RUTGERS
New Jersey Agricultural
Experiment Station

Impervious Cover Reduction Action Plan
for
Edison Township, Middlesex County, New Jersey

Prepared for Edison Township by the
Rutgers Cooperative Extension Water Resources Program

October 6, 2015

Table of Contents

Attachment: Climate Resilient Green Infrastructure

a. Overview Map of the Project

b. Green Infrastructure Sites

c. Proposed Green Infrastructure Concepts

d. Summary of Existing Conditions

e. Summary of Proposed Green Infrastructure Practices

Introduction

Located in Middlesex County in central New Jersey, Edison Township covers approximately 30.6 square miles west of Woodbridge. Figures 1 and 2 illustrate that Edison Township is dominated by urban land uses. A total of 72.9% of the municipality's land use is classified as urban. Of the urban land in Edison Township, medium density residential is the dominant land use (Figure 3).

The New Jersey Department of Environmental Protection's (NJDEP) 2007 land use/land cover geographical information system (GIS) data layer categorizes Edison Township into many unique land use areas, assigning a percent impervious cover for each delineated area. These impervious cover values were used to estimate the impervious coverage for Edison Township. Based upon the 2007 NJDEP land use/land cover data, approximately 36.2% of Edison Township has impervious cover. This level of impervious cover suggests that the streams in Edison Township are likely non-supporting streams.[1]

Methodology

Edison Township contains portions of seven subwatersheds (Figure 4). For this impervious cover reduction action plan, projects have been identified in each of these watersheds. Initially, aerial imagery was used to identify potential project sites that contain extensive impervious cover. Field visits were then conducted at each of these potential project sites to determine if a viable option exists to reduce impervious cover or to disconnect impervious surfaces from draining directly to the local waterway or storm sewer system. During the site visit, appropriate green infrastructure practices for the site were determined. Sites that already had stormwater management practices in place were not considered.

[1] Caraco, D., R. Claytor, P. Hinkle, H. Kwon, T. Schueler, C. Swann, S. Vysotsky, and J. Zielinski. 1998. Rapid Watershed Planning Handbook. A Comprehensive Guide for Managing Urbanizing Watersheds. Prepared by Center For Watershed Protection, Ellicott City, MD. Prepared for U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds and Region V. October 1998

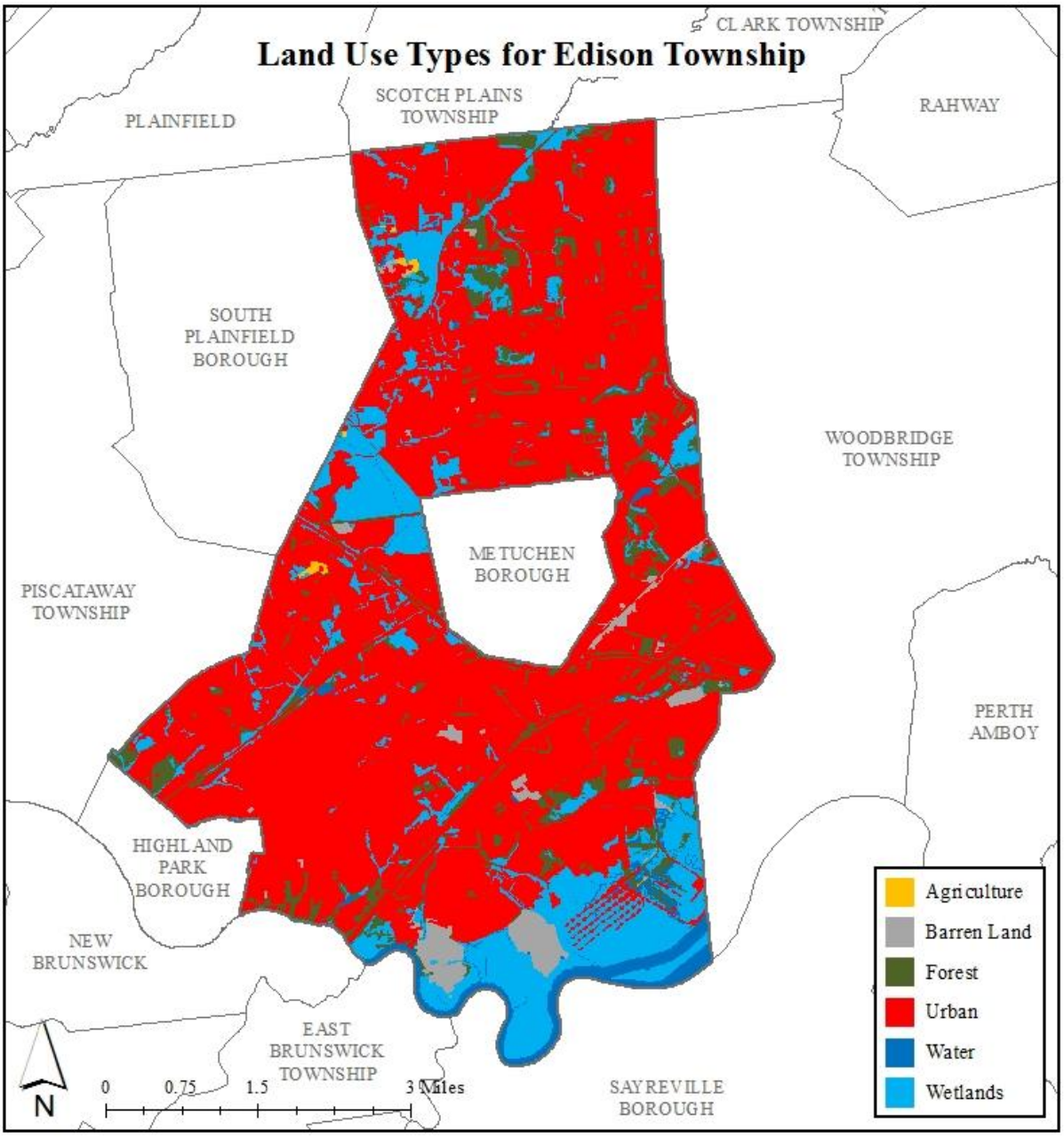


Figure 1: Map illustrating the land use in Edison Township

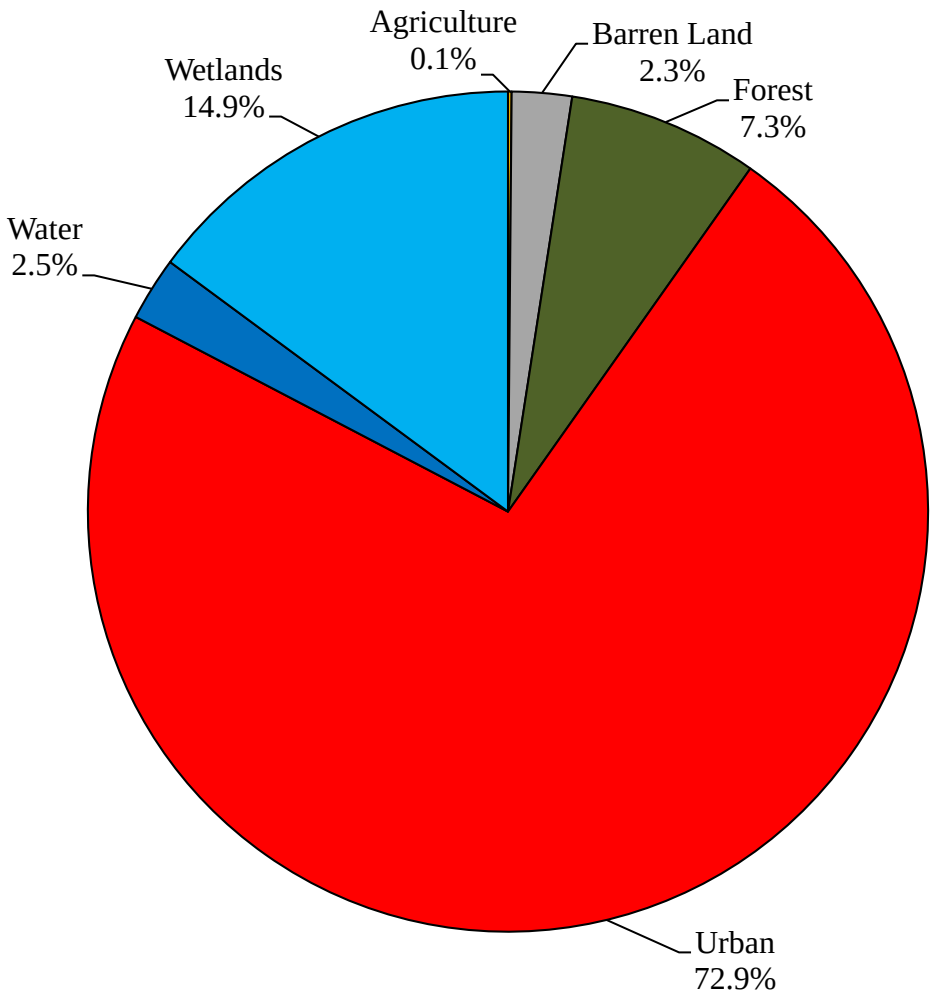


Figure 2: Pie chart illustrating the land use in Edison Township

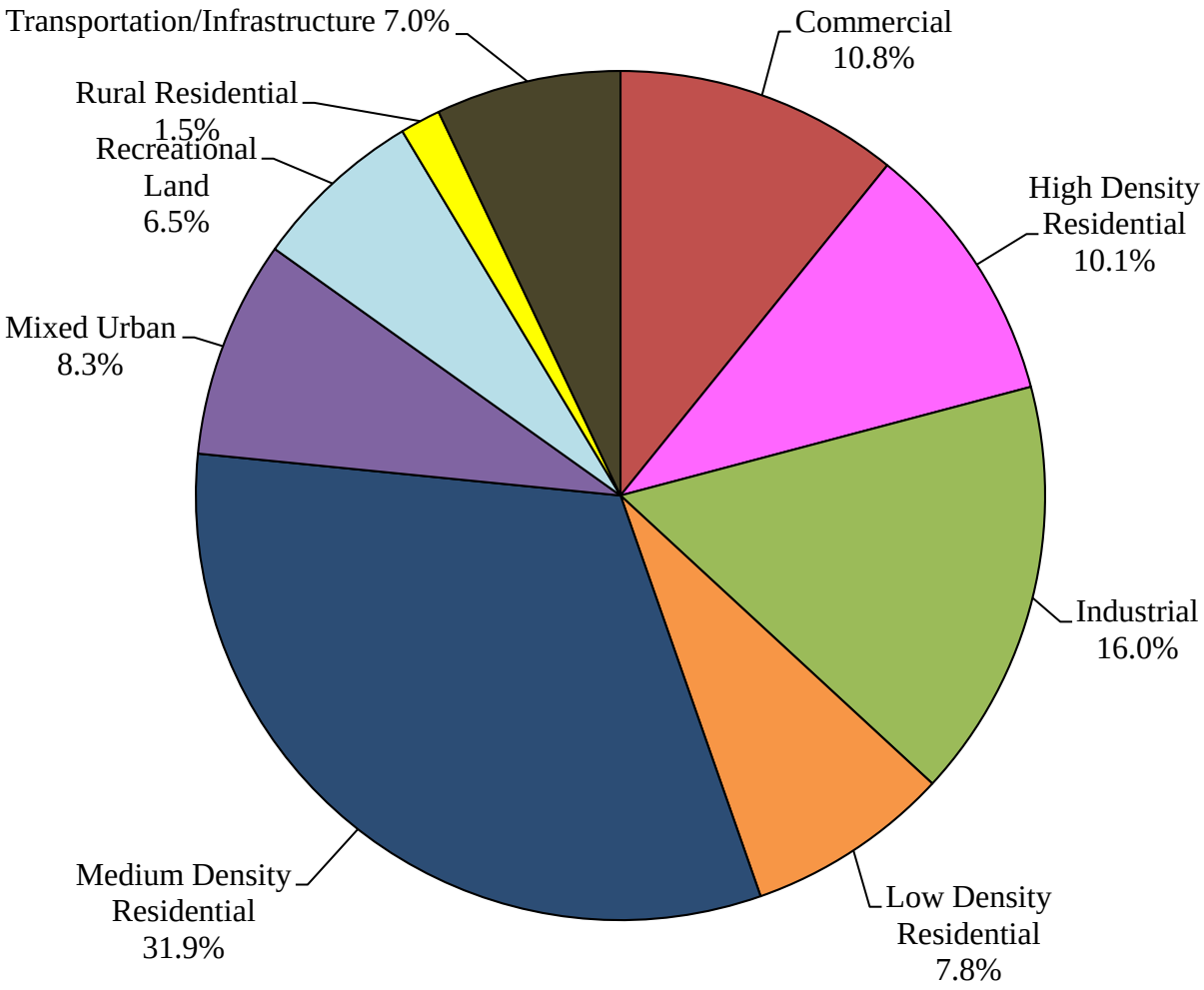


Figure 3: Pie chart illustrating the various types of urban land use in Edison Township

