THE LAND CONSERVANCY
OF NEW JERSEY

# TOWNSHIP OF TEANECK ENVIRONMENTAL RESOURCE INVENTORY UPDATE

*Township of Teaneck*
*March 12, 2024*

DRAFT

TOWNSHIP OF TEANECK, BERGEN COUNTY

March 12, 2024 - DRAFT

# ENVIRONMENTAL RESOURCE INVENTORY DRAFT

PREPARED BY

THE LAND CONSERVANCY OF NEW JERSEY

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The original document will be appropriately signed and sealed in accordance with Chapter 41, Title 13 of the State Board of Professional Planners upon adoption by the Planning Board.

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# ACKNOWLEDGMENTS

THE LAND CONSERVANCY
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**Cover Photo: Hackensack River**
**Executive Summary: Andreas Park**

# Executive Summary

The Township of Teaneck has a rich history of environmental awareness and conservation. Since the 1930s, when its Master Plan was initially drafted, the town recognized the benefit of natural resources when it established a greenbelt along the newly constructed State Route 4. More recently, the Township produced its first Environmental Resource Inventory (ERI) in 2002 to document the environmental and cultural features that form the landscape of the community. The next update was in 2013, and this is the second update to that initial report.

Home to 25 municipal parks and one county park, the Township of Teaneck offers its residents places to recreate and enjoy the serenity of the rivers that form its borders. It is a walkable community with tree-lined streets and interlocking neighborhoods where families meet at parks and school playgrounds. The Hackensack River forms its western boundary, and Overpeck Creek forms its eastern border. The Hackensack feeds into Newark Bay through the tidal marshes of the Meadowlands, an area home to more than 700 plants and animals, including rare and endangered species. Tidal forces are present in the lower section of the Hackensack River below the Oradell dam, which is a few miles upstream of the Township of Teaneck.

The Township has a population of 41,631 individuals and comprises an area of 6.22 square miles. Located within seven miles of New York City, there is easy access to mass transportation into Manhattan and the larger metropolitan area. The town's Environmental Commission advocates for improving alternative transportation, increasing recycling options, and accelerating the town's efforts to become a "greener" community. Integral to this is the town's bronze certification through the Sustainable Jersey program in 2022. Updating the ERI is a priority action for renewing their certification, sharing awareness of the town's natural and cultural features, and promoting a reduced carbon footprint for residents and officials.

Sustainability and resiliency are at the forefront of municipal leadership as they address the effects of a changed climate, which includes increased flooding regionally and elevated temperatures. Knowledge of Teaneck's natural resources will allow its officials and citizens to make informed decisions as they strive to preserve and enhance the Township's character.

*Photo: Brett Park*

# Chapter 1.

# Geology & Topography

## Physiographic Provinces

New Jersey's landscape is divided into four distinctive regions, each characterized by unique geologic processes and landforms, known as physiographic provinces.

Physiographic provinces classify landscapes based on terrain texture, rock type, geologic structure, and history. These attributes play an important role in determining the natural resources of an area. In New Jersey, beginning in the northwest and proceeding to the southeast, these provinces are identified as the Valley and Ridge, Highlands, Piedmont, and Coastal Plain Provinces. Teaneck Township lies entirely within the Piedmont Province. (**Figure 1**)

The Piedmont Province covers 1,600 square miles or roughly 20% of the state. Its surface is generally low, rolling hills marked with sudden, steep ridges that extend across the state and include the Palisades in the east.

According to the New Jersey Department of Environmental Protection (NJDEP) New Jersey Geological and Water Survey (NJGS), the Piedmont is mostly underlain with slightly folded and faulted sedimentary rocks of Triassic and Jurassic age (240 to 140 million years old) and igneous rocks of Jurassic age.[1]

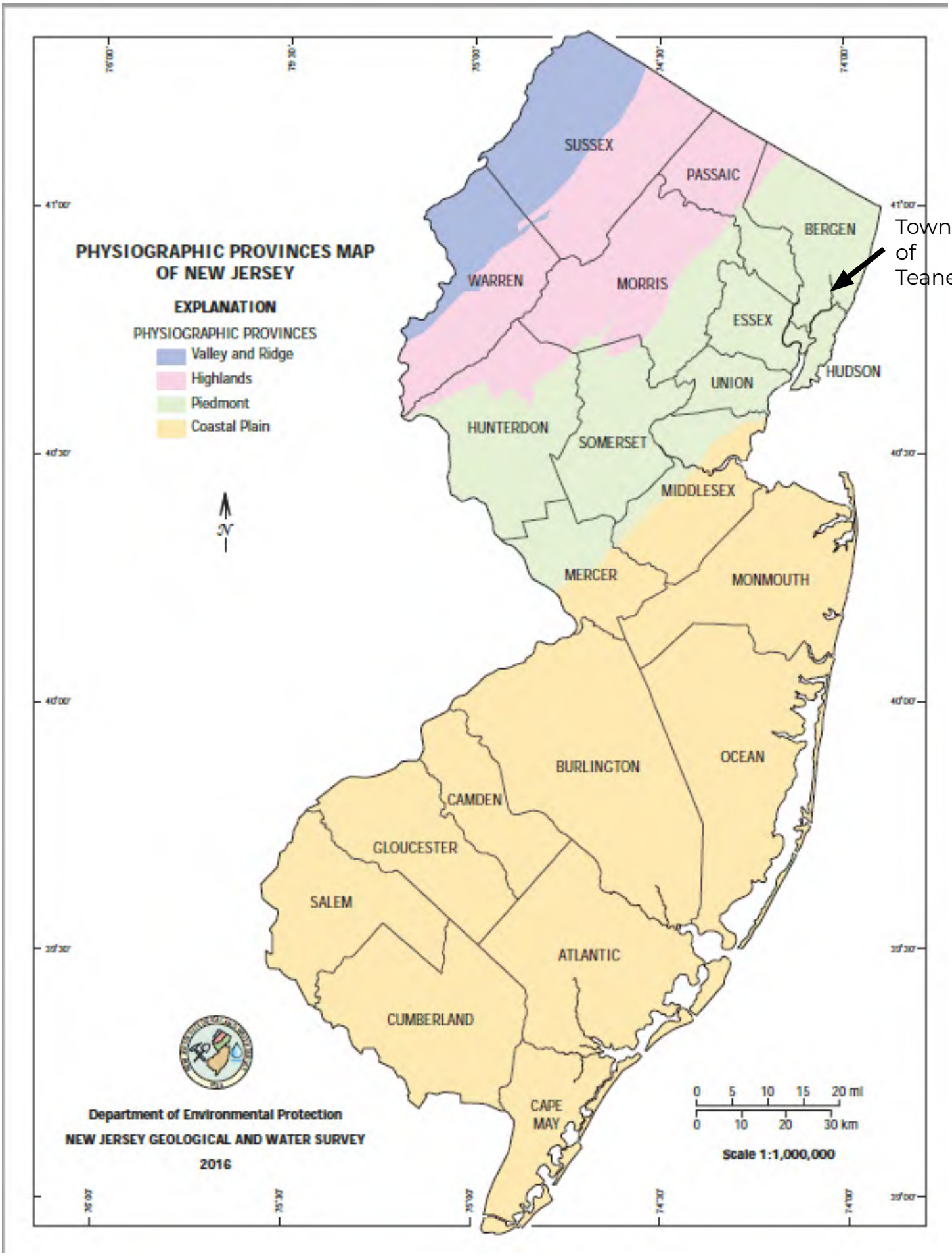



*Figure 1. Physiographic Provinces (NJGWS)*

## Bedrock Geology

The geology of the Township can be classified into two layers: bedrock geology, which is consolidated, underlying rock that extends deep into the earth's crust, and surficial geology, which is the unconsolidated sedimentary materials overlaying bedrock formations and are the parent material for soils.

According to the NJGS, the properties of these layers determine the physical extent of aquifers and the chemical quality of water they yield. They also control how groundwater recharges and moves through the aquifers, how contaminants seep into and move through soil and groundwater, and where natural hazards like radon, sinkholes, and seismic instability may occur.[2]

These properties establish where geologic resources such as sand, gravel, peat, clay, quarry rock, and mineral ores are located. Geologic properties also determine an area's suitability for septic systems, stormwater and surface runoff management, and the stability of foundations for buildings, bridges, tunnels, and other structures.

Teaneck is located in the Newark Basin, a rift basin formed during the breakup of the supercontinent Pangaea in the Mesozoic era. The underlying geology of Teaneck is predominantly sedimentary Passaic formation sandstone and siltstone facies, comprising 95% of the Township's total area.

The Passaic formation mudstone facies underlie the southeastern corner of Interstate-95 (I-95) and Overpeck Creek, comprising 3% of Teaneck's total area. Two pockets of intrusive Jurassic diabase are found in south-central Teaneck, limited to 1% of the town (see **Table 1, Figure 2,** and **Map 1**).

**Table 1. Bedrock Geology of Teaneck Township**

| Abbrev. | Name | Lithology | Acres | Percent |
|---|---|---|---|---|
| JTrps | Passiac Formation Sandstone and Siltstone facies | Sandstone & Siltstone | 3,814.03 | 95.5% |
| JTrpms | Passiac Formation Mudstone facies | Sandy Mudstone | 125.25 | 3.1% |
| Jd | Jurassic Diabase | Diabase, medium to course grained | 53.74 | 1.35% |
| | | Total **:** | 3,993 | 100% |

*Source: Bedrock Geology (NJGS)*

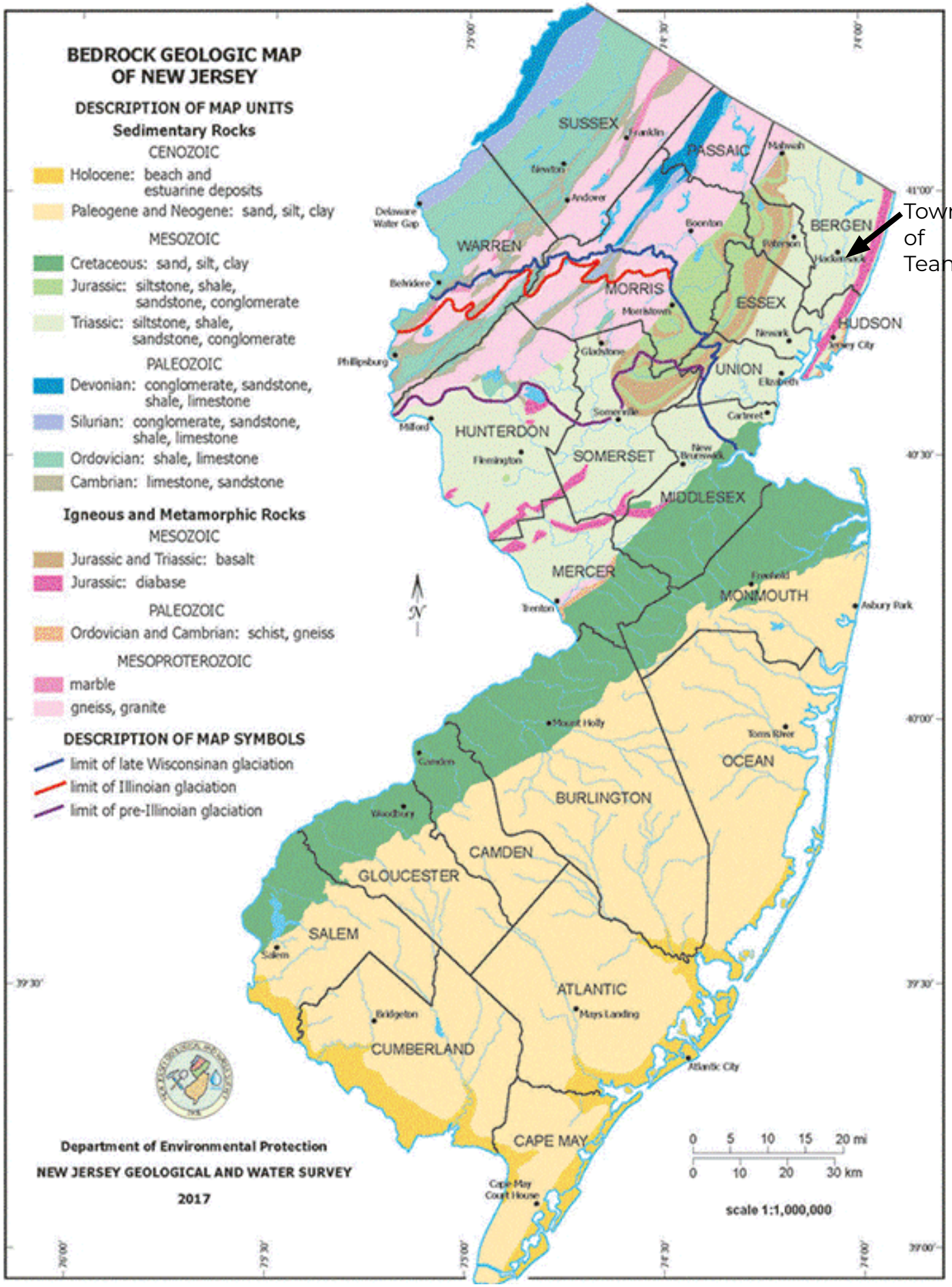
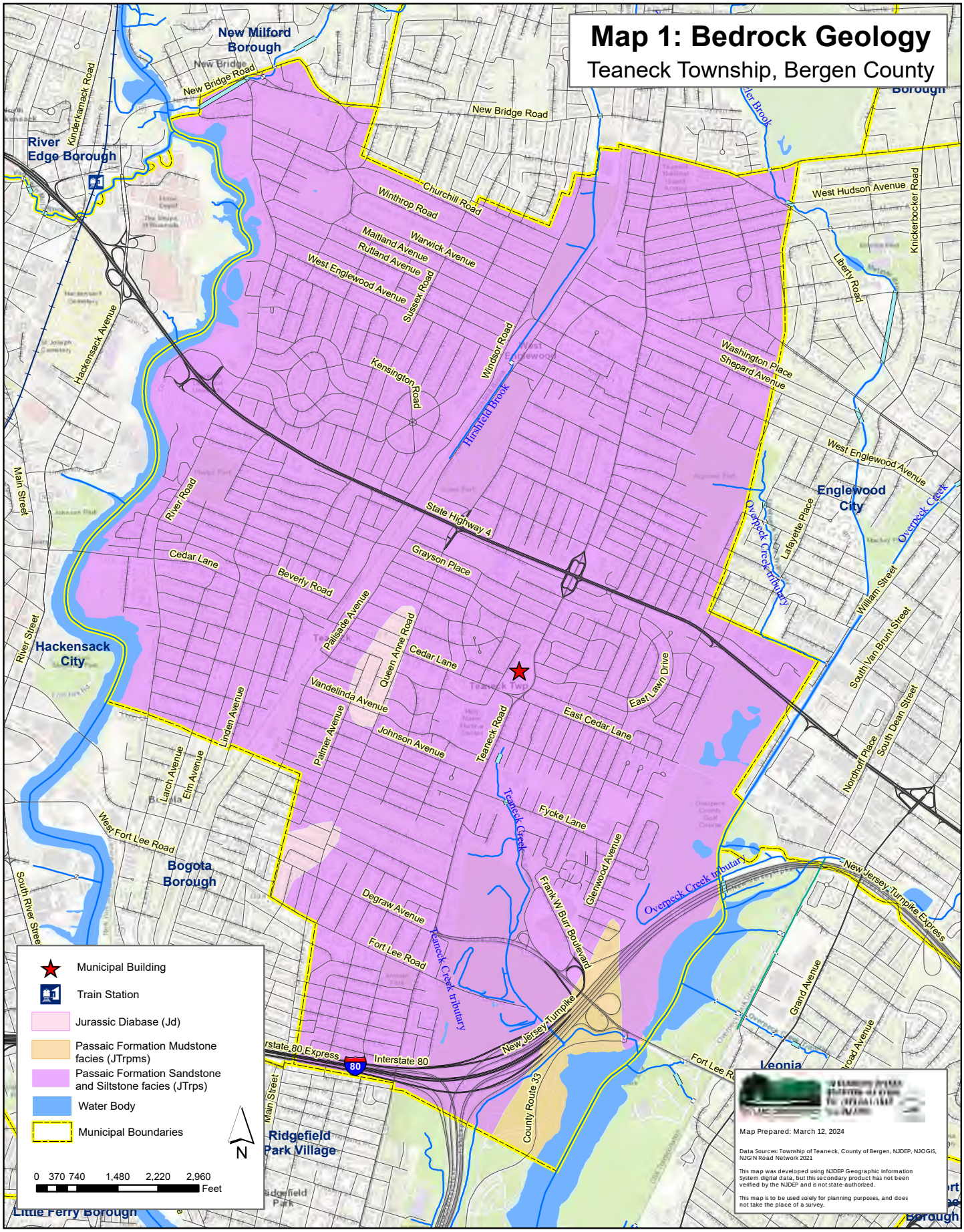



*Figure 2. Bedrock Geology Map of New Jersey (NJGWS)*


Map 1: Bedrock Geology
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Ridgefield Park Village
Little Ferry Borough
Englewood City
Teaneck Twp
New Bridge Road
Kinderkamack Road
Churchill Road
Winthrop Road
Maitland Avenue
Warwick Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Windsor Road
Kensington Road
Hackensack Avenue
Main Street
River Road
State Highway 4
Cedar Lane
Beverly Road
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Palmer Avenue
Linden Avenue
Johnson Avenue
Teaneck Road
East Cedar Lane
Easy Lawn Drive
Fycke Lane
Degraw Avenue
Fort Lee Road
West Fort Lee Road
River Street
South River Street
Larch Avenue
Elm Avenue
Hirshfield Brook
Teaneck Creek
Teaneck Creek tributary
Overpeck Creek tributary
Overpeck Creek
Frank W Burr Boulevard
Glenwood Avenue
New Jersey Turnipke
New Jersey Turnipke Express
Interstate 80
80
County Route 33
Grand Avenue
Washington Place
Shepard Avenue
West Hudson Avenue
Knickerbocker Road
Liberty Road
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
Municipal Building
Train Station
Jurassic Diabase (Jd)
Passaic Formation Mudstone facies (JTrpms)
Passaic Formation Sandstone and Siltstone facies (JTrps)
Water Body
Municipal Boundaries
N
0 370 740 1,480 2,220 2,960
Feet
Map Prepared: March 12, 2024
Data Sources: Township of Teaneck, County of Bergen, NJDEP, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.

## Surficial Geology

Glacial movement physically shaped Teaneck's topography. When passing through a landscape, glaciers picked up debris carving their path and sheering down ridges and cliffs. Glacial deposits were a mixture of sand, silt, clay, and boulders that created a hummocky topography with stony low-relief ridges.

Glacial deposition also affected surface water bodies and drainage patterns, as well as smaller formations in the Hohokus and Pascack Valleys. These unconsolidated materials overlaying bedrock formations is the surficial geology.[3] The resulting deposits are sediments laid down by rivers, glaciers, ocean currents and waves, wind, and movement of soil and rocks on hill slopes. Alluvium, estuarine, and other post-glacial deposits are the most recent deposits and overlie glacial sediments. **Table 2** and **Map 2** detail the surficial geology of Teaneck. The majority of the Township (69.5%, or 2,776 acres) is covered in Rahway till (Qwtn), with 13% salt marsh and estuarine deposits (Qmm) and 8% stream terrace deposits (Qst2).

## Topography

Topography refers to the slope and level of the land. It is the measurement of elevation, and the slope is the percentage change in that elevation over a certain distance. Topography is measured by connecting points of the same elevation. These points are known as contours. The topography of Teaneck is "gently rolling." The south-north trending ridgelines flanking the railroad corridor encompass the highest elevations (162 feet near Teaneck High School) and with steeper front faces and longer back slopes, which is lower than average, a typical feature of the Piedmont. From these ridgelines, the land slopes down towards the railroad corridor in the interior along the Hackensack River and Overpeck Creek.

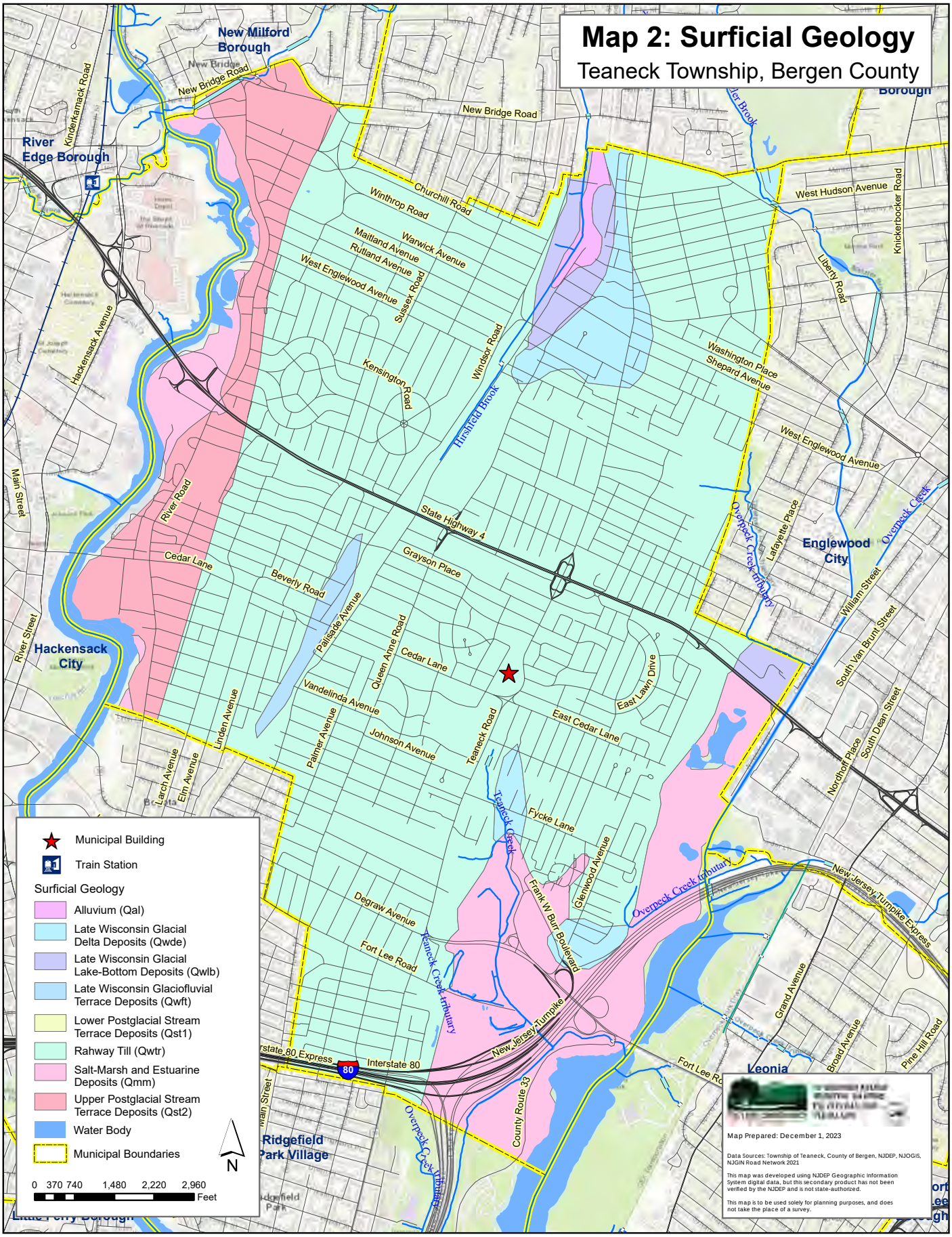
## Steep Slopes

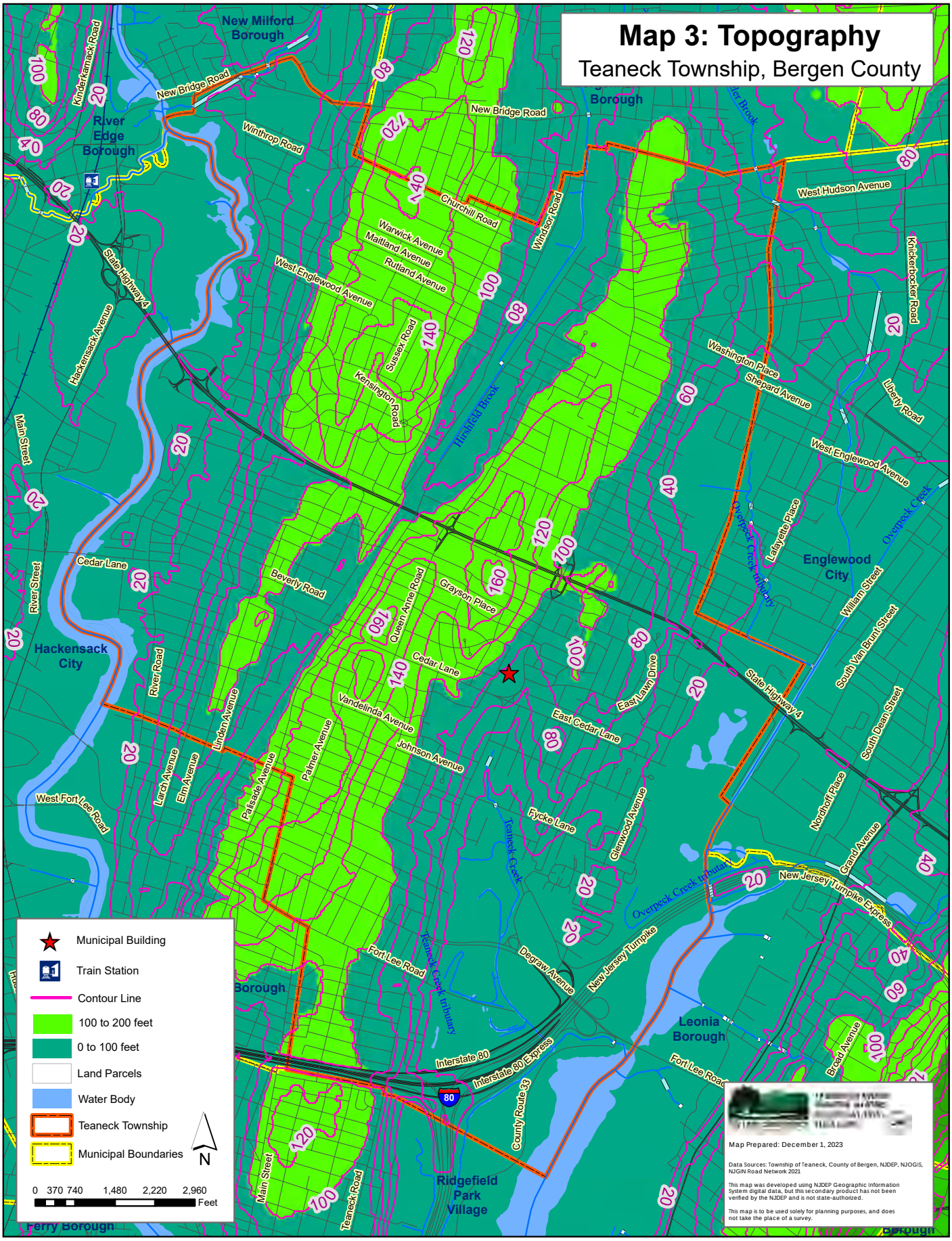
Consideration of the slope of the land is important to reduce the risk of natural hazards such as flooding and landslides and to minimize the impact of human activity on natural resources such as soils, vegetation, and water systems.[4]

Alteration of the slope may cause slope instability, flooding, erosion, degradation of surface water, or drainage problems. Improper grading often alters surface water flow and may cause flooding for the site and nearby property owners. Excessive grading may also alter groundwater levels, which can cause the slow death of trees and ground cover and, in turn, destroy wildlife habitats.

As noted, Teaneck's topography is gently rolling, with a majority of land containing slopes of less than 4%. There are moderate slopes of 5 to 9 percent in various locations of the Township. Steep slopes, defined as containing slopes in excess of 15%, are found only in two or three distinct locations in the northeast quadrant of the Township (**Map 3**).

| Table 2. Surficial Geology | | | | |
|---|---|---|---|---|
| Name | Description | Geologic Age | Acres | % of Teaneck |
| Alluvium (Qal) | Sand, silt, pebble-to-cobble gravel, minor clay; dark brown, brown, reddish-brown, gray; moderately to well sorted, stratified to massive. | Holocene and late Pleistocene | 20.23 | 0.51% |
| Swamp & Marsh Deposits (Qs) | Freshwater peat and organic silt, sand, and clay; dark brown to black. As much as 10 feet thick. | Holocene and late Pleistocene | 518.98 | 13.00% |
| Postglacial Stream Terrace Deposits (Qst) | Stratified well- to moderately-sorted, massive to aminated, and minor cross-bedded fine sand and silt in terraces flanking present and late postglacial stream courses. As much as 20 feet (6m) thick. Overlies glacial and postglacial fluvial, planar to cross-bedded pebbly sand and gravel; as much as 10 feet (3m) thick. | Holocene and late Pleistocene | 320.05 | 8.22% |
| Late Wisconsinan Glacial Delta Deposits (Qwde) | Sand, pebble-to-cobble gravel, minor silt; yellowish brown, reddish brown, light gray. As much as 150 feet thick. | Late Pleistocene and late Wisconsinan | 137.84 | 3.55% |
| Late Wisconsinan Glaciofluvial Terrace Deposits (Qwft) | Sand, pebble-to-cobble gravel, minor silt; yellowish brown to reddish brown. As much as 40 feet thick. | Late Pleistocene and late Wisconsinan | 80 | 3.11% |
| Late Wisconsinan Glacial Lake-Bottom Deposits (Qwlb) | Sand, pebble-to-cobble gravel, few to some boulders, minor silt yellowish brown to reddish brown. As much as 150 feet thick. | Late Pleistocene and late Wisconsinan | 73.04 | 1.83% |
| Rahway Till (Qwtr) | A nonstratified sediment deposited directly from the ice of Glacial Lake Teaneck. Clayey, sandy-silt with some to many pebbles and cobbles and very few boulders; reddish brown, reddish yellow, yellowish brown, brown. Gravels include mudstone, sandstone, gneiss, conglomerate, quartzite and rounded quartz pebbles. As much as 100 feet thick, generally less than 40 feet thick. (NJDEP NJGS) | Late Pleistocene and late Wisconsinan | 2,775.91 | 69.52% |
| | | Total | 3,877 | 97% |
| *Source: NJDEP, NJGIN* | | | | |


Map 2: Surficial Geology
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Englewood City
Leonia
Ridgefield Park Village
New Bridge Road
Kinderkamack Road
Churchill Road
Winthrop Road
Maitland Avenue
Rutland Avenue
Warwick Avenue
West Englewood Avenue
Sussex Road
Windsor Road
Kensington Road
Hackensack Avenue
Main Street
River Road
Cedar Lane
Beverly Road
Grayson Place
State Highway 4
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Palmer Avenue
Linden Avenue
Johnson Avenue
Teaneck Road
East Cedar Lane
East Lawn Drive
Fycke Lane
Degraw Avenue
Fort Lee Road
Glenwood Avenue
Frank W Burr Boulevard
Teaneck Creek
Teaneck Creek tributary
Overpeck Creek tributary
Overpeck Creek
Hirshfield Brook
Washington Place
Shepard Avenue
West Hudson Avenue
Knickerbocker Road
Liberty Road
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
New Jersey Turnipike Express
New Jersey Turnipike
Interstate 80
Interstate 80 Express
County Route 33
Grand Avenue
Broad Avenue
Pine Hill Road
Larch Avenue
Elm Avenue
Municipal Building
Train Station
Surficial Geology
Alluvium (Qal)
Late Wisconsin Glacial Delta Deposits (Qwde)
Late Wisconsin Glacial Lake-Bottom Deposits (Qwlb)
Late Wisconsin Glaciofluvial Terrace Deposits (Qwft)
Lower Postglacial Stream Terrace Deposits (Qst1)
Rahway Till (Qwtr)
Salt-Marsh and Estuarine Deposits (Qmm)
Upper Postglacial Stream Terrace Deposits (Qst2)
Water Body
Municipal Boundaries
N
0 370 740 1,480 2,220 2,960
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, County of Bergen, NJDEP, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.


Map 3: Topography
Teaneck Township, Bergen County
Municipal Building
Train Station
Contour Line
100 to 200 feet
0 to 100 feet
Land Parcels
Water Body
Teaneck Township
Municipal Boundaries
N
0 370 740 1,480 2,220 2,960
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, County of Bergen, NJDEP, NJOGIS, NJGIN Road Network 2021
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New Milford Borough
River Edge Borough
Hackensack City
Englewood City
Leonia Borough
Ridgefield Park Village
Ferry Borough
New Bridge Road
Winthrop Road
Churchill Road
Windsor Road
West Hudson Avenue
Knickerbocker Road
Warwick Avenue
Maitland Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Kensington Road
Washington Place
Shepard Avenue
Liberty Road
Hackensack Avenue
State Highway 4
Main Street
Cedar Lane
River Street
Beverly Road
Grayson Place
Queen Anne Road
Hirshfield Brook
Lafayette Place
Overpeck Creek tributary
Overpeck Creek
William Street
South Van Brunt Street
South Dean Street
East Lawn Drive
East Cedar Lane
River Road
Linden Avenue
Vandelinda Avenue
Johnson Avenue
Larch Avenue
Elm Avenue
Palisade Avenue
Palmer Avenue
West Fort Lee Road
Fycke Lane
Teaneck Creek
Glenwood Avenue
Nordhoff Place
Grand Avenue
New Jersey Turnpike Express
New Jersey Turnpike
Degraw Avenue
Fort Lee Road
Teaneck Creek tributary
Interstate 80
Interstate 80 Express
County Route 33
Broad Avenue
Main Street
Teaneck Road


*Photo: Puffin Sculpture Park*

# Chapter 2.

# Soil

## Soils Overview

Soil is the unconsolidated mineral or organic matter on the surface of the earth that has been subjected to and shows the effects of genetic and environmental factors (including climate) of micro-and macro-organisms acting on parent material over a period of time. The Natural Resources Conservation Service (NRCS) Soil Survey identifies and maps over 20,000 different types in the United States.[5] Most are given names from the local area where they were first mapped, and these named soils are referred to as soil series. Soil forming factors include:

**Parent Material:** Some soils weather directly from the underlying rocks. The residual soils have the same general chemistry as the original rocks.

**Climate:** Temperature and moisture can cause different patterns of weathering and leaching. The intensity, timing, and amount of rain also influence soil formation.

**Topography:** The slope and aspect (the direction the physical slopes face) affect the soil's temperature and moisture content.

**Biological Factors**: Plants, animals, micro-organisms, and humans affect soil formation. Native vegetation depends on biology, topography, and climate factors, as well as soil factors (density, chemistry, depth, temperature, and moisture) .

**Time:** Soil formation is continuous, always altering according to climate, landscape position, and biological activity.

# Soil Classifications

Soils are named and classified on the basis of physical and chemical properties in their layers (horizons).[6] Soil Taxonomy uses the color, texture, structure, and other properties of the surface two meters deep to key the soil into a classification system to help the public use soil information.

The United States Department of Agriculture (USDA) defines 12 major soil texture classifications (loamy, loamy sand, sandy loam, loam, silt loam, silt sandy, clay loam, silty clay, and clay). Soil textures are classified by the fractions of sand, silt, and clay in soil (**Figure 3** and **Figure 4**). Classifications are typically named for the primary constituent particle size or the most abundant particle sizes.[7]

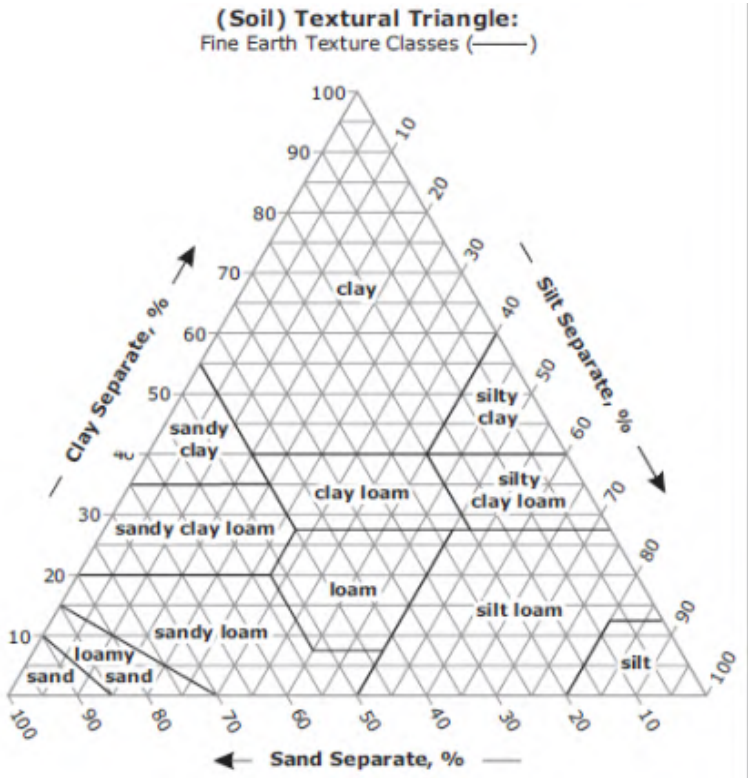



*Figure 3. Soil Texture Pyramid (USDA)*

## *Soils of Teaneck Township*

The official Soil Survey for Bergen County is maintained by the NRCS.[8] The soils maps and tables in the ERI are based on the data from that official survey. The NRCS Soil Survey plots soils by map units based on the characteristics of the dominant soils within that unit. The map unit names identify the soils by their soil series classification(s). Each map unit name has an associated abbreviation that offers a shorthand version of the naming/classification system. This abbreviation system identifies the soil types by steepness, stoniness, and frequency of flooding as follows:

- The first three letters of the abbreviation name the soil or complex. For example, Boh is Boonton and Bou is Boonton-Urban land complex.
- Capital letters at the end of the abbreviation indicate the slope "A" being less steep and "E" being steeper. An example is the Boonton-Urban land complex, BouB, BouC, and BouD.
- The smaller "t" at the end of an abbreviation indicates frequently flooded. An example is Preakness silt loam, PrnAt.

