Borough of Roselle Park

Environmental Resource Inventory

COUNTY OF UNION

ERI completed on September 8,2020

SUSTAINABLE JERSEY
ROSELLE PARK
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A Better Tomorrow, One Community at a Time

THE LAND CONSERVANCY
OF NEW JERSEY

ROSELLE PARK NEW JERSEY
ENVIRONMENTAL COMMISSION

1901

ENVIRONMENTAL RESOURCE INVENTORY 2020

for

Borough of Roselle Park

County of Union

Prepared September 8, 2020 by:

The Land Conservancy of New Jersey
An accredited land trust
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This original document was appropriately signed and sealed
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Cover Photograph: Roselle Park Welcome Sign
Photo provided by Michele LoManto
Environmental Commission Member and Chair, Green Team

Photo Bars: Parks and Public Lands in Roselle Park
Photographs provided by Michele LoManto

The information and maps presented in this report are intended for preliminary review and cannot substitute for on-site testing and evaluations. The maps for the Environmental Resource Inventory were developed using NJDEP Geographic Information System digital data.

EXECUTIVE SUMMARY

Located in the heart of Union County, the Borough of Roselle Park is a 1.23 square mile community, home to 13,300 individuals. Bordered by the City of Elizabeth, the Borough of Roselle, Cranford Township, Union Township, and Kenilworth, its growth and development was influenced by the railroad lines which traverse it.[1] (***Map 1***)

This is the first *Environmental Resource Inventory* (ERI) to be completed by Roselle Park. This report is based on available data from federal, state, and municipal resources. The section on historic and cultural features was provided by the President of the Borough's Historical Society. Documentation of the natural resource base – the geology, hydrology, ecology, and wildlife – conveys the scope and condition of the landscape upon which the Borough relies. Detailed mapping and tables document the Borough's environmental resources. Sections include information on geology, topography, hydrology and water resources, soils, flooding, wetlands, wildlife habitat, historic resources, air, and climate change.

In 2018, the Borough passed a resolution to work towards Sustainable Jersey certification, and in that year Roselle Park achieved Bronze Certification. In 2019, Roselle Park was recertified. New Jersey is the first state in the nation to have a comprehensive sustainability program for communities that links certification with strong state and private financial incentives, and a fully resourced program of technical support and training. The Borough's Green Team is spearheading the effort toward certification for 2020.

The submittal of an *Environmental Resource Inventory* will help meet the Borough's goal of being a sustainable community. The Environmental Commission will add new material to the ERI as it becomes available. The ERI will assist the community as it makes decisions regarding future planning and development. Knowledge of the natural resources will allow the Borough's officials and citizens to make informed decisions as they strive to preserve and promote the character of the Borough and to create a sustainable community within its landscape.

GEOLOGY AND 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, and 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. The Borough of Roselle Park is in the Piedmont Province. (***Figure 1***)

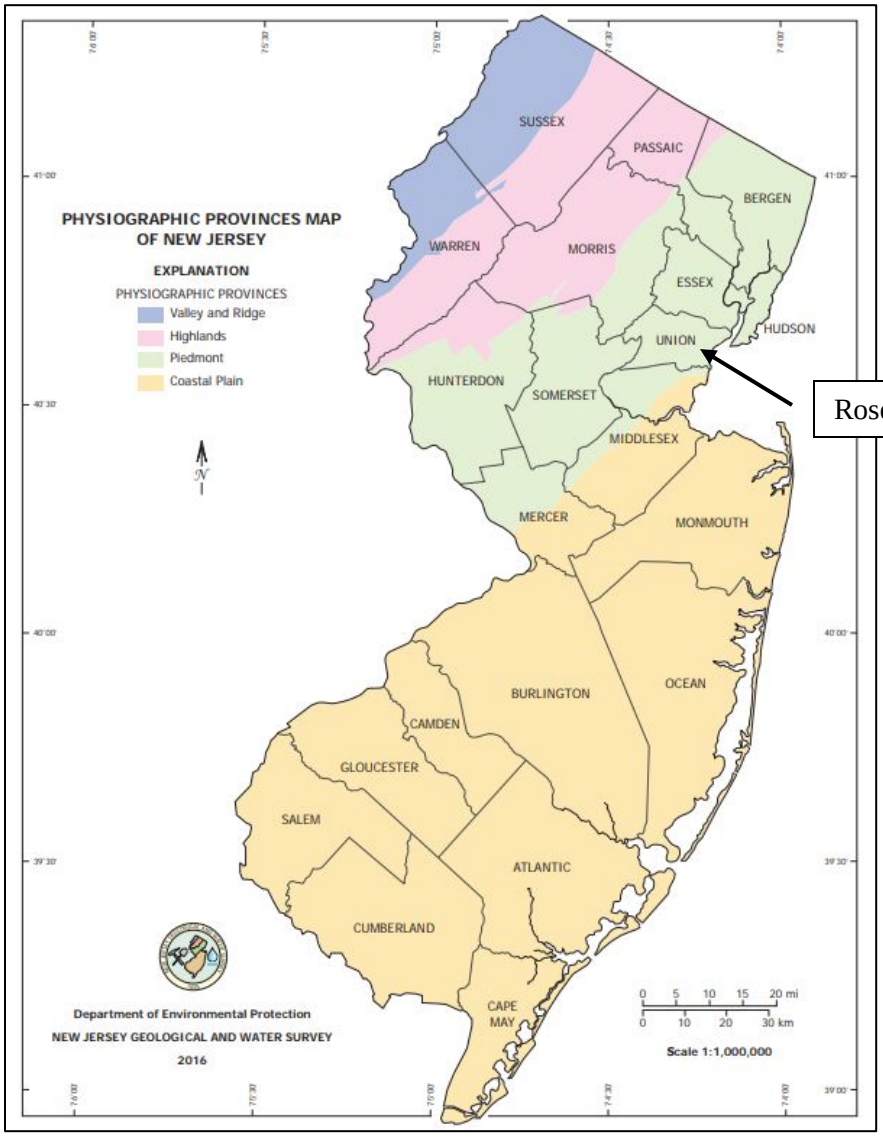


Figure 1. Physiographic Provinces in New Jersey
NJDEP Geological and Water Survey

The Piedmont Province covers 1,600 square miles, which is roughly 20% of

the state. The Piedmont Province's surface is generally low rolling hills marked with sudden, steep ridges, which extend across the state and includes the Palisades in the east. According to the New Jersey Department of Environmental Protection New Jersey (NJDEP) Geological and Water Survey, 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." [2]

Bedrock Geology

The geology of Roselle Park can be classified into two layers: bedrock geology, which is consolidated, underlying rock that extends deep into earth's crust; and surficial geology, the unconsolidated sedimentary materials overlaying bedrock formations, and is the parent material for soils. 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. Finally, these properties establish where geologic resources such as sand, gravel, peat, clay, quarry rock, and mineral ores are located. Geologic properties also determine the suitability of an area for the use of septic systems, the management of stormwater and surface runoff, and the stability of foundations for buildings, bridges, tunnels, and other structures."[3]

The bedrock geology of Roselle Park is entirely within the Passaic Formation that stretches in a band from central-western to northeastern New Jersey underlying portions of Hunterdon, Mercer, Somerset, Middlesex, Union, Essex, and Bergen Counties. (***Figure 2***, ***Figure 3*** and ***Map 2***)

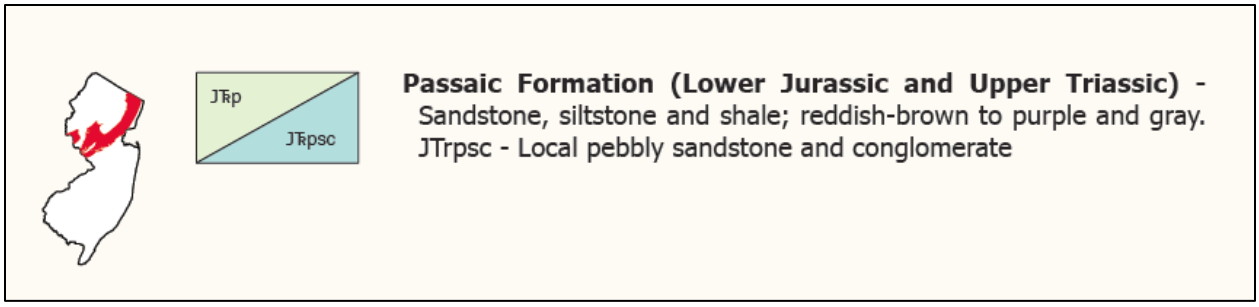


Figure 2. Bedrock Geology Map Unit for Roselle Park – Passaic Formation
NJDEP Geological and Water Survey

The Passaic Formation lies on a sedimentary bedrock of a siltstone, shale, sandstone, and conglomerate, as well as an igneous and metaphoric bedrock of basalt.[4] Its lithology is reddish-brown to brownish-purple and grayish-red siltstone and shale.[5] In New Jersey, sedimentary rock is typically less than 5 million years old and 400 feet thick, while in northern New Jersey, where Roselle Park is located, it can be 200 million to more than 1 billion years old and has been molded by periods of collisions and rifting over time.[6]

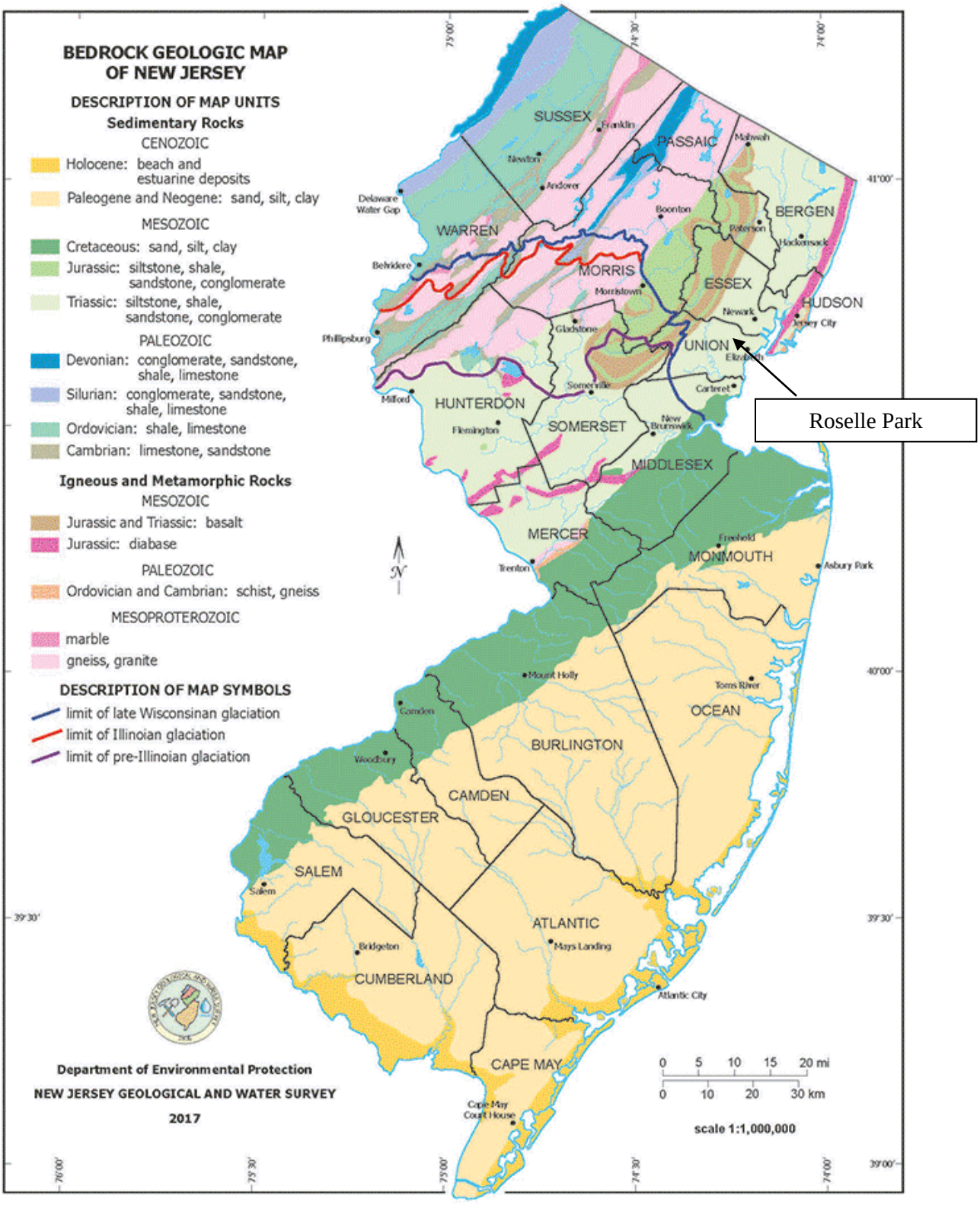


Figure 3. Bedrock Geology in New Jersey
NJDEP Geological and Water Survey

Surficial Geology

Surficial deposits are sediments deposited by rivers, glaciers, ocean currents and waves, wind, and movement of soil and rocks on hillslopes. Rahway Till is the surficial deposit that underlies Roselle Park (***Map 3*** and ***Table 1***). Rahway Till is a reddish-brown sandy silt till derived from sedimentary rocks in northeastern New Jersey. Sedimentary rock from northeastern New Jersey was relocated to the area near Roselle Park resulting from glacial meltwater flowing across the region as glaciers receded.[7]

Table 1. Surficial Geology in Roselle Park

Abbreviation	Geologic Name	Lithology	Age	Acres	Percent
Qwtr	Rahway Till	Clayey silt to sandy silt with some to many pebbles and cobbles and few boulders; reddish brown, reddish yellow, yellowish brown, brown. As much as 100 feet thick, generally less than 40 feet thick.	late Pleistocene, late Wisconsinan	782.87	99.90
Qal	Alluvium	Sand, gravel, silt, minor clay, and peat; reddish brown, yellowish brown, brown, gray. As much as 20 feet thick.	Holocene and late Pleistocene	0.6794	0.098

Source: NJDEP New Jersey Geological Survey

Topography

Roselle Park consists of mostly flat terrain, as it is in the low-lying Piedmont region. Nearly all of Roselle Park is under 100 feet in elevation (***Table 2*** and ***Map 4***)[a]

Table 2. Elevation of Roselle Park Borough

Elevation (feet)	Acres	Percent
0-100	762.82	97.34%
100-200	20.81	2.66%
Total:	**783.63**	**100.00%**

Source: USGS Topographic Data

[a] Acres in the ERI were measured using the ArcGIS digital mapping software.

SOILS

Soils Overview

Soils play a critical role in the environment. They support an area's vegetation, absorb rainwater, and provide habitat. The physical and chemical properties of soils reflect a large number of variables, including the parent material (bedrock), climate, vegetative cover, animal activities, slopes and drainage patterns, and time. New Jersey's complex bedrock geology, history of glaciations, abundant precipitation, and patterns of human use have led to complex patterns of soil distribution.[8]

Soil can shape a landscape through the plants it supports and the water it absorbs. Vegetation, supported by a variety of soils, can provide shelter for animals and food for people. In this way, everything from our food supply to the stable foundations of our homes depend upon soil.[9] Soil health is the ability of soil to sustain plants, animals, and people, shaping its surrounding ecosystem. Within soil are living organisms, including fungi, bacteria, and microbes. Their health, and thus, the health of the soil, is determined by nutrients, rainwater, and human-influenced pollutants.[10]

Soil Classifications

The official Soil Survey for Union County was updated in 2002 by the Natural Resources Conservation Service (NRCS), an agency of the United States Department of Agriculture (USDA). The soils maps and tables in the *Environmental Resource Inventory* are based on the data from that official survey.

The NRCS Soil Survey plots soils by map units.[11] The Soil Survey names each map unit based on the characteristics of the dominant soils within that unit. These 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:

- Capital letters at the end of the abbreviation indicate the slope
  "A" being less steep and "E" being steeper.
  An example is the Boonton series, which includes BouB, BouC, and BouD.

- Small letters following these capital letters indicate stoniness.
  "a" "b" or "c" indicate the degree of stoniness: stony, very stony, and extremely stony.
  An example of this is the Haledon silt loam series, HanBc indicates extremely stony.

- Small letter "t" at the end of an abbreviation indicates "frequently flooded."
  An example of this is UcDAt, Udifluvents, 0 to 3 percent slopes, frequently flooded.

The Soil Survey also categorizes each map unit as one of four map unit types: consociations, complexes, associations, and undifferentiated groups. The soils in Roselle Park fall into two groups: consociation and 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. Consociations represent 20.1% (158 acres) of Roselle Park's total area. An example of this soil type in Roselle Park Borough is the Udorthents, loamy substratum.

- ***Complexes (Cx)*** consist of two or more dissimilar components that occur in a regularly repeating pattern. The total amount of other dissimilar components is minor in extent. Complexes represent 79.9% (625.8 acres) of Roselle Park's total area. An example of this soil type in Roselle Park is the Boonton-Urban land-Haledon complex.

Major Soil Series

Soils with similar profiles are a soil series. The two most prevalent soil types in Roselle Park Borough are the Boonton-Urban land-Haledon and Haledon-Urban land-Hasbrouck soil series. They account for 79.9% (625.8) of the total land area. (***Table 3*** and ***Map 5***) Boonton-Urban land-Haledon accounts for 49.2% of the Borough, or approximately 385.25 acres. Haledon-Urban land-Hasbrouck accounts for 30.7% of the Borough, or 240.55 acres of land. Water and Urban Land are not considered soil series and are excluded.

Table 3. Major Soil Series in Roselle Park Borough

Soil Series	Acres	% of Borough
Boonton-Urban land-Haledon complex, 0 to 8% slope	385.25	49.2%
Haledon-Urban land-Hasbrouck complex, 0 to 8% slope	240.55	30.7%
Udorthents, loamy substratum, 0 to 8% slopes	14.09	1.8%
Total:	**639.89**	**81.7%**

Source: NRCS Soil Survey

Soil Descriptions

Boonton Series

The Boonton soil series is the most prevalent type in Roselle Park. Its parent material is loamy basal till that comes from basalt, and the Boonton Series itself is well drained. It is mostly composed of red and brown shale, sandstone, basalt, and granitic gneiss.[12] Boonton Soil Series totals 385 acres in Roselle Park. (***Table 4***)

- *Geographically Associated Soils:* Holyoke, Haledon, Riverhead, and Dunellen are associated soils to the Boonton series.
- *Drainage and Saturated Hydraulic Conductivity:* Overall, the series is moderately well drained, with slow to rapid runoff. The series has a perched water table.
- *Use and Vegetation:* Many Boonton soils are in urbanized, as well as some undeveloped sites such as wooded fields, which are comprised of oaks, red maple, white ash, hickory, gray birch, and dogwood trees.

Haledon Series

Haledon soil is deep and poorly drained and found in uplands and low positions, formed through glacial till.[13] There are 241 acres of Haledon soil series in Roselle Park.

- *Geographically Associated Soils:* Boonton, Rockaway, and Holyoke are associated soils to the Haledon series.
- *Drainage and Saturated Hydraulic Conductivity:* Overall, the series is somewhat poorly drained, with medium to high surface runoff. The series has a perched water table.
- *Use and Vegetation:* Many Haledon soils are in wooded areas, as well as some idle fields. Vegetation is largely comprised of oaks, maple, birch, and ash.

Udorthents

Udorthents consist of areas which have been transformed by earth moving, including grading, cut and fill, residential development, commercial and industrial buildings, cemeteries, and recreational areas. This soil typically has human artifacts and ash from coal mixed in, and generally is comprised of loamy material in the upper sections of the soil, and sandy-to-loamy material in the lower part. In Roselle Park, Udorthents total about 14 acres with a 0- 8% slope.

Urban

Urban land is defined by areas altered by structures so that the soil is not viable for vegetation without extensive reclamation. This soil's parent material is a surface covered by pavement, concrete, or buildings, which are underlain with disturbed and natural soil. Urban land in Roselle Park accounts for 144 acres.

Table 4. Soil Series						
Abbrv	**Map Unit Name**	**Type**	**Farmland Type**	**Erodibility**	**Acres**	**% Borough**
Boonton-Urban Series						
BovB	Boonton-Urban land-Haledon complex, 0 to 8% slopes	Cx	Not Prime Farmland	Moderate	385.25	49.2%
Haledon-Urban Series						
HatB	Haledon-Urban land-Hasbrouck complex, 0 to 8% slopes, eroded	Cx	Not Prime Farmland	Moderate	240.55	30.7%
Udorthents Series						
UdkttB	Udorthents, loamy, substratum 0 to 8% slopes	Cn	Not prime farmland	Moderate	14.09	1.8%
				Total	**639.89**	**81.7%**
Source: NRCS Soil Survey						

Soil Characteristics

Hydric Soils

According to the Natural Resources Conservation Service, "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/State Wetlands Law may restrict land use due to the relationship of hydric soils to wetlands and wetland preservation.[14]

Soils in Roselle Park that have a hydric rating are Haledon-Urban land-Hasbrouck complex, 0 to 8 percent slopes (HatB) and Udorthents, loamy, substratum 0 to 8 percent slopes (UdkttB).

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. 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 Roselle Park (outside of water and urban land) are rated as moderate in this category. Using K-factor, slope, and content of rock fragments, the rating of the Erosion Hazard is described as Slight, Moderate, or Severe:

- **Erosion factor Kw (whole soil):** Erodibility of the whole soil. The estimates are modified by the presence of rock fragments.
- **Erosion factor Kf (rock free):** Erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.
- **Erosion factor T:** Estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year. T Factors are important in the evaluation and development of conservation practices that reduce soil erosion. An assigned T Factor is not used in any erosion prediction equations but is the target value used to determine whether a management system is/is not sustainable.[15]

In Roselle Park, the soil K-factors range from 0.24 to 0.37 which represent moderate risks of erosion. (***Table 5***)

Table 5. Soil Erodibility Classifications

Soil Type	Kw	Kf	T	Wind Erodibility Group	Wind Erodibility Index
BovB Boonton-Urban land-Haledon complex, 0 to 8% slopes	0.32	0.32	4	5	56
HatB Haledon-Urban land-Hasbrouck complex, 0 to 8% slopes, eroded	0.24	0.24	4	5	56
UdkttB Udorthents, loamy, substratum 0 to 8% slopes	0.37	0.37	3	5	56

Source: NRCS Soil Survey

Topographic Protection (Wind)

According to the Natural Resource Conservation Service (NRCS), the soils of Roselle Park are subjected to erosion by wind. Wind erosion most often affects soil on bare lands, where sheer force of wind detaches particles protruding from the soil surface. A conservation measure that can minimize damage due to wind erosion is maintaining a surface cover. Wind erosion is measured by group and index. Wind erodibility groups consist of soils that have similar properties that affect their susceptibility to wind erosion. Soils in group 1 are most susceptible to wind erosion, while soils in group 8 are less susceptible to wind erosion. Wind erodibility index is a numerical value that measures the susceptibility of soil to wind erosion. This value is measured in tons per acre per year that is expected to be lost to wind erosion. The soils of Roselle Park ranked in group 5 of the index. (***Table 5***)

Limitations for Use

Other characteristics of soil that determine suitability for development, including its capacity to support foundations without corrosion, limits for septic systems, and hydrological characteristics such as tendency towards ponding and flooding, a shallow water table or potential for frost heave, can contraindicate development, as shown in ***Table 6***. The NRCS Soil Survey states,

> "Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as foundation 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."

Table 6. Soil Limitations

Soil:	**BovB Boonton-Urban land-Haledon complex 0 to 8% slopes**	**HatB Haledon-Urban land-Hasbrouck complex 0 to 8% slopes, eroded**	**UdttkB Udorthents, loamy, substratum 0 to 8% slopes**
Depth to Restrictive Feature (inches to fragipan	91 cm	71 cm	>200 cm
Drainage	Moderately Well drained	Somewhat Poorly Drained	Well drained
Depth to Water Table	76 cm	31 cm	183 cm
Available Water Capacity	0.17 cm	0.20 cm	0.18 cm
Flooding	None	None	None
Frost Action Potential	Moderate	Moderate	Moderate
Ponding	None	None	None
Risk of Corrosion Steel	Moderate	High	High
Risk of Corrosion Concrete	Moderate	Moderate	High
Septic Limitations	Very Limited	Very Limited	Very Limited

Source: NRCS Soil Survey

Limitations for use include the following characteristics:

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 has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. Though not shown in this table, information on the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation, can be obtained for specific soil types from the NRCS.

In Roselle Park, the Boonton soil series is rated (centimeters) at 91, Haledon series at 71, and Udorthents at >200.

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 like those under which the soil developed. Drainage classes range from excessively drained (water is removed very rapidly and the soils are commonly coarse-textured or shallow) to very poorly drained (water is removed from the soil so slowly that free water remains at or very near the ground surface during much of the growing season and unless artificially drained, most crops cannot be grown).

In Roselle Park, the Boonton soil series is rated as moderately well drained, the Haledon series is rated as somewhat poorly drained, and Udorthents series is rated as well drained.

Capacity [of most limiting layer] to transmit water refers to the ease with which pores in a saturated soil transmit water. This capacity is considered in the design of soil drainage systems and septic tank absorption fields.

Depth to water table indicates a range of expected depth to a saturated zone in the soil, known as a "water table," that occurs during several months in most years. A saturated zone that lasts for less than a month is not considered a water table.

The rating (centimeters) of the soil series in Roselle Park range from 31 to 183.

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. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

- "None" means that flooding is not probable. The chance of flooding is nearly 0% in any year. Flooding occurs less than once in 500 years.
- "Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1% in any year.

- "Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1-5% in any year.
- "Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5-50% in any year.
- "Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50% in any year but is less than 50% in all months in any year.
- "Very frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50% in all months of any year.

Flooding of the soil series in Roselle Park is categorized as none.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Frequency is expressed as none, rare, occasional, and frequent.

- "None" means that ponding is not probable.
- "Rare" that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 to 5% in any year).
- "Occasional" that it occurs, on the average, once or less in two years (the chance of ponding is 5-50% in any year).
- "Frequent" that it occurs, on the average, more than once in two years (the chance of ponding is more than 50% in any year).

Ponding in Roselle Park was ranked at none, therefore ponding in the soils is not probable.

Available water capacity refers to the quantity of water that the soil can store 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 or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water available to plants at any given time.

The soils in Roselle Park range from 0.17 to 0.20 centimeters per centimeter of water capacity.

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. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained.

All the soil series in Roselle Park are rated as moderate for frost action.

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.

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. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

The corrosion of concrete in Roselle Park soils is rated as moderate for the Boonton and Haledon soil series and high for the Udorthents soil series. The corrosion of steel in Roselle Park soils is rated as moderate for the Boonton soil series and high for the Haledon and Udorthents soil series.

Septic limitations refer to effectiveness of a soil type to manage a septic tank absorption field. Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tile or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. The most important soil properties that determine septic limitations are saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding. Stones and boulders, ice, and bedrock or cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

All of the rated soils in Roselle Park Borough are classified by the NRCS as “very limited,” which indicates that the soil has at least one feature that is unfavorable for such use, with the expectation of poor performance and high maintenance.

Soil Limitations for Building Site Development

The NRCS Web Soil Survey states that in Roselle Park Borough, UR soil is not rated for limitations for building site development, UdkttB is not limited for building site development, and BovB and HatB are very limited for building site development. (***Table 7***)

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. For dwellings without basements and small commercial buildings, the foundation is “assumed to consist of spread footing of reinforced concrete built on undisturbed soil at a depth of 2 feet or at a depth of maximum frost penetration, whichever is deeper.” For

dwellings with basements, the foundation is "assumed to consist of spread footings of reinforced concrete built in undisturbed soil at a depth of about 7 feet." 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.[16] The ratings are as follows:

> **Not Limited:** indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected.
>
> **Somewhat Limited:** indicates that the soil has features that are moderately favorable for specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected.
>
> **Very Limited:** indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

See ***Table 7*** for the breakdown of these ratings for each soil type and their total acreage found throughout the Borough.

Table 7. Soil Limitations for Building Site Development in Roselle Park

Rating	Dwellings with Basements	Dwellings without Basements	Small Commercial Buildings
Not Rated	UR (143.8) Total Acres: 143.8 % of Borough: 18.3%	UR (143.8) Total Acres: 143.8 % of Borough: 18.3%	UR (143.8) Total Acres: 143.8 % of Borough: 18.3%
Not Limited	UdkttB (14.1) Total Acres: 14.1 % of Borough: 1.8%	UdkttB (14.1) Total Acres: 14.1 % of Borough: 1.8%	UdkttB (14.1) Total Acres: 14.1 % of Borough: 1.8%
Very Limited	BovB (385.3) HatB (240.6) Total Acres: 625.9 % of Borough: 79.9%	BovB (385.3) HatB (240.6) Total Acres: 625.9 % of Borough: 79.9%	BovB (385.3) HatB (240.6) Total Acres: 625.9 % of Borough: 79.9%

Source: NRCS Soil Survey

Limitations for Recreational Use

Camp areas require preparation, which include shaping and leveling parking and tents, stabilizing roads and frequently used areas, and installing sanitary facilities and utility lines. Areas for camping often incur foot traffic and some motor traffic. Picnic areas incur heavy foot traffic, and limited motor traffic, as there are parking spots outside park areas. Playgrounds need level soil that is free of stones and that can stand heavy foot traffic.

Table 8 identifies the major soils in Roselle Park and their limitations for recreational land. The value columns indicate a value from 0.01 to 1, with a larger value indicating more limitations. There are multiple values, each relating to the limiting factors.

Table 8. Values[b] and Limitations of Soils in Roselle Park for Recreational Use

Map Symbol Soil Name	Camp Rating Limitations	Camp Area Value	Picnic Rating Limitations	Picnic Area Value	Playground Rating Limitations	Playground Area Value
BovB- Boonton- Urban land- Haledon complex	(S) dusty	0.01	(S) dusty saturated zone*	0.01 1.00	(V) dusty saturated zone* gravel content slope	0.01 1.00 0.37 1
HatB Haledon- Urban land- Hasbrouck complex	(V) dusty saturated zone* slow water flooding	0.01 1.00 0.96 1.00	(S) dusty saturated zone*	0.01 1.00	(V) dusty saturated zone* gravel content slope slow water**	0.01 1.00 0.39 0.50 0.96
UdkttB Udorthents, loamy substratum	(S) dusty slow water**	0.01 0.96	(S) dusty slow water**	0.01 0.96	(S) dusty slope slow water**	0.01 0.13 0.96

**saturated zone: depth to saturated zone*
***slow water: slow water movement through soil*
S: Somewhat Limited, V: Very Limited, N: Not Rated

Source: NRCS Soil Survey

[b] The value columns indicate a value from 0.01 to 1, with a larger value indicating more limitations.

WETLANDS

Wetlands are important natural resources that contribute significantly to an area's social, economic, and environmental health. Among the services they provide are filtration of chemicals, pollutants, and sediment from water; flood control; critical habitat for wildlife; recreation and tourism. The NJDEP defines a freshwater wetland as "an area that is inundated or saturated by surface water or ground water 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; provided, however, that the Department, in designating a wetland, shall use the three-parameter approach (that is, hydrology, soils, and vegetation) enumerated in the 1989 Federal Manual."[17] (*N.J.A.C. 7:7A*) NJDEP has adopted this manual as the technical basis for identifying and delineating wetlands.

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 transition area. Wetlands in New Jersey are classified into three different values: exceptional resource value, ordinary resource value, or intermediate resource value. The criteria for these classifications are described below.

Exceptional Resource Value Wetland

- Discharges into FW-1 water and FW-2 trout producing waters and their tributaries,
- Is a present 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 Wetlands which is:
    - An isolated wetland, as defined at *N.J.A.C. 7:7A-1.4*, which:
    - Is smaller than 5,000 square feet, and

- Has the uses listed below covering more than 50% of the area within 50 feet of the wetland boundary. In calculating the area covered by a use, the Department will only consider a use that was legally existing in that location prior to July 1, 1988, or was permitted under this chapter since that date:
    - Lawns
    - Maintained landscaping
    - Impervious surfaces
    - Active railroad right-of-way
    - Graveled or stoned parking/storage areas and roads
    - A drainage ditch
    - A swale or
    - A detention facility created by humans in an area that was upland at the time the facility 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 2015 Land Use/Land Cover data, there are no mapped wetlands within Roselle Park Borough. (**Map 6A**) Between 1986 and 2015, the percentage of wetlands dropped from 0.7% (5.46 acres) of the Borough in 1986 to 0% in 2015. **Map 6B** identifies where the wetlands were in 1986.

While there may be designated stormwater drainage basins in Roselle Park, these areas are still considered urban land use as mapped by the NJDEP digital orthophotography. It is important to note, that while the state data does not show mapped wetlands in the Borough, this does not mean that there are no wetlands located within Roselle Park. The wetlands and areas of wetland change represented on this mapping have been determined primarily through photointerpretation. They do not represent, and should not be used as, wetlands delineation under the Wetlands Protection Act. The Planning Board and Environmental Commission should request onsite evaluation and review for the potential presence of wetlands for proposed development applications.

VEGETATION

Since 1986, the NJDEP has mapped land use within the state using digital orthophotography and the Land Use/Land Cover (LU/LC) data sets. Areas are delineated using color infrared images. The latest update of this data occurred in 2015. The NJDEP also maps critical habitat for imperiled and priority species through the Landscape Project, which is a proactive, ecosystem-level approach to the long-term protection of these habitats, rare plant species, and ecological communities through the Natural Heritage Database.

Land Cover

The NJDEP identifies the following LU/LC categories: agriculture, barren land, forest, urban, and wetlands. In Roselle Park, only urban and forest land use classifications are identified by the LU/LC data. Forested areas represent less than 1% of Roselle Park's land cover (7.8 acres).

Forest Types

According to the 2015 LU/LC data, 76% of the forest cover in Roselle Park is deciduous forest (5.9 acres). Of this, 4.65 acres has >50% crown closure. Less than 25% of the total forest cover is brush/shrubland in old fields (1.9 acres). (***Table 9***) Most of the contiguous forest in the Borough is located adjacent to the Little League complex where it runs along Laurel Avenue and backs up to the railroads tracks next to West Clay Avenue. Another strip of forest is located along Valley Road near the western boundary of the Borough. A small tract of forest on municipal property, is located on Lehigh Avenue in the northeastern portion of the Borough. (***Map 6A***)

Table 9. Forested Land Classifications in Roselle Park

Classification	Acres	% of Category	% of Roselle Park
Deciduous Forest (>50% Crown Closure)	4.65	59.9%	0.59%
Deciduous Forest (10-50% Crown Closure)	1.22	15.7%	0.16%
Old Field (<25% Brush Covered)	1.89	24.4%	0.24%
Total:	**7.76**	**100%**	**0.99%**

Source: Land Use/Land Cover 2015, NJDEP

Forested lands in Roselle Park Borough include the following classifications:

Deciduous – This category includes forested lands that contain deciduous tree species, which lose their leaves at the end of the growing season. These trees remain leafless throughout the 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 trees species to be placed in this category. In Roselle Park, there are 5.9 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. Roselle Park has 4.65 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 1.2 acres in Roselle Park.

Brush/Shrubland – When vegetation is less than 20 feet high, the area is categorized as brush/shrubland. There are 1.9 acres of brush/shrubland in Roselle Park.

> *Old Field:* This category includes open areas that have less than 25% brush cover. The predominant cover types are grasses, herbaceous species, tree seedlings, and/or saplings. Old Fields are distinguished from inactive farmland by the amount of brush cover. If a field contains few woody stems (<5%), it should be placed in the inactive farmland category. An area should be placed in the Old Field category if the amount of brush cover requires extensive brush removal before plowing. In some cases, it may not be established that the previous use was agriculture.

Community Forestry

Community Forestry Management Plan

The Borough of Roselle Park released the *Community Forestry Management Plan for 2020-2024* (CFMP) in January 2020.[18] This comprehensive plan provides detailed strategies to promote the health and sustainability of Roselle Park's forest cover. The Environmental Commission has a shade tree sub-committee, dedicated to "preserv[ing] the borough's existing urban forestry and increas[ing] the canopy coverage that has seen significant reduction these past several years." As written in the *Community Forestry Management Plan for 2020-2024:*

> "Recognizing the enhancing value that street and park trees contribute to the quality of life in the Borough of Roselle Park, it is the Borough's mission to promote a sustainable and productive community forest. The introduction of State sanctioned standards followed by local budgetary enablement will provide the necessary impetus to minimize Roselle Park's future exposure to tree related liability while simultaneously enriching the quality of life enjoyed by its residents."

The goal of the plan is to "ensure that trees within the public right of way not only contribute to the environmental and economic vitality of the area, but also reduce potential hazards to public safety." The Borough of Roselle Park has, in recent years, focused on eliminating dangerous tree and sidewalk conditions, to "enrich the quality of life enjoyed by its residents." The Borough of Roselle Park CFMP enables the Borough Council and the Public Works Committee to set attainable goals within budgetary constraints to meet present and future maintenance needs.

A hazardous tree and windshield tree survey were conducted as part of the Borough's Tree Inventory/Assessment component of the CFMP. The tree survey identifies Ash Trees that may be at risk of infestation from the Emerald Ash Borer.

A component of the CFMP is the Borough's identification and removal of potentially hazardous trees. The plan offers strategies for managing/removing hazardous trees that may pose a threat to public safety and infrastructure if not addressed. Approximately 48 trees were identified as needing to be removed in the Borough.

Roselle Park strives toward goal of no-net-loss planting - to plant the same or more trees than those removed. The CFMP states that on average, the Borough removes 25 trees and plants 15 trees, which is not yet fulfilling the goal of no net tree loss. The goal was met in 2019 when 114 trees were planted and 36 were removed.

To promote tree biodiversity, it is recommended that the Borough plant a greater variety of trees. Currently, the Borough has many varieties of maple trees. The CFMP recommends diversifying the existing forest cover with additional Lacebark Elm, Littleleaf Linden, Heritage River Birch, and Amanogawa Cherry. (***Table 10***)

To ensure the health of the Borough's trees, routine tree maintenance and care are recommended. The goal of this component is to provide scheduled maintenance of the Borough's trees over a 10-year period, which includes removal and pruning of trees.