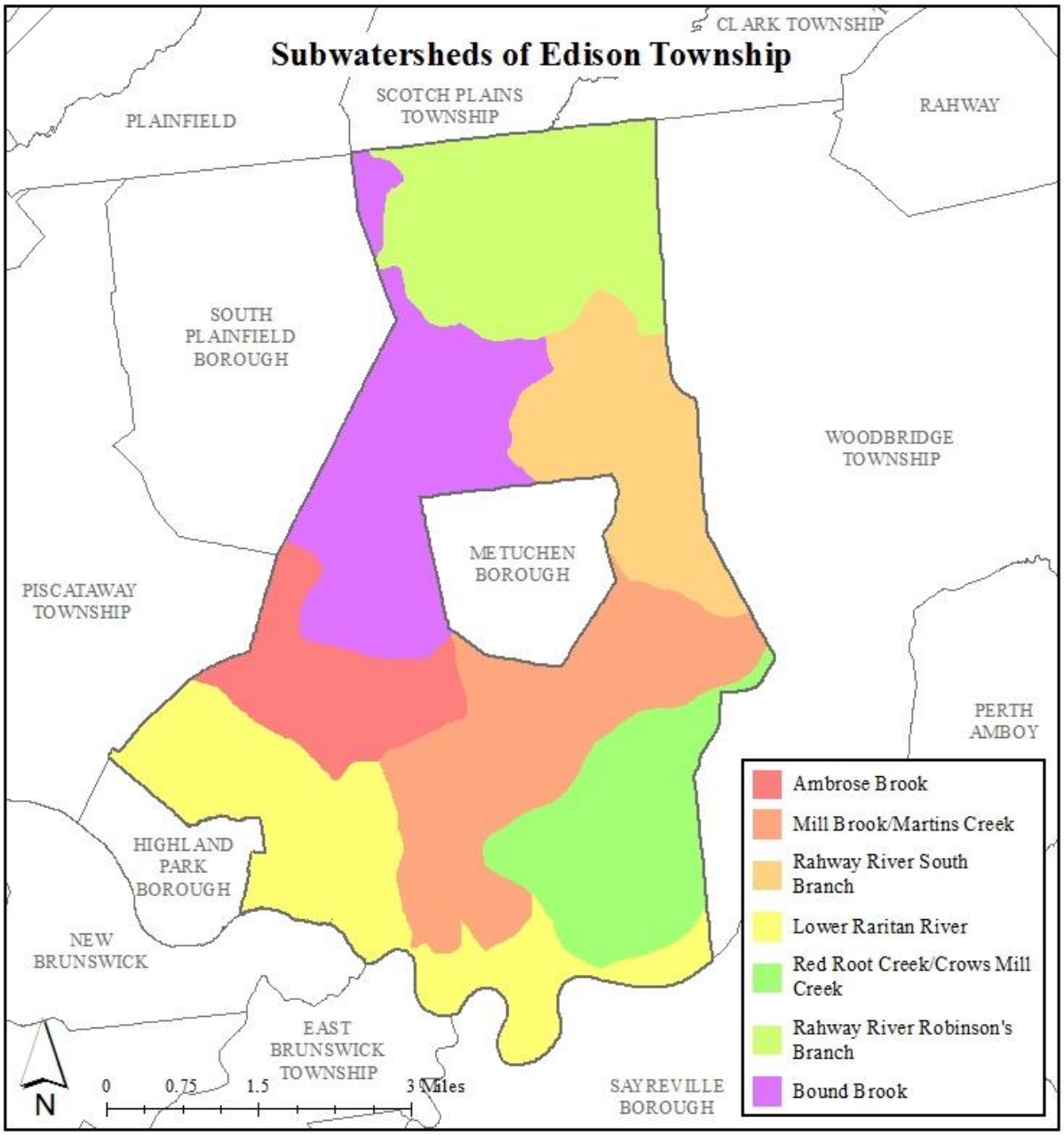


Figure 4: Map of the subwatersheds in Edison Township

For each potential project site, specific aerial loading coefficients for commercial land use were used to determine the annual runoff loads for total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS) from impervious surfaces (Table 1). These are the same aerial loading coefficients that NJDEP uses in developing total maximum daily loads (TMDLs) for impaired waterways of the state. The percentage of impervious cover for each site was extracted from the 2007 NJDEP land use/land cover database. For impervious areas, runoff volumes were determined for the water quality design storm (1.25 inches of rain over two-hours) and for the annual rainfall total of 44 inches.

Preliminary soil assessments were conducted for each potential project site identified in Edison Township using the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, which utilizes regional and statewide soil data to predict soil types in an area. Several key soil parameters were examined (e.g., natural drainage class, saturated hydraulic conductivity of the most limiting soil layer (K_{sat}), depth to water table, and hydrologic soil group) to evaluate the suitability of each site's soil for green infrastructure practices. In cases where multiple soil types were encountered, the key soil parameters were examined for each soil type expected at a site.

For each potential project site, drainage areas were determined for each of the green infrastructure practices proposed at the site. These green infrastructure practices were designed to manage the 2-year design storm, enabling these practices to capture 95% of the annual rainfall. Runoff volumes were calculated for each proposed green infrastructure practice. The reduction in TSS loading was calculated for each drainage area for each proposed green infrastructure practice using the aerial loading coefficients in Table 1. The maximum volume reduction in stormwater runoff for each green infrastructure practice for a storm was determined by calculating the volume of runoff captured from the 2-year design storm. For each green infrastructure practice, peak discharge reduction potential was determined through hydrologic modeling in HydroCAD. For each green infrastructure practice, a cost estimate is provided. These costs are based upon the square footage of the green infrastructure practice and the real cost of green infrastructure practice implementation in New Jersey.

Table 1: Aerial Loading Coefficients[2]

Land Cover	TP load (lbs/acre/yr)	TN load (lbs/acre/yr)	TSS load (lbs/acre/yr)
High, Medium Density Residential	1.4	15	140
Low Density, Rural Residential	0.6	5	100
Commercial	2.1	22	200
Industrial	1.5	16	200
Urban, Mixed Urban, Other Urban	1.0	10	120
Agriculture	1.3	10	300
Forest, Water, Wetlands	0.1	3	40
Barrenland/Transitional Area	0.5	5	60

[2] New Jersey Department of Environmental Protection (NJDEP), Stormwater Best Management Practice Manual, 2004.

Green Infrastructure Practices

Green infrastructure is an approach to stormwater management that is cost-effective, sustainable, and environmentally friendly. Green infrastructure projects capture, filter, absorb, and reuse stormwater to maintain or mimic natural systems and to treat runoff as a resource. As a general principal, green infrastructure practices use soil and vegetation to recycle stormwater runoff through infiltration and evapotranspiration. When used as components of a stormwater management system, green infrastructure practices such as bioretention, green roofs, porous pavement, rain gardens, and vegetated swales can produce a variety of environmental benefits. In addition to effectively retaining and infiltrating rainfall, these practices can simultaneously help filter air pollutants, reduce energy demands, mitigate urban heat islands, and sequester carbon while also providing communities with aesthetic and natural resource benefits[3]. A wide range of green infrastructure practices have been evaluated for the potential project sites in Edison Township. Each practice is discussed below.

Disconnected downspouts

This is often referred to as simple disconnection. A downspout is simply disconnected, and prevented from draining directly to the roadway or storm sewer system, and directed to discharge water to a pervious area (i.e., lawn).

Pervious pavements

There are several types of permeable pavement systems including porous asphalt, pervious concrete, permeable pavers, and grass pavers. These surfaces are hard and support vehicle traffic but also allow water to infiltrate through the surface. They have an underlying stone layer to store stormwater runoff and allow it to slowly seep into the ground.




[3] United States Environmental Protection Agency (USEPA), 2013. Watershed Assessment, Tracking, and Environmental Results, New Jersey Water Quality Assessment Report. http://ofmpub.epa.gov/waters10/attains_state.control?p_state=NJ

Bioretention systems/rain gardens

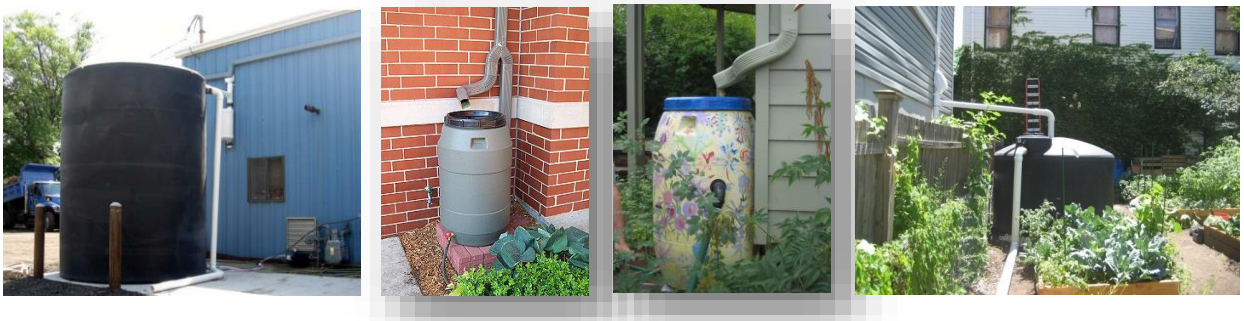
These are landscaped features that are designed to capture, treat, and infiltrate stormwater runoff. These systems can easily be incorporated into existing landscapes, improving aesthetics and creating a wildlife habitat while managing stormwater runoff. Bioretention systems also can be used in soils that do not quickly infiltrate by incorporating an underdrain into the system.

Downspout planter boxes

These are wooden boxes with plants installed at the base of a downspout that provide an opportunity to beneficially reuse rooftop runoff.

Rainwater harvesting systems (cistern or rain barrel)

These systems capture rainwater, mainly from rooftops, in cisterns or rain barrels. The water can then be used for watering gardens, washing vehicles, or for other non-potable uses.



Bioswale

Bioswales are landscape features that convey stormwater from one location to another while removing pollutants and providing water an opportunity to infiltrate.

Stormwater planters

Stormwater planters are vegetated structures that are built into the sidewalk to intercept stormwater runoff from the roadway or sidewalk. Many of these planters are designed to allow the water to infiltrate into the ground while others are designed simply to filter the water and convey it back into the stormwater sewer system.

Tree filter boxes

These are pre-manufactured concrete boxes that contain a special soil mix and are planted with a tree or shrub. They filter stormwater runoff but provide little storage capacity. They are typically designed to quickly filter stormwater and then discharge it to the local sewer system.

Potential Project Sites

Attachment 1 contains information on potential project sites where green infrastructure practices could be installed. The recommended green infrastructure practice and the drainage area that the green infrastructure practice can treat are identified for each potential project site. For each practice, the recharge potential, TSS removal potential, maximum volume reduction potential per storm, and the peak reduction potential are provided. This information is also provided so that proposed development projects that cannot satisfy the New Jersey stormwater management requirements for major development can use one of the identified projects to offset a stormwater management deficit. [4]

[4] New Jersey Administrative Code, N.J.A.C. 7:8, Stormwater Management, Statutory Authority: N.J.S.A. 12:5-3, 13:1D-1 et seq., 13:9A-1 et seq., 13:19-1 et seq., 40:55D-93 to 99, 58:4-1 et seq., 58:10A-1 et seq., 58:11A-1 et seq. and 58:16A-50 et seq., *Date last amended: April 19, 2010*.

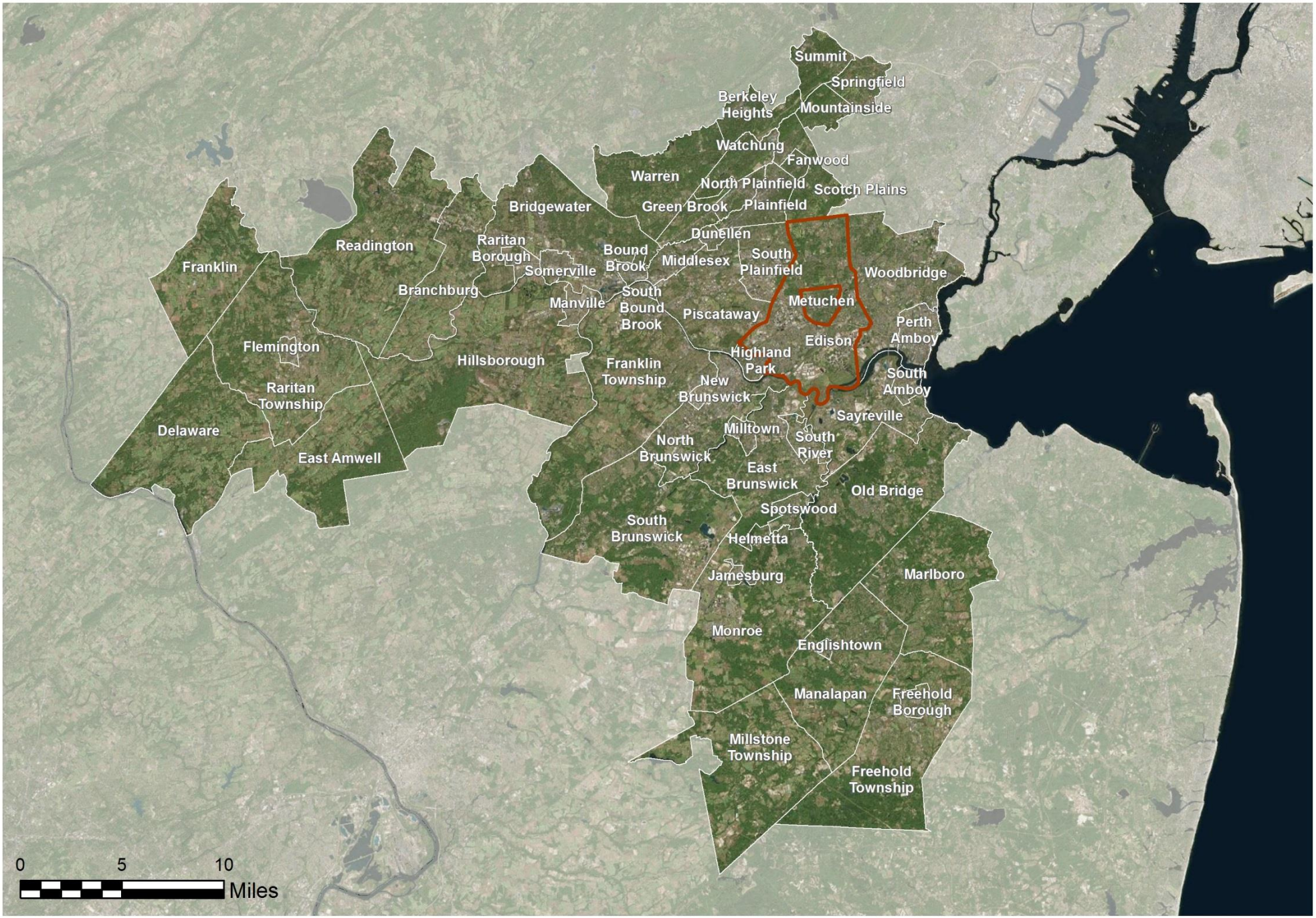
Conclusion

This impervious cover reduction action plan is meant to provide the municipality with a blueprint for implementing green infrastructure practices that will reduce the impact of stormwater runoff from impervious surfaces. These projects can be implemented by a wide variety of people such as boy scouts, girl scouts, school groups, faith-based groups, social groups, watershed groups, and other community groups.

Additionally, development projects that are in need of providing off-site compensation for stormwater impacts can use the projects in this plan as a starting point. The municipality can quickly convert this impervious cover reduction action plan into a stormwater mitigation plan and incorporate it into the municipal stormwater control ordinance.