The Soil Survey categorizes each map unit as one of four types: consociations, complexes, associations, and undifferentiated groups. Teaneck's soils are typed as either consociation or complexes:

- Consociations (Cn) are named for the dominant soil. In a consociation, delineated areas use a single name from the dominant component in the map unit. Dissimilar components are minor

in extent. Examples are Boonton and Dunellen loam.

- Complexes (Cx) consist of two or more dissimilar components that occur in a regularly repeating pattern. The total number of other dissimilar components is minor in extent. Many of the complexes in Teaneck combine consociations with urban land, such as the Boonton-Urban land complex.

## Major Soil Series

Soils with similar profiles are a soil series. The most prevalent soil series in Teaneck are:

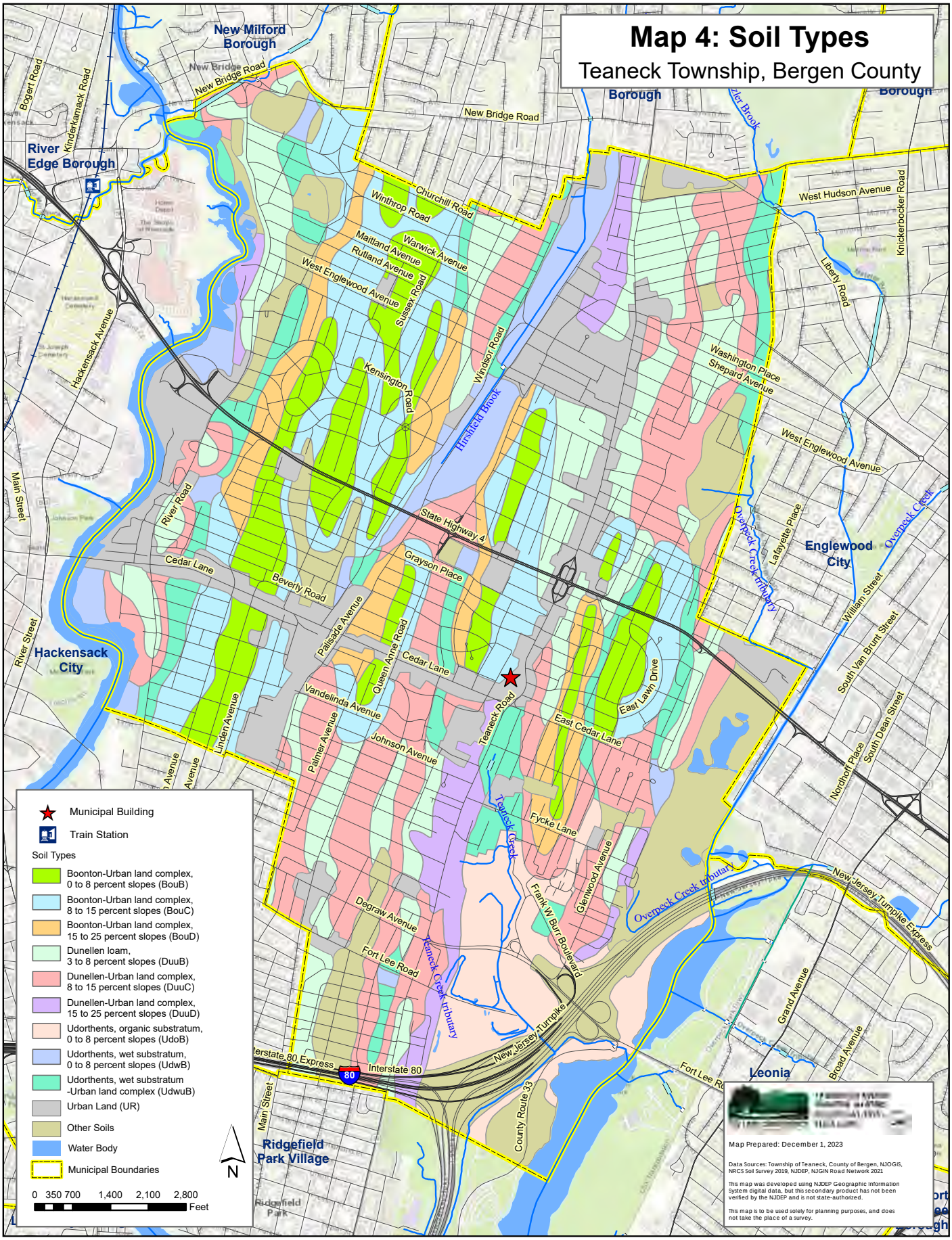
- Dunellen-Urban Land Complex
- Boonton-Urban Land Complex
- Urban Land
- Udorthents

Together, they account for 72% (2,838 acres) of the total land area. Water is not considered a soil series and is excluded. Urban land is also typically excluded, but some of this land type in Teaneck Township is intermixed with other soil series, so all urban land soil series have been included. The acreage of each series is shown in **Table 3** and on **Map 4**.

**Table 3. Soils of Teaneck Township**

| Soil Series | Acres | % Township | |
|---|---|---|---|
| **Major Series** | | | |
| Dunellen-Urban Land Complex (DuuB & DuuC) | 1,151.77 | 28.8% | **2,837.91 acres 72.5%** |
| Boonton-Urban land Complex (BouB & BouC) | 801.04 | 20.1% | |
| Urban Land (UR) | 469.82 | 11.8% | |
| Udorthents, wet substratum-Urban land complex (UdwuB) | 267.06 | 6.7% | |
| Urdorthents, organic substratum (UdoB) | 204.7 | 5.1% | |
| **Minor Series** | | | |
| Dunellen-Urban land complex (DuuA & DuuD) | 229.39 | 5.6% | **941.78 acres 23.5%** |
| Boonton Urban Land Complex (BouD) | 199.86 | 5.0% | |
| Udorthents, wet substratum (UdwB) | 167.49 | 4.2% | |
| Udorthents, refuse substratum (UdrB) | 143.91 | 3.6% | |
| Udorthents, organic substratum-Urban land complex (UdouB) | 120.73 | 3.0% | |
| Dunellen loam (DuoB) | 62.62 | 1.6% | |
| Haledon-Urban land complex (HasB) | 35.30 | 0.9% | |
| Udorthents, loamy (UdkttB) | 17.78 | 0.5% | |
| **Other Series (10 acres or less)** | | | |
| Pascack silt loam, Preakness silt loam, Boonton moderately well drained gravelly loam, and Otisville gravelly loamy sand (PbuA. PrmAt, BohC, & OtsD) | 31.88 | 0.8% | **31.88 acres 0.8%** |
| **Total (with water)** | **3,993** | **100%** | |

*Source: NRCS Soil Survey*


Map 4: Soil Types
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Englewood City
Leonia
Ridgefield Park Village
New Bridge Road
Bogert Road
Kinderkamack Road
Churchill Road
Winthrop Road
Maitland Avenue
Warwick Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Windsor Road
Kensington Road
Hackensack Avenue
Hirshfield Brook
Washington Place
Shepard Avenue
West Hudson Avenue
Knickerbocker Road
Liberty Road
West Englewood Avenue
Main Street
River Road
State Highway 4
Cedar Lane
Beverly Road
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Linden Avenue
Palmer Avenue
Johnson Avenue
Teaneck Road
East Cedar Lane
East Lawn Drive
Lafayette Place
Overpeck Creek tributary
Overpeck Creek
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
River Street
Fycke Lane
Teaneck Creek
Glenwood Avenue
Frank W Burr Boulevard
Degraw Avenue
Fort Lee Road
Teaneck Creek tributary
New Jersey Turnpike
New Jersey Turnpike Express
Interstate 80
Interstate 80 Express
County Route 33
Grand Avenue
Broad Avenue
Municipal Building
Train Station
Soil Types
Boonton-Urban land complex, 0 to 8 percent slopes (BouB)
Boonton-Urban land complex, 8 to 15 percent slopes (BouC)
Boonton-Urban land complex, 15 to 25 percent slopes (BouD)
Dunellen loam, 3 to 8 percent slopes (DuuB)
Dunellen-Urban land complex, 8 to 15 percent slopes (DuuC)
Dunellen-Urban land complex, 15 to 25 percent slopes (DuuD)
Udorthents, organic substratum, 0 to 8 percent slopes (UdoB)
Udorthents, wet substratum, 0 to 8 percent slopes (UdwB)
Udorthents, wet substratum -Urban land complex (UdwuB)
Urban Land (UR)
Other Soils
Water Body
Municipal Boundaries
0 350 700 1,400 2,100 2,800
Feet
N
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, County of Bergen, NJOGIS, NRCS Soil Survey 2019, NJDEP, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.

**Dunellen Series**

The Dunellen series consists of very deep, well-drained soils formed in stratified materials. Dunellen soils are on outwash plains and stream terraces. Slope ranges from zero to 35%. The underlying bedrock is red, soft shale, or siltstone. The Dunellen series includes the soils from the Dunellen-Urban Complex series (DuuA, DuuB. DuuC & DuuD) and the Dunellen Loam series (DuoB). Characteristics include:

- Drainage and Permeability: Dunellen soils are well drained. Saturated hydraulic conductivity ranges from moderately high or high in the solum and high or very high in the substratum. Runoff is negligible to high.

- Use and Vegetation: Dunellen soils are principally used for community development. Most remaining areas are idle on the urban fringe. Trees in wooded areas include red, white and black oak, hickory, red maple, and ash.

The Dunellen-Urban and the Dunellen Loam series comprise 36% of Teaneck, totaling 1,444 acres. Dunellen loam (63 acres) is found in Teaneck's parks, including Feldman Nature Preserve, Brett Park, Argonne Park and the Teaneck Armory.

**Boonton Series**

The Boonton series consists of deep or very deep, moderately well and well-drained soils formed in glacial till composed mostly of red to brown shale, sandstone, basalt, and some granitic gneiss on gently sloping to very steep uplands. They are moderately deep to a fragipan (a dense, hard subsoil forming a restrictive feature). The slope is usually smooth and regular and the gradient ranges from zero to 50%. The Boonton series includes soils from the Boonton-Urban Complex Series (BouB, BouC, & BouD) and Boonton Loam series (BohC). Characteristics include:

- Drainage and Saturated Hydraulic Conductivity: Moderately well and well drained. Runoff is slow to rapid. Saturated hydraulic conductivity is moderately low to high in the mineral soil above the fragipan, low or very low in the fragipan, and low to high below the fragipan. There is a perched water table (a water table that is above the normal water table and separated from it by a dry, or unsaturated, zone) at a depth of 18 to 36 inches from November to May of most years.

- Use and Vegetation: Most Boonton soils are in areas that have become highly urbanized. Undeveloped sites are wooded or idle fields. Wooded areas have oaks, red maple, white ash, hickory, gray birch, and dogwood.

The Boonton Urban series and the Boonton Loam series comprise 25% of Teaneck (1,009 acres). Its distribution is uplands in northeastern New Jersey and southeastern New York.

**Urban Land**

The NRCS defines the parent material of urban soils as surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material. Urban land comprises 12% of Teaneck, totaling 470 acres.

### Udorthents

Udorthents are defined as a form of orthent. Orthents exhibit textures ranging from very fine sand or finer in the fine earth fraction to loamy fine sand or coarser, with a coarse fragment content of 35% or higher. Additionally, these soils display a systematic decrease in organic carbon content with increasing depth. They are primarily found on recently eroded surfaces, where former soils have been removed or truncated either geologically or through cultivation, mining or other human activity.

Udorthents are generally acid to neutral and commonly occur in areas of recently exposed loess or till; areas of weakly cemented rocks, such as shale; or areas where the regolith, or loose earth, is thin over hard rocks. Vegetation is commonly a deciduous forest.

There are a number of udorthent types in Teaneck, in general, they are either a loamy material transported by human activity (UdkttB) or a loamy material spread over an organic, refuse or wet substratum. Udorthents and Udorthents–Urban land complexes comprise 23% of Teaneck, totaling 922 acres.

## Minor and Other Soil Series

### Haledon Series

The Haledon series consists of very deep, somewhat poorly drained soils formed in glacial till and found in low positions on undulating uplands. The soils developed in coarse textured glacial till composed primarily of basalt, red sandstone and shale, and granitic gneiss with lesser amounts of quartzite and gray sandstone and shale. They are found at the base of steeper sloping uplands and in shallow drainageways. Slope ranges from zero to 15%. Characteristics:

- Drainage and Saturated Hydraulic Conductivity: Somewhat poorly drained. Surface runoff is medium to very high. Saturated hydraulic conductivity is moderately high or high above the fragipan and very slow or slow in the fragipan and densic materials.

- Use and Vegetation: Most areas are wooded or in idle fields. Much of this soil is used for housing or urban development. Vegetation is largely forest dominated by oak and maple with some birch and ash.

Haledon-Urban land complex soils comprise 0.9% of Teaneck, totaling 35 acres.

### Pascack Series

The Pascack series consists of very deep, moderately well drained and somewhat poorly drained soils formed in glacial outwash, which in many places has a loamy mantle. The outwash is derived principally from red shales and sandstones, basalt, and granitic gneiss. They are nearly level to undulating soils in slight depressions or broad drainageways on outwash plains and terraces. Slope ranges from zero to 8%. Characteristics include:

- Drainage and Permeability: Moderately well and somewhat poorly drained. Surface runoff is slow. Permeability is moderately rapid in the solum and rapid or very rapid in the substratum. The

soil has a seasonal high-water table at a depth of one to three feet from October through May.

- Use and Vegetation: Most of the acreage is used for community development. Some areas are idle or wooded. Common crops are corn, soybeans, vegetables, and nursery stock. Common trees are red, white and black oak, hickory, red maple and white ash.

Pascack soils comprise 0.2% of Teaneck, totaling 9 acres and are located in the area of Tokoloka Park.

**Preakness Series**

The Preakness series consists of very deep, poorly and very poorly drained soils on broad, nearly level outwash plains or in narrow swales that dissect outwash terraces. Slope ranges from zero to 3%. Characteristics include:

- Drainage and Saturated Hydraulic Conductivity: Preakness soils are poorly or very poorly drained. Runoff is negligible or low. Saturated hydraulic conductivity is moderately high or high in the surface and subsoil and high to very high in the substratum. The water table is at or near the surface from late autumn through winter and spring. The soils are often ponded in winter and during periods of high rainfall because of their low topographic position. In many places adjacent to streams, Preakness soils flood frequently for brief periods in late winter and early spring. They flood more extensively but less often following severe storms of low frequency in August through October.
- Use and Vegetation: Many areas of these soils are idle or are drained and used for housing developments. Native vegetation is red maple, elm, willow, and ash with some sedge and other hydrophytic species.

Preakness silt loam, totaling 9 acres, or 0.2% of Teaneck, can be found in the eastern portion of Argonne Park.

**Otisville Series**

The Otisville series consists of very deep, excessively drained soils and are on long narrow ridges, summits, shoulders, and side slopes. Slope ranges from zero to 60%. Characteristics include:

- Drainage and Permeability: Excessively drained. The potential for surface runoff ranges from negligible to low. Permeability is rapid in the solum and rapid or very rapid in the substratum.
- Use and Vegetation: The soils are mainly idle. Limited areas are in deciduous fruit trees. Woodlots are dominated by oak-hickory associations at the southern limit of the series, while sugar maple and American beech are prominent near the northern limit.

Otisville soils comprise 0.2% of Teaneck, totaling 6 acres located in a north/south linear strip between Brett Park and Andreas Park.

**Water**

Water covers 125 acres, making up the remaining 3% of Teaneck's total area.

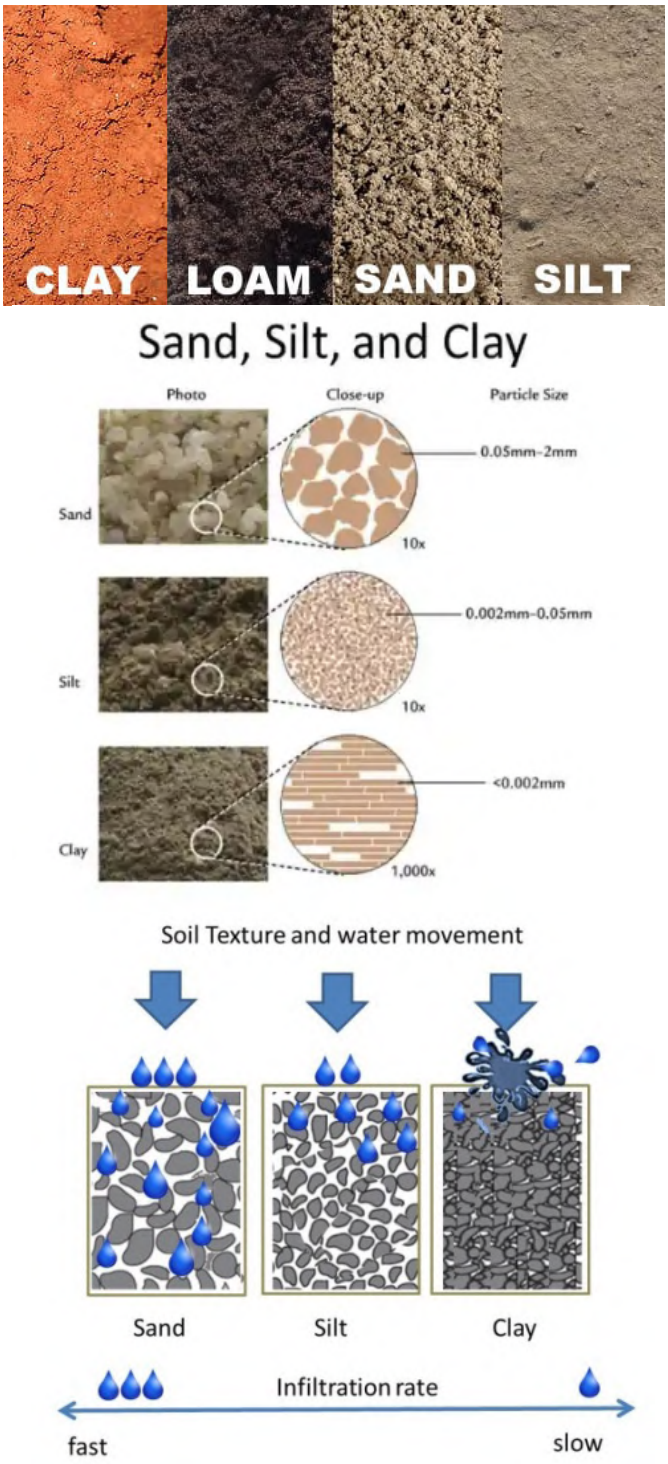



*Figure 4. Soil Types (top), Soil Size (middle) and Soil Texture (bottom)* *(Source: Noble Research Institute)*

## Soil Characteristics

### Hydric Soils

According to the NRCS, a hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils are an important element of wetland areas and naturally support wetland vegetation. If a soil is classified as hydric, federal, and state wetlands regulations may restrict land use. The NRCS Soil Survey for Teaneck indicates the following soils with hydric components:

- PbuA - a minor component of this consociation, Preakness, frequently flooded, is a hydric soil, and represents 5% of the consociation. Landform: Drainageways
- PrnAt - Preakness silt loam, frequently flooded, is a hydric soil and represents 85% of this consociation. Landform: Drainageways.
- UdkttB – The minor component Parsippany, frequently flooded, is a hydric soil and represents 5% of this consociation. Landform: Outwash plains.
- UdwB and UdwuB – The minor components Pawcatuck, very frequently flooded and Transquaking, very frequently flooded, are hydric soils, each representing 1% of the consociation. Landform: tidal marshes.

Soils with hydric components total 479 acres or 12% of Teaneck's total area.

### Erodibility

Soils can be categorized by their susceptibility to erosion, the natural process by which wind, moving water, ice, and gravitational forces cause soil and particulate materials to be displaced. While erosion of exposed bedrock occurs over an extended time scale, soil erosion can occur more acutely with more immediate consequences. The consistency of the soil is one factor determining its erodibility potential, with dense, compact, clayey soils being less susceptible and looser loamy soils, with varying levels of clay and sand, being more susceptible (**Figure 4**).

A measure of this susceptibility is the K-factor. The K-factor looks at the soil texture and composition as well as the permeability to determine a number between 0.02 (less susceptible) and 0.69 (more susceptible) that demonstrates the erosion potential of a soil.

According to the NRCS, Erosion Hazard for Road/Trail Soils measures the soil loss from unsurfaced roads and trails. The soils in the Township of Teaneck (outside of water and urban land) are rated as low in this category. For the Township's four main soil units, K values are at or beneath 0.32, representing a low risk of erosion.

### Topographic Protection (Wind)

According to the NRCS, the soils of the Township are subject to wind erosion. Wind erosion most often affects soil on bare lands, where sheer force of wind detaches particles protruding from the soil surface.

## Limitations for Use

Other characteristics of soil that determine suitability for development include:

- Its capacity to support foundations without corrosion.
- Limits for septic systems.
- Hydrological characteristics such as tendency towards ponding and flooding.
- Shallow water table or potential for frost heave.

According to the NRCS Soil Survey, differences in soil properties can occur within short distances.[8] Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as foundations for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes soil poorly suited to basements or underground installations. Limitations for use include the following characteristics and the details for soils in Teaneck are included in **Table 4**.

**Depth to restrictive layer** is the vertical distance from the soil surface to the upper boundary of the restrictive layer. The restrictive layer is a nearly continuous layer that significantly impedes the movement of water and air through the soil or otherwise provides an unfavorable root environment. Examples are bedrock, cemented layers, dense

layers, and frozen layers. Shallow soils can limit plant growth. In the Township of Teaneck, the major soil series have a depth to restrictive layer greater than 200 cm.

**Drainage** refers to the relative wetness of the soil under natural conditions as it pertains to wetness due to a water table. Drainage classes refer to the frequency and duration of wet periods under conditions similar to those under which the soil developed. Drainage classes range from excessively drained to very poorly drained.

**Depth to water** table indicates a range of expected depth to a saturated zone in the soil. The soil series rating in the Township is greater than 200 cm in the Boonton and Denville series. It varies from 26 to greater than 200 cm for Udorthents.

**Available water capacity** is the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in centimeters of water per centimeter of soil for each soil layer. The capacity varies depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants and in the design and management of irrigation systems. The known soils in the Township of Teaneck narrowly range from 0.08 to 0.60 cm, with no data available for Urban Land.

**Flooding** is the temporary inundation of an area caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding. Given the well-drained loamy and gravelly soils throughout the Township, none of the major soil series are prone to flooding.

**Potential for frost action** is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well-drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

**Ponding** is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Ponding in Teaneck Township was ranked as “none” for both the Dunellen and Boonton series.

**Risk of corrosion** pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. The corrosion of concrete and steel in

| Table 4. Soil Limitations | | | | | |
|---|---|---|---|---|---|
| | Major Soil Series in Teaneck Township | | | | |
| | *Dunellen Urban Land Complex* | *Boonton Urban Land Complex* | *Urban Land* | *Udorthents* wet substratum, urban land complex | *Udorthents* organic substratum |
| Depth to Restrictive Feature (cm) | >200 | >200 | >200 | 76 | >200 |
| Drainage | Well Drained | Well Drained | N/A | Moderately well drained | Moderately well drained |
| Depth to Water Table (cm) | >200 | >200 | >200 | 76 | >200 |
| Available Water Capacity (cm) | 0.15 | 0.17 | N/A | N/A | |
| Flooding | None | None | None | None | None |
| Frost Action Potential | Moderate | Moderate | N/A | Low | Low |
| Ponding | None | None | None | None | None |
| Risk of Corrosion Steel | High | High | N/A | Low | Low |
| Risk of Corrosion Concrete | High | High | N/A | High | High |
| Septic Absorption | Very Limited | Very Limited | N/A | Very limited to Somewhat limited | Very limited to Somewhat limited |
| *Source: NRCS Soil Survey* | | | | | |

| Table 5. Soil Limitations for Recreational Use | | | | |
|---|---|---|---|---|
| **Major Soil Units in Teaneck** | **Camp Area** | **Picnic Area** | **Playground** | **Paths and Trails** |
| **Dunellen Urban Land Complex** | Somewhat to Very Limited | Somewhat to Very Limited | Very Limited | Somewhat Limited |
| **Boonton Urban Land Complex** | Very Limited | Very Limited | Very Limited | Somewhat Limited |
| **Urban Land** | Not Rated | Not Rated | Not Rated | Not Rated |
| *Udorthents* | Somewhat Limited | Somewhat Limited | Somewhat Limited | Somewhat Limited |
| *Source: NRCS Soil Survey* | | | | |

the Township's soils is rated as high for all soils in the Township except UdrB (low), Urban land (no data) and Water (no data).

**Septic limitations** refer to effectiveness of a soil type to manage a septic tank absorption field. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Within the Township of Teaneck, all soils are classified as "very limited" except for UDoB and UdrB, which are classified as "somewhat limited." The "very limited" classification indicates that the soil has at least one feature that is unfavorable for such use, with the expectation of poor performance and high maintenance.

## Limitations - Recreational Use

The NRCS Soil Survey also provides general recommendations with the capacity of the soil to support recreational use. This includes camping, hiking, picnicking and playgrounds (**Table 5**). In Teaneck, the soils in this category range from limited to somewhat limited (**Figure 5**). For the municipality, the Recreation Department manages the fields and parks to sustain soil health and playing capacity, regardless of the mapped limitation.

## Soil Limitations for Building Site Development

Teaneck has certain soils rated by the NRCS as having no limits on their ability to support dwellings and small commercial buildings. For the purpose of these ratings, dwellings are defined as single-family houses of three stories or less and small commercial buildings are structures that are fewer than three stories high and do not have basements. The ratings for dwellings are based on the soil properties that affect excavation and construction costs.

The properties that affect the load-supporting capacity include depth to a water table, ponding and flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Properties that affect excavation and construction costs are depth to a water table, ponding and flooding, slope, depth to bedrock or cemented pan, hardness of bedrock or cemented pan, and the amount and size of rock fragments. In Teaneck this is shown on **Figure 6**:

- 29% (1,173 acres) of the Township is "very limited," which indicates that the soil has one or more features that are unfavorable for dwellings with basements.
- 28% (1,128 acres) of the Township is not limited, meaning the soil has conditions that is favorable for basement dwellings.
- 27.5% (1,098 acres) is somewhat limited, which indicates that the limitations can be overcome or minimized by planning, design, or installation.

*Figure 5. Soil Limitations -Recreational Use*
*(Source: USDA)*

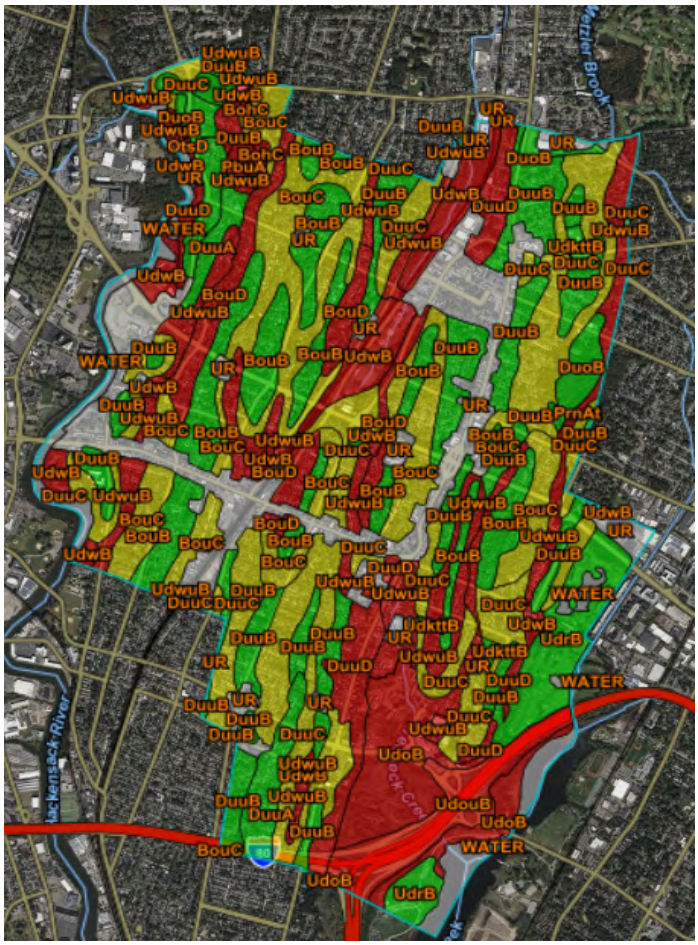




*Figure 6. Soil Limitations for Building Site Development (Source: USDA)*

*Photo: Municipal Building*

# Chapter 3.

# Land Use Land Cover

The NJDEP maps land use and land cover using digital orthophotography (known as Land Use/Land Cover or LU/LC, data).[9] Areas are delineated using color infrared images. Nearly all of the Township is designated by the NJDEP as urban. Per the Anderson Land Use Classification System, upon which the NJDEP categorizes land cover:

*The term urban is characterized by intensive land use where the landscape has been altered by human activities... Urban categories can include residential, commercial and service, industrial, transportation, communication and commercial complexes, mixed urban or built-up, other urban or build-up, and recreational*

**Table 6** presents a breakdown of the four different land use types found within the Township and includes a comparison of the land use/land cover in 1986 and 2020, along with the percent change between the years. **Map 5** documents current land use.

Urban land classifications compose nearly 86% of the Teaneck, indicating a high amount of commercial and residential development. Of the urban land category, 5% (179 acres) is high density or multiple residential dwelling. Single unit, medium-to-low residential density is 66% (2,269 acres) of total urban land (**Figure 7**). Smaller areas of urban land use include utilities and infrastructure, athletic fields, industrial uses, and recreational land.

Over the past 34 years, the town has lost 15% of its forest cover (47 acres), with a corresponding increase in the urban cover. The NJDEP defines the land cover types as follows:

- Agriculture – lands used for the production of food and fiber, and the structures associated with this production
- Barren Land – The sub-categories of barren land that are identified in Teaneck include altered lands and transitional areas.
- Forest– lands covered by woody vegetation other than wetlands.

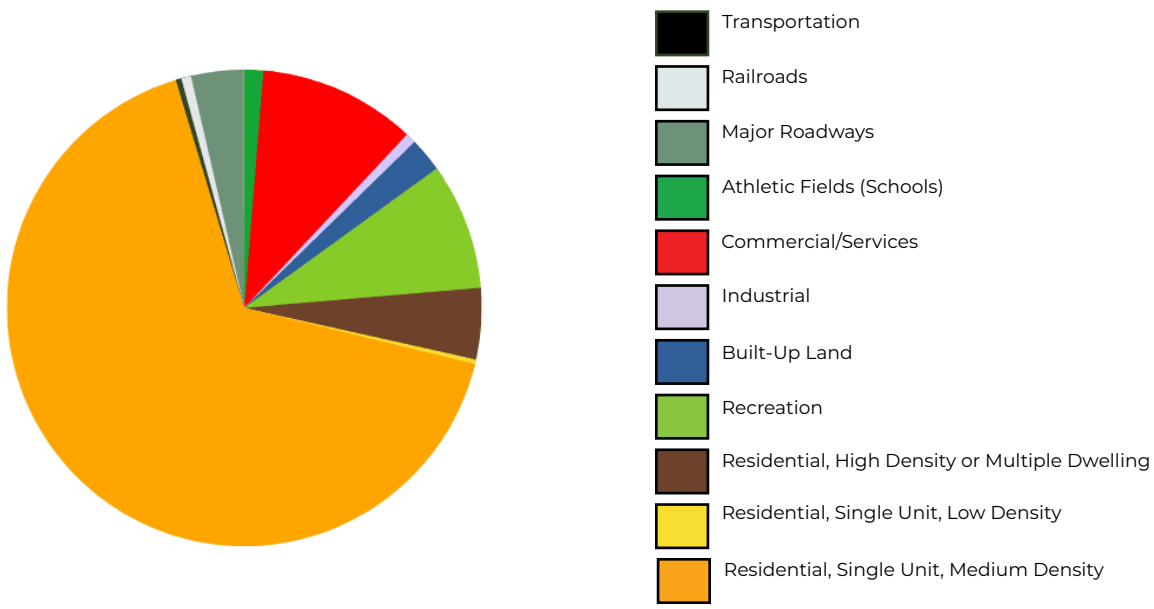
**Table 6. Land Use/Land Cover, 1986 to 2020**

| Type | Acres | | % Change 1986-2020 |
|---|---|---|---|
| | 1986 | 2020 | |
| Agriculture | 2.47 | 3.11 | 26% |
| Barren | 9.61 | 2.33 | -76% |
| Forest | 319.52 | 272.32 | -15% |
| Urban | 3,405.83 | 3,450.06 | 1% |
| Water | 124.16 | 139.90 | 13% |
| Wetlands | 131.46 | 125.29 | 5% |
| Urban | 3,405.83 | 3,450.06 | 1% |
| Total: | 7,398.88 | 7,443.07 | |

*Source: Land Use Land Cover, NJDEP*

- Water – Areas that are periodically water covered.
- Wetlands – Areas that are inundated or saturated by surface or ground waters at a frequency and duration sufficient to support vegetation adapted for life in saturated soil conditions.
- Urban Land – Urban land is characterized by intensive land use where the landscape has been altered by human activities. Urban land categories are shown in **Figure 7.**

*Figure 7. Urban Land Classifications in Teaneck (NJDEP Land Use/ Land Cover, 2020)*



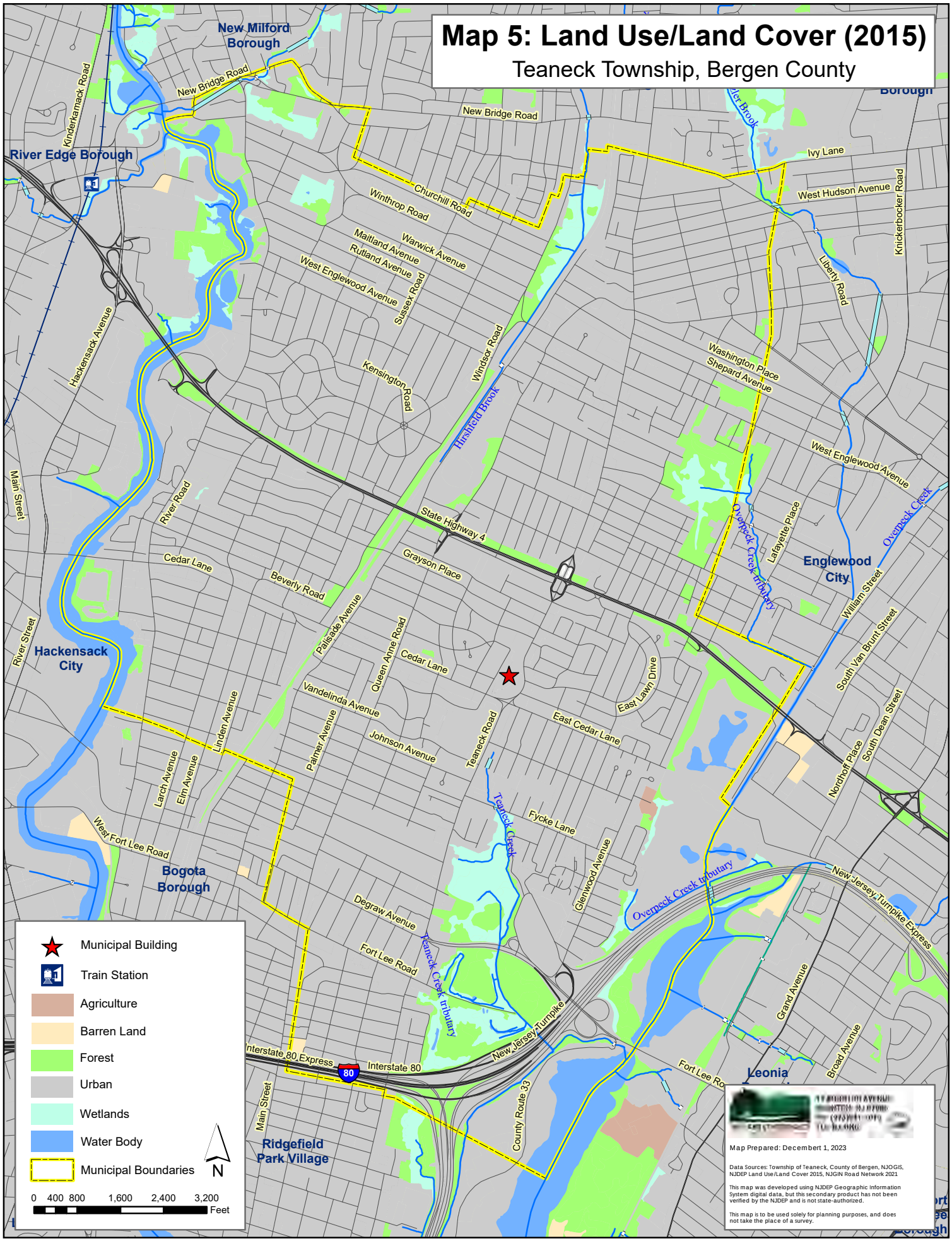

Map 5: Land Use/Land Cover (2015)
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Ridgefield Park Village
Englewood City
Leonia
New Bridge Road
Kinderkamack Road
Churchill Road
Winthrop Road
Warwick Avenue
Maitland Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Kensington Road
Windsor Road
Hackensack Avenue
Main Street
River Road
River Street
Cedar Lane
Beverly Road
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Johnson Avenue
Linden Avenue
Palmer Avenue
Larch Avenue
Elm Avenue
West Fort Lee Road
Degraw Avenue
Fort Lee Road
Teaneck Road
East Cedar Lane
East Lawn Drive
Fycke Lane
Glenwood Avenue
Grayson Place
State Highway 4
Interstate 80 Express
Interstate 80
New Jersey Turnpike
New Jersey Turnpike Express
County Route 33
Hirshfeld Brook
Teaneck Creek
Teaneck Creek tributary
Overpeck Creek
Overpeck Creek tributary
Ivy Lane
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
Grand Avenue
Broad Avenue
Municipal Building
Train Station
Agriculture
Barren Land
Forest
Urban
Wetlands
Water Body
Municipal Boundaries
N
0 400 800 1,600 2,400 3,200
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, County of Bergen, NJOGIS, NJDEP Land Use/Land Cover 2015, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.