An infected ash tree containing the Emerald Ash Borer was identified by Roselle Park's Department of Public Works (DPW) and confirmed by a third party in 2020. The Department of Public Works (DPW) conducted a survey in 2019 and concluded there were 227 green and white ash trees on the Borough rights-of-way. This figure does not include county roads, parks, basins, wooded lots, or school property.[19]

Table 10. Recommended Tree Lawn Species for Roselle Park		
48" in width or greater	**30" – 48" in width**	**30" in width or less**
Lacebark Elm	Heritage River Birch	Amanogawa Cherry
Magnifica Hackberry	Yoshino, Autumn Flowering, Kwanzan, and Columnar Sargent Cherry	Cornelian Cherry
Littleleaf Linden	Yellowwood	Rutgers variety of Dogwood
Swamp White Oak	Maackia	Kousa Dogwood
	Parrotia	Japanese or Ivory Silk Tree Lilac
	Ruby Red Horse Chestnut	Merrill Magnolia
	Merlot Redbud	Silverbell
		Shadblow
Source: Roselle Park Community Forestry Management Plan *Recommendations adapted from NJ Streets published by the New Jersey Shade Tree Federation*		

Urban Forestry

In 2018, Roselle Park received the Greening Union County grant from the Union County Open Space, Recreation, and Historic Preservation Fund. The grant allowed Roselle Park to plant 50 trees throughout the Borough. Union County offered to match every tree purchased by the Borough. Roselle Park planted the trees in the Spring of 2019 with species including *Acer campestre* (Field or Hedge Maple) and *Prunus sargentii columnaris* (Columnar Sargent Cherry).

Roselle Park - Tree Protection Ordinance

Trees have a high return on investment due to the ecosystem services they provide. Trees and greenspace provide direct and indirect benefits, including reducing stormwater runoff, air and water pollution, energy costs and use associated with heating and cooling, the urban heat island, reducing the amount of asphalt sealers required, pollution, and providing carbon storage and sequestration.

The Roselle Park Municipal Code establishes tree protection protocols in the Tree Protection Ordinance § 26-1.1-1.3. The first section of the ordinance prohibits injury to trees along streets. It states, "it shall be unlawful for any person, including the owner of any trees to cut down, dig up, cut the roots of, injure or damage any saplings or shade trees in, on or along any of the streets, highways or parks of this Borough." [20]

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. 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:** Species-specific patches that do not contain any species occurrences and do not meet any habitat-specific suitability requirements.

The majority of critical species habitat in Roselle Park is Rank 0 (94.6%), species-specific patches that do not contain any species occurrences and do not meet any habitat-specific suitability requirements. The remainder, 5.4% (42.33 acres) are 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. (***Figure 4*** and ***Map 7***)

Roselle Park contains Rank 1 habitat patches located along the stream corridors of Morses Creek, Peach Orchard Brook, and West Brook. Morses Creek flows through the southwestern corner of the Borough. The Rank 1 habitat patch follows the path of Morses Creek north into the Kenilworth Borough to patches that are ranked as habitat areas of State Threatened Species. The Patch 1 habitat areas along the Peach Orchard Brook and West Brook are confined to where the brooks drain.

For Rank 1 and 2 habitat patches that exist within and along stream corridors, there is a potential risk of damage from pollutants upstream. Any further development near Morses Creek, Peach Orchard Brook, and West Brook should include a consideration of the location of the patches to ensure protection of the species habitat. Limitation of further development around stream corridors can additionally provide flood protection and increase overall green space in the Borough. Continued stream quality monitoring can help Roselle Park assess the extent to which pollution is harming the habitat patches.

Roselle Park Borough is not home to any state threatened species or state species of special concern.

Figure 4. Landscape Project NJDEP Landscape 3.3 Viewer Critical Habitats

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 dry 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 the pools' 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.

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 the following criteria:

1. The wetland must consist of or contain a confined basin or depression without a permanently flowing outlet;
2. 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, Appendix 1*);
3. The area must maintain ponded water for at least two continuous months between March and September of a normal rainfall year; and
4. The area must remain free of fish populations throughout the year, or it must dry up at some time during a normal rainfall year.

Roselle Park does not have any documented vernal pools nor does it have any potential vernal habitat areas.

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", or simply "vernal habitat areas". The NJDEP maps both certified "vernal habitat areas" and "potential vernal habitat areas" using New Jersey's Landscape Project. The mapping depicts a 300-meter radii circle over the estimated center of both "certified" and potential" vernal habitats. The 300-meter buffer is intended to account for the varying sizes of individual pool, the likely presence of adjacent wetland areas and – significantly – the adjacent dispersal habitats typically utilized by many resident amphibian species. The Landscape Project defines its mapping of vernal habitats as follows:

> *Potential vernal habitat areas* – These 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 have been 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* – These are areas that 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) protects 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.

Roselle Park does not have any documented vernal pools, nor does it have any potential vernal habitat areas.[21]

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."[22] 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.

The NJDEP has divided the state into Watershed Management Areas (WMAs). Every WMA is composed of multiple watersheds and sub-watersheds. The US Geological Survey (USGS) has mapped and identified watersheds using hierarchical numbering systems. This system identifies watersheds using hydrological unit code (HUC) consisting of up to 14 digits for the smallest watersheds.

The Borough of Roselle Park falls within WMA 7, the Arthur Kill. The majority of Roselle Park (92%) is within the Morses Creek/Piles Creek sub-watershed. The eastern corner of the Borough, adjoining Elizabeth City near Bender and Woodland Avenues, falls within the Elizabeth River sub watershed. (***Map 8*** and ***Table 11***)

Table 11. HUC14 Watersheds

WMA	WMA name	Sub-Watersheds	Acres	Percent
7	Arthur Kill	Elizabeth River (below CORP BDY)	60.57	7.73%
7	Arthur Kill	Morses Creek/Piles Creek	723.16	92.27%
		Total:	**783.73**	**100.00%**

Source: NJDEP HUC14 Watershed Tabular Data

Surface Water

Surface water is water that collects on the ground or in a stream, river, lake, wetland, or ocean. There are two surface streams mapped in Roselle Park, Morses Creek and Peach Orchard Brook. (***Map 8***)

New Jersey's Surface Quality Standards (SWQS) (N.J.A.C. 7:9) classify Fresh Water 1 (FW1) as the highest level of classification, which is defined as:

> "those fresh waters, as designated in N.J.A.C. 7:9B-1.15(j), that are maintained in their natural state of quality (set aside for prosperity) and not subject to any manmade wastewater discharges or increased runoff from anthropogenic activities. These waters are set aside for prosperity because of their clarity, color, scenic setting, other characteristics of aesthetic value, unique ecological significance, or *exceptional* fisheries resource(s)."[23]

The general classification for other freshwater in the State is Fresh Water 2 (FW2). The presence of trout in a stream means that the waters are relatively free of chemicals or biological contaminants and is used to further define designated uses. A stream can be classified as Trout Production (TP), Trout Maintenance (TM), or Non-Trout (NT).

- Trout Production waters are designated "for use by trout spawning or nursery purposes during their first summer."
- Trout Maintenance waters support trout throughout the year.
- Waters classified as Non-Trout do not support trout, either because of their physical nature or due to biological or chemical characteristics.
  (SWQS, N.J.A.C.7:9B)

The surface waters of Roselle Park are classified as FW2 and Non-Trout (FW2-NT). (***Map 9***)

Surface water quality is affected by point sources and non-point sources of pollution as well as erosion and sedimentation. Point source means any discernible, confined, and discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharged.[24] This includes discharges from sewage treatment plants and factories, stormwater runoff, illegal dumping, and malfunctioning underground storage tanks and septic tanks. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.

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 ground water. 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, eutrophication can lead to anoxia, a condition where a water body has depleted levels of oxygen – a result of the decomposition of dead phytoplankton.

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 results in exposed soil. The vegetative cover

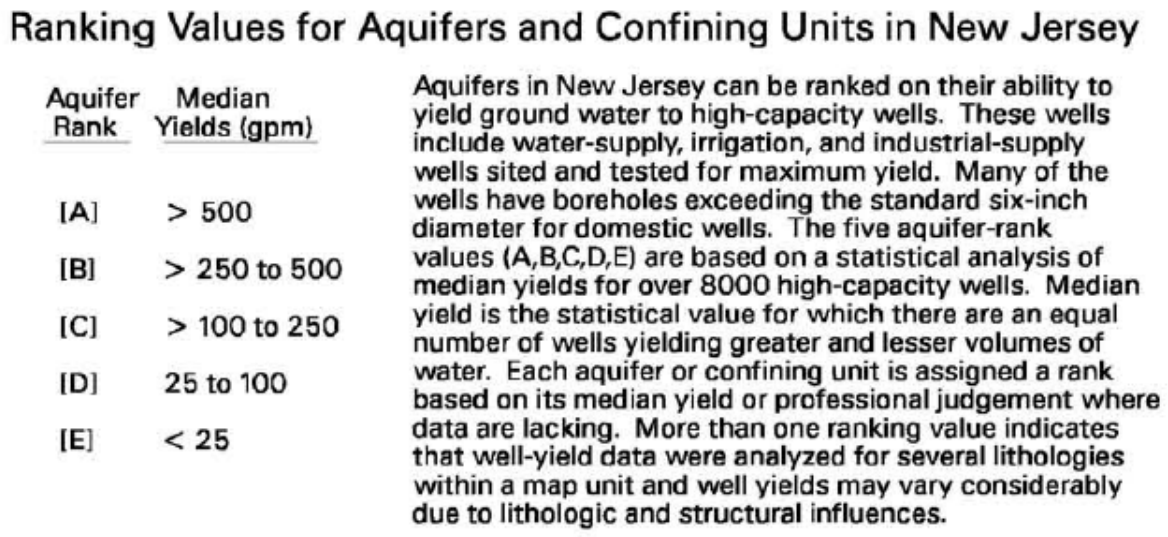
can typically absorb the impact of raindrops, but when it is removed, the exposed soil easily becomes eroded. The eroded soil can then be transported to surface waters where it could contaminate and increase the turbidity of the water, effectively blocking sunlight to plant species and negatively affecting the health of the aquatic ecosystem.

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 and less water and even run dry.

Aquifers are typically equated to the type of geologic formation in which they exist. 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.

The Borough of Roselle Park is underlain by the Brunswick Aquifer (Rank C). The NJGS identifies the Brunswick Aquifer as a fractured-rock aquifer of the Newark Basin part of the Piedmont Physiographic Province, which yields between 100 to 250 gallons per minute. (***Map 10***, ***Figure 5***, and ***Figure 6***)



Ranking Values for Aquifers and Confining Units in New Jersey

Aquifer Rank	Median Yields (gpm)
[A]	> 500
[B]	> 250 to 500
[C]	> 100 to 250
[D]	25 to 100
[E]	< 25

Aquifers in New Jersey can be ranked on their ability to yield ground water 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 standard six-inch diameter for domestic wells. The five aquifer-rank values (A,B,C,D,E) are based on a statistical analysis of median yields for over 8000 high-capacity wells. Median yield is the statistical value for which there are an equal number of wells yielding greater and lesser volumes of water. Each aquifer or confining unit is assigned a rank based on its median yield or professional judgement where data are lacking. More than one ranking value indicates that well-yield data were analyzed for several lithologies within a map unit and well yields may vary considerably due to lithologic and structural influences.

Figure 5. Ranking Values for Aquifers in New Jersey (NJGS)

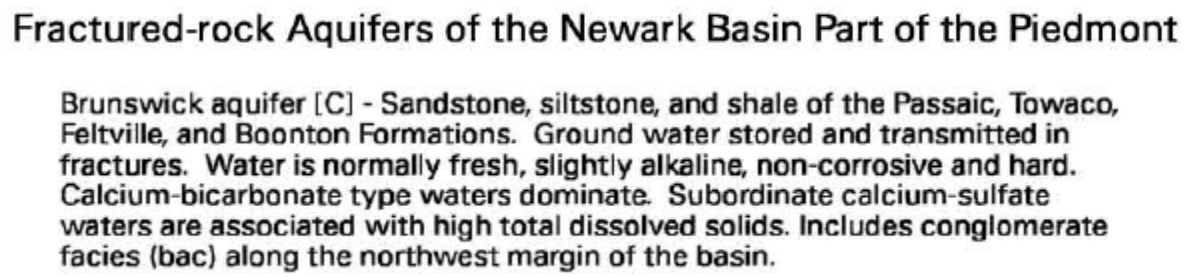


Figure 6. Brunswick Aquifer Description (NJGS)

Surficial aquifers in New Jersey are those 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.

Map 11 and ***Table 12*** show the distribution of rankings for Roselle Park Borough. The map shows the potential for an aquifer to recharge in each area. The area with the highest potential for recharge would be ranked A/A (>500gpm, 20-23 in/yr). (***Table 13***) Nearly all of Roselle Park (75%) is ranked C/B, which provides between 100-250gpm, 7-8 in/yr.

Table 12. Aquifer Potential Recharge Rankings in Roselle Park

Aquifer Rank	*Groundwater Rank*	*Numeric Rank*	*Alpha Rank*	*Acres (GIS)*	*% Borough*
C	A	31	C/A	1.8179	0.23%
C	B	32	C/B	585.1423	74.67%
C	C	33	C/C	0.1695	0.02%
C	D	34	C/D	22.3571	2.85%
C	E	35	C/E	174.1388	22.22%
			Total	**783.6256**	**100.00%**
Source: NJDEP NJGS					

Table 13. Statewide Aquifer and Union County Groundwater Rankings

Aquifer Rank	*Median Well Yield (Gallons/Minute)*	*Groundwater Rank*	*Avg. Annual Infiltration (In/Yr)*
A	>500	A	13-20
B	>250-500	B	9-12
C	>100-250	C	7-8
D	25-100	D	1-6
E	<25	0	0
There are also hydric soils (L/L), wetlands and open water (W/W) and instances where no recharge is calculated (X/X). *Source: NJGS*			

Public Water Supply and Wellhead Protection

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.

Wellhead Protection Areas (WPAs) are delineated for both public community and non-community wells. The delineations for these wells are two, five, and 12-year tiers. Each tier represents the horizontal extent of ground water captured by a well pumping at a specific rate over those periods of time. There are no community water supply wells within the Borough of Roselle Park, however there is an adjacent public community water supply well in neighboring Roselle Borough to the south. This public well is supplied by water from the two-year tier WPA that is in Roselle Park Borough. (***Map 12***)

The Borough's water is provided by New Jersey American Water in the Raritan System and purchased from Newark Water Company. The Raritan system consists of 98 wells and seven surface water intakes along the Raritan River, Millstone River, and Delaware and Raritan Canal.[25]

Riparian Zones

In order to better protect the public from hazards of flooding, preserve the quality of surface waters, and protect wildlife and vegetation, the NJDEP has adopted Flood Hazard Area Control Act Rules (N.J.A.C. 7:13)[26] in order to incorporate more stringent standards for development in flood hazard areas and riparian zones. A riparian zone is land and vegetation with and adjacent to surface waters. Riparian areas in the Piedmont include all open waters, flood prone areas, and wildlife corridors (300-foot corridors along each stream bank).

Activity within the regulated area of the flood hazard area and the riparian zone may be restricted if it includes or results in one or more of the following:

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 or a public building.

The NJDEP recognizes riparian zones for all surface waters in New Jersey. In most areas Category 1 (C1) waters require a 300-foot buffer. Surface waters, including the FW2-NT designated streams in Roselle Park, are subject to a regulated 50-foot riparian zone, measured from the top of the bank, along both sides of the surface waters.

In April 2020, NJDEP Division of Water Monitoring and Standards adopted a new rule that expands C1 waters to 600 miles of rivers and waterways in the state.[27] While this rule may not directly impact Roselle Park, increased protections of waterways will benefit water quality across the state.

Roselle Park - Riparian Buffer Conservation Zone

Chapter 38 of Roselle Park Borough's municipal code, "Riparian Buffer Conservation Zone," establishes where riparian zones exist in Roselle Park. The purpose of the municipal code is to protect and conserve "native vegetation in riparian areas." The municipal code regulates permitted uses in the riparian zone (§38-5). Prohibited uses in the riparian zone include "removal or clear-cutting of trees and other vegetation" and "use of fertilizers, pesticides, and herbicides."[28]

According to §38-4, "Establishment of Riparian Zones," the following areas are defined as riparian zones in Roselle Park:

1. 300-foot wide buffer along both sides of any C1 water, and all upstream tributaries situated within the same HUC-14 watershed.
2. Riparian zones shall be 300 feet wide along both sides of the following waters not designated as C1 waters:
    a. Any trout production water and all upstream waters (including tributaries);
    b. Any trout maintenance water and all upstream waters (including tributaries) within one (1) linear mile as measured along the length of the surface water body;
    c. Any segment of a water flowing through an area that contains documented habitat for a threatened or endangered species of plant or animal, which is critically dependent on the surface water body for survival, and all upstream waters (including tributaries) within one (1) linear mile as measured along the length of the surface water body; and
    d. Any segment of a surface water body flowing through an area that contains acid producing soils.
3. For all other surface water bodies, a riparian zone of fifty (50) feet wide shall be maintained along both sides of the water.

A map of riparian zones in Roselle Park Borough is available at the Municipal Building Offices upon request.

CLIMATE

Prevailing Air Currents in New Jersey

According to the Office of the New Jersey State Climatologist (ONJSC) at Rutgers University, a "broad, undulating flow from west to east" dominates atmospheric circulation in the middle latitudes of North America, including New Jersey. "These 'prevailing westerlies' shift north and south and vary in strength during the course of the year, exerting a major influence on the weather throughout the State".[29] In general, most areas in New Jersey experience 25 to 30 thunderstorms per year, with fewer storms near the coast than farther inland. About five weak tornados occur each year throughout the state.

Climate Zone

New Jersey is divided into five distinct climate regions, or zones. Differences in geology, distance from the Atlantic Ocean, and prevailing atmospheric flow patterns produce distinct variations in the daily weather between each of these regions.

According to the ONJSC publication, "*The Climate of New Jersey*", Roselle Park is in the Central climate zone, which runs from the New York Harbor to the Delaware River near Trenton. Due to the urban nature of this region, large quantities of pollutants are produced by a high volume of automobile traffic and industrial waste. Furthermore, the high concentration of buildings and paved surfaces helps retain more heat, thus affecting the temperature. This is commonly referred to as the "heat island effect". The Central Zone experiences approximately 15-20 days annually of 90° F or higher.[30] (***Figure 7***)

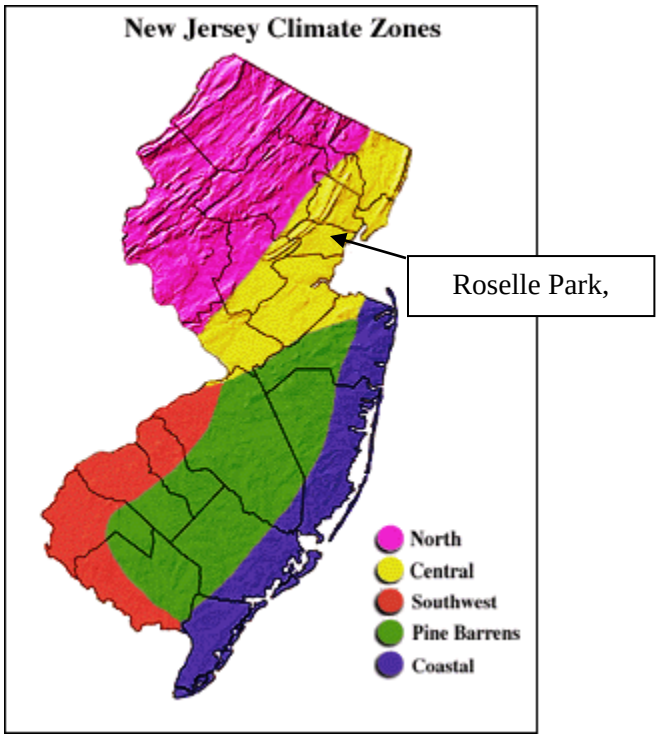


Figure 7. New Jersey Climate Zones
(Office of the NJ State Climatologist)

Temperature and Precipitation

The ONJSC maintains temperature and precipitation data from monitoring stations throughout the state, with some records dating back to the 1890s. The state is divided into three divisions, with Union County falling under Division 1 (North). Division 1 includes counties of Union, Somerset, Essex, Hudson, Bergen, Passaic, Morris, Sussex, Warren, and Hunterdon. The ONJSC has compiled a statewide report, with values calculated from an average of monthly temperatures.

State Historic Averages

Data from 1895 through 2012 for New Jersey statewide mean annual temperatures and annual precipitation along with yearly cooling and heating degree day totals for New Jersey from 1890 to 2012 have been collected and graphically represented to show a comparison and historic trend for the state's climate. Heating degree days are the number of degrees the average daily temperature is below 65°F. Cooling degree days are the number of degrees the average daily temperature is above 65°F. These numbers provide data on to what extent outside temperatures lead to increased energy use to either cool or heat indoor spaces.

This data is represented in ***Figure 8***, ***Figure 9***, ***Figure 10*** and ***Figure 11*** which show an overall upward trend in mean temperature and precipitation for the State of New Jersey between 1895 and 2012, as well as an increase in yearly cooling degree days and a reduction in yearly heating degree days. The ONJSC records an average of 163 "freeze free" days in the north, 179 in central Jersey and southern Jersey, and 217 at the coast. The normal heating degree days, reported by the Northeast Regional Climate Center, are on a base of 65 degrees.[31]

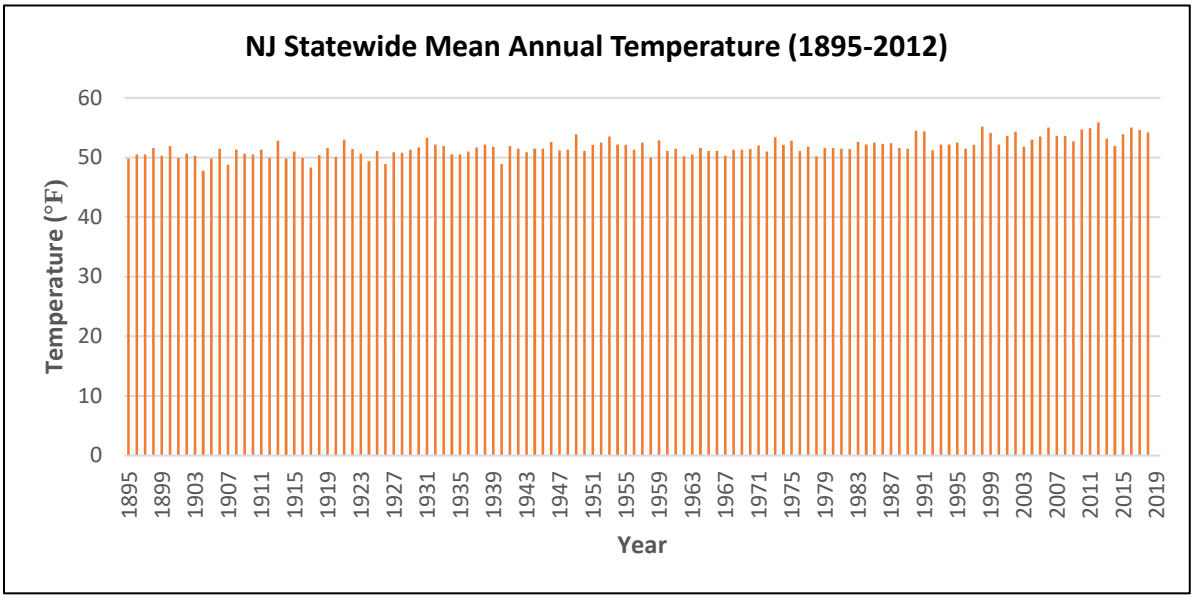


Figure 8. NJ Statewide Mean Annual Temperature (1895-2018)

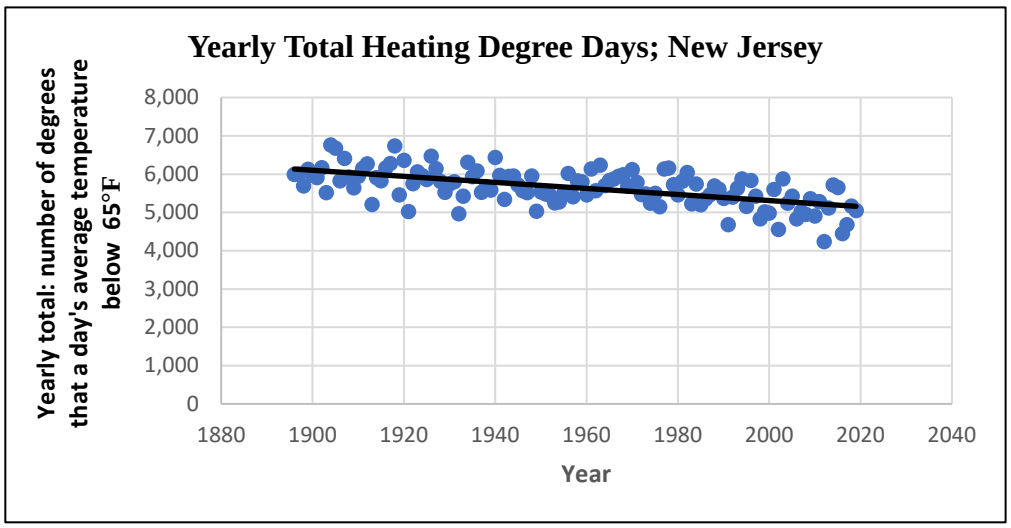


Figure 9. Yearly Total Heating Degree Days; New Jersey

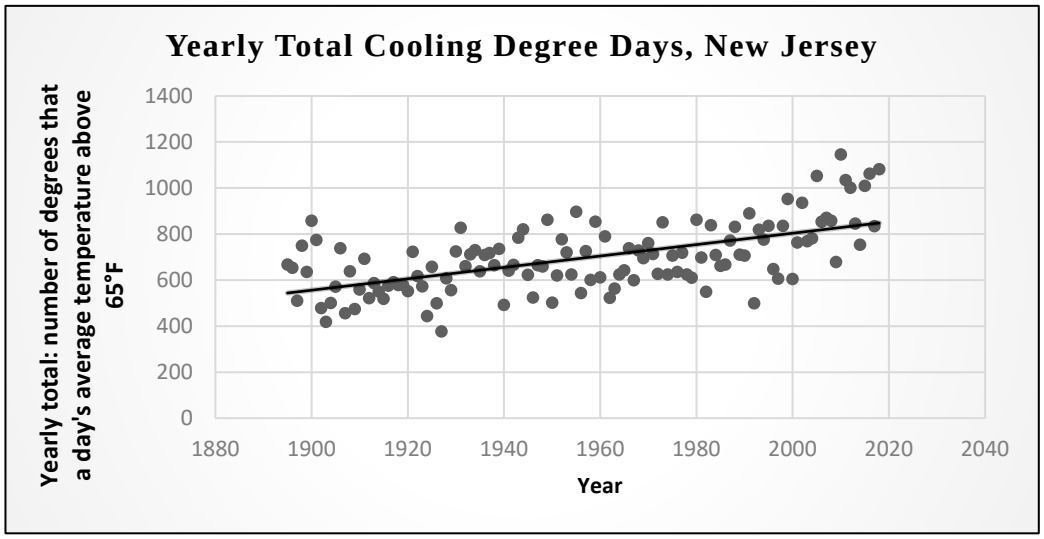


Figure 10. Yearly Total Cooling Degree Days; New Jersey

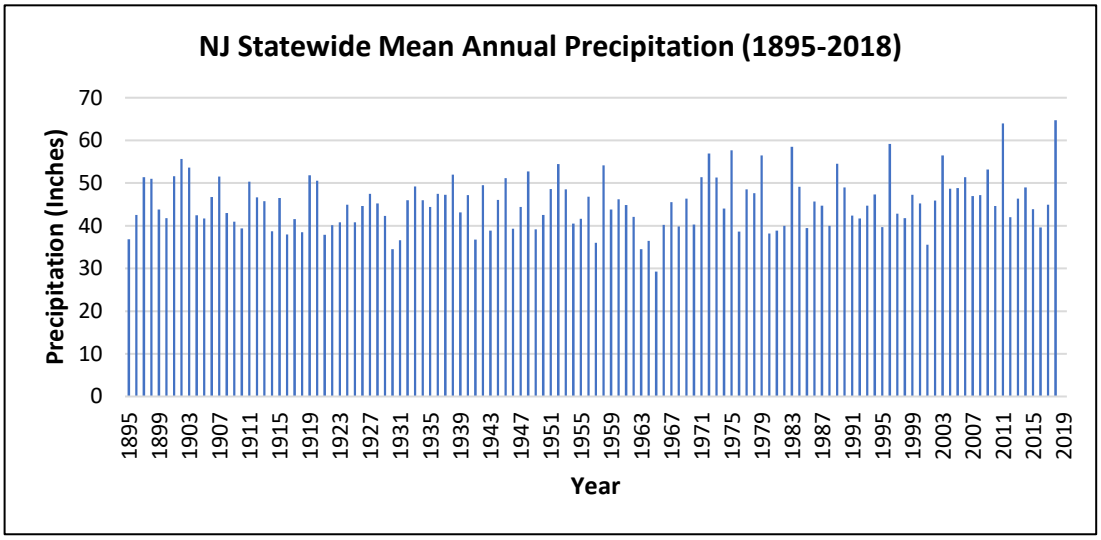


Figure 11. NJ Statewide Mean Annual Precipitation (1895-2018)

Local Historic Averages

The three ONJSC reporting stations closest to Roselle Park are at Cranford[32], Plainfield[33], and Newark International Airport.[34] These monitoring stations track a variety of climate factors, including monthly and annual temperatures and precipitation. ***Table 14*** includes monthly and annual temperature averages recorded at the Cranford, Plainfield, and Newark monitoring stations. Each station has been monitoring temperatures for a different length of time. The historic average of annual mean temperatures for Cranford is 53.4°F. For Newark and Plainfield, the historic average of annual mean temperatures is 54.6°F and 52.5°F, respectively.

Local Historic Precipitation Averages

Table 15 details the monthly and annual averages for precipitation (in inches) at the Cranford, Plainfield, and Newark monitoring stations. Historic annual mean precipitation for Cranford is 51.6 inches. For Newark and Plainfield, the annual mean rates are 44.29 inches and 48.84 inches, respectively. A breakdown of precipitation averages by month is also included. ***Table 16*** details the historic monthly and annual snowfall averages (in inches) from each of the monitoring stations. The annual mean snowfall in Cranford is 22.7 inches. The annual mean snowfall at the Plainfield and Newark monitoring stations are 30.1 and 28.4 inches, respectively.

Local Temperature and Precipitation Records

The National Weather Service report indicates that in Newark, the closest report area for Roselle Park, the highest degree day was in July 2011 (108°F) and the coldest day was reported in 1934. The highest rainfall was reported in 2011 with nearly 70 inches of rain recorded. (***Table 17***)

Table 14. Monthly and Annual Average Temperatures (°F): Cranford, Plainfield, Newark Airport Monitoring Stations													
Cranford Monitoring Station (1969-2016)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Mean	30.8	33.5	41.4	51.6	61.3	70.2	75.2	73.8	66.3	54.9	45.4	35.6	53.4
Median	30.9	33.9	40.4	51.7	61.5	70.6	75.1	73.6	66	54.6	45.1	35.9	53.2
Min	21.6	23.4	33.8	46.5	57.6	65.8	71.3	70	62	49.7	39.1	24.3	51.1
Max	39.1	39.9	50.2	55.7	67.4	73.7	79.7	78.2	71.1	61.6	49.8	43.4	55.7
Plainfield Monitoring Station (1892-1999)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Mean	30.6	31.6	40.5	50.7	61	69.7	74.7	73	66.2	54.9	44.2	33.8	52.5
Median	30.7	31.9	40.2	50.4	60.7	69.9	74.7	72.8	66	54.7	44.2	34.2	52.4
Min	21	17.3	31.7	44.9	53.9	63.4	71	66.6	60.6	46.5	36.9	21.8	48.4
Max	41.4	39.7	52	57.1	67.4	75.1	80.7	79.4	72.4	61	51	42.9	55.9
Newark Airport Monitoring Station (1938-2018)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Mean	31.9	33.6	41.6	52.3	62.7	71.9	77.2	75.5	68.3	57.1	46.6	36.2	54.6
Median	31.6	33.6	41.7	52.7	63	72.2	77	75.5	68.2	57.1	46.7	36.6	54.4
Min	20.9	18.6	33.9	45.8	54.3	67.5	73.1	70.1	63.6	51.8	39.9	25.6	50.5
Max	42	41.6	51.3	57.9	68.9	77.8	82.7	80.4	74.5	63.8	52	49.8	57.8
Source: Office of the New Jersey State Climatologist													

Table 15. Historical Precipitation (inches): Cranford, Plainfield, Newark Airport Monitoring Stations													
Cranford Monitoring Station (1969-2016)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Mean	3.74	3.19	4.23	4.15	4.47	4.51	5.04	4.52	4.47	4.18	4.11	4.28	51.6
Median	3.47	2.73	4.03	3.55	4.16	3.94	4.61	3.46	3.68	3.68	3.68	4.51	50.25
Min	0.56	0.61	0.7	1.14	1.47	0.59	0.57	0.91	1.18	0.8	0.45	0.6	36.55
Max	9.59	10.56	12.07	12.51	9.91	9.36	13.96	18.93	13.51	13.84	11.21	11.31	71.74
Plainfield Monitoring Station (1892-1999)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Mean	3.6	3.28	4.02	3.84	4.11	4.02	5.24	4.8	4.37	3.82	3.66	3.85	48.84
Median	3.35	2.94	3.99	3.51	3.65	3.72	4.96	4.19	3.56	3.49	3.36	3.69	48.39
Min	0.66	0.79	0.37	0.87	0.84	0.02	0.33	0.42	0.14	0.23	0.36	0.21	32.06
Max	8.48	7.65	8.77	9.13	9.27	10.39	14.27	15.64	14.2	14.05	9.51	9.89	72.99
Newark Airport Monitoring Station (1938-2018)													
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
Mean	3.41	2.95	4.03	3.74	3.94	3.68	4.2	4.17	3.74	3.27	3.56	3.55	44.29
Median	3.19	2.75	3.65	3.16	3.76	3.28	4.05	3.52	3.33	2.98	3.07	3.65	43.72
Min	0.45	0.52	0.79	0.9	0.52	0.07	0.84	0.36	0.14	0.21	0.37	0.27	26.09
Max	10.1	5.88	11.14	11.85	10.22	10.5	9.98	18.79	10.28	13.22	11.53	9.47	69.91
Source: Office of the New Jersey State Climatologist													

Table 16. Monthly and Annual Mean Snowfall (inches): Historical Snowfall Average for Cranford, Plainfield, Newark Airport Monitoring Stations													
Cranford Monitoring Station (1969-2016)													
	Jul	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Annual**
Mean	0	0	0	0	0.6	4.1	7.4	8	4	0.4	0	0	22.7
Median	0	0	0	0	0	2.5	5.8	6	2.5	0	0	0	19.5
Min	0	0	0	0	0	0	0	0	0	0	0	0	2.8
Max	0	0	0	0	7.8	23.5	28	30.9	16	6.5	0	0	60.7
Plainfield Monitoring Station (1892-1999)													
	Jul	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Annual**
Mean	0	0	0	0	1.1	6	8.3	9.7	5.5	0.8	0	0	30.1
Median	0	0	0	0	0	4	6.7	7.2	4.5	0	0	0	26.9
Min	0	0	0	0	0	0	0.1	0	0	0	0	0	4
Max	0	0	0	2	17.2	25.9	33.6	32.9	23.1	14	0	0	71.4
Newark Airport Monitoring Station (1938-2018)													
	Jul	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Annual**
Mean	0	0	0	0.1	0.8	5.3	8	8.6	4.9	0.7	0	0	28.4
Median	0	0	0	0	0	3.3	5.9	6.1	3.4	0	0	0	24.6
Min	0	0	0	0	0	0	0	0	0	0	0	0	1.9
Max	0	0	0	5.2	14.2	29.1	37.4	33.4	26	13.8	0	0	78.4
Source: Office of the New Jersey State Climatologist													

Table 17. Temperature (°F) and Rainfall Records (inches), Newark, NJ (2019)					
Temperature (°F)	**Record Temperature**	**Date**	**2019 Record Temperature**	**2019 Date**	**2019 Average**
Temperature (High)	108	07/22/2011	99 degrees	07/21/2019	63.8
Temperature (Low)	-14	02/09/1934	2 degrees	01/31/2019	47.6
Rainfall (inches)	**Single Year Record**	**Date**	**Total (2019)**	**Daily Average (2019)**	**Highest 24 Hour Total (2019)**
Precipitation (Maximum)	69.91	2011	58.56	0.16	2.13
Precipitation (Minimum)	26.09	1965			
Source: National Weather Service[35]					

Extreme Phenomena

Tropical Cyclones

According to the National Oceanic and Atmospheric Administration (NOAA), tropical cyclones are rotating, organized systems of clouds and thunderstorms that originate over tropical or subtropical waters.[36] Tropical cyclones have four major levels, increasing in severity: tropical depression, tropical storm, hurricane, and major hurricane. Storms may start out as major hurricanes and weaken in strength as they travel and make landfall. The season generally runs from spring through fall, with most activity for the Mid-Atlantic States occurring in August and September. Tropical cyclones tend to bypass New Jersey due to its protective location slightly to the west of coastal outcrops to the north and south. When they do affect New Jersey, they are more apt to affect coastal areas, although a few have traveled inland.

Notable recent tropical cyclones are Hurricane Floyd in September 1999, Hurricane Irene in August 2011, and Hurricane Sandy in October 2012. According to ONJSC, 5-10 inches of rain fell in the areas near Roselle Park during Hurricane Irene.[37] During Hurricane Sandy in 2012, Roselle Park received between 1 and 1.5 inches of rain.[38]

Other recent tropical cyclones affecting New Jersey:

2010 – Tropical Storm Hanna took an inland track.
2004 – Several tropical storms and depressions affected the East Coast but missed inland Northern New Jersey.
2000 – A tropical depression from Hurricane Gordon affected coastal New Jersey.
1999 – Hurricane Bret clipped the New Jersey coast in September at a Tropical Storm level.

