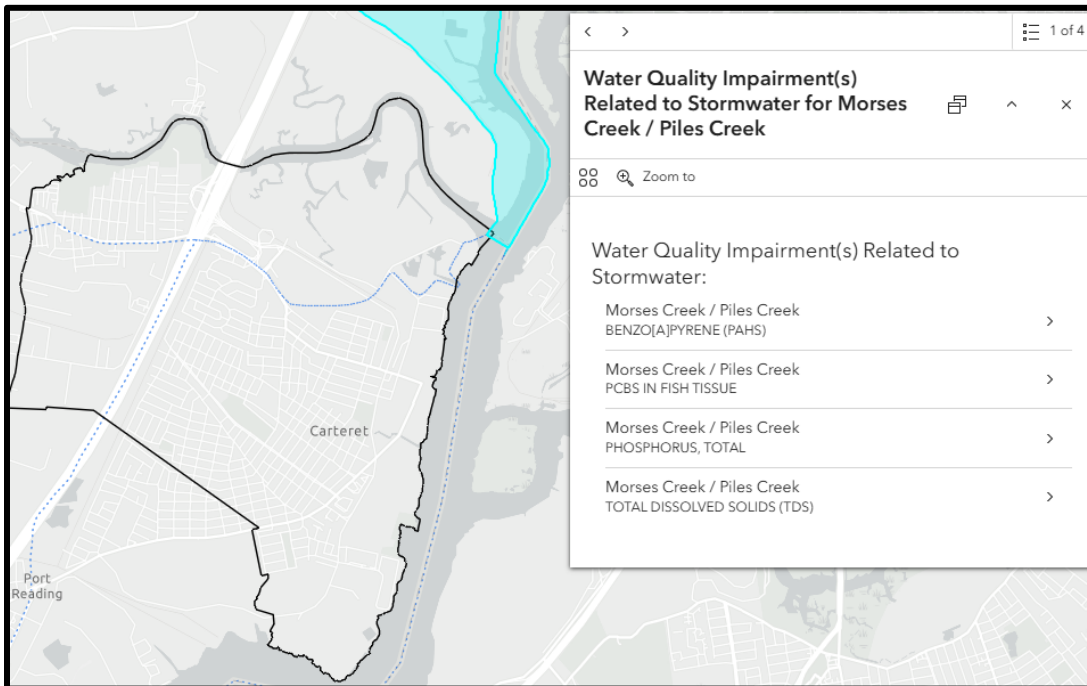
Total Phosphorus



**Figure 11: Arthur Kill waterfront (below Grasselli) – Benzo(a)pyrene (PAHS) and PCB's in Fish Tissue**

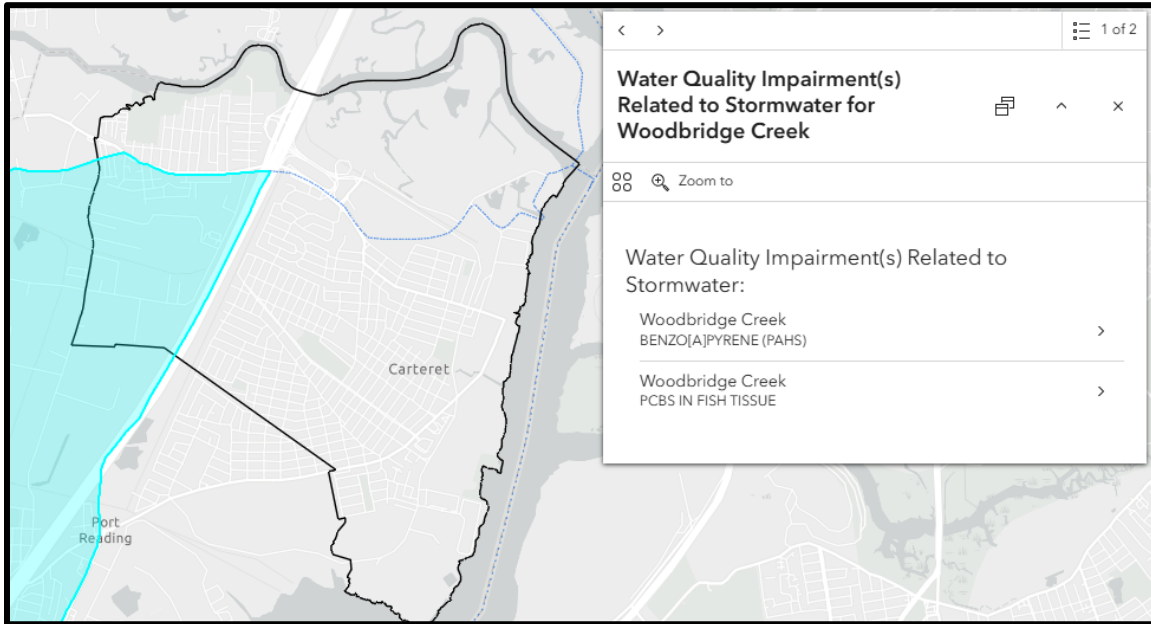


**Figure 12: Morses Creek / Piles Creek – Benzo(a)pyrene (PAHS), PCB's in Fish Tissue, Total Phosphorous, and Total Dissolved Solids (TDS)**