*Photo: Teaneck Community Garden*

# Chapter 4.

# Vegetation

## Forest Types

Forested areas represent 7% of the Township's land cover (267 acres). These wooded areas are commonly found within or near municipal parks, riparian corridors, residential backyards, and undeveloped parcels.

Of the 267 acres of deciduous forest, 152 acres have >50% crown closure, and 97 acres have 10-50% crown closure. Only 18 acres are brush or shrubland (**Table 7**).

Forested lands in the Township of Teaneck include the following classifications :

**Deciduous** – Forested land that contains deciduous tree species, which lose their leaves at the end of the growing season. These trees remain leafless throughout the

**Table 7. Forested Land Classifications**

| Classification | Acres | % of Category |
|---|---|---|
| Deciduous Forest (>50% Crown Closure) | 151.58 | 56.83% |
| Deciduous Forest (10-50% Crown Closure) | 96.74 | 36.27% |
| Deciduous Brush/Shrubland | 18.39 | 6.90% |
| Total: | 266.71 | 100% |

*Source: Land Use Land Cover, NJDEP*

winter and sprout new leaves the following spring. The average height of the stand is at least 20 feet. A forest stand must have at least 75% canopy coverage from deciduous tree species to be placed in this category. In the Township of Teaneck, there are 267 acres of deciduous forest.

*Deciduous Forest, >50% Crown Closure*: This category contains deciduous stands with crown closure greater than 50%. Crown closure is the percentage of forest area occupied by the vertical projections of tree crowns. Crown closure percentages provide a reasonable estimate of stand density. Most of the deciduous forests in New Jersey are in this category. The Township has 152 acres of forest in this category.

*Deciduous Forest, 10-50% Crown Closure*: This category contains deciduous forest stands that have crown closure greater than 10% but less than 50%, which includes 97 acres in the Township.

*Deciduous Brush/Shrubland*: This category contains forested areas with deciduous species less than 20 feet in height. An area must have greater than 25% brush cover to be placed in this category. This category can also contain inactive agricultural areas that have grown over with brush. There are 18 acres of deciduous brush/shrubland within the Township.

The Native Plant Society of New Jersey **website** maintains a list of native plants.

## Tree Protection Ordinance

The Township's code, Chapter 37: Trees and Plants, 37-1 to 37-26, covers tree removal and planting.[10] Initially adopted in 1951, this section regulates the removal of trees, protects local infrastructure, and provides initiatives for replenishing shade trees. The code:

- Protects shade trees in the Township.
- Prohibits unauthorized tree cutting and pruning.
- Establishes regulations for tree planting on public land.
- Forbids topping of public trees except in certain cases.
- Sets regulations for public utility operations.
- Authorizes the Council to designate landmark trees.

## Trees in Teaneck

The Shade Tree Commission has identified the most common trees found in Teaneck (**Table 7**). In addition to what is in the table, various varieties of hollies, magnolias, pines, balsam, spruce, dogwood, flowering cherries, crabapple, birches, cottonwood, and serviceberries are also seen throughout the Township.[11] Recently, the Commission has observed an increase in invasive plant species, including the Porcelain Berry (*Ampelopsis brevipedunculata*) threatening the tree canopy.[12]

In October 2023, a team of plant scientists and volunteers documented plants growing in the

Teaneck Creek Conservancy's (TCC) new restoration areas. A survey of 20 plots found 56 plant species growing on the 20 acres of land (**Table 8**).[13]

Trees in Teaneck, as seen throughout the state and region, have been affected by two invasive insects, the emerald ash borer and the spotted lanternfly.[14, 15] The Emerald Ash Borer afflicts ash trees, burrowing beneath the bark, disrupting its absorption of water, and eventually causing its death. The spotted lanternfly nymphs and adults suck sap from the stems and leaves of trees, interrupting weakening the tree and killing it. The NJ Department of Agriculture (NJDA) promotes an integrated pest management approach. Aerial spray treatments on residential and recreational areas using the selective, non-chemical insecticide *Bacillus thuringiensis* is recommended where natural controls struggle to keep the pest population in check.

**Table 8. Local Tree Inventory**

| Common Name | Scientific Name |
|---|---|
| Dawn Redwood | *Metasequoias glyptostroboides* |
| Eastern White Pines | *Pinus strobus* |
| Yellowwood | *Cladrastis kentukea* |
| Callery Pears | *Pyrus calleryana* |
| Japanese Lilacs | *Syringa reticulata* |
| Red Maple | *Acer rubrum* |
| Norway Maple | *Acer platanoides* |
| Silver Maple | *Acer saccharinum* |
| Walnut | *Juglans nigra* |
| Hazelnut | *Corylus americana* |
| Gingko | *Ginkgo biloba* |
| Tree of Heaven | *Ailanthus altissima* |
| Sweet Gum | *Liquidambar styraciflua* |
| Tulip Tree | *Liriodendron tulipifera* |
| Sycamore | *Platanus occidentalis* |
| European Beech | *Fagus sylvatica* |
| American Beech | *Fagus grandifolia* |
| Black Tupelo | *Nyssa sylvatica* |
| Golden Raintree | *Koelreuteria paniculata* |
| Hawthorn | *Crataegus monogyna* |
| Redbud | *Cercis canadensis.* |
| Red Oak | *Quercus rubra* |
| White Oak | *Quercus alba* |

*Source: Teaneck Shade Tree Advisory Board*

## Urban and Community Forestry Program

The Urban and Community Forestry (UCF) program is a part of the federal government's Justice40 Initiative.[16] This comprehensive climate legislation was passed under the 2022 Inflation Reduction Act to help disadvantaged communities with low tree canopy. Operated by the USDA Forest Service, the UCF Program provides technical, financial, and educational support for nature-based solutions to create tree cover in urban areas. Strategies include cooling urban areas by planting more trees, promoting forest health, and creating green job opportunities. The Forest Service is allocating $250 million in the form of competitive grants, cooperative agreements, and technical assistance. For disadvantaged communities, the federal government is waiving the match requirement.

More details can be found at this link: https://www.fs.usda.gov/sites/default/files/UCF-IRA-NOFO-04122023.pdf.

| Table 9. Plants Recorded at Teaneck Creek Conservancy | |
|---|---|
| **Common Name** | **Scientific Name** |
| Alsike clover | *Alisma subcordatum* |
| American water plantain | *Pinus strobus* |
| Beggar tick | *Bidens frondosa* |
| Big bluestem | *Andropogon gerardi* |
| Birdsfoot trefoil | *Lotus corniculatus* |
| Black medic | *Medicago lupulina* |
| Black-eyed Susan | *Rudbeckia hirta* |
| Blue vervain | *Verbena hastata* |
| Blunt spikerush | *Eleocharis obtusa* |
| Broom sedge | *Andropogon virginicus* |
| Brownish beaksedge | *Rhynchospora capitellata* |
| Cattail species* | *Typha sp.* |
| Clearweed | *Pilea pumila* |
| Clover species | *Trifolium sp.* |
| Common mugwort | *Artemisia vulgaris* |
| Common ragweed | *Ambrosia artemisiifolia* |
| Common reed | *Phragmites australis* |
| Common three square | *Schoenoplectus pungens* |
| Corn speedwell | *Veronica arvensis* |
| Creeping yellowcress | *Rorippa sylvestris* |
| Crown vetch | *Securigera varia* |
| Curly dock | *Rumex crispus* |
| Cursed crowfoot | *Ranunculus sceleratus* |
| Deer-tongue grass | *Dichanthelium clandestinum* |
| Eastern cottonwood | *Populus deltoides* |
| Eastern red cedar | *Juniperus virginiana* |
| Goldenrod species | *Solidago sp.* |
| Hardstem bullrush | *Scirpus acutus* |
| Fireweed | *Chamaenerion angustifolium* |
| Hop sedge | *Carex lupulina* |
| Hop trefoil | *Trifolium campestre* |
| Horseweed | *Conyza canadensis* |
| Japanese stiltgrass | *Microstegium vimineum* |
| Joe-pye-weed | *Eutrochium purpureum* |
| Northern red oak | *Quercus rubra* |
| Path rush | *Juncus tenuis* |
| Perennial ryegrass | *Lolium perenne* |
| Pickerelweed | *Pontederia cordata* |
| Plaintain species | *Plantago sp.* |
| Purple loosestrife | *Lythrum salicaria* |
| Queen Ann's Lace | *Daucus carota* |
| Rabbit-foot clover | *Trifolium arvense* |
| Red clover | *Trifolium pratense* |
| Red maple | *Acer rubrum* |
| Rush species | *Juncus sp.* |
| Sedge species | *Carex sp.* |
| Skunk cabbage | *Symplocarpus foetidus* |
| Smartweed species | *Persicaria sp.* |
| Soft rush | *Juncus effusus* |
| Square stemmed monkey flower | *Mimulus ringens* |
| Swamp rose mallow | *Hibiscus moscheutos* |
| Switchgrass | *Panicum virgatum* |
| Tickseed species | *Coreopsis sp.* |
| Water purslane | *Lythrum portula* |
| White clover | *Trifolium repens* |
| Yellowseed false pimpernell | *Lindernia dubia* |

*Source: Teaneck Creek Conservancy: June 2023 Restoration Area Plot Survey*

*A plant name that includes “species” indicates that they could only determine the genus of the plant, but it did not have enough distinguishing characteristics to determine the particular species.

## Carbon Storage

Forests remove or sequester substantial amounts of carbon from the atmosphere and are known as carbon sinks. Forests in the United States are currently estimated to offset about 15% of annual U.S. carbon emissions. This is in addition to any local climate benefits they may provide (as discussed in **Chapter 9**). However, the impact of forest carbon sequestration is dependent on the fate of a forest — when wood is harvested and burned, for example, any stored carbon is returned to the atmosphere.

The Nature Conservancy has created detailed mapping of estimated carbon sinks (the amount of carbon currently stored in forests) as of 2010 and projected sequestration between 2010 and 2050 under a no-disturbance scenario.[17] Actual carbon sequestered may be higher or lower depending on management practices or the success of forest preservation. Areas of stored carbon in Teaneck correspond to the deciduous forest cover (**Figure 8**).

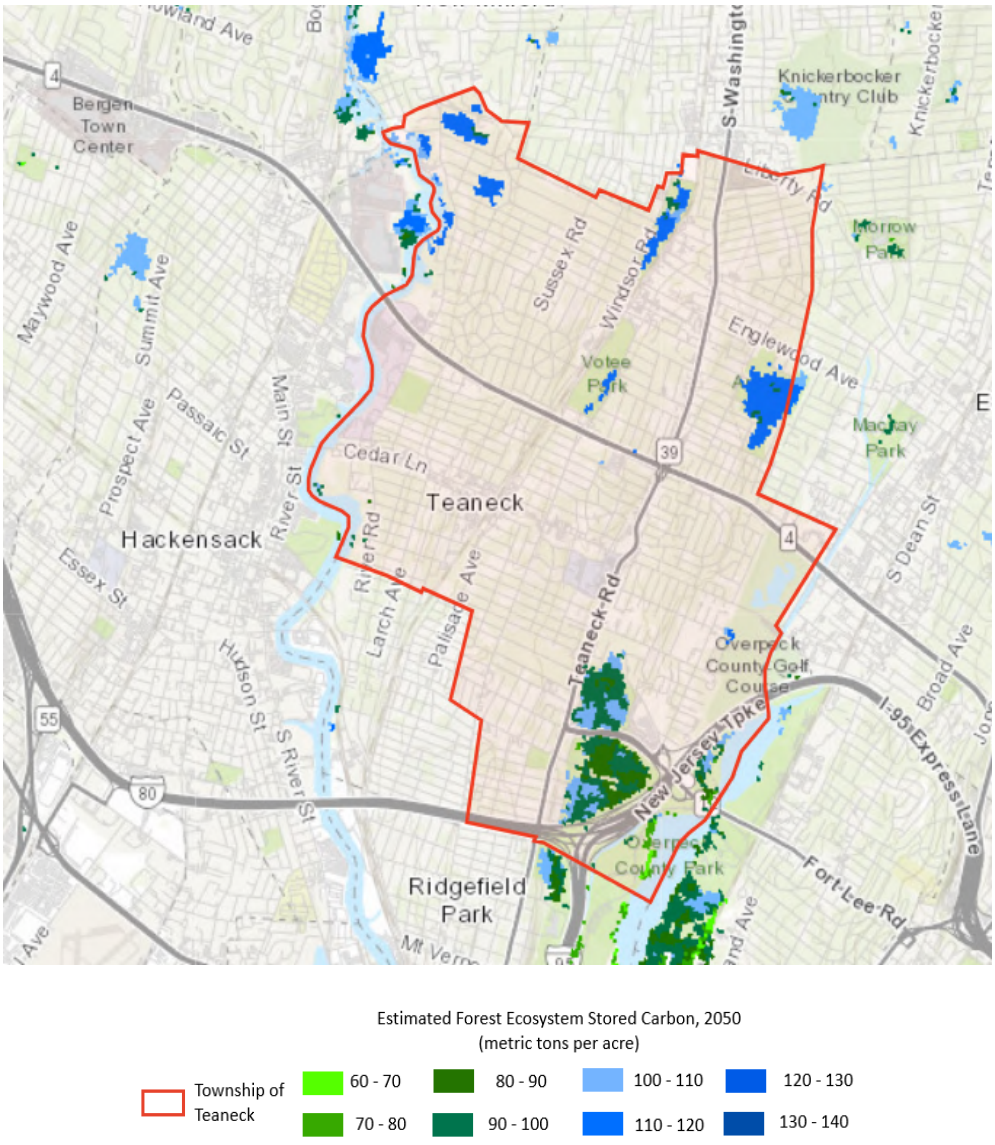



*Figure 8. Forest Ecosystem Projected Stored Carbon, Teaneck 2050 (The Nature Conservancy, Resilient Land Mapping Tool)*

*Photo: Teaneck Creek*

# Chapter 5.

# Wildlife

## Threatened & Endangered Species and Critical Habitat

The NJDEP Landscape Project 3.3 ranks patches of habitat using a numeric system (0 through 5) for the purpose of identifying habitat which may be suitable for threatened and endangered species.[18] Habitat identified as Rank 3 through 5 are considered environmentally significant by the NJDEP:

- Rank 5: Species-specific patches containing one or more occurrences of wildlife listed as endangered and threatened pursuant to the Federal Endangered Species Act of 1973.
- Rank 4: Species-specific patches with one or more occurrences of state endangered species.
- Rank 3: Species-specific patches containing one or more occurrences of state threatened species.
- Rank 2: Species-specific patches containing one or more occurrences of species considered to be species of special concern.
- Rank 1: Species-specific patches that meet habitat-specific suitability requirements such as minimum size criteria for endangered, threatened, or priority wildlife species, but that do not intersect with any confirmed occurrences of such species.
- Rank 0: Patches that do not contain any species occurrences and do not meet any habitat-specific suitability requirements.

There are land patches in the Township that contain endangered species or their habitat, and are ranked as either 1 or 2. These areas are located primarily along riparian corridors.

Rank 2, or habitat suitable for species of special concern, is concentrated along the Township's eastern side from Teaneck Creek in the south to Overpeck Creek tributary and Hirshfield Brook in the north. Other areas where these species are found are Tokoloka Park, Clarence W. Brett Park and Andreas Park.

Rank 3, or state threatened species, is primarily seen in two spots, one spot is to the northeast near Liberty Road at Metzler Brook and another one is northwest near New Bridge Road in French Brook above Matthew Feldman Nature Preserve.

Rank 4, or state endangered species habitat, can be found along the Hackensack River running along the west side of the Township's border. State endangered species habitats are also found along the Overpeck Creek which is to the southeast of the Township.

Rank 5, or federally listed endangered species habitat, is not present in Teaneck.

The NJDEP notes that several rare species and their habitat have been found within the Township of Teaneck (**Table 10** and **Map 6**)[19]:

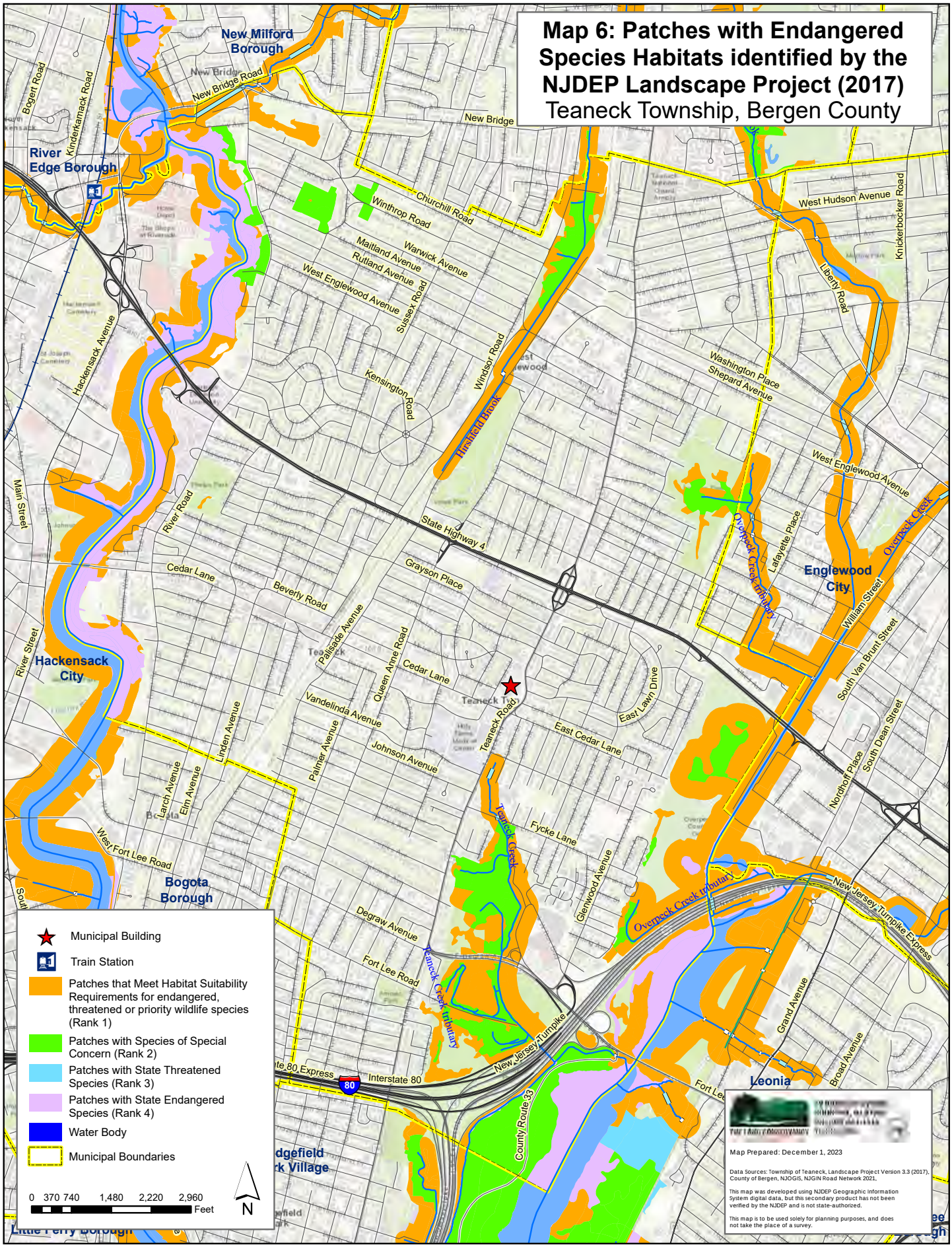
- Rank 2: The majority (71%) of these species and their habitat fall under Rank 2 and includes the brown thrasher, glossy ibis, little blue heron, snowy egret and wood thrush.
- Rank 3 (5%) containing the yellow-crowned night heron (**Figure 9**).
- Rank 4 species (bald eagle): 25% of species-specific patches.
- None of the Township maintains Rank 5 with species-specific patches containing one or more occurrences of federally listed threatened or endangered species.

**Table 10. Rare Wildlife Species in Teaneck**

| Species Rank | Common Name | Scientific Name | Habitat Patch (Acres) |
|---|---|---|---|
| Rank 2 (Species of Special Concern) | Brown Thrasher | *Toxostoma rufum* | 49.69 |
| | Glossy Ibis | *Plegadis falcinellus* | 114.32 |
| | Little Blue Heron | *Egretta caerulea* | 128.11 |
| | Snowy Egret | *Egretta thula* | 187.04 |
| | Wood Thrush | *Hylocichla mustelina* | 27.31 |
| Rank 3 (State Threatened) | Yellow-crowned Night-heron | *Nyctanassa violacea* | 33.22 |
| Rank 4 (State Endangered) | Bald Eagle | *Haliaeetus leucocephalus* | 144.17 |
| | Bald Eagle nest | | 31.18 |
| | | **Total** | **715.04** |

*Source: NJDEP; Natural Heritage Database and Landscape Project*

Mc


Map 6: Patches with Endangered Species Habitats identified by the NJDEP Landscape Project (2017)
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Englewood City
Leonia
Municipal Building
Train Station
Patches that Meet Habitat Suitability Requirements for endangered, threatened or priority wildlife species (Rank 1)
Patches with Species of Special Concern (Rank 2)
Patches with State Threatened Species (Rank 3)
Patches with State Endangered Species (Rank 4)
Water Body
Municipal Boundaries
0 370 740 1,480 2,220 2,960 Feet
N
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, Landscape Project Version 3.3 (2017), County of Bergen, NJOGIS, NJGIN Road Network 2021,
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.

## Aquatic Species

Recently, the Teaneck Creek Conservancy conducted an aquatic survey which found the following species[20]:

- American bullfrogs
- Green frog
- Dragonfly larvae
- Pouch/lunged Snail
- Eastern painted turtles
- Planaria (flatworm)
- Sowbugs
- Fly midges
- Aquatic worms
- Soldier fly larvae
- Leeches
- Oriental weatherfish
- Water skimmer bugs
- Mummichog (small killifish)

## Vernal Habitat

Vernal habitats, also known as vernal pools, are natural wetland depressions that fill with water during the rainy season in the fall and remain ponded until the warmer weather in early summer causes them to dry out. Vernal pools provide habitat for a wide variety of amphibians, reptiles, invertebrates, and many species of wetland vegetation, but cannot support a fish population because of their brief dry period. Certain wildlife species, referred to as obligate vernal pool breeders, have evolved with reliance upon these fish-free breeding sites and cannot successfully produce elsewhere. Other wildlife species, referred to as facultative vernal pool species, also take advantage of vernal habitats for breeding and/or feeding purposes, but are not limited to performing these functions solely in vernal pools.

Wetland areas featuring a confined basin depression exhibiting the hydrologic and biological criteria established above are said to meet certification requirements and may be referred to as certified vernal habitats.

The NJDEP defines a vernal habitat in the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A-1.4) as a wetland that meets all of the following criteria:

- The wetland must consist of or contain a confined basin or depression without a permanently flowing outlet.
- The pool must feature evidence of breeding by at least one obligate or two facultative vernal habitat species. (these species are identified in N.J.A.C. 7:7A)
- The area must maintain ponded water for at least two continuous months between March and September of a normal rainfall year.
- The area must remain free of fish populations throughout the year, or it must dry up at some time during a normal rainfall year.

The NJDEP's Landscape Project divides its mapping of vernal habitats into two categories:

*Potential vernal habitat areas* are areas identified as possibly containing a vernal pool that meets the criteria of a vernal habitat pursuant to N.J.A.C. 7:7A-1.4. These sites include sites that have been field inspected and found to meet the physical characteristics of a vernal habitat but for which biological criteria have not yet been measured, as well as sites that have not been checked by NJDEP staff.

*Vernal habitat areas* contain pools that have been field-verified by the NJDEP and have been determined to meet both physical and biological characteristics of a vernal habitat in accordance with N.J.A.C. 7:7A-1.4. The Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A) protect vernal habitats as wetland areas requiring a 50-foot buffer, or a 150-foot buffer if the pool supports a State Threatened or Endangered Species.

The NJDEP maps both certified vernal habitat areas and potential vernal habitat areas. **Map 7** shows 300-meter radius circles around the estimated center of Teaneck's one potential vernal habitat. The 300-meter buffer is used to account for the varying sizes of individual pools, the likely presence of adjacent wetland areas and – significantly – the adjacent dispersal habitats typically utilized by many resident amphibian species.

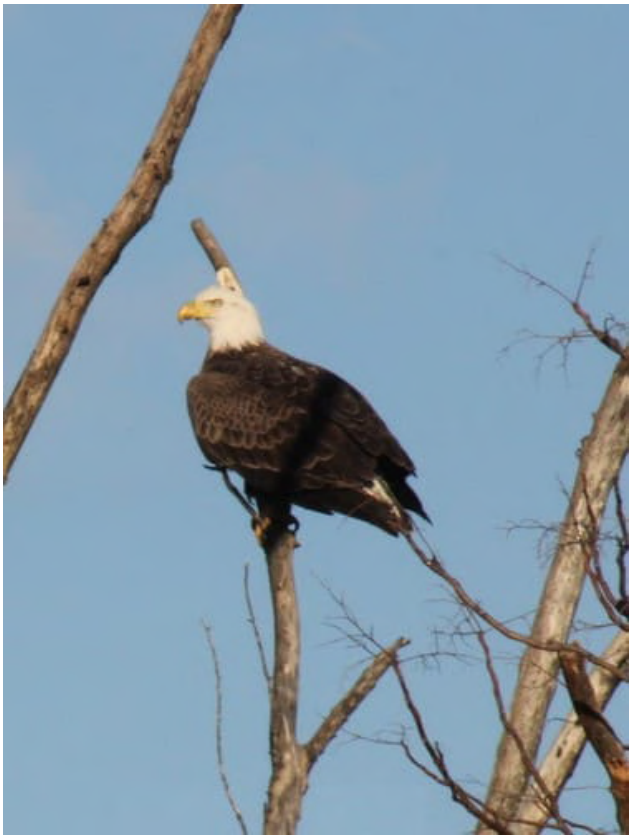


**Figure 9.** *Threatened & Endangered Species, Yellow-Crowned Night Heron (top, National Audubon Society) and Bald Eagle (bottom, Mark Oppenheim)*

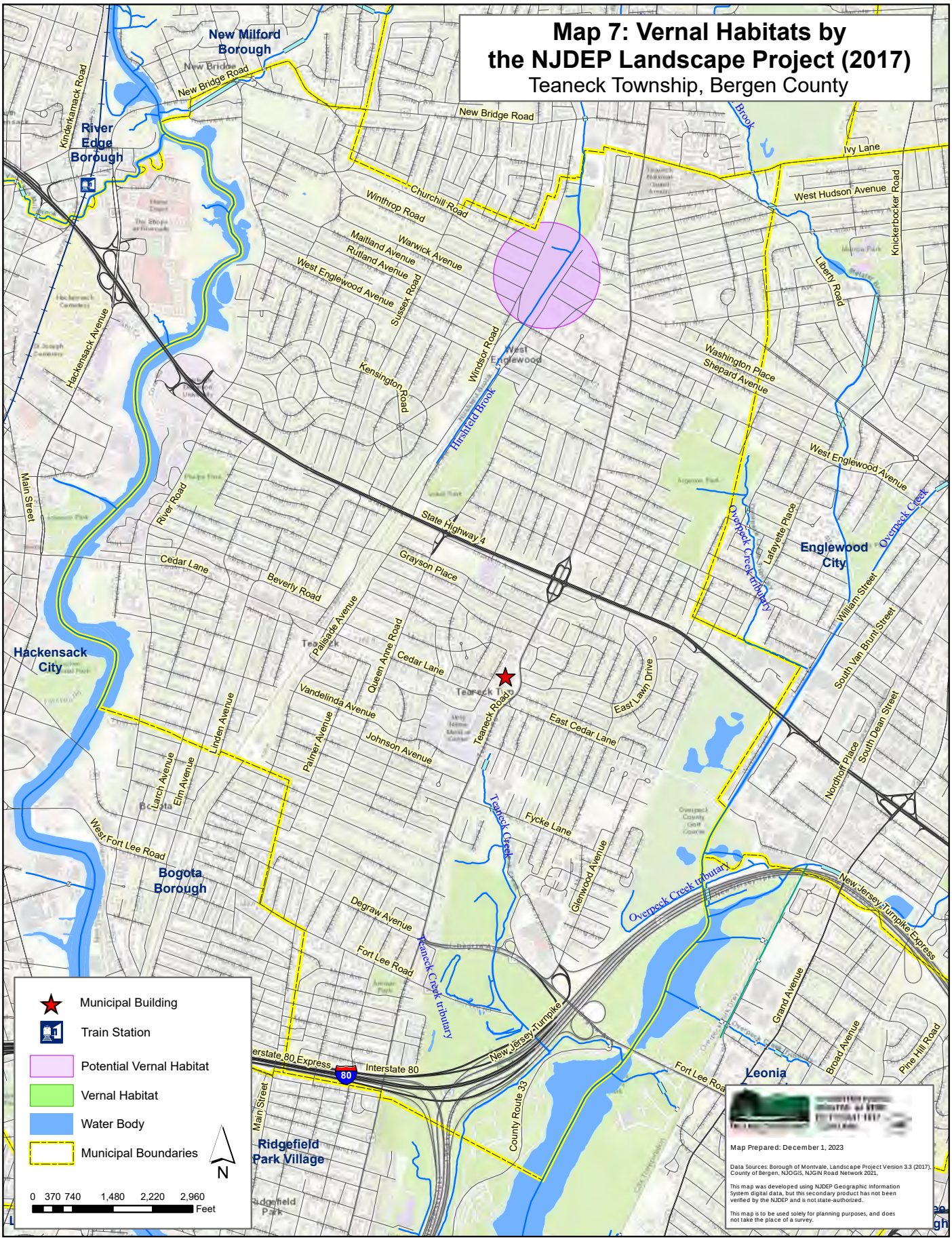

Map 7: Vernal Habitats by the NJDEP Landscape Project (2017)
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Ridgefield Park Village
Englewood City
Leonia
New Bridge Road
Kinderkamack Road
Churchill Road
Winthrop Road
Warwick Avenue
Maitland Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Windsor Road
Kensington Road
Hackensack Avenue
Main Street
River Road
Cedar Lane
Beverly Road
Grayson Place
State Highway 4
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Johnson Avenue
Linden Avenue
Palmer Avenue
Larch Avenue
Elm Avenue
West Fort Lee Road
Degraw Avenue
Fort Lee Road
Interstate 80
New Jersey Turnpike
Interstate 80 Express
County Route 33
Teaneck Creek
Teaneck Creek tributary
Hirshfield Brook
Overpeck Creek
Overpeck Creek tributary
Ivy Lane
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
East Lawn Drive
East Cedar Lane
Fycke Lane
Glenwood Avenue
New Jersey Turnpike Express
Grand Avenue
Broad Avenue
Pine Hill Road
Municipal Building
Train Station
Potential Vernal Habitat
Vernal Habitat
Water Body
Municipal Boundaries
N
0 370 740 1,480 2,220 2,960
Feet
Map Prepared: December 1, 2023
Data Sources: Borough of Montvale, Landscape Project Version 3.3 (2017), County of Bergen, NJOGIS, NJGIN Road Network 2021,
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
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*Photo: Hackensack River*

# Chapter 6.

# Hydrology

## Watersheds

A watershed is a topographic area within which surface water runoff drains into a specific point on a stream or to a water body, such as a lake. A watershed-based approach to natural resource management is considered by state and national agencies to be the most appropriate unit for managing complex environmental problems.[21] The United States Geological Survey (USGS) has mapped and identified watersheds using a hierarchical numbering system.

**Table 11. HUC14 Watersheds**

| WMA | WMA Name | Watershed Name | Sub-Watersheds Name | Acres | Percent |
|---|---|---|---|---|---|
| 05 | Hackensack, Hudson, and Pascack | Hackensack River (below/including Hirshfeld Brook) | Hackensack River (Fort Lee Road to Oradell gage) | 1,166 | 29% |
| 05 | Hackensack, Hudson, and Pascack | Hackensack River (below/including Hirshfeld Brook) | Hirshfeld Brook | 719 | 53% |
| 05 | Hackensack, Hudson, and Pascack | Hackensack River (below/including Hirshfeld Brook) | Overpeck Creek | 2,109 | 18% |
| | | | **Total** | **3,993** | **100%** |

*Source: NJDEP HUC14 Watershed Data*

This system identifies watersheds by a hydrological unit code (HUC) that includes up to 14 digits for the smallest watersheds. The HUC14 watersheds for Teaneck are identified on **Map 8** and **Table 11**. The NJDEP has divided the state into Watershed Management Areas (WMAs). Teaneck is located in WMA 5, the Hackensack River, Pascack Creek and Hudson River watersheds.

## Surface Water Quality

Surface water is water that collects on the ground or in a stream, river, lake, wetland, or ocean. The surface water bodies in Teaneck are listed in **Table 12** and shown on **Map 9**.

**Table 12. Surface Water**

| Stream | Miles | Percent |
|---|---|---|
| Teaneck Creek | 1.23 | 12% |
| Teaneck Creek UNT | 1.39 | 14% |
| Hirshfeld Brook | 1.25 | 12% |
| Hirshfeld Brook UNT | 0.12 | 1% |
| Overpeck Creek | 1.51 | 15% |
| Overpeck Creek UNT | 1.63 | 16% |
| French Brook | 0.31 | 3% |
| Metzler Brook | 0.16 | 2% |
| Hackensack River | 2.64 | 26% |
| **Total:** | **10.24** | **100%** |

*Source: NJDEP Surface Water Quality Data*

*(UNT: Unnamed Tributary)*

New Jersey's Surface Quality Standards (SWQS), N.J.A.C. 7:9, classify water based on the type of waterbody and designated use of the waterbody.

Freshwaters are classified as:

- FW1: not subject to any man-made wastewater discharges. FW1 waters are non-degradation waters set aside because of their ecological significance.