1996 – Hurricane Josephine downgraded to a tropical storm hit inland in October.
1994 – A tropical depression traveled west and north of New Jersey.
1992 – Tropical Storm Earl traveled south and west of New Jersey.
1988 – Tropical Storm Chris traveled west to east through Northern New Jersey.
1985 – Hurricane Gloria skirted the coast of New Jersey.

For 2019, the most recent summary data available, the frequency of tropical storms was above the 1981-2010 average of 12.1, with 18 named storms forming (6 of which were hurricanes, and 3 major hurricanes). The 2019 season had an Accumulated Cyclone Energy (ACE) index (duration and strength) of about 25% above the 1981-2010 average, and the 15th highest since 1981. The 2019 season saw two Category 5 hurricanes in Dorian and Lorenzo. Dorian's winds were among the strongest of any Atlantic hurricane in history before it hit the Bahamas as a Category 5 hurricane.[39] In 2019, there were no weather-related disasters in New Jersey costing over one billion dollars.[40]

Landslides

Landslides in New Jersey have generally occurred in the northern and central parts of the state and include slumps, debris flows, rock falls, and rockslides. They are not as common in New Jersey as in other parts of the country. As of July 2018, there were approximately 298 landslides in New Jersey as reported by the NJDEP.[41] Of the 298 landslides recorded in New Jersey from 1887 to 2018, 13% (39) occurred during the heavy rains of Hurricane Irene in August 2011. No landslides have occurred in Roselle Park.

Earthquakes

The NJDEP maintains a database of recorded earthquakes in New Jersey, with more than 207 as of April 2019.[42] They occur more frequently along the fault lines in north-central New Jersey than in other parts of the state. These earthquakes are typically minor in nature, often registering in the category of micro-quakes. The strongest earthquake epi-centered in New Jersey, with a magnitude of 5.3, occurred in 1783, just north of present-day Picatinny Arsenal in Rockaway Township, Morris County. The strongest earthquakes felt in New Jersey had a magnitude of 8.0-8.8 and were epi-centered in New Madrid, Missouri in 1811-1812. An earthquake epi-centered in Virginia was felt in New Jersey in August 2011.[43] NOAA's website indicates the closest area that tests for earthquakes is New York, in which there was most recently an earthquake in 2002. During this earthquake there was minimal damage, costing under one million dollars.[44] There has not been a registered earthquake in Roselle Park.

In New Jersey, damage from earthquakes is rare or minor. The baseline for the hazard ranking is the level of horizontal shaking that have a 2-in-100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the acceleration of a falling object due to gravity. Maps available from the USGS can "form the basis for seismic design provisions of building codes, insurance rate structures, earthquake loss studies, retrofit priorities, and land-use planning."[45]

Earthquakes are measured by magnitude, intensity (level of shaking), and depth to hypocenter. Magnitude measures the relative size and energy released (when one block or rock, along a fault

line, slips over another, causing the ground to vibrate).[46] The magnitude scale begins at 0 and the highest magnitude ever recorded was 9.5. Of the 207 earthquakes recorded in the database, 59% had a magnitude of 2 or less and are considered "micro earthquakes." ***Table 18*** shows the magnitude summary.

Table 18. Magnitude Summary for Earthquakes in New Jersey

Range	Count	% of Total
<2.0	122	59%
2.0-3.0	72	35%
3.1-4.0	11	5%
4.1-5.0	1	0.5%
>5.1	1	0.5%
Total:	**207**	**100%**

Source: NJDEP[47]

Generally, the intensity of an earthquake relates to its magnitude, with a higher level of intensity occurring at or near the epicenter of a higher magnitude earthquake. The intensity scale ranges from I to VIII or higher. Intensities of VI (felt by all, frightening but damage is slight) or VII (damage negligible in buildings of good design and construction) are generally associated with a magnitude in the 5 range. Intensities of IV (felt by nearly everyone; some shaking, cracking of walls, standing cars rocked) or V (felt by everyone) are generally associated with magnitudes in the 4 range.

Another earthquake measurement is the depth below the surface at which the hypocenter occurs. The hypocenter is the point in the earth where the rupture starts, and the epicenter is the point at the earth's surface directly above the hypocenter. Depth levels are grouped as shallow, 0-70 km deep; intermediate, 70-300 km deep; and deep, 300-700 km deep. All earthquakes in New Jersey have a shallow depth to hypocenter with the deepest recorded hypocenter at 25 km below the surface for an earthquake occurrence near Sussex in northwestern New Jersey in 1969. ***Figure 12*** shows the frequency of earthquakes in New Jersey from 1983-2018. The highest annual count was 13 in 1984, and no earthquakes were reported in either 1985 or 2000. The strongest earthquake recorded within 20 miles of Roselle Park was near South Amboy, Middlesex County in 1895.

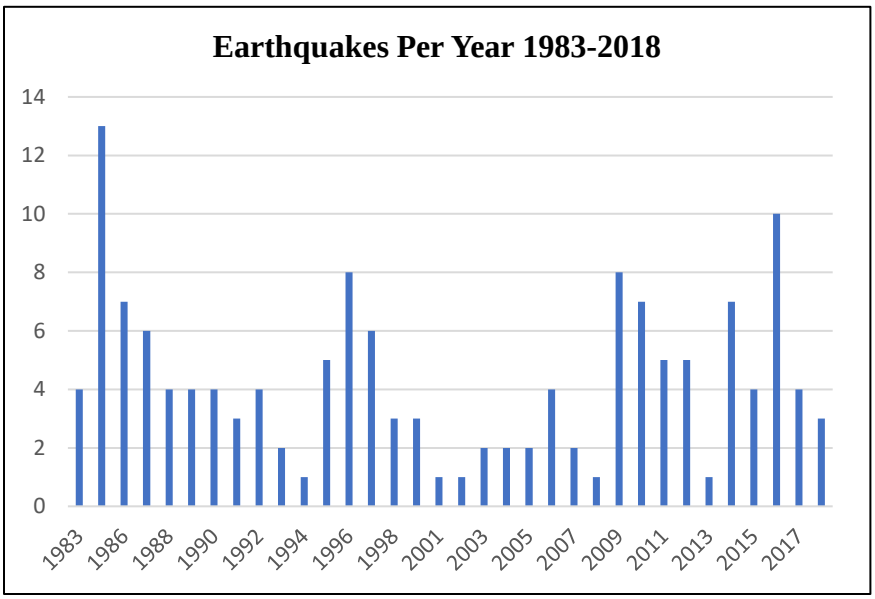


Figure 12. Earthquakes in New Jersey

Climate Change

In 2007, the Intergovernmental Panel on Climate Change (IPCC) reported that increasing carbon dioxide (CO_2) emissions into the atmosphere, as a result of human activity, has warmed the Earth's surface by more than 1.3°F during the last century. The Union of Concerned Scientists has indicated that temperatures in the northeast are likely to rise in winter and summer over the next several decades. Without a reduction in CO_2 and other Greenhouse Gas (GHG) Emissions, average temperatures may rise by up to 14°F in the summer by 2100. Studies have predicted that by the end of the century the New York City region and cities such as Trenton could experience more than 20 days per summer with temperatures above 90°F.[48]

The National Centers for Environmental Information noted that 2018 was the fourth warmest year on record dating back to the mid-1800s.[49] 2017 was the second warmest year on record behind 2016. Sea surface temperatures were also near-record high. Sea surface temperatures have cooled slightly since the record El-Niño in 2016, but 2018 temperatures were recorded at 0.33 °C above the 1981-2010 mean.[50] Of importance is the trend in temperatures, as 2018 itself is the 42nd consecutive year with both land and ocean temperatures above the average for the century. Since the 21st century began, these temperatures for land and ocean have broken records five times, three of which happening consecutively, from 2014-2016.[c]

This warming trend can have impacts on the health of humans and the environment. The predicted effects on humans include heat stress, increased particulates in the air, and increased

[c] "Reporting on the State of the Climate in 2018*" was used because the report for 2019 was not released at the time of the making of this document*

occurrences of insect-spread diseases such as West Nile Virus in the winter season of northern climates. Ecosystem repercussions include changes to the water cycle, with the following potential consequences: loss of critical habitat, further stressing some already threatened and endangered species; impacts on water supply and agriculture; more intense rain events; more frequent periods of extended dryness; and increases in fires, pests, disease pathogens, and invasive weed species.[51]

2018 Mid-Atlantic Forest Ecosystem Vulnerability Assessment

In October 2018, the USDOA Forest Service produced a report that studies the impact that climate change will have on the Mid-Atlantic region that covers 60 million acres including New Jersey, Pennsylvania, Delaware, and most of New York and Maryland. This assessment states that the annual average temperature has increased by 1.8°F since 1901. This increase is felt more along the coast as the average temperature has warmed by more than 4°F in certain locations. This report outlines a low climate scenario in which the climate change projections are made with the lowest projected impact, and a high climate scenario in which the highest projected impacts are used in future projections. Under each of these projections, temperatures are expected to increase anywhere from 1°F to 10°F, and the region should expect increases in precipitation in winter and spring. In addition to increased precipitation, studies project more frequent heavy rain events (1-inch to 3-inch) rain events as well as increased risk of drought as increased temperature will increase rates of evaporation and transpiration. Other impacts that the Mid-Atlantic region will experience are an increased risk of wildfires, tree regeneration and recruitment will be affected by changing conditions, suitability for southern species will increase, suitability for northern species will decline, and damage from invasive plants, pests, and pathogens will increase.

Greenhouse Gases

A Greenhouse Gas (GHG) is defined by the NJDEP as:

> "an atmospheric gas that slows the rate at which heat radiates into space, thus having a warming effect on the atmosphere. GHGs include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide, chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), and some other halogenated gases."[52]

To address the effects of GHGs, New Jersey enacted the Global Warming Response Act in 2007. This law requires:

- Stabilization of statewide GHGs to 1990 levels by 2020, and
- A further reduction to 80% below 2006 levels by 2050

According to the NJDEP, New Jersey must meet these limits to avoid the most damaging impacts of climate change. In 2012, the latest year for which major sector estimates are available, total estimated emissions were 104.6 million metric tons of CO_2 equivalent (MMTCOe), below the 1990 baseline and 2020 target of 125.6 MMTCOe. The 2050 goal is much more ambitious: to be 80% below the 2006 level, or approximately 25.5 MMTCOe.

In December 2011, the state revised its *Energy Master Plan* and released an updated draft in December 2015. The state *Energy Master Plan* is the strategic vision for the use, management, and development of energy in New Jersey over the next decade. Because fossil fuels such as coal, oil, and natural gas are the largest source of GHGs in the state, the *Energy Master Plan* serves as the platform for discussions about how New Jersey can meet the Global Warming Response Act's 2050 greenhouse gas limit.[53] On May 23, 2018, Governor Phil Murphy signed an Executive Order for the Energy Master Plan Committee to undertake an update to the 2015 Plan.[54]

The transportation sector continues to be the major contributor to GHGs (44% in 2012) and vehicle miles traveled continue to increase while fuel efficiencies have leveled off. In 2012, electricity generation was the second largest contributor at approximately 20% followed by residential at 11%, commercial at approximately 10%, and industrial at approximately 10%, combining for 31% of gross statewide emission. Highly warming gases, waste management, and land clearing contributed approximately 12%, while terrestrial carbon sequestration (forests absorbing carbon) provided an offset of -7.9%.[55]

Urban Heat Island Effect

Urban heat island effect is caused by the combination of a lack of tree cover and heat absorption by dark surfaces. In the Central climate zone of New Jersey, where Roselle Park lies, the asphalt, concrete, and other paved surfaces contribute to the temperature, as these paved surfaces retain heat. Localized high temperatures can cause heat-related illnesses and decrease the quality of life in these areas. Additionally, hotspots can be correlated with increased air conditioning which leads to elevated emissions of air pollutants, increased asthma rates and greenhouse gas emissions.

Map 13 illustrates land surface temperature in Roselle Park and identifies hot spots within the municipality. There are nine hotspots in the Borough, and these can be correlated with apartment complexes, warehouses, and denser development in Roselle Park and neighboring Kenilworth Borough. The mapping shows that Woodside Gardens Apartments, the Romerovski Corporation, and Webster Gardens create hotspots in Roselle Park.[56]

Clean Energy Initiatives

On an individual level, rebates on energy efficient alternatives for household appliances, heating, cooling, and alternative energy systems are available through New Jersey's Clean Energy Program (NJCEP), which are administered by the New Jersey Board of Public Utilities. Commercial, industrial, and local government programs are also available.[57]

Roselle Park Borough was awarded an "It Pay$ to Plug In" grant in 2019 for installation of electric vehicle chargers at Michael Mauri Park in downtown Roselle Park. Installation is pending.

AIR

Air Quality

Air quality in the Borough of Roselle Park and New Jersey is carefully monitored by the NJDEP through various regional collection stations that ensure air quality standards are meeting the national standards set by the Clean Air Act. The pollutants measured in the air can vary greatly over the course of a year and even from day to day depending on weather conditions and traffic patterns. The local air testing stations in New Jersey measure maximum pollutant concentration, assess population exposure, determine the impact of major pollution sources, measure background levels, determine the extent of regional pollutant transport, or measure secondary impacts in rural areas. The information gathered is transmitted in real time and consolidated in yearly reports to ensure that both State and National Clean Air Standards are met.[58]

National Clean Air Standards

In 1970, the federal government passed the Clean Air Act, setting standards to be met throughout the country. The Act was amended in 1990, with focus on four areas of pollution: acid rain, urban air pollution, toxic air emissions, and stratospheric ozone depletion. The amendment also introduced a permits program and strengthened enforcement.[59] Under the Act, it is the responsibility of the United States 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 NJDEP Division of Air Quality (DAQ) and its Bureau of Air Monitoring (BAM), which monitors the State's ambient air monitoring network.

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 but also provides real-time reporting through its Air Quality Index website.[60] Although there are monitoring sites throughout the state, each site measures a limited set of pollutants; no one site tracks them all. (***Figure 13***)

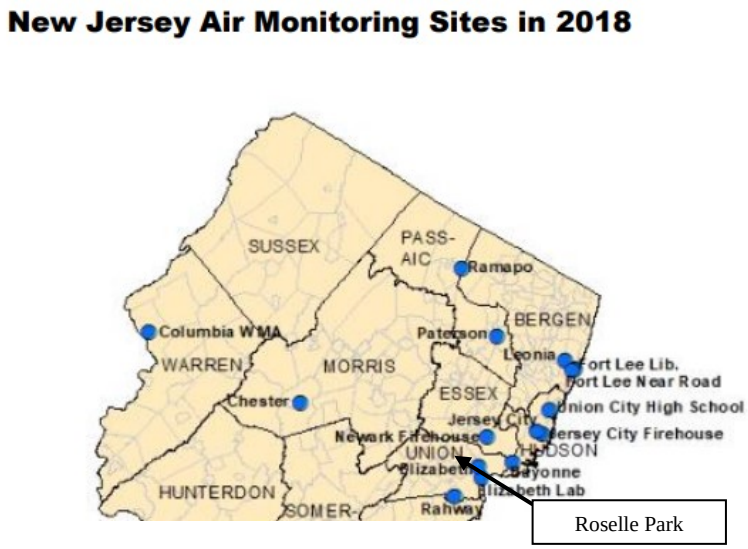


Figure 13. NJDEP Air Monitoring Sites (2018)

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. Over the period of 1990-2010, total emissions of these air pollutants have decreased by more than 41% nationally.[61]

In New Jersey, air quality has improved significantly over the last fifty years since the first Earth Day, in 1970. [62] New Jersey has attained sulfur dioxide (with the exception of a portion of Warren County), lead, carbon monoxide, and nitrogen dioxide standards.

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. The NJDEP DAQ also regulates emissions of these HAPs. For many toxins, the State has set its own standards, with stricter requirements than the EPA.

The Air Quality Index (AQI) rates air quality based on the NAAQS. (***Figure 14***) A score of 50-100 is considered a moderate level of concern. In 2018, New Jersey exceeded the standards where the AQI was over 100. AQI pollutants include ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. There were 19 days in 2018 when New Jersey exceeded the standards, and these days were reported "Unhealthy for Sensitive Groups," such as children, elders, and those with asthma. There were 3 days classified as "Unhealthy," which was an increase from 2017 when there were no days classified as "Unhealthy."

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 14. Air Quality Index NJDEP Report (2018)

Criteria Pollutants

Criteria pollutants are those that take precedence in the United States air quality standards. They have more severe primary and secondary health effects on people and the environment, and include carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter.[63] They are carefully monitored, and if one exceeds the standards for the nation or state, more effort is placed into lowering the emissions and exposure to residents. Efforts can be seen in technological advancements and advocacy from the national, state, and local government.

Ozone

Ozone (O3) is defined by the NJDEP 2015 Ozone Summary[64] as a gas that consists of three oxygen atoms. Ozone occurs naturally in the upper atmosphere where it offers protection from harmful ultraviolet rays. However, when found at ground level, ozone can have serious adverse health effects. Ground-level ozone is formed through a chemical reaction that requires nitrous oxides (NOx), volatile organic compounds (VOCs), and the presence of heat and sunlight. Therefore, because of the sunlight and heat necessary for ground-level ozone production, measurements are taken between April 1 and October 31.

The EPA revised National Ambient Air Quality Standards (NAAQS) for ozone in 2008, having determined that the previous standard of 0.08 parts per million (ppm) maximum daily 8-hour averages did not sufficiently protect public health and was lowered to 0.075 ppm. In October 2015, the 8-hour standard was lowered further to 0.070 ppm and went into effect in 2016. Attainment of the NAAQS is determined by taking the average of the fourth highest daily maximum 8-hour average concentrations that are recorded each year for three years.

New Jersey standards are based on 1-hour averaging, with primary standards set at 0.12 ppm and secondary standards set at 0.075 ppm. They are not as stringent as the revised NAAQS. To date,

the effort to lower ozone concentrations has focused on reducing emissions of VOCs. However, improvements have leveled off in recent years, especially with respect to maximum 8-hour average concentrations. According to the NJDEP report, significant further improvements will require reductions in both VOCs and NOx. Levels of NOx in New Jersey are largely affected by emissions from regional upwind sources outside of New Jersey. States impacting ozone levels in New Jersey include Illinois, Indiana, Kentucky, Maryland, Michigan, Ohio, Pennsylvania, Virginia, and West Virginia.[65]

Statewide, New Jersey is classified as a "marginal" ozone non-attainment area for NAAQS, with an overall score between 0.063 and 0.075 ppm for the three-year average. The highest 8-hour daily maximum reached 0.092 at the Bayonne Monitoring Station. The ozone monitoring stations closest to Roselle Park reported levels close to 0.067 (Newark Firehouse) for the period 2016-2018. (***Table 19***) In 2018, 14 of the 16 New Jersey stations reported levels above the 0.070 ppm per 8-hour standard. The highest daily maximum in 2018 in the state was at Flemington at 0.135 ppm. The EPA's air quality index notes that there were 116 days in 2017 and 120 days in 2018 when the main pollutant was ozone for the New York-Newark-Jersey City region.[d66]

Table 19. 2018 New Jersey Ozone Concentrations
parts per million (ppm)

Monitoring Site	1-Hour Average Concentration New Jersey Standards: Primary: 0.12 ppm; Secondary: 0.08 ppm	8- hour Average Concentrations NAAQS Standard: 0.075 ppm		
	Maximum	Highest Daily Maximum (2018)	4th Highest Daily Maximum	2016-2018 4th Highest Daily Maximum
Newark Firehouse (c. 10 mi)	0.120	0.096	0.071	0.067
Bayonne (c. 15.6 mi)	0.110	0.095	0.078	0.071
Source: 2018 New Jersey Air Quality Report				

Sulfur Dioxide

NJDEP's 2018 Sulfur Dioxide Summary[67] defines sulfur dioxide (SO2) as "a heavy, colorless gas with a suffocating odor that easily dissolves in water to form sulfuric acid. SO2 gases can be formed when fuels containing sulfur are burned, or when gasoline is extracted from oil." Most of the sulfur dioxide released into the air comes from electric utilities, followed by fossil fuel combustion, industrial processes, non-road equipment, and on-road vehicles. Sulfur dioxide can

[d] The Air Data Air Quality Index Summary Report displays an annual summary of Air Quality Index (AQI) values for counties or core based statistical areas (CBSA). Air Quality Index is an indicator of overall air quality because it considers all the criteria air pollutants measured within a geographic area. A daily index value is calculated for each pollutant measured. The highest of those index values is the AQI value, and the pollutant responsible for the highest index values is the "main pollutant."

be harmful to people (primarily children, the elderly, and asthmatics) and the environment when it reacts with other gases and particulates in the air to form sulfates. These sulfates are a primary cause of reduced visibility in the eastern United States. Sulfur dioxide can also combine with other substances in the atmosphere to form acid rain, which damages forests, crops, aquatic environments, and decays building materials. There are several standards for monitoring SO2, ranging from 1-hour to annual averaging. The State has both primary and secondary standards.

The primary standard is a 12-month standard based on any 12-month average recorded during consecutive years. The state's secondary standards are 12-month, 24-hour, and 3-hour averages. New Jersey's standards differ slightly from national standards, as shown in ***Table 20***.

Table 20. National and New Jersey Ambient Air Quality Standards for Sulfur Dioxide
parts per million (ppm); parts per billion (ppb); micrograms per cubic meter (µg/m^3)

Averaging Period	Standard Type	New Jersey	National[a]
12–month average	Primary	80 µg/m^3 (0.03 ppm)	---
12–month average	Secondary	60 µg/m^3 (0.02 ppm)	---
24–hour average	Primary	365 µg/m^3 (0.14 ppm)	---
24–hour average	Secondary	260 µg/m^3 (0.10 ppm)	---
3–hour average	Secondary	1300 µg/m^3 (0.5 ppm)	0.5 ppm
1–hour average[b]	Primary	---	75 ppb

a-National standards are block averages rather than moving averages
b-To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppm
Source: NJDEP 2018 Sulfur Dioxide Summary

Regulations requiring the use of low sulfur fuels in New Jersey have been effective in lowering SO_2 concentrations. No monitoring sites in New Jersey exceeded primary or secondary SO_2 standards in 2018. The last year an exceedance of the national 3-hour, 24-hour, or 12-month SO_2 standards was recorded in the state was 1980. ***Table 21*** shows data for the SO_2 monitoring sites closest to Roselle Park.

Table 21. Sulfur Dioxide 2018
parts per billion (ppb); parts per million(ppm)

Monitoring Site	3-year Avg. 99th %-ile of Daily Max 1-Hour Avg (ppb)	3-hour Avg Max (ppm)	24-hour Avg Max (ppm)	12-Month Avg Max (ppm)
Elizabeth (c. 3.2 mi)	4	0.0057	0.0039	0.0005
Elizabeth Lab (c. 3.2 mi)	6	0.0057	0.0030	0.0002
Newark Firehouse (c. 10 mi)	3	0.0056	0.0023	0.0002

Source: NJDEP 2018 Sulfur Dioxide Summary

Carbon Monoxide

According to the NJDEP *2018 Carbon Monoxide Summary*[68], carbon monoxide (CO) is a colorless, odorless, poisonous gas formed when carbon in fuels are not entirely burned. The primary creators of carbon monoxide emissions are on-road and off-road vehicles, with boilers, incinerators, and forest fires also contributing. The symptoms of exposure are headaches and nausea, with those who have cardiovascular disease being the most affected.

Although there are no national secondary standards, New Jersey has set its secondary standards at the same level as its primary standards and uses a different measuring metric than national standards. (***Table 22***) In addition, New Jersey standards are not to be exceeded more than once in any 12-month period.

Table 22. National and New Jersey Ambient Air Quality Standards of Carbon Monoxide
milligrams per cubic meter (mg/m3); parts per million(ppm)

Averaging Period	Type	New Jersey	National
1-Hour	Primary	40 mg/m^3 (35 ppm)	35 ppm
1-Hour	Secondary	40 mg/m^3 (35 ppm)	----
8-Hour	Primary	10 mg/m^3 (9 ppm)	9 ppm
8-Hour	Secondary	10 mg/m^3 (9 ppm)	----
Source: NJDEP 2018 Carbon Monoxide Summary			

Because on-road vehicle emissions are a major contributor of CO levels, there is a variation throughout the day, with the highest peaks around 7 to 8 am, and another, lower but more extended rise between 4 and 8 pm.

In 2018, of the CO monitoring stations in New Jersey, the Elizabeth, Elizabeth Lab, and Newark Firehouse stations were in the closest proximity to Roselle Park. All concentrations were well below the national and state standards. (***Table 23***)

Table 23. Carbon Monoxide 2018
1-Hour and 8-Hour Averages in Parts per million (ppm) 1-hour standard (35 ppm); 8-hour standard (9 ppm)

Monitoring Site	Maximum 1-hr Avg.	2nd Highest 1-hr Avg.	Maximum 8-hr Avg.	2nd Highest 8-hr Avg.
Elizabeth (c. 3.2 mi)	2.9	2.8	2.8	2.7
Elizabeth Lab (c. 3.2 mi)	2.3	2.1	1.3	1.2
Newark Firehouse (c. 10.0 mi)	2.626	2.569	1.8	1.7
Source: NJDEP 2018 Carbon Monoxide Summary				

Nitrogen Dioxide

According to the NJDEP *2018 Nitrogen Dioxide Summary*[69], 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 contributors to acid rain and haze. Oxides of nitrogen (NO_x) are combinations of gases comprising mostly of NO_2 and NO. They are emitted from fuel-related sources, which include vehicle exhaust, the burning of coal, natural gas and oil, industrial processes such as welding, and household gas stoves and heaters. NO is released into the atmosphere as NO_x but easily converts to NO_2.

NO_2 can aggravate or cause respiratory illness and prolonged exposure can permanently damage the lungs. Along with NO, NO_2 can irritate the eyes, nose, throat and lungs and cause nausea and tiredness. The environmental effects of nitrogen oxides can include changes in the composition of the flora in wetland and terrestrial ecosystems, acidification of freshwater bodies, eutrophication of estuarine and coastal waters, increases in levels of toxins harmful to fish and other aquatic life, and decreased visibility.

The levels for the national and state standards are the same; however, national standards are based on calendar year averages, while state standards apply to any 12-month period. (***Table 24***) The majority of NO_2 emissions come from vehicle exhaust, therefore, the highest levels occur during the morning and afternoon rush hours. Levels are also higher in winter than in summer.

Table 24. National and New Jersey Ambient Air Quality Standards for Nitrogen Dioxide (NO_2)
parts per million (ppm); micrograms per cubic meter (µg/m^3)

Averaging Period	Type	New Jersey	National
12-month average	Primary	100 µg/m^3 (0.053 ppm)	
Annual average	Primary		0.053 ppm (100 µg/m^3)
12-month average	Secondary	100 µg/m^3 (0.053 ppm)	
Annual average	Secondary		0.053 ppm (100 µg/m^3)
1-hour average	Primary		0.100 ppm (190 µg/m^3)
Source: NJDEP 2018 Nitrogen Dioxide Summary			

NO_2 concentrations in New Jersey have fallen steadily since 1975 when the average concentration was 0.040 ppm. Neither the statewide nor the individual station averages have exceeded the health standard of 0.053 ppm, although the highest reporting stations in 1975 came close. The Fort Lee Near Road, Elizabeth Lab, and Bayonne stations all have exceeded the State or National Standards for 1-hour concentrations, however they do not violate the NAAQS which is based off the 98th percentile. Of the ten reporting stations in 2018, Elizabeth Lab, and Newark Firehouse were the closest to Roselle Park. (***Table 25***) Although NO_2 concentrations score well within the NAAQS, oxides of nitrogen continue to be of concern because of their role in the formation of other pollutants, particularly ozone and fine particles.

Table 25. Nitrogen Dioxide (NO_2) 2018 *parts per million (ppm) National Standards: 1-Hour (0.100 ppm); 12-Month (0.053 ppm)*				
	1-Hour Average (ppm)		**12-Month Average (ppm)**	
Monitoring Station	**2018 98th %-ile**	**2016-2018 98th %-ile 3-year Avg**	**Maximum (Running 12 Month)**	**Calendar Year**
Elizabeth Lab (3.2 mi)	0.061	0.060	0.020	0.019
Newark Firehouse (10.0 mi)	0.052	0.055	0.015	0.0014
[a] Millville temporarily shut down for site renovations December 2012 to March 2013 *Source: NJDEP 2018 Nitrogen Dioxide Summary*				

Particulate Matter

Particulate matter[70] can be any manmade or natural particles found in the air, such as dust, dirt, smoke, sea salt, and liquid droplets. At any size, these particles can affect the environment. The total of all particles, of whatever size, is referred to as "Total Suspended Particulates" (TSPs). Particles less than 10 micrometers in diameter (PM_{10}) are called "Inhalable Particulates" because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers ($PM_{2.5}$), called "Fine Particulates," are believed to pose the greatest health risk. NAAQs for both Inhalable Particulates (PM_{10}) and Fine Particulates ($PM_{2.5}$) are set at the same level for both primary (health) and secondary (environmental welfare) standards. At greatest risk are children, the elderly, and individuals with heart and lung diseases, such as asthma.

The EPA abandoned standards for TSPs in favor of the smaller PM_{10} and $PM_{2.5}$ particulates, however New Jersey still maintains TSP standards, as shown in (***Table 26***). For $PM_{2.5}$ standards, an annual concentration for a given site is calculated by averaging the annual mean concentrations for the three most recent consecutive calendar years, in this case 2016-2018. Similarly, the 24-hour concentration for a given site is calculated by averaging the 98th percentile 24-hour concentrations for each year for the same 3-year period. For PM_{10} standards, the concentrations are simply calculated as the annual mean and the highest 24-hour average PM_{10} concentrations. (***Table 26***)

Table 26. Particulate Matter – 2018 National and New Jersey NAAQs *micrograms per cubic meter ($\mu g/m^3$)*			
Pollutant	**Averaging Time**	**Type**	**Level**
Fine Particulate ($PM_{2.5}$)	Annual	Primary	12.0 $\mu g/m^3$
	Annual	Secondary	15.0 $\mu g/m^3$
	24-Hour Average	Primary & Secondary	35 $\mu g/m^3$
Inhalable Particulate (PM_{10})	24-Hour Average	Primary & Secondary	150 $\mu g/m^3$
Source: NJDEP 2018 Particulate Summary			

In 2018, three New Jersey air monitoring stations measured PM_{10}, sixteen $PM_{2.5,}$ and one monitored what is known as smoke shade or the coefficient of haze (COH), for which no standard is set. Several stations use the EPA sanctioned Federal Reference Method (FRM) sampling, based on a 24-hour period, but New Jersey also has additional monitors that continuously measure particulate concentrations (TEOMs), providing the real-time data that the FRM cannot. TEOM data are made available to the public via the Air Quality Index.

In 2018, all areas of the State were in attainment for Inhalable Particulates, PM_{10}. The closest of the three PM_{10} monitoring stations to Roselle Park is Newark Firehouse, where the highest daily concentration was 40µg/m3 versus the national standard of 150µg/m3.

All sites met the annual and 24-hour standard for Fine Particulates, $PM_{2.5}$. The sites closest to Roselle Park include Elizabeth Lab and Newark Firehouse, which had an 8.82 µg/m3 and 7.75 µg/m3 annual mean concentration respectively, both falling below the National Standard of 15.0 µg/m3. (***Table 27***)

Further breaking down the fine particulate contribution to air pollution, five stations, including Camden Spruce Street, measure 40 components. The five highest contributors are organic carbon, sulfate, nitrate, elemental carbon, and sulfur.

Table 27. Particulate Material 2018

	$PM_{2.5}$ Data		**PM_{10} Data**	
	Measured in micrograms per cubic meter (µg/m^3)			
Monitoring Station	**Annual Mean Conc.**	**Highest 24-hr Conc.**	**Annual Mean Conc.**	**Highest 24-hr Conc.**
Elizabeth Lab (c. 3.2 mi)	8.82	33.2	---	---
Newark Firehouse (c. 10.0 mi)	7.75	26.1	13.1	40
Source: NJDEP 2018 Particulate Matter Summary				

Lead

Lead is a hazard to the health of humans and the environment, whether the source is lead in the air, in paint on walls, in our water, or in our soils. When taken into the body, lead circulates via the blood and accumulates in the bones. It affects the oxygen carrying capacity of the blood and can negatively affect the nervous system, kidneys, immune system, reproductive, developmental, and cardiovascular systems. It most commonly causes neurological effects in children and cardiovascular effects in adults. On a secondary level, lead from the air or water bodies may accumulate in soils and sediments, adversely affecting biodiversity.

According to the EPA, taking lead out of on-road motor vehicle gasoline has been the primary reason for a decline in lead in the air. Between 1980 and 2010 the EPA reported an 89% decrease in national average. Contributors to lead in the air today include ore and metals processing and leaded aviation fuel. In 2008 the NAAQS level was set at 0.15µg/m^3 for a rolling 3-month average. As of 2013, in accordance with the new 2008 standard there are 21 areas nationwide that are in non-attainment with the closest locations being in central Pennsylvania.[71]

The NJDEP has data for New Jersey stations monitoring lead in the air from 1990 to 1995-1996. Although some stations exceeded NAAQS levels in the early 1990's, all were below the standards by 1996.

In September of 2016, the EPA decided to retain these standards to protect primary and secondary benefits based on scientific evidence showing lead's health effects, confirming the need for a margin of safety.[72] In 2018, lead was monitored at the Newark Firehouse based on a 3-month rolling average which, ranged between 0.001 and 0.003 µg/m3. The United States has itself decreased its lead concentrations for outdoor air by over 90% since 1980.

Air Toxics

Almost 200 air toxics have been identified on the list of Hazardous Air Pollutants (HAPs) maintained by the EPA. The EPA issues a National-Scale Air Toxics Assessment (NATA), which the NJDEP adapts to evaluate the types and amounts of air toxics people are exposed to in New Jersey. NJDEP compares the estimated NATA air concentrations to their chemical-specific health benchmarks and divides the modeled air concentration by the health benchmark to get a risk ratio. If the risk ratio for a specific chemical is greater than one, it may be of concern, increasing the risk for cancer or other negative health effects. In general, higher population densities result in greater emissions of, and exposure to, air toxics.[73]

A station was established in Elizabeth in 2000. In 2001, the NJDEP also started measuring toxic metals in Newark, located in Essex County.[74] In 2018, eleven air toxics measured at the Elizabeth Lab exceeded the health benchmarks set by the EPA. These results can be seen in ***Table 28***.

Table 28. Air Toxics for Elizabeth Lab Above the Health Benchmark

Pollutant	Annual Mean (µg/m^3)	Health Benchmark (µg/m^3)	Annual Mean Risk Ratio
Acetaldehyde	2.268	0.45	5
Acrolein[a]	0.908	0.02	45
Benzene	0.709	0.13	5
1,3-Butadiene	0.092	0.033	3
Carbon Tetrachloride	0.557	0.17	3
Chloroform	0.154	0.043	4
Chloromethane	1.167	0.56	2
1,2-Dibromoethane	0.003	0.0017	2
1,2-Dichloroethane	0.088	0.038	2
Formaldehyde	3.971	0.077	52
Hexachlorobutadiene	0.054	0.045	1.2

[a]Acrolein concentrations are highly uncertain because of problems with collection and analysis methods

Source: NJDEP 2018 Air Toxics Summary

The three chemicals with the highest risk ratios reported at the Elizabeth Lab site are Formaldehyde (52), Acrolein (45), and Acetaldehyde (5).

Formaldehyde. Formaldehyde is used mainly to produce resins used in particleboard products and as an intermediate in the synthesis of other chemicals. The major sources of emissions to the air are forest and wildfires, stationary internal combustion engines and turbines, pulp and paper plants, petroleum refineries, power plants, manufacturing facilities, incinerators, and automobile exhaust emissions.

Acrolein. Acrolein is a colorless or yellowish liquid that is used to make tear gas, drugs, and plastics. It is extremely irritating to the eyes, skin, and lungs if inhaled. It is on the Hazardous Substance List and should be handled with extreme caution.[75]

Acetaldehyde. Acetaldehyde is highly reactive and may have a fruity smell in small doses and pungent at high doses. It is used to make acetic acid and other chemicals and can be released into the environment from industrial plants, combustion, and tobacco usage. Acetaldehyde can contribute to ground-level ozone. When inhaled or ingested, it can cause respiratory and nervous system problems, and even death.[76]

Sources

The source of air toxics varies for each pollutant. On-road mobile sources of air toxics emissions are vehicles; non-road mobile sources include aircraft, trains, lawnmowers and leaf blowers, boats, dirt bikes, and construction vehicles. Nonpoint sources of air toxics emissions include heating, fuel and pesticide use, dry cleaners, and consumer products, such as adhesives, sealants, paint, personal care, and other household products.[77] Point sources are identified by the NJDEP as "large facilities that emit a significant amount of air pollution during manufacturing, power generation, heating, incineration, or other such activity" as well as "smaller facilities including those that are required to report their emissions under the federal Toxic Release Inventory program and the state's Community Right-To-Know program" (see *Contaminated Sites* chapter).