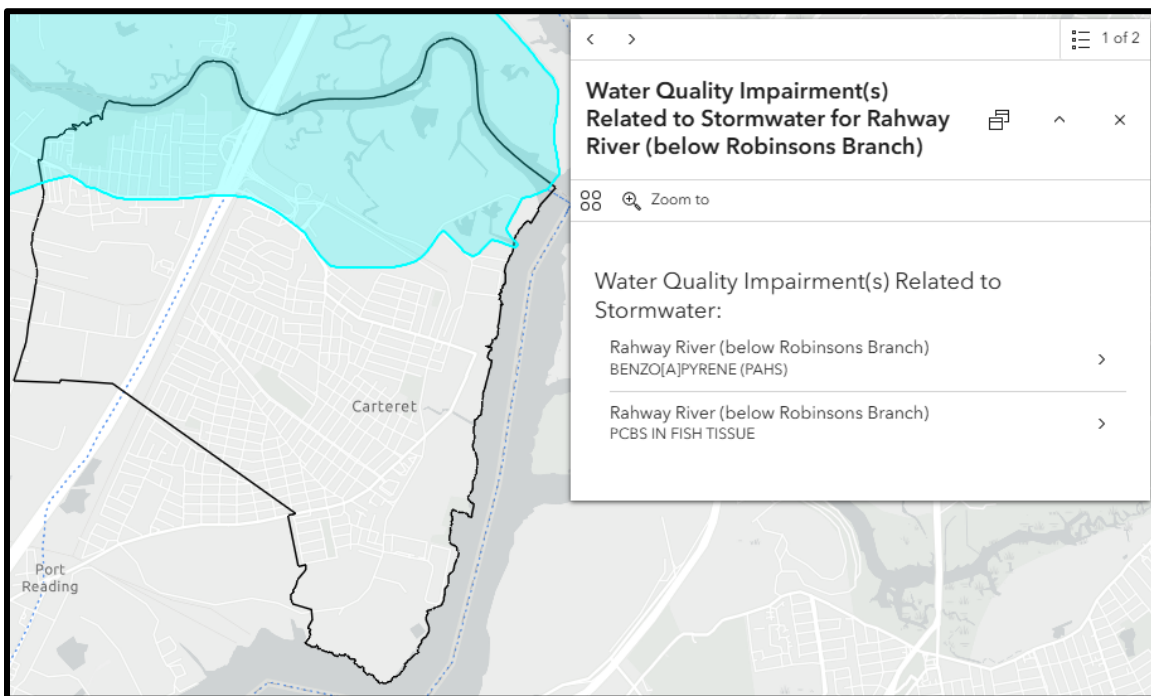




**Figure 13: Woodbridge Creek – Benzo(a)pyrene (PAHS) and PCB’s in Fish Tissue**



**Figure 14: Rahway River (below Robinsons Branch) – Benzo(a)pyrene (PAHS) and PCB’s in Fish Tissue**



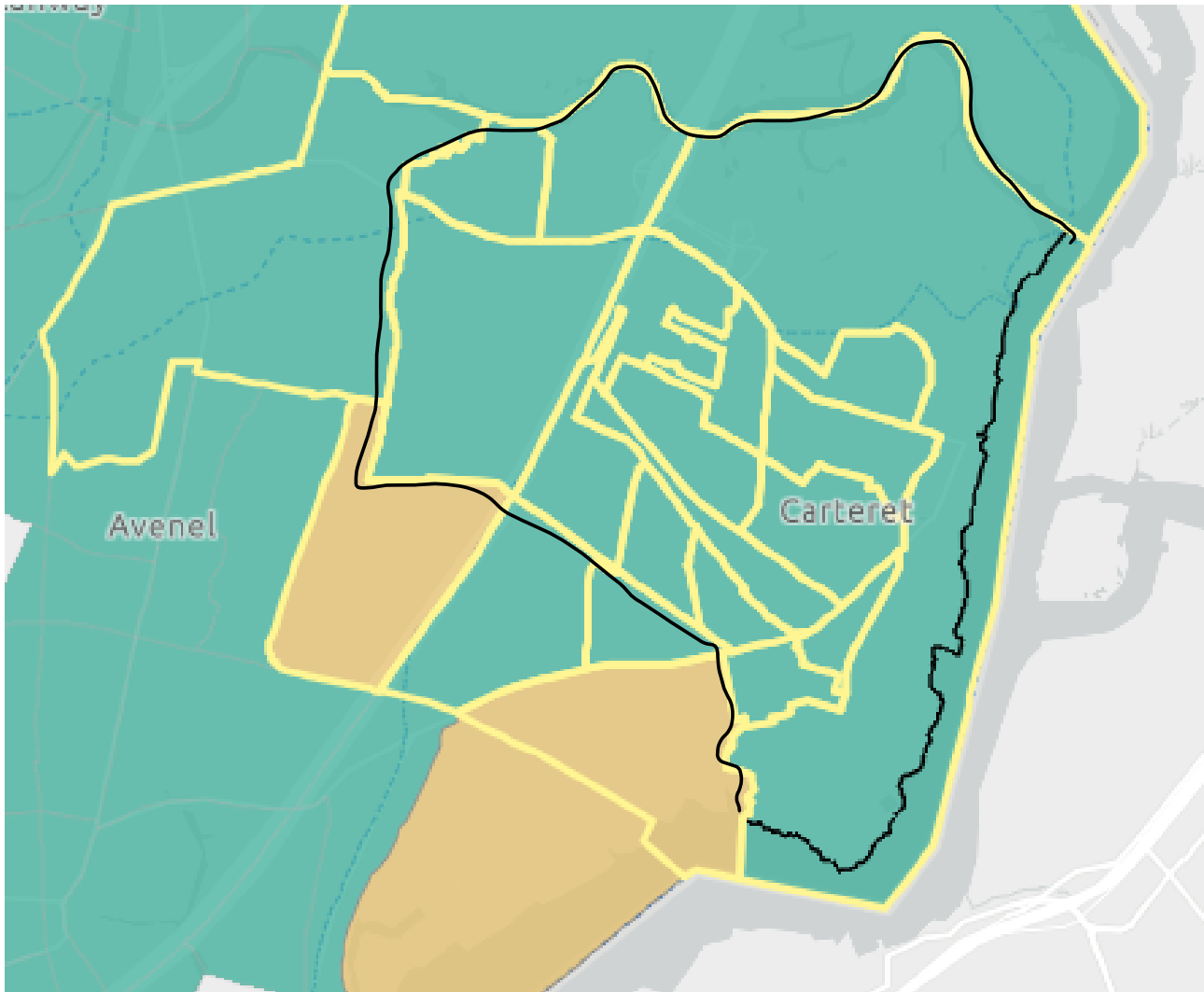


### Overburdened Communities

Based on analysis using the NJ-WET (New Jersey Watershed Evaluation Tool), the Carteret Borough contains designated overburdened communities as defined by the New Jersey Department of Environmental Protection (NJDEP).

Overburdened communities often have limited financial resources, which restricts their ability to invest in effective stormwater management systems. As a result, these communities are more prone to flooding. When flooding occurs, it can create serious public health challenges, particularly because these communities already experience greater health disparities. This data was found from the New Jersey Watershed Evaluation Tool (NJ-WET) and Figure 19 illustrates the sections of Freehold Township identified as overburdened communities.

**Figure 15: Carteret Borough Overburdened Communities**





**Table 9: Borough of Carteret Overburdened Communities per HUC-14**

<b>Subwatershed Common Name</b>	<b>HUC 14</b>	<b>Overburdened Type</b>
Morses Creek/ Piles Creek	02030104030010	Minority
Arthur Kill waterfront (below Grasselli)	02030104050120	Low Income and Minority
Woodbridge Creek	02030104050110	Minority
Rahway River (below Robinsons Branch)	02030104050100	Low Income and Minority

Clean surface water in overburdened communities is vital as it directly impacts environmental stability, public health, and economic stability. These communities face disproportionate exposure to pollutants from industrial runoff, aging infrastructure, and inadequate wastewater management, making them more vulnerable to waterborne illnesses and the deterioration of local ecosystems. Access to clean surface water ensures safe drinking supplies, supports local agriculture, and preserves aquatic habitats that provide natural flood control and climate adaptation benefits.



## Impervious Area

Based on analysis using the NJ-WET (New Jersey Watershed Evaluation Tool), impervious areas are heavily concentrated in the Borough.

## Impervious Surface Cover Concept and Thresholds

Drawing from *The Impervious Surface Cover Concepts and Threshold* (Rutgers University Libraries, retrieved from <https://rucore.libraries.rutgers.edu>) and *The Importance of Imperviousness* by Thomas R. Schueler (*Watershed Protection Techniques*), the following insights highlight the critical role of impervious cover in shaping ecosystem and stream health.

Imperviousness, which is defined as the percentage of land covered by impermeable surfaces such as roads, rooftops, sidewalks, and compacted soils, is a powerful predictor of future stream quality. Research consistently shows that significant ecological degradation begins at relatively low levels of development, presenting a major challenge for urban watershed managers.