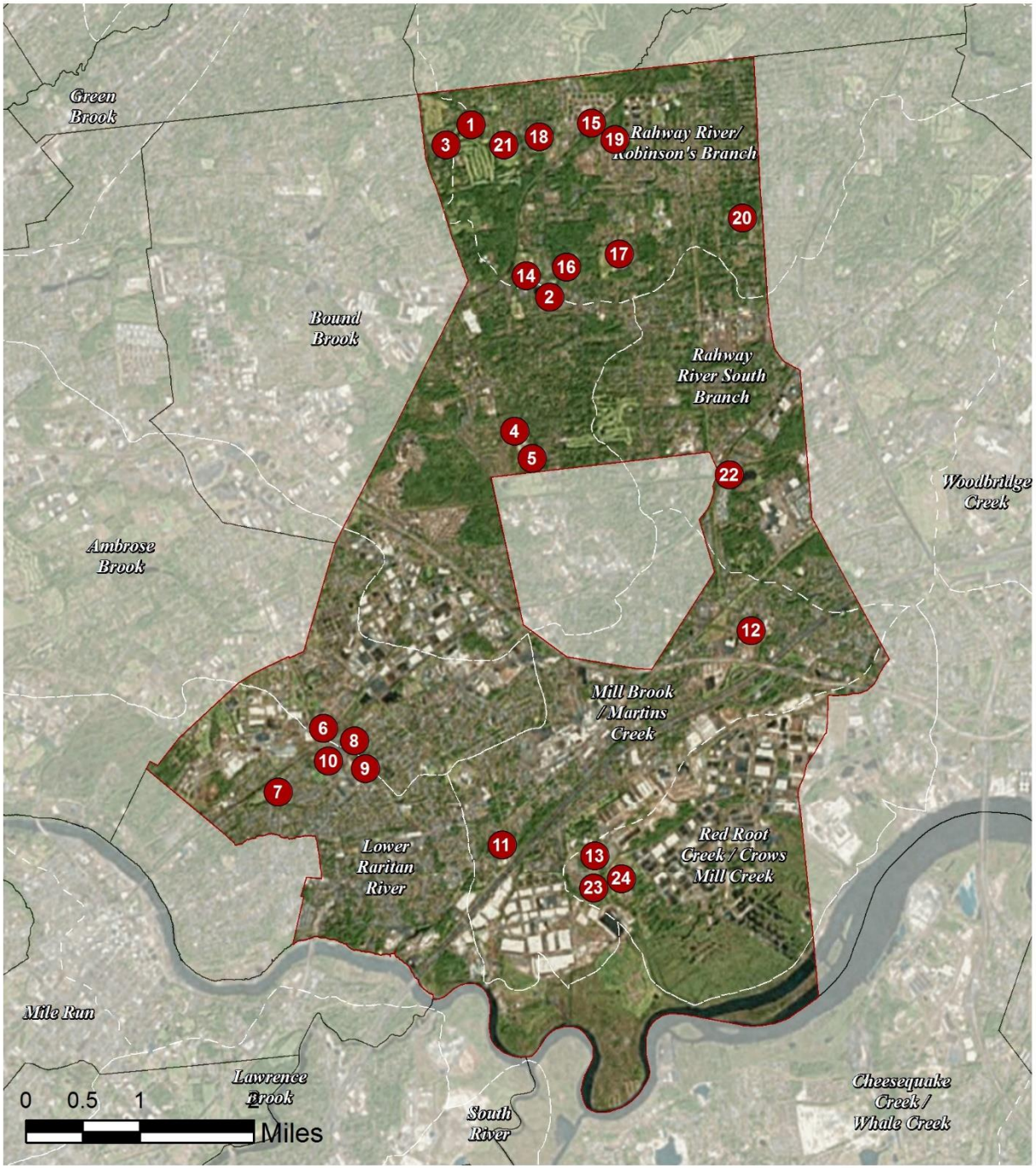
a. Overview Map of the Project

EDISON: CLIMATE RESILIENT GREEN INFRASTRUCTURE FOR THE RARITAN BASIN



b. Green Infrastructure Sites

EDISON TOWNSHIP: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE BOUND BROOK SUBWATERSHED:

1. CareOne at the Highlands
2. JFK Hartwyck at Oak Tree
3. Plainfield Country Club
4. Woodbrook Elementary School
5. Woodrow Wilson Middle School

SITES WITHIN THE LOWER RARITAN RIVER SUBWATERSHED:

6. Edison Public Library
7. John Marshall Elementary School
8. Stelton Baptist Church
9. Stelton Community Center
10. Thomas Jefferson Middle School

SITES WITHIN THE MILL BROOK / MARTINS CREEK SUBWATERSHED:

11. Benjamin Franklin Elementary School
12. Herbert Hoover Middle School
13. Middlesex County Academy for Science, Mathematics and Engineering Technologies and Middlesex County College

SITES WITHIN THE RAHWAY RIVER ROBINSON'S BRANCH SUBWATERSHED:

14. Bishop George Ahr High School
15. Inman Grove Center
16. John Adams Middle School
17. John P. Stevens High School
18. Martin Luther King Elementary School
19. Mount Pleasant Baptist Church
20. New Dover Cemetery
21. The Wardlaw-Hartridge School

SITES WITHIN THE RAHWAY RIVER SOUTH BRANCH SUBWATERSHED:

22. Lakeview School

SITES WITHIN THE RED ROOT CREEK / CROWS MILL CREEK SUBWATERSHED:

23. Middlesex County Prosecutor's Office Training Center
24. Thomas A. Edison Park

c. Proposed Green Infrastructure Concepts

CAREONE AT THE HIGHLANDS

Subwatershed: **Bound Brook**

Site Area: **289,462 sq. ft.**

Address: **1350 Inman Avenue**
Edison, NJ 08820

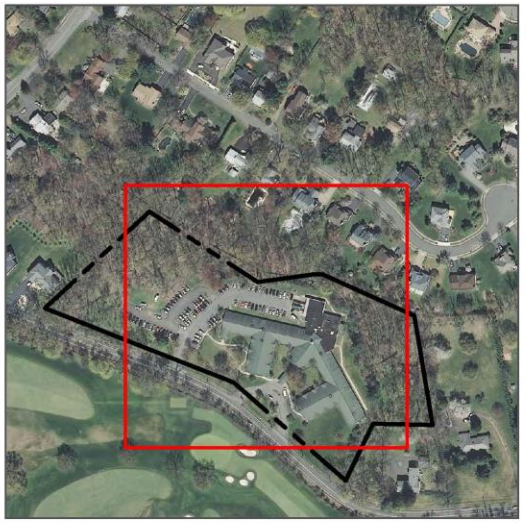
Block and Lot: **Block 410, Lot 28**

Multiple rain gardens can capture, treat, and infiltrate runoff. Parking spots can also be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
38	111,226	5.4	56.2	510.7	0.087	3.05

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.372	62	27,265	1.02	3,916	$19,580
Pervious pavements	0.942	158	69,130	2.60	7,668	$191,700

GREEN INFRASTRUCTURE RECOMMENDATIONS



CareOne at the Highlands

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

JFK HARTWYCK AT OAK TREE

Subwatershed: **Bound Brook**

Site Area: **157,951 sq. ft.**

Address: **2048 Oak Tree Road**
Edison, NJ 08820

Block and Lot: **Block 545.R, Lot 37**

Sections of parking spots can be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. On the west side, and south of the building rain gardens can be installed to capture, treat and infiltrate runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
80	126,673	6.1	64.0	581.6	0.099	3.47

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.164	27	11,998	0.45	1,569	$7,846
Pervious pavements	1.100	184	80,732	3.03	15,617	$390,425

GREEN INFRASTRUCTURE RECOMMENDATIONS

JFK Hartwyck at Oak Tree

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

PLAINFIELD COUNTRY CLUB

Subwatershed: **Bound Brook**

Site Area: **2,612,637 sq. ft.**

Address: **1591 Woodland Avenue**
Edison, NJ 08820

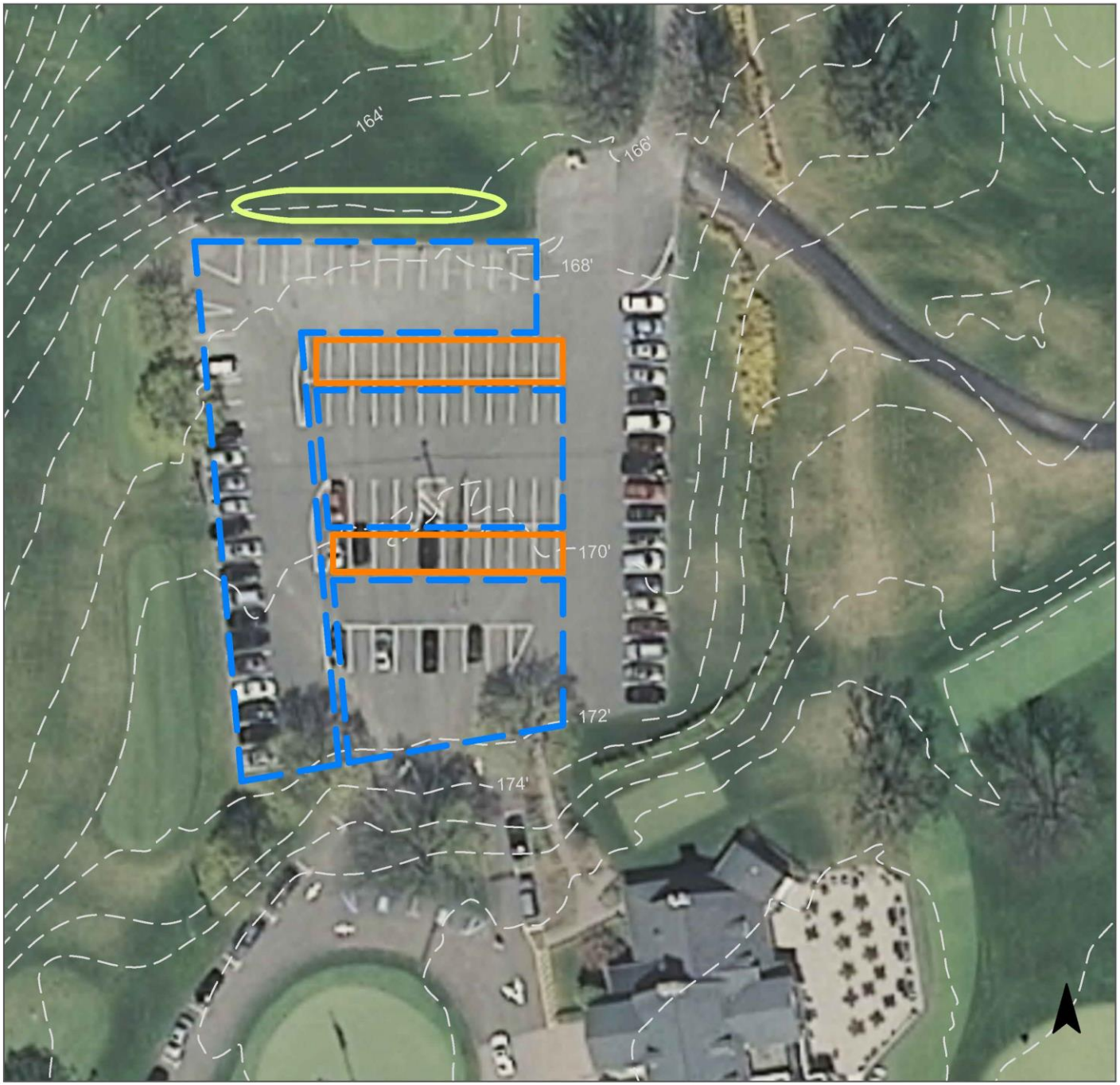
Block and Lot: **Block 415, Lot 3**

A rain garden north of the parking lot can capture, treat, and infiltrate stormwater. Parking spaces can also be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
18	478,048	23.0	241.4	2,194.9	0.372	13.11

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.308	52	22,605	0.85	1,122	$5,610
Pervious pavements	0.286	48	20,981	0.79	2,930	$73,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Plainfield Country Club

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 30' 60'

WOODBROOK ELEMENTARY SCHOOL

Subwatershed: **Bound Brook**

Site Area: **953,301 sq. ft.**

Address: **15 Robin Road**
Edison, NJ 08820

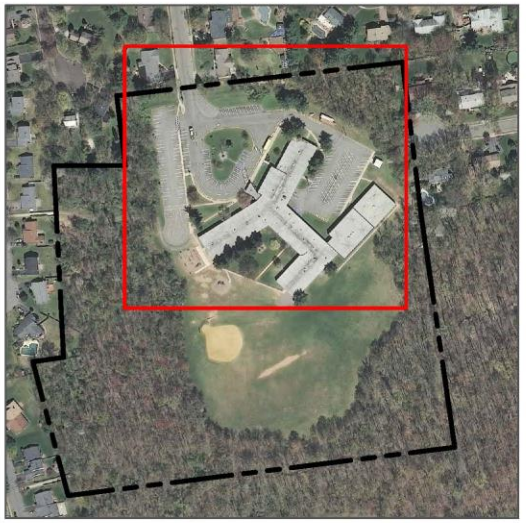
Block and Lot: **Block 593.09, Lot 13.B**

Parking spaces can be replaced with pervious pavement to reduce impervious cover, and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
19	183,891	8.9	92.9	844.3	0.143	5.04

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	0.940	157	69,003	2.59	8,324	$208,100

GREEN INFRASTRUCTURE RECOMMENDATIONS



Woodbrook Elementary School

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

WOODROW WILSON MIDDLE SCHOOL

Subwatershed: **Bound Brook**

Site Area: **1,692,223 sq. ft.**

Address: **50 Woodrow Wilson Drive, Edison, NJ 08820**

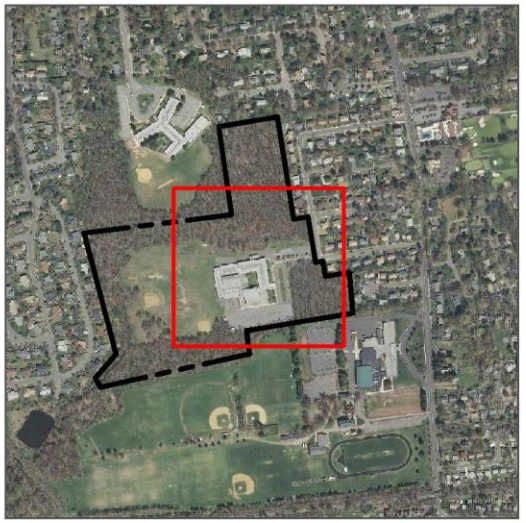
Block and Lot: **Block 593.09, Lot 13.D**

Rain gardens can be implemented along the north parking lot and at the west end of the south lot to capture, treat and infiltrate runoff from the parking lots. Pervious pavements can be implemented to reduce impervious cover and capture runoff from a majority of the south parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
16	269,819	13.0	136.3	1,238.8	0.210	7.40

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	1.090	182	79,991	3.01	7,475	$186,875
Pervious pavements	0.390	65	28,581	1.07	3,730	$18,650

GREEN INFRASTRUCTURE RECOMMENDATIONS



Woodrow Wilson Middle School

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 75' 150'

EDISON PUBLIC LIBRARY

Subwatershed: Lower Raritan River

Site Area: 79,342 sq. ft.