An additional category of contributions to emissions is background and secondary sources. Background concentrations generally cannot be sourced to current, local emissions. Secondary concentrations refer to chemicals that have been transformed in the air from an air pollutant into another chemical, which may have a different level of toxicity.[78]

Radon

Radon gas is radioactive, coming from the breakdown of natural uranium. Radon is odorless and tasteless, so special tests are the only current way to detect it. People can be exposed to radon if there is a crack in the foundation of a building or small opening in pipes, through which radon can seep.[79] Radon releases radioactive energy, causing lung damage and lung cancer. In the United States, radon is the second main cause of lung cancer, which kills around 20,000 people a year.[80] In 2015, Union County was mapped under the low-to-moderate potential for radon.[81]

A 2015 sampling of 1469 homes in Roselle Park revealed that overall, the Borough measured at Tier 2 (moderate radon potential), where at least 25 homes tested with 5 to 24 percent having radon concentrations greater than or equal to 4 pCi/L.[82]

Noise and Odors

Noise

The NJDEP helps regulate noise in New Jersey through the Noise Control Act of 1971, which helps them track complaints about noise. This Act covers noises made from airplanes, highways, industrial and commercial areas, and residential noise. Noises that are classified as nuisances can be considered a public health nuisance, enforced by the local health agency or the Code of Criminal Justice. Noises are considered a public health nuisance when they are "unreasonably or unnecessarily loud".[83]

A source of noise pollution in Roselle Park Borough is its proximity to the Newark Airport. There are two noise monitoring sites in Newark and one in Elizabeth. ***Figure 15*** shows the monthly averages of Aircraft Day-Night Average Sound Level (ADNL) in Newark (monitoring site E04_BP and E29_BP) and Elizabeth (E22_BP).[84]

Month	E22_BP	E04_BP	E29_P
Apr-19	72.0	72.9	46.5
May-19	72.6	73.4	46.2
Jun-19	72.9	73.1	45.9
Jul-19	72.9	72.8	46.7
Aug-19	72.7	72.8	45.0
Sep-19	72.1	72.4	46.5
Oct-19	72.0	72.9	45.9
Nov-19	71.5	72.0	45.6
Dec-19	71.9	72.6	44.5
Jan-20	71.3	72.0	44.6
Feb-20	71.2	71.9	44.5
Mar-20	69.7	70.6	43.5
Apr-20	63.3	63.8	43.3

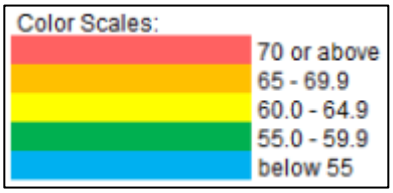


Figure 15. Monthly Averages of ADNL at Newark, 2019-2020

Odors

The NJDEP classifies odor under air pollution when it interferes with people's general enjoyment. The EPA's 1980 Regulatory Options for the Control of Odors notes that a study for the health effects of odors/odorous emissions should be conducted to gauge the welfare and health of the environment and residents. Most odor problems come from agriculture and livestock, diesel, and incinerators. These regulations are difficult to enact or enforce because the nuisance level of each odor is relative to those who smell it. One of the levels to control odors is using NAAQS, as some odors come from hazardous substances.[85]

Meteorology and Pollution

Pollution levels are affected by meteorological events like wind speed and direction. Additionally, weather and solar radiation play a role in how pollutants spread and interact with their environment. By looking at meteorological events, people can predict pollution levels based on how emissions and chemicals interact with the weather, air pressure, wind speed and direction, and so on.

Because of New Jersey's global position, it is affected by a variety of air streams, so that the weather each day is variable, which means so are the pollutant levels. The state has 5 different climate zones- North, Coastal, Pine Barrens, Central, and Southwest- with distinct variations in climate patterns for each. New Jersey collected meteorological data from eight stations in 2018. The Elizabeth Lab measured almost all parameters including temperature, relative humidity, wind speed, wind direction, barometric pressure, and rain, excluding solar radiation. At the Elizabeth Lab, the mean annual temperature was 55 degrees Fahrenheit and the annual rain was recorded as 44.34 inches. The relative humidity mean in 2018 for the Elizabeth Lab was 60%, and the annual average barometric pressure was 30.02 inches of Hg.[86]

LAND USE

Roselle Park Borough is a 1.23 square mile suburban community. Nearly all of the Borough is designated by the NJDEP as urban land, 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 land.[87]

Table 29 presents a breakdown of the three different land use types found within Roselle Park, and includes a comparison of the land use/land cover in 1986 and what is found in 2015. (***Map 6A*** and ***Map 14***)

Table 29. Land Use/Land Cover, 1986 to 2015

	1986		2015	
Type	**Acres**	**Percent**	**Acres**	**Percent**
Forest	12.07	1.54%	7.76	0.99%
Urban	766.10	97.76%	775.86	99.01%
Wetlands	5.46	0.70%	0	0%
Total:	**783.63**	**100.00%**	**783.63**	**100.00%**

Source: Land Use Land Cover 1986-2015, NJDEP

Urban land is categorized by landscape influenced by human activity. This category includes Residential, Commercial and Services, Transportation, Industrial Complexes, and Recreation. Currently, 52% (403 acres) is residential, high density or multiple dwelling. Residential, single unit, medium density is 23% of total urban land. (***Table 30***)

Table 30. Urban Land Classifications

Classification	Acres	% of Category	% of Roselle Park Borough
Athletic Fields (Schools)	19.00	2.45%	2.42%
Commercial/Services	83.18	10.72%	10.61%
Industrial	28.27	3.64%	3.61%
Mixed Urban or Built-Up Land	1.60	0.21%	0.2%
Other Urban or Build-Up Land	0.58	0.07%	0.07%

Table 30. Urban Land Classifications			
Classification	**Acres**	**% of Category**	**% of Roselle Park Borough**
Recreational Land	5.28	0.68%	0.67%
Residential, High Density or Multiple Dwelling*	402.60	51.86%	51.38%
Residential, Rural, Single Unit	1.28	0.17%	0.16%
Mixed Transportation Corridor Overlap Area	0.10	0.01%	0.01%
Residential, Single Unit, Medium Density	180.78	23.29%	23.07%
Stormwater Basin	11.96	1.54%	1.53%
Transportation/Communication/Utilities	17.74	2.29%	2.26%
Railroads	23.49	3.03%	3%
Total:	**775.86**	**100.00%**	**99.01%**
*High Density Dwelling: Single unit residential areas with more than 5 dwellings per acre. *Source: Land Use/Land Cover 2015, NJDEP https://gisdata-njdep.opendata.arcgis.com/datasets/*			

Preserved open space in Roselle Park includes a variety of open spaces including a retention basin, public parks, athletic complexes, and a playground:[e]

- Casano Community Center
- Acker Park
- Aldene Park
- Loreti Park
- Hawthorne Basin
- Little League Complex
- Board of Education Ballfields
- Municipal Open Space
- Lamonaco Perry Park

Map 14 and ***Appendix A*** identify land for recreation, conservation, and public use. In addition, the map includes residential and commercial property using the tax assessor classification for land use. Class 15 are public and charitable properties (Class 15A, B, C, D, E and F). Class 2 are residential properties and Class 1 are undeveloped, vacant properties (***Appendix B***). Class 4 (A, B, and C) are commercial, industrial and apartment properties, and Class 5 (A and B) are railroads.

[e] This data layer was obtained from the NJDEP Green Acres website for Roselle Park Borough. (https://www.nj.gov/dep/greenacres/openspace.html)

STORMWATER AND FLOODING

Flood Zones

Federal, state, and municipal governments provide oversight regarding areas prone to flooding through various acts, laws, and ordinances. The intent is to minimize property damage and negative ecological effects by limiting development and protecting positive environmental influences in areas subject to frequent flooding.

At the federal level, the United States Geological Survey (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. On the state level, the NJDEP delineates Flood Hazard Areas along streams and regulated 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.

FEMA Mapping and Flood Insurance Program

Special Flood Hazard areas, evaluated and mapped by FEMA, and other flood zones are used to create official Flood Insurance Rate Mapping (FIRM) that can be used in participating communities, such as Roselle Park Borough, 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 Special Flood Hazard Areas. The National Flood Hazard Layer is a geospatial database that contains current flood zone information that supports the National Flood Insurance Program.[88] A Special Flood Hazard Area is defined as “an area that would be inundated by the flood having 1% of chance being equaled or exceeded in any given year,” also known as the base flood or 100-year flood zone. NFIP mapping also includes information on 500-year flood zones and various sublevels within the 100-year zone.[89]

The majority of Roselle Park is not located in a flood zone. 3.5% of the Borough is located within the 100-year (1% probability) flood zone, while less than 1% of the Borough is in the 500-year (0.2% probability) flood zone. (***Map 15A*** and ***Table 31***) Areas near Morses Creek, including the Carpenter Retention Basin, and Peach Brook fall within the 100-year flood zone. (***Map 15B***) In February 2020, the Borough Hall, located at 110 East Westfield Avenue, was identified as being in a Special Flood Hazard Area. According to the Flood Disaster Protection Act of 1973, flood insurance is required for this property.[90]

Table 31. FEMA National Flood Hazard Layer		
Flood Hazard	**Acres***	**% of Total Municipal Area***
100-year Flood (1% annual chance)	27.84	3.55%
500-year Flood (0.2% annual chance)	7.29	0.93%
Not in Flood Zone	748.57	95.52%
Total Borough Acreage:	**783.70**	**100%**
Source: FEMA National Flood Hazard Layer (2019) **GIS Acres Used to Tabulate Data*		

NJDEP Regulated Waterways

At the state level, New Jersey regulates flood prone areas through the New Jersey Flood Hazard Area Control Act (FHCA), *N.J.S.S. 58:16A-50 et. Seq.*, and its rule, adopted November 5, 2017.[91] The act recognizes the importance not only avoiding building in unsafe places, but also preserving the vegetation that "is essential for maintaining bank stability and water quality." The rules set standards for development in flood hazard areas and areas adjacent to surface waters "in order to mitigate the adverse impacts to flooding and the environment that can be caused by such development." As defined by the rules, a flood hazard area exists along every regulated waterway that has a drainage area of 50 acres or more.

A Flood Hazard Area is defined as the area equal to the 100-year flood plus a "factor of safety." It includes both a floodway and a flood fringe. There are six measures for determining the flood hazard area under the FHCA rules. They include a NJDEP delineation method; flood studies are undertaken; FEMA tidal, fluvial, and hydraulic methods; and approximation and calculation methods.

NJDEP regulated activities in a flood hazard area or riparian include:

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; and
6. The conversion of building into a private residence on a public building. (*N.J.A.C. 7:13-2.4)*[92]

The appropriate permit must be obtained 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 area specific standards, depending on whether the area includes a channel, riparian zone, floodway, flood fringe, fishery resource, threatened and endangered species, or acid producing soils. And there are specific standards for different facets such as storm water management, excavating, filling, building, roads, and parking areas. Construction is not necessarily prohibited in a regulated area, but a disturbance must be justified.

Flooding in Roselle Park Borough

Morses Creek flows into a retention basin designed to mitigate flooding. In addition to the retention basin, the Army Corps of Engineers channelized the Borough's streams to reduce flooding hazards.[93] The Roselle Park Borough Municipal Code addresses flood hazard areas in Chapter 31 of the Stormwater Control Code, which specifies requirements for structural and nonstructural stormwater management strategies. Article 4, *Stormwater Management Requirements for Major Development*, provides the following general standards for building in flood areas:[94]

1. Structural Stormwater Management Strategies for Major Developments
   - A stormwater maintenance plan is required for any new development.
   - Stormwater management measures must avoid adverse impacts of concentrated flow on habitat of threatened or endangered species.
   - A waiver from strict compliance from the groundwater recharge, stormwater runoff quantity, and stormwater runoff quality requirements of Section 31-4f. and g. may be obtained for the enlargement of an existing public roadway or railroad; or the construction or enlargement of a public pedestrian access.

2. Nonstructural Stormwater Management Strategies
   - Protect areas susceptible to erosion.
   - Minimize impervious surfaces.
   - Maximize protection of natural drainage features.
   - Minimize the decrease in the "time of concentration" from preconstruction to post-construction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the watershed to the point of interest within a watershed.
   - Minimize land disturbance including clearing and grading.
   - Minimize soil compaction.
   - Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.
   - Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas.
   - Provide source control site design features that minimize pollutants from drainage systems.

The *Union County Hazard Mitigation Plan* (2015) identifies frequently flooded locations in Roselle Park. As noted in the report, only the area at the southern end of the jurisdiction (near Dalton Street and Union Road) appears to have any special flood vulnerability. There is also routinely flooding on East Lincoln Avenue, Clay Avenue, Spruce Street, Walnut Street, and Grant Avenue. This is street flooding due to drainage problems.[95]

The *Municipal Stormwater Management Plan* (2006) for the Borough of Roselle Park addresses water quantity and stream flow problems which cause potential flooding. The plan states that major improvements have been made with the construction of detention basins along two major

branches of the Morses Creek. Culverts in Roselle Park were designed for different hydrologic conditions when there was much less impervious surface in the Borough. Increased impervious surface leads to increased stream flow and decreased groundwater recharge, increasing flood risk.

One specific area of concern for potential flooding is the Locust Street underpass, where the stream discharges through this underpass into Roselle Park. The plan states, "undersized culverts do not have adequate capacity, thereby causing a backwater effect and flooding upstream. Storms of the magnitude of a 50-year design will cause some street flooding and larger storms may start to have impact on personal property." ***Figure 16*** shows the location of the Locust Street underpass where the stream discharges. This area highlights how structural design can lead to flooding.

Figure 16. Location of the Locust Street Underpass

Potential flooding in this area is a concern due to the proximity of the brownfield site at the McDonald's (47 West Westfield Avenue), causing a stormwater pollution risk. Planned development in this area should consider potential flooding, particularly surrounding the West Brook stream.

Storm Basins

There are 687 stormwater catch basins in Roselle Park Borough. There are an additional 76 catch basins on county roads, and 40 catch basins re located on Westfield Avenue/State Route 28.[96]

Stormwater Pollution Prevention Plan

The *Stormwater Pollution Prevention Plan* offers nonstructural or low impact techniques for flood control, groundwater recharge, and pollutant reduction including environmentally sensitive site design and source controls that prevent pollutants from being exposed to stormwater.[97] The

plan provides information for catch basins and drain inlets. Two catch basins located in the Borough have recurring backups. The first is located at East Lincoln Avenue and Spruce Street, and the second basin is located at Cherry Street and East Clay Avenue. When these areas become blocked, the DPW is dispatched to remove debris to reduce the risk of flooding. Catch basins are inspected yearly, stormwater retention basins are routinely mowed, and stormwater retention racks are checked by the DPW before heavy rain events.

KNOWN CONTAMINATED SITES

Soil and groundwater contamination are tracked by the state and federal governments at varying degrees of contamination. This includes the following type of sites and locations:

- ✓ Brownfields – extensive or long-term remediation, point source facilities that require continuous monitoring
- ✓ Community Right to Know Programs – point source sites that require ongoing, continuous monitoring; and
- ✓ Known Contaminated Sites – Point source occurrences are specific and limited.

As of 2018, the NJDEP Site Remediation Program maintains a list of 13,707 sites with 10,850 of those sites listed as active with Licensed Site Remediation Professional (LSRP). New Jersey sites that have been confirmed contaminated and are undergoing remedial investigation, cleanup, or awaiting assignment of a LSRP include private residences, active/abandoned manufacturing/commercial properties, and gas stations. The list does not include sites that have been successfully remediated. [98]

There are 13 active Known Contaminated Sites in the Borough of Roselle Park, 10 are non-homeowner sites.

Brownfields

A brownfield is "any former or current commercial or industrial site, currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant."[99] The State of New Jersey encourages municipalities and counties to redevelop their brownfields as part of Smart Growth initiatives. According to the State of New Jersey Brownfield SiteSmart, there are 10 brownfields in Roselle Park Borough.[100]

Community Right to Know

The Community Right to Know (CRTK) program is responsible for collecting and disseminating data on hazardous substances produced, stored, or used at companies in New Jersey. 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) is used to collect information for the NJDEP Community Right to Know and Pollution Prevention programs. The RPPR gathers data on toxic chemical 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.[101]

In 2018 there were 3 active sites in Roselle Park Borough that met the threshold for the State CRTK.[102] The first site is a property owned by Extreme Environmental Inc. located at 815 Larch Street. The second site is owned by High Impact Printing LLC located at 41 Sheridan Avenue. The third site is a property owned by Citizens Global Cargo LLC located at 127 Jerome Street. (***Table 32***)

Table 32. Community Right to Know Locations

Facility	Eligibility	Physical Address	Substance
Extreme Environmental Inc.	Exempt	815 Larch Street	Unknown
High Impact Printing LLC	Exempt	41 Sheridan Avenue	Unknown
Citizens Global Cargo LLC	CRTK/RPPR	127 Jerome Street	Unknown

Source: NJDEP. Data Miner. https://www13.state.nj.us/DataMiner (Accessed November 2019)

Known Contaminated Sites

The Known Contaminated Sites (KCS) List for New Jersey 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. Known Contaminated Sites may include:

- *Active Sites* with known contamination, these sites can have one or more active cases with any number of pending and closes cases.
- *Pending sites* with confirmed contamination which are those sites having one or more pending cases, no active cases, and any number of closes cases
- *Closed sites* with remediated contamination, which are those sites having only closed cases. Sites in this category have 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*) which required the preparation a list of sites affected by hazardous substances. It also satisfied obligations under the New Jersey 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, ranging from relatively simple "cut and scrape" cleanups to highly complex cleanups. The sites with complex contamination issues can have several sources of contamination, which can affect both soil and groundwater at the same time.

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, "thus helping to decrease the threat of contamination to public health and safety of the environment, and to quickly return underutilized properties to productive use." Active sites are rated with B, C1, C2, C3, or D depending on the type of severity of the contamination defined as follows:

- B: Remedial level associated with emergency response, simple removal activities of contaminants usually no impact to soil or ground water.
- 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 are C3 except that D levels are also usually designated Federal "Superfund Sites".

The Classification Exception Area (CEA) Status explains an area where one or more standards and designated uses are suspended. (*N.J.A.C 7:9C -1.4*)[103]. In Roselle Park, there are 13 active sites (10 non-homeowner), no pending non-homeowner sites, and 248 closed sites, 53 of which are non-homeowner.[104] (***Map 16*** and ***Table 33***)

Table 33. Active (Non-Homeowner) Contaminated Sites

Site ID	PI Number	PI Name	Address	CEA Status	Category
766	003659	Gulf	413 E Westfield Ave		C2
754	012023	Aldene Cleaners	570 W Westfield Ave		C2
762	000490	Fuel 1	101 Westfield Ave W		C2
41287	031625	Cellular Concrete LLC	220 W Westfield Ave		C2
20288	010909	Krahnert Bros Inc.	112 W Westfield Ave		C2
46276	007494	Exxon R/S #30254	47 Westfield Ave	Ongoing	C2
46310	007699	Roselle Park DPW	180 W Webster Ave		C2
128322	570603	Romerovski Corporation	404 450 W Westfield Ave		C2
406701	509040	Roselle Park Baseball Fields	Webster Ave		C3
478889	728642	McDonalds Restaurant #029-0290	108 W Westfield Ave		C2

Source: NJGIN Open Data. KCSL (Non-Homeowner).
https://njogis-newjersey.opendata.arcgis.com/datasets *(Accessed November 2019)*

HISTORIC AND CULTURAL RESOURCES

The Historic Overview and Locally Significant Sites and historic images were provided by Patricia Butler, President of the Roselle Park Historical Society.[105]

Overview of Roselle Park

The locale which was to become known as Roselle Park remained rural and dotted with farms well into the 1880's. The development of the Central Railroad of New Jersey and Lehigh Valley Railroad lines through the area enhanced its attractiveness and six years before entry into the 20th Century, several unsuccessful attempts were made to incorporate the area as a part of the neighboring Borough of Roselle.

Roselle Park was originally a part of Elizabethtown. In 1808, the area became part of Union Township, known as North Roselle, and then an independent Borough on March 22, 1901. The new Borough, known as Roselle Park, named by John Keddie, consisted of 790 acres with 225 homes and a population of approximately 1,000. It was governed by a newly elected Mayor, John Cummins, and seven Council members: Abraham Woodruff, Emery L. Lillibridge, Robert Gordon, Paul Hochart, John Herman, Alfred Atkins, and Charles A. Potter. These men "gave life" to the state's newest municipality. They made provisions for a form of government and included essential services for a growing community. Among the initial ordinances were those creating a Board of Health, a Police Department, and a Fire Department.

The earliest recorded residents were the Williams family of Connecticut. In the early 1700's, Samuel Williams, his wife, five sons, and three daughters built a home and farm on the road to the West Fields. At that time there were three dirt roads and old Indian trails winding through the area. One was the road to the West Fields, the second Galloping Hill Road, and the third started with Union Road and ran diagonally in a northwest direction through Five Points to Springfield.

During the Revolutionary War, messengers and soldiers were sent from General Washington in Morristown to Governor Livingston in Ursino, Elizabethtown on Galloping Hill Road, which most likely got its name because of the number of couriers who traveled on horseback over it. In 1913, a monument was erected by the Daughters of the American Revolution (DAR) on the corner of Galloping Hill Road and Colonial Road in honor of the son of General William Crane who was bayoneted by the British near that spot. The plaque quotes Washington's praise of the New Jersey Militia at the victorious Battle of Springfield, which he wrote in his letter to

Congress from his headquarters in Whippany two days after the battle. “They flew to arms universally and acted with a spirit equal to anything I have seen during the war.” The Hospital Oak marked the location of a field hospital where wounded soldiers were treated.

Grant Avenue was one of the most scenic streets in the Borough. Jeremiah Eighmie, who owned many parcels of land in the Borough, is attributed to laying out and naming several of the Borough’s streets and planting many of the older trees along those streets around 1860.

Many newcomers were recorded purchasing property and planning streets which would later become familiar names to our residents as their surnames were used to name the streets. Most streets were unpaved until 1915. Newspapers in the 1900’s recount the mud was sometimes halfway up wagon wheels and in winter storms wheels would be frozen in the mud. It is no wonder that the Borough grew outward from the railroad and the subsequently paved roads.

The Borough is rich in railroad history with the former Jersey Central Railroad, Lehigh Valley Railroad, and the Short Line Rahway Valley Railroad being major contributors to the growth of the town. A train stop was first established in this area in about 1858, called Mulford Station after a prominent family in the Borough. Several train stations were built in different locations in the Borough over the many decades that followed as the town developed. NJ Transit has a station on what was the former Lehigh Valley Railroad. The railroads were responsible for the gradual transition of the town from a farming community into more of a commuter town in the decades after 1860. The Aldene Station was instrumental to Guglielmo Marconi’s choice of purchasing property for his factory near the station in 1912. This transition resulted in the need for better infrastructure, including sewers and services. Farms were transformed into tree-lined streets and neighborhoods grew in proximity to the railroad.

Because the beginnings of Roselle Park and Roselle are similar, they were often referred to as the “Twin Boroughs” but their continuing developments became unique to each. Thomas Edison built his first generating station for isolated lighting, DC current in the neighboring town of Roselle in the early 1880’s. One of the first commercial buildings ever to have Edison’s incandescent lamp was Stone’s Store in Roselle Park. Stones Store was also the First Post Office in the Borough. Wiring was completed by Edison and some of his newly hired workers including Nikola Tesla, who Edison hired as an Electrical Engineer for $100. Electrical lines ran from the generating station located on Locust Street and First Avenue in Roselle. The impact on this area of having the first widespread use of electricity was also an important factor in its growth. Roselle Park is truly nestled in a corridor of science and technology.

Roselle Park had two major houses of worship, the Community Methodist Church and the Church of the Assumption (1911), which are now joined by an additional number of smaller congregations. Today the Community Methodist Church has a Community Preschool on site. Many masses are celebrated in Spanish to accommodate the changing community. The second Church of the Assumption, now known as the Chiego Center, still stands proudly on West Westfield Avenue and Chiego Place (Coolidge Place). The bell tower was removed in 1955 with the hopes of adding a school on the remaining property. Unfortunately, the school was never built. Many families who chose a parochial education for their child sent them to St. Joseph the Carpenter School in Roselle.

The Borough has supported our nation's call to duty, remembering its citizens' military service every Veterans Day and Memorial Day at the Veterans Memorial Library Park. Monuments commemorating their contributions from the Revolutionary War through the present stand on Chestnut Street and Galloping Hill Road.

Roselle Park has grown into a community of many cultures where inventors, scientists, and engineers tested their patents and Civil War soldiers and generals came home to raise their families. Roselle Park is a Borough where families and friendships have prevailed, and comfort and peace continue to exist along tree lined streets.

Descriptions of Locally Significant Sites

Magie Avenue School

The Magie Avenue School (1896) was the second elementary school in the Borough. (***Figure 17)*** It is currently two separate residential homes at 219 and 225 Magie Avenue. (***Figure 18)***

Figure 17. Magie Avenue School 1896,

Figure 18. #219 and 225 Magie Avenue

Marconi Wireless Telegraph Company of America

Growing out of the invention of wireless communication by Guglielmo Marconi, radio and wireless equipment for the United States Navy during World War I was manufactured in Roselle Park. (***Figure 19***) Marconi's wireless was installed on the Titanic in 1911 and was one of the primary reasons they were able to reach out for help. During World War I troops were stationed across the Gordon Street Bridge to prevent espionage. David Sarnoff worked at this facility as Commercial Manager and later became Chairman of RCA and went onto New York City where he founded the National Broadcasting Company (NBC). The Marconi Wireless Plant was the home of one of the first licensed broadcast radio stations in the country, WDY. Famous radio personalities came to its small broadcast studio to air programs during the very beginning of radio in 1921, which could be heard in many distant places across the country. Much of the growth in population on the west side of the Borough is attributed to the Marconi Plant. Marconi's two brothers, a realtor, and a contractor, built many of the small "Cape" style homes on the west side.

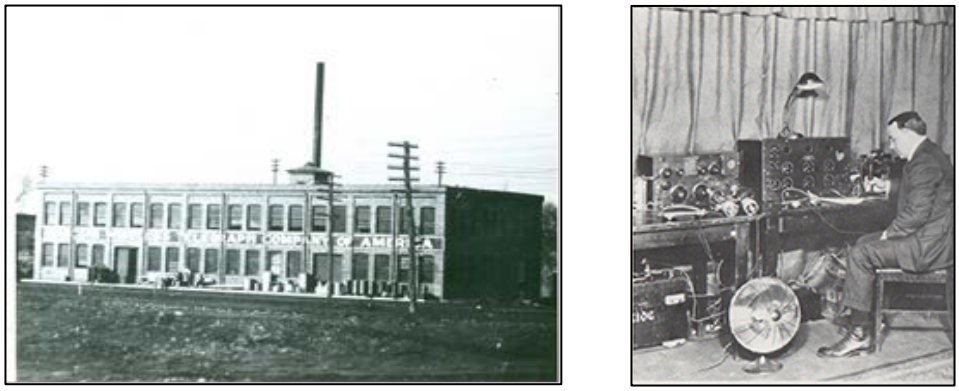


Figure 19. Marconi Wireless Telegraph Company of America

The Robert Gordon School

The Robert Gordon School (1907), formerly the High School, is now an Elementary School located at 57 West Grant Avenue. This school was dedicated in 1909 and was the first Portland Poured Concrete Cement Building using Thomas Edison's patent. In 1968, the school received a Union County Preservation Award for 60 years of continuous usage. (***Figure 20***)

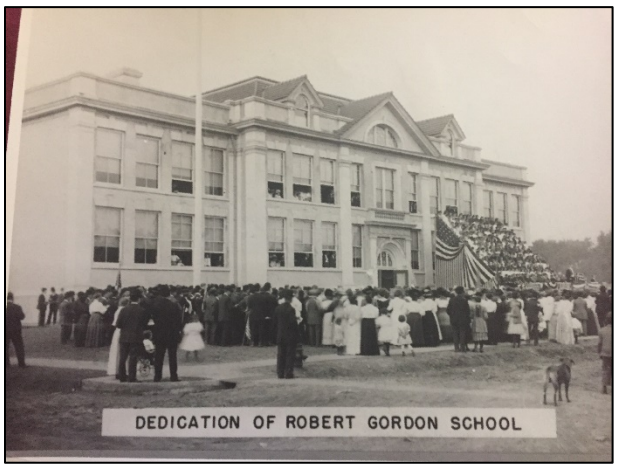


Figure 20 Robert Gordon School

Figure 21. Roselle Park Museum

Roselle Park Museum

The Roselle Park Museum, at 9 West Westfield Avenue in the Washington Apartments building, is the site where the Roselle Park Historical Society Inc., maintains the Borough's archival records. (***Figure 21***) This apartment complex was the home of Nikola Tesla in the spring of 1925. Nikola Tesla's story is a sad one. No patent is truly safe. When an engineer working at the Marconi Plant mentioned to Tesla, "Looks like he got the jump on you." Tesla replied, "Marconi is a good fellow. Let him continue. He is using seventeen of my patents." Tesla's calm

confidence was shattered in 1904, when the U.S. patent office gave the patent to Marconi. When Marconi won the Nobel Prize in 1911, Tesla was furious. He sued Marconi for patent infringement in 1915. The U.S. Supreme Court in 1943 upheld Tesla's radio patent.

Historic and Cultural Sites

There are three historic sites in Roselle Park identified by the NJDEP Historic Preservation Office (State Historic Preservation Office or SHPO). [106] (***Table 34***)

Table 34. Roselle Park SHPO Sites

Site Name	Address	Designation	Designation
Central Railroad of New Jersey Main Line Corridor Historic District	Railroad right-of-way from Philipsburg to Bayonne	SHPO Opinion: 7/19/1991 ID#3500	State
Lehigh Valley Railroad Historic District		SHPO Opinion: 3/15/2002 ID#4154	State
Staten Island Railroad Historic District		SHPO Opinion: 2/27/1995 ID#3482	State

Source: NJDEP State Historic Preservation Office

Other sites in the Borough are of special historic interest and may be eligible for inclusion on the National or State Register but have yet to receive an opinion from the SHPO. (***Table 35***)

Table 35. Roselle Park – Local Historic Sites

Site Name	Location
Magie Avenue School	219 and 225 Magie Avenue
Marconi Wireless Telegraph Company of America	450 West Westfield Avenue
Robert Gordon School	57 West Grant Avenue
Roselle Park Museum	9 West Westfield Avenue

Source: Roselle Park Historic Society

PLANNING AND INFRASTRUCTURE

Municipal Planning

Roselle Park is a suburban community, home to close-knit neighborhoods, local stores, schools, and businesses. The US Census estimates that in 2018, Roselle Park was home to 13,650 individuals. This is an increase of 353 residents (a 3% increase) since 2010. The average household size from 2014-2018 was 2.67 persons per household.[107] The average commuting time for Roselle Park residents was approximately 30 minutes.[108] As the population has continued to rise in Roselle Park, community planning has provided goals and infrastructure/development improvements to meet the changing needs of the Borough's residents.

The Borough completed its *Master Plan* in 1997 and completed the most recent reexamination in 2016. The 1997 *Master Plan* includes the following goals for the Borough:

- Improve land use in residential, commercial, and industrial sections of the Borough.
- Maintain and enhance the community design elements of existing and planned development.
- Improve circulation in the Borough to provide more pedestrian access to residents and visitors.
- Maintain and enhance community facilities to meet the needs of residents.
- Enhance parks and recreation while increasing accessibility for residents.

Residential Land. Roselle Park is a primarily residential community. The Borough has a need for increased senior citizen housing and has identified the previous Department of Public Works (DPW) yard as a suitable site for new senior citizen housing. Roselle Park is working with its municipal planners to identify and redevelop underutilized properties. Projects include a Planned Development District, Senior Housing District, and the West Westfield Redevelopment Plan.

Commercial Business District. An ongoing goal for the commercial sector of Roselle Park is the overall improvement of the Central Business District (CBD) and redevelopment of underutilized properties adjacent to the CBD. The Borough has plans for a streetscape improvement program, support for façade improvements and the adoption of design standards.

Community Design Standards. Community design measures include improving the visual and physical appearance of new development and nonresidential areas to enhance the overall aesthetic and character of the Borough.

Parks and Recreation. With increasing recreational and open space demands, Roselle Park has pledged to meet these demands by increasing public space for recreation. Providing pedestrian connections between residential neighborhoods and existing recreational facilities will ensure that residents have access to parks and recreation areas. An ongoing goal of the Master Plan and reexaminations is to include pathways for bicycle traffic, as an alternative to motor vehicles.

Transportation

Roadways

There are 27.5 miles of roadway in Roselle Park.[109] The major roads are Westfield Avenue (Route 28), Chestnut Street, East Lincoln Avenue, and Galloping Hill Road. The remainder of the roads serve to access residential neighborhoods. Roselle Park Borough has not been classified utilizing the Residential Site Improvement Standards (RSIS) because that applies to proposed new roads and Roselle Park's roads already exist. The hierarchy of roads, based on the functional classification system is arterial and collectors: [110]

Arterial carry large volumes of traffic at relative high speeds and may connect to interstate highway network. Westfield Avenue is the only arterial road in Roselle Park. Westfield Avenue is a four-lane highway divided by a median. It is located near the southern border of the Borough and runs east to west across the Borough. Land uses on this road include commercial, residential, and industrial.

Collectors provide access and traffic circulation within residential neighborhoods, commercial, and industrial areas and connect local roads with arterials Collector roads in Roselle Park include Faitoute Avenue, Locust Street, Chestnut Street, Galloping Hill Road, East Lincoln Avenue, Colfax Avenue, Clay Avenue, Grant Avenue, and Roselle Avenue.

Mass Transit

Mass transportation in Roselle Park consists of regularly scheduled bus and train service, which make connections to Elizabeth, Newark, and New York City. [111]

Train. Passenger rail service is available to Roselle Park residents. New Jersey Transit provides mass transit into New York City via the Raritan Valley Line at the Roselle Park Station located on the corner of Chestnut Street and West Lincoln Avenue. Roselle Park Borough is two stops from Newark Penn Station. The Raritan Valley Line begins at High Bridge in Hunterdon County to Newark Penn Station in Newark.[112] The majority of trains terminate and originate at Newark Penn Station; passengers travelling to New York City must transfer at Newark Penn. In 2014 the average number of daily boardings in Roselle Park was 856.[113]

Bus. There are four New Jersey Transit bus routes in Roselle Park. Routes 94 and 113 North and South service Roselle Park. Route 94 travels from Bloomfield Center and Linden, and Route 113

stretches from Dunellen to the Port Authority in New York City. Route 58 runs from Union County College to Elizabeth and makes stops on Faitoute Avenue and Westfield Avenue in Roselle Park. Bus stops are for one direction only. The following lists each stop along the four bus routes which service Roselle Park Borough:

113N – Dunellen to Port Authority Bus Terminal

- Westfield Ave at Colonial Rd - 415 Westfield Avenue East, Roselle Park
- Westfield Ave at Sherman Ave - 350 Westfield Avenue East, Roselle Park
- Westfield Ave at Magie Ave - 273 Westfield Avenue East, Roselle Park
- Westfield Ave at Walnut St - 83 Westfield Avenue East, Roselle Park
- Westfield Ave at Chestnut St - 1 Westfield Avenue East, Roselle Park
- Westfield Ave at Locust St - 105 Westfield Avenue West, Roselle Park
- Westfield Ave at Hawthorne St - 229 Westfield Avenue West, Roselle Park
- Westfield Ave at Faitoute Ave - 361 Westfield Avenue West, Roselle Park
- Westfield Ave at Bridge St - 503 Westfield Avenue West, Roselle Park
- Westfield Ave at Valley Road - Westfield Avenue West, Roselle Park

113S – Dunellen to Port Authority Bus Terminal

- Chestnut St at W Sumner Ave - 830 Chestnut Street, Roselle Park
- Chestnut St at West Lincoln Ave - 510 Chestnut Street, Roselle Park
- Chestnut St at W Grant Ave - 304 Chestnut Street, Roselle Park
- Chestnut St at Westfield Ave - 1 Westfield Avenue West, Roselle Park
- Westfield Ave at Locust St - 105 Westfield Avenue West, Roselle Park
- Westfield Ave at Hawthorne St - 229 Westfield Avenue West, Roselle Park
- Westfield Ave at Faitoute Ave - 361 Westfield Avenue West, Roselle Park
- Westfield Ave at Bridge St - 503 Westfield Avenue West, Roselle Park
- Westfield Ave at Valley Road - Westfield Avenue West, Roselle Park

94 – Linden to Bloomfield

- Chestnut St at W Sumner Ave - 830 Chestnut Street, Roselle Park
- Chestnut St at West Lincoln Ave - 510 Chestnut Street, Roselle Park
- Chestnut St at W Grant Ave - 304 Chestnut Street, Roselle Park
- Chestnut St at Westfield Ave - 1 Westfield Avenue West, Roselle Park
-

58 – Union County College to Elizabeth

- Faitoute Ave at W Colfax Ave - 632 Faitoute Avenue, Roselle Park
- Faitoute Ave at Webster Ave - 446 Faitoute Avenue, Roselle Park
- Westfield Ave at Faitoute Ave - 357 Westfield Avenue West, Roselle Park
- Westfield Ave at Locust St - 74 Westfield Avenue West, Roselle Park
- Westfield Ave at Chestnut St - 10 Westfield Avenue East, Roselle Park
- Westfield Ave at Walnut St - 110 Westfield Avenue East, Roselle Park
- Westfield Ave at Berwyn St - 236 Westfield Avenue East, Roselle Park
- Westfield Ave at Linden Rd - Westfield Avenue East, Roselle Park

Figure 22 details the bus routes in Roselle Park Borough.