### Hydrologic Impacts:

While impervious surfaces do not directly generate pollution, they fundamentally alter watershed hydrology. These surfaces prevent water from infiltrating into the ground, disrupting the natural hydrologic cycle. As impervious cover increases, surface runoff volume and velocity rise, while groundwater recharge and soil percolation decline. This shift contributes to altered stream flow patterns, increased flooding, and reduced water supply.

### Water Quality Degradation

Stormwater runoff from impervious surfaces also transports pollutants, such as sediments, nutrients, pathogens, hydrocarbons, and metals, into nearby water bodies, making it a major source of nonpoint source pollution. The ecological consequences are profound: stream banks erode, aquatic habitats degrade, and biodiversity declines. Urban streams often become “non-supporting” when impervious cover exceeds 25%, meaning they are no longer viable for restoration.

*The Importance of The Impervious Surface Cover Concepts and Threshold*, identifies three thresholds of impact:

- **Sensitive streams:** 0–10% impervious cover (minimal impact)
  - Streams are typically high quality, typified by stable channels, excellent habitat structure, goot to excellent water quality, and diverse fish communities.
- **Impacted streams:** 11–25% impervious cover (moderate degradation)
  - Stream show clear signs of degradation due to urbanization. Greater frequency and volume of storm flushing begins to alter stream geometry. Erosion and channel widening are clearly evident. Streambanks become unstable, and physical habitat in the stream declines noticeably. Stream water quality shifts into the fair/good category during both storms and dry weather periods; biodiversity declines to fair levels, and the most sensitive fish and aquatic insects disappear from the stream.
- **Non-supporting streams:** 26–100% impervious cover (severe degradation)



- At this level of impervious cover, streams are essentially conduits for stormwater flow and can no longer support a diverse stream community. Stream channels in this category are highly unstable, can experience severe widening and erosion. Pool and riffle structure for aquatic habitat is diminished resulting in substrate loss for aquatic insects, benthic macroinvertebrates, and fish spawning. Water quality is consistently rated as fair to poor and contact recreation is no longer possible due to the presence of high bacterial levels.

These thresholds underscore the importance of managing impervious surfaces to protect watershed integrity and ecological health.

### Public Impacts

Beyond ecological impacts, disruption of the hydrologic cycle has significant implications for public health and welfare. These include increased flooding, degraded water quality, reduced water supply, loss of habitat and species diversity, and diminished recreational value. As impervious cover increases, stream channels are often modified to protect adjacent properties, further accelerating runoff conveyance and exacerbating flood risks.

Depending on the degree of imperviousness, annual stormwater runoff volume can increase by 2 to 16 times its predevelopment rate, with proportional reductions in groundwater recharge. In natural settings, most rainfall infiltrates into the soil, replenishing aquifers and supporting stream flow during dry periods. In urbanized areas, less rainfall infiltrates and more is converted to frequent, high-volume runoff.

This increased runoff leads to erosion, not only from construction sites but also from streambanks. Higher peak flows gradually widen and destabilize stream channels. Riparian vegetation is often lost due to bank erosion or urban encroachment, which in turn affects stream temperature and aquatic species composition. Sensitive species may be displaced by those more tolerant of warmer, degraded conditions.

### Riparian Corridor Development

Development within **the riparian corridor**, the vegetated area adjacent to streams and rivers, further exacerbates the effects of impervious cover. Riparian zones serve as natural buffers that filter pollutants, stabilize streambanks, regulate water temperature, and provide critical habitat for aquatic and terrestrial species.

When development encroaches into these corridors, several negative outcomes occur:

- **Loss of riparian vegetation** reduces shade, leading to stream warming and altered thermal regimes that affect temperature-sensitive species.
- **Streambank erosion** intensifies due to the removal of root systems that stabilize soil.
- **Habitat fragmentation** disrupts wildlife movement and reduces biodiversity.
- **Reduced filtration capacity** allows more pollutants to enter streams directly.
- **Increased imperviousness near stream channels** accelerates runoff and peak flows, contributing to channel instability and flooding.

### Thresholds

There is evidence in the scientific literature that there is a link between impervious surface cover and stream ecosystem impairment, some researchers have suggested that impairment begin to be significant at approximately 10% impervious cover.