- FW2: all other freshwaters. FW2 waters are further classified based on their ability to support trout:
  - FW2-TP: Trout Production
  - FW2-TM: Trout Maintenance
  - FW2-NT: Non-trout

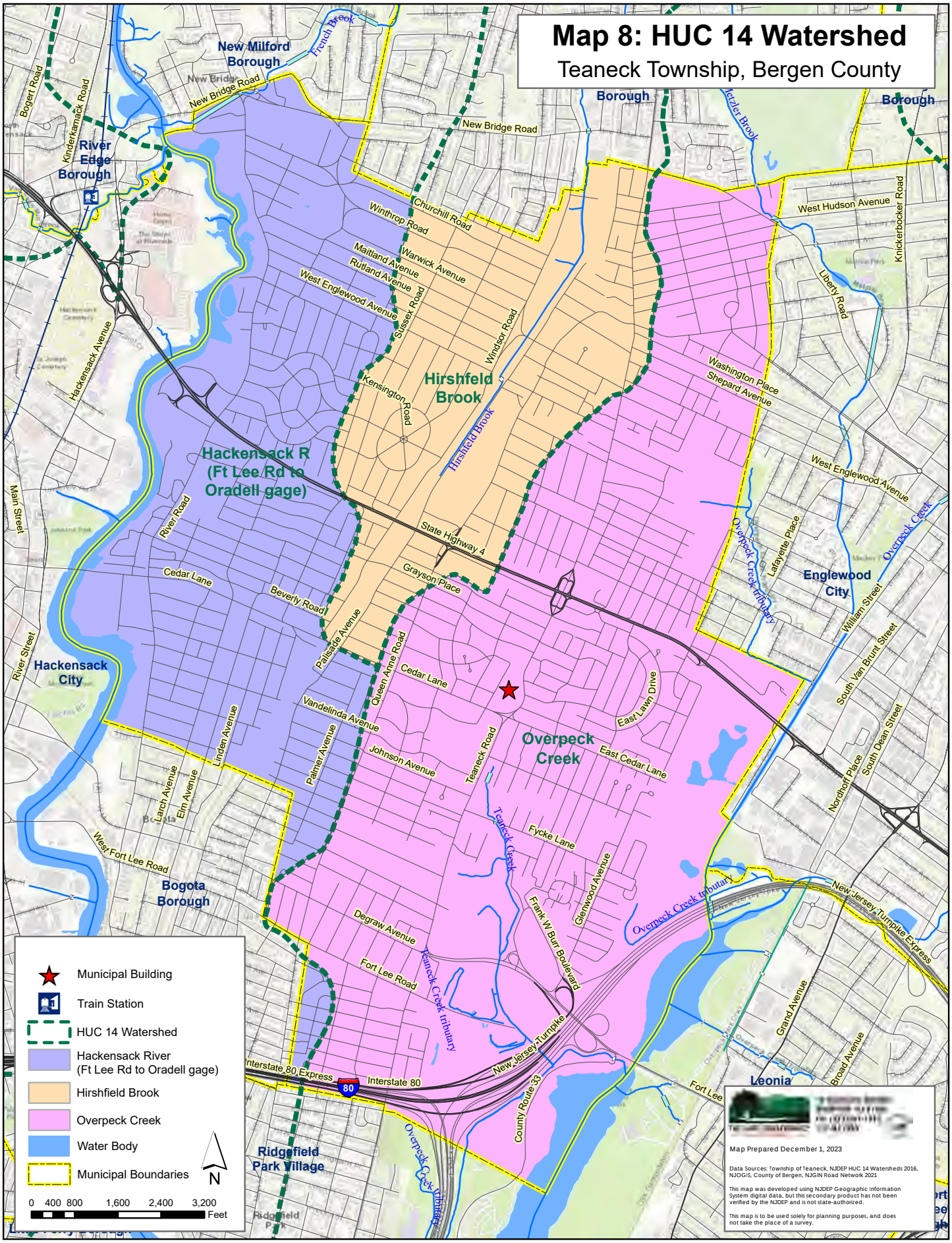
The presence of trout in a stream means that the waters are relatively free of chemicals or biological contaminants:

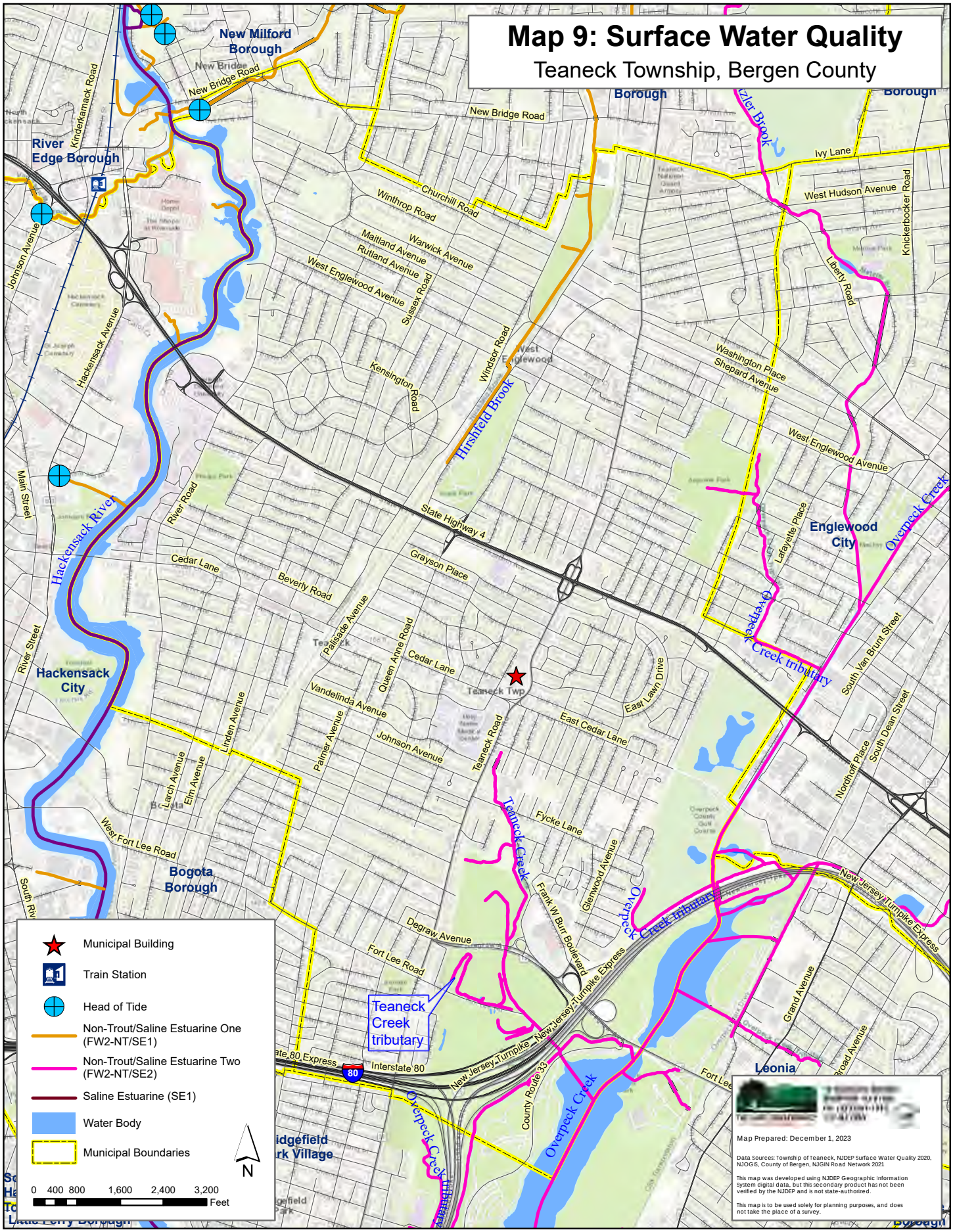
- TP: Designated for use by trout spawning or nursery purposes during their first summer.
- TM: Support trout throughout the year.
- NT: Do not support trout, either because of their physical nature or due to biological or chemical characteristics (SWQS, N.J.A.C.7:9B).

In addition, saline waters (such as the waters in Teaneck) are classified as:

- SE: Saline Estuary
- SC: Saline Coastal

The Township's surface waters are classified as either FW2 and Non-Trout (FW2-NT) or Saline Estuarine (SE1 or SE2). The SE waters are further classified based on their ability to support recreation, shellfish harvesting, and warm water fish species. FW2-NT/SE1 indicates that the water changes from freshwater to saline due to tidal influences.


Map 8: HUC 14 Watershed
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Ridgefield Park Village
Englewood City
Leonia
Borough
Hirshfeld Brook
Hackensack R (Ft Lee Rd to Oradell gage)
Overpeck Creek
New Bridge Road
Winthrop Road
Churchill Road
Maitland Avenue
Warwick Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Windsor Road
Kensington Road
Hackensack Avenue
Main Street
River Road
Cedar Lane
Beverly Road
State Highway 4
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Johnson Avenue
Palmer Avenue
Linden Avenue
Larch Avenue
Elm Avenue
West Fort Lee Road
River Street
Teaneck Road
East Cedar Lane
East Lawn Drive
Fycke Lane
Teaneck Creek
Teaneck Creek tributary
Degraw Avenue
Fort Lee Road
Frank W Burr Boulevard
Glenwood Avenue
Overpeck Creek tributary
New Jersey Turnpike
New Jersey Turnpike Express
Interstate 80
Interstate 80 Express
County Route 33
Grand Avenue
Broad Avenue
Fort Lee
Washington Place
Shepard Avenue
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
Overpeck Creek
Knickerbocker Road
West Hudson Avenue
Liberty Road
Hirshfeld Brook
Metzler Brook
French Brook
Bogert Road
Kinderkamack Road
Municipal Building
Train Station
HUC 14 Watershed
Hackensack River (Ft Lee Rd to Oradell gage)
Hirshfeld Brook
Overpeck Creek
Water Body
Municipal Boundaries
N
0 400 800 1,600 2,400 3,200
Feet
Map Prepared December 1, 2023
Data Sources: Township of Teaneck, NJDEP HUC 14 Watersheds 2016, NJOGIS, County of Bergen, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.


Map 9: Surface Water Quality
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Englewood City
Leonia
Teaneck Twp
New Bridge Road
Kinderkamack Road
Johnson Avenue
Hackensack Avenue
Main Street
River Road
River Street
Cedar Lane
Beverly Road
Grayson Place
State Highway 4
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Linden Avenue
Palmer Avenue
Larch Avenue
Elm Avenue
West Fort Lee Road
South Rv
Churchill Road
Winthrop Road
Maitland Avenue
Warwick Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Kensington Road
Windsor Road
Hirshfeld Brook
Ivy Lane
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
West Englewood Avenue
Lafayette Place
Overpeck Creek
Overpeck Creek tributary
South Van Brunt Street
South Dean Street
Nordhoff Place
East Lawn Drive
East Cedar Lane
Teaneck Road
Johnson Avenue
Fycke Lane
Teaneck Creek
Teaneck Creek tributary
Frank W Burr Boulevard
Glenwood Avenue
Degraw Avenue
Fort Lee Road
New Jersey Turpike Express
Interstate 80
80
County Route 33
Grand Avenue
Overpeck Creek tributary
Municipal Building
Train Station
Head of Tide
Non-Trout/Saline Estuarine One (FW2-NT/SE1)
Non-Trout/Saline Estuarine Two (FW2-NT/SE2)
Saline Estuarine (SE1)
Water Body
Municipal Boundaries
N
0 400 800 1,600 2,400 3,200
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, NJDEP Surface Water Quality 2020, NJOGIS, County of Bergen, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.

Over time, the primary streams divide into smaller streams and continue their flow beneath the surface. This phenomenon can be observed in Teaneck, where Teaneck Creek emerges on the premises of Holy Name Hospital slightly north of Vadelinda Avenue. It then transverses Teaneck Road in a culvert before heading east towards Thomas Jefferson Middle School (**Figure 10**).[23]

**Figure 10.** *Teaneck Creek emerging on the grounds of Holy Name Hospital (Google Maps)*

Surface water quality in Teaneck Township is affected by point source and non-point sources of pollution, as well as erosion and sedimentation.[24] Point source means any discernible, confined, and discrete fissure or container from which pollutants are or may be discharged. This includes discharges from sewage treatment plants and factories, stormwater runoff, illegal dumping, and malfunctioning underground storage tanks and septic tanks.

In contrast to point source pollution, non-point source pollution comes from many different sources. As rainfall or snowmelt moves over and through the ground, it picks up and carries natural and human-made pollutants (such as fertilizers, herbicides, and motor oil) and deposits them into surface and groundwater. The effects of pollutants on specific waterways can vary, but eventually all are manifested into negative outcomes for drinking water supplies, recreation, fisheries, and wildlife.

One of these effects is eutrophication, which, in freshwater systems, is the addition of substances, either man-made or natural, to a water body, affecting the primary productivity of that body of water. Nitrates and phosphates promote excessive algae growth. These blooms can have negative effects on the ecosystem. This can include clouding of the water which limits sunlight penetration and stops the growth of plants deeper in the water. Additionally, the excess nutrient availability (eutrophication) from the decomposition of dead phytoplankton can cause depleted levels of dissolved oxygen (anoxia). This can be seen in algal blooms which can choke the water body of oxygen and degrade conditions for wildlife and recreation.

Water quality can also be negatively impacted by sedimentation, which is the transportation and deposition of eroded materials. A primary cause of sedimentation is development near streams and on steep slopes that reduce vegetative cover and result in exposed soil. The vegetative cover can typically absorb the impact of raindrops, but when it is removed, the exposed soil easily becomes eroded. The eroded soil can then be transported to surface waters, where it could contaminate and increase the turbidity of the water, effectively blocking sunlight to plant species and negatively affecting the health of the aquatic ecosystem. Teaneck's waters are exposed to this as well.

## Aquifer Recharge

An aquifer is an underground formation of permeable rock or unconsolidated materials that can yield significant quantities of water to wells or springs. The rate of recharge is not the same for all aquifers, and that must be considered when pumping water from a well. Pumping too much water too fast draws down the water in the aquifer and eventually causes a well to yield less water or run dry.

Aquifers in New Jersey are classified as either bedrock or surficial. Bedrock aquifers consist of rock formations, while surficial aquifers are formed from unconsolidated materials, such as sand or gravel or glacial sediment. Bedrock aquifers in the Piedmont contain water in fractures within the rock while surficial aquifers contain water primarily in the spaces between sand and gravel particles.

Teaneck Township is underlain by the Brunswick Aquifer (Rank C) and diabase (Rank E) (**Map 10**).

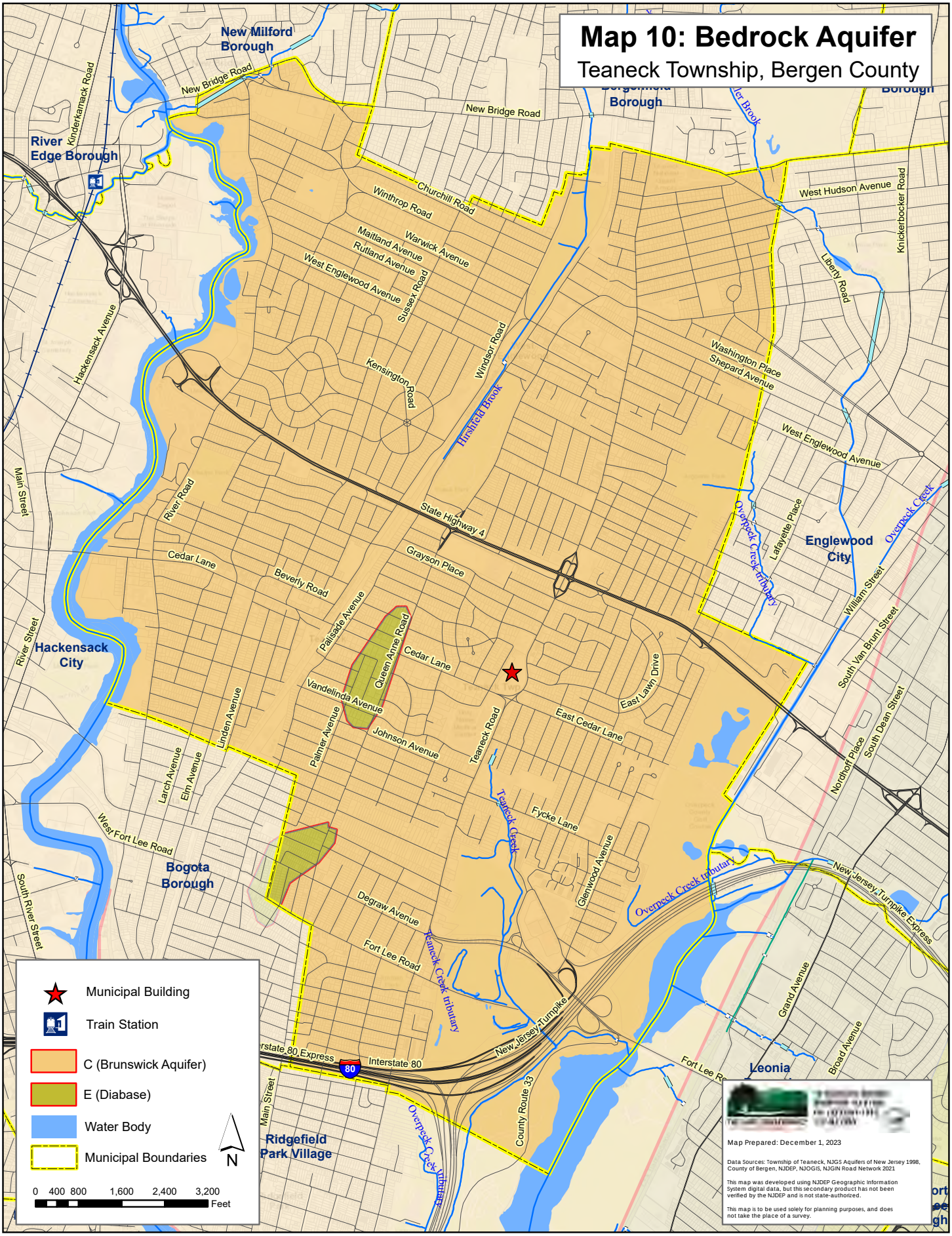
The Brunswick Aquifer is composed of sandstone, siltstone, and shale of the Passaic, Towaco, Teltville, and Boonton Formations. Groundwater is stored and transmitted in fractures. Water is normally fresh, slightly alkaline, non-corrosive and hard, while calcium-bicarbonate type waters dominate. The NJGS identifies the Brunswick Aquifer as a fractured rock aquifer of the Newark Basin which yields between 100 and 250 gallons per minute.

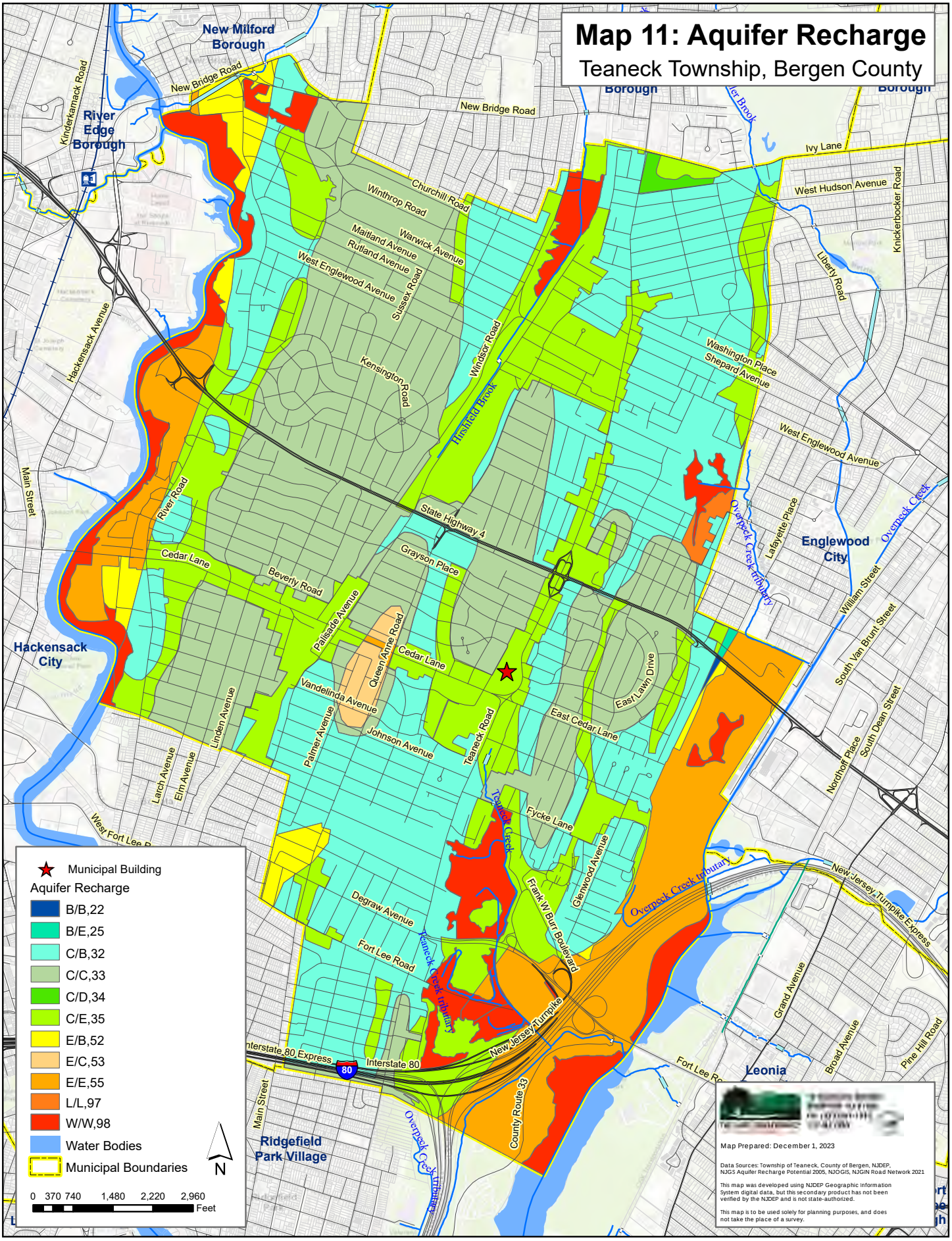
Surficial aquifers in New Jersey are water-bearing formations which are both greater than 50 feet thick (New Jersey law requires well casing of no less than 50 feet) and are significantly different, hydrogeologically, than the underlying aquifer. Surficial aquifers are most prevalent in northern New Jersey where bedrock consists of consolidated fractured bedrock overlain by thick sequences of unconsolidated glacial sediments.

Aquifers in New Jersey can be ranked on their ability to yield groundwater to high-capacity wells. These wells include water-supply, irrigation, and industrial-supply wells sited and tested for maximum yield. Many of the wells have boreholes exceeding the standing six-inch diameter for domestic wells. The five aquifer ranks values are based on a statistical analysis of median yields for over 8,000 high-capacity wells (**Table 13**).

**Map 11** and **Table 14** show the distribution of rankings for the Township. 79% of Teaneck is ranked as either C/B, C/C or C/E. These ranks have a well yield potential ranging 25-250 gallons per minute (gpm) and a groundwater infiltration rate between 8-17 inches per year (in/yr).

The areas of highest recharge potential in the Township are the forested, undeveloped lands found primarily within and near public parks. The areas of lowest potential are located in the wetland areas where the hydric nature of the system holds (ponds) the water where it slowly percolates and infiltrates the groundwater aquifer.


Map 10: Bedrock Aquifer
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Bergenfield Borough
Englewood City
Hackensack City
Bogota Borough
Ridgefield Park Village
Leonia
New Bridge Road
Kinderkamack Road
Churchill Road
Winthrop Road
Warwick Avenue
Maitland Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Windsor Road
Kensington Road
Hackensack Avenue
Main Street
River Road
State Highway 4
Cedar Lane
Beverly Road
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Linden Avenue
Palmer Avenue
Johnson Avenue
Teaneck Road
East Cedar Lane
East Lawn Drive
Fycke Lane
Glenwood Avenue
Degraw Avenue
Fort Lee Road
West Fort Lee Road
Larch Avenue
Elm Avenue
River Street
South River Street
Hirshfield Brook
Teaneck Creek
Teaneck Creek tributary
Overpeck Creek
Overpeck Creek tributary
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
New Jersey Turnpike Express
New Jersey Turnpike
Interstate 80
Grand Avenue
Broad Avenue
County Route 33
Municipal Building
Train Station
C (Brunswick Aquifer)
E (Diabase)
Water Body
Municipal Boundaries
N
0 400 800 1,600 2,400 3,200
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, NJGS Aquifers of New Jersey 1998, County of Bergen, NJDEP, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.


Map 11: Aquifer Recharge
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Englewood City
Ridgefield Park Village
Leonia
New Bridge Road
Kinderkamack Road
Hackensack Avenue
Main Street
River Road
Cedar Lane
Beverly Road
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Linden Avenue
Larch Avenue
Elm Avenue
West Fort Lee Road
Palmer Avenue
Johnson Avenue
Teaneck Road
East Cedar Lane
East Lawn Drive
Grayson Place
State Highway 4
Churchill Road
Winthrop Road
Warwick Avenue
Maitland Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Kensington Road
Windsor Road
Hirshfield Brook
Washington Place
Shepard Avenue
West Englewood Avenue
Ivy Lane
West Hudson Avenue
Knickerbocker Road
Liberty Road
Lafayette Place
Overpeck Creek
Overpeck Creek tributary
William Street
South Van Brunt Street
South Dean Street
Northoff Place
Teaneck Creek
Fycke Lane
Glenwood Avenue
Frank W Burr Boulevard
Degraw Avenue
Fort Lee Road
Teaneck Creek tributary
New Jersey Turnpike
New Jersey Turnpike Express
Interstate 80 Express
Interstate 80
80
County Route 33
Grand Avenue
Broad Avenue
Pine Hill Road
Municipal Building
Aquifer Recharge
B/B,22
B/E,25
C/B,32
C/C,33
C/D,34
C/E,35
E/B,52
E/C,53
E/E,55
L/L,97
W/W,98
Water Bodies
Municipal Boundaries
N
0 370 740 1,480 2,220 2,960
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, County of Bergen, NJDEP, NJGS Aquifer Recharge Potential 2005, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.

| Table 13. Well Yield Rankings and Groundwater Rankings in Bergen County | | | |
|---|---|---|---|
| Aquifer Rank | Median Well Yield (Gallons/Minute) | Groundwater Rank | Avg. Annual Infiltration (In/Yr) |
| A | >500 | A | 18-21 |
| B | >250-500 | B | 12-17 |
| C | >100-250 | C | 8-11 |
| D | 25-100 | D | 1-7 |
| E | <25 | E | 0 |

*There are also hydric soils (L/L), wetlands and open water (W/W) and instances where no recharge is calculated (X/X).*

*Source: NJDEP NJGS. Aquifer-Recharge Potential for Bergen County, New Jersey*

| Table 14. Aquifer Potential Recharge Rankings in Teaneck Township | | | |
|---|---|---|---|
| Alpha Rank | Numeric Rank | Acres | Percent of Total |
| B/B | 22 | 1 | 0% |
| B/E | 25 | 2 | 0% |
| C/B | 32 | 1,277 | 32% |
| C/C | 33 | 1,081 | 27% |
| C/D | 34 | 9 | 0% |
| C/E | 35 | 816 | 20% |
| E/B | 52 | 80 | 2% |
| E/C | 53 | 29 | 1% |
| E/E | 55 | 432 | 11% |
| L/L | 97 | 12 | 0% |
| W/W | 98 | 255 | 6% |

*Source: NJDEP NJGS*

*C/B, C/C, and C/E, highlighted in gray, comprise 79% of the recharge in Teaneck.*

## Public Water Supply and Wellhead Protection

Wellhead Protection Areas (WPAs) are delineated for both public community and non-community supply wells.[25] The delineations for these wells are two, five, and twelve-year tiers. Each tier represents the horizontal extent of groundwater captured by a well pumping at a specific rate over those periods of time.

Based on NJDEP data, there are no public community water supply wells located within or surrounding Teaneck Township (**Map 12**).

There is a non-community public water supply well on the southwest of the Township in the Borough of Bogota (near Elm Street). A non-community public supply well provides water to non-residential structures (such as business, restaurants, lodging or camps, etc.) and the NJDEP does not provide the tiered time of travel to these types of wells.

Veolia Water New Jersey, Inc. (previously Suez Water; amalgamated in 2022 through a merger agreement) is the water utility provider for Teaneck Township. The Township falls under the Hackensack water system. According to the 2022 Healthy Community Planning report, Teaneck fell in the lower range(1-5) of maximum contaminant levels and treatment techniques violations as well as action levels exceedances.[26]

The 1986 Federal Safe Drinking Water Act Amendments (Section 1428, P/L. 93-523, 42 USC 300 et. seq) directed all states to develop a Well Head Protection Program (WHPP) Plan for both public community (CWS) and public non-community (NCWS) water supply wells. A component of the WHPP is the delineating of Well Head Protection Areas. This delineation is the first step in defining the sources of water to a public water supply to prevent and clean up groundwater contamination.

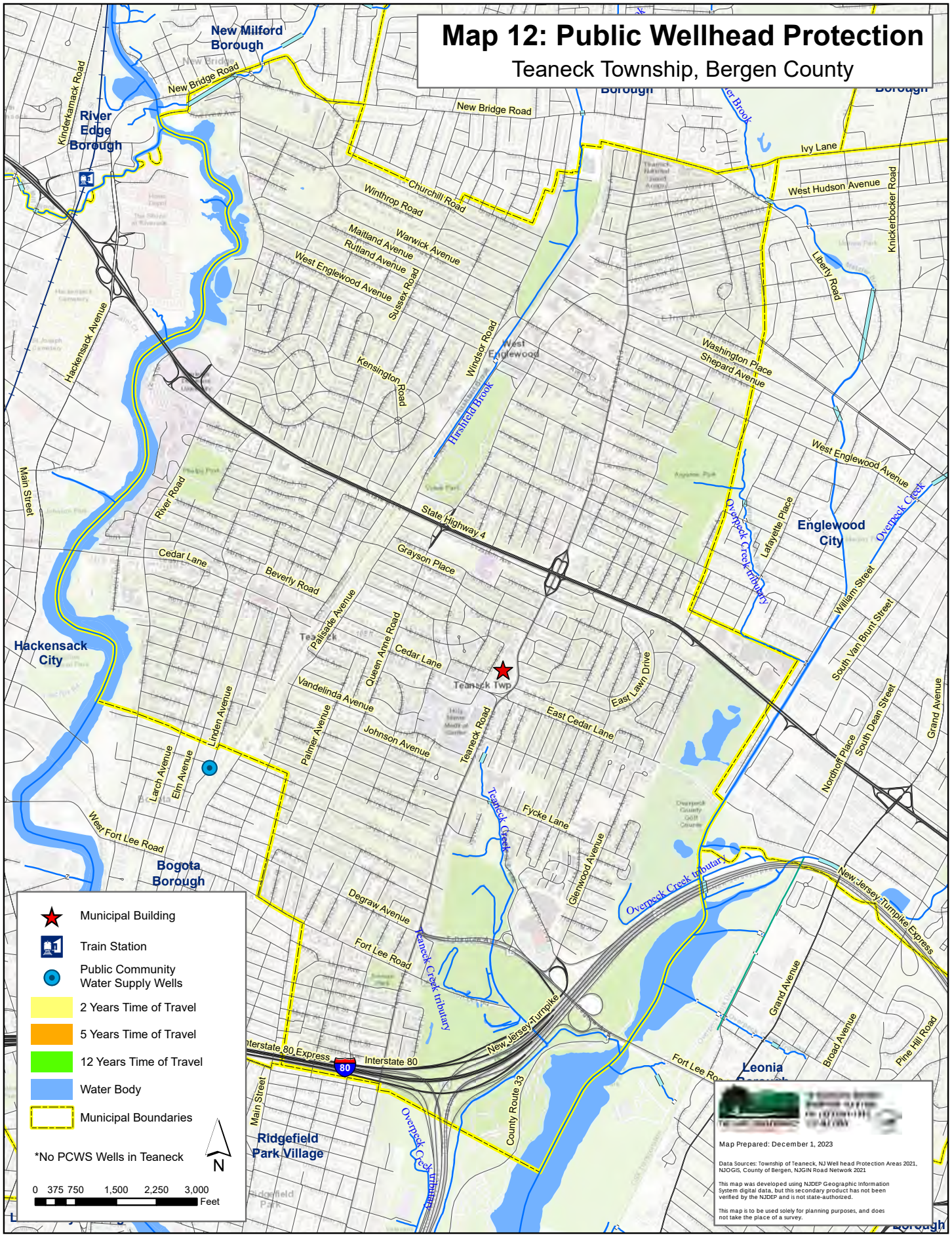

Map 12: Public Wellhead Protection
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Englewood City
Leonia
Ridgefield Park Village
West Englewood
New Bridge Road
Kinderkamack Road
Hackensack Avenue
Churchill Road
Winthrop Road
Maitland Avenue
Rutland Avenue
Warwick Avenue
West Englewood Avenue
Sussex Road
Kensington Road
Windsor Road
Hirschfeld Brook
Ivy Lane
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
West Englewood Avenue
Overpeck Creek
Overpeck Creek tributary
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Grand Avenue
Nordhoff Place
Main Street
River Road
State Highway 4
Cedar Lane
Beverly Road
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Johnson Avenue
Palmer Avenue
Linden Avenue
Larch Avenue
Elm Avenue
West Fort Lee Road
Teaneck Twp
Teaneck Road
East Cedar Lane
East Lawn Drive
Teaneck Creek
Fycke Lane
Glenwood Avenue
Degraw Avenue
Fort Lee Road
Teaneck Creek tributary
New Jersey Turnipike Express
Interstate 80 Express
Interstate 80
New Jersey Turnpike
County Route 33
Broad Avenue
Pine Hill Road
Municipal Building
Train Station
Public Community Water Supply Wells
2 Years Time of Travel
5 Years Time of Travel
12 Years Time of Travel
Water Body
Municipal Boundaries
*No PCWS Wells in Teaneck
N
0 375 750 1,500 2,250 3,000
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, NJ Well head Protection Areas 2021, NJOGIS, County of Bergen, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
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*Photo: Pomander Walk, Meadowlands Conservation Trust*

# Chapter 7.

# Wetlands

Wetlands:

- Filter chemicals.
- Remove pollutants and sediment from water.
- Provide flood control.
- Offer critical habitat for wildlife.
- Host recreation and tourism.

The NJDEP defines a freshwater wetland as an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation.

In designating a wetland, three parameters are used: hydrology, soils, and vegetation (enumerated in the 1989 Federal Manual, N.J.A.C. 7:7A). NJDEP has adopted this manual as the technical basis for identifying and delineating wetlands.[27]

The NJDEP regulates virtually all activities in a wetland, including removing vegetation, filling, and placing obstructions. Depending on the environmental value of a wetland, there may also be a transition area, or buffer, around the wetland that will require a waiver issued by the NJDEP for any activity within that zone. A wetland containing endangered species habitat would require a 150-foot wide transition area, whereas a small wetland in a ditch might not require any transition area at all.

Most freshwater wetlands require a 50-foot buffer.

Wetlands in New Jersey are classified as: exceptional resource value, ordinary resource value, or intermediate resource value. The criteria for these classifications are described below.

*Exceptional Resource Value Wetland*

- Dischargers into FW-1 water and FW-2 trout producing waters and their tributaries;
- Is presently a habitat for threatened or endangered species; or
- Is a documented habitat for threatened or endangered species, and remains suitable for breeding, resting, or feeding by the species during the normal period these species would use the habitat.

*Ordinary Resource Value Wetland*

A freshwater wetland which does not exhibit any of the characteristics of an exceptional resource value wetland, and which is one of the following:

- An isolated wetland (as defined at N.J.A.C. 7:7A-1.4) smaller than 5,000 square feet, with the following uses covering more than 50% of the area within 50 feet of the wetland boundary: lawns, maintained landscaping, impervious surfaces, active railroad right-of-way, and graveled or stoned parking/storage area and roads.
- A drainage ditch.
- A swale.
- A detention facility that was uplands at the time it was created regardless of the wetland resource classification of the wetlands under these rules, or classification of the body of water, as FW-1 or FW-2 trout production, to which it discharges.

*Intermediate Resource Value Wetland*

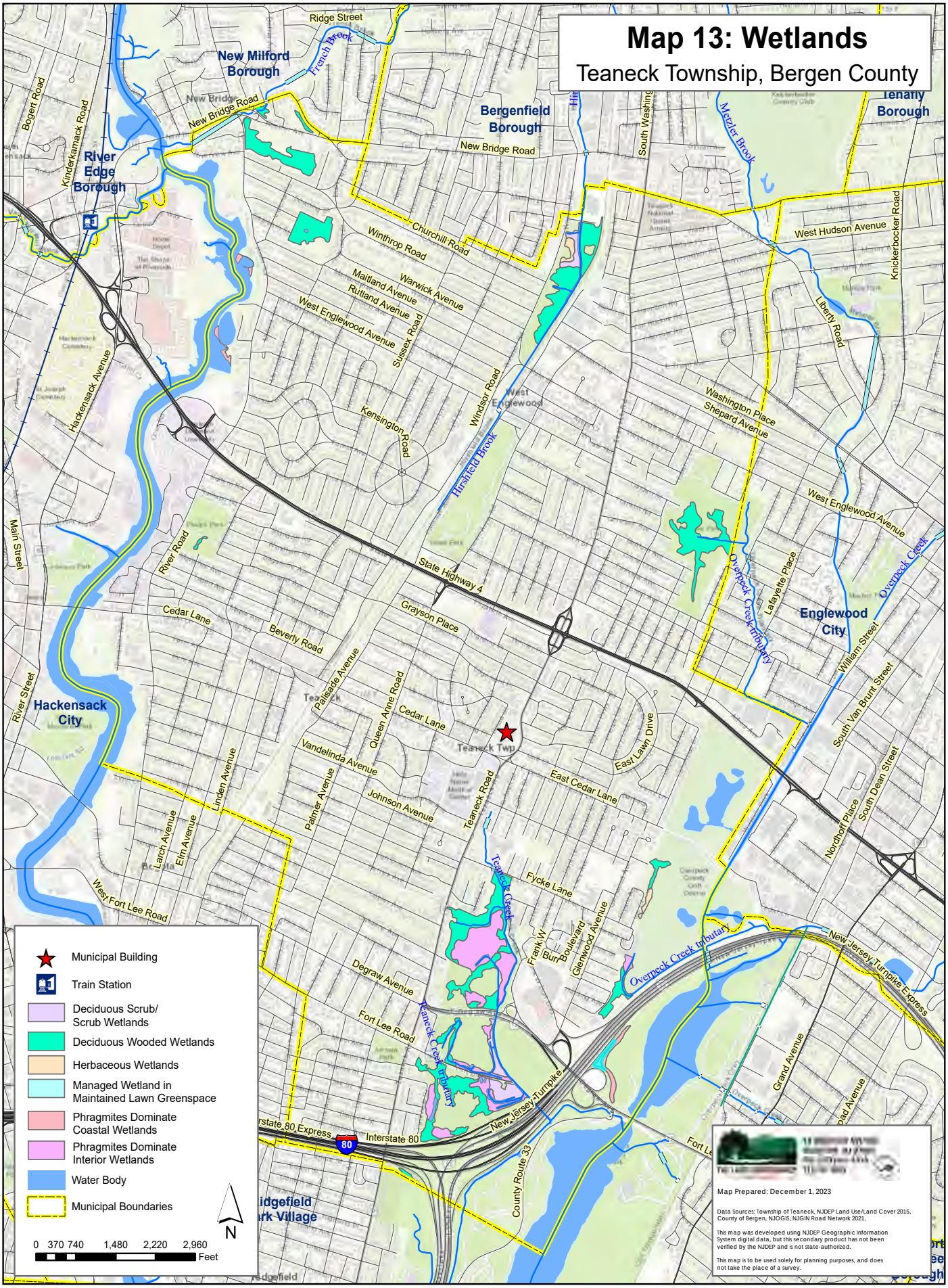
- A freshwater wetland of intermediate resource value is any wetland not defined as exceptional or ordinary.