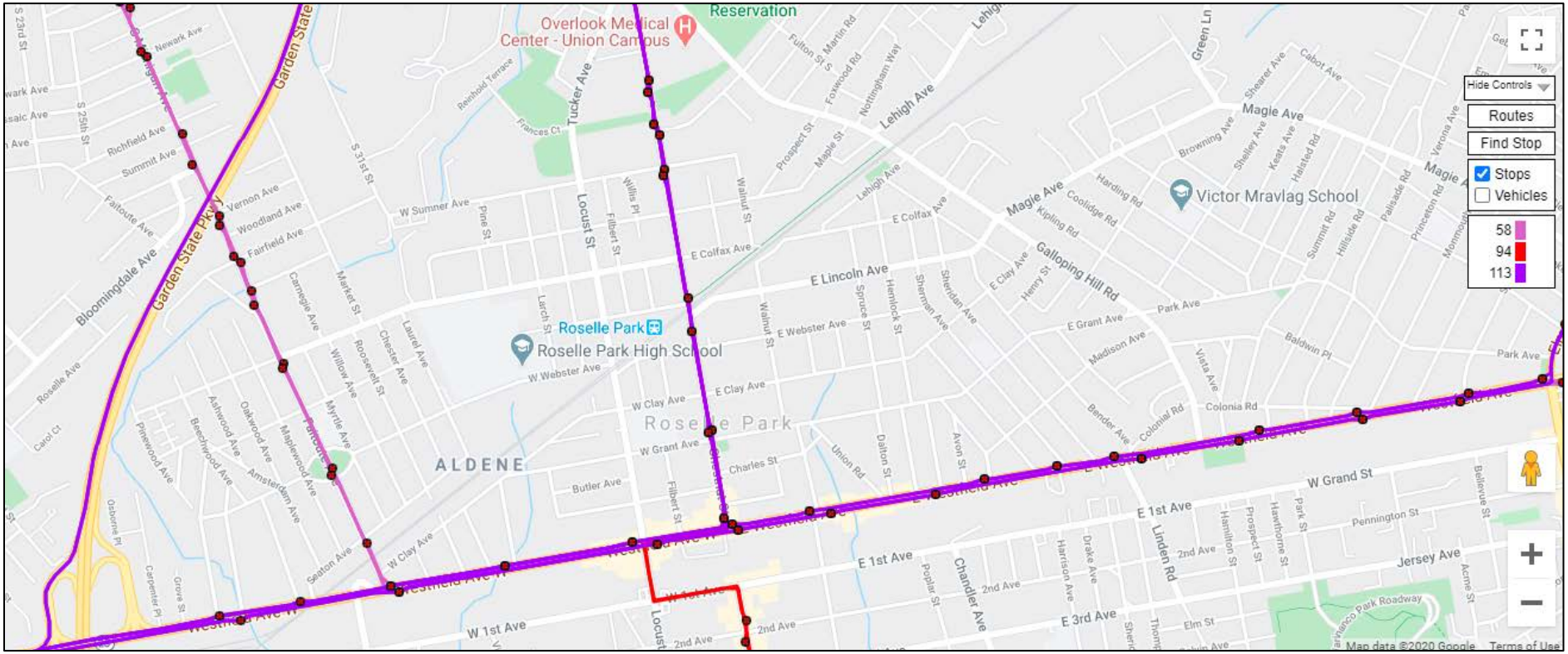


Figure 22. NJ Transit Bus Route in Roselle Park – Routes 58, 94, and 113 North and South[114]

Bicycle & Pedestrian

Roselle Park Borough has Class 3 bicycle routes. Class 3 routes provide for shared use with the pedestrian or motor vehicle traffic, marked with signs for identification. There is a bicycle trail which travels alongside portions of the Raritan Valley Line Trail that stretches throughout the Borough. [115]

Pedestrian circulation in Roselle Park is primarily accessed via a network of sidewalks on most streets. These sidewalks link residential neighborhoods to schools, the downtown, and recreational facilities. \

In 2018, Roselle Park adopted a Complete Streets policy. The New Jersey Department of Transportation (NJDOT) has been recognized as a national leader for advancing Complete Streets policies, which "promote safety for pedestrians, bicyclists, and other users of New Jersey roadways…Policy is implemented through the planning, design, construction, maintenance and operation of new or rehabilitated transportation facilities within public rights of way that are federally or state funded, including projects processed or administered by the Department."[116]

Roselle Park Borough's policy requires that:

> *"all public street projects, both new construction and reconstruction in the Borough of Roselle Park, shall be designed and constructed using Complete Streets policies where practical and safe, in order to accommodate travel by pedestrians, bicyclists, and motorized vehicles and their passengers,; and, be it further resolved, that the Municipal Land Use Board, and the Borough Engineer should make Complete Streets practices and principles a standard part of everyday operations including planning and design studies, should approach every transportation project and program as an opportunity to improve public streets, public health, and the transportation network in the Borough for all users, and should work in coordination with other departments, agencies, and jurisdictions including public health to achieve robust Complete Streets."*

Additionally, the policy outlines steps for implementation, including that within two years of the effective date of the policy, the Borough shall:

- Inventory and modify its procedures, policies, documents, training programs, performance measures, and other guidance documents pertaining to the funding, planning, design, operation, and maintenance of transportation infrastructure.
- Collect, track, and monitor data to determine compliance with the policy with benchmarks including mileage of new and existing bicycle infrastructure, number of new and existing ADA-compliant infrastructure, number of new street trees, and others.[117]

Regional Planning

New Jersey State Development and Redevelopment Plan (SDRP)

The SDRP identifies areas for growth, areas for limited growth, and areas for conservation. The State Plan Policy Map designates the majority of Roselle Park Borough as Metropolitan Planning

Area, Planning Area 1 (PA1).[118] PA1 comprises the most densely developed regions in the state. The goals in these areas are to revitalize existing cities and towns by encouraging compact growth and redevelopment. The Metropolitan Planning Area is identified as the most appropriate location for future development in New Jersey.

Statewide Water Quality Management Plan

The Statewide Water Quality Management Plan was adopted by the NJDEP in November 1985 as part of a comprehensive effort to protect water quality in the State.[119] The Plan serves as the foundation of the State's Water Quality Management Planning Program, and unified three federal Clean Water Act programs – wastewater facilities planning, basin planning, and areawide planning – into one comprehensive Statewide program. In addition to addressing federal requirements, these three programs serve to satisfy State requirements for water quality planning specified in the New Jersey Water Quality Planning Act. The existing DEP Water Quality Management Planning Program and Water Quality Management (WQM) Planning rules (N.J.A.C. 7:15) represent the State's current implementation of the areawide planning program. The areawide WQM plans (formerly known as 208 plans), as part of the Statewide WQM Plan, are umbrella plans, each with various adopted components that address different aspects of water resource planning.

Union County is part of the Northeast Water Quality Management Planning Area.

Wastewater Management Plans (WMP), including designated sewer service areas, are a major component of the WQMP. The State requires WMP to be updated every six years. Roselle Park falls into the Roselle Wastewater Authority located within the Northeast Water Quality Management Plan.[120]

Union County Department of Parks and Recreation

The County Parks System released a Union County Parks Plan in 2010 and includes the following goals and strategies: [121]

- Provide an interconnected system of high quality, accessible, multi-use trails and greenway corridors.
- Work with other government agencies and community partners to improve walkable access to parks and recreation opportunities throughout Union County.
- Encourage outdoor recreation for all ages and ability levels.
- Develop standards for trail amenities.
- Facilitate community involvement and stewardship.
- Development of a Union County Greenway System.

Conservation Blueprint

The Nature Conservancy and New Jersey Conservation Foundation partnered with Rowan University to develop a mapping tool to assist local decision makers and non-profit organizations in selecting properties for protection. Known as the Conservation Blueprint, this online,

interactive mapping tool was developed as part of a collaborative effort with a 22-member Steering Committee to identify priority land rankings based on four themes:

- Water quality – to protect surface water and groundwater.
- Ecological – to support ecosystem health.
- Community Green Space –lands important for recreation and connecting people to nature.
- Agricultural – to support farming.

With funding support from the William Penn Foundation and the Geraldine R. Dodge Foundation, the purpose of the project is "to develop a shared, living blueprint of lands to be protected in the next few decades" and provide a "blueprint of conservation priorities to ensure a healthy New Jersey for future generations."

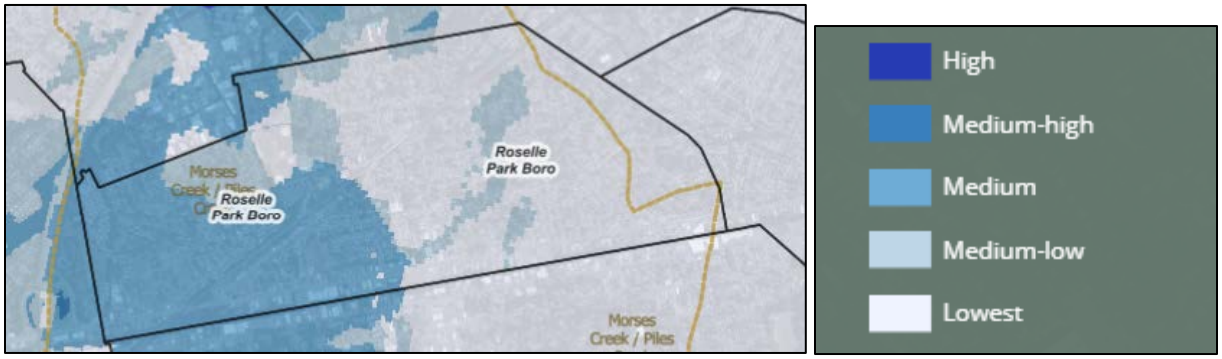


Figure 23. Priority Areas for Water Quality Protection

Priority Areas for Water Quality Protection identifies lands that are important for water and water resources. Areas in natural cover where water can recharge aquifers are highly ranked. Wetland areas are also favored in this ranking, along with floodplains and land areas surrounding small headwater streams. In Roselle Park, highest priority area for water quality surround Morses Creek and encompass land within the 2- and 5-year time of travel of public community water supply wells. (***Figure 23***)

Priority Areas for Community Green Space identifies lands that are important to protect the health of people, natural and agricultural lands close to people's residences, and undeveloped land in floodplains. High priority lands in the Borough include the wooded area on Valley Road, the Middle School recreation field, Little League Complex, Acker Park, Elementary School recreation fields, and the High School recreation fields. Priority areas also include the pathways along the Borough's railroad tracks. (***Figure 24***)

Figure 24. Priority Areas for Community Green Space

Priority Areas for Ecological Integrity: Ecological priorities are lands that are important to protect for their significance to providing clean water, diverse habitats, and healthy ecosystems. In Roselle Park Borough, lands that surround Morses Creek are ranked higher for ecological integrity. (***Figure 25***)

Figure 25. Priority Areas for Ecological Integrity

Sustainable Jersey

Sustainable Jersey is a nonprofit organization that certifies actions taken by municipalities in New Jersey to reduce waste, cut greenhouse gas emissions, and improve environmental equity. The organization provides the tools, training, and incentives needed for municipalities to achieve sustainability actions. The certification program allows municipalities to score points based on their sustainability achievements and gain Bronze, Silver, or Gold status.

Roselle Park is a participating community that achieved bronze level certification in 2018 and 2019. Roselle Park takes part in waste reduction programs including a Backyard Composting

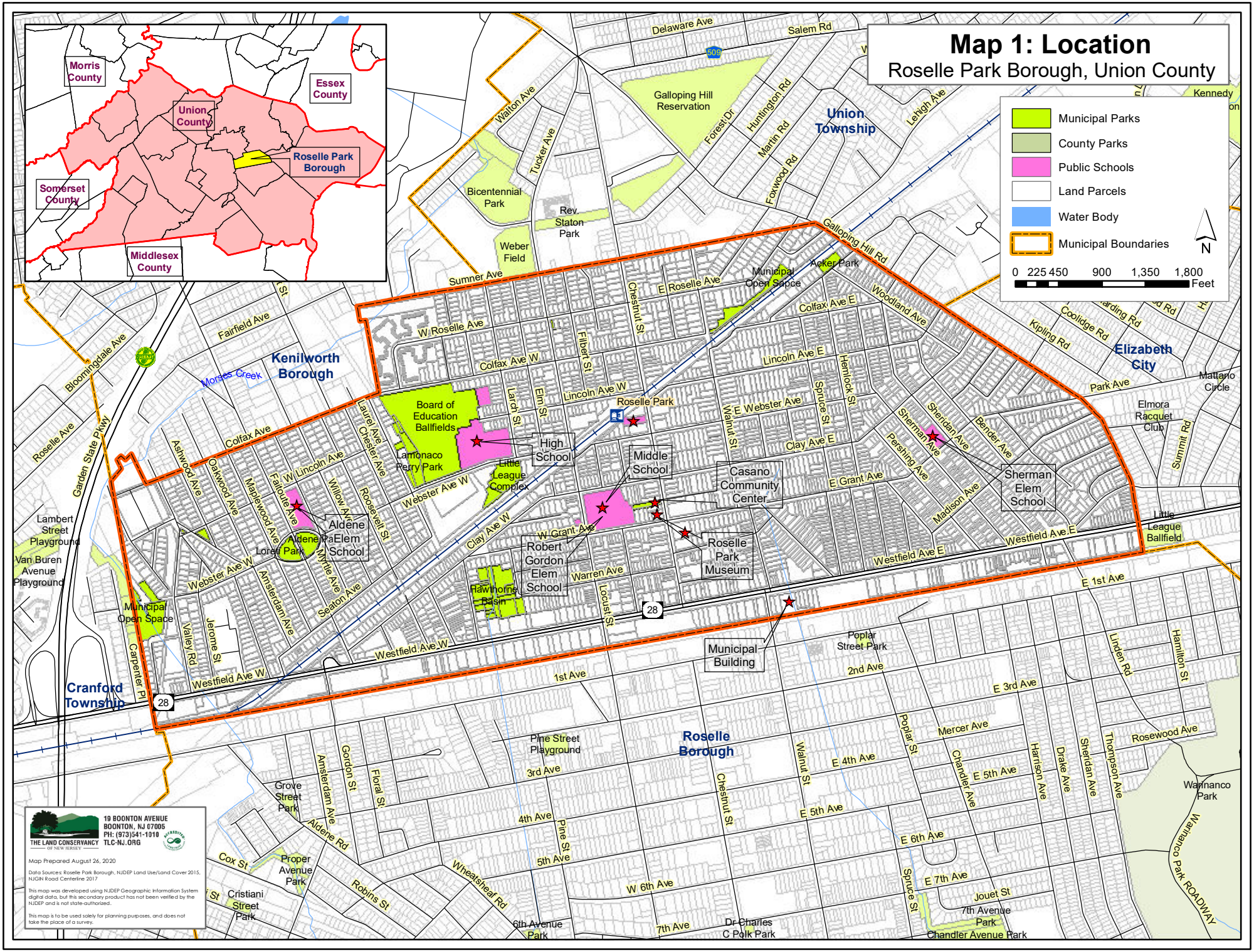
Program and a Reusable Bag Education Program. Roselle Park also supports accessibility to local food through the Roselle Park Farmers Market.[122] In addition, the Borough's community garden was established in 2014 and is comprised of 22 raised beds. Upkeep of the garden is done by the Environmental Commission members, with support from the local Boy Scout troop and garden members. The Environmental Commission donates a portion of the produce to residents in need and the borough's food pantry. In 2019 the Borough of Roselle Park was awarded a $10,000 grant from Sustainable Jersey to complete the *Environmental Resource Inventory*. The completion of the ERI is a priority action for Sustainable Jersey. The grant was funded by the Public Service Enterprise Group (PSEG) Foundation. Roselle Park Borough has addressed sustainability actions in thirteen categories. (***Table 36***)

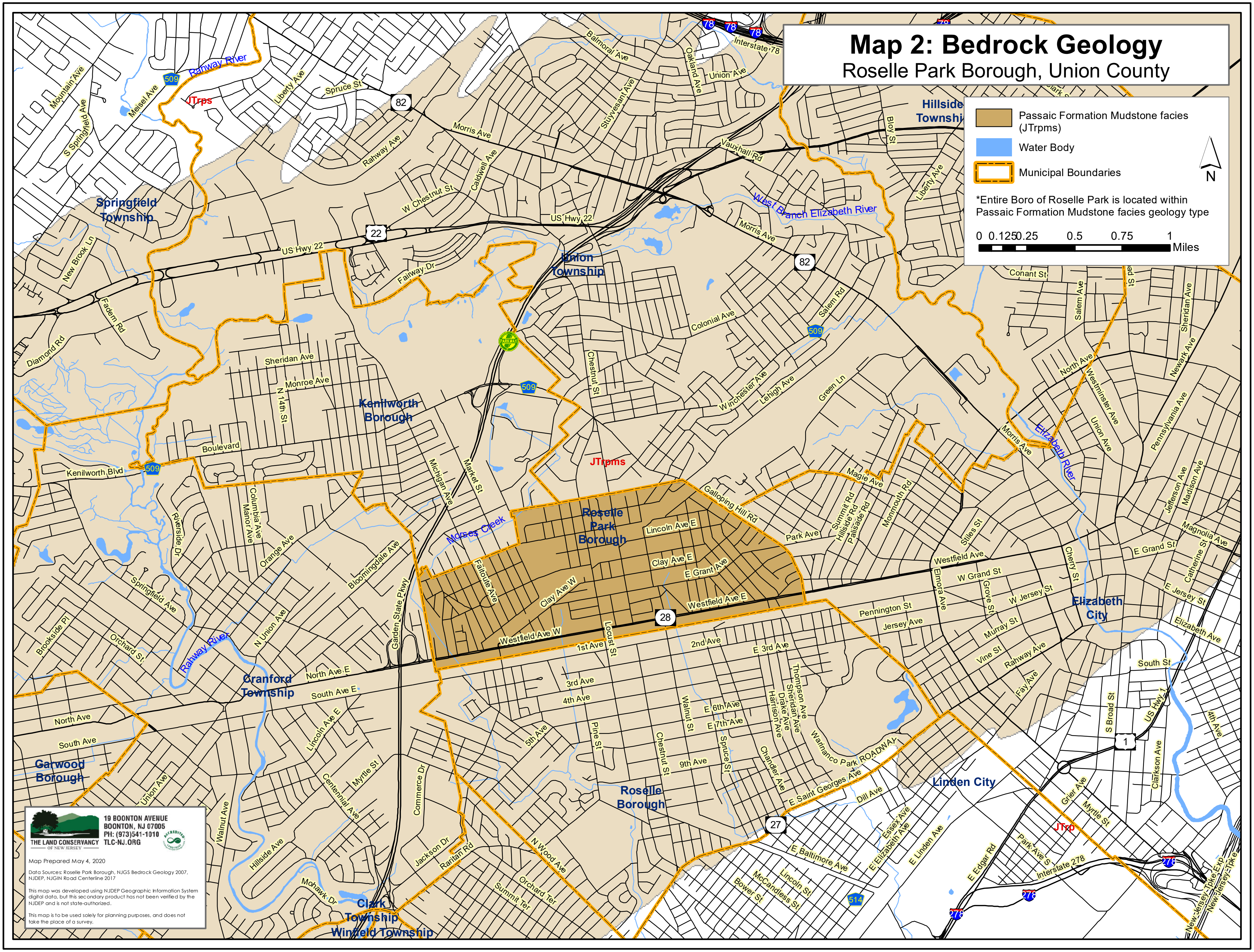
Table 36. Sustainable Jersey Actions Implemented: Borough of Roselle Park

Category	***Action Item***	***Points***
Animals in the Community	Companion Animal Management Pledge	5
Arts & Creative Culture	Creative Assets Inventory	10
	Establish a Creative Team	10
Community Partnership & Outreach	Create Green Team	10
Food Production	Community Gardens	10
Support Local Food	Farmers Market	10
	Making Farmers Markets Accessible	5
Health & Wellness	Building Healthier Communities	20
	Smoke-Free and Tobacco-Free Public Places	10
Land Use & Transportation	Adopt a Complete Streets Policy	10
	Sustainable Land Use Pledge	10
Natural Resources	Environmental Commission	10
Green Purchasing Program	Adopt Green Purchasing Policy by Ordinance	10
Communications	Municipal Communications Strategy	10
Waste Management	Prescription Drug Safety and Disposal	10
Recycling	Community Paper Shredding Day	5
Waste Reduction	Backyard Composting Program	5
	Reusable Bag Education Program	5
	Total Points:	**165**

Source: Roselle Park Borough Sustainable Jersey Community Certification Report[123]