**Table 10: Impervious Area Coverage per HUC-14**

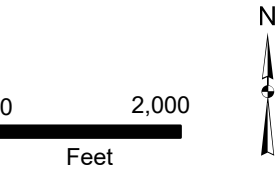
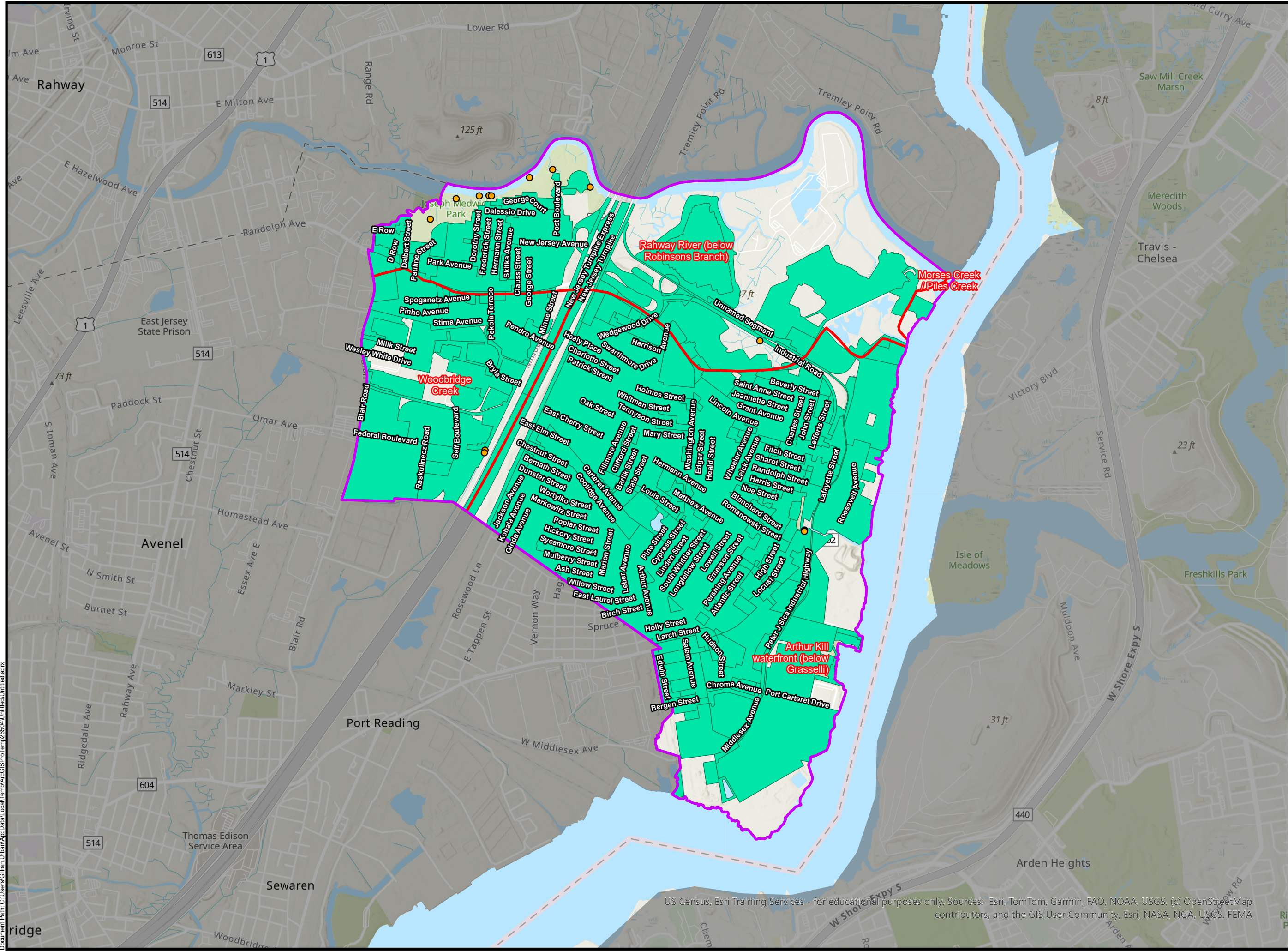
<b>Subwatershed Common Name</b>	<b>HUC 14 Area (Acres)</b>	<b>Impervious Area (Acres)</b>	<b>Impervious Area Coverage</b>
Woodbridge Creek	420.36	366.74	87.25%
Morses Creek / Piles Creek	0.50	0	0%
Rahway River (below Robinsons Branch)	899.88	460.91	51.22%
Arthur Kill waterfront (below Grasselli)	1563.19	1388.02	88.79%

Figure 11 depicts impervious areas in the Borough.

**CARTERET BOROUGH MS4 IMPERVIOUS AREA MAP**

**Legend**

-  Outfalls
-  Impervious Areas
-  HUC 14 Zones
-  Carteret Municipal Boundary



US Census, Esri Training Services - for educational purposes only, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Esri, NASA, NGA, USGS, FEMA

**FIGURE: 16**



## Non-Municipally Owned and Operated Stormwater Facilities

Below is detailed information non-municipally owned or operated structural stormwater facilities. Data was collected using New Jersey’s compiled Hydrologic Modeling Database, Aerial Imagery from Near Map gathered from images from Fall of 2024.