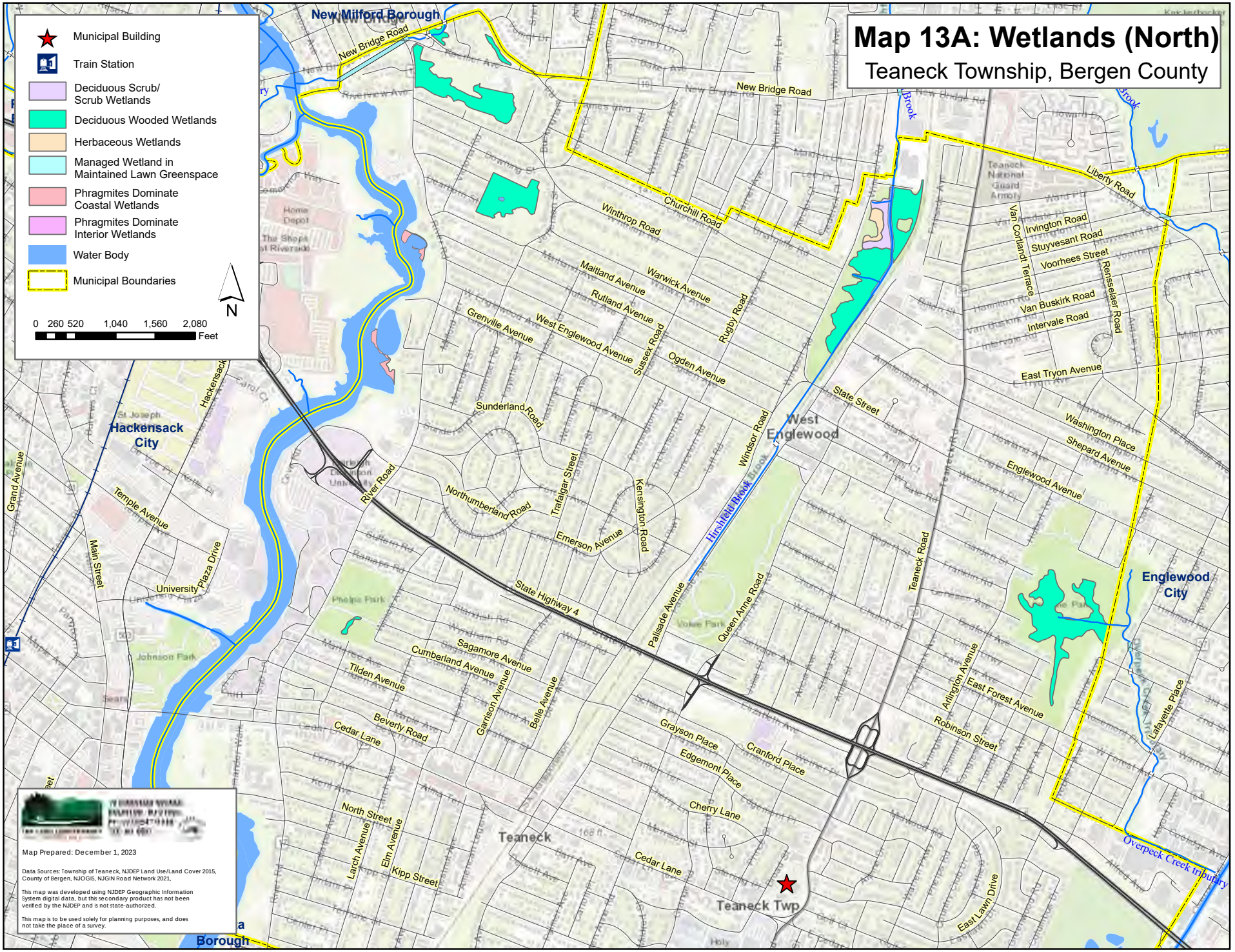
According to the NJDEP 2020 Land Use/Land Cover data, Teaneck Township contains 125 acres of wetlands, of which:

- 75 acres of which are classified as deciduous wooded.
- 8 deciduous scrub/shrub.
- 2 acres are herbaceous wetlands.

These areas are largely concentrated along the riparian corridors, the Hackensack River, and within Overpeck County Park. There are some small areas along French Brook near New Bridge Road, Givaudan Drive, and around Stuyvesant Road. These areas are shown on **Map 13**, and in more detail on **Map 13A** and **Map 13B**.

Wetland mapping from NJDEP is approximate, and unmapped wetlands may exist within Teaneck Township and would still be subject to NJDEP regulations (*as noted above*). Wetlands require a professional delineation before a regulated activity can occur in or around them.


Map 13: Wetlands
Teaneck Township, Bergen County
Municipal Building
Train Station
Deciduous Scrub/ Scrub Wetlands
Deciduous Wooded Wetlands
Herbaceous Wetlands
Managed Wetland in Maintained Lawn Greenspace
Phragmites Dominate Coastal Wetlands
Phragmites Dominate Interior Wetlands
Water Body
Municipal Boundaries
0 370 740 1,480 2,220 2,960
Feet
N
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, NJDEP Land Use/Land Cover 2015, County of Bergen, NJOGIS, NJGIN Road Network 2021,
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.
New Milford Borough
River Edge Borough
Bergenfield Borough
Tenafly Borough
Hackensack City
Englewood City
Teaneck Twp
Ridge Street
New Bridge Road
Bogert Road
Kinderkamack Road
Churchill Road
Winthrop Road
Warwick Avenue
Maitland Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Kensington Road
Windsor Road
West Englewood
Hackensack Avenue
Main Street
River Road
River Street
State Highway 4
Cedar Lane
Beverly Road
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Linden Avenue
Palmer Avenue
Johnson Avenue
Teaneck Road
East Cedar Lane
East Lawn Drive
Fycke Lane
Degraw Avenue
Fort Lee Road
West Fort Lee Road
Larch Avenue
Elm Avenue
Interstate 80
New Jersey Turnpike
County Route 93
Frank W. Burr Boulevard
Glenwood Avenue
Overpeck Creek tributary
Overpeck Creek
Hirshfield Brook
Metzler Brook
French Brook
Teaneck Creek
Teaneck Creek tributary
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
Grand Avenue


Map 13A: Wetlands (North)
Teaneck Township, Bergen County
Municipal Building
Train Station
Deciduous Scrub/ Scrub Wetlands
Deciduous Wooded Wetlands
Herbaceous Wetlands
Managed Wetland in Maintained Lawn Greenspace
Phragmites Dominate Coastal Wetlands
Phragmites Dominate Interior Wetlands
Water Body
Municipal Boundaries
N
0 260 520 1,040 1,560 2,080
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, NJDEP Land Use/Land Cover 2015, County of Bergen, NJOGIS, NJGIN Road Network 2021,
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.
New Milford Borough
Hackensack City
West Englewood
Englewood City
Teaneck
Teaneck Twp
Borough
New Bridge Road
Churchill Road
Liberty Road
Winthrop Road
Maitland Avenue
Warwick Avenue
Rutland Avenue
Grenville Avenue
West Englewood Avenue
Sussex Road
Rugby Road
Ogden Avenue
Sunderland Road
Windsor Road
State Street
East Tryon Avenue
Irvington Road
Stuyvesant Road
Voorhees Street
Van Buskirk Road
Intervale Road
Van Cortlandt Terrace
Rensselaer Road
Washington Place
Shepard Avenue
Englewood Avenue
River Road
Northumberland Road
Trafalgar Street
Kensington Road
Emerson Avenue
Hirshfeld Brook
Palisade Avenue
Queen Anne Road
Teaneck Road
State Highway 4
Temple Avenue
Main Street
Grand Avenue
Hackensack
University Plaza Drive
Johnson Park
Phelps Park
Cumberland Avenue
Sagamore Avenue
Tilden Avenue
Garrison Avenue
Belle Avenue
Beverly Road
Cedar Lane
Grayson Place
Cranford Place
Edgemont Place
Cherry Lane
Artington Avenue
East Forest Avenue
Robinson Street
Lafayette Place
Overpeck Creek tributary
North Street
Larch Avenue
Elm Avenue
Kipp Street
East Lawn Drive
Home Depot
The Shops at Riverside
Teaneck National Guard Armory

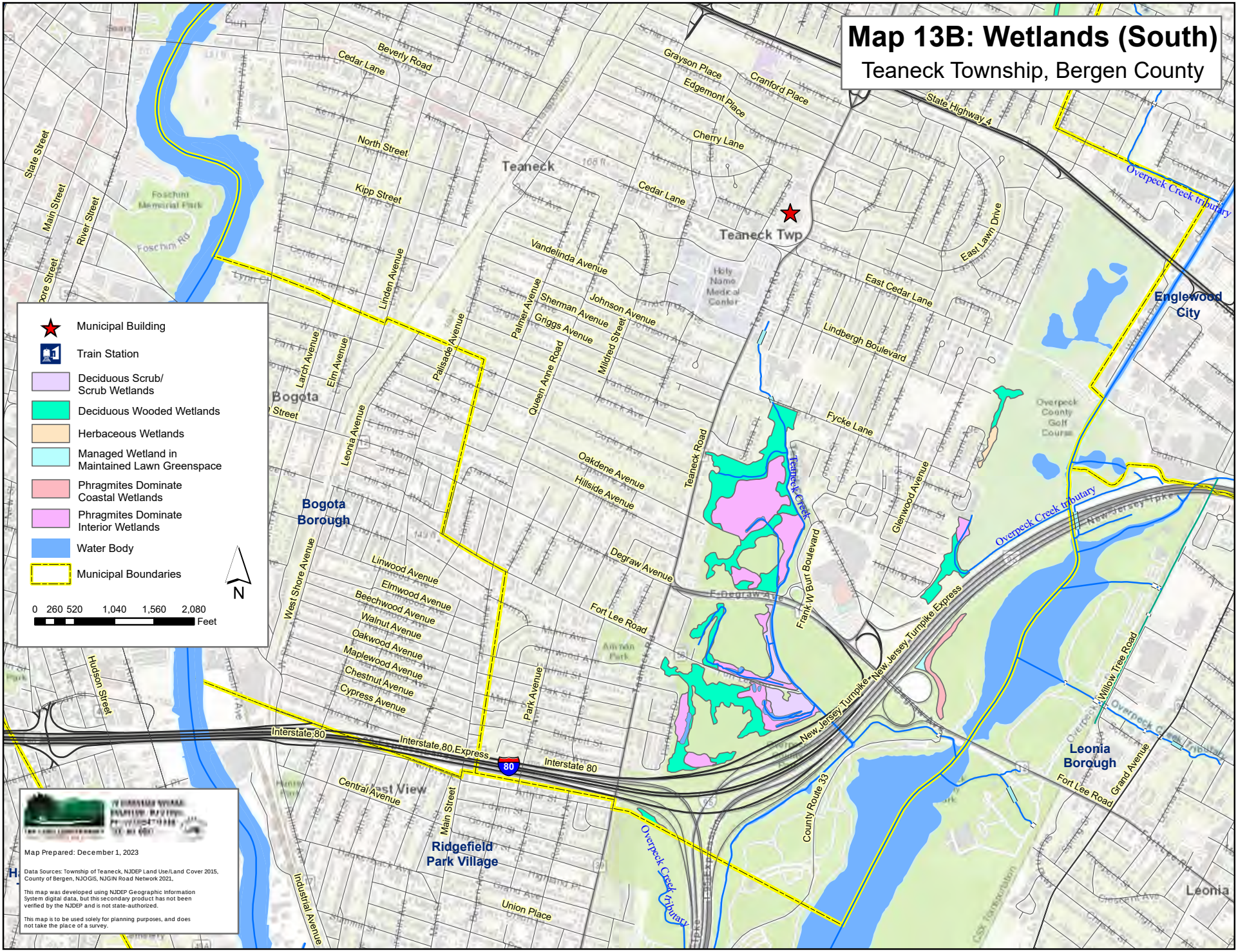

Map 13B: Wetlands (South)
Teaneck Township, Bergen County
Municipal Building
Train Station
Deciduous Scrub/ Scrub Wetlands
Deciduous Wooded Wetlands
Herbaceous Wetlands
Managed Wetland in Maintained Lawn Greenspace
Phragmites Dominate Coastal Wetlands
Phragmites Dominate Interior Wetlands
Water Body
Municipal Boundaries
0 260 520 1,040 1,560 2,080
Feet
N
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck, NJDEP Land Use/Land Cover 2015, County of Bergen, NJOGIS, NJGIN Road Network 2021,
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.
Teaneck
Teaneck Twp
Bogota
Bogota Borough
Englewood City
Leonia Borough
Leonia
Ridgefield Park Village
East View
Interstate 80
Interstate 80,Express
New Jersey Turnpike
New Jersey Turnpike Express
State Highway 4
Overpeck Creek tributary
Teaneck Creek
Fort Lee Road
Teaneck Road
Queen Anne Road
Palisade Avenue
Linden Avenue
Leonia Avenue
West Shore Avenue
Hudson Street
Main Street
Park Avenue
Degraw Avenue
Oakdene Avenue
Hillside Avenue
Fycke Lane
Lindbergh Boulevard
East Cedar Lane
Vandelinda Avenue
Johnson Avenue
Sherman Avenue
Griggs Avenue
Palmer Avenue
Mildred Street
Cedar Lane
North Street
Kipp Street
Beverly Road
Grayson Place
Edgemont Place
Cranford Place
Cherry Lane
East Lawn Drive
Glenwood Avenue
Frank W Burr Boulevard
Willow Tree Road
Grand Avenue
County Route 33
Central Avenue
Industrial Avenue
Union Place
Linwood Avenue
Elmwood Avenue
Beechwood Avenue
Walnut Avenue
Oakwood Avenue
Maplewood Avenue
Chestnut Avenue
Cypress Avenue
Larch Avenue
Elm Avenue
State Street
River Street
Foschini Memorial Park
Holy Name Medical Center
Overpeck County Golf Course

*Photo: Overpeck Creek, njpaddle.org*

# Chapter 8.

# Riparian Areas & Flood Zones

The lands along waterways serve critical roles in the mitigation of downstream flooding and maintenance of healthy stream ecology. Development within these riparian areas can cause environmental damage and expose people to flood risk. Because of their importance, these lands are subject to regulation from multiple different authorities. Riparian zones and flood zones are overlapping regulated areas by the NJDEP and other agencies.

## Riparian Zones

A riparian zone comprises the land and vegetation within and adjacent to surface waters regulated by NJDEP. As a baseline, riparian zones include all lands within 50 feet of any NJDEP regulated waters. Riparian zones are expanded to 150 feet around the following waters:

- Any trout production water and all upstream waters.
- Any trout maintenance water and all upstream waters within one mile of a trout maintenance water.
- Waters which flow through an area of habitat for threatened or endangered species, and waters within one mile of such habitat.

The widest riparian zone buffer, 300 feet, is applied to Category One (C1) waters and all upstream waters within the same watershed. All these definitions also include tributaries, and buffers are measured from the top of the waterway's banks.

In April 2020, NJDEP's Division of Water Monitoring and Standards adopted a new rule that expands C1 waters designation to 600 miles of rivers and waterways in the state.[28] This rule accordingly widened the riparian zone around those waterways newly listed as C1 waters. While this rule may not directly impact Teaneck, increased protections of waterways will benefit water quality across the State.

## Flood Zones

Federal, state, and municipal governments oversee areas prone to flooding through various acts, laws, and ordinances. The intent is to minimize property damage by limiting development and protecting areas subject to frequent flooding.

At the federal level, the USGS maps flood prone areas and the Federal Emergency Management Agency (FEMA) evaluates and maps Special Flood Hazard Areas (SFHAs) that can be used in participating communities to determine flood insurance rates.[29] On the state level, the NJDEP delineates Flood Hazard Areas along streams and regulates activities within these areas. In recent years, FEMA and the state have coordinated to integrate NJDEP flood hazard area parameters into FEMA updates. Municipal code may set standards that are stricter than either the state or FEMA.

There are different methods of delineating SFHAs and Flood Hazard Areas, but the two terms are intended to mean the same thing. These areas include all lands which would be underwater in a 100-year flood, meaning a flood level which is expected to only occur every 100 years. These areas have a 1% chance each year of being completely flooded. Estimates for 100-year floods do include a small margin of safety to factor in potential increased flow due to upstream development. SFHAs are delineated and regulated for waterways with a drainage area of 50 acres are greater.

Information on specific area in the Township that are prone to flooding can be found in **Chapter 9**.

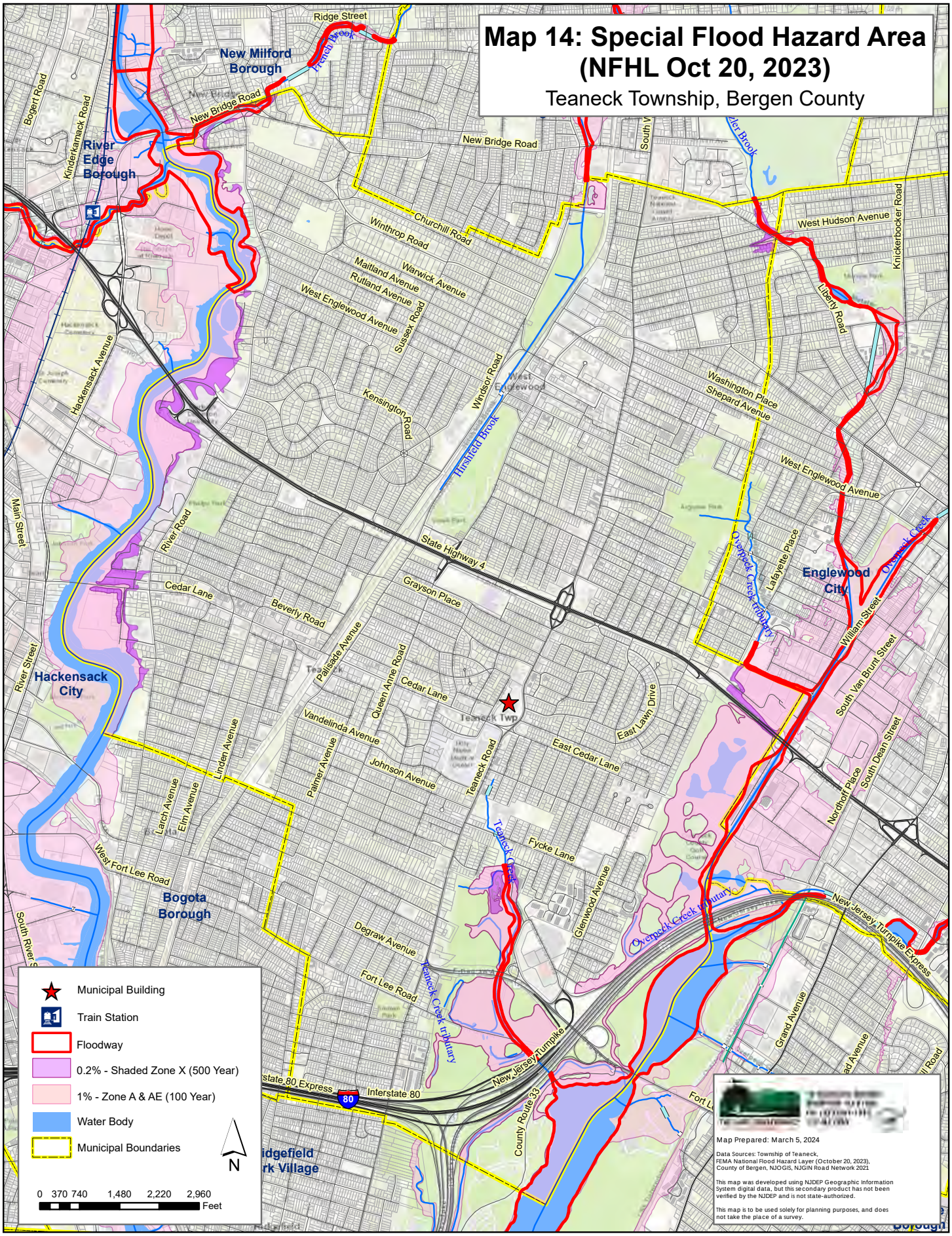
## FEMA Mapping and Flood Insurance Program

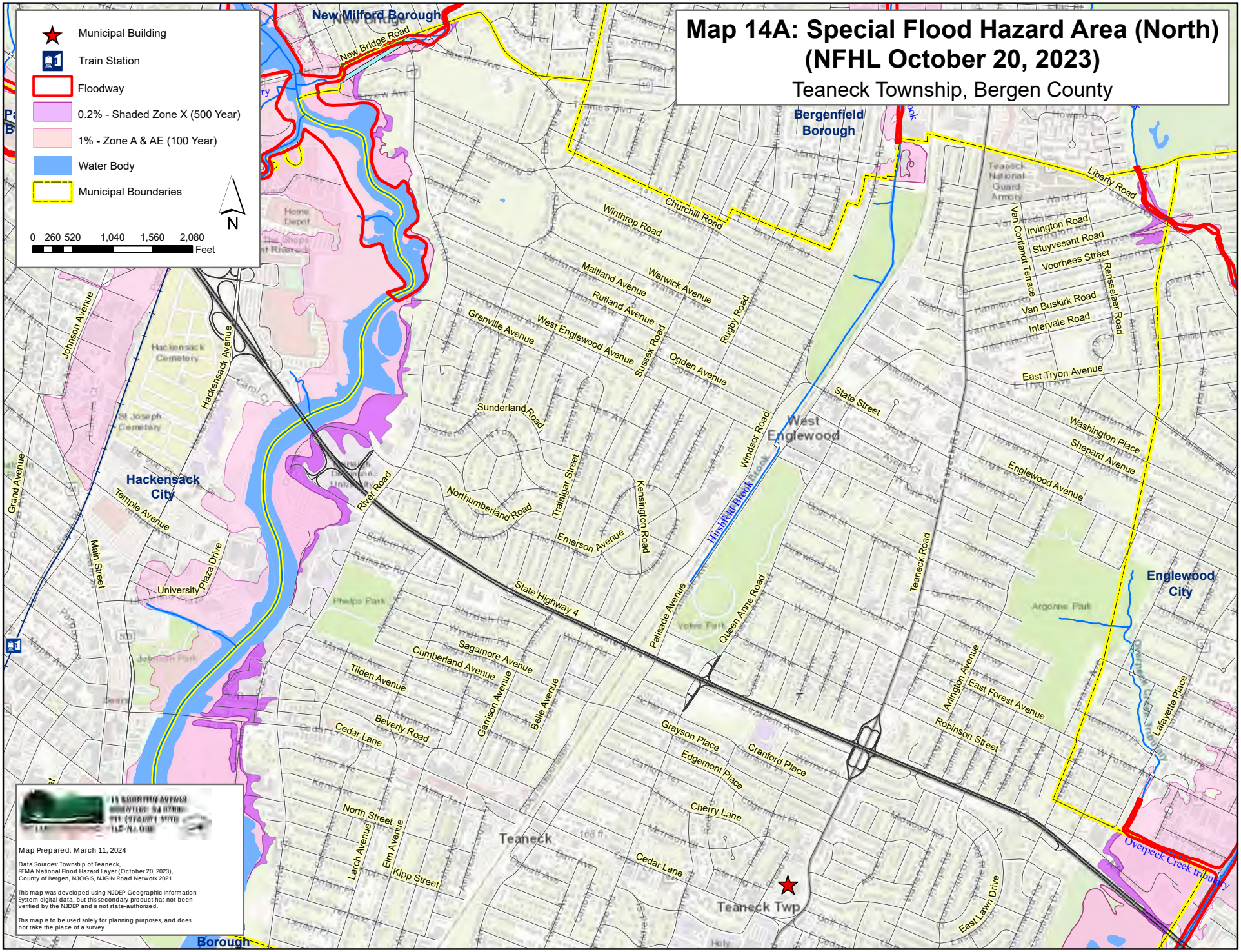
SFHAs as delineated by FEMA are used, along with other flood zones, to create official Flood Insurance Rate Mapping (FIRM) that can be used in participating communities, to determine flood insurance rates. Communities can choose to participate in the National Flood Insurance Program (NFIP), which requires mandatory flood insurance in areas mapped as SFHAs.

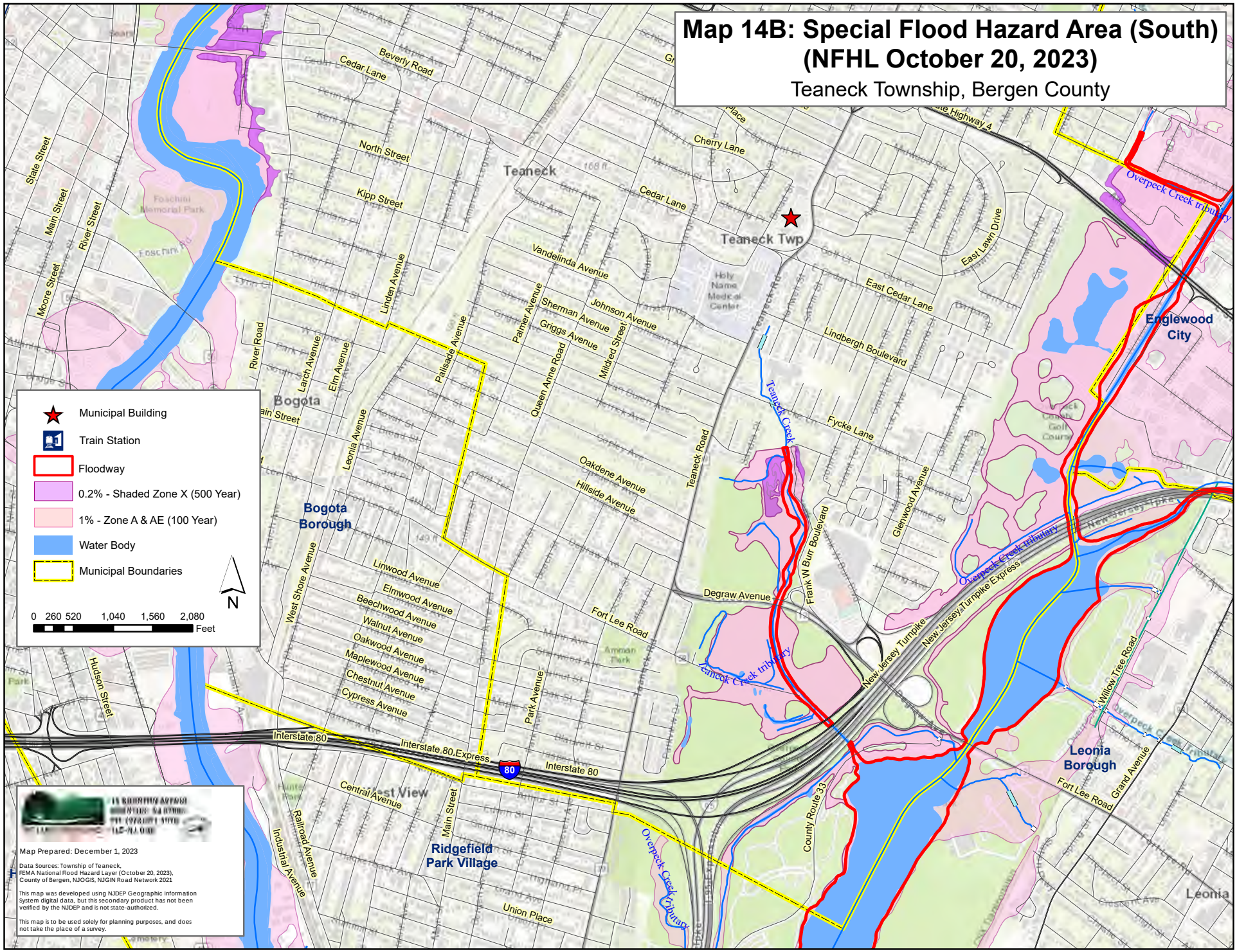
In addition to the SFHAs, NFIP mapping also delineates 500-year flood zones and various sublevels within the 100-year zone. As shown on **Map 14, Map 14A and 14B**, the Township of Teaneck contains approximately 40 acres of land within the 500-year flood zone (0.2% chance of an annual flood, also known as the Shaded Zone X) and 391 acres within the 100-year flood zone (1% chance of an annual flood, also known as Zones A and AE).

## NJDEP Regulations

NJDEP regulates floodprone areas through the New Jersey Flood Hazard Area Control Act, N.J.A.C. 7:13, last amended on October 5, 2021.[30]


Map 14: Special Flood Hazard Area
(NFHL Oct 20, 2023)
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Englewood City
Teaneck Twp
Ridge Street
New Bridge Road
Bogert Road
Kinderkamack Road
Churchill Road
Winthrop Road
Warwick Avenue
Maitland Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Hackensack Avenue
Kensington Road
Windsor Road
Hirshfield Brook
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
West Englewood Avenue
Main Street
River Road
State Highway 4
Cedar Lane
Beverly Road
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Linden Avenue
Palmer Avenue
Johnson Avenue
Teaneck Road
East Cedar Lane
East Lawn Drive
Fycke Lane
Glenwood Avenue
Degraw Avenue
Fort Lee Road
West Fort Lee Road
Larch Avenue
Elm Avenue
River Street
South River
Overpeck Creek
Overpeck Creek tributary
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
New Jersey Turnipike Express
Teaneck Creek
Teaneck Creek tributary
New Jersey Turnipike
Interstate 80
State 80 Express
County Route 33
Grand Avenue
Municipal Building
Train Station
Floodway
0.2% - Shaded Zone X (500 Year)
1% - Zone A & AE (100 Year)
Water Body
Municipal Boundaries
N
0 370 740 1,480 2,220 2,960
Feet
Map Prepared: March 5, 2024
Data Sources: Township of Teaneck,
FEMA National Flood Hazard Layer (October 20, 2023),
County of Bergen, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.


Map 14A: Special Flood Hazard Area (North)
(NFHL October 20, 2023)
Teaneck Township, Bergen County
Municipal Building
Train Station
Floodway
0.2% - Shaded Zone X (500 Year)
1% - Zone A & AE (100 Year)
Water Body
Municipal Boundaries
N
0 260 520 1,040 1,560 2,080
Feet
New Milford Borough
Bergenfield Borough
Hackensack City
West Englewood
Englewood City
Teaneck
Teaneck Twp
Borough
New Bridge Road
Churchill Road
Liberty Road
Winthrop Road
Maitland Avenue
Warwick Avenue
Rutland Avenue
Grenville Avenue
West Englewood Avenue
Sussex Road
Rugby Road
Ogden Avenue
Sunderland Road
Windsor Road
State Street
East Tryon Avenue
Van Cortlandt Terrace
Irvington Road
Stuyvesant Road
Voorhees Street
Van Buskirk Road
Intervale Road
Rensselaer Road
Washington Place
Shepard Avenue
Englewood Avenue
Johnson Avenue
Hackensack Avenue
Grand Avenue
Temple Avenue
Main Street
University Plaza Drive
River Road
Northumberland Road
Trafalgar Street
Kensington Road
Emerson Avenue
Hirshfield Brook
State Highway 4
Palisade Avenue
Queen Anne Road
Teaneck Road
Cumberland Avenue
Sagamore Avenue
Tilden Avenue
Garrison Avenue
Belle Avenue
Beverly Road
Cedar Lane
Grayson Place
Edgemont Place
Cranford Place
Cherry Lane
Arlington Avenue
East Forest Avenue
Robinson Street
Lafayette Place
North Street
Larch Avenue
Elm Avenue
Kipp Street
East Lawn Drive
Overpeck Creek tributary
Map Prepared: March 11, 2024
Data Sources: Township of Teaneck,
FEMA National Flood Hazard Layer (October 20, 2023),
County of Bergen, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.


Map 14B: Special Flood Hazard Area (South)
(NFHL October 20, 2023)
Teaneck Township, Bergen County
Municipal Building
Train Station
Floodway
0.2% - Shaded Zone X (500 Year)
1% - Zone A & AE (100 Year)
Water Body
Municipal Boundaries
N
0 260 520 1,040 1,560 2,080
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck,
FEMA National Flood Hazard Layer (October 20, 2023),
County of Bergen, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.
Teaneck
Teaneck Twp
Bogota
Bogota Borough
Englewood City
Leonia Borough
Leonia
Ridgefield Park Village
West View
Cedar Lane
Beverly Road
North Street
Kipp Street
Cherry Lane
Vandelinda Avenue
Johnson Avenue
Sherman Avenue
Griggs Avenue
Lindbergh Boulevard
East Cedar Lane
East Lawn Drive
Fycke Lane
Degraw Avenue
Fort Lee Road
Oakdene Avenue
Hillside Avenue
Linwood Avenue
Elmwood Avenue
Beechwood Avenue
Walnut Avenue
Oakwood Avenue
Maplewood Avenue
Chestnut Avenue
Cypress Avenue
Central Avenue
Union Place
Grand Avenue
Willow Tree Road
Interstate 80
Interstate 80 Express
New Jersey Turpike
New Jersey Turpike Express
Overpeck Creek tributary
Teaneck Creek
Teaneck Creek tributary
Frank W Burr Boulevard
Teaneck Road
Queen Anne Road
Palisade Avenue
Palmer Avenue
Mildred Street
Glenwood Avenue
Linden Avenue
Elm Avenue
Leonia Avenue
Larch Avenue
River Road
West Shore Avenue
Park Avenue
Railroad Avenue
Industrial Avenue
Main Street
County Route 33
Holy Name Medical Center
Foschini Memorial Park
Amman Park
Hudson Street
State Street
Moore Street
River Street

The full rules governing delineation and regulation of flood hazard areas are included in Title 7, Chapter 13 of the New Jersey Administrative Code, available on NJDEP's website.

The act recognizes the importance of not only avoiding building in unsafe places, but also preserving vegetation that is considered essential for maintaining bank stability and water quality. The rules set standards for development in flood hazard areas and land adjacent to surface water to mitigate the adverse impacts of flooding caused by this type of activity. NJDEP regulated activities in a flood hazard or riparian are include (per N.J.A.C. 7:13-2.4):

1. The alteration of topography through excavation, grading, and/or placement of fill.

2. The clearing, cutting, and/or removal of vegetation in a riparian zone.

3. The creation of impervious surface.

4. The storage of unsecured material.

5. The construction, reconstruction and/or enlargement of a structure.

6. The conversion of a building into a private residence on a public building.

The appropriate permit must be obtained in order to engage in any of these activities in a regulated area. There are several different categories of permits: permits by rule, general permits and individual permits. There are also area specific standards, depending on whether or not the area includes a channel, floodway, flood fringe, fishery resource, threatened and endangered species, or acid producing soils. Construction is not necessarily prohibited in a regulated area, but the permit is required. More specific regulations depend on what portion of the flood hazard area a piece of land falls in, and whether it is a riparian zone.

## Inland Flood Protection Rule

On July 17, 2023, a new rule from the NJDEP known as the Inland Flood Protection Rule took effect.[31,32] This rule updates the methods of delineating Flood Hazard Areas to account for changes to stormwater flow due to climate change and the impact of upstream development. By expanding the flood hazard areas, these standards increase the amount of land where NJDEP has the authority to regulate development.

Specifically, the rules expand the Flood Hazard Area to include all lands up to two feet higher than current 100-year flood areas in NJDEP maps, and three feet higher than current 100-year flood areas in FEMA maps.[33] The new rule also requires that all new major developments address stormwater runoff using an updated NJDEP data set for peak flow rates of streams and rivers.[34] This new data accounts for recent changes in the region's precipitation patterns since the data was last updated in 1999.

The NJDEP has created an online Flood Indicator Tool which provides information about potential flood risk on or near a property of interest. It does not show precise NJDEP

standards, calculate actual risk, or demarcate a zone where NJDEP regulations apply. It is intended only as a reference.

## Flood Disclosure

On July 3, 2023, Bill S3110/A4783, also known as the Flood Disclosure Bill, became law. This new legislation, which takes effect in the Fall of 2023, adds a new tool for home buyers and renters across the state. The law requires that landlords and home sellers disclose flood risk to prospective tenants or buyers.[35] This includes the property's history of flooding and its location in a FEMA-designated (100-year or 500-year) Flood Hazard Area.

Additionally, the law requires landlords to notify tenants of the availability of insurance for renters through the National Flood Insurance Program.

## Teaneck Township Municipal Planning

Teaneck Township has taken steps to address the adverse effects of flooding, as summarized by the following list of planning documents and ordinances:

*2007 Master Plan* and *2017 Master Plan Reexamination*[36,37] – One of the goals in the plans outlines providing mechanisms to encourage the needed upgrade of the existing stormwater management.

*2005* and 2007 Revised *Municipal Stormwater Management Plan*[38] – The purpose of this plan is to address groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development (defined as projects that disturb one or more acre of land). The plan included a series of proposed amendments to Teaneck's municipal land code to address nonstructural stormwater management strategies, including various changes to Chapter 33 of the Town Code, street classification (33-15(b)); preservation of natural features (33-15(h)); top soil protection (33-15(i)); provision of stormwater drainage systems (33-15(q)); buffer areas (for stormwater management (33-15(s)); curbs for vegetated swales(33-15(t)); and parking areas suitably paved, drained and lighted. The mitigation section identifies specific stormwater measures to reduce the impact of existing development.

*2021 Stormwater Control* Ordinance No. 3-2021[39] – The ordinance outlines a series of design and performance standards for green infrastructure best management practices (GI BMPs) and nonstructural stormwater management strategies to achieve flood control, groundwater recharge, and pollutant reduction in Teaneck Township. The stormwater management ordinance is based on NJDEP's Model Municipal Stormwater Control Ordinance, published in March 2020 and NJDEP's Stormwater Management Regulations (N.J.A.C. 7:8) most recently updated in March 2021.

*Photo: Pomander Walk*

# Chapter 9.

# Climate

**Climate Facts: Township of Teaneck**

» The average temperature has been trending upward over the last twenty years. Teaneck experiences noticeably elevated temperaturess.

» Extreme weather phenomena in recent years have caused substantial power outages and property damage in Teaneck.