Address: 340 Plainfield Avenue
Edison, NJ 08820

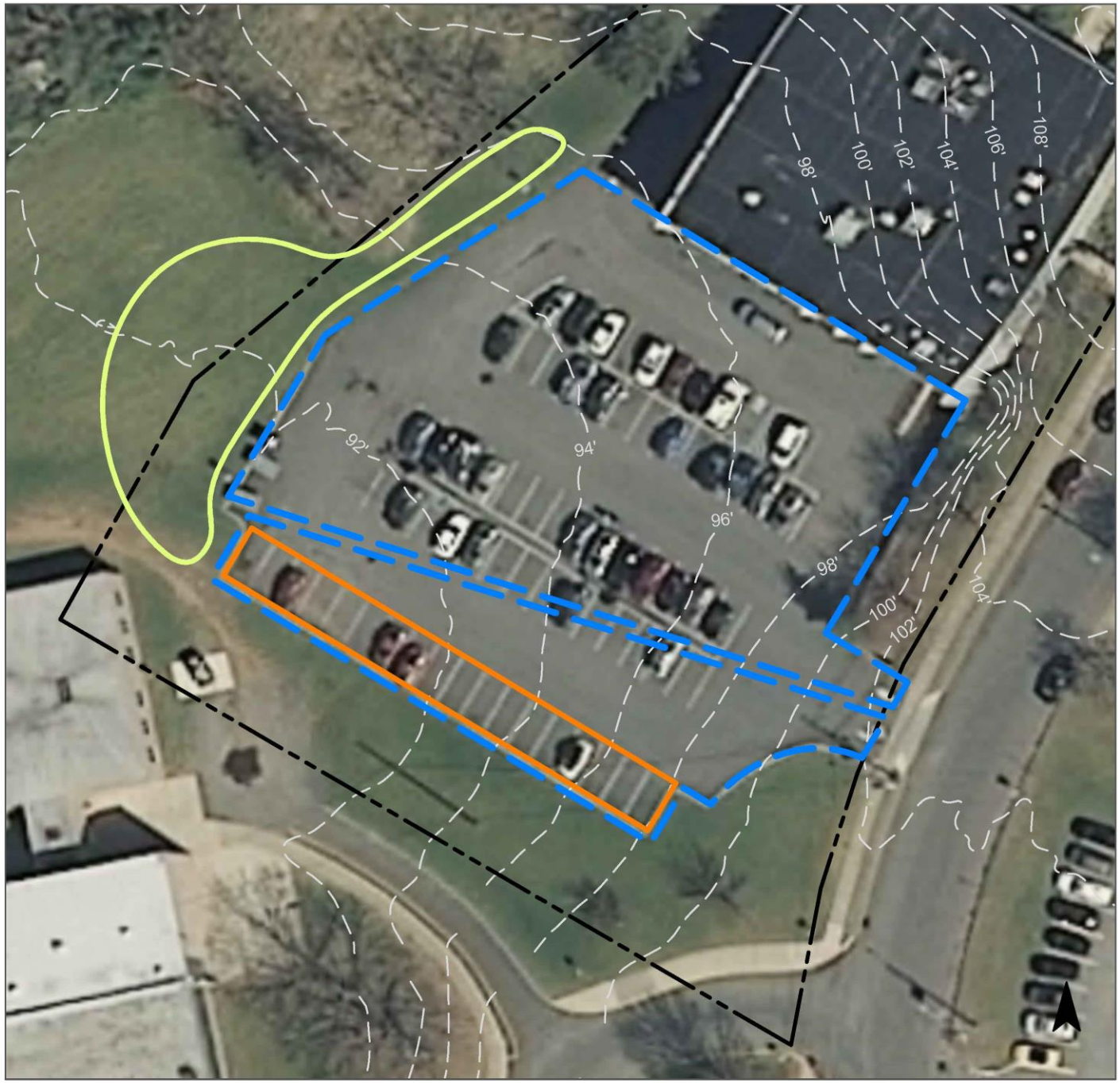
Block and Lot: Block 82, Lot 9

A bioretention system can be installed in the turf grass located northwest of the parking lot to capture, treat, and infiltrate stormwater. The southern most parking row can be replaced with porous asphalt to infiltrate runoff, and reduce impervious cover. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
61	48,633	2.3	24.6	223.3	0.038	1.33

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.599	100	43,923	1.65	5,807	$29,035
Pervious pavements	0.226	38	16,591	0.62	2,919	$72,975

GREEN INFRASTRUCTURE RECOMMENDATIONS



Edison Public Library

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 25' 50'

JOHN MARSHALL ELEMENTARY SCHOOL

Subwatershed: Lower Raritan River

Site Area: 634,738 sq. ft.

Address: 15 Cornell Street
Edison, NJ 08820

Block and Lot: Block 59.U, Lot 2

Rain gardens can be installed to capture and treat roof runoff by disconnecting and redirecting downspouts. Parking spaces in both parking lots can also be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
19	119,574	5.8	60.4	549.0	0.093	3.28

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.347	58	25,447	0.96	3,328	$16,639
Pervious pavements	1.171	196	85,900	3.23	8,565	$214,125

GREEN INFRASTRUCTURE RECOMMENDATIONS

John Marshall Elementary School

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

STELTON BAPTIST CHURCH

Subwatershed: Lower Raritan River

Site Area: 46,377 sq. ft.

Address: 334 Plainfield Avenue
Edison, NJ 08820

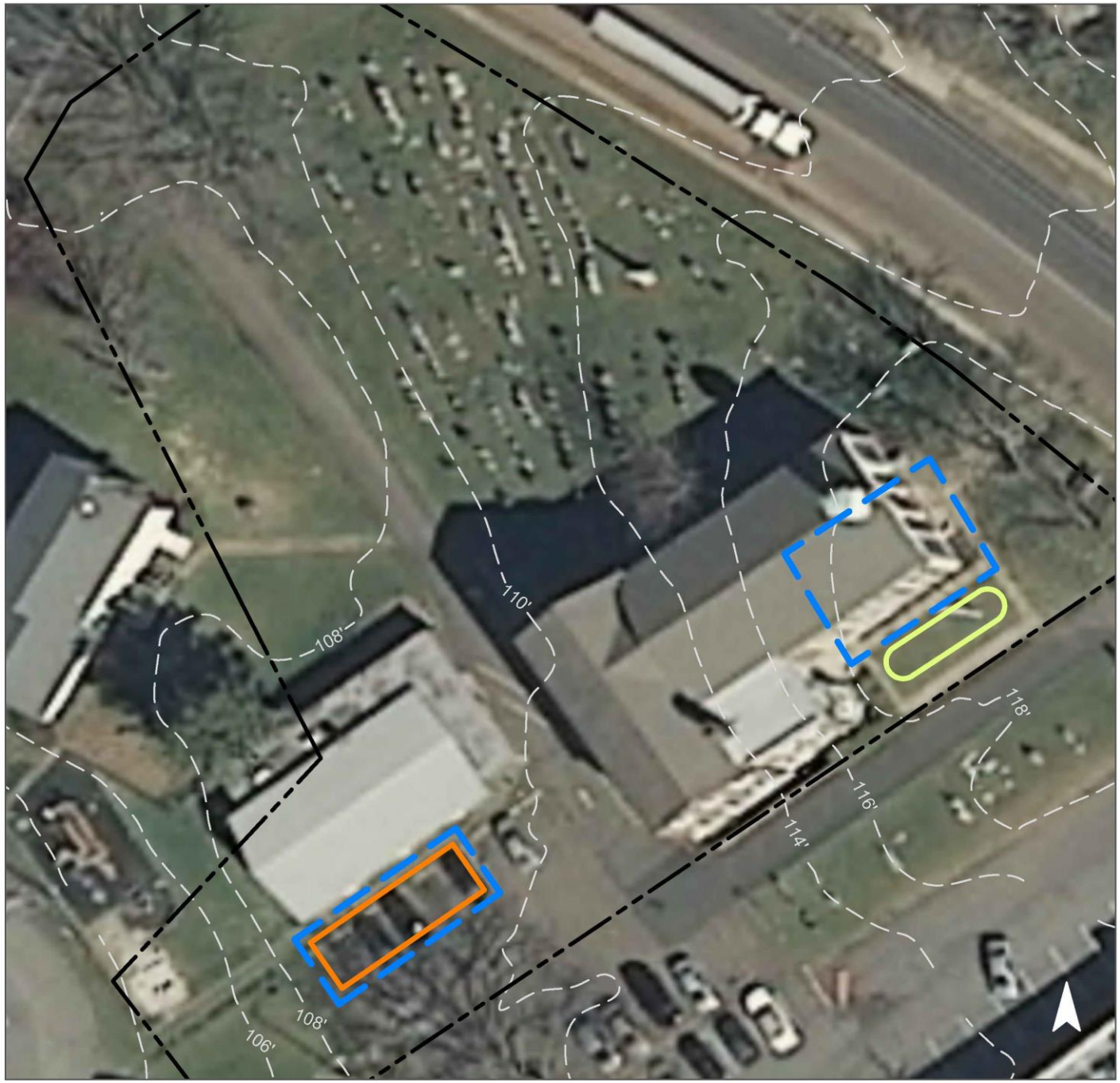
Block and Lot: Block 82.N, Lot 5

Parking spaces on the southwest side of the building is in poor condition, and can be replaced with pervious pavement to infiltrate runoff. A rain garden can be installed to capture, treat , and infiltrate roof runoff on the southeast side of the main building. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
38	17,418	0.8	8.8	80.0	0.014	0.48

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.040	7	2,932	0.11	305	$1,525
Pervious pavements	0.028	5	2,020	0.08	1,000	$25,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Stelton Baptist Church

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 20' 40'

STELTON COMMUNITY CENTER

Subwatershed: **Lower Raritan River**

Site Area: **169,649 sq. ft.**

Address: **328 Plainfield Avenue**
Edison, NJ 08820

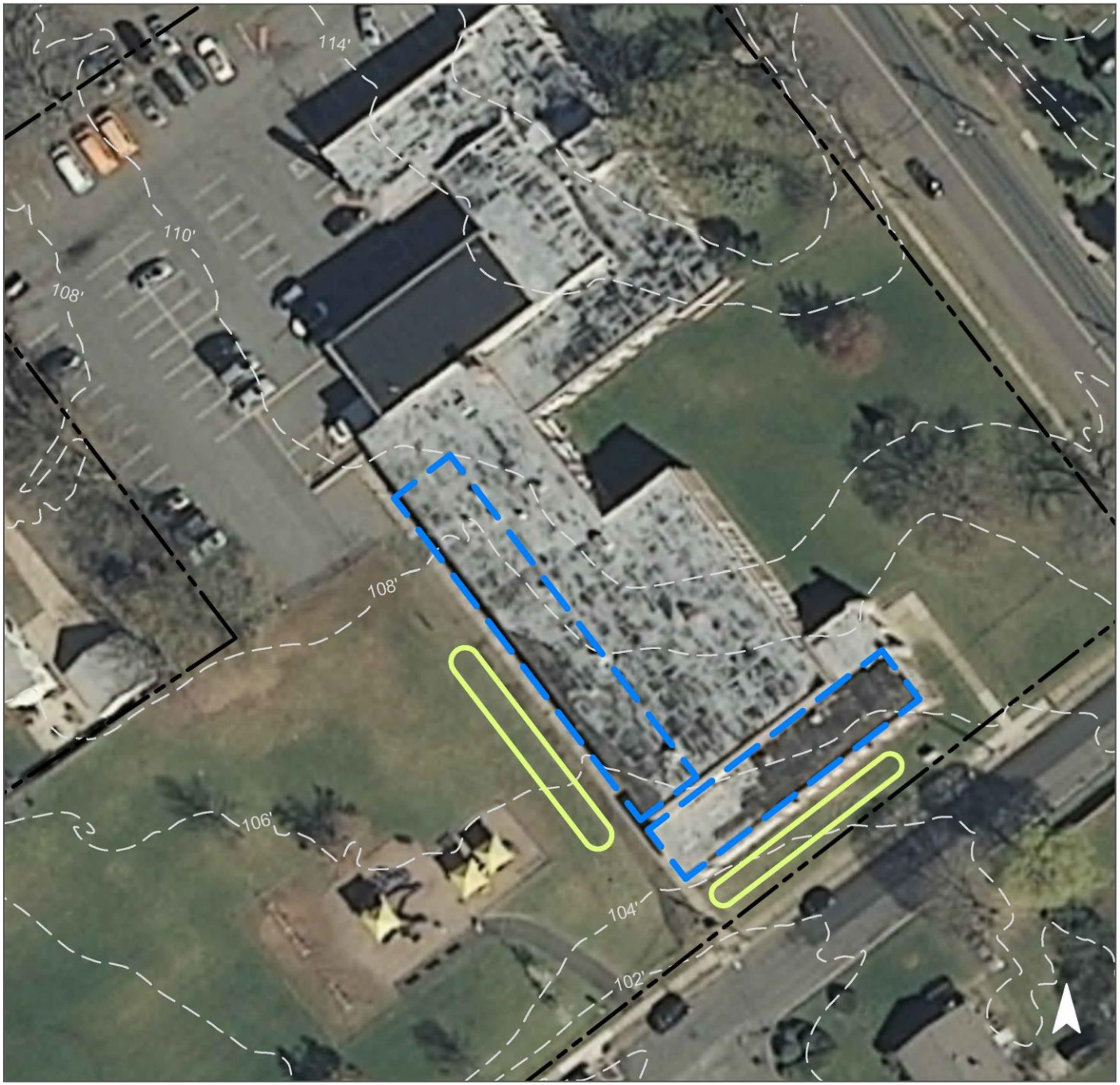
Block and Lot: **Block 82.N, Lot 4.C**

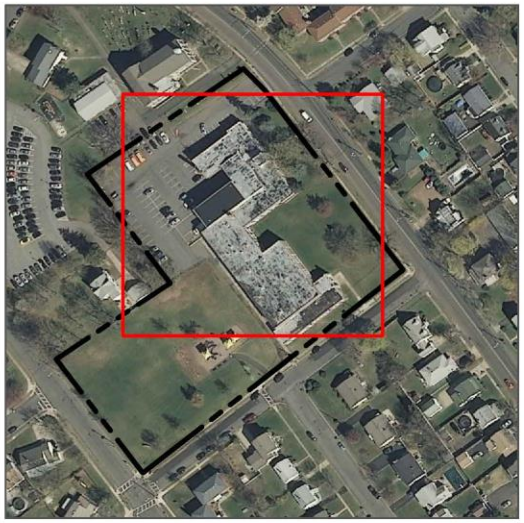
Bioretention systems can be installed to capture, treat, and infiltrate rooftop runoff. once the downspouts are repaired. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
47	79,249	3.8	40.0	363.9	0.062	2.17

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.188	31	13,771	0.52	1,882	$9,410

GREEN INFRASTRUCTURE RECOMMENDATIONS





Stelton Community Center

- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 30' 60'

THOMAS JEFFERSON MIDDLE SCHOOL

Subwatershed: Lower Raritan River

Site Area: 901,143 sq. ft.