MAPS


Map 1: Location
Roselle Park Borough, Union County
Municipal Parks
County Parks
Public Schools
Land Parcels
Water Body
Municipal Boundaries
N
0 225 450 900 1,350 1,800
Feet
Morris County
Essex County
Union County
Roselle Park Borough
Somerset County
Middlesex County
Union Township
Kenilworth Borough
Cranford Township
Roselle Borough
Elizabeth City
Galloping Hill Reservation
Bicentennial Park
Rev. Staton Park
Weber Field
Municipal Open Space
Acker Park
Board of Education Ballfields
Lamonaco Perry Park
Little League Complex
High School
Middle School
Casano Community Center
Sherman Elem School
Aldene Elem School
Aldene Park
Robert Gordon Elem School
Roselle Park Museum
Hawthorne Basin
Municipal Building
Poplar Street Park
Pine Street Playground
Grove Street Park
Cristiani Street Park
Proper Avenue Park
6th Avenue Park
Dr Charles C Polk Park
7th Avenue Park
Chandler Avenue Park
Warinanco Park
Lambert Street Playground
Van Buren Avenue Playground
Elmora Racquet Club
Little League Ballfield
Mattano Circle
Garden State Pkwy
Morses Creek
Delaware Ave
Salem Rd
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Colfax Ave W
Colfax Ave E
Lincoln Ave W
Lincoln Ave E
Roselle Park
E Webster Ave
Webster Ave W
Clay Ave W
Clay Ave E
W Grant Ave
E Grant Ave
Westfield Ave W
Westfield Ave E
1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
6th Ave
7th Ave
E 1st Ave
E 3rd Ave
E 4th Ave
E 5th Ave
E 6th Ave
E 7th Ave
W 6th Ave
Park Ave
Kipling Rd
Coolidge Rd
Woodland Ave
Sheridan Ave
Bender Ave
Summit Rd
Madison Ave
Pershing Ave
Linden Rd
Hamilton St
Rosewood Ave
Mercer Ave
Thompson Ave
Harrison Ave
Drake Ave
Sheridan Ave
Chandler Ave
Jouet St
Wheatsheaf Rd
Aldene Rd
Cox St
Robins St
Warinanco Park ROADWAY
Chestnut St
Walnut St
Spruce St
Hemlock St
Locust St
Pine St
Floral St
Gordon St
Amsterdam Ave
Maplewood Ave
Oakwood Ave
Ashwood Ave
Laurel Ave
Chester Ave
Roosevelt St
Willow Ave
Myrtle Ave
Seaton Ave
Jerome St
Valley Rd
Carpenter Pl
Fairfield Ave
Bloomingdale Ave
Roselle Ave
Foxwood Rd
Martin Rd
Huntington Rd
Forest Dr
Tucker Ave
Walton Ave
Lehigh Ave
Kennedy
Filbert St
Larch St
Elm St
Fatoute Ave
Warren Ave
Locust St
28
509
1
THE LAND CONSERVANCY OF NEW JERSEY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
Map Prepared August 26, 2020
Data Sources: Roselle Park Borough, NJDEP Land Use/Land Cover 2015, NJGIN Road Centerline 2017
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 2: Bedrock Geology
Roselle Park Borough, Union County
Passaic Formation Mudstone facies (JTrpms)
Water Body
Municipal Boundaries
*Entire Boro of Roselle Park is located within Passaic Formation Mudstone facies geology type
0 0.125 0.25 0.5 0.75 1
Miles
N
Roselle Park Borough
Kenilworth Borough
Union Township
Springfield Township
Hillside Township
Elizabeth City
Linden City
Roselle Borough
Cranford Township
Garwood Borough
Clark Township
Winfield Township
JTrps
JTrpms
JTrp
Rahway River
West Branch Elizabeth River
Elizabeth River
Morses Creek
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2020
Data Sources: Roselle Park Borough, NJGS Bedrock Geology 2007, NJDEP, NJGIN Road Centerline 2017
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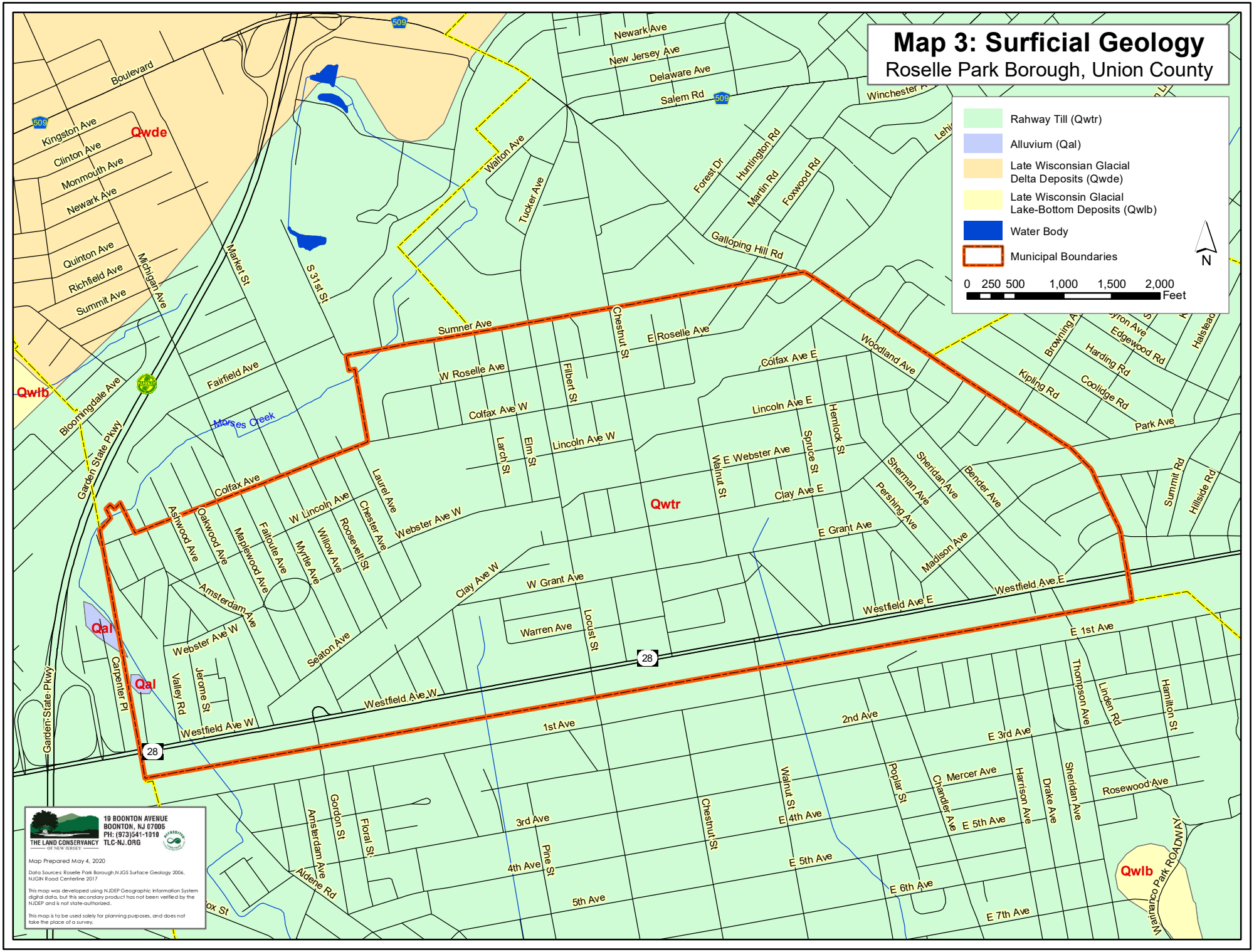
Map 3: Surficial Geology
Roselle Park Borough, Union County
Rahway Till (Qtr)
Alluvium (Qal)
Late Wisconsian Glacial Delta Deposits (Qwde)
Late Wisconsin Glacial Lake-Bottom Deposits (Qwlb)
Water Body
Municipal Boundaries
N
0 250 500 1,000 1,500 2,000
Feet
Qwde
Qwlb
Qtr
Qal
Qal
Qwlb
Newark Ave
New Jersey Ave
Delaware Ave
Salem Rd
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Market St
S 31st St
Watton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Chestnut St
Filbert St
Colfax Ave E
Woodland Ave
Browning Ave
Edgewood Rd
Harding Rd
Kipling Rd
Coolidge Rd
Park Ave
Halstead
Fairfield Ave
Bloomingdale Ave
Garden State Pkwy
Moses Creek
Colfax Ave W
Larch St
Elm St
Lincoln Ave W
Lincoln Ave E
Hemlock St
Spruce St
E Webster Ave
Walnut St
Clay Ave E
Sherman Ave
Sheridan Ave
Bender Ave
Summit Rd
Hillside Rd
Colfax Ave
W Lincoln Ave
Laurel Ave
Chester Ave
Webster Ave W
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fallcute Ave
Myrtle Ave
Willow Ave
Roosevelt St
Pershing Ave
E Grant Ave
Madison Ave
Clay Ave W
W Grant Ave
Warren Ave
Locust St
Westfield Ave E
Westfield Ave.E
E 1st Ave
Amsterdam Ave
Webster Ave W
Seaton Ave
Carpenter Pl
Valley Rd
Jerome St
Westfield Ave W
Garden State Pkwy
28
1st Ave
2nd Ave
E 3rd Ave
Thompson Ave
Linden Rd
Hamilton St
Gordon St
Floral St
Amsterdam Ave
Aldene Rd
3rd Ave
4th Ave
Pine St
5th Ave
Chestnut St
Walnut St
E 4th Ave
E 5th Ave
E 6th Ave
E 7th Ave
Poplar St
Chandler Ave
Mercer Ave
Harrison Ave
Drake Ave
Sheridan Ave
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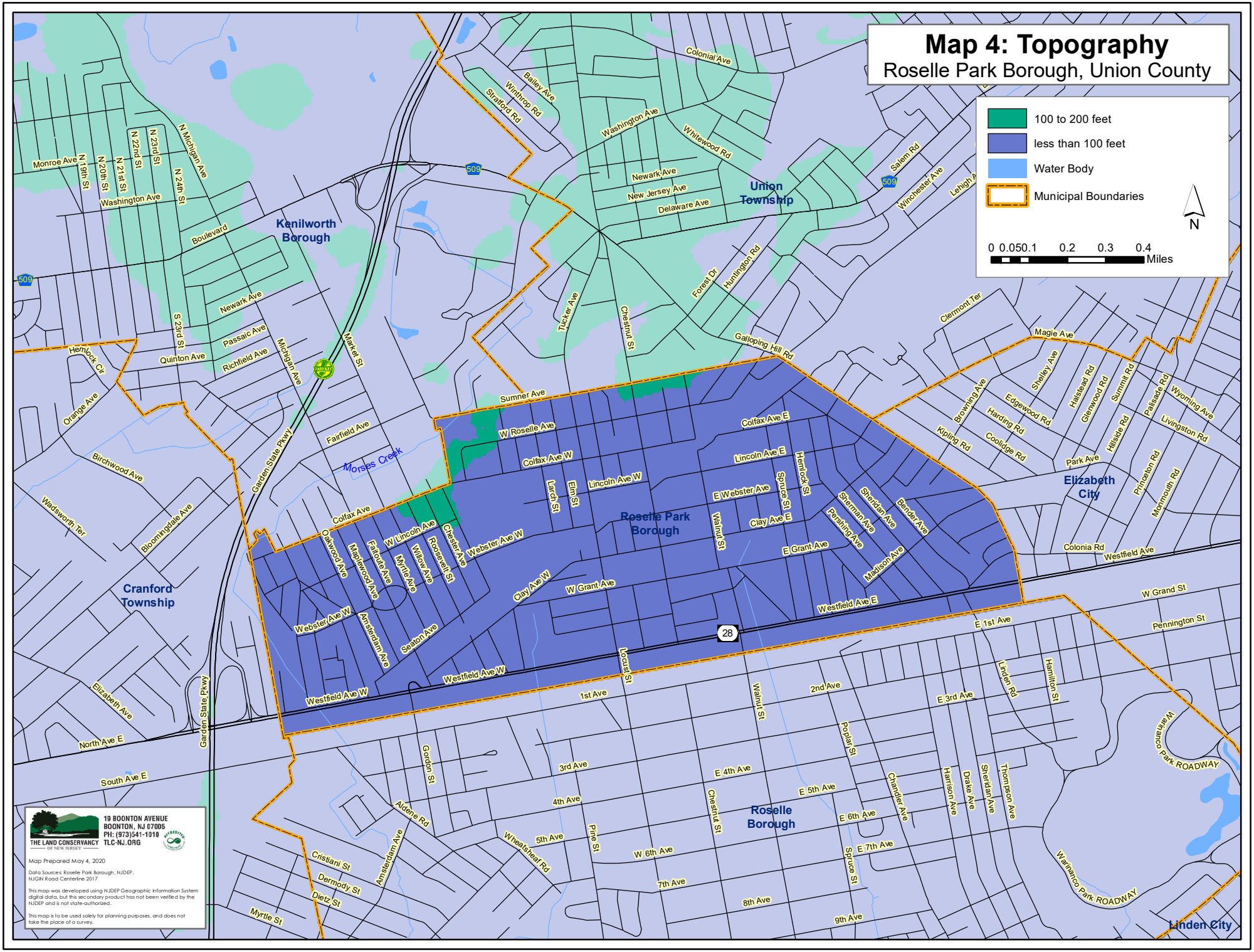
Map 4: Topography
Roselle Park Borough, Union County
100 to 200 feet
less than 100 feet
Water Body
Municipal Boundaries
N
0 0.050.1 0.2 0.3 0.4
Miles
Roselle Park Borough
Union Township
Kenilworth Borough
Cranford Township
Roselle Borough
Elizabeth City
Linden City
Morses Creek
Garden State Pkwy
Colfax Ave W
Colfax Ave E
W Roselle Ave
Sumner Ave
Lincoln Ave W
Lincoln Ave E
E Webster Ave
Webster Ave W
W Lincoln Ave
Clay Ave E
Clay Ave W
E Grant Ave
W Grant Ave
Westfield Ave E
Westfield Ave W
Colonia Rd
Westfield Ave
Park Ave
Magie Ave
Clermont Ter
Galloping Hill Rd
Forest Dr
Huntington Rd
Chestnut St
Tucker Ave
Market St
Michigan Ave
Fairfield Ave
Richfield Ave
Passaic Ave
Quinton Ave
Newark Ave
Boulevard
Washington Ave
Monroe Ave
Hemlock Cir
Orange Ave
Birchwood Ave
Wadsworth Ter
Bloomingdale Ave
Elizabeth Ave
North Ave E
South Ave E
Colonial Ave
Winthrop Rd
Bailey Ave
Stratford Rd
Whitewood Rd
Washington Ave
Newark Ave
New Jersey Ave
Delaware Ave
Salem Rd
Winchester Ave
Lehigh A
Browning Ave
Shelley Ave
Edgewood Rd
Harding Rd
Coolidge Rd
Kipling Rd
Halstead Rd
Glenwood Rd
Hillside Rd
Summit Rd
Palisade Rd
Wyoming Ave
Livingston Rd
Princeton Rd
Monmouth Rd
Colfax Ave
Oakwood Ave
Maplewood Ave
Fairoute Ave
Myrtle Ave
Willow Ave
Roosevelt St
Chester Ave
Larch St
Elm St
Spruce St
Hemlock St
Walnut St
Sherman Ave
Sheridan Ave
Bender Ave
Pershing Ave
Madison Ave
Amsterdam Ave
Seaton Ave
Locust St
1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
6th Ave
7th Ave
8th Ave
9th Ave
E 1st Ave
E 3rd Ave
E 4th Ave
E 5th Ave
E 6th Ave
E 7th Ave
W 6th Ave
Linden Rd
Hamilton St
Poplar St
Chandler Ave
Harrison Ave
Drake Ave
Sheridan Ave
Thomson Ave
W Grand St
Pennington St
Warrenco Park ROADWAY
Gordon St
Aldene Rd
Wheatsheaf Rd
Pine St
Cristiani St
Dermody St
Dietz St
Myrtle St
509
28
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2020
Data Sources: Roselle Park Borough, NJDEP, NJGIN Road Centerline 2017
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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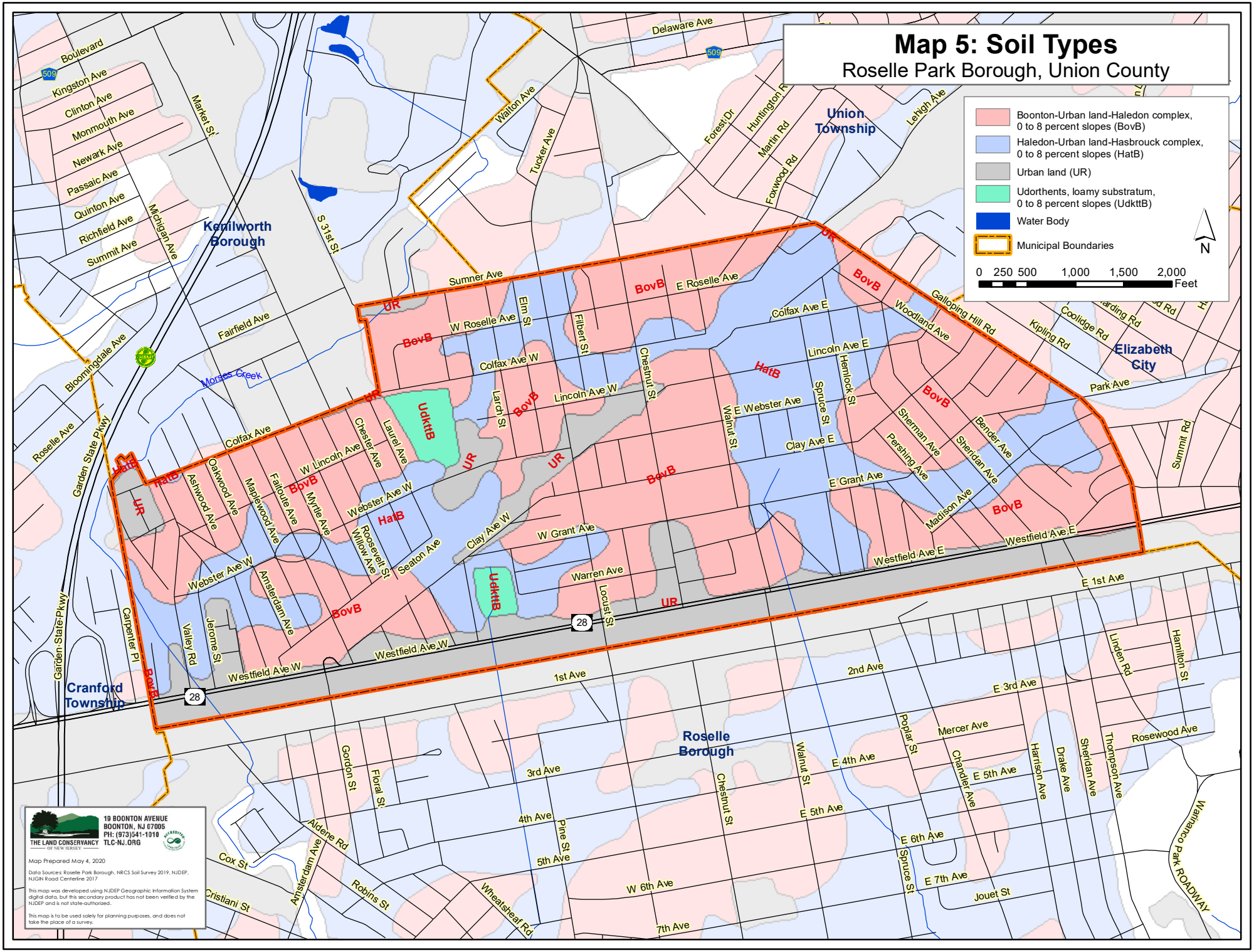
Map 5: Soil Types
Roselle Park Borough, Union County
Boonton-Urban land-Haledon complex, 0 to 8 percent slopes (BovB)
Haledon-Urban land-Hasbrouck complex, 0 to 8 percent slopes (HatB)
Urban land (UR)
Udorthents, loamy substratum, 0 to 8 percent slopes (UdkttB)
Water Body
Municipal Boundaries
N
0 250 500 1,000 1,500 2,000 Feet
Kenilworth Borough
Union Township
Elizabeth City
Cranford Township
Roselle Borough
Garden State Pkwy
Morses Creek
Delaware Ave
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Market St
Walton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Lehigh Ave
S 31st St
Fairfield Ave
Bloomingdale Ave
Roselle Ave
Sumner Ave
E Roselle Ave
W Roselle Ave
Elm St
Filbert St
Chestnut St
Colfax Ave E
Colfax Ave W
Lincoln Ave E
Lincoln Ave W
Larch St
Hemlock St
Spruce St
Walnut St
E Webster Ave
Clay Ave E
Clay Ave W
E Grant Ave
W Grant Ave
Park Ave
Summit Rd
Galloping Hill Rd
Woodland Ave
Kipling Rd
Coolidge Rd
Sherman Ave
Pershing Ave
Sheridan Ave
Bender Ave
Madison Ave
Colfax Ave
W Lincoln Ave
Chester Ave
Laurel Ave
Oakwood Ave
Ashwood Ave
Maplewood Ave
Fairoute Ave
Myrtle Ave
Webster Ave W
Willow Ave
Roosevelt St
Seaton Ave
Amsterdam Ave
Jerome St
Valley Rd
Carpenter Pl
Warren Ave
Locust St
Westfield Ave E
Westfield Ave W
28
1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
6th Ave
7th Ave
E 1st Ave
E 3rd Ave
E 4th Ave
E 5th Ave
E 6th Ave
E 7th Ave
W 6th Ave
Linden Rd
Hamilton St
Mercer Ave
Rosewood Ave
Poplar St
Chandler Ave
Harrison Ave
Drake Ave
Thompson Ave
Spruce St
Jouet St
Gordon St
Floral St
Pine St
Aldene Rd
Cox St
Cristiani St
Robins St
Wheatsheaf Rd
Watchung Reservation ROADWAY
BovB
HatB
UdkttB
UR
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2020
Data Sources: Roselle Park Borough, NRCS Soil Survey 2019, NJDEP, NJGIN Road Centerline 2017
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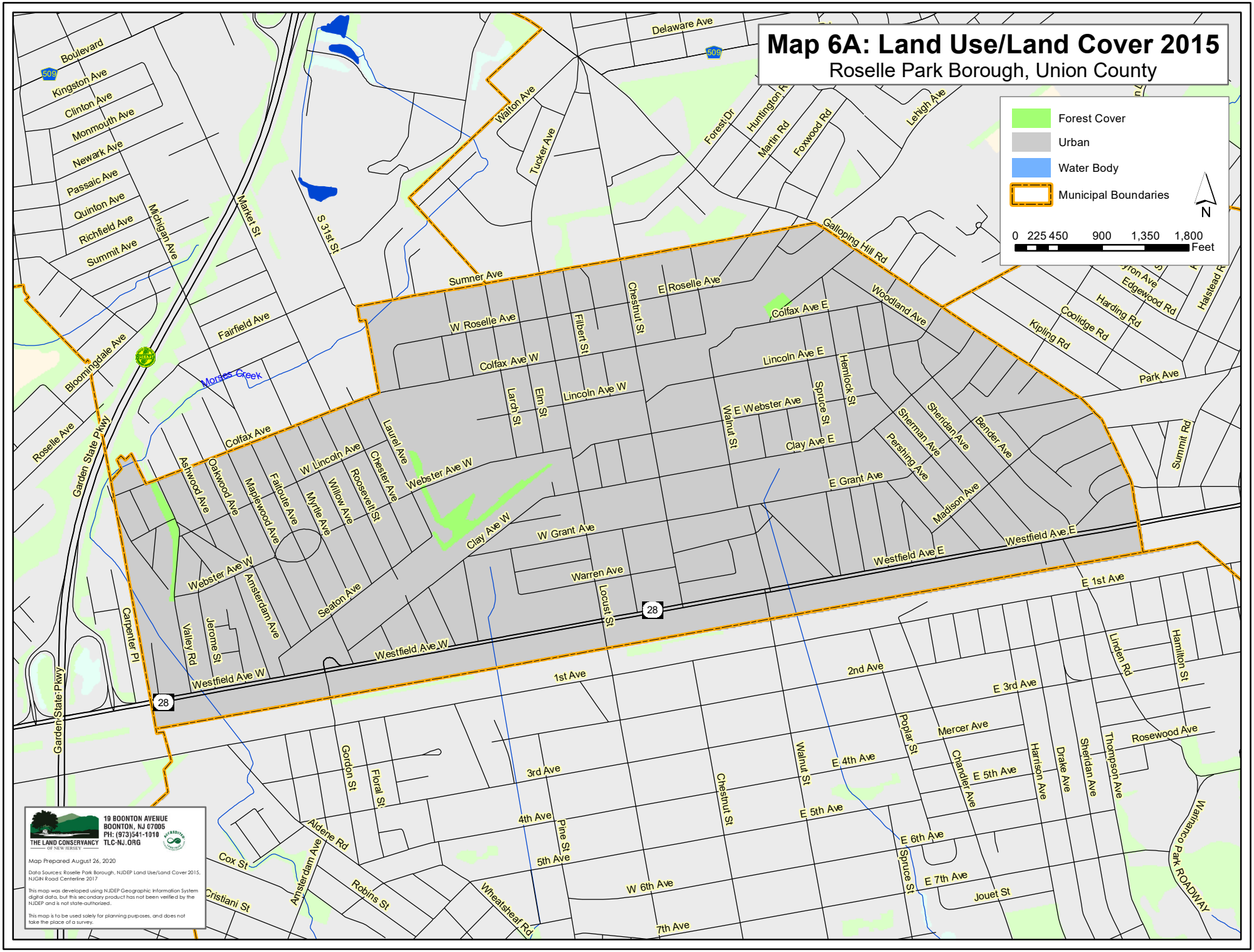
Map 6A: Land Use/Land Cover 2015
Roselle Park Borough, Union County
Forest Cover
Urban
Water Body
Municipal Boundaries
N
0 225 450 900 1,350 1,800
Feet
Delaware Ave
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Market St
S 31st St
Walton Ave
Tucker Ave
Forest Dr
Huntington R
Martin Rd
Foxwood Rd
Lehigh Ave
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Chestnut St
Filbert St
Colfax Ave E
Woodland Ave
Colfax Ave W
Lincoln Ave E
Lincoln Ave W
Larch St
Elm St
Hemlock St
Spruce St
E Webster Ave
Walnut St
Clay Ave E
Sherman Ave
Sheridan Ave
Bender Ave
Pershing Ave
E Grant Ave
Madison Ave
Fairfield Ave
Morses Creek
Bloomingdale Ave
Roselle Ave
Garden State Pkwy
Colfax Ave
W Lincoln Ave
Laurel Ave
Webster Ave W
Clay Ave W
W Grant Ave
Warren Ave
Westfield Ave E
Westfield Ave W
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fairoute Ave
Myrtle Ave
Willow Ave
Roosevelt St
Chester Ave
Amsterdam Ave
Seaton Ave
Locust St
Valley Rd
Jerome St
Carpenter Pl
28
Kipling Rd
Coolidge Rd
Harding Rd
Edgewood Rd
Park Ave
Summit Rd
Halstead R
E 1st Ave
1st Ave
2nd Ave
E 3rd Ave
3rd Ave
E 4th Ave
4th Ave
E 5th Ave
5th Ave
E 6th Ave
W 6th Ave
E 7th Ave
7th Ave
Jouet St
Linden Rd
Hamilton St
Rosewood Ave
Mercer Ave
Poplar St
Chandler Ave
Harrison Ave
Drake Ave
Sheridan Ave
Thompson Ave
Gordon St
Floral St
Chestnut St
Walnut St
Pine St
Spruce St
Aldene Rd
Cox St
Cristiani St
Robins St
Wheatsheaf Rd
Wahanna Park ROADWAY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
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THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared August 26, 2020
Data Sources: Roselle Park Borough, NJDEP Land Use/Land Cover 2015, NJGIN Road Centerline 2017
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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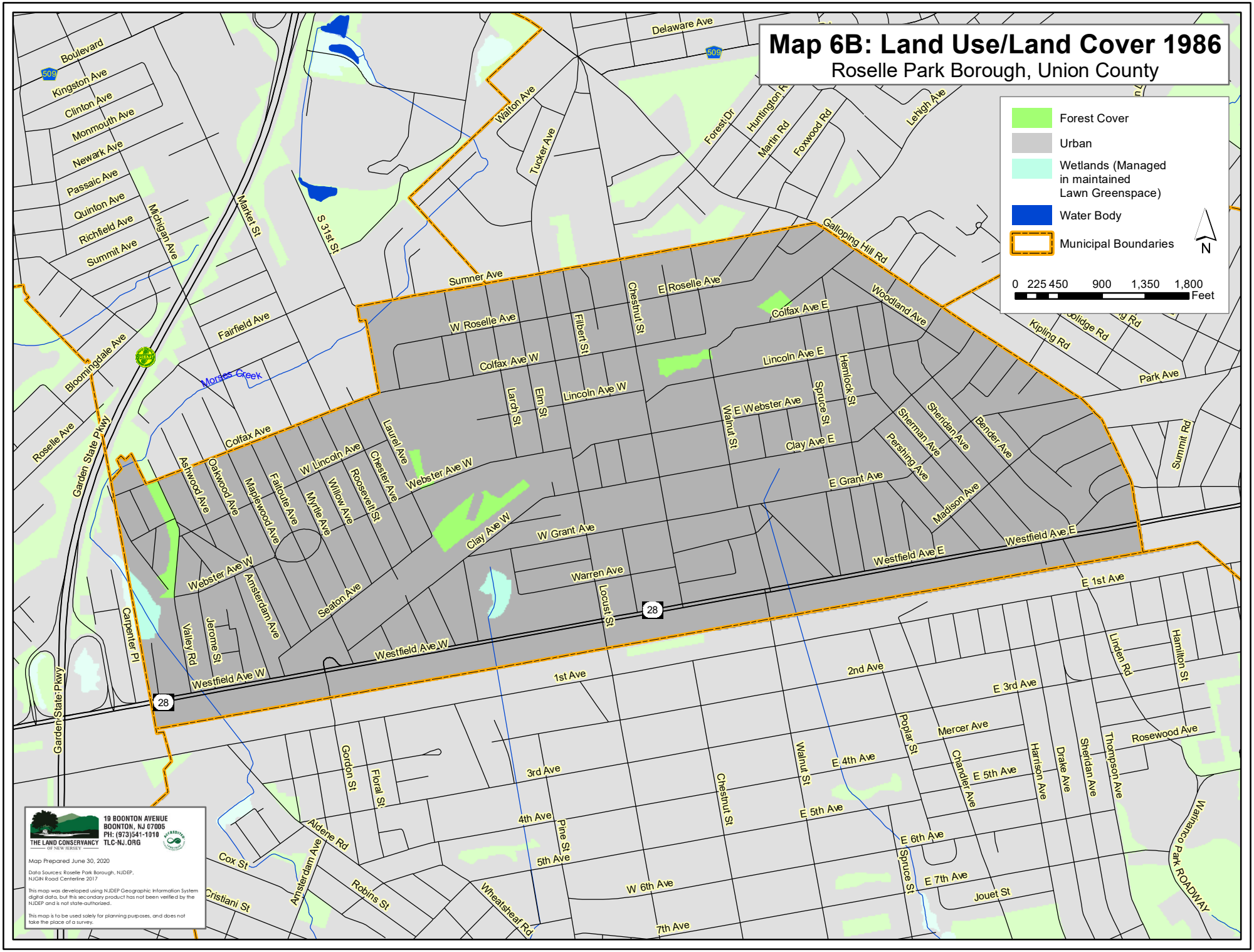
Map 6B: Land Use/Land Cover 1986
Roselle Park Borough, Union County
Forest Cover
Urban
Wetlands (Managed in maintained Lawn Greenspace)
Water Body
Municipal Boundaries
N
0 225 450 900 1,350 1,800
Feet
Delaware Ave
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Market St
S 31st St
Walton Ave
Tucker Ave
Forest Dr
Huntington R
Martin Rd
Foxwood Rd
Lehigh Ave
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Filbert St
Chestnut St
Colfax Ave E
Woodland Ave
Kipling Rd
Colfax Ave W
Lincoln Ave E
Park Ave
Fairfield Ave
Bloomingdale Ave
Morses Creek
Larch St
Elm St
Lincoln Ave W
Hemlock St
Spruce St
E Webster Ave
Walnut St
Sheridan Ave
Bender Ave
Sherman Ave
Clay Ave E
Pershing Ave
Summit Rd
Roselle Ave
Garden State Pkwy
Colfax Ave
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fallbourne Ave
Myrtle Ave
Willow Ave
Roosevelt St
Chester Ave
Laurel Ave
W Lincoln Ave
Webster Ave W
E Grant Ave
Madison Ave
Clay Ave W
W Grant Ave
Westfield Ave E
Warren Ave
Locust St
28
E 1st Ave
Webster Ave W
Amsterdam Ave
Seaton Ave
Carpenter Pl
Valley Rd
Jerome St
Westfield Ave W
Westfield Ave W
1st Ave
2nd Ave
E 3rd Ave
Linden Rd
Hamilton St
Mercer Ave
Rosewood Ave
Poplar St
Gordon St
Floral St
3rd Ave
E 4th Ave
Chandler Ave
E 5th Ave
Harrison Ave
Drake Ave
Sheridan Ave
Thompson Ave
Chestnut St
Walnut St
4th Ave
E 5th Ave
Pine St
5th Ave
E 6th Ave
Aldene Rd
Cox St
Amsterdam Ave
Robins St
W 6th Ave
E Spruce St
E 7th Ave
Jouet St
Cristiani St
Wheatsheaf Rd
7th Ave
Warinanco Park ROADWAY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared June 30, 2020
Data Sources: Roselle Park Borough, NJDEP, NJGIN Road Centerline 2017
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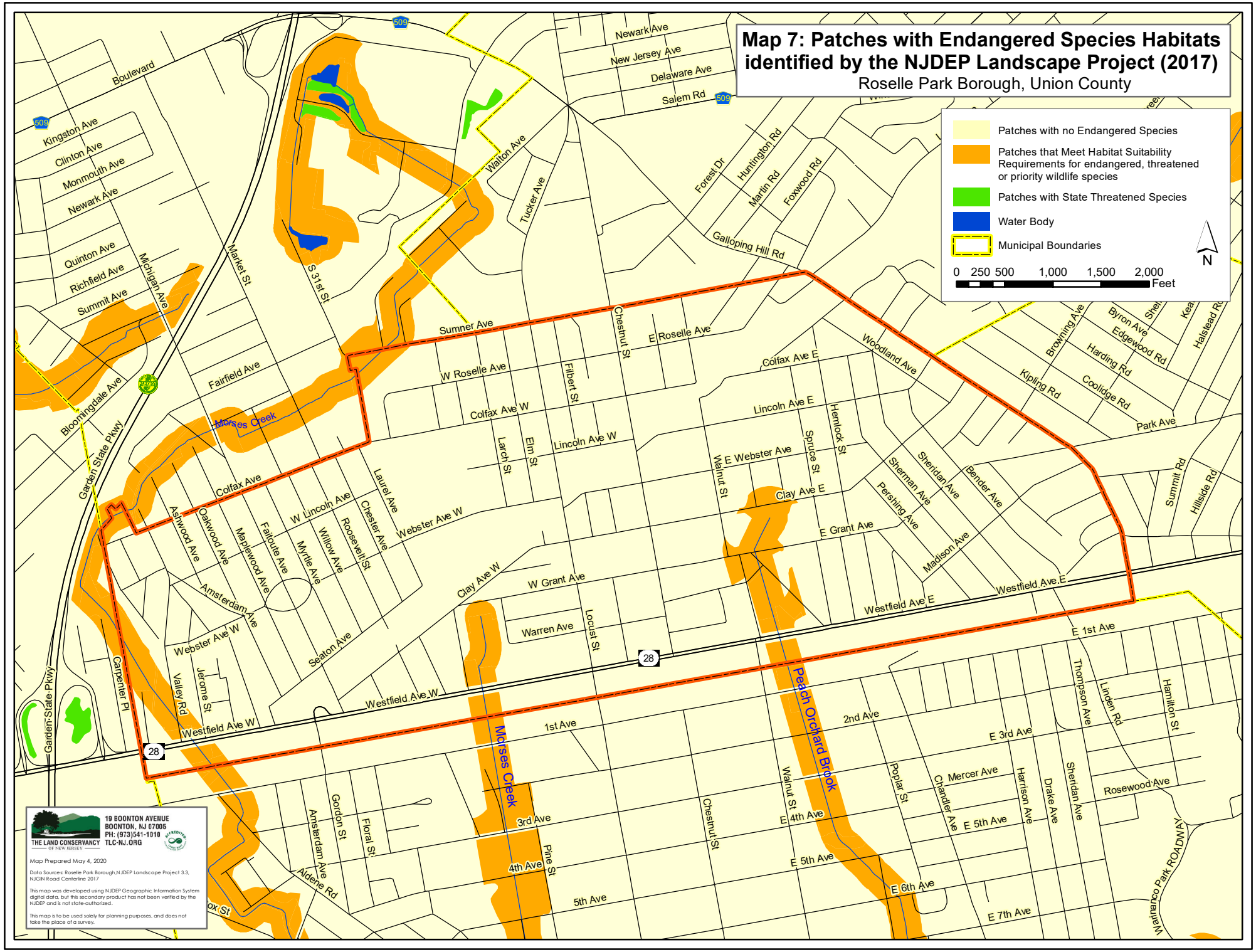
Map 7: Patches with Endangered Species Habitats identified by the NJDEP Landscape Project (2017)
Roselle Park Borough, Union County
Patches with no Endangered Species
Patches that Meet Habitat Suitability Requirements for endangered, threatened or priority wildlife species
Patches with State Threatened Species
Water Body
Municipal Boundaries
N
0 250 500 1,000 1,500 2,000
Feet
Morses Creek
Peach Orchard Brook
Garden State Pkwy
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Market St
S 31st St
Fairfield Ave
Bloomingdale Ave
Newark Ave
New Jersey Ave
Delaware Ave
Salem Rd
Walton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Galloping Hill Rd
Sumner Ave
W Roselle Ave
E Roselle Ave
Chestnut St
Filbert St
Colfax Ave W
Colfax Ave E
Woodland Ave
Lincoln Ave E
Lincoln Ave W
Larch St
Elm St
Hemlock St
Spruce St
Walnut St
E Webster Ave
Clay Ave E
Sherman Ave
Sheridan Ave
Bender Ave
Pershing Ave
E Grant Ave
Madison Ave
Summit Rd
Hillside Rd
Browning Ave
Byron Ave
Edgewood Rd
Harding Rd
Kipling Rd
Coolidge Rd
Park Ave
Halstead Rd
Colfax Ave
W Lincoln Ave
Laurel Ave
Chester Ave
Webster Ave W
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fallcute Ave
Myrtle Ave
Willow Ave
Roosevelt St
Clay Ave W
W Grant Ave
Warren Ave
Locust St
Amsterdam Ave
Seaton Ave
Webster Ave W
Jerome St
Valley Rd
Carpenter Pl
Garden State Pkwy
Westfield Ave W
Westfield Ave E
28
1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
E 1st Ave
E 3rd Ave
E 4th Ave
E 5th Ave
E 6th Ave
E 7th Ave
Thompson Ave
Linden Rd
Hamilton St
Mercer Ave
Chandler Ave
Harrison Ave
Drake Ave
Sheridan Ave
Rosewood Ave
Poplar St
Chestnut St
Walnut St
Pine St
Gordon St
Floral St
Amsterdam Ave
Aldene Rd
Wawinanco Park ROADWAY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2020
Data Sources: Roselle Park Borough,NJDEP Landscape Project 3.3, NJGIN Road Centerline 2017
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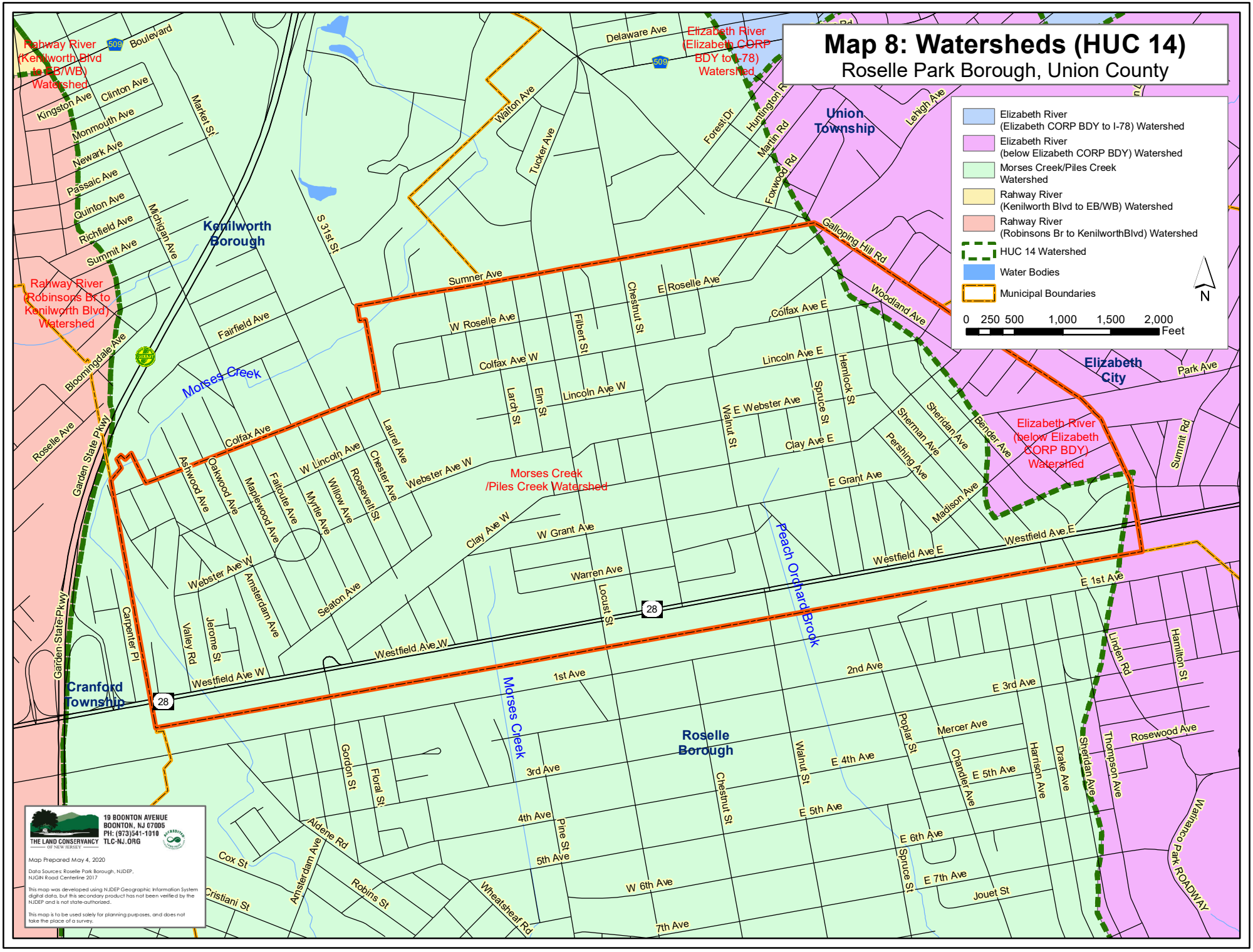
Map 8: Watersheds (HUC 14)
Roselle Park Borough, Union County
Elizabeth River (Elizabeth CORP BDY to I-78) Watershed
Elizabeth River (below Elizabeth CORP BDY) Watershed
Morses Creek/Piles Creek Watershed
Rahway River (Kenilworth Blvd to EB/WB) Watershed
Rahway River (Robinsons Br to KenilworthBlvd) Watershed
HUC 14 Watershed
Water Bodies
Municipal Boundaries
N
0 250 500 1,000 1,500 2,000 Feet
Rahway River (Kenilworth Blvd to EB/WB) Watershed
Elizabeth River (Elizabeth CORP BDY to I-78) Watershed
Rahway River (Robinsons Br to Kenilworth Blvd) Watershed
Morses Creek /Piles Creek Watershed
Elizabeth River (below Elizabeth CORP BDY) Watershed
Union Township
Kenilworth Borough
Elizabeth City
Roselle Borough
Cranford Township
Morses Creek
Peach Orchard Brook
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Richfield Ave
Summit Ave
Bloomingdale Ave
Roselle Ave
Garden State Pkwy
Market St
Michigan Ave
Fairfield Ave
S 31st St
Walton Ave
Tucker Ave
Delaware Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Lehigh Ave
Galloping Hill Rd
Woodland Ave
Sumner Ave
E Roselle Ave
W Roselle Ave
Colfax Ave E
Colfax Ave W
Filbert St
Chestnut St
Lincoln Ave E
Lincoln Ave W
Larch St
Elm St
Hemlock St
Spruce St
E Webster Ave
Walnut St
Park Ave
Sheridan Ave
Bender Ave
Sherman Ave
Pershing Ave
Clay Ave E
Summit Rd
Colfax Ave
Laurel Ave
W Lincoln Ave
Chester Ave
Webster Ave W
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fallcourte Ave
Myrtle Ave
Willow Ave
Roosevelt St
E Grant Ave
Madison Ave
Clay Ave W
W Grant Ave
Warren Ave
Westfield Ave E
Westfield Ave W
Seaton Ave
Amsterdam Ave
Locust St
E 1st Ave
Linden Rd
Hamilton St
Carpenter Pl
Valley Rd
Jerome St
1st Ave
2nd Ave
E 3rd Ave
Mercer Ave
Poplar St
Rosewood Ave
Gordon St
Floral St
3rd Ave
E 4th Ave
Chandler Ave
E 5th Ave
Harrison Ave
Drake Ave
Thompson Ave
Sheridan Ave
Wahanna Park ROADWAY
4th Ave
Pine St
5th Ave
E 6th Ave
E 7th Ave
Jouet St
W 6th Ave
7th Ave
Aldene Rd
Cox St
Cristiani St
Robins St
Wheatsheaf Rd
28
509
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2020
Data Sources: Roselle Park Borough, NJDEP, NJGIN Road Centerline 2017
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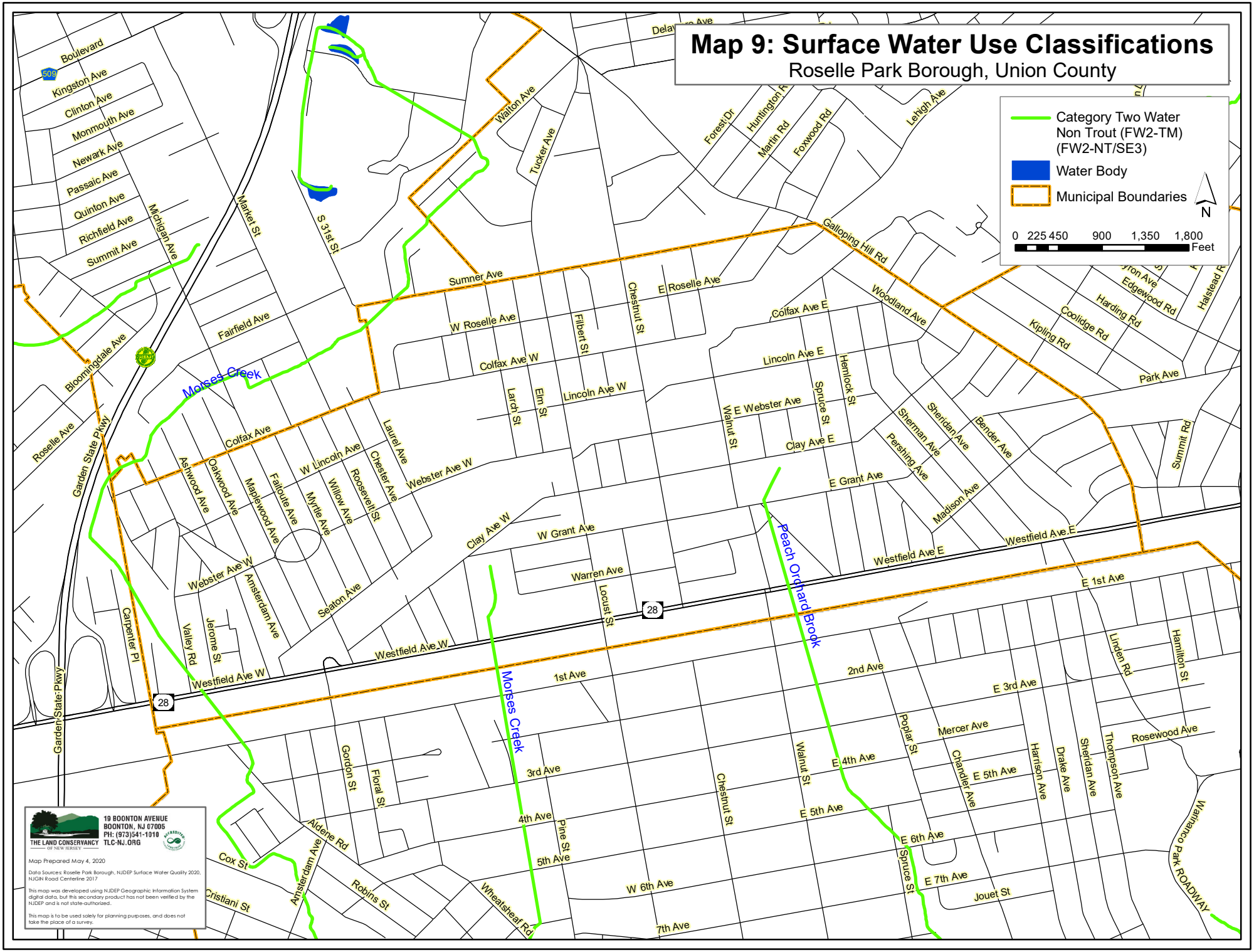
Map 9: Surface Water Use Classifications
Roselle Park Borough, Union County
Category Two Water Non Trout (FW2-TM) (FW2-NT/SE3)
Water Body
Municipal Boundaries
N
0 225 450 900 1,350 1,800 Feet
Morses Creek
Peach Orchard Brook
Garden State Pkwy
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Market St
S 31st St
Walton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Lehigh Ave
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Chestnut St
Filbert St
Colfax Ave E
Colfax Ave W
Woodland Ave
Kipling Rd
Coolidge Rd
Harding Rd
Edgewood Rd
Halstead Rd
Park Ave
Lincoln Ave E
Lincoln Ave W
Larch St
Elm St
Hemlock St
Spruce St
E Webster Ave
Walnut St
Clay Ave E
Sheridan Ave
Bender Ave
Summit Rd
Sherman Ave
Pershing Ave
E Grant Ave
Madison Ave
Bloomingdale Ave
Fairfield Ave
Roselle Ave
Colfax Ave
W Lincoln Ave
Laurel Ave
Chester Ave
Webster Ave W
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fallcourt Ave
Myrtle Ave
Willow Ave
Roosevelt St
Clay Ave W
W Grant Ave
Warren Ave
Locust St
Westfield Ave E
Westfield Ave W
Webster Ave W
Amsterdam Ave
Seaton Ave
Valley Rd
Jerome St
Carpenter Pl
28
E 1st Ave
1st Ave
2nd Ave
E 3rd Ave
3rd Ave
4th Ave
E 4th Ave
E 5th Ave
5th Ave
E 6th Ave
E 7th Ave
W 6th Ave
7th Ave
Linden Rd
Hamilton St
Rosewood Ave
Mercer Ave
Poplar St
Chandler Ave
Harrison Ave
Drake Ave
Sheridan Ave
Thompson Ave
Jouet St
Gordon St
Floral St
Chestnut St
Pine St
Aldene Rd
Cox St
Cristiani St
Amsterdam Ave
Robins St
Wheatsheaf Rd
Spruce St
Watchung Reservation ROADWAY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2020
Data Sources: Roselle Park Borough, NJDEP Surface Water Quality 2020, NJGIN Road Centerline 2017
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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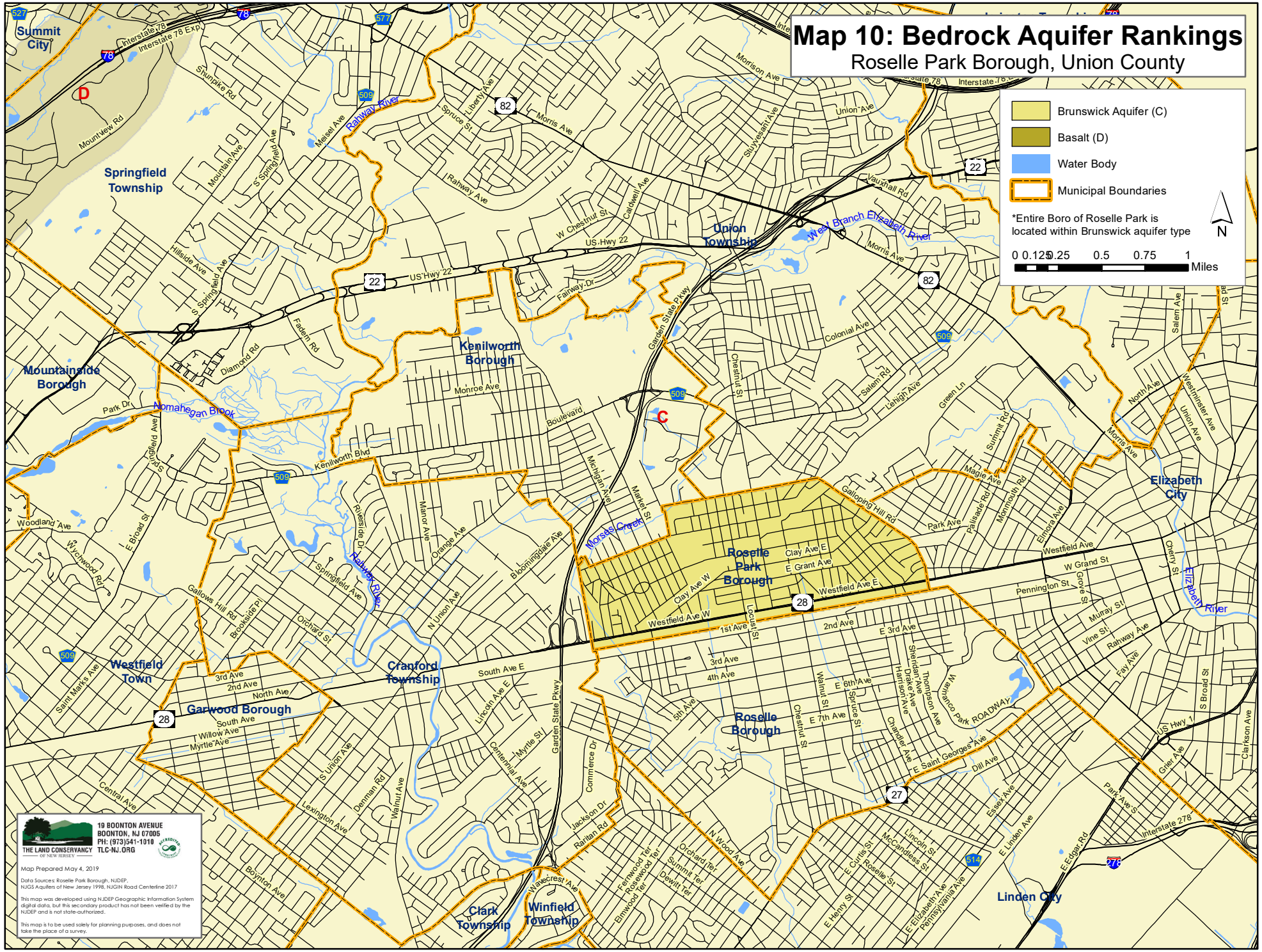
Map 10: Bedrock Aquifer Rankings
Roselle Park Borough, Union County
Brunswick Aquifer (C)
Basalt (D)
Water Body
Municipal Boundaries
*Entire Boro of Roselle Park is located within Brunswick aquifer type
N
0 0.125 0.25 0.5 0.75 1
Miles
Summit City
Springfield Township
Mountainside Borough
Kenilworth Borough
Union Township
Roselle Park Borough
Roselle Borough
Elizabeth City
Linden City
Westfield Town
Cranford Township
Garwood Borough
Clark Township
Winfield Township
D
C
Interstate 78
US Hwy 22
Rahway River
West Branch Elizabeth River
Elizabeth River
Nomahegan Brook
Morses Creek
Garden State Pkwy
Interstate 278
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
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THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2019
Data Sources: Roselle Park Borough, NJDEP, NJGS Aquifers of New Jersey 1998, NJGIN Road Centerline 2017
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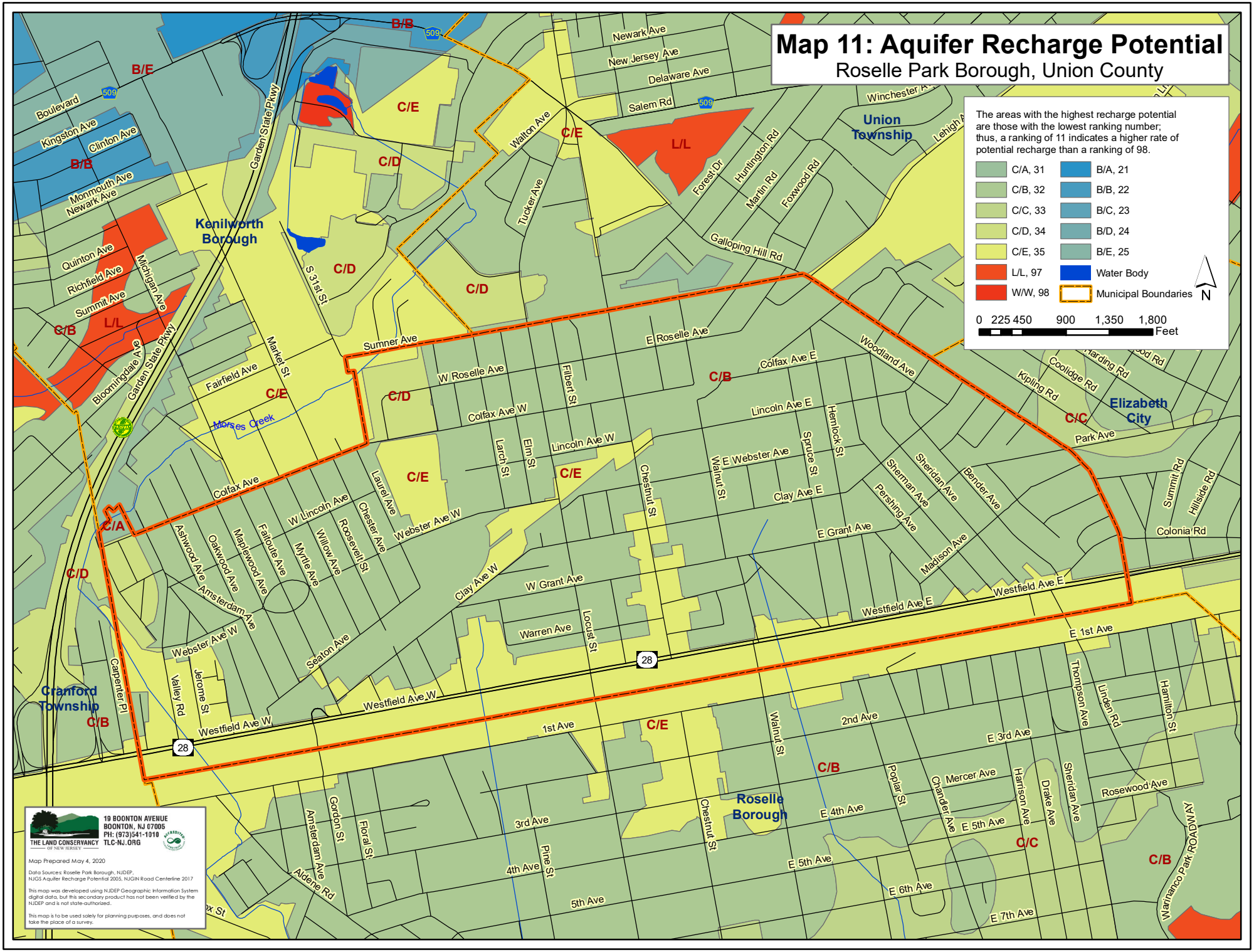
Map 11: Aquifer Recharge Potential
Roselle Park Borough, Union County
The areas with the highest recharge potential are those with the lowest ranking number; thus, a ranking of 11 indicates a higher rate of potential recharge than a ranking of 98.
C/A, 31
B/A, 21
C/B, 32
B/B, 22
C/C, 33
B/C, 23
C/D, 34
B/D, 24
C/E, 35
B/E, 25
L/L, 97
Water Body
W/W, 98
Municipal Boundaries
N
0 225 450 900 1,350 1,800
Feet
Kenilworth Borough
Union Township
Elizabeth City
Roselle Borough
Cranford Township
Garden State Pkwy
Morses Creek
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Bloomingdale Ave
Fairfield Ave
Market St
S 31st St
Sumner Ave
W Roselle Ave
E Roselle Ave
Colfax Ave W
Colfax Ave E
Filbert St
Larch St
Elm St
Lincoln Ave W
Lincoln Ave E
Hemlock St
Spruce St
Walnut St
Chestnut St
W E Webster Ave
Clay Ave E
Sherman Ave
Sheridan Ave
Bender Ave
Pershing Ave
Madison Ave
E Grant Ave
Park Ave
Summit Rd
Hillside Rd
Colonia Rd
Woodland Ave
Coolidge Rd
Kipling Rd
Harding Rd
Colfax Ave
W Lincoln Ave
Laurel Ave
Chester Ave
Webster Ave W
Roosevelt St
Willow Ave
Myrtle Ave
Fallcote Ave
Maplewood Ave
Oakwood Ave
Ashwood Ave
Amsterdam Ave
Clay Ave W
W Grant Ave
Warren Ave
Locust St
Seaton Ave
Webster Ave W
Valley Rd
Jerome St
Carpenter Pl
Westfield Ave W
Westfield Ave E
E 1st Ave
1st Ave
2nd Ave
E 3rd Ave
3rd Ave
E 4th Ave
4th Ave
E 5th Ave
5th Ave
E 6th Ave
E 7th Ave
Thompson Ave
Linden Rd
Hamilton St
Mercer Ave
Harrison Ave
Drake Ave
Sheridan Ave
Rosewood Ave
Poplar St
Chandler Ave
Pine St
Floral St
Gordon St
Amsterdam Ave
Aldene Rd
Warinanco Park ROADWAY
Tucker Ave
Walton Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Galloping Hill Rd
Winchester A
Lehigh A
Newark Ave
New Jersey Ave
Delaware Ave
Salem Rd
B/B
B/E
C/E
C/D
L/L
C/B
C/A
C/C
509
28
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Map Prepared May 4, 2020
Data Sources: Roselle Park Borough, NJDEP, NJGS Aquifer Recharge Potential 2005, NJGIN Road Centerline 2017
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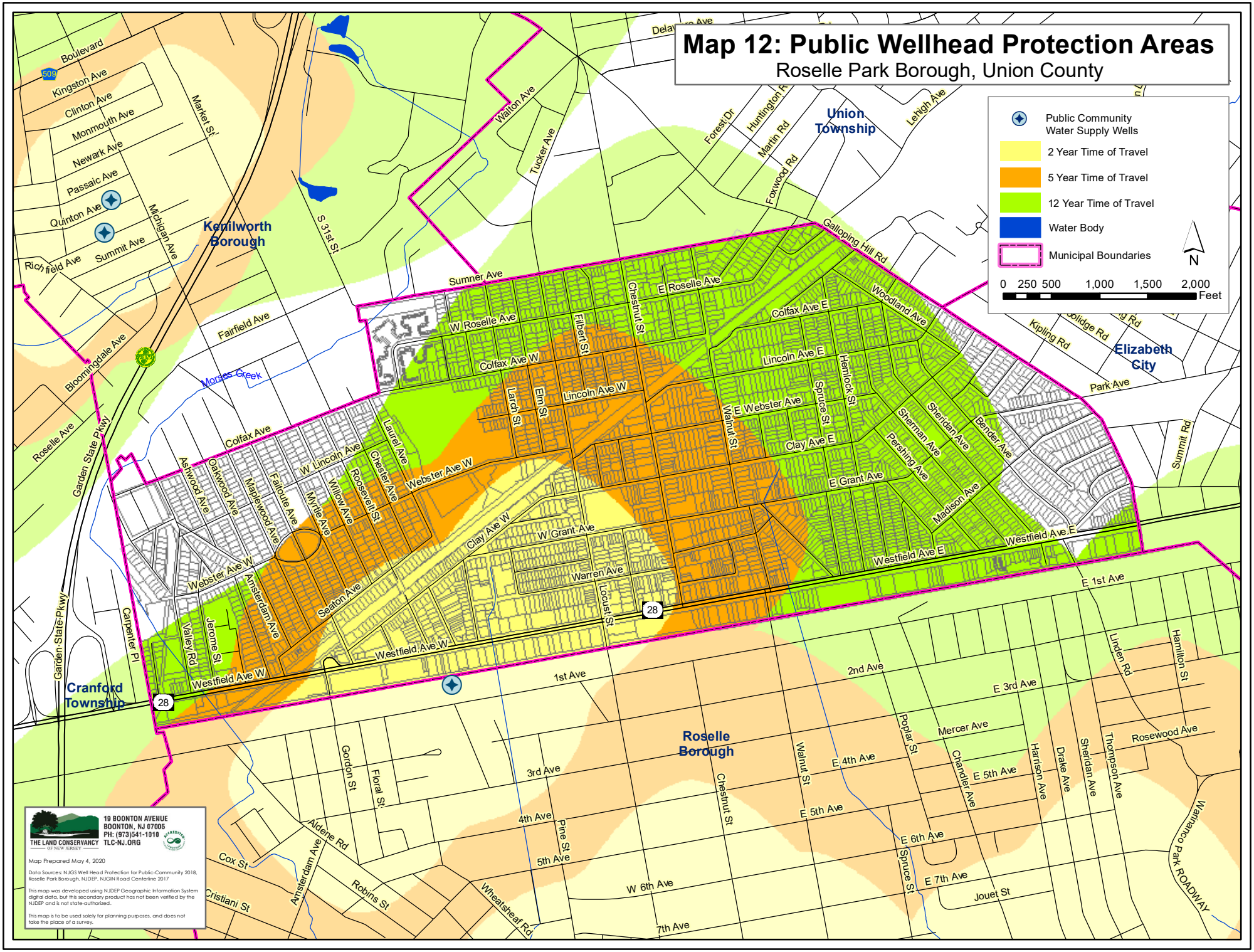
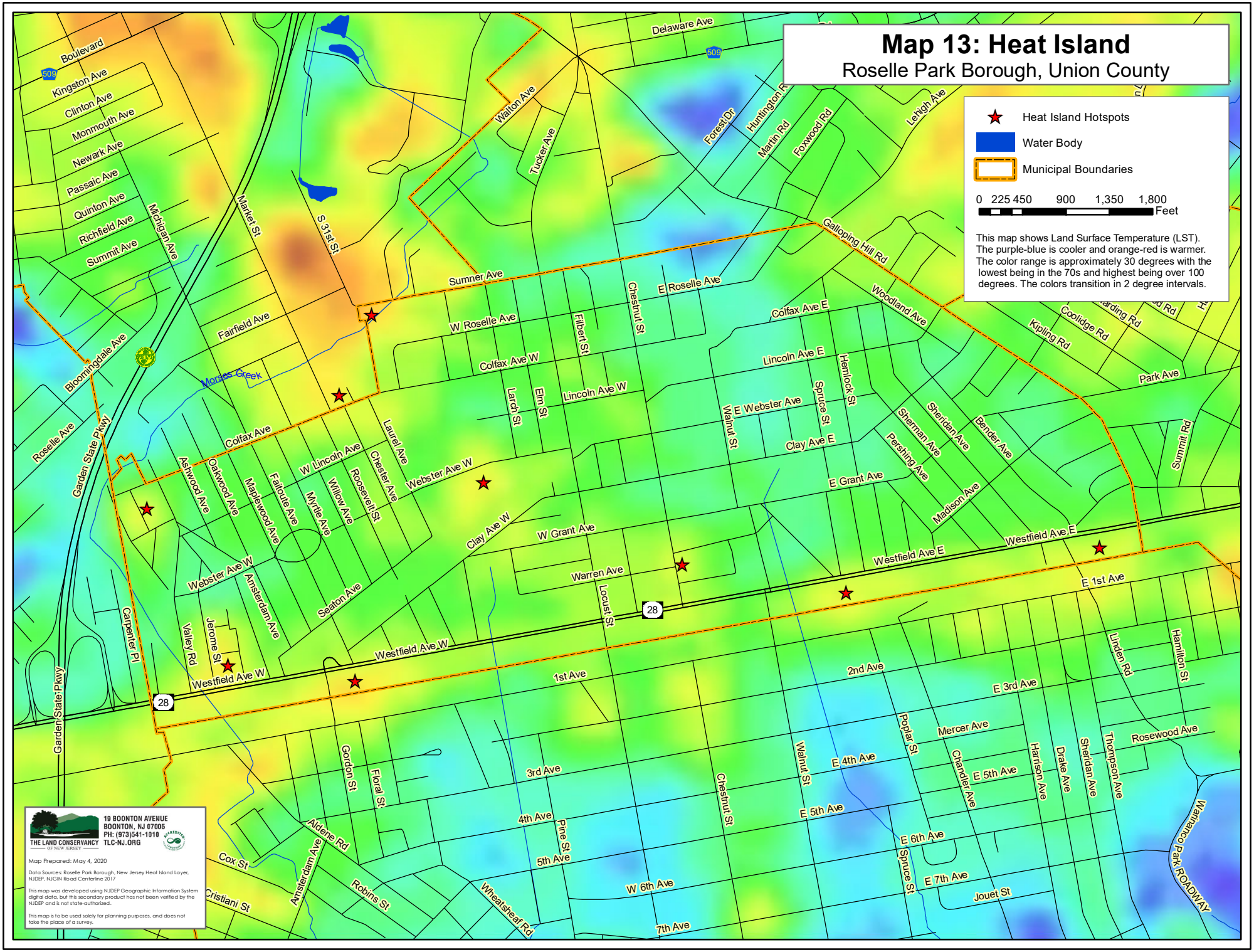
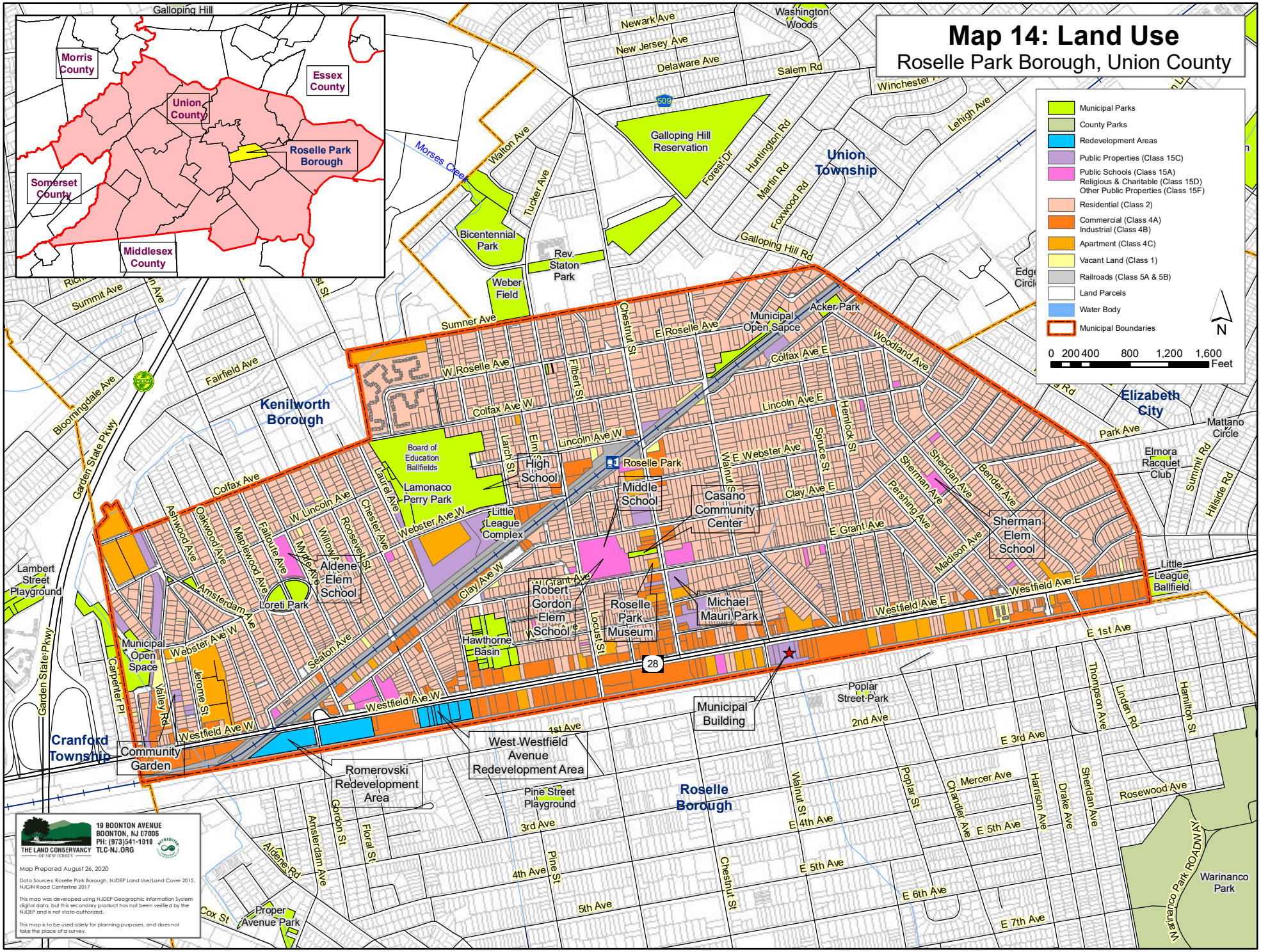
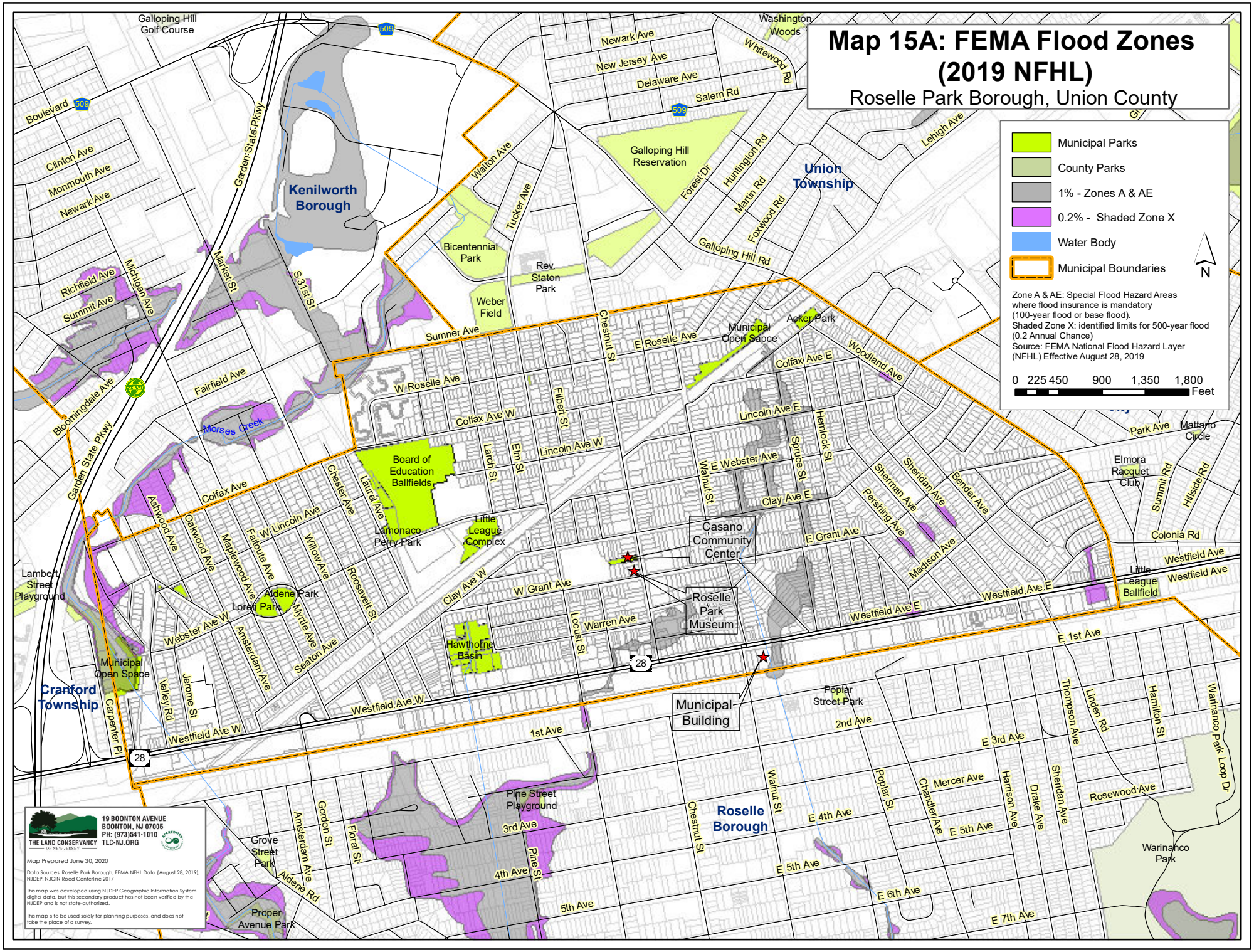
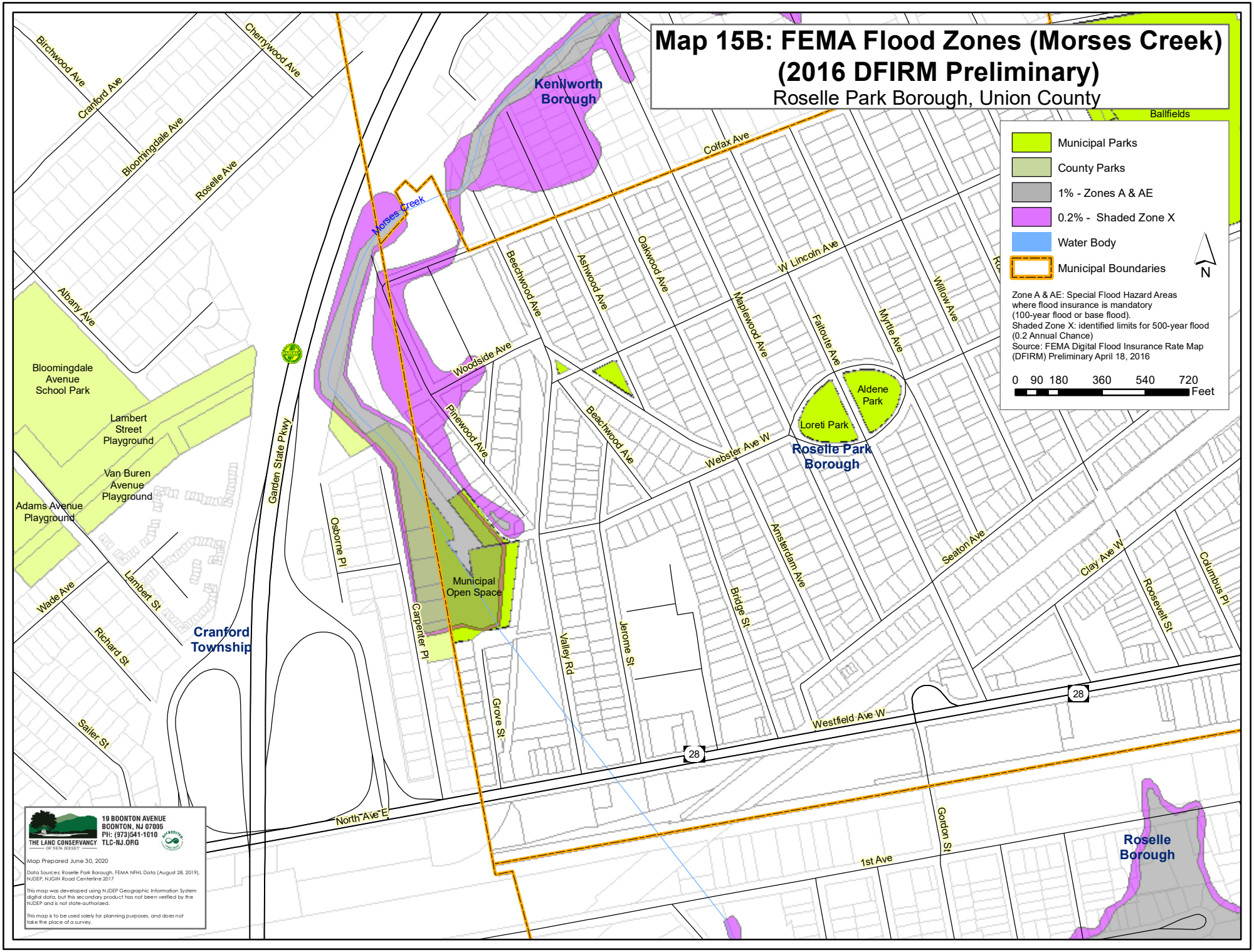