» The USDA Forest Service has modeled the impact of climate change on forests and trees across five states, including New Jersey, predicting higher temperatures and precipitation, drought risk, and increased wildfire. Recently, Teaneck faced an unusual brush fire impacting 10 acres of Overpeck Park..

» Teaneck's transportation and building sectors likely make up a higher percentage of carbon emissions than the statewide figure of 68%.

» New Jersey is taking measures to adapt to a changing climate. The state's climate goals are being integrated into the permitting process.

» Teaneck residents, renters, homeowners, and businesses in New Jersey can access state rebate programs for energy-saving measures through PSE&G.

» Sustainable Jersey certifies actions taken by municipalities in New Jersey to reduce waste, cut greenhouse gas emissions, and improve environmental equity. Teaneck earned Bronze Certification in October of 2022.

## Prevailing Air Currents in New Jersey and Climate Zone

Atmospheric circulation over North America is dominated by prevailing westerly winds, which move air from west to east in a broad, undulating flow. New Jersey's weather is substantially influenced by the north-south movement of these westerly currents, and the variation in their strength throughout the year. This variation results in the state being influenced by wet, dry, hot, and cold airstreams changing from day to day. The Office of the New Jersey State Climatologist (ONJSC) divides New Jersey into five distinct climate zones, each of which experiences distinct variations in the daily weather due to differences in:[40]

- Geology.
- Distance from the Atlantic Ocean.
- Prevailing atmospheric flow patterns.

Teaneck falls in the Central Zone, which stretches along the Hudson River and southwest across the state to Trenton. The National Oceanic and Atmospheric Administration (NOAA) divides New Jersey into three climate divisions.[41] Teaneck falls in the Division 1 (Northern) of New Jersey (**Figure 11**).

With major traffic arteries and urban development, much of this region's climate is marked by the prevalence of buildings and paved surfaces. The presence of numerous buildings and paved surfaces contributes to heat retention, resulting in elevated local temperatures. The prevalence of asphalt, brick, and concrete causes heavily developed areas to exhibit consistently warmer nighttime temperatures compared to the surrounding suburban and rural regions. This phenomenon is commonly known as a "heat island."

## Temperature and Precipitation

The ONJSC gathers temperature and precipitation data from monitoring stations throughout the state, with some site records dating back to the 1890s and many sites with more than 50 years of continuous data.[42] This data is used to calculate averages at the division and county level. Weather statistics are available for individual monitoring stations, with the stations closest to Teaneck located at Teterboro Airport.

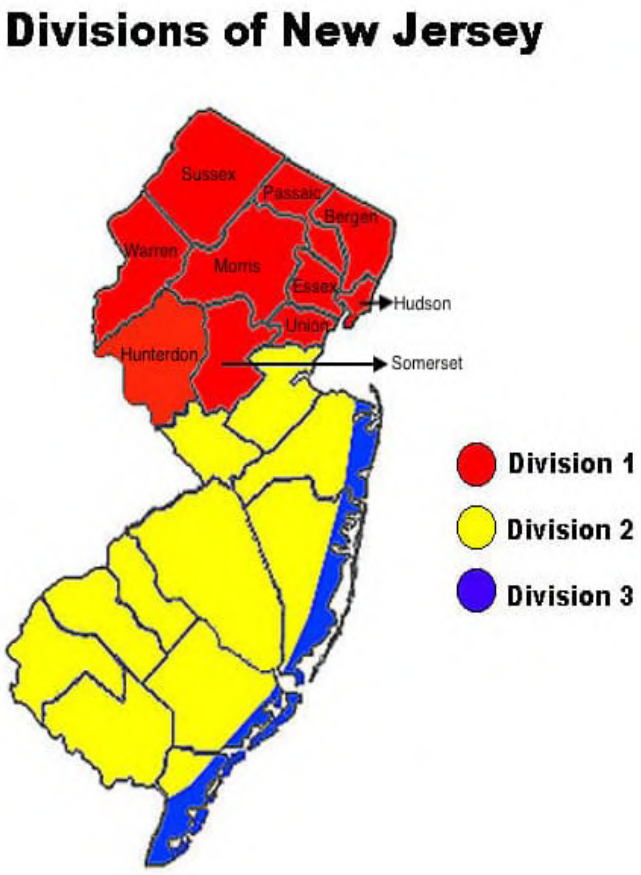



*Figure 11. Divisions of New Jersey (ONJSC)*

The ONJSC monitoring stations track a variety of climate factors, namely temperature, precipitation, snowfall, and heating and cooling degree days. Not all stations track the same climate factors.

> Heating and cooling degree days measure the extent to which outside temperatures required energy use to maintain a comfortable indoor temperature of 65°F in a given year. For example, a 20° day in January has 45 heating degrees. The heating degrees for each day of a year are added up to calculate the number of heating degree days for that year.

Data for Division 1 show an upward trend in temperature over the last 20 years (**Figure 12**). There has been a decrease in heating degree days (**Figure 13**) and an increase in cooling degree days (**Figure 14**).

**Figure 15** shows a slight downward trend in precipitation over the last 20 years in Division 1, although precipitation during these years remains higher than the average from the previous century.[43]

Between 1895 and 2023, the average annual temperature in Bergen County has risen from about 41°F to 45°F (**Figure 16**). Annual precipitation also rose gradually over the same time period, from about 46 inches to 50 (**Figure 17**) Precipitation has also shown more extremes in recent years.

The average temperature in Bergen County is 51.4°F, warmer than the

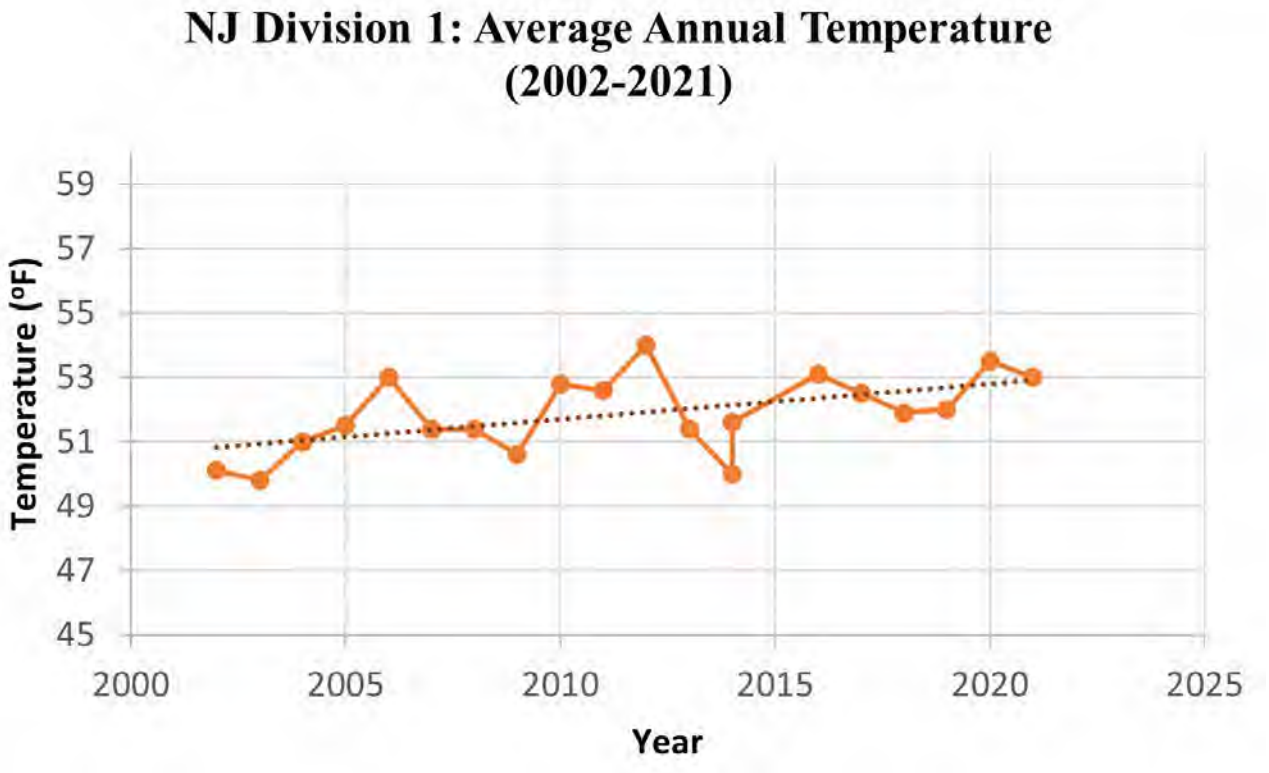



*Figure 12. New Jersey Division 1, Average Annual Temperature 2002 - 2021 (ONJSC)*

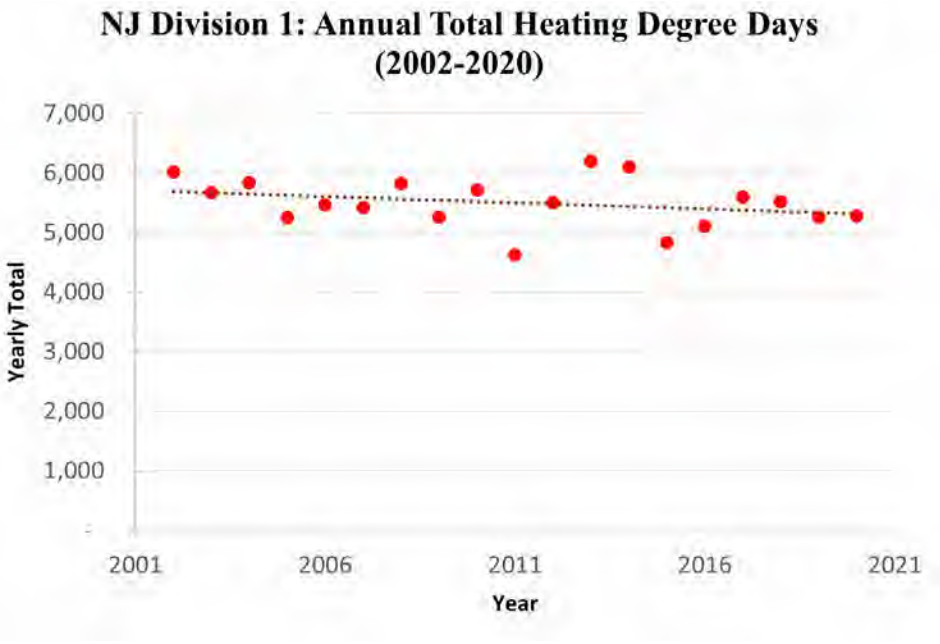



*Figure 13. New Jersey Division 1, Annual Heating Degree Days 2002 - 2021 (ONJSC)*

> In 2011, Hurricane Irene contributed to an all-time record of 73 inches of precipitation in one year.

49.8°F average for Division 1. The County's average annual is 47.0 inches, similar to the 47.1 inches average for northern New Jersey.

The stations with snowfall data closest to Teaneck Township are Newark Airport, Raymond Dam station in Wanaque, Harrison in Hudson County, and the Canoe Brook station in Short Hills. Newark Airport, however, may be subject to more of an urban heat island effect than Teaneck, and Raymond Dam is at higher elevation in a different ONJSC climate zone. Canoe Brook is over 30 miles from Teaneck, but it may be considered similar because it is in the same climate zone, lies at similarly low elevation, and is in a similar medium-density suburban area. Its records, spanning 1954 to the present, show a minimum annual snowfall of 7.8 inches in 1972 and a maximum of 74.8 inches in 1960. (**Figure 18**)

The closest weather station to Teaneck, which records temperature and precipitation, is at Teterboro Airport. For that station, all-time records for temperature and precipitation extremes are shown in **Table 15**.[44] Temperature data from 1970 to 2023 and precipitation data from 1974 to 2023 are available. Monthly records indicate the year with the highest measurement for each month. For

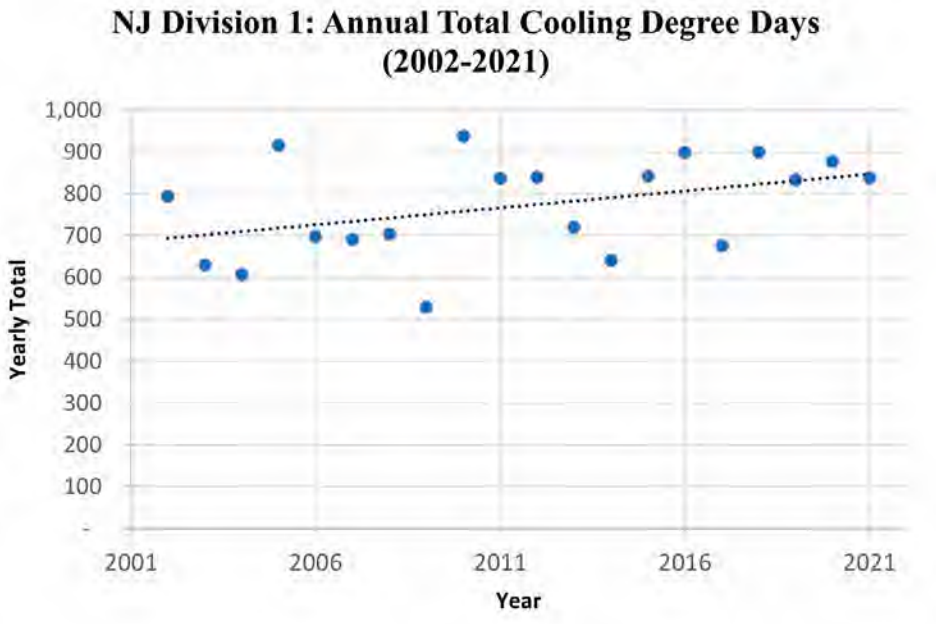



*Figure 14. New Jersey Division 1, Annual Cooling Degree Days 2002 - 2021 (ONJSC)*

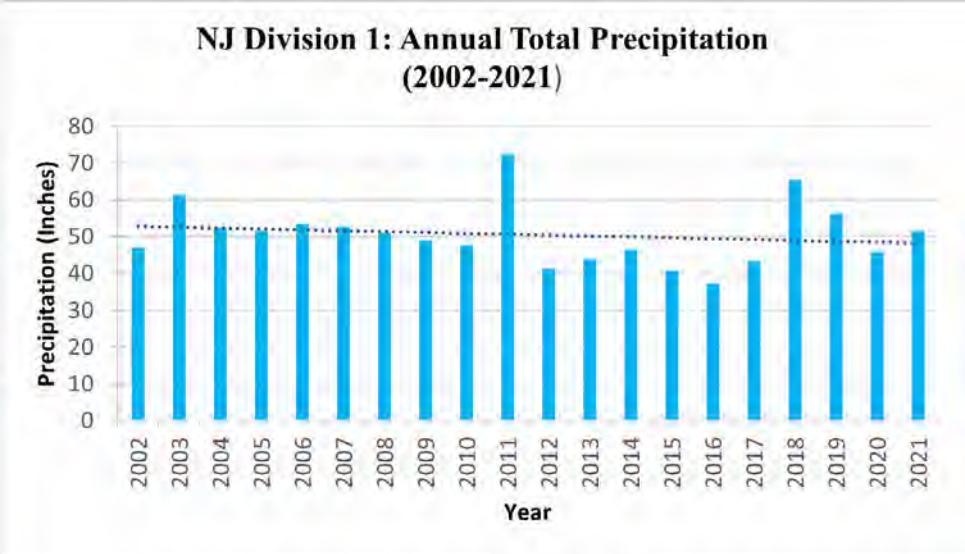



*Figure 15. New Jersey Division 1, Annual Precipitation 2002 - 2021 (ONJSC)*

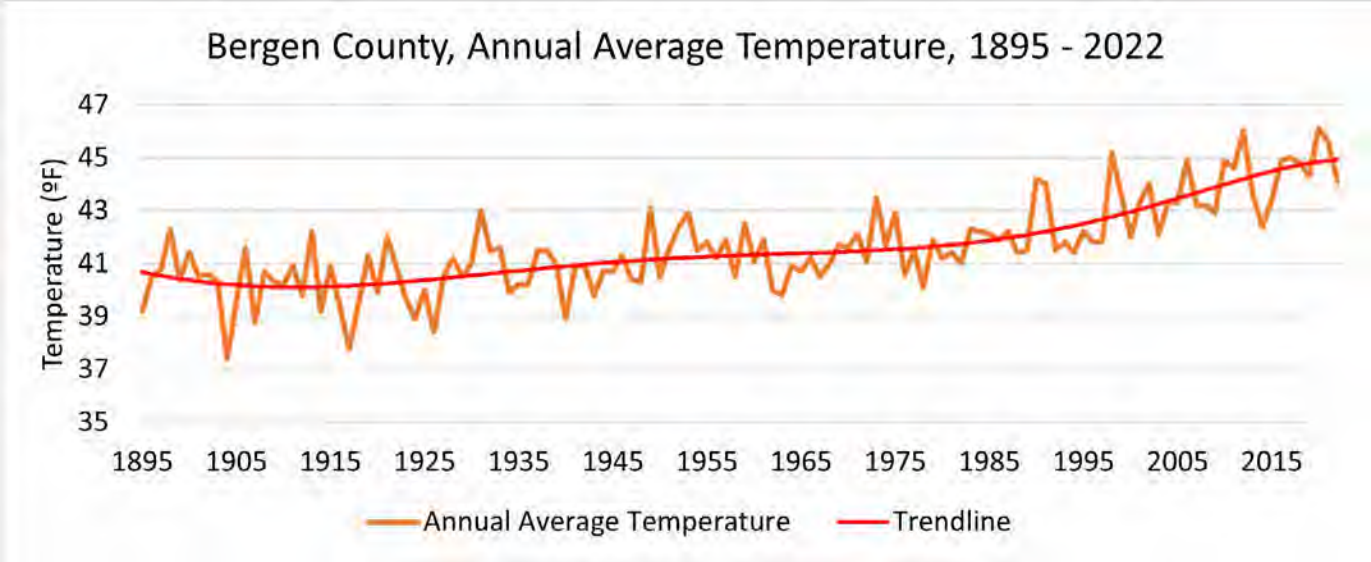



*Figure 16. Bergen County, Annual Average Temperature 1895 - 2022 (ONJSC)*

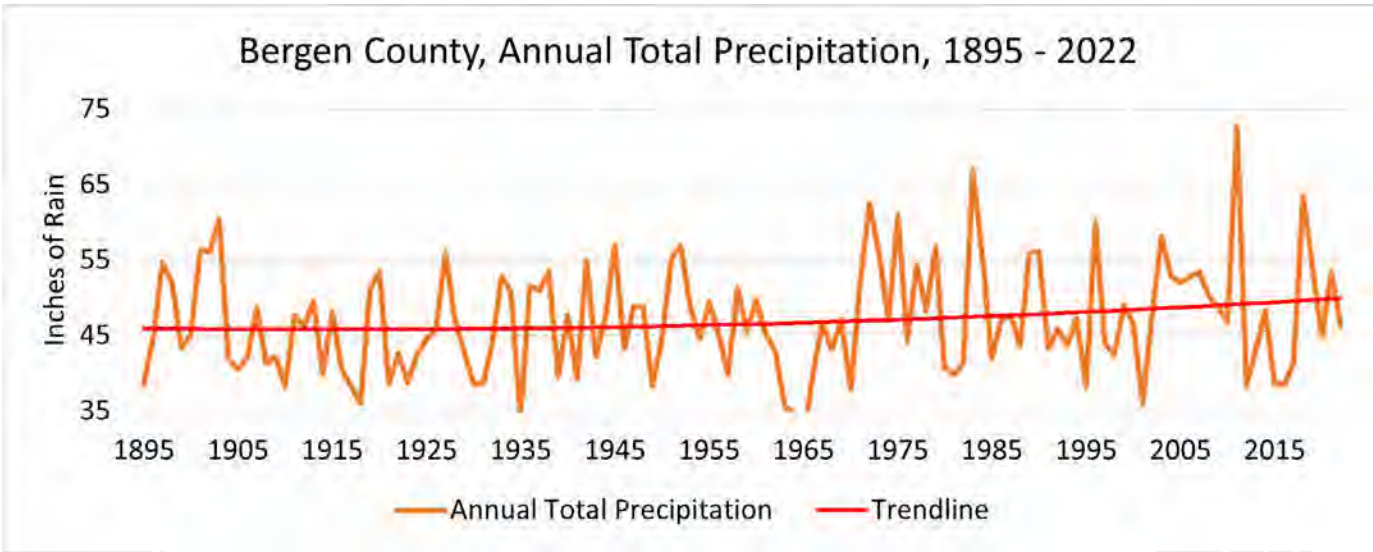



*Figure 17. Bergen County, Annual Total Precipitation 1895 - 2022 (ONJSC)*

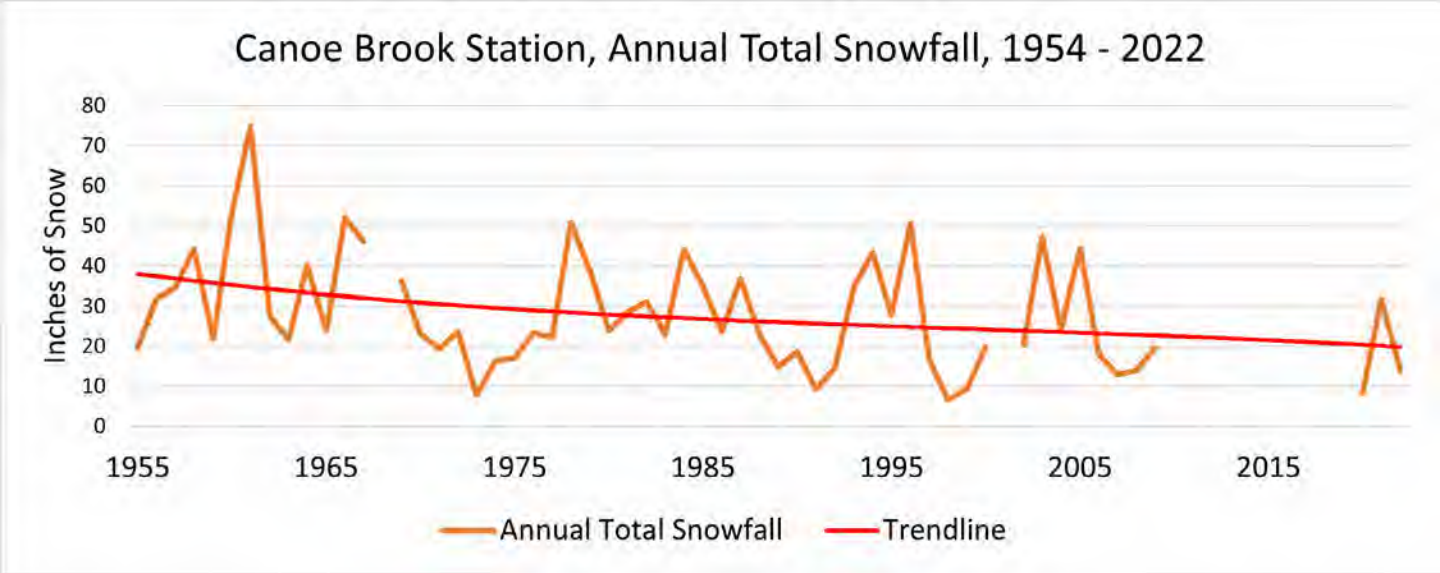



*Figure 18. Canoe Brook Station, Total Annual Snowfall 1954 - 2022 (ONJSC)*

example, in May 2015, the daily high temperatures surpassed any previous May since 1970. Years since 2010 are highlighted. The data show that out of 12 months in the year:

- 7 months have experienced their hottest average daily highs since 2010.
- 9 months have experienced their hottest average daily lows since 2010
- 9 months have experienced their hottest average temperature since 2010.
- No months have experienced their highest amount of precipitation since 2010.
- More records have been set in recent years for average daily lows than average daily highs, meaning that nights are warming faster than days.

**Table 15. Year in Which All-Time Monthly Records Were Recorded, Teterboro Airport**

| Month | Temperature (1970 - 2023) | | | Highest Total Rainfall (1974 - 2023) |
|---|---|---|---|---|
| | Highest Average Daily High | Highest Average Daily Low | Highest Monthly Average | |
| January | 2023 | 2023 | 2023 | 1999 |
| February | 2017 | 1998 | 2017 | 2008 |
| March | 2012 | 2012 | 2012 | 1983 |
| April | 2010 | 2017 | 2010 | 2007 |
| May | 2015 | 2012 | 2015 | 1984 |
| June | 2008 | 1973 | 2005 | 2009 |
| July | 1999 | 2013 | 2011 | 2004 |
| August | 2016 | 2018 | 2005 | 2011 |
| September | 2005 | 2018 | 2015 | 1999 |
| October | 2017 | 2017 | 2017 | 2005 |
| November | 2001 | 2006 | 2015 | 1977 |
| December | 2015 | 2015 | 2015 | 1996 |

*Source: Office of the New Jersey State Climatologist*

*Note: Highlighting indicates years since 2010*

## Drought

Teaneck is a water-rich environment with frequent and substantial precipitation.

However, the distribution of precipitation has changed. Large storms are occurring more frequently, dropping more rainfall when they come, and causing more damage. At the same time, droughts are occurring more frequently. **Table 16** shows the historical droughts recorded in Bergen County's Hazard Mitigation Plan, along with their peak severity according to the U.S. Drought Monitor. The severity of droughts is classified as 1 (moderate), 2 (severe), 3 (extreme), or 4 (exceptional). Some droughts, such as those having to do with longer-term issues like low reservoir levels, are identified by Bergen County's Hazard Mitigation Plan but not noted as occurring in Bergen County by the U.S. Drought Monitor. Missing from these records are the drought conditions experienced in 2022 due to high temperatures over the spring and summer, with a corresponding lack of rain.

This data shows that the region is getting hotter and more extreme, with higher annual temperatures, more precipitation, greater precipitation fluctuations, record-high monthly average temperatures and lows, and decreasing snowfall.

Sandy's high winds in 2012 resulted in many downed trees across the region. In recent years, Tropical Storm Isaias (2020) and Hurricane Ida (2021) caused substantial power outages and flood damage in Teaneck.[46, 47]

## Extreme Phenomena

### *Tropical Cyclones*

NOAA defines tropical cyclones as rotating, organized systems of clouds and thunderstorms that originate over tropical or subtropical waters.[45] Tropical cyclones tend to bypass New Jersey due to its protective location slightly inland of coastal outcrops to the north and south. When they do affect New Jersey, they affect coastal areas, although a few have traveled inland. In 2011, Hurricane Irene's heavy rains caused damage to roads and bridges as rivers overflowed their banks, while Hurricane

**Table 16. Historical Droughts Impacting Bergen County, 1895 - 2020**

| Date of Drought | Severity (1 to 4) |
|---|---|
| May 1929 to October 1932 | 3 |
| February 1949 to October 1950 | 3 |
| May 1953 to July 1955 | 3 |
| June 1961 to August 1966 | 4 |
| June 1980 to April 1981 | 4 |
| June 1984 to August 1985 | 4 |
| November 2001 | N/A - low reservoir levels |
| January - February 2002 | 4 |
| August - September 2002 | 1 |
| October 2002 | N/A - low reservoir levels |
| May to July 2006 | N/A |
| August to October 2010 | N/A |
| September 2015 to March 2016 | 2 |
| October 2016 to April 2017 | 2 |

*Source: U.S. Drought Monitor, Bergen County Hazard Mitigation Plan*

**Notable Tropical Cyclones:**

Hurricane Floyd: September 1999

Hurricane Irene: August 2011

Hurricane Sandy: October 2012

Tropical Storm Isaias: July 2020

Hurricane Ida: August 2021

***Landslides***

No landslides have occurred in the Township of Teaneck.[48]

***Earthquakes***

The NJDEP has recorded 16 earthquakes in Bergen County, of which 13 are considered microquakes with magnitudes of 2.0 or less.[49] The closest to Teaneck that an earthquake has occurred is a 2007 earthquake of magnitude 1.3 in Hackensack. The strongest earthquake recorded within 15 miles of Teaneck was in Yonkers, New York, in 1985 with a magnitude of two.[50]

**NJDEP Earthquakes:**

216 earthquakes recorded as of April 2023

Frequency of occurance is more along the fault lines in north-central New Jersey than in other parts of the state. New Jersey earthquakes are typically minor in nature, causing no damage.

## Urban Heat Island Effect

A heat island is a localized area which experiences higher temperatures than surrounding areas due to development.[51] Though often referred to as the urban heat island effect, this phenomenon also affects suburban areas such as Teaneck.

Heat islands are caused by modifications to the natural environment, such as buildings, roads, and other infrastructure. These features generally absorb more heat from the sun than natural ground cover would, in part due to their darker color. In addition, areas without trees do not benefit from the cooling effect of plants through a process known as evapotranspiration. Buildings and other structures may also block wind which would otherwise circulate cooler air. Waste heat from cars, air conditioners, buildings, and industry is also concentrated in developed areas.

This can be reduced through strategies such as:

- Lighter-color roofs.
- Reduced paved surface.
- Increased tree cover.

The Trust for Public Land has constructed a map of the heat island effect throughout the United States (**Figure 19**). Darker shades such, as red and orange, indicate the strongest effect. Substantial areas of urban heat island effect exist in Teaneck along the interstates and highways and near the commercial and industrial areas along the Cedar Lane. Other areas with higher heat island effect are seen along Teaneck Road.

## Climate Change

Climate Change refers to the impacts humans have on Earth's climate as a result of activities that emit greenhouse gases. Greenhouse gases (GHGs) are defined by the NJDEP as atmospheric gases that slow the rate at which heat radiates into space. In a stable climate, sunshine heats the earth, and that heat then radiates back into space. Because GHGs do not block the sunshine but prevent its heat from going back into space, they have a warming effect on the atmosphere, much like the glass roof of a greenhouse. Most GHGs occur naturally in earth's atmosphere, but human activity has caused a substantial increase in the concentration of GHGs in the atmosphere, thereby holding more of the sun's heat in and warming the planet. This has a complex effect on the earth's climate, which can already be observed.

According to the NJDEP's **2020 Scientific Report on Climate Change**, the state's annual average temperature has increased by 3.5°F since 1895.[52] According to Rutgers University's **New Jersey Climate Change Resource Center**, average annual precipitation has also increased by more than 3 inches since 1900, with greater volatility from year to year.[53] As noted by the Resource Center in its **2021 New Jersey State of the Climate Report**, this increased and more intense precipitation, along with sea level rise, has increased the frequency and length of coastal floods.[54]

Across urban areas, daytime temperatures are generally 1-7°F warmer than the region's baseline, and nighttime temperatures are 2-5°F warmer.

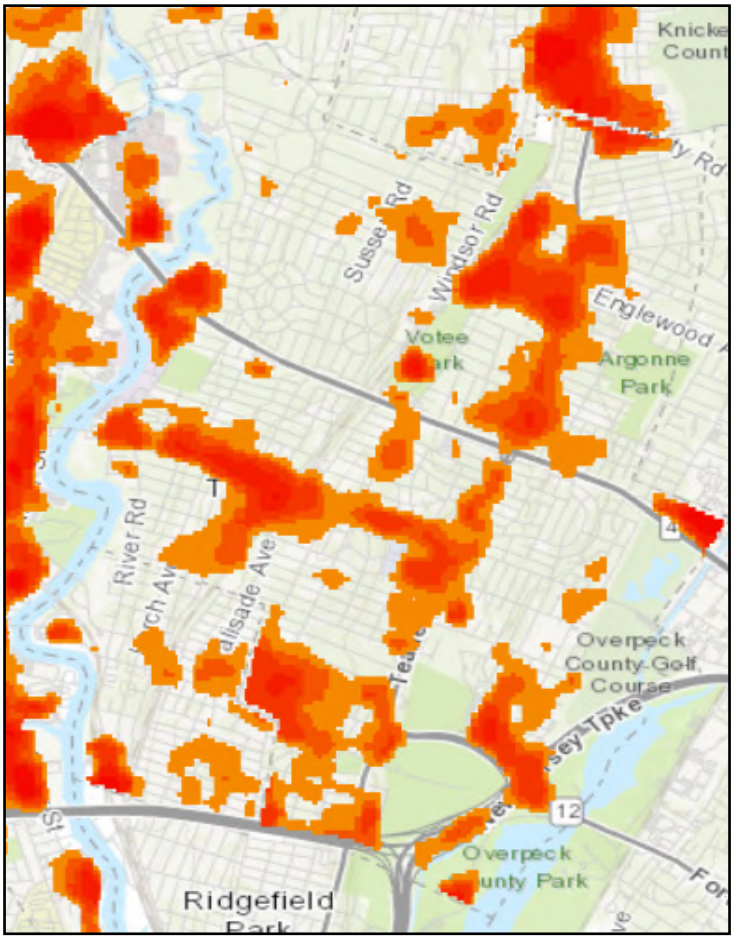



*Figure 19.* *The Trust for Public Land - Urban Heat Island Severity*

Climate change can have impacts on the health of humans. According to the **U.S. Center for Disease Control's (CDC) Climate Effects on Health Resources**, the predicted effects of climate warming on human health include heat stress and increased air pollution in summer, along with increased spread of disease due to increased temperatures in winter. These effects will vary based on

New Jersey is already experiencing the effects of climate change.

Summers are growing longer and hotter, while winters are getting shorter and warmer.

location. For example, residents of more urbanized areas are at higher risk for heat stress.

As noted in the CDC's **2020 Preparing for the Regional Health Impacts of Climate Change in the United States** report, climate-related disruptions to the water cycle will likely result in more intense rain events and more frequent periods of drought, causing disruptions to the food supply.[55] The CDC also notes that the northeastern United States, with its high concentration of polluted sites along historically industrial waterways, is particularly vulnerable to chemical contamination when there is flooding. Hot days can result in dangerous air quality due to the formation of ozone and the accumulation of pollutants.

Climate change will also have an impact on ecosystem health in the region. According to **NJDEP's 2020 Environmental Trends - Climate Change** report, predicted ecosystem repercussions of increased temperatures include:

- Loss of critical habitat.
- Further stress on already threatened and endangered species.
- Impacts on the water supply, agriculture, and fisheries.
- An increase in fires, pests, disease pathogens, and invasive weed species.

The USDA Forest Service (USFS) has modeled the specific impact that climate change will have on forests and trees of the Mid-Atlantic region, which spans 60 million acres across New Jersey, Pennsylvania, Delaware, and most of New York and Maryland.[56] The USFS predicts increased temperatures and precipitation, along with drought risk. Other predicted impacts include an increased risk of wildfire, changing conditions for tree regeneration and recruitment, increased suitability for southern species, decreased suitability for northern species, and increased damage from invasive plants, pests, and pathogens.

Of the 10 hottest summers in New Jersey since 1895, all have occurred since 1999. Nine have occurred since 2005.

- Office of the New Jersey State Climatologist, 2022 Summer Recap

***Wildfires***

Wildfires are worsening across the United States. Heat-trapping pollution is warming and affecting weather conditions, increasing the risks of wildfires. The NJDEP listed all of North Jersey as very high risk for wildfires. The report **Wildfire Weather: Analyzing the 50-Year Shift Across America**, focused on

three weather conditions which contribute to fire conditions: relative humidity, temperature and wind.[57] The brush fire which destroyed ten acres of Overpeck Park in 2023 is an example of these types of climate-related conditions.[58] In the summer of 2023, New Jersey faced the effects of wildfires from Canada, resulting in the air quality being the worst in 43 years. [59] There were 14 major wildfires, making 2023 the busiest fire season in more than a decade.[60]. American Lung Association and Rutgers Climate Change Resource Center provide adaptability strategies.

***Flooding***

With the changing climate, the Township has seen a surge in storms and hurricanes which has led to flooding in regions not affected previously. Although only a small part of the Township falls within the FEMA flood hazard zone (see **Map 14**), residents have been impacted by storms and flooding. The Township Engineer has identified homes along Belle Avenue, Pomander Walk, the Sagamore Park area, and Hawthorne Athletic Fields at higher risk from severe storms.[61] At present, the Township has undertaken mitigation efforts at the Belle Avenue location for these floods. Also, drainage issues have arisen from the CSX Railroad ditch.

***Plant Hardiness Zones***

Plant hardiness zones provide a general indication of the extent of overwintering stress experienced by plants and are based on the average annual extreme minimum temperatures.[62] Hardiness zones are used by horticulturists to evaluate the cold hardiness of plants. Plant hardiness zones and subzones are delineated by the USDA, which breaks the geography into zones by 10°F increments. North America is divided into 11 separate planting

The NJDEP offers three reports on climate change: 2020 New Jersey Scientific Report on Climate Change, 2021 Statewide Climate Change Resilience Strategy and 2022 Human Health Addendum.

Resilience Action Plans will be based on the 2021 Strategy policy framework and research from the 2020 and 2022 reports. The Plan will cover climate threats to New Jersey, the first being extreme heat. This report should be released in Spring 2024. A prelude to the plan recently release can be found here .

Additionally, the recently introduced Heat Hub NJ, a one-stop digital resource for all things related to extreme heat, provides information on effects of heat on individuals, communities, and the environment, along with real-time weather alerts, surveys, and quizzes. Furthermore, through participation in the Cooling Center Survey,individuals can contribute to the assessment and improvement of the facilities.

zones; each growing zone is 10°F warmer (or colder) in an average winter than the adjacent zone. Currently, Teaneck is in the Plant Hardiness Zone 7a. This could increase due to rising temperatures, reflecting the lengthening of the growing season and the types of plants endemic to the region.