Address: 450 Division Street, Edison, NJ 08820

Block and Lot: Block 82, Lot 10

Rain gardens can be installed in the courtyard between the two buildings, as well as in southwest, to capture roof runoff from nearby downspouts. Additionally, an area of pavement can be replaced with pervious pavement to infiltrate runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
14	129,117	6.2	65.2	592.8	0.101	3.54

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.265	44	19,433	0.73	3,246	$16,230
Pervious pavements	0.172	29	12,611	0.06	1,210	$30,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Thomas Jefferson Middle School

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

BENJAMIN FRANKLIN ELEMENTARY SCHOOL

Subwatershed: **Mill Brook/ Martins Creek**

Site Area: **407,618 sq. ft.**

Address: **2485 Woodbridge Avenue**
Edison, NJ 08820

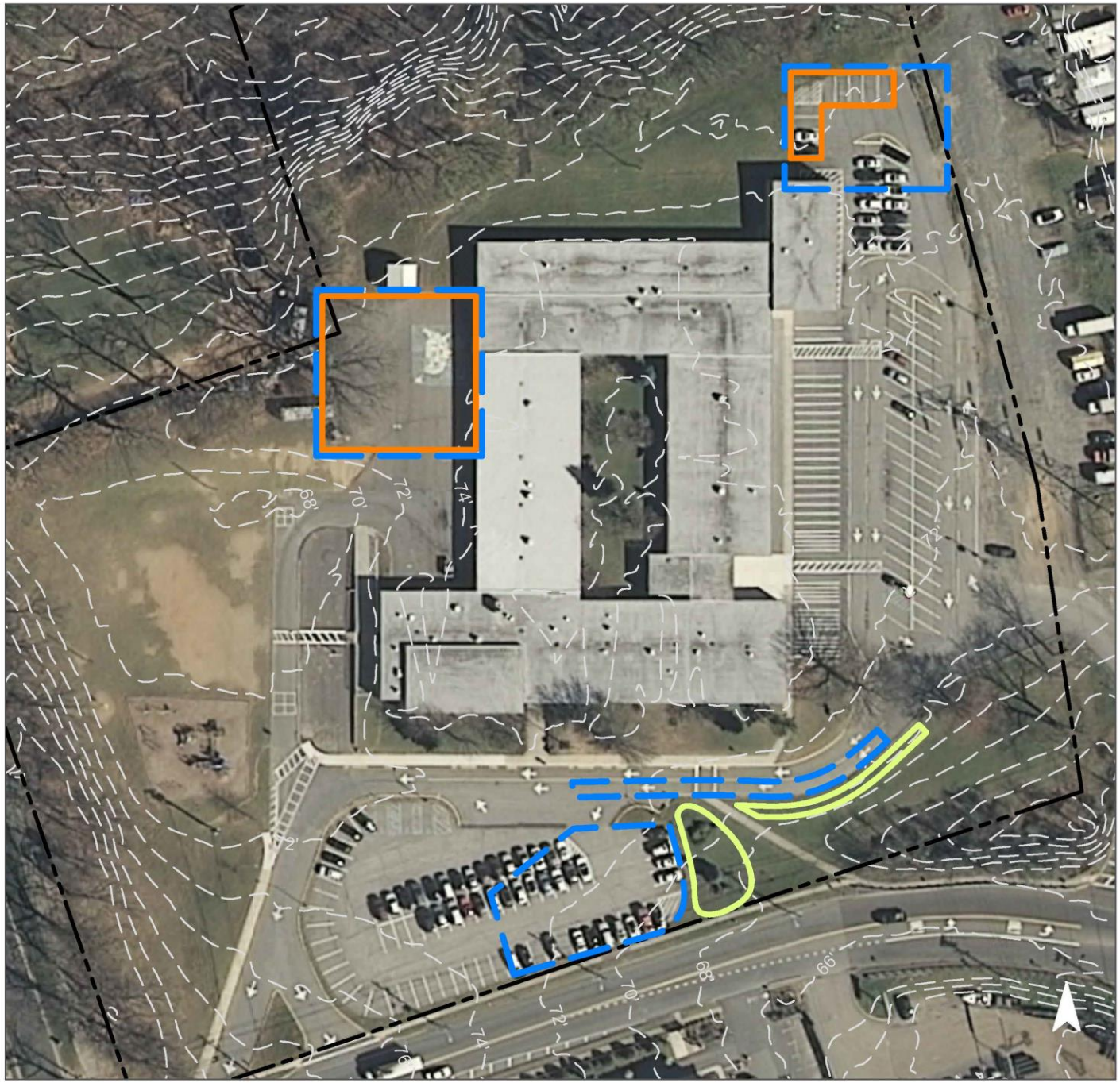
Block and Lot: **Block 265.DD, Lot 41**

Pavement to the west and north of the school can be replaced with pervious pavement to infiltrate stormwater. Rain gardens around the school's welcome sign and driveway can also capture, treat and infiltrate runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
50	203,795	9.8	102.9	935.7	0.159	5.59

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.226	38	16,591	0.62	3,118	$15,590
Pervious pavements	0.532	89	39,053	1.47	12,320	$308,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Benjamin Franklin Elementary School

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

HERBERT HOOVER MIDDLE SCHOOL

Subwatershed: Mill Brook/ Martins Creek

Site Area: 323,475 sq. ft.

Address: 174 Jackson Avenue
Edison, NJ 08820

Block and Lot: Block 730, Lot 7.A3

Two rain gardens can be installed north of the building to capture and treat roof runoff by disconnecting and redirecting two adjacent downspouts. Parking spaces located south of the school can also be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
67	217,671	10.5	109.9	999.4	0.170	5.97

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.335	56	24,564	0.92	3,212	$16,060
Pervious pavements	0.700	117	51,365	1.93	4,480	$112,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Herbert Hoover Middle School

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

MIDDLESEX COUNTY ACADEMY FOR SCIENCE, MATHEMATICS AND ENGINEERING TECHNOLOGIES & MIDDLESEX COUNTY COLLEGE

Subwatershed: Mill Brook / Martins Creek

Site Area: 7,004,461 sq. ft.

Address: 100 Technology Drive *and*
2600 Woodbridge Avenue
Edison, NJ 08820

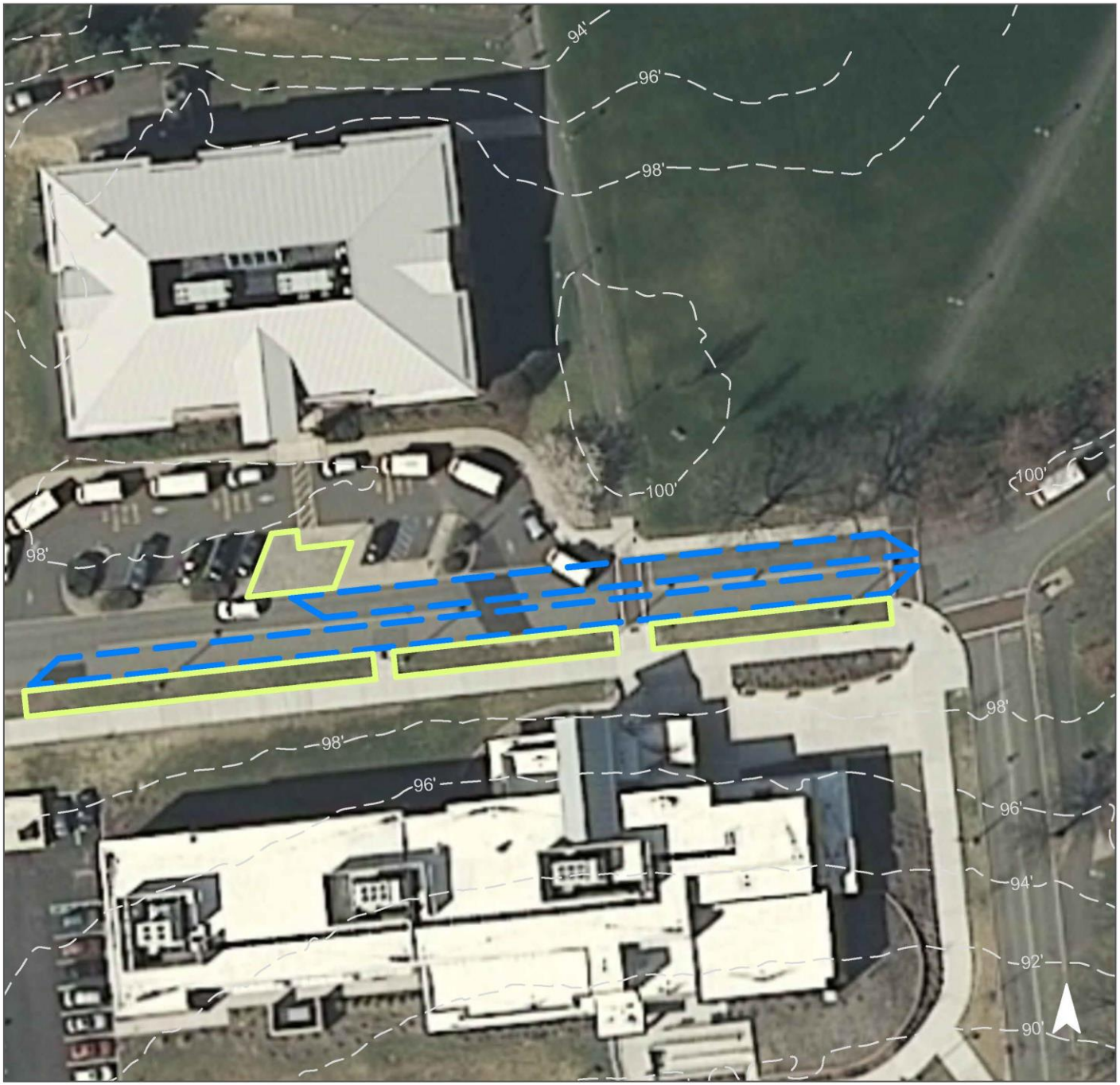
Block and Lot: Block 396, Lot 3.B; Block 396, Lot 1.A

Rain gardens can be installed on Otlowski Drive and around the cottages to the north of the Studio Theater to capture, treat, and infiltrate stormwater. Additionally, Parking Lot 1 of the Middlesex County Academy is in poor condition. Multiple parking lanes can be replaced with pervious pavement to allow stormwater to infiltrate. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
41	2,890,738	139.4	1,460.0	13,272.4	2.252	79.28

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.160	27	11,751	0.44	4,660	$23,300
Pervious pavements	6.018	1,007	441,582	16.60	66,803	$1,670,075

GREEN INFRASTRUCTURE RECOMMENDATIONS

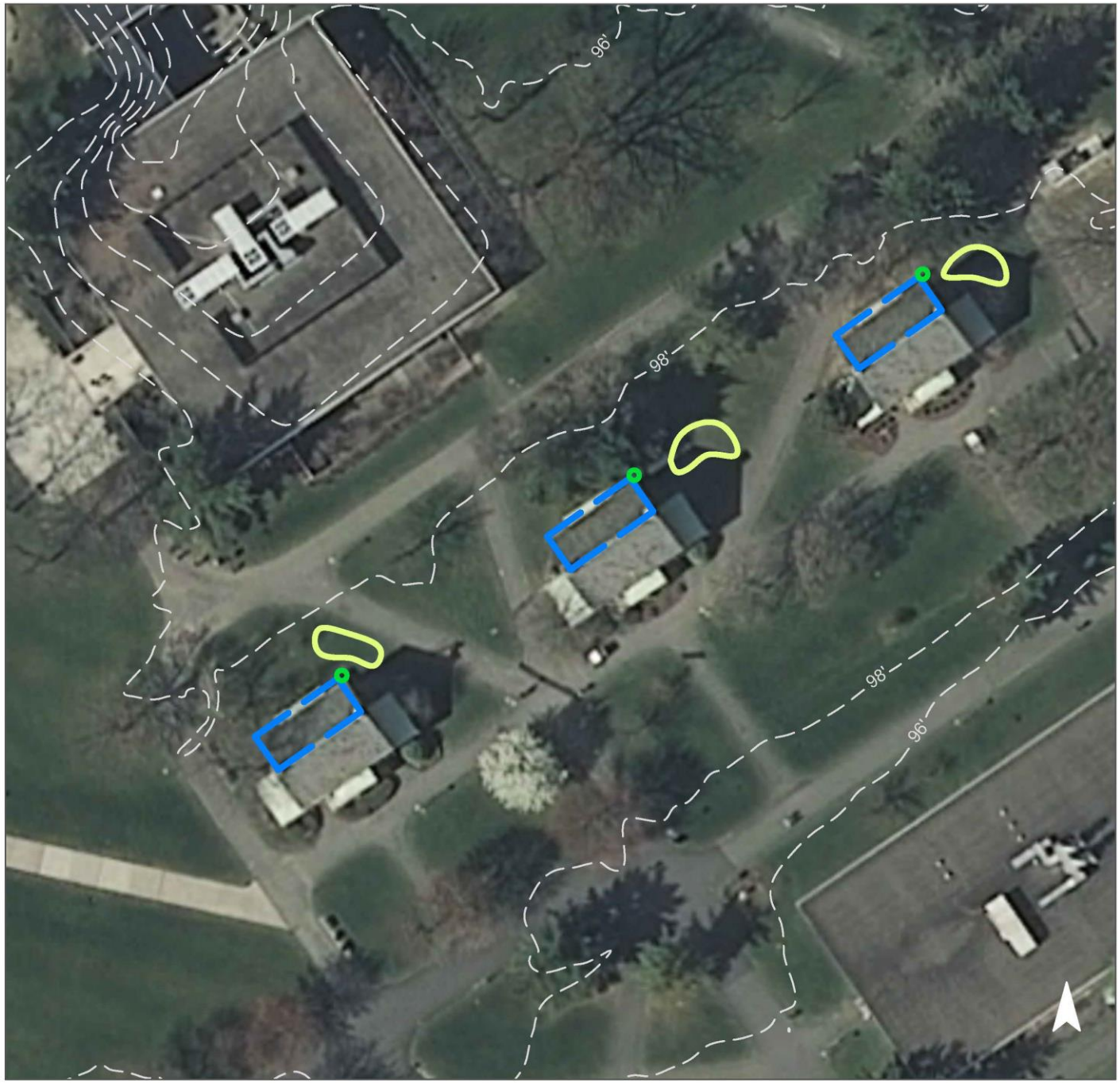


Middlesex County Academy for Science, Mathematics and Engineering Technologies & Middlesex County College

- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 30' 60'

GREEN INFRASTRUCTURE RECOMMENDATIONS



Middlesex County Academy for Science, Mathematics and Engineering Technologies & Middlesex County College

- bioretention / rain gardens
- disconnected downspouts
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 30' 60'

GREEN INFRASTRUCTURE RECOMMENDATIONS

Middlesex County Academy for Science, Mathematics and Engineering Technologies & Middlesex County College

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

BISHOP GEORGE AHR HIGH SCHOOL

Subwatershed: Rahway River
Robinson's Branch

Site Area: 1,366,646 sq. ft.

Address: 1 Tingley Lane
Menlo Park, NJ 08820

Block and Lot: Block 425, Lot 5.C3

Multiple parking spaces can be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
23	307,964	14.8	155.5	1,414.0	0.240	8.45

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	2.075	347	152,263	5.72	21,703	$542,575

GREEN INFRASTRUCTURE RECOMMENDATIONS

Bishop George Ahr High School

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 100' 200'

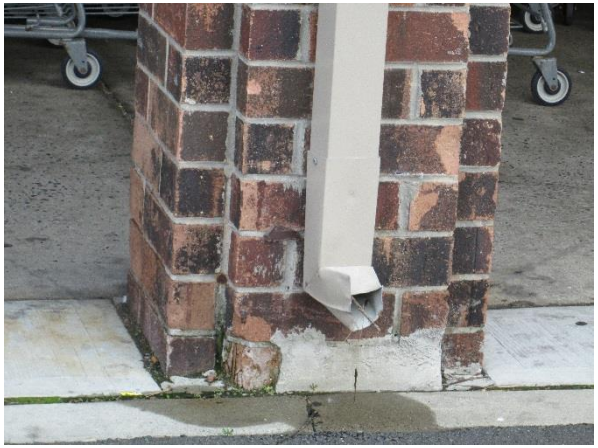
INMAN GROVE CENTER

Subwatershed: Rahway River
Robinson's Branch

Site Area: 664,220 sq. ft.