**Table 11: Known Non-Municipally Owned Stormwater Facilities**

Block and Lot	Type	Owner Type	Owner	Subwatershed
Block 8.01 Lot 2.01	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 8.01 Lot 2.01	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 100 Lot 5	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 101 Lot 1	Inlet	Commercial	Edwin St	Arthur Kill waterfront (below Grasselli)
Block 101 Lot 1	Inlet	Commercial	Edwin St	Arthur Kill waterfront (below Grasselli)
Block 101 Lot 1	Inlet	Commercial	Edwin St	Arthur Kill waterfront (below Grasselli)
Block 101 Lot 1	Inlet	Commercial	Edwin St	Arthur Kill waterfront (below Grasselli)
Block 101 Lot 1	Inlet	Commercial	Edwin St	Arthur Kill waterfront (below Grasselli)
Block 101 Lot 1	Inlet	Commercial	Edwin St	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 102 Lot 5.02	Stormwater Basin	Commercial	Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.02	Stormwater Basin	Commercial	Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.02	Stormwater Basin	Commercial	Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 1	Inlet	Commercial	380 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 1	Inlet	Commercial	380 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 8	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 102 Lot 1	Inlet	Commercial	380 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 4	Inlet	Commercial	580 Port Carteret Dr.	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 5.01	Inlet	Commercial	760 Port Carteret Drive	Arthur Kill waterfront (below Grasselli)
Block 102 Lot 4	Inlet	Commercial	580 Port Carteret Dr.	Arthur Kill waterfront (below Grasselli)



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 103 Lot 1	Inlet	Commercial	300 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 103 Lot 1	Inlet	Commercial	300 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 103 Lot 1	Inlet	Commercial	300 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 103 Lot 1	Inlet	Commercial	300 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 4	Stormwater Basin	Commercial	115 Middlesex Ave (Rear)	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 4	Stormwater Basin	Commercial	115 Middlesex Ave (Rear)	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 1	Inlet	Commercial	4000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 1	Inlet	Commercial	4000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 4	Inlet	Commercial	115 Middlesex Ave (Rear)	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 3.02	Inlet	Commercial	125 Middlesex Ave (Rear)	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 3.02	Inlet	Commercial	125 Middlesex Ave (Rear)	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 3.02	Inlet	Commercial	125 Middlesex Ave (Rear)	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 2	Inlet	Commercial	100 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 2	Inlet	Commercial	100 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 2	Inlet	Commercial	100 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 201 Lot 2	Inlet	Commercial	100 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 301 Lot 5	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 301 Lot 5	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 304 Lot 2.02	Inlet	Commercial	100 Lighthouse Way	Arthur Kill waterfront (below Grasselli)
Block 304 Lot 1	Inlet	Commercial	5000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 304 Lot 1	Inlet	Commercial	5000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 304 Lot 1	Inlet	Commercial	5000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 304 Lot 1	Inlet	Commercial	5000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 304 Lot 1	Inlet	Commercial	5000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 304 Lot 2.02	Inlet	Commercial	100 Lighthouse Way	Arthur Kill waterfront (below Grasselli)
Block 304 Lot 1	Inlet	Commercial	5000 Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 403 Lot 2	Stormwater Basin	Commercial	27 Randolph Street	Arthur Kill waterfront (below Grasselli)
Block 404 Lot 2	Inlet	Commercial	350 Roosevelt Avenue	Arthur Kill waterfront (below Grasselli)
Block 404 Lot 2	Inlet	Commercial	350 Roosevelt Avenue	Arthur Kill waterfront (below Grasselli)
Block 404 Lot 2	Inlet	Commercial	350 Roosevelt Avenue	Arthur Kill waterfront (below Grasselli)
Block 600 Lot 1	Inlet	Commercial	Industrial Avenue	Arthur Kill waterfront (below Grasselli)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.02	Inlet	Commercial	400 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 602 Lot 1.01	Inlet	Commercial	300 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 603 Lot 10	Stormwater Basin	Commercial		Rahway River (below Robinsons Branch)



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 603 Lot 4	Stormwater Basin	Commercial		Rahway River (below Robinsons Branch)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 604 Lot 3	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 675 Lot 3	Inlet	Commercial	Lafayette Street	Arthur Kill waterfront (below Grasselli)
Block 702 Lot 2	Stormwater Basin	Commercial		Rahway River (below Robinsons Branch)
Block 703 Lot 1	Inlet	Commercial	Adj Nj Tpke Auth	Rahway River (below Robinsons Branch)
Block 703 Lot 1	Inlet	Commercial	Adj Nj Tpke Auth	Rahway River (below Robinsons Branch)
Block 703 Lot 1	Inlet	Commercial	Adj Nj Tpke Auth	Rahway River (below Robinsons Branch)
Block 703 Lot 1	Inlet	Commercial	Adj Nj Tpke Auth	Rahway River (below Robinsons Branch)
Block 703 Lot 1	Inlet	Commercial	Adj Nj Tpke Auth	Rahway River (below Robinsons Branch)



Block and Lot	Type	Owner Type	Owner	Subwatershed
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 42	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 7	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 42	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.02	Inlet	Commercial		Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)