Map 12: Public Wellhead Protection Areas
Roselle Park Borough, Union County
Public Community Water Supply Wells
2 Year Time of Travel
5 Year Time of Travel
12 Year Time of Travel
Water Body
Municipal Boundaries
N
0 250 500 1,000 1,500 2,000 Feet
Kenilworth Borough
Union Township
Elizabeth City
Cranford Township
Roselle Borough
Garden State Pkwy
Morses Creek
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Summit Ave
Richfield Ave
Michigan Ave
Market St
Walton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Lehigh Ave
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Fairfield Ave
Bloomingdale Ave
Roselle Ave
Colfax Ave
Colfax Ave W
Colfax Ave E
Filbert St
Chestnut St
Woodland Ave
Kipling Rd
Park Ave
Summit Rd
Lincoln Ave W
Lincoln Ave E
Larch St
Elm St
Hemlock St
Spruce St
Walnut St
E Webster Ave
Webster Ave W
Clay Ave E
Clay Ave W
Sheridan Ave
Bender Ave
Sherman Ave
Pershing Ave
Madison Ave
E Grant Ave
W Grant Ave
W Lincoln Ave
Laurel Ave
Chester Ave
Roosevelt St
Willow Ave
Myrtle Ave
Fallcourse Ave
Maplewood Ave
Oakwood Ave
Ashwood Ave
Webster Ave W
Amsterdam Ave
Seaton Ave
Warren Ave
Locust St
Westfield Ave E
Westfield Ave W
Jerome St
Valley Rd
Carpenter Pl
28
1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
E 1st Ave
E 3rd Ave
E 4th Ave
E 5th Ave
E 6th Ave
E 7th Ave
W 6th Ave
7th Ave
Linden Rd
Hamilton St
Mercer Ave
Poplar St
Chandler Ave
Harrison Ave
Drake Ave
Sheridan Ave
Thompson Ave
Rosewood Ave
Warinanco Park ROADWAY
Jouet St
Gordon St
Floral St
Chestnut St
Walnut St
Pine St
Spruce St
Aldene Rd
Amsterdam Ave
Robins St
Wheatsheaf Rd
Cox St
Cristiani St
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared May 4, 2020
Data Sources: NJGS Well Head Protection for Public-Community 2018, Roselle Park Borough, NJDEP, NJGIN Road Centerline 2017
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 13: Heat Island
Roselle Park Borough, Union County
Heat Island Hotspots
Water Body
Municipal Boundaries
0 225 450 900 1,350 1,800
Feet
This map shows Land Surface Temperature (LST). The purple-blue is cooler and orange-red is warmer. The color range is approximately 30 degrees with the lowest being in the 70s and highest being over 100 degrees. The colors transition in 2 degree intervals.
Delaware Ave
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Richfield Ave
Summit Ave
Michigan Ave
Market St
S 31st St
Walton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Lehigh Ave
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Chestnut St
Filbert St
Colfax Ave E
Woodland Ave
Coolidge Rd
Kipling Rd
Harding Rd
Park Ave
Fairfield Ave
Bloomingdale Ave
Morses Creek
Colfax Ave W
Lincoln Ave E
Hemlock St
Larch St
Elm St
Lincoln Ave W
E Webster Ave
Spruce St
Walnut St
Sheridan Ave
Bender Ave
Summit Rd
Roselle Ave
Garden State Pkwy
Colfax Ave
Laurel Ave
Clay Ave E
Sherman Ave
Pershing Ave
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fallbourne Ave
W Lincoln Ave
Myrtle Ave
Willow Ave
Roosevelt St
Chester Ave
Webster Ave W
E Grant Ave
Madison Ave
Clay Ave W
W Grant Ave
Westfield Ave E
Webster Ave W
Amsterdam Ave
Warren Ave
Seaton Ave
Locust St
E 1st Ave
Carpenter Pl
Valley Rd
Jerome St
28
Westfield Ave W
Westfield Ave W
1st Ave
2nd Ave
E 3rd Ave
Linden Rd
Hamilton St
Gordon St
Floral St
3rd Ave
Poplar St
Mercer Ave
Rosewood Ave
Chestnut St
Walnut St
E 4th Ave
Chandler Ave
E 5th Ave
Harrison Ave
Drake Ave
Sheridan Ave
Thompson Ave
4th Ave
Pine St
E 5th Ave
Aldene Rd
Cox St
5th Ave
E 6th Ave
Spruce St
E 7th Ave
Jouet St
Wahanso Park ROADWAY
Amsterdam Ave
Robins St
Cristiani St
W 6th Ave
Wheatsheaf Rd
7th Ave
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
THE LAND CONSERVANCY OF NEW JERSEY
Map Prepared: May 4, 2020
Data Sources: Roselle Park Borough, New Jersey Heat Island Layer, NJDEP, NJGIN Road Centerline 2017
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 14: Land Use
Roselle Park Borough, Union County
Municipal Parks
County Parks
Redevelopment Areas
Public Properties (Class 15C)
Public Schools (Class 15A)
Religious & Charitable (Class 15D)
Other Public Properties (Class 15F)
Residential (Class 2)
Commercial (Class 4A)
Industrial (Class 4B)
Apartment (Class 4C)
Vacant Land (Class 1)
Railroads (Class 5A & 5B)
Land Parcels
Water Body
Municipal Boundaries
N
0 200 400 800 1,200 1,600
Feet
Morris County
Essex County
Union County
Roselle Park Borough
Somerset County
Middlesex County
Galloping Hill
Morses Creek
Galloping Hill Reservation
Bicentennial Park
Rev. Staton Park
Weber Field
Union Township
Kenilworth Borough
Elizabeth City
Cranford Township
Roselle Borough
Board of Education Ballfields
Lamonaco Perry Park
High School
Middle School
Roselle Park
Casano Community Center
Little League Complex
Aldene Elem School
Robert Gordon Elem School
Roselle Park Museum
Michael Mauri Park
Sherman Elem School
Municipal Open Space
Municipal Open Sapce
Acker Park
Hawthorne Basin
Loreti Park
Lambert Street Playground
Municipal Building
Poplar Street Park
Pine Street Playground
Community Garden
Romerovski Redevelopment Area
West Westfield Avenue Redevelopment Area
Proper Avenue Park
Warinanco Park
Little League Ballfield
Elmora Racquet Club
Mattano Circle
Garden State Pkwy
Summit Ave
Fairfield Ave
Bloomingdale Ave
Sumner Ave
W Roselle Ave
E Roselle Ave
Colfax Ave W
Colfax Ave E
Lincoln Ave W
Lincoln Ave E
W Webster Ave
E Webster Ave
Webster Ave W
Clay Ave W
Clay Ave E
E Grant Ave
Grant Ave
Westfield Ave W
Westfield Ave E
Seaton Ave
Jerome St
Valley Rd
Carpenter Pl
Amsterdam Ave
Oakwood Ave
Maplewood Ave
Fallcrute Ave
Myrtle Ave
Willow Ave
Roosevelt St
Chester Ave
Laurel Ave
Larch St
Elm St
Filbert St
Chestnut St
Locust St
Walnut St
Spruce St
Hemlock St
Sherman Ave
Sheridan Ave
Bender Ave
Pershing Ave
Madison Ave
Park Ave
Summit Rd
Hillside Rd
Woodland Ave
Newark Ave
New Jersey Ave
Delaware Ave
Salem Rd
Washington Woods
Winchester
Lehigh Ave
Walton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Galloping Hill Rd
1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
E 1st Ave
E 3rd Ave
E 4th Ave
E 5th Ave
E 6th Ave
E 7th Ave
Mercer Ave
Rosewood Ave
Thompson Ave
Linden Rd
Hamilton St
Harrison Ave
Drake Ave
Chandler Ave
Aldene Rd
Floral St
Gordon St
Cox St
Pine St
Warinanco Park ROADWAY
28
509
THE LAND CONSERVANCY OF NEW JERSEY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
Map Prepared August 26, 2020
Data Sources: Roselle Park Borough, NJDEP Land Use/Land Cover 2015, NJGIN Road Centerline 2017
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 15A: FEMA Flood Zones (2019 NFHL)
Roselle Park Borough, Union County
Municipal Parks
County Parks
1% - Zones A & AE
0.2% - Shaded Zone X
Water Body
Municipal Boundaries
N
Zone A & AE: Special Flood Hazard Areas where flood insurance is mandatory (100-year flood or base flood).
Shaded Zone X: identified limits for 500-year flood (0.2 Annual Chance)
Source: FEMA National Flood Hazard Layer (NFHL) Effective August 28, 2019
0 225 450 900 1,350 1,800 Feet
Galloping Hill Golf Course
Kenilworth Borough
Union Township
Cranford Township
Roselle Borough
Galloping Hill Reservation
Bicentennial Park
Rev. Staton Park
Weber Field
Municipal Open Sapce
Acker Park
Board of Education Ballfields
Lamonaco Perry Park
Little League Complex
Casano Community Center
Roselle Park Museum
Municipal Building
Hawthorne Basin
Aldene Park
Loretl Park
Lambert Street Playground
Municipal Open Space
Pine Street Playground
Grove Street Park
Proper Avenue Park
Poplar Street Park
Elmora Racquet Club
Little League Ballfield
Warinanco Park
Morses Creek
Garden State Pkwy
Garden State Pkwy
Galloping Hill Golf Course
Boulevard
Clinton Ave
Monmouth Ave
Newark Ave
Richfield Ave
Summit Ave
Michigan Ave
Bloomingdale Ave
Fairfield Ave
Market St
S 31st St
Walton Ave
Tucker Ave
Forest Dr
Huntington Rd
Martin Rd
Foxwood Rd
Galloping Hill Rd
Lehigh Ave
Washington Woods
Whitewood Rd
Newark Ave
New Jersey Ave
Delaware Ave
Salem Rd
Sumner Ave
W Roselle Ave
E Roselle Ave
Chestnut St
Filbert St
Elm St
Larch St
Laurel Ave
Chester Ave
Colfax Ave W
Colfax Ave E
Woodland Ave
Lincoln Ave W
Lincoln Ave E
Hemlock St
Spruce St
Walnut St
E Webster Ave
Park Ave
Mattano Circle
Summit Rd
Hillside Rd
Colonia Rd
Colfax Ave
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fairoute Ave
W Lincoln Ave
Willow Ave
Roosevelt St
Clay Ave W
Clay Ave E
Sherman Ave
Sheridan Ave
Bender Ave
Pershing Ave
E Grant Ave
W Grant Ave
Madison Ave
Webster Ave W
Amsterdam Ave
Myrtle Ave
Seaton Ave
Locust St
Warren Ave
Westfield Ave W
Westfield Ave E
Westfield Ave
Valley Rd
Jerome St
Carpenter Pl
1st Ave
E 1st Ave
2nd Ave
E 3rd Ave
3rd Ave
E 4th Ave
4th Ave
E 5th Ave
5th Ave
E 6th Ave
E 7th Ave
Thompson Ave
Linden Rd
Hamilton St
Harrison Ave
Drake Ave
Sheridan Ave
Rosewood Ave
Warinanco Park Loop Dr
Mercer Ave
Chandler Ave
Poplar St
Pine St
Floral St
Gordon St
Aldene Rd
28
509
THE LAND CONSERVANCY OF NEW JERSEY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
Map Prepared June 30, 2020
Data Sources: Roselle Park Borough, FEMA NFHL Data (August 28, 2019), NJDEP, NJGIN Road Centerline 2017
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 15B: FEMA Flood Zones (Morses Creek)
(2016 DFIRM Preliminary)
Roselle Park Borough, Union County
Municipal Parks
County Parks
1% - Zones A & AE
0.2% - Shaded Zone X
Water Body
Municipal Boundaries
N
Zone A & AE: Special Flood Hazard Areas where flood insurance is mandatory (100-year flood or base flood).
Shaded Zone X: identified limits for 500-year flood (0.2 Annual Chance)
Source: FEMA Digital Flood Insurance Rate Map (DFIRM) Preliminary April 18, 2016
0 90 180 360 540 720
Feet
Kenilworth Borough
Roselle Park Borough
Cranford Township
Roselle Borough
Morses Creek
Municipal Open Space
Aldene Park
Loreti Park
Ballfields
Bloomingdale Avenue School Park
Lambert Street Playground
Van Buren Avenue Playground
Adams Avenue Playground
Garden State Pkwy
Colfax Ave
W Lincoln Ave
Webster Ave W
Westfield Ave W
North Ave E
1st Ave
Seaton Ave
Clay Ave W
Birchwood Ave
Cranford Ave
Cherrywood Ave
Bloomingdale Ave
Roselle Ave
Albany Ave
Wade Ave
Lambert St
Richard St
Sailer St
Osborne Pl
Carpenter Pl
Grove St
Valley Rd
Jerome St
Bridge St
Amsterdam Ave
Beechwood Ave
Ashwood Ave
Oakwood Ave
Maplewood Ave
Fairoute Ave
Myrtle Ave
Willow Ave
Woodside Ave
Pinewood Ave
Roosevelt St
Columbus Pl
Gordon St
28
THE LAND CONSERVANCY OF NEW JERSEY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
Map Prepared June 30, 2020
Data Sources: Roselle Park Borough, FEMA NFHL Data (August 28, 2019), NJDEP, NJGIN Road Centerline 2017
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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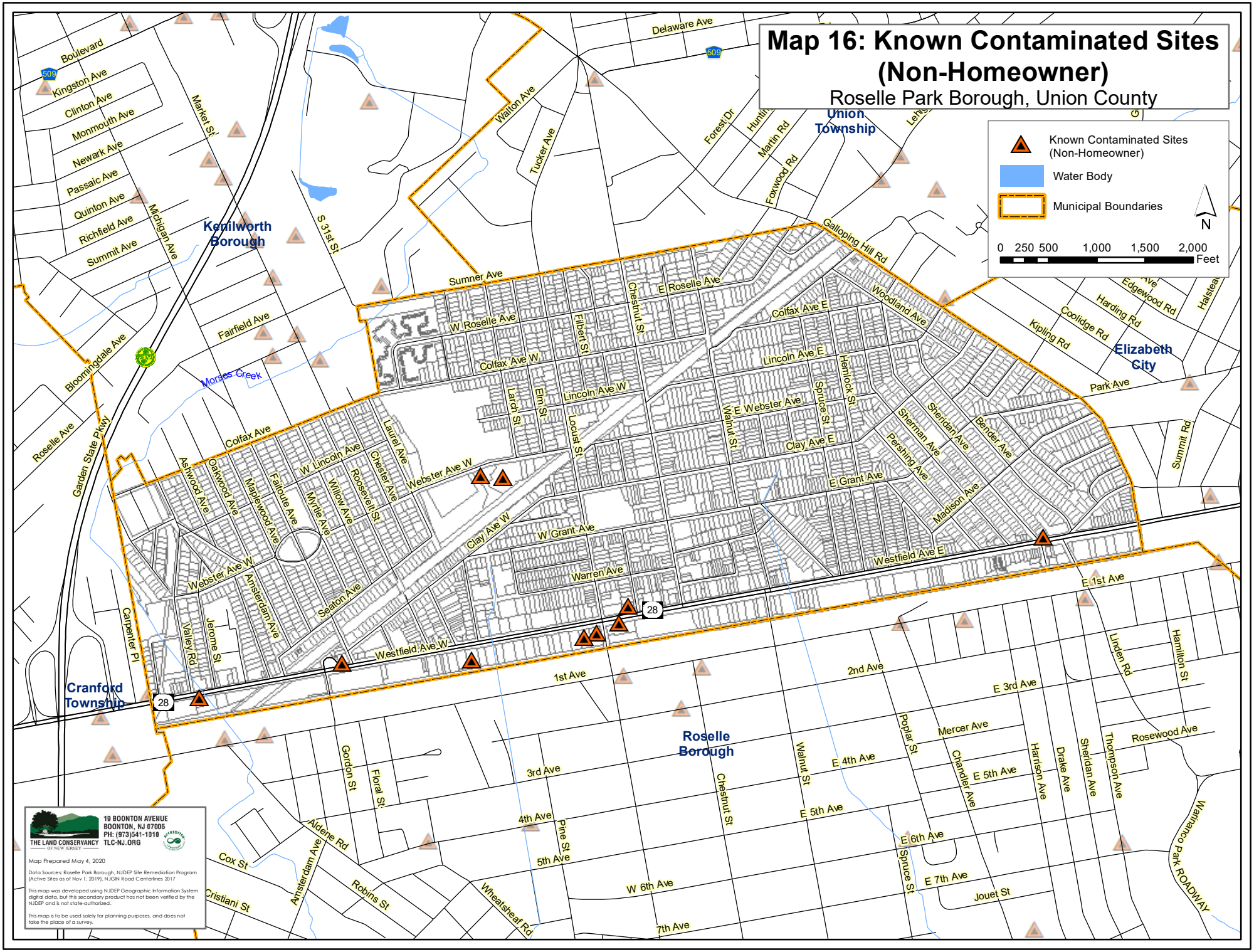
Map 16: Known Contaminated Sites (Non-Homeowner)
Roselle Park Borough, Union County
Known Contaminated Sites (Non-Homeowner)
Water Body
Municipal Boundaries
N
0 250 500 1,000 1,500 2,000 Feet
Kenilworth Borough
Union Township
Elizabeth City
Cranford Township
Roselle Borough
Morses Creek
Delaware Ave
Boulevard
Kingston Ave
Clinton Ave
Monmouth Ave
Newark Ave
Passaic Ave
Quinton Ave
Richfield Ave
Summit Ave
Market St
Michigan Ave
Bloomingdale Ave
Roselle Ave
Garden State Pkwy
Fairfield Ave
S 31st St
Walton Ave
Tucker Ave
Forest Dr
Martin Rd
Foxwood Rd
Galloping Hill Rd
Sumner Ave
E Roselle Ave
W Roselle Ave
Filbert St
Chestnut St
Colfax Ave E
Woodland Ave
Colfax Ave W
Lincoln Ave E
Lincoln Ave W
Larch St
Elm St
Locust St
Hemlock St
Spruce St
Walnut St
E Webster Ave
Clay Ave E
Sheridan Ave
Sherman Ave
Pershing Ave
Bender Ave
Park Ave
Summit Rd
Edgewood Rd
Harding Rd
Coolidge Rd
Kipling Rd
Halstead
Colfax Ave
W Lincoln Ave
Webster Ave W
Laurel Ave
Chester Ave
Roosevelt St
Willow Ave
Myrtle Ave
Fallcote Ave
Maplewood Ave
Oakwood Ave
Ashwood Ave
Clay Ave W
W Grant Ave
E Grant Ave
Madison Ave
Warren Ave
Westfield Ave W
Westfield Ave E
Webster Ave W
Amsterdam Ave
Seaton Ave
Jerome St
Valley Rd
Carpenter Pl
28
1st Ave
2nd Ave
E 1st Ave
E 3rd Ave
Linden Rd
Hamilton St
Mercer Ave
Poplar St
Rosewood Ave
3rd Ave
E 4th Ave
Chandler Ave
E 5th Ave
Harrison Ave
Drake Ave
Sheridan Ave
Thompson Ave
Gordon St
Floral St
Chestnut St
Walnut St
4th Ave
Pine St
5th Ave
E 6th Ave
Spruce St
E 7th Ave
Jouet St
W 6th Ave
7th Ave
Aldene Rd
Cox St
Amsterdam Ave
Robins St
Wheatsheaf Rd
Cristiani St
Watchung Reservation ROADWAY
THE LAND CONSERVANCY OF NEW JERSEY
19 BOONTON AVENUE
BOONTON, NJ 07005
PH: (973)541-1010
TLC-NJ.ORG
Map Prepared May 4, 2020
Data Sources: Roselle Park Borough, NJDEP Site Remediation Program (Active Sites as of Nov 1, 2019), NJGIN Road Centerlines 2017
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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APPENDIX