Address: 1067 Inman Avenue
Edison, NJ 08820

Block and Lot: Block 433.A, Lot 60.01

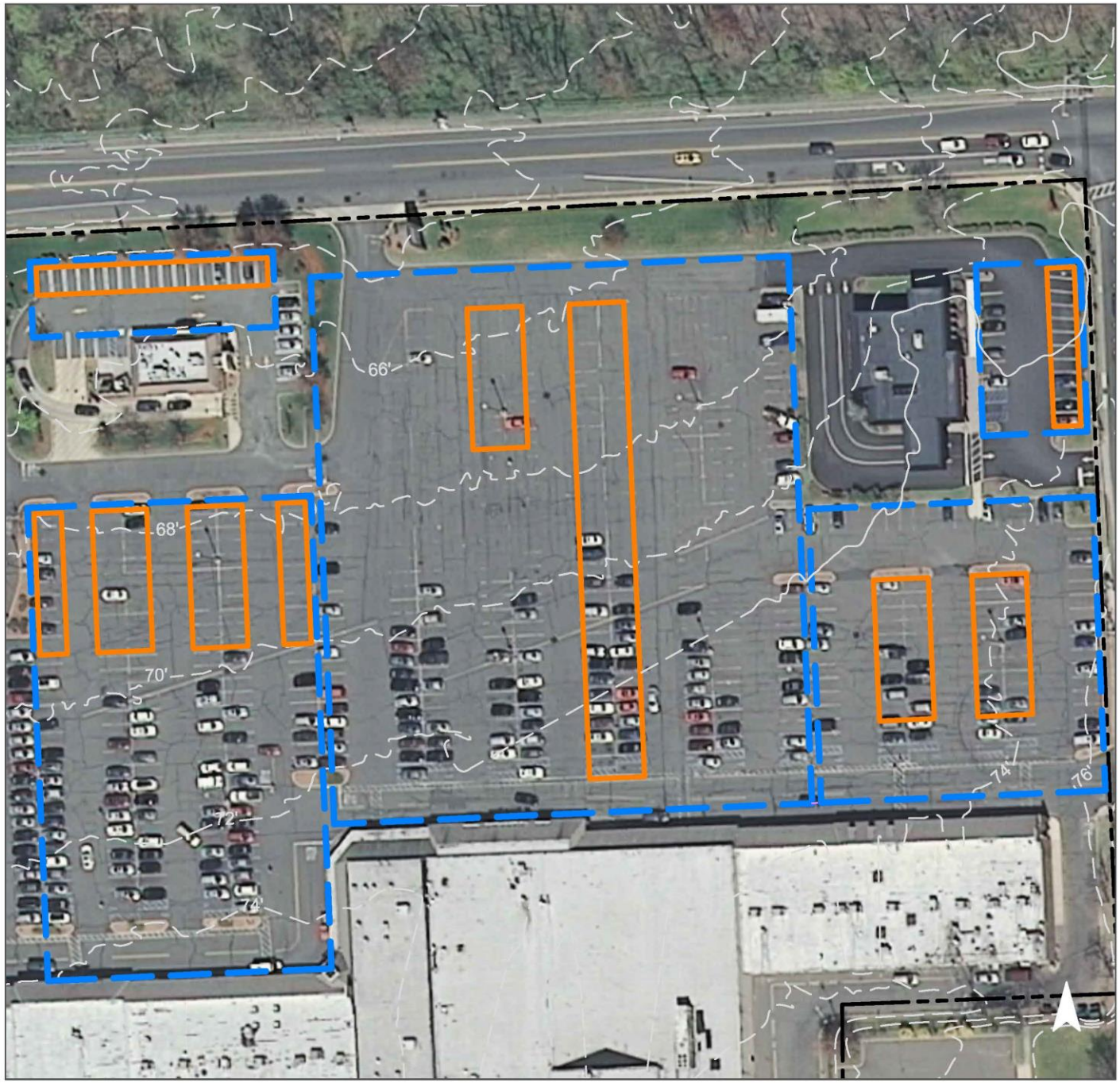


Multiple parking spaces throughout the parking lot can be replaced with pervious pavement in order to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
81	535,978	25.8	270.7	2,460.9	0.418	14.7

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	6.000	1,008	441,866	16.61	35,786	$894,650

GREEN INFRASTRUCTURE RECOMMENDATIONS



Inman Grove Center

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 100' 200'

JOHN ADAMS MIDDLE SCHOOL

Subwatershed: Rahway River
Robinson's Branch

Site Area: 3,552,744 sq. ft.

Address: 1081 New Dover Road
Edison, NJ 08820

Block and Lot: Block 528.A, Lot 3

Parking spaces in both parking lots can be replaced with porous asphalt to reduce imperious cover and promote stormwater infiltration. Rain gardens can also be installed along the west and east sides of the entrance overhang to capture and treat roof runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
22	781,082	37.7	394.5	3,586.2	0.609	21.42

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.072	12	5,303	0.20	693	$3,465
Pervious pavements	1.913	320	140,340	5.28	26,306	$657,650

GREEN INFRASTRUCTURE RECOMMENDATIONS

John Adams Middle School

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

JOHN P. STEVENS HIGH SCHOOL

Subwatershed: Rahway River
Robinson's Branch

Site Area: 3,552,744 sq. ft.

Address: 855 Grove Avenue
Edison, NJ 08820

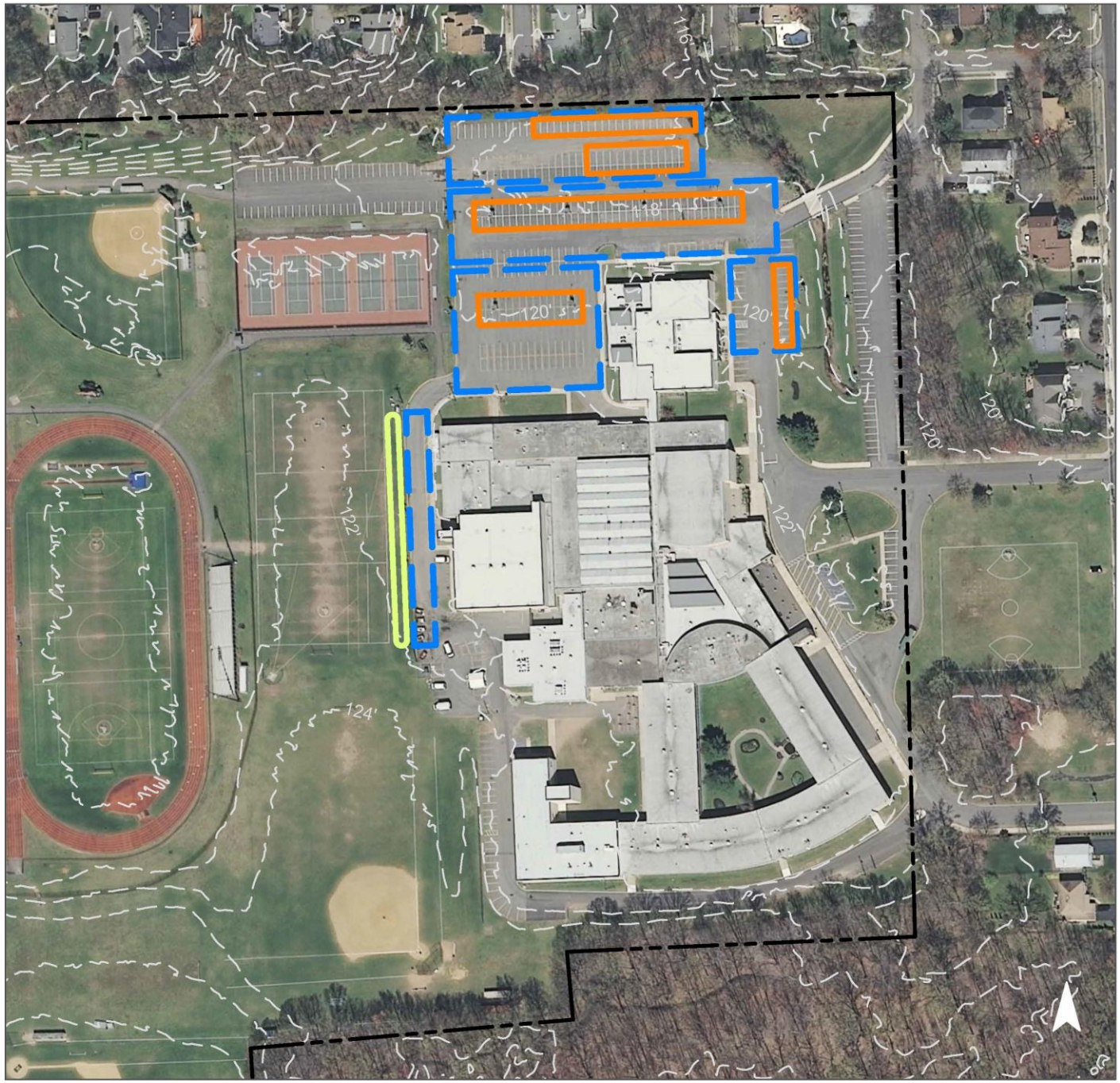
Block and Lot: Block 528.A, Lot 3

Multiple parking areas can be replaced with porous asphalt to infiltrate runoff and reduce impervious cover. A rain garden along the back drive lane can also be installed to capture, treat and infiltrate runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
22	781,082	37.7	394.5	3,586.2	0.609	21.42

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.224	38	16,463	0.62	4,256	$21,280
Pervious pavements	2.828	473	207,510	7.80	30,081	$752,025

GREEN INFRASTRUCTURE RECOMMENDATIONS



John P. Stevens High School

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 100' 200'

MARTIN LUTHER KING ELEMENTARY SCHOOL

Subwatershed: Rahway River
Robinson's Branch

Site Area: 510,591 sq. ft.

Address: 285 Tingley Lane
Edison, NJ 08820

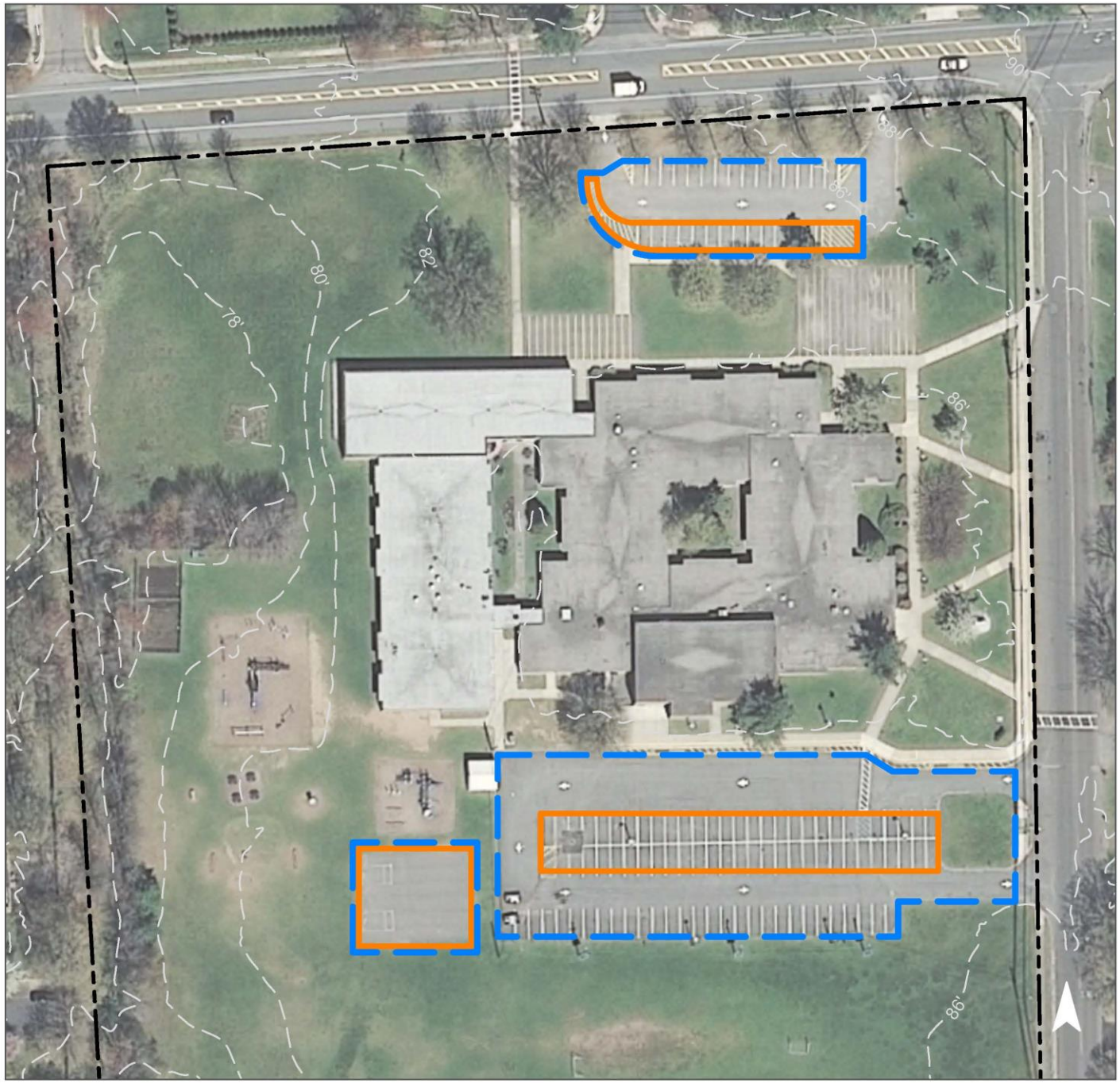
Block and Lot: Block 415, Lot 11.A

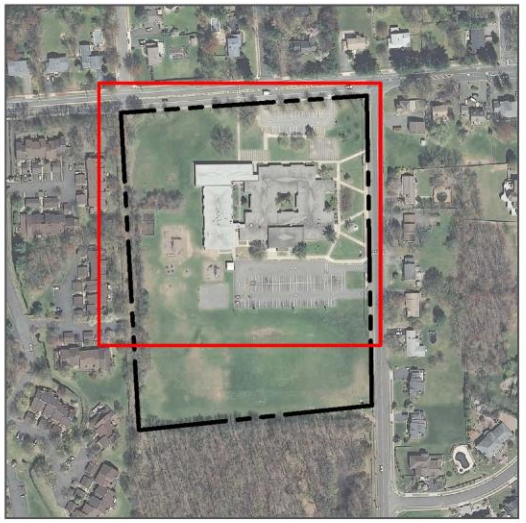
Parking spots in both lots, as well as a paved playground, located south of the school, can be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
30	152,088	7.3	76.8	698.3	0.119	4.17

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	1.469	246	107,757	4.05	17,584	$439,600

GREEN INFRASTRUCTURE RECOMMENDATIONS





Martin Luther King Elementary School

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

MOUNT PLEASANT BAPTIST CHURCH

Subwatershed: Rahway River
Robinson's Branch

Site Area: 30,788 sq. ft.