Block and Lot	Type	Owner Type	Owner	Subwatershed
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 20.01	Inlet	Commercial	8001-8003-8005 Indust Ave	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 705 Lot 1.01	Inlet	Commercial	500 Salt Meadow Road	Rahway River (below Robinsons Branch)
Block 2702 Lot 24	Inlet	Commercial	60 Minue Street	Woodbridge Creek
Block 2702 Lot 24	Inlet	Commercial	60 Minue Street	Woodbridge Creek
Block 2702 Lot 12	Inlet	Commercial	8 Germak Dr.	Woodbridge Creek
Block 2702 Lot 12	Inlet	Commercial	8 Germak Dr.	Woodbridge Creek
Block 2704 Lot 1	Inlet	Commercial	200 Milik Street	Woodbridge Creek
Block 2704 Lot 1	Inlet	Commercial	200 Milik Street	Woodbridge Creek
Block 2704 Lot 1	Inlet	Commercial	200 Milik Street	Woodbridge Creek
Block 2704 Lot 1	Inlet	Commercial	200 Milik Street	Woodbridge Creek
Block 2705 Lot 4	Stormwater Basin	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2705 Lot 4	Inlet	Commercial	50 Bryla Street	Woodbridge Creek
Block 2801 Lot 1	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 3	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 3	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 3	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 1	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 1	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 1	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 3	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 3	Inlet	Commercial		Woodbridge Creek



<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 2801 Lot 3	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 3	Inlet	Commercial		Woodbridge Creek
Block 2801 Lot 4	Inlet	Commercial	400 Federal Blvd.	Woodbridge Creek
Block 2801 Lot 4	Inlet	Commercial	400 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 4	Inlet	Commercial	1000 Blair Road	Woodbridge Creek
Block 2802 Lot 4	Inlet	Commercial	1000 Blair Road	Woodbridge Creek
Block 2802 Lot 4	Inlet	Commercial	1000 Blair Road	Woodbridge Creek
Block 2802 Lot 3	Inlet	Commercial	1600 Blair Rd.	Woodbridge Creek
Block 2802 Lot 3	Inlet	Commercial	1600 Blair Rd.	Woodbridge Creek
Block 2802 Lot 3	Inlet	Commercial	1600 Blair Rd.	Woodbridge Creek
Block 2802 Lot 3	Inlet	Commercial	1600 Blair Rd.	Woodbridge Creek
Block 2802 Lot 13.01	Inlet	Commercial	1300 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 13.01	Inlet	Commercial	1300 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 11	Inlet	Commercial	100 Raskulinecz Rd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2802 Lot 12	Inlet	Commercial	900 Federal Blvd.	Woodbridge Creek
Block 2902 Lot 3	Inlet	Commercial	835 Roosevelt Avenue	Arthur Kill waterfront (below Grasselli)
Block 2902 Lot 3	Inlet	Commercial	835 Roosevelt Avenue	Arthur Kill waterfront (below Grasselli)
Block 2902 Lot 3	Inlet	Commercial	835 Roosevelt Avenue	Arthur Kill waterfront (below Grasselli)
Block 4701 Lot 1	Stormwater Basin	Residential	Carteret Avenue & Cypress St	Arthur Kill waterfront (below Grasselli)
Block 5002 Lot 1	Inlet	Residential	199 Washington Avenue	Arthur Kill waterfront (below Grasselli)
Block 5002 Lot 1	Inlet	Residential	199 Washington Avenue	Arthur Kill waterfront (below Grasselli)
Block 5002 Lot 1	Inlet	Residential	199 Washington Avenue	Arthur Kill waterfront (below Grasselli)
Block 5002 Lot 1	Inlet	Residential	199 Washington Avenue	Arthur Kill waterfront (below Grasselli)
Block 5301 Lot 2	Inlet	Commercial	760 Roosevelt Avenue	Rahway River (below Robinsons Branch)