**Climate Mitigation: Reducing Greenhouse Gas Emissions**

The primary driver of climate change is the ongoing emission of GHGs into the earth's atmosphere, primarily due to the extraction and combustion of fossil fuels. Reducing the continued emission of GHGs is the first and most direct step to mitigating climate change.[63]

The New Jersey Legislature enacted the **Global Warming Response Act** (GWRA) in 2007 and updated it in 2019. This law requires a reduction of GHG emissions by 80% below 2006 levels by 2050. An intermediate reduction requirement of 20% by 2020 was achieved. The 2019 updates to the GWRA require that the NJDEP collaborate with other state agencies and to share recommendations for reducing emissions, and the NJDEP's **2020 Global Warming Response Act 80 x 50 Report** (80 x 50 Report) describes progress to date and strategies for reaching the required emissions reductions.[64]

A breakdown of emissions sources is not available on the municipal level. However, carbon emissions per capita are generally highest in areas with car-dependent infrastructure and large homes. The transportation and building sectors likely make up an even higher percentage of Teaneck 's carbon emissions than the statewide figure of 68%. The **80 x 50 Report** attributes the state's success in meeting the 2020 emission reduction requirement to market and other forces which caused a transition from coal-fired power plants to power plants powered by natural gas. In addition to other complementary strategies, such as increasing ridership on mass transit, the report recommends transitioning the electric grid to:

New Jersey's met its carbon emissions reduction goal for 2020 due to market forces. The 2050 goal, to reduce carbon emissions by 80%, will require a "seismic shift." (NJDEP)

- 100% renewable energy.
- Electrifying 100% of light-duty vehicles.
- Electrifying 90% of building and water heating.

Legislation, agency reports, and executive orders relating to climate change continue to be produced. The **Energy Master Plan: Pathway to 2050** was released in 2019, outlining strategies to transition New Jersey's electrical grid to 100% renewable by 2050.[65] In 2020, Governor Murphy signed Executive Order 100: **Protecting Against Climate Threats** (PACT), which authorizes the NJDEP to make regulatory reforms to pursue the state's climate goal.[66]

***Resilience: Living in a Changed Climate***

Along with its efforts to reduce the scale of climate change, New Jersey is taking action to adapt to a changing climate. In 2019, Governor Murphy signed Executive Order 89,

creating the **Interagency Council on Climate Resilience** (ICCR).[67] The ICCR spans 17 agencies working together to maintain New Jersey's economic, environmental, and natural resources in the face of climate change. Executive Order 89 also created the **New Jersey Climate and Flood Resilience Program**, responsible for releasing the state's first **Climate Resilience Strategy** in 2021.

One component of the ICCR's work is the production of subject-specific **Resilience Action Plans**. The plan for extreme heat is scheduled for release, and more information about the process and public engagement opportunities is available here. The Resilience Action Plan and all other resilience work in the state is guided by the six main goals identified in the Climate Resilience Strategy, available here:

- Build resilient and healthy communities.
- Strengthen the resilience of New Jersey's ecosystems.
- Promote coordinated governance.
- Invest in information and increase public understanding.
- Promote climate informed investments and innovative financing.
- Coastal resilience.

### *Sustainable Jersey*

Sustainable Jersey certification recognizes actions taken by municipalities in New Jersey to reduce waste, cut greenhouse gas emissions, and improve environmental equity. Of the 564 Municipalities in New Jersey, 466 are registered with Sustainable Jersey.[72] Teaneck received bronze certification in October 2022 and the completion of this update to the ERI is part of its application for renewal of certification.[73]

### *Clean Energy Initiatives*

Renters, homeowners, and businesses in New Jersey can take advantage of various state rebate programs on energy-saving measures through their local utility.[68] In Teaneck, PSE&G offers resources for energy-saving practices, as well as an online marketplace for energy-saving items ranging from efficient water fixtures to smart home items.[69] Rebates are included in purchases from their online store at this website. There are an increasing number of public electric vehicle charging stations in and around Teaneck.[70] [71]

> The state's Climate Resilience Strategy defines climate resilence as "the ability of social and ecological systems to absorb and adapt to shocks and stresses resulting from a changing climate, while becoming better positioned to respond in the future."

*Photo: Andreas Park*

# Chapter 10.

# Air

## Air and Teaneck Township: Fast Facts

» Air quality is monitored by the NJDEP's Division of Air Quality through 30 air monitoring stations across the state, to ensure that air quality meets national standards.

» In 1970, the federal government passed the Clean Air Act, which set air quality standards. The Act was amended in 1990 under which, it is the responsibility of the EPA to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, fine particulates, and lead.

» New Jersey utilizes data from its monitoring network to track specific pollutants.

» Recent years have shown varying numbers of days with Air Quality Index (AQI) values surpassing 100: 19 in 2018, 14 in 2019, and 6 in 2020. The lowest number of exceedance days occurred in 2020, likely due to reduced traffic resulting from the COVID-19 pandemic. However, air pollutant levels returned to pre-pandemic levels in 2021.

» State regulations set noise limits above 50 decibels during nighttime (10:00 pm to 7:00 am) and 65 decibels during the day, with municipalities allowed to adopt more stringent ordinances. Teterboro Airport is a source of noise pollution in Teaneck. The Teterboro Aircraft Noise Abatement Advisory Committee, which includes Teaneck, works with the airport to address noise concerns. Runway 24 at Teterboro Airport accounted for 61% of departure flights in 2021, and there were 85 noise complaints related to the airport.

The NJDEP's Division of Air Quality (DAQ) oversees 30 air monitoring stations across the state to ensure that air quality levels meet the national standards set by the federal Clean Air Act as well as various state laws and regulations.[74] The local air monitoring stations help the NJDEP assess:

- The population's exposure.
- Determine the impact of major pollution sources.
- Measure background levels.
- Determine the extent of regional pollutant transport.
- Measure secondary impacts in rural areas.

The levels recorded for many pollutants vary greatly from season to season and even from day to day depending on weather conditions and traffic patterns.

## National Clean Air Standards

In 1970, the federal government passed the Clean Air Act, which set air quality standards to be met throughout the country. The Act was amended in 1990, with focus on four areas of pollution[75]:

- Acid rain.
- Urban air pollution.
- Toxic air emissions.
- Stratospheric ozone depletion.

The amendment also introduced a permit program and strengthened enforcement. Under the Act, it is the responsibility of the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six common pollutants (ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, fine particulates, and lead) and the responsibility of each state to develop State Implementation Plans (SIPs) to attain and maintain these standards. In New Jersey, that role is assigned to the DAQ.

> Under the Clean Air Act, EPA is responsible to set National Ambient Air Quality Standards (NAAQS) for six common pollutants such as ozone, carbon monoxide, sulfur dioxide, nitrogen dioxide, fine particulates, and lead.

## Regional/Local Statistics

The State uses the air quality data from its air monitoring network to determine which areas comply with NAAQS as well as overall trends in air pollution levels. The NJDEP produces yearly reports known as the New Jersey Air Quality Reports and provides real-time reporting through its Air Quality Index (AQI) website.[76] Each monitoring site measures a limited set of pollutants; no one site tracks them all. **Figure 20** illustrates the location of the air monitoring stations in northern New Jersey.

The AQI rates air quality based on the NAAQS, on a scale from zero to 500 (**Figure 21**).[77] AQI pollutants include ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. A score of 50 to 100 is considered a moderate level of concern.

*Figure 20. [NJDEP Northern New Jersey Air Monitoring Sites]*


In 2021, New Jersey exceeded an AQI of 100 on 15 days. 14 of these days were considered "Unhealthy for Sensitive Groups" and was considered "Unhealthy."

The number of days with AQI values over 100 in recent years has been 19 in 2018, 14 in 2019, and 6 in 2020. The number of exceedance days in 2020 was the lowest in recent years, likely due to decreased traffic throughout the year in response to the COVID-19 pandemic and related closures of businesses, offices, schools, and other destinations. At the New Jersey Clean Air Council's annual public hearing in April 2022, data was presented to show that COVID-19 measures most strongly affected ozone, nitrogen dioxide, and particulate matter.[78] In 2021 air pollutant levels returned to pre-pandemic levels.

## Criteria Pollutants

The six pollutants for which standards have been set by the EPA, ozone, sulfur dioxide, carbon monoxide, nitrogen dioxide, particulate matter, and lead, are known as criteria pollutants and are regulated by air quality standards.

Since 1997, annual concentrations of all criteria pollutants in New Jersey have decreased.[79] Air quality has improved significantly over the last fifty years since the advent of environmental regulation in 1970. New Jersey has attained NAAQS levels of lead, carbon monoxide, sulfur dioxide, and nitrogen dioxide for many years. There are still periodic exceedances of the NAAQS for ozone and fine particulates.

**Air Quality Index Levels and Associated Health Impacts**

| AQI Level of Health Concern | Numerical Value | Meaning | Color Code |
|---|---|---|---|
| Good | 0 to 50 | Air quality is considered satisfactory, and air pollution poses little or no risk. | Green |
| Moderate | 51 to 100 | Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution. | Yellow |
| Unhealthy for Sensitive Groups | 101 to 150 | Members of sensitive groups may experience health effects. The general public is not likely to be affected. | Orange |
| Unhealthy | 151 to 200 | Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects. | Red |
| Very Unhealthy | 201 to 300 | Health warnings of emergency conditions. The entire population is more likely to be affected. | Purple |
| Hazardous | 301 to 500 | Health alert: everyone may experience more serious health effects. | Maroon |

*Figure 21. NJDEP Air Quality Index Guide*

***Ozone, $O_3$***

Ozone ($O_3$) is a gas consisting of three oxygen atoms. It occurs naturally in the upper atmosphere, where it offers protection from harmful ultraviolet rays and has been the subject of successful environmental efforts to maintain its presence.[80] However, when found at ground level, ozone can have serious adverse health effects.

> Ground-level ozone is formed through a chemical reaction involving nitrogen oxides ($NO_x$), volatile organic compounds (VOCs), and the presence of heat and sunlight.

Volatile organic carbons (VOCs) are a group of compounds typically emitted in industrial processes and leached into the air as gases from common household products, such as paint and certain plastics.[81] Nitrous oxides ($NO_x$), are a family of poisonous gases produced by the combustion of fuels and largely associated with on-road emissions from cars and trucks.[82] VOCs and $NO_x$ are emitted year-round, but ozone only forms in warmer and sunnier conditions. The ozone season is defined as the annual period between March and October.

Statewide, New Jersey is classified as a "marginal" ozone non-attainment area for NAAQS. A state is considered to be in non-attainment for ozone in a given year if, at any monitoring stations, the three-year average of the fourth-highest daily maximum 8-hour average concentration exceeds 0.070 parts per million (ppm). The Leonia station, at 0.071 ppm, is the only New Jersey station to exceed this standard. New Jersey's standard of 0.12 ppm 1-hour concentration has not been exceeded since 2018. However, the 8-hour average concentration

exceeded the NAAQS of 0.070 ppm at some stations on 13 days in 2021, causing the AQI on those days to reach the "Unhealthy for Sensitive Groups" range. The EPA also defines a primary contributor to the AQI for each day by county.

> In 2021, the primary contributor to AQI in Bergen County on 142 days of the year was ozone.
>
> *Source: Air Quality Index Report: Bergen County,NJ 2021. https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report*

The ozone monitoring stations closest to Teaneck are the Leonia, Fort Lee Near Road, and Paterson stations. The Leonia station is located at the convergence of all major state thoroughfares to the George Washington Bridge, while Fort Lee Near Road is located along Interstate 95 Lower Level near the Palisades Interstate Park Commission, and Paterson station is located near the intersection of Broadway Avenue and Memorial Drive.

Teaneck is closest in geography and type to the Leonia station, which reported 1-hour concentrations up to 0.103 ppm and 8-hour concentrations up to 0.084 ppm (**Table 17**). In 2021, the Leonia station exceeded the 8-hour NAAQS on 8 separate days. Leonia is the most frequent station to exceed the NAAQS and the only one in the state in overall non-attainment and is categorized as moderate.

The effort to lower ozone concentrations has focused on reducing emissions of VOCs, but further improvements will require reductions in both VOCs and $NO_x$. New Jersey falls within the EPA's Ozone Transport Region, where local ozone is particularly impacted by the regional transport of ozone-forming $NO_x$.[83] Continued interstate cooperation may be required to achieve further reductions in New Jersey's ozone levels.

### *Sulfur Dioxide, $SO_2$*

Sulfur Dioxide ($SO_2$) is a heavy, colorless gas with a suffocating odor that easily dissolves in water to form sulfuric acid, or acid rain. $SO_2$ gases can be formed when fuels containing sulfur are burned, or when gasoline is extracted from

**Table 17. 2021 Ozone Concentrations (ppm)**

| Monitoring Site | 1-Hour Average Concentration (NJ Standard: 0.12 ppm) | 8-Hour Average Concentration (NAAQS Standard: 0.070 ppm | | |
|---|---|---|---|---|
| | Maximum | Highest Daily Maximum | 4th Highest Daily Maximum | 4th Highest Daily Maximum: 2018-2021 Average |
| Leonia | 0.103 | 0.084 | 0.076 | 0.071 |

*Source: 2021 New Jersey Air Quality Report*

crude oil. Most of the sulfur dioxide released into the air comes from the combustion of fossil fuels in power plants and industrial processes, and it is particularly associated with the burning of coal.

As the northeastern United States has phased out the use of coal, the regional average concentration of $SO_2$ has decreased by 90% since 2000 and been well in attainment of the NAAQS standard for over 10 years.

$SO_2$ can be harmful to people (primarily children, the elderly, and asthmatics) and the environment. It reacts with other gases and particulates in the air to form sulfates, which have their own harmful effects. Sulfates are the primary cause of reduced visibility in the eastern United States. $SO_2$ can also react with other substances in the atmosphere to form acid rain, which damages forests, crops, aquatic environments, and buildings.[84]

New Jersey has been in $SO_2$ attainment since 2015. The State has more stringent requirements which were also met in 2021. Regulations requiring the use of low sulfur fuels in New Jersey have been effective in lowering $SO_2$ concentrations.

The last year an exceedance of the national $SO_2$ standards was recorded in the state was 2013-2014.[85] The activities of a coal-fired power plant in Portland, Pennsylvania, are believed to be the primary reason for this 2013-2014 exceedance, and New Jersey has not been near NAAQS exceedance any year since the power plant's closure in 2014.

***Carbon Monoxide, CO***

Carbon monoxide (CO) is a colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely. The primary sources of carbon monoxide emissions in New Jersey are on-road and off-road vehicles, with boilers, incinerators, and forest fires also contributing.

90% of New Jersey's CO comes from internal combustion engines.

Outdoor CO levels can reach dangerous levels in cases of a weather inversion, where a layer of air becomes trapped at the earth's surface, allowing pollutants to build up without the usual circulation.

Carbon monoxide reduces the oxygen-carrying capacity of blood and, therefore, slows the flow of oxygen to critical parts of the body. CO does not occur in outdoor air at the lethal concentrations which can be recorded in indoor air. However, even at the lower concentrations which occur in outdoor air, exposure to CO can result in headaches and nausea. CO can be more damaging for individuals with cardiovascular disease, reducing ability to exercise and causing chest pain.[86]

The CO monitoring stations closest to Teaneck are Fort Lee Near Road , Newark Firehouse, and Jersey City. At these stations, concentrations were well below the national and state standards, though the highest values of any monitoring site in the state were recorded at Newark Firehouse.

### *Nitrogen Dioxide, $NO_2$*

Nitrogen dioxide ($NO_2$) is a reddish-brown, highly reactive gas that is formed in the air through the oxidation of nitric oxide (NO). When it reacts with other chemicals, it can form ozone, particulate matter, and other pollutant compounds. $NO_2$ is generally used as an indicator for the group of gases known as nitrogen oxides ($NO_x$), which are emitted from the combustion of fossil fuels in vehicles, power plants, home heating and cooking, and industrial processes. $NO_x$ is primarily released by motor vehicles, so concentrations in the air tend to peak during and immediately after the morning and evening rush hour.

$NO_2$ can aggravate or cause respiratory illness, and prolonged exposure can permanently damage the lungs. NO and $NO_2$ can irritate the eyes, nose, throat and lungs and cause nausea and tiredness. The environmental effects of $NO_x$ can include:[87]

- Acidification of freshwater bodies.
- Eutrophication of coastal waters.
- Increases in levels of toxins harmful to fish and other aquatic life.

New Jersey began routinely monitoring $NO_2$ in 1966. The last year in which the annual average $NO_2$ concentration exceeded standards was 1974, and it has not exceeded the 1-hour NAAQS since their implementation in 2010. Since 1975, $NO_2$ concentrations in New Jersey have fallen steadily to around 40 ppb. The Fort Lee Near Road, Elizabeth Lab, and Bayonne stations had the highest 1-hour concentrations, but were never in excess of the 100 ppb NAAQS.

> No monitoring sites in New Jersey exceeded $NO_2$ standards in 2021.

$NO_2$ concentrations scored well within the NAAQS, but oxides of nitrogen continue to be of concern because of their role in the formation of other pollutants, particularly ozone and fine particles. Because $NO_X$ generally originates in internal combustion vehicles, it may be of particular concern in parts of Teaneck close to major Interstates such as I-95 and I-80, as well as Route 4 which passes through the town.

## Particulate Matter

Particulate air pollution consists of any artificial or natural particles suspended in the air, such as dust, dirt, smoke, sea salt, and liquid droplets.[88] At any size, these particles can affect the environment. The total of all particulates, of whatever size, is referred to as Total Suspended Particulates (TSPs). Particulates less than 10 micrometers in diameter ($PM_{10}$) are Inhalable Particulate Matter because they can be inhaled into and accumulate in the respiratory system. Particulates less than 2.5 micrometers ($PM_{2.5}$), called

Fine Particulate Matter, are believed to pose the greatest health risk, penetrating deep into the lungs, heart, and even bloodstream to exacerbate heart and lung diseases and cause heart attacks. $PM_{10}$ is considered less dangerous but can irritate the eyes, nose, and throat.

In 2021, all areas of New Jersey were in attainment of the national standard of 150.0 micrograms [one-millionth of a gram] per cubic meter air (μg/$m^3$) for Inhalable Particulates, $PM_{10}$. The closest of the three $PM_{10}$ monitoring stations to Teaneck is Jersey City Firehouse, where the highest 24-hour concentration recorded was 41.0 μg/$m^3$, well in attainment.

All sites in New Jersey also met the annual standard for Fine Particulates, $PM_{2.5}$. However, the Fort Lee Near Road and Newark Firehouse monitoring stations both exceeded the 35.0 μg/$m^3$ 24-hour standard on July 20, 2021. This exceedance can be attributed to wildfire smoke from the west that winds brought over to New Jersey.

Smoke from wildfires can lead to an exceedance of fine particulate matter.

## Lead

Lead is a hazard to the health of humans and the environment, whether in the air, in paint, in water, or in soils.[89] Though action standards are still defined for lead exposure, there is consensus that no level of lead exposure can be considered safe. Lead has its main impact on the nervous system, particularly in children. Exposure to lead is linked with learning disabilities, mood issues, and lowered IQ. In adults, it can also impact the cardiovascular system and is considered a probable human carcinogen. Lead from the air or water may also accumulate in soil and sediments.

Before the 1970s, lead was a common air pollutant due to its use as an additive in gasoline.

New Jersey no longer has any significant industrial sources of lead, but small airplanes continue to use leaded gasoline and are estimated to release over 4 tons of lead annually into New Jersey's skies as of 2017. In 2008, the NAAQS level was set at 0.15μg/m3 for a rolling 3-month average. As of 2022, there are 21 areas nationwide that are in non-attainment. The closest location is in Berks County, Pennsylvania.

Nationwide, since 1980, phase-out of leaded gasoline has led to a 99% decrease in the average lead air concentration.

Since 2012, there has been one lead monitoring station in New Jersey, at the Newark Firehouse. The measurements taken in 2021 ranged between 0.001 and 0.003 μg/$m^3$, well below the NAAQS level.

## Air Toxics

Additional air pollutants that may cause adverse health effects but are not criteria pollutants are referred to as Hazardous Air Pollutants (HAPs) or air toxics.[90] Almost 200 air toxics have been identified on the list of HAPs maintained by the EPA.[91] The source of air toxics varies by pollutant, but in New Jersey, the majority of all air toxics are produced by internal combustion engines, with non-point sources accounting for most of the rest and heavy industry accounting for only a small portion. Non-point sources include emissions from buildings, pesticide use, consumer products, and various small-scale industrial processes.[92]

> In 2018, Bergen County released more air toxics than any other New Jersey county, with a substantially higher proportion coming from non-point sources in comparison to other counties.

The EPA and other agencies have developed health benchmarks for all HAPs, representing the concentration generally considered safe to breathe on a daily basis. NJDEP calculates a risk ratio by dividing annual average concentrations of each HAP by its health benchmark. Risk ratios greater than one indicate that a given pollutant may be of concern, substantially increasing the risk for cancer or other negative health effects.

NJDEP Air Monitoring Stations closest to Teaneck are at Chester Borough and the City of Elizabeth. Chester's station is considered a baseline. Given that most air toxics come from internal combustion, such as the vehicles on the Interstates I-95 and I-80, Route 4, and the lawnmowers throughout suburban North Jersey, Teaneck may fall between the concentrations observed at Chester and Elizabeth. Chester exceeded health benchmarks for 8 different air toxics, and Elizabeth for 9. These results can be seen in **Table 18**.

The NJDEP also monitors certain toxic metals and elements, most of which fall well below their health benchmark at all stations. However, the Elizabeth station recorded cadmium levels above the health benchmark, and both Elizabeth and Chester recorded chromium levels above the health benchmark.

The two chemicals with the highest risk ratios reported at the Elizabeth site are acrolein and formaldehyde. Acrolein is a colorless or yellowish liquid that is used to make tear gas, drugs, and plastics.[93] It is irritating to the eyes, skin, and lungs if inhaled.

Formaldehyde is a colorless gas with a strong odor that is sold commercially in a methanol and water solution.[94] It is used in making resins and textiles, and as an intermediate in the synthesis of other chemicals. It is also used as a disinfectant, fertilizer, fungicide, and embalming solution. It is a known carcinogen. Both chemicals are listed on the NJ Department of Health's Hazardous Substance List.

## Radon

Radon is an invisible and odorless radioactive gas resulting from the breakdown of naturally occurring uranium in soil and rock.[95] Radon is primarily a concern for indoor air quality. It builds up in homes as it seeps out of bedrock and through any crack or opening in a home's foundation. Radon releases radioactive energy, causing lung damage and lung cancer.

NJDEP estimates of radon risk based on real occurrences of radon contamination place Teaneck in a low-risk category.[96] This means that within the municipality, at least 25 homes were tested, with less than 5% having radon readings greater than or equal to 4.0 pCi/L (picocuries per liter).[97] EPA recommends action in homes with a radon level of 4 pCi/L or more, but also notes that there are no safe levels of radon, and action may be appropriate above 2 pCi/L. As a harmful pollutant which builds up in indoor air, the threat of radon exposure varies from home to home. As residents better insulate and seal their homes to reduce energy usage, they may cause elevated levels of radon to accumulate. Although testing for radon is only required at the time a home is sold, improving the structure's insulation or doing foundation work, may change the radon level in a home.[98]

In the United States, radon is the second main cause of lung cancer and kills at least 15,000 people per year.

## Noise

The Noise Control Act of 1971 authorizes NJDEP to regulate noise from stationary industrial, commercial properties and railroads in New Jersey.[99] Other sources of excess noise are regulated as a public health nuisance enforced by a local public health agency or as a disorderly person's offense enforced by police. Noises are defined as a public health nuisance when they are "unreasonably or unnecessarily loud."[100] State regulations are applicable to noises above 50 decibels from the hours of 10 pm to 7 am and 65 decibels during the day,

**Table 18. 2021 Air Toxics Above Their Health Benchmark**

| Pollutant | Health Benchmark (µg/m³) | Annual Mean Risk Ratios | |
|---|---|---|---|
| | | Chester | Elizabeth |
| Acetaldehyde | 0.45 | 3 | 5 |
| Acrolein | 0.02 | 36 | 45 |
| Benzene | 0.13 | 3 | 6 |
| 1,3-Butadiene | 0.033 | 0.3 | 2 |
| Carbon Tetrachloride | 0.17 | 3 | 3 |
| Chloroform | 0.043 | 2 | 3 |
| Chloromethane | 0.56 | 2 | 1.8 |
| 1,2-Dichloroethane | 0.038 | 1.4 | 1.3 |
| Formaldehyde | 0.08 | 30 | 47 |

*Source: 2021 New Jersey Air Quality Report*

though individual municipalities may adopt more stringent ordinances.[101]

Of particular concern in Teaneck is Teterboro Airport, a general aviation airport managed by the Port Authority of New York and New Jersey.[102] The airport does not offer commercial flights and has a weight restriction for aircraft. The airport also has in place mandatory noise limits for departing aircraft and a voluntary restriction on traffic between 11 pm and 6 am.[103]

The airport's most recent **Noise Compatibility Program** was approved in January 2023 by the Federal Aviation Administration and involves mandatory as well as voluntary measures for pilots and airport administration.[104] The airport consults with a committee representing local municipalities, known as the Teterboro Aircraft Noise Abatement Advisory Committee.[105] The committee includes Teaneck as the Township falls within a five-mile radius of the Teterboro Airport.

Runway 24 is the cause for noise as per the 2023 **Noise Monitoring Report** with 52% of departure flights utilizing this runway.[106] As of the first quarter of 2023, there have been 25 complaints.

## Odors

The NJDEP classifies odor as air pollution when it is severe enough to unreasonably interfere with the enjoyment of life or property.[107] In many cases, odor is an indicator of chemicals described above, which are regulated separately by the NJDEP. The CDC notes that the best strategy for addressing odor issues is prevention zoning, time of day operating restrictions, filtering, and emission control.[108]

## Meteorology and Pollution

Pollution levels are affected by meteorological attributes like wind speed and direction, temperature, and solar radiation.[109] Meteorology is an important factor in the levels of ozone in particular, as it is largely a secondary pollutant created from the chemical reaction of other pollutants in the presence of heat and sunshine.

**Chapter 9** outlines climate patterns in Teaneck, which may impact pollution levels. Of particular note is the effect of dominant westerly winds, which carry weather patterns and pollution from west of the state over and across New Jersey. These westerly winds migrate substantially from north to south, bringing different levels of pollution from areas outside the state, causing substantial variation within the state.

*Photo: Historic Swing Bridge, Historic New Bridge Landing, Bergen County Historical Society*

# Chapter 11.

# Transportation

## Transportation

### *Modal Split*

The U.S. Census Bureau collects data on how workers commute.[110] According to their estimates, there were 20,165 workers 16 years or age and older in Teaneck as of 2021. Of those workers:

- 10,864 drove alone.
- 1,356 carpooled.
- 3,677 rode a bus.
- 46 used commuter rail.
- 493 walked.
- 3,362 worked from home.

### *Roadways*

The Federal Highway Administration classifies roadways, based on the Highway Functional Classification system, as arterials, collectors, and local roads. The Township of Teaneck's 2007 Master Plan Circulation Element further divides arterials into primary arterials, secondary arterials.[111]

*Primary arterials* include Interstate Routes 80 and 95 and New Jersey Route 4. I-80 and I-95 are limited-access highways that carry traffic from one state to another. NJ Route 4 begins in Fort Lee at the George Washington Bridge and runs east to west across Bergen County terminating in Elmwood Park.

*Secondary arterials* in Teaneck generally carry traffic either north-

south or east-west. North-south arterials include Teaneck Road, Queen Anne Road, Palisade Avenue, Windsor Road, and River Road. Fort Lee Road, DeGraw Avenue, Cedar Lane, Forest Avenue, Tryon Avenue, New Bridge Road, Roemer Avenue, Liberty Road/Ivy Lane, and Hargreaves Avenue are east-west secondary arterials.

*Collectors* in Teaneck carry traffic either north-south or east-west. North-south collectors includes Glenwood Avenue, Van Cortlandt Terrace, Park Avenue, American Legion Drive, Garrison Avenue/ Sussex Road, Larch Avenue, Lincoln Place, Elm Avenue, and East Lawn Drive. East-west include Fycke Lane, Lindbergh Boulevard, Beverly Road, Forest Avenue, State Street, Englewood Avenue, West Englewood Avenue, Ward Plaza, Sagamore Avenue, and Grayson Place.

All other roads are considered *local roads*.

### *Mass Transit*

*Rail*. The closest NJ Transit stations are the New Bridge Landing Station in River Edge and the Anderson Station in Hackensack which has the Pascack Valley Line, with direct service to Secaucus Junction, Hoboken, and other towns in New Jersey and New York's Rockland County. There are over 15 weekday departures and 10 weekend departures in each direction.

*Air*. The nearest airport, Teterboro Airport, hosts only private services. There are three major public international airports within 40 miles: Newark Airport, John F. Kennedy Airport, and La Guardia Airport, which operates as a domestic airport. All are accessible by multiple transit via transfers in New York City.

*Bus*. Teaneck is served by the NJ Transit.[112] There are multiple bus routes that run along or intersect major Teaneck roadways connecting to other towns in New Jersey and New York. Rockland Coaches, Inc. (the Red and Tan Lines) also operates a bus service in Teaneck.[113] The 11A route provides service to the Port Authority Bus Terminal in midtown Manhattan. The Paterson-New York Jitney service currently exists along Route 4.[114]

> Teaneck is connected to other New Jersey towns and New York via buses served by New Jersey Transit.

### *Bicycle & Pedestrian*

As in many suburban towns, Teaneck's historic thoroughfares were converted into streets designed for higher-speed car traffic, without space for bicycle or pedestrian mobility. In 2011, Teaneck Township with the assistance of the NJ Department of Transportation, Office of Bicycle and Pedestrian Programs, developed a **Bicycle and Pedestrian Master Plan**.[115] It included:

- A compatibility assessment of sidewalks, roadways, and intersections using NJDOT guidelines.
- An analysis of reported bicycle and pedestrian crashes.

- The identification of bicycle and pedestrian facilities and trip generators.

These components helped to create on-road bicycle facility improvements and pedestrian facility improvements.

In 2011, Teaneck adopted a **Complete Streets Policy** under direction of the Teaneck Environmental Commission to reach their goal of improving bicycle and pedestrian facilities, improve bicycle and pedestrian accessibility, and develop education initiatives to advance residents awareness of best bicycle and pedestrian practices.[116] Examples of Complete Streets improvements include:

- Installation of new sidewalks.
- ADA-compliant crosswalks and curb ramps.
- Pedestrian countdown signal heads other pedestrian safety improvement features along sections of Route 4 and the local roadway system.[117]

A study published by the University of Colorado found that building safe facilities for cyclists is one of the biggest factors in road safety for everyone.

***Community Transportation Services***

Residents of Teaneck can take advantage of four community transportation services:

*Bergen County Community Transportation*[118]: This is a free curb-to-curb transportation service for persons with disabilities, senior citizens, veterans, and welfare to work residents. It includes transportation for routine medical visits, senior activity centers, shopping, employment, education, recreation, post-stroke programs, and meals on wheels.

*Access Link (New Jersey Transit)*[119]: This door-to-door ride service is provided by NJ Transit for people with disabilities who are unable to use a local fixed-route bus. All Access Link rides begin and end within a ¾-mile radius of an eligible bus route or light rail station, excluding commuter buses.

*EZ Ride*[120]: This is a door-to-door ride service provided through a public-private partnership. This service provides direct route transportation that fills the gap between fixed-route/ fixed-schedule services and other expensive, private options.

*Teaneck Senior and Disabled Transportation Services*[121]: This is a curb-to-curb ride service provided by the Recreation Department for people with disabilities who are unable to use a local fixed route bus. This service is by appointment and includes transportation for medical appointments in Teaneck, Englewood, or Hackensack as well as grocery shopping.

To schedule Teaneck Senior and Disabled Transporatation Services, Teaneck's residents can call the Township's Transportation Coordinator at 201-837-7130 extension 7040 during the hours of 8 AM am to 5:15 pm.


*Photo: Teaneck Creek Conservancy*

# Chapter 12.

# Known Contaminated Sites

Soil and groundwater contamination are tracked by the state and federal governments.[122] This review and monitoring includes the following:

- **Brownfields**: Per N.J.S.A. 58:10B-23.d, they are "any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant." Generally, brownfields are properties that are abandoned or underutilized because of either real or perceived contamination.
- **Community Right to Know** (CRTK) Program: Collects, processes, and disseminates the chemical inventory, environmental release, and materials accounting data required to be reported under the New Jersey Worker and Community Right to Know Act and the federal Emergency Planning and Community Right to Know Act of 1986.
- **Known Contaminated Sites**: Point source occurrences which are specific and limited.[123]

As of 2021, the NJDEP Site Remediation Program maintains a list of 14,461 sites with 11,205 of those sites listed as active cases managed by a New Jersey Licensed Site Remediation Professional.

Sites that have been confirmed as contaminated and are undergoing remedial investigation, cleanup, or awaiting assignment of a Licensed Site Remediation Professional (LSRP) include private residences, active/abandoned manufacturing/ commercial properties, and gas stations.[124] The list does not include sites that have been successfully remediated.

## Brownfields

The State of New Jersey encourages municipalities and counties to redevelop their brownfields as part of Smart Growth initiatives. According to NJDEP's NJ-GeoWeb website, no brownfield sites were identified within in Teaneck Township.[125]

## Community Right to Know

The CRTK program is responsible for collecting and disseminating data on hazardous substances produced, stored, or used at companies in New Jersey.[126] Companies or organizations storing certain hazardous substances in levels above specific threshold amounts are required by state and federal law to file annual reports.

The Release and Pollution Prevention Report (RPPR) collects information for the NJDEP CRTK and Pollution Prevention programs. It gathers data on toxic chemicals from multi-media environmental releases, on-site waste management, and off-site transfers, collectively known as material accounting.

The Emergency Planning Community Right-to-Know Act (EPCRA) is a federal regulation that establishes requirements regarding emergency planning and Community Right-to-Know reporting on hazardous toxic chemicals to increase public knowledge and information about chemical uses.

There were 28 CRTK sites identified by the NJDEP in Teaneck Township. Of these, three are exempt, and two are EPCRA (**Table 19**).

## Known Contaminated Sites

The Known Contaminated Sites (KCS) list includes those sites and properties within the state where contamination of soil or groundwater has been confirmed at levels equal to or greater than applicable standards. KCS may include:

- *Active Sites* are those with confirmed contamination that have one or more active cases and any number of pending and/or closed cases;
- *Pending Sites* are those with one or more pending cases, no active cases, and any number of closed cases; and
- *Closed Sites* are those with only closed cases and no active or pending cases.

The KCS list was produced in response to the **Brownfield and Contaminated Site Remediation Act** (N.J.S.A. 58:10-23.16-17). It also satisfied obligations under the **NJ New Residential Construction Off-Site Conditions Disclosure Act** (N.J.S.A. 46:3C1 et seq.). Sites included can undergo a wide variety of remedial activities. The sites with complex contamination issues can have several sources, which can affect both soil and groundwater.

| Table 19. Community Right to Know Sites in Teaneck Township | | | |
|---|---|---|---|
| **PI Number** | **Facility Name** | **Physical Address** | **Status** |
| 00000004025 | Peace Health Partners PC | 718 Teaneck Road | EPCRA Only |
| 00000009743 | GH Gas Supply LLC | 1261 Teaneck Road | CRTK/RPPR |
| 00000021288 | Teaneck Ignition Service LLC | 1188 Teaneck Road | CRTK/RPPR |
| 00000022643 | Pasmel Property Inc. | 738 Cedar Lane | CRTK/RPPR |
| 00000065671 | Nathan Turner Landscaping Serv. | 126 Copley Avenue | CRTK/RPPR |
| 00000069817 | McElroy Therapeutic Intervention | 283 Woodbine Street | CRTK/RPPR |
| 00000071311 | F Y Guevarra Motorworks Inc. | 738 Cedar lane | CRTK/RPPR |
| 00000070594 | EP Supply Inc. | 455 Alfred Avenue | EXEMPT |
| 00000071378 | On the Spot Auto Service LLC | 58 Fycke Lane | CRTK/RPPR |
| 00000073549 | Teaneck Express Lube, Auto Care | 762 Palisade Avenue | CRTK/RPPR |
| 00000077026 | AT&T -USID48701 | 250 Colonial Court | CRTK/RPPR |
| 00000077106 | All Terrain Global Logistics Inc. | 300 Beech Street | CRTK/RPPR |
| 00000077145 | Perl Pigments LLC | 757 Wintrop Road | EXEMPT |
| 00000077336 | Picklelicious LLC | 384 Cedar Lane | CRTK/RPPR |
| 00000077353 | Travel Auto Bag Co., Inc. | 944 Columbus Drive | EXEMPT |
| 00585211167 | Public Service Electric & Gas | 1103 Palisade Avenue | CRTK/RPPR |
| 23397000000 | Golddel Inc | 419 Cedar Lane | CRTK/RPPR |
| 31680000008 | Fairleigh Dickinson University | 1000 River Road | CRTK/RPPR |
| 31734700000 | Holy Name Medical Center | 718 Teaneck Road | CRTK/RPPR |
| 40433600000 | Ramapo Consultants Inc. | 1451 Teaneck Road | CRTK/RPPR |
| 44892300000 | The Community School Inc. | 11 W. Forest Avenue | CRTK/RPPR |
| 53720700000 | Teaneck Texaco Inc. | 209 Cedar Lane | CRTK/RPPR |
| 68456700000 | Noah Auto Repair Shop LLC | 351 Queen Anne Road | CRTK/RPPR |
| 70032000000 | NJ Energy Corp. | 228 Teaneck Road | CRTK/RPPR |
| 70826600000 | Michaels Service Station Inc. | 468 Teaneck Road | CRTK/RPPR |
| 76383200001 | Teaneck Road Gas LLC | 457 Teaneck Road | CRTK/RPPR |
| 91708400000 | Fuel 4 | 1510 Teaneck Road | EPCRA only |
| 95964400000 | Ramapo Consultants Inc. | 1456 Teaneck Road | CRTK/RPPR |

*Note: The information in this table, and the ones which follow, are subject to change based upon the NJDEP. The source information at the NJDEP should be checked to confirm site status. It is also likely that the facility name may not be current for the same reason.*

*Source: NJDEP Data Miner (Accessed June 2023)*

The **Site Remediation Reform Act,** N.J.S.A. 58:10C-1 et seq. (SRRA), enacted in 2009, has helped to speed up the remediation process. Active sites are rated with B, C1, C2, C3, or D depending on the type of severity of the contamination:

- B: Remedial level associated with emergency response, simple removal activities of contaminants usually no impact to soil or groundwater.
- C1: Remedial levels are associated with simple sites, one or two contaminates localized to soil and the immediate spill or discharge area.
- C2: Remedial levels are associated with more complicated contaminant discharges such as multiple site spills and discharges, or more than one contaminant, with both soil and groundwater impacted or threatened.
- C3: Remedial levels are associated with highly complex and threatening sites. These sites can have multiple contaminants, some at high concentrations with unknown sources continuing to impact soils, groundwater, and possibly surface waters and potable water resources. These sites are dangerous for direct contact with contaminated soils.
- D: Same conditions as C3 except that D levels are also usually designated Federal Superfund Sites.