Address: Inman Avenue
Edison, NJ 08820

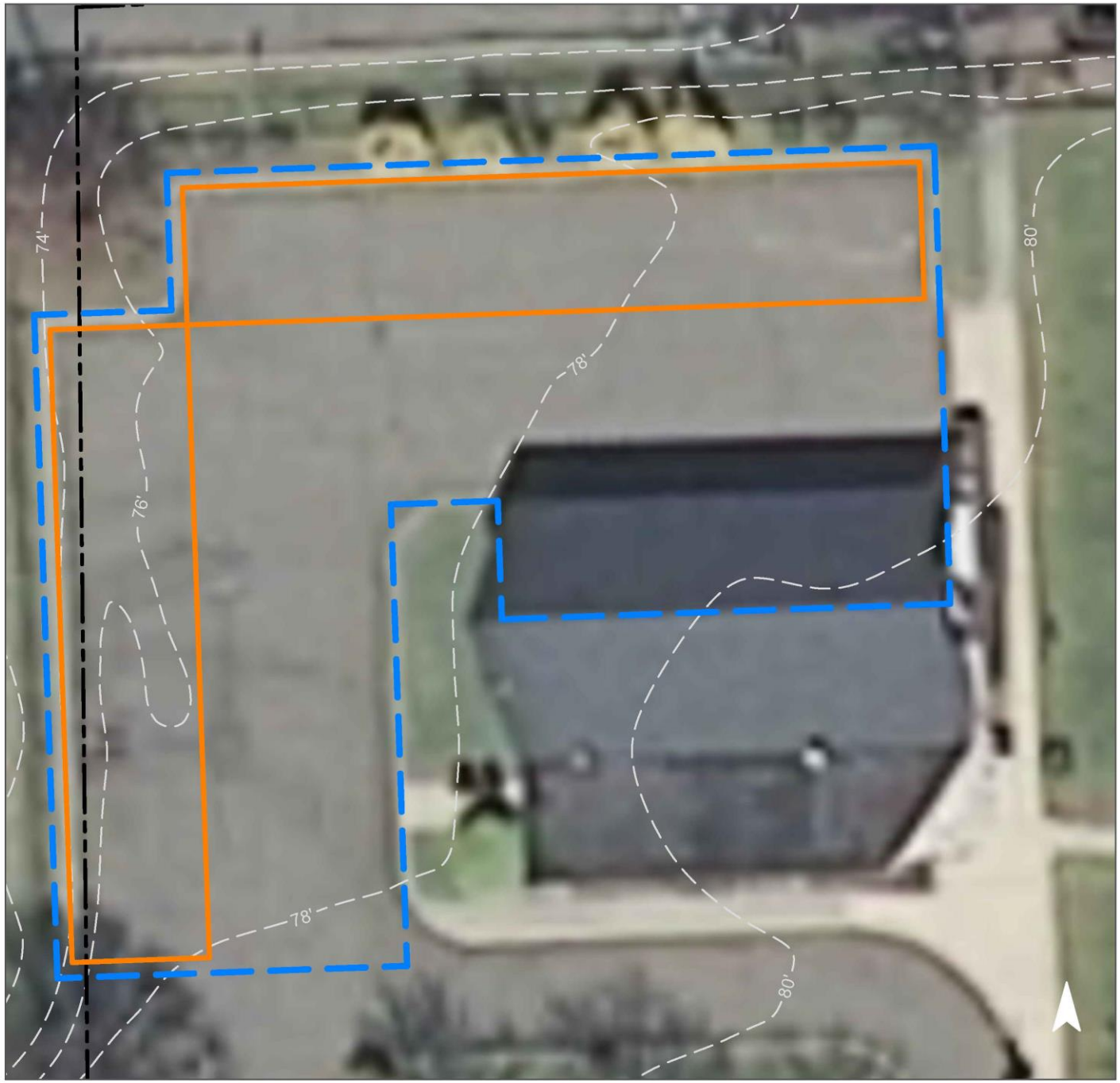
Block and Lot: Block 433.A, Lot 59

Parking spaces can be replaced with porous asphalt to promote stormwater infiltration. A rain garden can capture, treat and infiltrate additional runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
90	27,710	1.3	14.0	127.2	0.022	0.76

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	0.225	38	16,523	0.62	3,234	$80,850

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mount Pleasant Baptist Church

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 10' 20'

NEW DOVER CEMETERY

Subwatershed: Rahway River
Robinson's Branch

Site Area: 116,920 sq. ft.

Address: 687 New Dover Road
Edison, NJ 08820

Block and Lot: Block 548.B, Lot 104

On the northwest side of the building, a rain garden can be installed to capture, treat and infiltrate roof runoff from two nearby downspouts. A cistern can also be installed on the southwest side of the building to harvest rainwater by disconnecting and redirecting a downspout. The water collected can then be used for the church's vegetable garden. In the parking lot located south of the building, an entire parking row can be replaced with porous asphalt to infiltrate stormwater. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
55	64,093	3.1	32.4	294.3	0.050	1.76

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.057	10	4,166	0.16	545	$2,723
Pervious pavements	0.645	108	47,318	1.78	5,571	$139,275
Rainwater harvesting systems	0.033	6	1,400	0.11	1,400 (gal)	$2,800

GREEN INFRASTRUCTURE RECOMMENDATIONS

New Dover Cemetery

- pervious pavements
- bioretention / rain gardens
- rainwater harvesting
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 25' 50'

THE WARDLAW-HARTRIDGE SCHOOL

Subwatershed: Rahway River
Robinson's Branch

Site Area: 1,346,913 sq. ft.

Address: 1295 Inman Avenue
Edison, NJ 08820

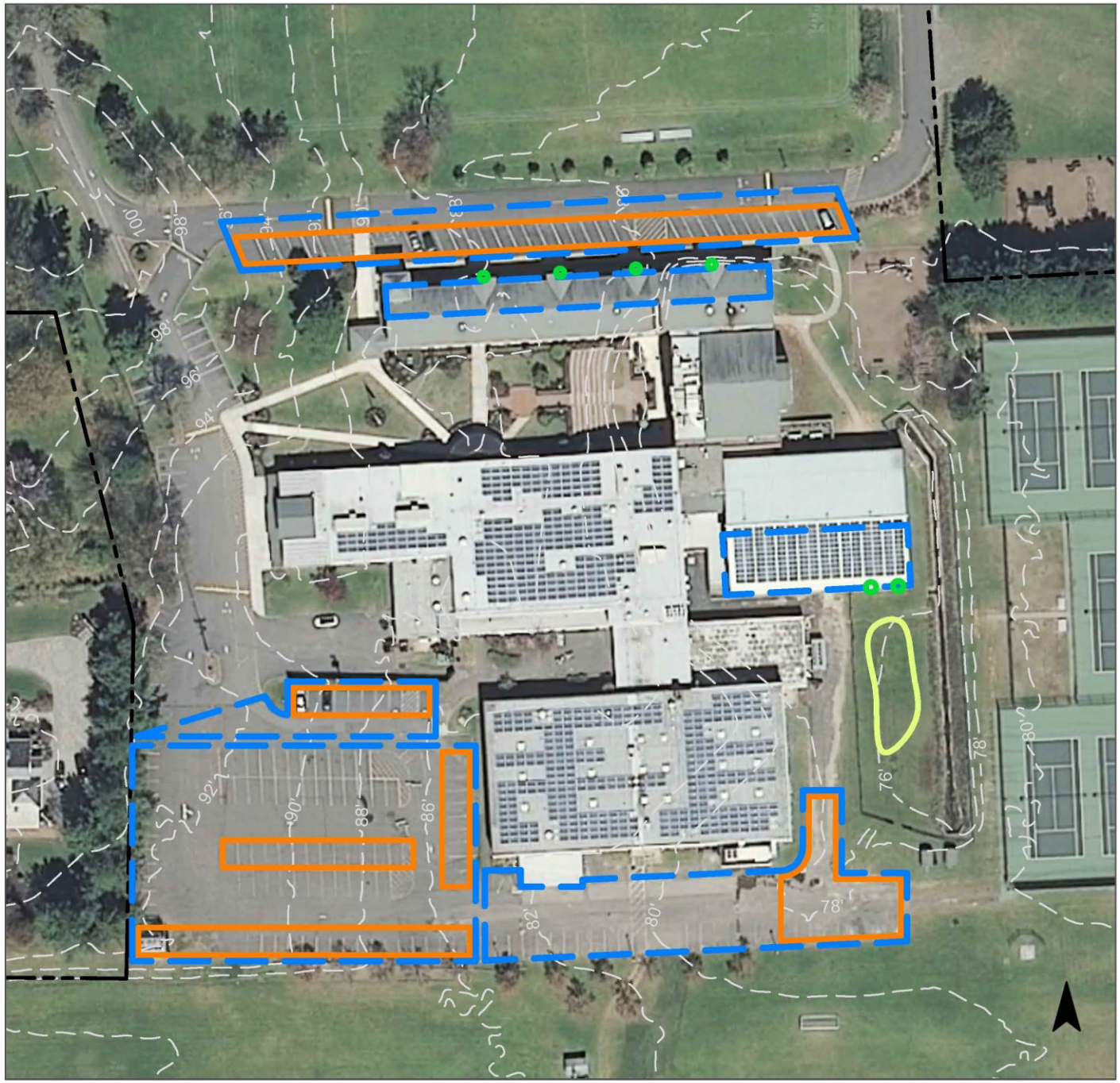
Block and Lot: Block 415, Lot 9.E5

Multiple parking rows throughout the parking lots can be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A bioswale can be installed north of the school to capture and treat parking lot runoff. On the southeast side of the building a rain garden can be installed to collect roof runoff from two nearby downspouts that can be disconnected and redirected. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
25	337,928	16.3	170.7	1,551.6	0.263	9.27

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.125	21	9,156	0.34	2,084	$10,420
Pervious pavements	1.827	306	134,034	5.02	20,598	$514,950

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Wardlaw-Hartridge School

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

LAKEVIEW SCHOOL

Subwatershed: **Rahway River South Branch**

Site Area: **1,417,352 sq. ft.**

Address: **10 Tall Oak Road**
Edison, NJ 08820

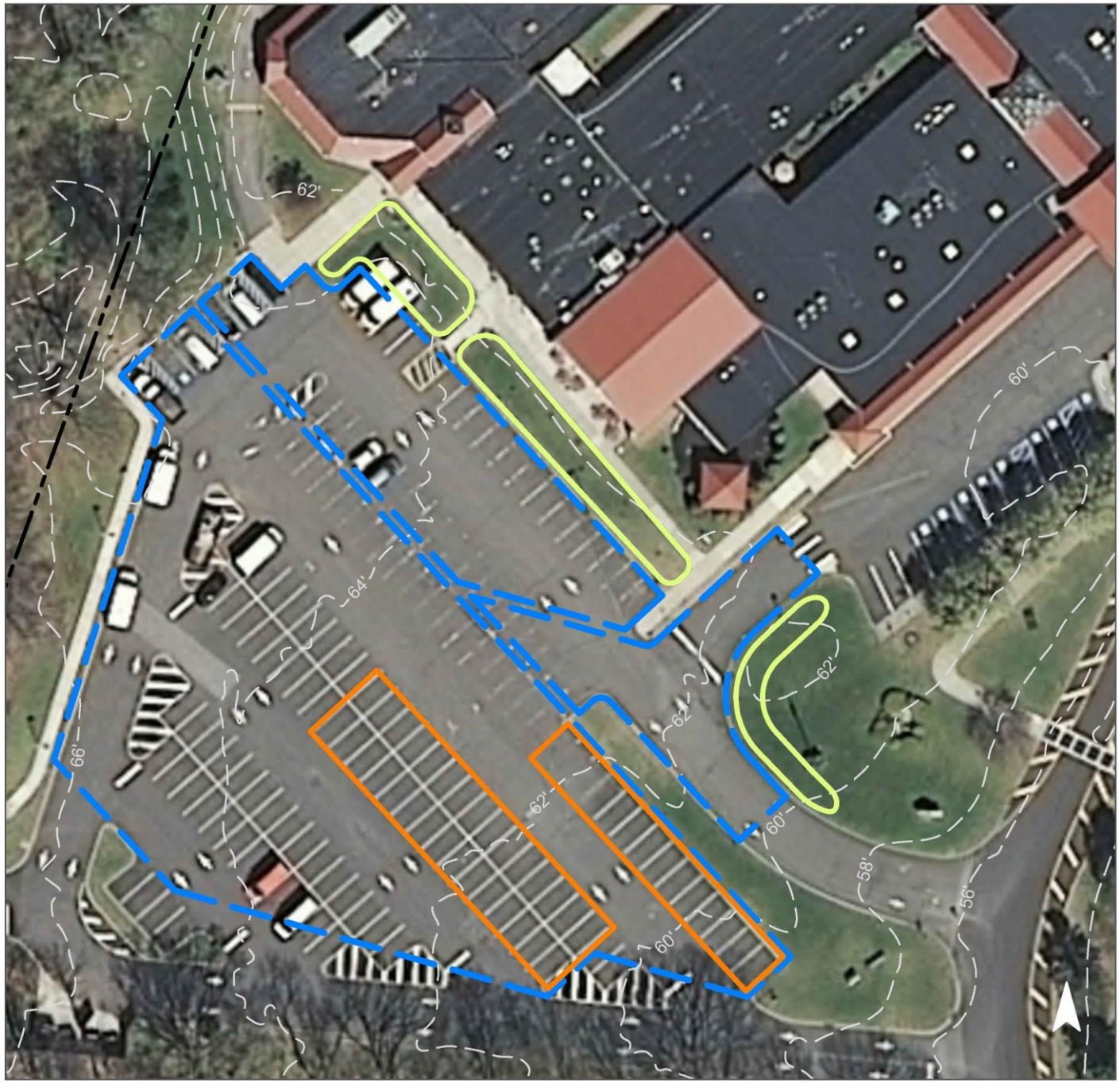
Block and Lot: **Block 689, Lot 1**

Parking spaces can be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. Several rain gardens can also be to capture, treat and infiltrate runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
22	310,358	15.0	156.7	1,425.0	0.242	8.51

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.387	65	28,364	1.07	3,218	$16,090
Pervious pavements	0.958	160	70,305	2.64	7,391	$184,775

GREEN INFRASTRUCTURE RECOMMENDATIONS



Lakeview School

- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 30' 60'

MIDDLESEX COUNTY PROSECUTOR'S OFFICE TRAINING CENTER

Subwatershed: Red Root Creek/ Crows Mill Creek

Site Area: 552,703 sq. ft.