Appendix A. Publicly Held Land in the Borough of Roselle Park

Appendix B. Undeveloped, Vacant Land in the Borough of Roselle Park

Block	Lot	Class	Location	Owner	Acres (Tax Assessor)	Facility	Acres (GIS)
416	2	15A	W COLFAX AVE	BOARD OF EDUCATION	7.75	HIGH SCHOOL	18.94
424	2	15A	LAUREL AVE, REAR	BOARD OF EDUCATION	0.60	SCHOOL	0.68
			Total (Board of Education Fields/Open Space):		**8.35**		**19.62**
104	1	15C	WEST LINCOLN AVE	BOROUGH OF ROSELLE PARK	0.01	VACANT LAND	0.04
114	1	15C	MAGNOLIAWOOD AVE	BOROUGH OF ROSELLE PARK	0.54	DRAINAGE	0.50
117	1	15C	FAITOUTE AVE	BOROUGH OF ROSELLE PARK	0.46	PARK	0.92
118	1	15C	FAITOUTE AVE	BOROUGH OF ROSELLE PARK	0.46	PARK	0.92
122	1	15C	W LINCOLN AVE	BOROUGH OF ROSELLE PARK	0.13	VACANT LAND	0.21
201	11	15C	GROVE ST	BOROUGH OF ROSELLE PARK	2.35	DRAINAGE	2.61
312	1	15C	HAWTHORNE STREET	BOROUGH OF ROSELLE PARK	0.71	DRAINAGE	0.71
312	9	15C	CEDAR ST	BOROUGH OF ROSELLE PARK	0.32	DRAINAGE	0.32
312	10	15C	216 CEDAR ST	BOROUGH OF ROSELLE PARK	0.05	DRAINAGE	0.05
312	11	15C	214 CEDAR ST	BOROUGH OF ROSELLE PARK	0.05	DRAINAGE	0.05
313	4	15C	HAWTHORNE ST	BOROUGH OF ROSELLE PARK	0.14	DRAINAGE	0.15
313	5	15C	126-130 CEDAR ST	BOROUGH OF ROSELLE PARK	0.14	DRAINAGE	0.15
313	6	15C	CEDAR ST	BOROUGH OF ROSELLE PARK	0.14	DRAINAGE	0.09
313	7	15C	120 CEDAR ST	BOROUGH OF ROSELLE PARK	0.14	DRAINAGE	0.14
413	5	15C	64 W ROSELLE AVENUE	BOROUGH OF ROSELLE PARK	0.06	VACANT LAND	0.06
413	7	15C	W ROSELLE AVENUE	BOROUGH OF ROSELLE PARK	0.02	VACANT LAND	0.02
416	1	15C	601 LAUREL AVE	BOROUGH OF ROSELLE PARK	0.07	PARK LAND	0.10
424	3	15C	WEBSTER AVE WEST	BOROUGH OF ROSELLE PARK	0.90	PARK	0.87
506	1.01	15C	WEBSTER AVENUE	BOROUGH OF ROSELLE PARK	2.02	PARK	1.82
513	12	15C	314 CHESTNUT ST	BOROUGH OF ROSELLE PARK	0.34	COMMUNITY CENTER	0.34
601	1	15C	CEDAR ST	BOROUGH OF ROSELLE PARK	1.49	DRAINAGE	1.12
601	7	15C	200 MEADOW ST	BOROUGH OF ROSELLE PARK	0.23	DRAINAGE	0.23
606	2	15C	CEDAR ST	BOROUGH OF ROSELLE PARK	0.74	DRAINAGE	0.73
606	3	15C	160-164 WARREN AVE	BOROUGH OF ROSELLE PARK	0.37	DRAINAGE	0.37
707	1	15C	COLFAX AVE E	BOROUGH OF ROSELLE PARK	4.00	FLOOD CONTROL	1.70
707	37	15C	E ROSELLE AVE	BOROUGH OF ROSELLE PARK	1.15	DRAINAGE	0.33
709	11.01	15C	LEHIGH AVE	BOROUGH OF ROSELLE PARK	0.69	PARK	0.59
			Total (Borough Fields/Open Space):		**17.71**		**15.17**

Publicly Held Land In Roselle Park Borough (Class 15)

Block	Lot	Class	Location	Owner	Acres (Tax Assessor)	Facility	Acres (GIS)
126	1	15A	MYRTLE AVE	BOARD OF EDUCATION	2.04	ALDENE GRADE SCHOOL	1.97
504	6	15A	510 CHESTNUT ST	BOARD OF EDUCATION	0.22	OFFICE BUILDING	0.44
512	22	15A	LOCUST ST	BOARD OF EDUCATION	0.19	PARKING AREAS	0.11
513	1	15A	323 LOCUST & 57&59 GRANT	BOARD OF EDUCATION	4.21	SCHOOLS	4.19
1013	1	15A	E GRANT AVE	BOARD OF EDUCATION	0.60	SHERMAN GRADE SCHOOL	1.21
				Total (Board of Education):	**7.25**		**7.91**
111	3	15C	609 WILLOW AVE	BOROUGH OF ROSELLE PARK	0.06	VACANT LAND	0.06
205	9.01	15C	133 VALLEY ROAD	BOROUGH OF ROSELLE PARK	0.14	DRAINAGE	0.15
205	9.02	15C	137 VALLEY ROAD	BOROUGH OF ROSELLE PARK	0.14	DRAINAGE	0.14
205	26.01	15C	124 JEROME STREET	BOROUGH OF ROSELLE PARK	0.11	DRAINAGE	0.12
205	26.02	15C	122 JEROME STREET	BOROUGH OF ROSELLE PARK	0.11	DRAINAGE	0.11
207	18	15C	BRIDGE STREET	BOROUGH OF ROSELLE PARK	0.02	DRAINAGE	0.02
424	1	15C	545 LAUREL AVE	BOROUGH OF ROSELLE PARK	-	FIREHOUSE&RSQUD	1.21
506	1	15C	178 WEBSTER AVE WEST	BOROUGH OF ROSELLE PARK	1.52	GARAGE,LITTLE LEAGU	1.18
511	12	15C	414 CHESTNUT ST	BOROUGH OF ROSELLE PARK	0.22	LIBRARY PARKING	0.33
511	13	15C	404 CHESTNUT STREET	BOROUGH OF ROSELLE PARK	0.67	LIBRARY	0.55
512	1	15C	MEADOW ST	BOROUGH OF ROSELLE PARK	0.04	DRAINAGE	0.06
515	2.01	15C	401-425 LAUREL AVE	BOROUGH OF ROSELLE PARK	3.85	DPW YARD	4.01
605	14	15C	234 CHESTNUT ST	BOROUGH OF ROSELLE PARK	0.14	COMMUNITY CENTER	0.18
708	19	15C	601-5 CHESTNUT ST	BOROUGH OF ROSELLE PARK	0.47	FIREHOUSE	0.45
709	4.01	15C	LEHIGH AVE	BOROUGH OF ROSELLE PARK	0.67	DRAINAGE	0.66
711	16	15C	E COLFAX AVENUE	BOROUGH OF ROSELLE PARK	0.04	VACANT LAND	0.04
802	26	15C	REAR 525 SPRUCE ST	BOROUGH OF ROSELLE PARK	0.04	VACANT LAND	0.04
807	18	15C	181 CLAY AVE E	BOROUGH OF ROSELLE PARK	0.00	VACANT LAND	0.00
901	2	15C	CHESTNUT ST	BOROUGH OF ROSELLE PARK	0.79	PARKING AREAS	0.75
903	45	15C	REAR 131 UNION ROAD	BOROUGH OF ROSELLE PARK	0.04	VACANT LAND	0.04
909	3	15C	129-133 CHESTNUT ST	BOROUGH OF ROSELLE PARK	0.60	PARKING AREAS	0.63
909	4.01	15C	20 CHARLES STREET	BOROUGH OF ROSELLE PARK	0.60	PARKING AREA	0.60
913	1	15C	102 WESTFIELD AVE E	BOROUGH OF ROSELLE PARK	0.23	MUNICIPAL BLDGS	0.23
913	2	15C	104 WESTFIELD AVE E	BOROUGH OF ROSELLE PARK	0.02	MUNICIPAL BLDGS	0.25
913	3.01	15C	110 WESTFIELD AVE.EAST	BOROUGH OF ROSELLE PARK	0.37	MUNICIPAL BLDG	0.94
913	5.01	15C	110 WESTFIELD AVE, EAST	BOROUGH OF ROSELLE PARK	0.19	VACANT LAND	0.17
1008	15	15C	E CLAY AVENUE	BOROUGH OF ROSELLE PARK	0.00	VACANT LAND	0.00
1108	2	15C	105 SHERMAN AVE	BOROUGH OF ROSELLE PARK	0.11	FIRE HOUSE	0.10
1111	32	15C	REAR 456 MADISON AVE	BOROUGH OF ROSELLE PARK	0.01	VACANT LAND	0.01
				Total (Borough of Roselle Park):	**11.22**		**13.04**

Publicly Held Land In Roselle Park Borough (Class 15)

Block	Lot	Class	Location	Owner	Acres (Tax Assessor)	Facility	Acres (GIS)
1116	9	15C	REAR 480 EAST WESTFIELD	CITY OF ELIZABETH	-	BALL FIELD	0.03
				Total (City of Elizabeth):	**-**		**0.03**
114	2	15C	MAGNOLIAWOOD AVE	COUNTY OF UNION	0.34	FLOOD CONTROL DAM	0.50
				Total (County of Union):	**0.34**		**0.50**
103	2	15C	BEECHWOOD AVE	STATE OF NEW JERSEY	0.68	RAILROAD	0.68
103	3	15C	BEECHWOOD AVENUE	STATE OF NEW JERSEY	0.20	RAILROAD	0.20
116	9	15C	VALLEY ROAD	STATE OF NEW JERSEY	1.30	RAILROAD	1.32
116	10	15C	VALLEY ROAD	STATE OF NEW JERSEY	0.07	RAILROAD	0.08
116	11	15C	VALLEY ROAD	STATE OF NEW JERSEY	0.11	RAILROAD	0.11
116	12	15C	W. WEBSTER AVE/VALLEY RD	STATE OF NEW JERSEY	0.00	RAILROAD	0.09
201	12	15C	GROVE STREET	STATE OF NEW JERSEY	0.00	RAILROAD	0.29
204.01	2	15C	GROVE ST/FAIRMOUNT AVE	STATE OF NEW JERSEY	0.00	RAILROAD	0.44
				Total (State of New Jersey):	**2.37**		**3.20**

Undeveloped, Vacant Land (Class 1) in the Borough of Roselle Park

Block	Lot	Class	Location	Owner	Acres (Tax Assessor)	Acres (GIS)
111	16	1	608 ROOSEVELT ST	CUTINELLO, ANTHONY & JOAN	0.08	0.08
119	12	1	516 JEROME ST	SHAH, PAYALBEN AND MITESHKUMAR	0.06	0.06
127	12	1	324 LINCOLN AVE W	KAULFERS, JULIA K & ARTHUR J	0.11	0.11
201	7	1	128 GROVE ST	KREIG, MARIE B	0.07	0.07
203	2	1	VALLEY ROAD	CROSSFIELD PRODUCTS CORP	0.37	0.63
205	14	1	213-219 VALLEY ROAD	MCNAMARA, PATRICIA A	0.23	0.11
207	11	1	135 BRIDGE ST	BARBERIO, RAFFAELA	0.06	0.06
210	10	1	410 SEATON AVE	POSSO, JORGE A & DIANA I	0.06	0.06
214	2	1	112 FAITOUTE AVE	SIGNATURE REAL ESTATE, L.L.C	-	0.04
303	25	1	311 SEATON AVE	ITALIANO, PHILLIP & HELEN	0.06	0.06
305	11	1	320 SEATON AVE	PRINCIPLE INVESTMENT LLC	0.14	0.14
309	3	1	357 WESTFIELD AVE W	SIGNATURE HOLDINGS, LLC	0.10	0.10
414	36	1	CHESTNUT STREET (REAR)	COLFORD, PAUL D & JANE J	0.05	0.05
417	1	1	157 LINCOLN AVE W	SANTIAGO, JENNY	0.08	0.08
421	13	1	32 COLFAX AVE W	STAINES, MARYANN C	0.02	0.02
421	19	1	608 DONALD PLACE	MCTAGUE, WILLIAM & ELAINE	0.06	0.06
503	7	1	38 LINCOLN AVE W	TIMPAT INC	0.20	0.20
512	4	1	180 CLAY AVE W	PALACIOS, W & POTES, S & ARANGO, F	0.09	0.09
708	18	1	WALNUT ST	CONSOLIDATED RAIL CORP%PROP TAX DEP	0.21	0.25
713	8	1	WALNUT ST	CONRAIL PROPERTY TAX DEPARTMENT	0.20	0.10
801	5	1	521 CHESTNUT ST	COUNTY EDUCATORS FED. CREDIT UNION	0.17	0.22
1107	2	1	REAR OF 101 PERSHING	COHEN RONALD A & JUDITH	0.01	0.01
1113	21	1	467 WESTFIELD AVE E	AMILCAR, LAURETTE	0.11	0.11
1114	8	1	350 WESTFIELD AVE EAST	ALI, FRANK	0.73	0.50
				Total (Undeveloped, Vacant Land):	**3.27**	**3.23**

LITERATURE CITED

[1] Borough of Roselle Park. 1997 Plan (Print). Accessed December 2019.

[2] New Jersey Geological and Water Survey (NJGS). Aquifer Recharge Potential for New Jersey. http://www.njgeology.org/geodata/dgs07-1.htm Accessed December 2019.

[3] Ibid.

[4] NJDEP. Bedrock Geology Map of New Jersey (2017). http://www.nj.gov/dep/njgs/NJMaps.pdf. Accessed January 2020.

[5] United States Geological Survey (USGS). Passaic Formation. https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=NJJTRp;5. Accessed January 2020

[6] New Jersey Geological and Water Survey. Information Center. http://www.state.nj.us/dep/njgs/enviroed/infocirc/mapping.pdf. Accessed January 2020.

[7] New Jersey Geological Survey. Surficial Geologic Map of New Jersey. https://www.state.nj.us/dep/njgs/enviroed/freedwn/psnjsurf.pdf. Accessed January 2020.

[8] NJGS Information Circular. Geologic Mapping in New Jersey. https://www.nj.gov/dep/njgs/enviroed/infocirc/mapping.pdf. Accessed April 2020.

[9] New Jersey Geological and Water Survey. Information Center. https://www.state.nj.us/dep/njgs/enviroed/infocirc/mapping.pdf. Accessed December 2019.

[10] United States Department of Agriculture (USDA). Soil Health. https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/. Accessed December 2019.

[11] USDA Natural Resource Conservation Services (NRCS) Web Soil Survey. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed April 2020.

[12] USDA. Boonton Series (2012). https://soilseries.sc.egov.usda.gov/OSD_DOCS/B/BOONTON.html. Accessed January 2020.

[13] USDA. Haledon Series (2013). https://soilseries.sc.egov.usda.gov/OSD_Docs/H/HALEDON.html. Accessed December 2019.

[14] USDA. NRCS Hydric Soils – Introduction. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/hydric/?cid=nrcs142p2_053961. Accessed April 2020.

[15] USDA. NRCS Updated T and K Factors.

[16] USDA. NRCS Soil Survey. https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed January 2020.

[17] New Jersey Department of Environmental Protection (NJDEP).N.J.A.C. 7:7A. Freshwater Wetlands Protection Act Rules. https://www.nj.gov/dep/rules/rules/njac7_7a.pdf. Accessed April 2020.

[18] Borough of Roselle Park. Community Forestry Management Plan 2020-2014. Print. Accessed January 2020.

[19] Borough of Roselle Park. Department of Public Works. Accessed June 2020.

[20] Borough of Roselle Park. §204-1-3, 1980. https://clerkshq.com/RoselllePark-nj. Accessed January 2020.

[21] NJDEP. Landscape Project Version 3.3 Mapping Tool. https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=0e6a44098c524ed99bf739953cb4d4c7. Accessed April 2020.

[22] Omernick, James M and Bailey, Robert G. Distinguishing Between Watersheds and Ecoregions (1997). Print. Accessed May 2020.

[23] NJDEP. N.J.A.C. 7:9B. Surface Water Quality Standards. https://www.nj.gov/dep/rules/rules/njac7_9b.pdf. Accessed May 2020.

[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 May 2020.

[25] New Jersey American Water. 2018 Annual Water Quality Report.http://www.amwater.com/ccr/raritan.pdf. Accessed May 2020.

[26] NJDEP. N.J.A.C. 7:13. Flood Hazard Area Control Act. http://www.nj.gov/dep/ruls/rules/njac7_13.pdf. Accessed May 2020.

[27] NJDEP. 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 May 2020.

[28] Borough of Roselle Park. Ord. No. 2277 §204-1-11, 1980. https://clerkshq.com/RoselllePark-nj. Accessed January 2020.

[29] Office of the New Jersey State Climatologist at Rutgers University. The Climate of New Jersey. http://climate.rutgers.edu/stateclim_v1/njclimoverview.html. Accessed January 2020.

[30] National Oceanic and Atmospheric Administration. Division of Science and Research. https://www.nj.gov/dep/dsr/trends/Climate%20Change.pdf. Accessed January 2020.

[31] Office of the New Jersey State Climatologist at Rutgers University. Monthly Statewide (1895-Present). http://climate.rutgers.edu/stateclim_v1/nclimdiv/. Accessed January 2020.

[32] Office of the New Jersey State Climatologist. Historical Monthly Station Data: Cranford. http://climate.rutgers.edu/stateclim_v1/monthlydata/index.php?stn=282023&elem=maxt. Accessed January 2020.

[33] Office of the New Jersey State Climatologist at Rutgers University (ONJSC). Historical Monthly Station Data: Plainfield. .rutgers.edu/stateclim_v1/monthlydata/index.php?stn=287079&elem=maxt. Accessed January 2020.

[34] Office of the New Jersey State Climatologist at Rutgers University (ONJSC). Historical Monthly Station Data: Newark International Airport. http://climate.rutgers.edu/stateclim_v1/monthlydata/index.php?stn=286026&elem=maxt. Accessed January 2020.

[35] National Weather Service. Climatological Report (Annual): Newark, NJ (2019). https://forecast.weather.gov/product.php?site=NWS&issuedby=EWR&product=CLA&format=CI&version=1&glossary=1&highlight=off. Accessed June 2020.

[36] National Oceanic and Atmospheric Administration (NOAA): National Hurricane Center (NHC). Tropical Cyclone Climatology. http://www.nhc.noaa.gov/climo/. Accessed January 2020.

[37] NOAA NHC. Tropical Cyclone Report, Hurricane Irene. http://www.nhc.noaa.gov/data/tcr/AL092011_Irene.pdf. Accessed January 2020.

[38] ONJSC Post Tropical Storm Sandy Event Overview. http://climate.rutgers.edu/stateclim/?section=njcc&target=sandy. Accessed January 2020.

[39] NOAA Hurricanes and Tropical Storms – Annual 2019. https://www.ncdc.noaa.gov/sotc/tropical-cyclones/201613. Accessed January 2020.

[40] NOAA. Billion-Dollar Weather and Climate Disasters: Overview. https://www.ncdc.noaa.gov/billions/. Accessed January 2020.

[41] NJDEP Division of Water Supply and Geoscience. Landslides in New Jersey. http://www.state.nj.us/dep/njgs/geodata/dgs06-3.htm. Accessed January 2020.

[42] NJDEP Bureau of GIS. Earthquakes Epicenters in New Jersey. https://gisdata-njdep.opendata.arcgis.com/datasets/earthquake-epicenters-in-new-jersey/data. Accessed January 2020.

[43] NJDEP. Table of Damaging Earthquakes Felt in NJ. www.state.nj.us/dep/njgs/enviroed/damage.htm. Accessed January 2020.

[44] NOAA. Significant Earthquakes. https://www.ngdc.noaa.gov/nndc/struts/results?eq_0=5631&t=101650&s=13&d=22,26,13,12&nd=display. Accessed January 2020.

[45] United States Geological Survey (USGS). Earthquake Hazards Program. http://earthquake.usgs.gov/earthquakes. Accessed January 2020.

[46] USGS. The Severity of an Earthquake. https://pubs.usgs.gov/gip/earthq4/severitygip.html. Accessed January 2020.

[47] NJDEP Bureau of GIS. Earthquakes Epicenters in New Jersey. https://gisdata-njdep.opendata.arcgis.com/datasets/earthquake-epicenters-in-new-jersey/data. Accessed January 2020.

[48] Union of Concerned Scientists. Confronting Climate Change in the US Northeast (2007). https://www.ucsusa.org/resources/confronting-climate-change-us-northeast. Accessed January 2020.

[49] NOAA National Centers for Environmental Information (NCEI). Reporting on the State of the Climate in 2018. https://www.ncei.noaa.gov/news/reporting-state-climate-2018. Accessed January 2020.

[50] Ibid.

[51] NJDEP. Climate Change in New Jersey: Temperature, Precipitation, Extreme Events and Sea Level. https://www.nj.gov/dep/dsr/trends/Climate%20Change.pdf. Accessed January 2020.

[52]NJDEP. Greenhouse Gas Emissions in New Jersey. https://www.nj.gov/dep/dsr/trends/ghg.pdf. Accessed January 2020.

[53] State of New Jersey. 2019 Energy Master Plan. http://www.nj.gov/emp/. Accessed January 2020.

[54] NJDEP. Executive Order No. 28. https://nj.gov/infobank/eo/056murphy/pdf/EO-28.pdf. Accessed January 2020.

[55] NJDEP. Statewide Greenhouse Gas Inventory. http://www.nj.gov/dep/aqes/sggi.html. Accessed January 2020.

[56] Sustainable Jersey. Roselle Park Certification Actions. http://www.sustainablejersey.com/actions-certification/actions/#open/action/570. Accessed January 2020.

[57] New Jersey's Clean Energy Program. Rebates and Promotions. http://www.njcleanenergy.com/rebates. Accessed January 2020.

[58] NJDEP. 2018 New Jersey Air Quality Report. http://www.njaqinow.net/. Accessed January 2020

[59] Environmental Protection Agency (EPA). 1990 Clean Air Act Amendment Summary. https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary. Accessed January 2020.

[60] NJDEP. Air Quality Index. https://www.njaqinow.net/. Accessed January 2020.

[61] NJDEP. 2018 New Jersey Air Quality Report. http://njaqinow.net/App_Files/2018/2018%20NJ%20AQ%20Report.pdf. Accessed January 2020.

[62] NJDEP. Air Quality Index. https://www.njaqinow.net/. Accessed January 2020.

[63]United States EPA. Criteria Air Pollutants (2019). https://www.epa.gov/criteria-air-pollutants#self. Accessed October 2019.

[64] NJDEP. Ozone Summary (2018). http://njaqinow.net/App_Files/2018/2018%20NJ%20AQ%20Report.pdf. Accessed October 2019.

[65] Office of the State Attorney General. Attorney General Grewal Leads Multi-State Lawsuit Against EPA Over Continued Failure, Despite Court Ruling, to Address Ozone Pollution from Upwind States. https://www.nj.gov/oag/newsreleases19/pr20191029a.html. Accessed June 2020.

[66] United States EPA. Air Quality Index Report (2017). https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report. Accessed October 2019.

[67] NJDEP. Sulfur Dioxide Summary (2018). http://njaqinow.net/App_Files/2018/2018%20NJ%20AQ%20Report.pdf. Accessed October 2019.

[68] NJDEP. Carbon Monoxide Summary (2018). http://njaqinow.net/App_Files/2018/2018%20NJ%20AQ%20Report.pdf. Accessed October 2019.

[69] NJDEP. Nitrogen Dioxide Summary (2018) http://njaqinow.net/App_Files/2018/2018%20NJ%20AQ%20Report.pdf. Accessed October 2019.

[70] NJDEP. Particulate Summary (2018). http://njaqinow.net/App_Files/2018/2018%20NJ%20AQ%20Report.pdf. Accessed October 2019.

[71] EPA. Lead in Outdoor Air. https://www.epa.gov/lead/lead-outdoor-air. Accessed October 2019.

[72] EPA. Fact Sheet on Lead NAAQS. https://www.epa.gov/sites/production/files/2016-09/documents/pb_naaqs_nfr_fact_sheet.pdf. Accessed October 16, 2019.

[73] NJDEP. Air Toxics. http://www.nj.gov/dep/dsr/trends/pdfs/air-toxics.pdf. Accessed October 2019.

[74] Ibid.

[75] NJ Department of Health. Acrolein. https://www.nj.gov/health/eoh/rtkweb/documents/fs/0021.pdf Accessed April 2020

[76] National Library of Medicine. Acetaldehyde. https://pubchem.ncbi.nlm.nih.gov/compound/Acetaldehyde. Accessed May 2020.

[77] NJDEP. Air Toxics in New Jersey: Sources of Air Toxics. http://www.nj.gov/dep/airtoxics/sourceso05.htm. Accessed October 2019.

[78] Ibid.

[79] New Jersey Department of Health. Environmental Quality. http://www.state.nj.us/health/ceohs/public-health-tracking/env-quality/. Accessed October 2019.

[80] NJDEP. Radon. http://www.nj.gov/dep/rpp/radon/radontes.htm. Accessed October 2019.

[81] NJDEP. Radon Testing and Mitigation: The Basics. http://njradon.org/radonin.htm. Accessed October 2019.

[82] NJDEP. Radon Tier Assignment Report (2015). https://www.nj.gov/dep/rpp/radon/download/rtar2015.pdf. Accessed April 2020.

[83] NJDEP. Noise Ordinance vs. Nuisance Code. http://www.nj.gov/dep/enforcement/NoiseOrdinancevsNuisanceCodeAug08.pdf. Accessed January 2020.

[84] Port Authority of NY-NJ. Monthly Noise Monitor Report for JFK, LGA, and EWR (2020). https://aircraftnoise.panynj.gov/reports/#noise-complaints-report-2020. Accessed June 2020.

[85] EPA. Regulatory Options for the Control of Odors. https://nepis.epa.gov/Exe/ZyPDF.cgi/9101XSVY.PDF?Dockey=9101XSVY.PDF. Accessed January 2019.

[86] NJDEP. 2018 New Jersey Air Quality Report. http://njaqinow.net/App_Files/2018/2018%20NJ%20AQ%20Report.pdf. Accessed January 2020.

[87] NJDEP. 2012 Land Use/Land Cover Update and Impervious Surface Mapping Project. http://www.nj.gov/dep/gis/digidownload/metadata/lulc12/update2012.html. Accessed May 2020.

[88] Federal Emergency Management Agency (FEMA). National Flood Hazard Layer. https://www.fema.gov/national-flood-hazard-layer-nfhl. Accessed January 2020.

[89] Federal Emergency Management Agency (FEMA). Flood Zones. http://www.fema.gov/flood-zones. Accessed May 2020.

[90] Fairview Insurance. Standard Flood Hazard Determination: Borough of Roselle Park, 110 E. Westfield Avenue, Roselle Park, 07204-2021. Print. Accessed June 2020.

[91] NJDEP. 2018 *N.J.S.S. 58:16A-50 et. Seq.* Flood Hazard Area Control Act. https://www.nj.gov/dep/landuse/download/58_16a_50.pdf. Accessed January 2020.

[92] NJDEP. 2019 *N.J.A.C. 7:13-2.* Flood Hazard Area Control Act Rules. https://www.nj.gov/dep/rules/rules/njac7_13.pdf. Accessed January 2020.

[93] Patricia Butler, Roselle Park Historian. Personal Communication. Accessed May 2020.

[94] Borough of Roselle Park. Municipal Code. https://clerkshq.com/Content/RosellePark-nj/books/code/roselleparkc31.htm. Accessed January 2020.

[95] 2015 Union County Hazard Mitigation Plan. Appendix 14: Borough of Roselle Park Borough. https://ucnj.org/wp-content/uploads/2015/11/Union-HMP2_Appendix-14_RosellePark.pdf. Accessed June 2020.

[96] Borough of Roselle Park. Department of Public Works. Accessed June 2020.

[97] Borough of Roselle Park. 2020 Stormwater Pollution Prevention Plan. http://content.rpgov.net/dpw/stormwater/SPPP_Stormwater_Pollution_Prevention_Plan.pdf Accessed January 2020.

[98] NJDEP. Site Remediation Program. https://www.nj.gov/dep/srp/. Accessed May 2020.

[99] NJDEP. 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 May 2020.

[100] State of New Jersey. Brownfields SiteSmart. http://www.njbrownfieldsproperties.com/CityListScreen.aspx. Accessed May 2020.

[101] USEPA. The Emergency Planning and Community Right-to-Know Act. https://www.epa.gov/laws-regulations/summary-emergency-planning-community-right-know-act. Accessed May 2020.

[102] NJDEP. Data Miner. https://www13.state.nj.us/DataMiner. Accessed May 2020.

[103] EPA. NJDEP Known Contaminated Site List for New Jersey (Non-Homeowner) Edition 201202. https://edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=%7B11E97E1F-AC4D-476C-A4BD-77985D06A5BB%7D. Accessed May 2020.

[104] NJDEP Site Remediation Program. Known Contaminated Sites in New Jersey Reports. https://www.state.nj.us/dep/srp/kcsnj/. Accessed May 2020.

[105] Roselle Park Historical Society. The History of the Borough of Roselle Park, New Jersey. Patricia Butler, Town Historian (2020). Accessed April 2020.

[106] NJDEP—State Historic Preservation Office: New Jersey and National Registers of Historic Places. Union County. https://www.nj.gov/dep/hpo/1identify/nrsr_lists/Union.pdf. Accessed May 2020.

[107] Borough of Roselle Park. 2016 Master Plan Re-Examination Report. http://content.rpgov.net/land_use_board/2016%20MASTER%20PLAN%20REEXAM%20REPORT%20%28FINAL%29.pdf. Accessed May 2020.

[108] US Census Reporter. Roselle Park Borough, Union County, NJ. https://censusreporter.org/profiles/06000US3403964650-roselle-park-borough-union-county-nj/. Accessed May 2020.

[109] NJDOT Union County. Mileage by Municipality and Jurisdiction. https://www.state.nj.us/transportation/refdata/sldiag/mileage_Union.pdf. Accessed November 2019.

[110] Roselle Park Borough. 1997 Master Plan. Print. Accessed April 2020.

[111] Ibid.

[112] NJ Transit. Rail System Map. https://d2g63oyneaimm8.cloudfront.net/sites/default/files/2020-03/Rail_System_Map.pdf. Accessed May 2020.

[113] Union County. 2016 Transportation Master Plan. https://ucnj.org/union-county-transportation-master-plan/master-plan/. Accessed May 2020.

[114] New Jersey Transit. Bus Routes. https://mybusnow.njtransit.com/bustime/map/displaymap.jsp. Accessed June 2020.

[115] Roselle Park Borough. 1997 Master Plan (Print). Accessed May 2020.

[116] State of New Jersey Department of Transportation (NJDOT). Complete Streets Overview. https://www.state.nj.us/transportation/eng/completestreets/. Accessed June 2020.

[117] Borough of Roselle Park. Resolution 231-18. http://content.rpgov.net/clerk/resolutions/2018_resolutions/2018-08-16_resolutions.pdf. Accessed June 2020.

[118]State of New Jersey. State Development and Redevelopment Plan. https://nj.gov/state/planning/assets/docs/2001-state-plan/stateplan030101.pdf. Accessed November 2019.

[119] NJDEP. Water Quality Management Planning. https://www.nj.gov/dep/wqmp/wqmps.html. Accessed May 2020.

[120] NJDEP Division of Watershed Management. Revision to the Northeast Water Quality Management Plan (2012). https://www.nj.gov/dep/wqmp/docs/wqmp/northeast/20120917.pdf. Accessed May 2020.

[121] Union County. Department of Parks and Recreation. https://ucnj.org/parks-recreation/. Accessed May 2020.

[122] Sustainable Jersey. Roselle Park Community Certification Report. http://www.sustainablejersey.com/certification/participating-communities/certification-report/?tx_sjcert_certification%5Bcertification%5D%5B__identity%5D=718&tx_sjcert_certification%5Baction%5D=show&tx_sjcert_certification%5Bcontroller%5D=Certification&cHash=4e63c8ac2ed578dafbf47e8d20f3c412. Accessed January 2020.

[123] Ibid.