Sites with documented groundwater contamination may also contain a **Classification Exception Area** (CEA), defined by NJDEP as "an area within which one or more constituent standards and designated uses are suspended."[127] A CEA is an institutional control prohibiting the use of groundwater for a defined period of time.

**Table 20**, **Table 22**, and **Map 15** identify the Known Contaminated Sites within the Township, noting the status (active, pending or closed) and whether the site is a homeowner property. There are 23 non-homeowner sites on the KCS list.

## PFAS

Per- and Polyfluoroalkyl Substances, commonly referred to as PFAS, are synthetic chemicals that have been globally utilized in industry and consumer products since the 1940s.[128] They have found application in the production of nonstick cookware, water-repellent clothing, stain-resistant fabrics and carpets, certain cosmetics, specific types of firefighting foams, as well as items designed to resist grease, water, and oil.

The most extensively researched PFAS compounds include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). Additionally, perfluorohexane sulfonic acid (PFHxS) and perfluorononanoic acid (PFNA) have also received considerable attention. In the United States, the production and use of PFOA and PFOS have been phased out.

Throughout their production and utilization, PFAS have the capacity to migrate into the soil, water, and air. The majority of PFAS, including PFOA and PFOS, exhibit a remarkable resistance to breaking down, thus persisting in the environment. Given their widespread use and enduring presence in the environment, PFAS are detectable in the bloodstreams of both humans and animals across the globe. Additionally, they are present at trace levels in various food products and within the environment. Certain PFAS compounds can accumulate in living organisms with repeated exposure over time.

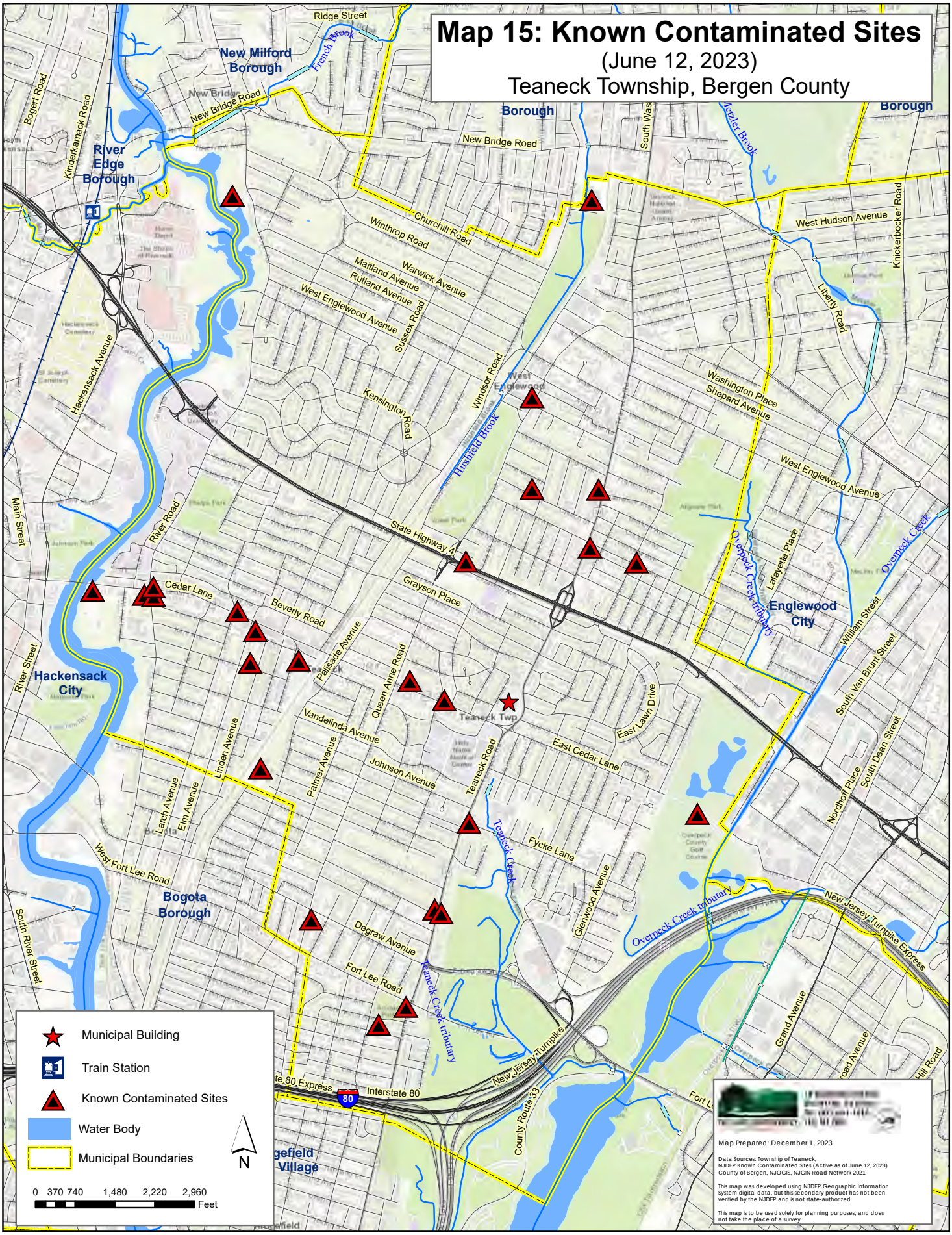
Numerous scientific studies have been conducted to examine the effects of PFAS exposure on health. While establishing direct causation between substances and health conditions in humans can be challenging, these studies have suggested potential links between environmental PFAS exposure and adverse health effects in both humans and animals.

| Table 20. Known Contaminated Sites in Teaneck | | | | |
|---|---|---|---|---|
| **Category** | **Status** | | | **Total** |
| | **Active** | **Pending** | **Closed** | |
| Homeowner | 2 | 34 | 484 | 520 |
| Non-Homeowner | 23 | 5 | 83 | 111 |
| Total | 25 | 39 | 567 | 631 |
| *Source: NJDEP Site Remediation Program* | | | | |

On March 14, 2023, the Environmental Protection Agency (EPA) announced the proposed **National Primary Drinking Water Regulation** (NPDWR) concerning six PFAS compounds, which include perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), and perfluorononanoic acid (PFNA).

The **NJDEP Drinking WaterWatch** offers insights into PFAS contamination in both public and private water systems.[129] As of the most recent testing conducted on August 2, 2023, the data pertaining to Hackensack's public water system which provides water and serves as the reference point for Teaneck, indicates compliance with the NJDEP Maximum Contaminant Levels (MCLs). This signifies that the PFAS concentrations in the public water system fall below the established thresholds for contamination (**Table 21**).[130]

| Table 21. PFAS Contamination, Hackensack Public Water System | | | |
|---|---|---|---|
| **Contaminant** | **Maximum Contaminant Level (MCL) (µg/L or ppb)** | **Ground Water Quality Standards (GWQS) (µg/L or ppb)** | **Test Result (µg/L or ppb)** |
| PFOA | 0.014 | 0.014 | 0.0104 |
| PFOS | 0.013 | 0.013 | 0.00397 |
| PFNA | 0.013 | 0.013 | 0.002 |
| *Source: NJ DEP Ground Water Quality Standards , Drinking WaterWatch , Agency for Toxic Substances and Disease Registry (ATSDR)* | | | |


Map 15: Known Contaminated Sites
(June 12, 2023)
Teaneck Township, Bergen County
New Milford Borough
River Edge Borough
Hackensack City
Bogota Borough
Englewood City
Teaneck Twp
Ridge Street
French Brook
New Bridge Road
Bogert Road
Kinderkamack Road
Churchill Road
Winthrop Road
Maitland Avenue
Warwick Avenue
Rutland Avenue
West Englewood Avenue
Sussex Road
Kensington Road
Windsor Road
Hirshfeld Brook
Hackensack Avenue
River Road
Main Street
State Highway 4
Cedar Lane
Beverly Road
Grayson Place
Palisade Avenue
Queen Anne Road
Vandelinda Avenue
Johnson Avenue
Linden Avenue
Palmer Avenue
Teaneck Road
East Cedar Lane
East Lawn Drive
Fycke Lane
Glenwood Avenue
Degraw Avenue
Fort Lee Road
West Fort Lee Road
Larch Avenue
Elm Avenue
River Street
South River Street
Teaneck Creek
Teaneck Creek tributary
Overpeck Creek tributary
Overpeck Creek
New Jersey Turnpike
New Jersey Turnpike Express
Interstate 80
County Route 33
Grand Avenue
Hill Road
West Hudson Avenue
Knickerbocker Road
Liberty Road
Washington Place
Shepard Avenue
Lafayette Place
William Street
South Van Brunt Street
South Dean Street
Nordhoff Place
Metzler Brook
Municipal Building
Train Station
Known Contaminated Sites
Water Body
Municipal Boundaries
N
0 370 740 1,480 2,220 2,960
Feet
Map Prepared: December 1, 2023
Data Sources: Township of Teaneck,
NJDEP Known Contaminated Sites (Active as of June 12, 2023)
County of Bergen, NJOGIS, NJGIN Road Network 2021
This map was developed using NJDEP Geographic Information System digital data, but this secondary product has not been verified by the NJDEP and is not state-authorized.
This map is to be used solely for planning purposes, and does not take the place of a survey.

| Table 22. Active Sites with Confirmed Contamination (Non-Homeowner) | | | | | |
|---|---|---|---|---|---|
| **Site ID** | **PI Number** | **PI Name** | **Address** | **CEA Status** | **Remedial Level** |
| 11190 | 519683 | STANSON CHEMICAL CORP | 520 Palisade Avenue | | C2 |
| 11197 | G000043938 | ROURE BERTRAND DUPONT INCORPORATED | 1775 Windsor Road | Ongoing | B |
| 11198 | 007093 | MICHAELS SERVICE STATION | 468 Teaneck Road | Ongoing | C2 |
| 11200 | 002608 | 1187 TEANECK RD | 1187 Teaneck Road | | C2 |
| 11201 | 006450 | USAVE STATION | 1280 Teaneck Road | Ongoing | C2 |
| 11204 | 008975 | EXXON | 228 Teaneck Road | Ongoing | C2 |
| 11205 | 000243 | TEANECK ROAD GAS LLC DBA ENRITE GAS | 457 Teaneck Road | | C2 |
| 11206 | 006346 | DEGRAW GULF SERVICE STATION | 335 Queen Anne Road | Ongoing | C2 |
| 11211 | 001664 | DELTA | 738 Cedar Lane | | C2 |
| 11215 | 011069 | TEANECK TEXACO INC | 209 Cedar Lane | Ongoing | C2 |
| 11218 | 006298 | LARRY'S FRIENDLY SERVICE | 520 Cedar Lane | Ongoing | C2 |
| 11219 | 000889 | UNITY GROUP LLC | 724 Cedar Lane | Ongoing | C2 |
| 11223 | 011664 | OVERPECK COUNTY GOLF COURSE | 273 E Cedar Lane | | |
| 14149 | G000041082 | 1374 QUEEN ANNE ROAD | 1374 Queen Anne Road | Ongoing | C2 |
| 14152 | 877886 | THOMAS CLEANERS | 143 Cedar Lane | | C2 |

*Source: NJDEP Site Remediation Program (Non-Homeowner)*

| Site ID | PI Number | PI Name | Address | CEA Status | Remedial Level |
|---|---|---|---|---|---|
| 17806 | 018366 | SUNOCO SERVICE STATION #0006-6340 FORMER | 725 Cedar Lane | Ongoing | C2 |
| 27365 | 031390 | BCL AUTOMOTIVE INC | 101 E Forest Avenue | Ongoing | C2 |
| 41358 | 000058 | EMMANUEL AUTO CENTER | 635 Teaneck Road | Ongoing | C2 |
| 48996 | 022080 | TEANECK DEPARTMENT OF PUBLIC WORKS | 1600 River Road | | C2 |
| 51926 | 018122 | ACADEMY OF GREATNESS AND EXCELLENCE | 441 North Street | | B |
| 57272 | 032250 | HOME TOWN LAUNDRIES INC | 713 American Legion Drive | Lifted | C2 |
| 85533 | G000044835 | 836 CEDAR LANE IFO | 836 Cedar Lane | | C1 |
| 539819 | 677132 | 563 571 CEDAR LANE | 563 571 Cedar Lane | | C1 |

*Source: NJDEP Site Remediation Program (Non-Homeowner)*

# References

## Chapter 1


1 Stanford, Scott. 2013 New Jersey Geological and Water Survey: Information Circular. https://nj.gov/dep/njgs/enviroed/infocirc/mapping.pdf. Accessed September 2023.

2 New Jersey Geological and Water Survey. Aquifer Recharge Potential for New Jersey. http://www.njgeology.org/geodata/dgs07-1.htm. Accessed September 2023.

3 New Jersey Department of Environmental Protection. NJ Geology Information App. https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=6e32c9122f9c49ea840dfffbf912f992. Accessed September 2023.

4 New Jersey Department of Environmental Protection. Division of Water Supply and Geoscience. New Jersey Geological and Water Survey. Digital Geodata Series. http://www.state.nj.us/dep/njgs/geodata/index.htm#list. Accessed September 2023.


## Chapter 2


5 United States Department of Agriculture: Natural Resources Conservation Service. Web Soil Survey. https://websoilsurvey.nrcs.usda.gov/app/. Accessed September 2023.

6 Shore Systems Group LLC. New Jersey Soil Types, Regions and Testing Guide. https://www.shorellc.com/articles/nj-soils-and-testing-guide. Accessed September 2023.

7 United States Department of Agriculture: Natural Resources Conservation Service. Wed Soil Survey. Soil Properties and Qualities. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed September 2023

8 United States Department of Agriculture: Natural Resources Conservation Service. Wed Soil Survey. Suitabilities and Limitations for Use. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed September 2023


## Chapter 3


9 New Jersey Department of Agriculture. 2015 Land Use/Land Cover Update and Impervious Surface Mapping Project. https://www.nj.gov/dep/gis/digidownload/metadata/lulc15/update2015.html. Accessed September 2023.


## Chapter 4


10 Teaneck Township. General Legislation, Chapter 37, Section 1-26. https://ecode360.com/13627122. Accessed August 2023.

11 Teaneck Plant Species. Information from the Teaneck Shade Tree Advisory Board. Accessed August 2023.

12 Teaneck Environmental Commission. Invasive species: Porcelain Berry. June 2023.

13 Teaneck Creek Conservancy. Biodiversity at Teaneck Creek Conservancy: June 2023 Restoration Area Plot Survey. Accessed October 2023.

14 Pest Alert: Emerald Ash Borer. https://www.nj.gov/agriculture/divisions/pi/prog/emeraldashborer.html. Accessed August 2023.

15 United States Department of Agriculture. 2014 Pest Alert: Spotted Lanternfly. https://www.hanovertownship.com/DocumentCenter/View/1839/Spotted-Lanternfly---Pest-Alert-PDF. Accessed August 2023.

16 Urban and Community Forestry Program. https://www.fs.usda.gov/sites/default/files/UCF-IRA-NOFO-04122023.pdf . Accessed August 2023

17 Resilient Land Mapping Tool. https://maps.tnc.org/resilientland/. Accessed August 2023

## Chapter 5

18 New Jersey Department of Environmental Protection. Fish & Wildlife. New Jersey Landscape Project. https://dep.nj.gov/njfw/conservation/new-jerseys-landscape-project/. Accessed August 2023.

19 NJDEP Natural Heritage Program data. Print. Accessed August 2023.

20 Teaneck Creek Conservancy. Aquatic Survey 2023. Accessed August 2023.

## Chapter 6

21 Omernick, James M and Bailey, Robert G. Distinguishing Between Watersheds and Ecoregions (1997). Print. Accessed July 2023.

22 New Jersey Department of Environmental Protection. N.J.A.C. 7:9B. Surface Water Quality Standards. https://www.nj.gov/dep/rules/rules/njac7_9b.pdf. Accessed July 2023.

23 Teaneck Environmental Commission. Teaneck Creek emerges on the premises of Holy Name Hospital. July 2023.

24 Environmental Protection Agency (EPA). Clean Water Act. 33 U.S.C. § 1251 et seq. 1972. https://www.epa.gov/laws-regulations/summary-clean-water-act. Accessed July 2023.

25 Guidelines for Delineation of Well Head Protection Areas in New Jersey. https://www.state.nj.us/dep/njgs/whpaguide.pdf. Accessed July 2023.

26 Health Community Planning Report 2022. https://www.nj.gov/health/hcpnj/documents/county-reports/HCPNJ_fullreports/BERGEN_TEANECK%20TWP.pdf . Accessed August 2023.

## Chapter 7

27 New Jersey Department of Environmental Protection. N.J.A.C. 7:7A. Freshwater Wetlands Protection Act Rules. https://www.nj.gov/dep/rules/rules/njac7_7a.pdf. Accessed July 2023.

## Chapter 8

28 New Jersey Department of Environmental Protection. N.J.A.C. 7:9B-1.4 and 1.15. Amendments to Surface Water Quality Standards (SWQS). https://www.nj.gov/dep/rules/adoptions/adopt_20200406b.pdf. Accessed July 2023.

29 Federal Emergency Management Agency (FEMA) Zones. https://www.fema.gov/glossary/flood-zones. Accessed July 2023.

30 New Jersey Department of Environmental Protection. N.J.A.C. 7:13 Flood Hazard Area Control Act Rules. https://dep.nj.gov/wp-content/uploads/rules/rules/njac7_13.pdf. Accessed July 2023.

31 New Jersey Department of Environmental Protection. Inland Flood Protection Rule. https://dep.nj.gov/inland-flood-protection-rule/. Accessed August 2023.

32 New Jersey State League of Municipalities. Inland Flood Protection Rules to Take Effect in July. https://www.njlm.org/CivicAlerts.aspx?AID=2623. Accessed August 2023.

33 The Watershed Institute. NJDEP Adopts Inland Flood Protection Rules – Monumental Step Forward. https://thewatershed.org/njdep-adopts-inland-flood-protection-rules-monumental- step-forward/. Accessed August 2023.

34 New Jersey Department of Environmental Protection. NJ Stormwater Best Management Practices Manual. https://dep.nj.gov/stormwater/bmp-manual/. Accessed July 2023.

33 New Jersey Future. Landmark Flood Disclosure Bill Now Law. https://www.njfuture.org/news/news-releases/landmark-flood-disclosure-bill-now-law/. Accessed July 2023.

35 Gothamist. NJ landlords must disclose prior flooding under new law signed by Murphy.https://gothamist.com/news/new-jersey-landlords-must-disclose-prior-flooding-underbill-passed-by-legislature. Accessed July 2023.

36 Teaneck Township. Master Plan Report 2007. https://www.teanecknj.gov/media/Government/Master%20Plans/Master%20Plan%202007.pdf. Accessed July 2023.

37 Teaneck Township. Master Plan Reexamination Report 2017. Teaneck Township. https://www.teanecknj.gov/media/Government/Master%20Plans/Master%20Plan%20Reexamination%20Report%202017.pdf. Accessed July 2023.

38 Municipal Stormwater Management Plan 2007. Teaneck Township. https://www.teanecknj.gov/media/Departments/Engineering/Stormwater%20Management%20Plan%20(PDF).pdf. Accessed July 2023.

39 Teaneck Township. Chapter 38 Stormwater Control. Teaneck Township. https://ecode360.com/13650863. Accessed July 2023.

## Chapter 9

40 Office of the New Jersey State Climatologist at Rutgers University. NJ Climate Overview. http://climate.rutgers.edu/stateclim_v1/njclimoverview.html. Accessed June 2023.

41 National Oceanic and Atmospheric Administration. History of the US Climate Divisional Dataset. https://www.ncei.noaa.gov/access/monitoring/dyk/us-climate-divisions. Accessed June 2023.

42 Office of the New Jersey State Climatologist at Rutgers University. Station List. http://climate.rutgers.edu/stateclim_v1/monthlydata/stn_list.php. Accessed June 2023.

43 Office of the New Jersey State Climatologist at Rutgers University. Monthly Total Precipitation for New Jersey Climate Division 1 (North). https://climate.rutgers.edu/stateclim_v1/nclimdiv/index.php?stn=NJ01&elem=pcpn. Accessed June 2023.

44 Office of the New Jersey State Climatologist at Rutgers University. Teterboro Airport. http://climate.rutgers.edu/stateclim_v1/monthlydata/index.php?stn=KTEB&elem=maxt. Accessed June 2023.

45 National Oceanic and Atmospheric Administration: National Hurricane Center. Tropical Cyclone Climatology. http://www.nhc.noaa.gov/climo/. Accessed June 2022.

46 Tropical Storm Isaias whips through New Jersey, taking trees and power along for the ride. North Jersey. https://www.northjersey.com/story/weather/2020/08/04/tropical-stormisaias-whips-through-new-jersey/3292628001/. Accessed June 2023.

47 Post-Ida Cleanup Underway in Teaneck. Patch. https://patch.com/new-jersey/teaneck/post-ida-cleanup-underway-teaneck. Accessed June 2023.

48 New Jersey Department of Environmental Protection: Bureau of GIS. Landslides in New Jersey. https://gisdata-njdep.opendata.arcgis.com datasets/05a41c39475e48d98b7b695e9ab73db2/explore?location=40.840126%2C-74.078921%2C12.05. Accessed June 2023.

49 New Jersey Department of Environmental Protection: Bureau of GIS. Earthquake Epicenters in New Jersey. https://gisdata-njdep.opendata.arcgis.com/datasets/earthquakeepicenters-in-new-jersey/explore. Accessed June 2023.

50 United States Geological Survey. Search Earthquake Catalog. https://earthquake.usgs.gov/earthquakes/search/. Accessed June 2023.

51 United States Environmental Protection Agency. Heat Island Effect. https://www.epa.gov/heatislands. Accessed June 2023.

52 New Jersey Department of Environmental Protection. 2020 New Jersey Scientific

Report on Climate Change. https://dep.nj.gov/wp-content/uploads/climatechange/nj-scientific-report-2020.pdf. Accessed June 2023.

53 New Jersey Climate Change Resource Center at Rutgers. https://njclimateresource-center.rutgers.edu/climate_change_101/climate-change-in-new-jersey-a-brief-introduction/. Accessed June 2023.

54 New Jersey Department of Environmental Protection: Climate and Flood Resilience Program. 2021 Climate Change Resilience Strategy. https://dep.nj.gov/wp-content/uploads/climatechange/nj-climate-resilience-strategy-2021.pdf. Accessed June 2023.

55 Centers for Disease Control and Prevention. Climate and Health Program: 2020 Preparing for the Regional Health Impacts of Climate Change in the United States. https://Health_Impacts_Climate_Change-508_final.pdf. Accessed June 2023.

56 United States Department of Agriculture. 2018 Mid-Atlantic Forest Ecosystem Vulnerability Assessment and Synthesis. https://www.fs.usda.gov/research/treesearch/57325. Accessed June 2023.

57 Climate Central. 2023 Wildlife Weather: Analyzing the 50-year shift across America. https://assets.ctfassets.netcxgxgstp8r5d/1RwlNCKT1zYQFz5NtKW9ue/9a843df6ca96446b-1f507a1acabfe0bc/FINAL-Fire_Weather_2023__EN_.pdf. Accessed June 2023.

58 Five-alarm brush fire in Teaneck spreads across 10 acres, sends firefighter to hospital. North Jersey. https://www.northjersey.com/story/news/bergen/teaneck/2023/04/11/teaneck-nj-fire-police-warning-residents-conservancy/70105726007/. Accessed June 2023.

59 N.J. smashes record for worst air quality day in 43 years from dense smoke. https://www.nj.com/weather/2023/06/nj-smashes-record-for-worst-air-quality-day-in-43-years-from-dense-smoke.html#:~:text=The%20dense%2C%20dangerous%20smoke%20that,index%20used%20to%20track%20pollution. Accessed February 2024.

60 Murphy Administration Announces $3 Million budget boost to DEP'S Forest Fire Service as state faces increasing wildfire risks from climate change. https://www.nj.gov/dep/newsrel/2023/23_0050.htm#:~:text=To%20date%20in%202023%2C%20the,in%20more%20than%20a%20decade. Accessed February 2024.

61 Personal corrspondence with the Environmental Commission of Teaneck. Flooding. September 2023.

62 United States Department of Agriculture. Plant Hardiness Zone Map. https://planthardiness.ars.usda.gov/. Accessed August 2023.

63 New Jersey Department of Environmental Protection. Greenhouse Gas Emissions in New Jersey. https://www.nj.gov/dep/dsr/trends/ghg.pdf. Accessed June 2023.

64 New Jersey Department of Environmental Protection. New Jersey's Global Warming Response Act: 80 x 50 Report. https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf. Accessed June 2023.

65 State of New Jersey. 2019 Energy Master Plan: Pathway to 2050. https://nj.gov/emp/

docs/pdf/2020_NJBPU_EMP.pdf. Accessed May 2023.62

66 Office of the New Jersey Governor. Murphy Unveils Energy Master Plan and Signs Executive Order Directing Sweeping Regulatory Reform to Reduce Emissions and Adapt to Climate Change. January 2020. https://www.nj.gov/governor/news/news/562020/approved/20200127a.shtml . Accessed June 2023.

67 Office of the Governor of New Jersey. Executive Order No. 89. October 2019. https://nj.gov/infobank/eo/056murphy/pdf/EO-89.pdf. Accessed June 2023

68 New Jersey Clean Energy Program. Rebates and Promotions. https://www.njcleanenergy.com/rebates. Accessed June 2023.

69 PSE&G Utilies. Appliance Rebates. https://homeenergy.pseg.com/rebates?utm_campaign=pseg-res-rebates&utm_source=marketplace&utm_medium=cross-promotion. Accessed June 2023.

70 Charge Point. Teaneck charger. https://driver.chargepoint.com/stations/181021. Accessed June 2023.

71 United States Department of Energy, Alternative Fuels Data Center. Electric Vehicle Charging Station Locations. https://afdc.energy.gov/fuels/electricity_locations.html#/find/nearest?fuel=ELEC. Accessed June 2023.

72 Sustainable Jersey. Search Participating Municipalities & Approved Actions. https://www.sustainablejersey.com/certification/search-participating-municipalities-approved-actions/. Accessed June 2023

73 Sustainable Jersey. Teaneck Twp Profile. https://www.sustainablejersey.com/certification/search-participating-municipalities-approved-actions/municipality detail/?tx_sjcert_applicant%5Bapplicant%5D%5B__identity%5D=466&tx_sjcert_applicant%5Baction%5D=show&tx_sjcert_applicant%5Bcontroller%5D=Applicant&cHash=f904fcb0aa197a73377b6dcd5bcc40ba. Accessed June 2023.

## Chapter 10

74 New Jersey Department of Environmental Protection. Division of Air Quality – Air Monitoring. https://www.nj.gov/dep/airmon/ . Accessed May 2023.

75 Environmental Protection Agency. 1990 Clean Air Act Amendment Summary. https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary. Accessed May 2023.

76 New Jersey Department of Environmental Protection. 2021 New Jersey Air Quality Report.https://www.nj.gov/dep/airmon/pdf/2021-nj-aq-report.pdf. Accessed May 2023.

77 New Jersey Department of Environmental Protection. Air Quality Index. https://www.njaqinow.net/ . Accessed May 2023.

78 New Jersey Clean Air Council. Declining Trends During the Pandemic: Vehicle Miles

Travelled and Air Pollutants. April 12, 2022. https://dep.nj.gov/wp-content/uploads/cleanaircouncil/hearings/2022report.pdf. Accessed May 2023.

79 New Jersey Department of Environmental Protection. 2021 New Jersey Air Quality Report. Accessed May 2023.

80 New Jersey Department of Environmental Protection. 2021 New Jersey Air Quality Report.Ozone Summary. Pg 4-1 – 4-13. Accessed May 2023.

81 United States Environmental Protection Agency. What Are VOCS?. https://www.epa.gov/indoor-airquality-iaq/what-are-volatile-organic-compounds-vocs. Accessed May 2023.

82 United States Environmental Protection Agency. Nitrogen Oxides Control Regulations. https://www3.epa.gov/region1/airquality/nox.html. Accessed May 2023.

83 United States Environmental Protection Agency. Nitrogen Oxide Control Regulations.https://www3.epa.gov/region1/airquality/nox.html. Accessed May 2023.

84 New Jersey Department of Environmental Protection. 2021 New Jersey Air Quality Report. Sulfur Dioxide Summary. Pg 7-1 – 7-11. Accessed May 2023

85 United States Environmental Protection Agency. Sulfur Dioxide Trends. https://www.epa.gov/air-trends/sulfur-dioxide-trends. Accessed May 2023.

86 New Jersey Department of Environmental Protection. 2021 New Jersey Air Quality Report. Carbon Monoxide Summary. Pg 8-1 – 8-8. Accessed May 2023

87 New Jersey Department of Environmental Protection. New Jersey Air Quality Report.Nitrogen Dioxide Summary. Pg 6-1 – 6-11. Accessed May 2023.

88 New Jersey Department of Environmental Protection. New Jersey Air Quality Report.Particulate Summary. Pg 5-1 – 5-15. Accessed May 2023.

89 New Jersey Department of Environmental Protection. New Jersey Air Quality Report. Lead Summary. Pg 9-1 – 9-4. Accessed May 2023.

90 New Jersey Department of Environmental Protection. 2021 New Jersey Air Quality Report. Air Toxics. Pg 10-1 – 10-26. Accessed May 2023.

91 New Jersey Department of Environmental Protection. Glossary. https://www.nj.gov/dep/airtoxics/glossary.htm#area. Accessed May 2023.

92 New Jersey Department of Environmental Protection. Sources of Air Toxics. https://dep.nj.gov/airplanning/airtoxics/emissions2018/. Accessed May 2023.

93 New Jersey Department of Health. Hazardous Substance Fact Sheet: Acrolein. https://www.nj.gov/health/eoh/rtkweb/documents/fs/0021.pdf. Accessed May 2023.

94 New Jersey Department of Health. Hazardous Substance Fact Sheet: Formaldehyde. https://nj.gov/health/eoh/rtkweb/documents/fs/0946.pdf. Accessed May 2023.

95 New Jersey Department of Health. Environmental Quality: Radon. http://www.state.nj.us/health/ceohs/public-health-tracking/env-quality/. Accessed May 2023.

96 New Jersey Department of Environmental Protection. 2015 New Jersey Radon Potential Map. https://www.state.nj.us/dep/rpp/radon/radonin.htm. Accessed May 2023.

97 United States Environmental Protection Agency. What is EPA's Action Level for Radon, and What Does it Mean? https://www.epa.gov/radon/what-epas-action-level-radon-andwhat-does-it-mean. Accessed May 2023.

98 New Jersey Department of Environmental Protection. Radon Testing and Mitigation: The Basics. http://www.nj.gov/dep/rpp/radon/radontes.htm. Accessed May 2023.

99 New Jersey Department of Environmental Protection. What's All the Noise About? https://www.nj.gov/dep/enforcement/noise-intro.html. Accessed May 2023.

100 New Jersey Administrative Code 13:1G-1 et seq. Chapter 29: Noise Control. https://www.nj.gov/dep/enforcement/finalnoiseregsjune2012.pdf. Accessed May 2023.

101 New Jersey Department of Environmental Protection. Noise Ordinance vs. Nuisance Code. https://www.nj.gov/dep/enforcement/NoiseOrdinancevsNuisanceCodeAug08.pdf. Accessed May 2023.

102 Port Authority of New York and New Jersey. Teterboro Airport. https://www.panynj.gov/airports/en/teterboro.html. Accessed June 2023.

103 Port Authority of New York and New Jersey. TEB Airport Noise Office. https://aircraft-noise.panynj.gov/teb-airport-noise-office/. Accessed June 2023.

104 Tap into Hasbrouck Heights - Wood-Ridge – Teterboro. FAA Approves Teterboro Airport's Noise Program. https://www.tapinto.net/towns/hasbrouck-heights-slash-wood-ridg-eslash-teterboro/sections/news/articles/faa-approves-teterboro-airport-s-noise-program. Accessed June 2023.

105 Noise compatibility program approved at Teterboro Airport.2023. https://www.globalair.com/articles/noise-compatibility-program-approved-at-teterboroairport?id=5509#:~:text=On%20Jan.,13%20were%20program%20management%20measures. Accessed June 2023.

106 Noise Monitoring Report 2023. https://www.panynj.gov/content/dam/port-authority/aircraft-noise/panynj-noise-monitoring-2023.pdf. Accessed June 2023.

107 New Jersey Department of Environmental Protection. Odor Fact Sheet. https://www.nj.gov/dep/enforcement/docs/odor.pdf. Accessed June 2023.

108 Center for Disease Control, Agency for Toxic Substances and Disease Registry. Odor Control. https://www.atsdr.cdc.gov/odors/odor_control.html. Accessed June 2023.

109 New Jersey Department of Environmental Protection. 2021 New Jersey Air Quality

Report. Executive Summary. Pg 1-1 – 1-3. Accessed June 2023.

## Chapter 11

110 United States Census Bureau. 2021 ACS 5-year Estimates Detailed Tables: Sex of Workers by Means of Transportation to Work. https://data.census.gov/table?q=teaneck+township+Commuting&tid=ACSDT5Y2021.B08006. Accessed June 2023

111 Township of Teaneck. Master Plan, Circulation Element. April 2007. https://www.teanecknj.gov/media/Government/Master%20Plans/Master%20Plan%202007.pdf. Accessed June 2023.

112 New Jersey Transit-Bus Routes. https://www.teanecknj.gov/public-transportation. Accessed June 2023.

113 Coach USA. Commute with us. https://www.coachusa.com/origin/stop-vDu-Vci2CgWoFPVe4QjwL1T/destination/stop-sBH4aYcwNntYLsECtb9HCq/schedules?-date=2024-02-22&partner_code=CUSA. Accessed June 2023.

114 Jitney Buses of New Jersey. https://www.jerseyjitneys.info/?page_id=13. Accessed June 2023

115 Township of Teaneck. Bicycle and Pedestrian Master Plan. March 2011.https://www.teanecknj.gov/media/Documents/Engineering%20Documents/Bicycle%20Pedestrian%20Master%20Plan.pdf . Accessed May 2023.

116 United States Department of Transportation. Complete Streets. https://www.transportation.gov/mission/health/complete-streets. Accessed May 2023.

117 Pedestrian safety and mobility to be improved in Teaneck https://www.state.nj.us/transportation/about/press/2013/091713t.shtm. Accessed June 2023.

118 Bergen County. Division of Community Transportation. https://www.co.bergen.nj.us/public-works-community-transportation. Accessed April 2023.

119 New Jersey Transit. Access Link ADA Paratransit. https://www.njtransit.com/accessibility/access-link-ada-paratransit . Accessed June 2023.

120 EZRide. https://ezride.org/ . June 2023.

121 Teaneck Senior and Disabled Transportation Service. https://www.teanecknj.gov/publictransportation. Accessed June 2023.

## Chapter 12

122 New Jersey Department of Environmental Protection. Site Remediation Program. https://www.nj.gov/dep/srp/. Accessed May 2023.

123 New Jersey Department of Environmental Protection. Known Contaminated Sites in New Jersey Reports. https://www.state.nj.us/dep/srp/kcsnj/. Accessed June 2023.

124 New Jersey Department of Environmental Protection. NJ-Geoweb. https://nj-dep.maps.arcgis.com/apps/webappviewer/index.html?id=02251e521d97454aabadfd-8cf168e44d. Accessed June 2023.

125 New Jersey Department of Environmental Protection Brownfield and Contaminated Site Remediation Act, N.J.S.A. 58:10B-1 et seq. https://www.nj.gov/dep/srp/regs/statutes/bcsra.pdf. Accessed June 2023.

126 United States Environmental Protection Agency. The Emergency Planning and Community Right-to-Know Act. https://www.epa.gov/laws-regulations/summary-emergency-planning-community-right-know-act. Accessed June 2023.

127 New Jersey Department of Environmental Protection. N.J.A.C 7:9C Ground Water Quality Standards. Last Amended June 1, 2020. https://www.nj.gov/dep/rules/rules/njac7_9c.pdf. Accessed June 2023.

128 Agency for Toxic Substances and Disease Registry (ATSDR). What are PFAS? https://www.atsdr.cdc.gov/pfas/health-effects/overview.html. Accessed September 2023.

129 New Jersey Department of Environmental Protection.Drinking WaterWatch. https://www9.state.nj.us/DEP_WaterWatch_public/. Accessed September 2023.

130 New Jersey Department of Environmental What are the PFAS standards in New Jersey? https://dep.nj.gov/pfas/standards/. September 2023.