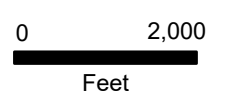
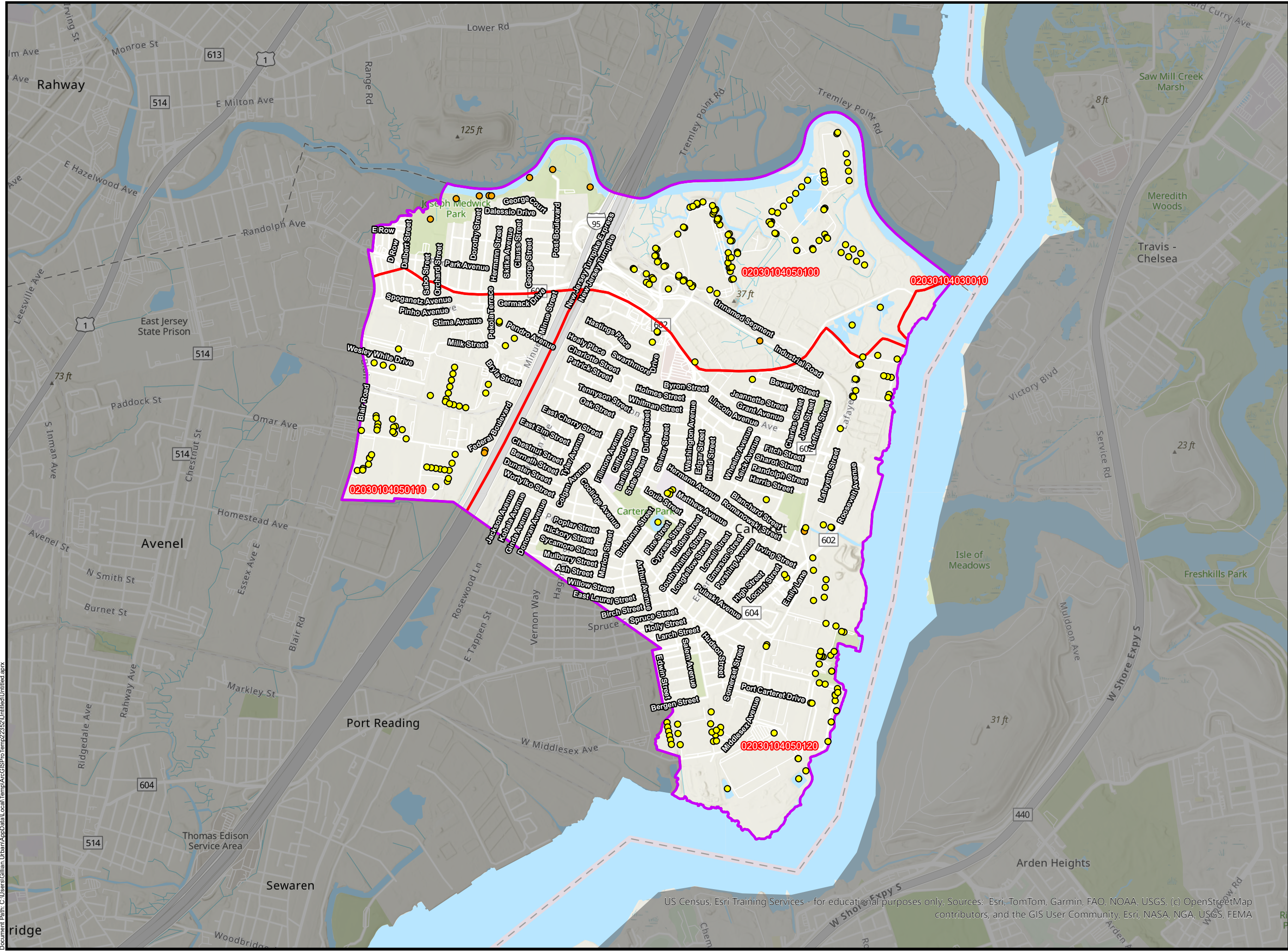


<b>Block and Lot</b>	<b>Type</b>	<b>Owner Type</b>	<b>Owner</b>	<b>Subwatershed</b>
Block 5301 Lot 9	Inlet	Commercial	35 Hayward Ave	Arthur Kill waterfront (below Grasselli)
Block 5602 Lot 15	Inlet	Commercial		Arthur Kill waterfront (below Grasselli)
Block 5801 Lot 1	Stormwater Basin	Commercial	7 Noe Street	Arthur Kill waterfront (below Grasselli)
Block 7402 Lot 1.05	Inlet	Commercial	120 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)
Block 7402 Lot 1.05	Inlet	Commercial	120 Middlesex Avenue	Arthur Kill waterfront (below Grasselli)

**CARTERET BOROUGH MS4 PRIVATE STORMWATER MAP**

**Legend**

- Outfalls
- Private Stormwater Facilities
- HUC 14 Zones
- Carteret Municipal Boundary



US Census, Esri Training Services - for educational purposes only. Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Esri, NASA, NGA, USGS, FEMA

**FIGURE: 17**



## Conclusion

The Watershed Inventory Report serves as a foundational assessment tool required under the Municipal Separate Storm Sewer System (MS4) permits. This report identifies existing stormwater infrastructure and compiles critical water quality data, including stream classifications, Total Maximum Daily Loads (TMDLs), and documented water quality impairments.

The data that accompanies this inventory report has been compiled as an electronic map and will be submitted to the NJDEP through NJDEP Online via Document Submittal Service. The information from this inventory report will be used to make informed decisions during the creation of the Watershed Assessment Report, Phase 2 of the Watershed Improvement Plan.

Phase 2 will build upon the inventory by identifying areas of concern and prioritizing locations for potential water quality improvement projects. These projects will be designed to address the water quality and quantity issues identified in Phase 1, supporting targeted and effective watershed management strategies.



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