Address: 11 Patrol Road Edison, NJ 08820

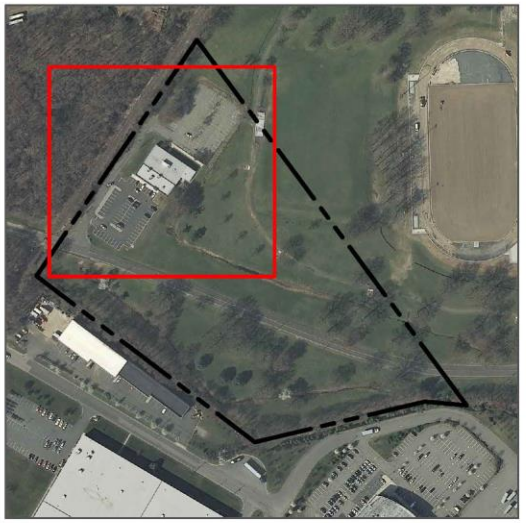
Block and Lot: Block 395, Lot 1.A

Bioretention systems can be installed to capture, treat and infiltrate stormwater. The northern parking lot is in poor condition. Parking spaces can be replaced with pervious pavement to reduce impervious cover and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
11	63,262	3.0	32.0	290.5	0.049	1.74

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.417	70	30,586	1.15	3,635	$18,175
Pervious pavements	0.642	107	47,087	1.77	9,808	$245,200

GREEN INFRASTRUCTURE RECOMMENDATIONS



Middlesex County Prosecutor's Office Training Center

- disconnected downspouts
- pervious pavements
- bioretention / rain gardens
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 30' 60'

THOMAS A. EDISON PARK

Subwatershed: Red Root Creek/ Crows Mill Creek

Site Area: 7,242,631 sq. ft.

Address: N Patrol Road Edison, NJ 08820

Block and Lot: Block 395, Lot 1.B2

To promote stormwater infiltration and reduce impervious cover, multiple parking areas and existing tennis courts can be replaced with pervious pavement. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
8	613,441	29.6	309.8	2,816.5	0.478	16.82

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavements	2.787	466	204,473	7.69	47,843	$1,196,075

GREEN INFRASTRUCTURE RECOMMENDATIONS

Thomas A. Edison Park

- pervious pavements
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 50' 100'

d. Summary of Existing Conditions

Summary of Existing Site Conditions

Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads TP (lb/yr)	Existing Annual Loads TN (lb/yr)	Existing Annual Loads TSS (lb/yr)	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (Mgal)	Runoff Volumes from I.C. Annual (Mgal)
BOUND BROOK SUBWATERSHED	**130.98**	**5,705,574**			**56.4**	**590.7**	**5,370.3**		**26.85**	**1,169,657**	**0.911**	**32.08**
CareOne at the Highlands												
Total Site Info	6.65	289,462	410	28	5.4	56.2	510.7	38	2.55	111,226	0.087	3.05
JFK Hartwyck at Oak Tree												
Total Site Info	3.63	157,951	545.R	37	6.1	64.0	581.6	80	2.91	126,673	0.099	3.47
Plainfield Country Club												
Total Site Info	59.98	2,612,637	415	3	23.0	241.4	2,194.9	18	10.97	478,048	0.372	13.11
Woodbrook Elementary School												
Total Site Info	21.88	953,301	593.09	13.B	8.9	92.9	844.3	19	4.22	183,891	0.143	5.04
Woodrow Wilson Middle School												
Total Site Info	38.85	1,692,223	593.09	13.D	13.0	136.3	1238.8	16	6.19	269,819	0.210	7.40
LOWER RARITAN RIVER SUBWATERSHED	**42.04**	**1,831,248**			**19.0**	**199.0**	**1,809.0**		**9.04**	**393,992**	**0.307**	**10.81**
Edison Public Library												
Total Site Info	1.82	79,342	82	9	2.3	24.6	223.3	61	1.12	48,633	0.038	1.33
John Marshall Elementary School												
Total Site Info	14.57	634,738	59.U	2	5.8	60.4	549.0	19	2.75	119,574	0.093	3.28
Stelton Baptist Church												
Total Site Info	1.06	46,377	82.N	5	0.8	8.8	80.0	38	0.40	17,418	0.014	0.48
Stelton Community Center												
Total Site Info	3.89	169,649	82.N	4.C	3.8	40.0	363.9	47	1.82	79,249	0.062	2.17
Thomas Jefferson Middle School												
Total Site Info	20.69	901,143	82	10	6.2	65.2	592.8	14	2.96	129,117	0.101	3.54

Summary of Existing Site Conditions

Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads TP (lb/yr)	Existing Annual Loads TN (lb/yr)	Existing Annual Loads TSS (lb/yr)	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (Mgal)	Runoff Volumes from I.C. Annual (Mgal)
MILL BROOK/ MARTINS CREEK SUBWATERSHED	**177.58**	**7,735,554**			**159.7**	**1,672.8**	**15,207.5**		**76.04**	**3,312,204**	**2.581**	**90.84**
Benjamin Franklin Elementary School												
Total Site Info	9.36	407,618	265.DD	41	9.8	102.9	935.7	50	4.68	203,795	0.159	5.59
Herbert Hoover Middle School												
Total Site Info	7.43	323,475	730	7.A3	10.5	109.9	999.4	67	5.00	217,671	0.170	5.97
Middlesex County Academy for Science, Mathematics and Engineering Technologies & Middlesex County College												
Total Site Info	160.80	7,004,461	396	3.B	139.4	1,460.0	13,272.4	41	66.36	2,890,738	2.252	79.28
RAHWAY RIVER ROBINSON'S BRANCH SUBWATERSHED	**255.78**	**11,141,567**			**144.0**	**1,509.1**	**13,718.7**		**68.59**	**2,987,924**	**2.328**	**81.95**
Bishop George Ahr High School												
Total Site Info	31.37	1,366,646	425	5.C3	14.8	155.5	1,414.0	23	7.07	307,964	0.240	8.45
Inman Grove Center												
Total Site Info	15.25	664,220	433.A	60.01	25.8	270.7	2,460.9	81	12.30	535,978	0.418	14.70
John Adams Middle School												
Total Site Info	81.56	3,552,744	528.A	3	37.7	394.5	3,586.2	22	17.93	781,082	0.609	21.42
John P. Stevens High School												
Total Site Info	81.56	3,552,744	528.A	3	37.7	394.5	3,586.2	22	17.93	781,082	0.609	21.42
Martin Luther King Elementary School												
Total Site Info	11.72	510,591	415	11.A	7.3	76.8	698.3	30	3.49	152,088	0.119	4.17
Mount Pleasant Baptist Church												
Total Site Info	0.71	30,788	433.A	59	1.3	14.0	127.2	90	0.64	27,710	0.022	0.76
New Dover Cemetery												
Total Site Info	2.68	116,920	548.B	104	3.1	32.4	294.3	55	1.47	64,093	0.050	1.76

Summary of Existing Site Conditions

Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	Existing Annual Loads TP (lb/yr)	Existing Annual Loads TN (lb/yr)	Existing Annual Loads TSS (lb/yr)	I.C. %	I.C. Area (ac)	I.C. Area (SF)	Runoff Volumes from I.C. Water Quality Storm (1.25" over 2-hours) (Mgal)	Runoff Volumes from I.C. Annual (Mgal)
The Wardlaw-Hartridge School												
Total Site Info	30.92	1,346,913	415	9.E5	16.3	170.7	1,551.6	25	7.76	337,928	0.263	9.27
RAHWAY RIVER SOUTH BRANCH SUBWATERSHED	**32.54**	**1,417,352**			**15.0**	**156.7**	**1,425.0**		**7.12**	**310,358**	**0.242**	**8.51**
Lakeview School												
Total Site Info	32.54	1,417,352	689	1	15.0	156.7	1,425.0	22	7.12	310,358	0.242	8.51
RED ROOT CREEK/ CROWS MILL CREEK SUBWATERSHED	**183.13**	**7,977,334**			**32.6**	**341.8**	**3,107.0**		**15.53**	**676,703**	**0.527**	**18.56**
Middlesex County Prosecutor's Office Training Center												
Total Site Info	12.69	552,703	395	1.A	3.0	32.0	290.5	11	1.45	63,262	0.049	1.74
Thomas A. Edison Park												
Total Site Info	170.45	7,424,631	395	1.B2	29.6	309.8	2,816.5	8	14.08	613,441	0.478	16.82

e. Summary of Proposed Green Infrastructure Practices

Summary of Proposed Green Infrastructure Practies

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area		Recharge Potential	TSS Removal Potential	Max Volume Reduction Potential	Peak Discharge Reduction Potential	Size of BMP	Unit Cost	Unit	Total Cost	I.C. Treated
		Area (SF)	Area (ac)	(Mgal/yr)	(lbs/yr)	(gal/storm)	(cfs)	(SF)	($)		($)	%
	BOUND BROOK SUBWATERSHED	**214,604**	**4.93**	**5.592**	**936**	**410,286**	**15.41**	**52,351**			**$1,083,386**	**23.8%**
1	**CareOne at the Highlands**											
	Bioretention systems/rain gardens	14,259	0.33	0.372	62	27,265	1.02	3,916	5	SF	$19,580	12.8%
	Pervious pavements	36,157	0.83	0.942	158	69,130	2.60	7,668	25	SF	$191,700	32.5%
	Total Site Info	**50,416**	**1.16**	**1.314**	**220**	**96,395**	**3.62**	**11,584**			**$211,280**	**45.3%**
2	**JFK Hartwyck at Oak Tree**											
	Bioretention systems/rain gardens	6,277	0.14	0.164	27	11,998	0.45	1,569	5	SF	$7,846	5.0%
	Pervious pavements	42,227	0.97	1.100	184	80,732	3.03	15,617	25	SF	$390,425	33.3%
	Total Site Info	**48,504**	**1.11**	**1.264**	**212**	**92,730**	**3.48**	**17,186**			**$398,271**	**38.3%**
3	**Plainfield Country Club**											
	Bioretention systems/rain gardens	11,825	0.27	0.308	52	22,605	0.85	1,122	5	SF	$5,610	2.5%
	Pervious pavements	10,976	0.25	0.286	48	20,981	0.79	2,930	25	SF	$73,250	2.3%
	Total Site Info	**22,801**	**0.52**	**0.594**	**99**	**43,586**	**1.64**	**4,052**			**$78,860**	**4.8%**
4	**Woodbrook Elementary School**											
	Pervious pavements	36,093	0.83	0.940	157	69,003	2.59	8,324	25	SF	$208,100	19.6%
	Total Site Info	**36,093**	**0.83**	**0.940**	**157**	**69,003**	**2.59**	**8,324**			**$208,100**	**19.6%**
5	**Woodrow Wilson Middle School**											
	Pervious pavements	41,840	0.96	1.090	182	79,991	3.01	7,475	25	SF	$186,875	15.5%
	Bioretention systems	14,950	0.34	0.390	65	28,581	1.07	3,730	5	SF	$18,650	5.5%
	Total Site Info	**56,790**	**1.30**	**1.480**	**248**	**108,572**	**4.08**	**11,205**			**$186,875**	**21.0%**
	LOWER RARITAN RIVER SUBWATERSHED	**116,447**	**2.67**	**3.034**	**508**	**222,628**	**7.96**	**28,262**			**$415,189**	**29.6%**
6	**Edison Public Library**											
	Bioretention systems/rain gardens	22,974	0.53	0.599	100	43,923	1.65	5,807	5	SF	$29,035	47.2%
	Pervious pavements	8,677	0.20	0.226	38	16,591	0.62	2,919	25	SF	$72,975	17.8%
	Total Site Info	**31,651**	**0.73**	**0.825**	**138**	**60,514**	**2.27**	**8,726**			**$102,010**	**65.1%**
7	**John Marshall Elementary School**											
	Bioretention systems/rain gardens	13,311	0.31	0.347	58	25,447	0.96	3,328	5	SF	$16,639	11.1%
	Pervious pavements	44,929	1.03	1.171	196	85,900	3.23	8,565	25	SF	$214,125	37.6%
	Total Site Info	**58,240**	**1.34**	**1.517**	**254**	**111,347**	**4.19**	**11,893**			**$230,764**	**48.7%**

Summary of Proposed Green Infrastructure Practies

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area Area (SF)	Potential Management Area Area (ac)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Max Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cfs)	Size of BMP (SF)	Unit Cost ($)	Unit	Total Cost ($)	I.C. Treated %
8	**Stelton Baptist Church**											
	Bioretention systems/rain gardens	1,534	0.04	0.040	7	2,932	0.11	305	5	SF	$1,525	8.8%
	Pervious pavements	1,057	0.02	0.028	5	2,020	0.08	1,000	25	SF	$25,000	6.1%
	Total Site Info	**2,591**	**0.06**	**0.068**	**11**	**4,952**	**0.19**	**1,305**			**$26,525**	**14.9%**
9	**Stelton Community Center**											
	Bioretention systems/rain gardens	7,203	0.17	0.188	31	13,771	0.52	1,882	5	SF	$9,410	9.1%
	Total Site Info	**7,203**	**0.17**	**0.188**	**31**	**13,771**	**0.52**	**1,882**			**$9,410**	**9.1%**
10	**Thomas Jefferson Middle School**											
	Bioretention systems/rain gardens	10,164	0.23	0.265	44	19,433	0.73	3,246	5	SF	$16,230	7.9%
	Pervious pavements	6,598	0.15	0.172	29	12,611	0.06	1,210	25	SF	$30,250	5.1%
	Total Site Info	**16,762**	**0.38**	**0.437**	**73**	**32,044**	**0.79**	**4,456**			**$46,480**	**13.0%**
	MILL BROOK/ MARTINS CREEK SUBWATERSHED	**305,935**	**7.02**	**7.971**	**1,334**	**584,906**	**21.98**	**94,593**			**$2,145,025**	**9.2%**
11	**Benjamin Franklin Elementary School**											
	Bioretention systems/rain gardens	8,676	0.20	0.226	38	16,591	0.62	3,118	5	SF	$15,590	4.3%
	Pervious pavements	20,425	0.47	0.532	89	39,053	1.47	12,320	25	SF	$308,000	10.0%
	Total Site Info	**29,101**	**0.67**	**0.758**	**127**	**55,644**	**2.09**	**15,438**			**$323,590**	**14.3%**
12	**Herbert Hoover Middle School**											
	Bioretention systems/rain gardens	12,848	0.29	0.335	56	24,564	0.92	3,212	5	SF	$16,060	5.9%
	Pervious pavements	26,867	0.62	0.700	117	51,365	1.93	4,480	25	SF	$112,000	12.3%
	Total Site Info	**39,715**	**0.91**	**1.035**	**173**	**75,929**	**2.85**	**7,692**			**$128,060**	**18.2%**
13	**Middlesex County Academy for Science, Mathematics and Engineering Technologies & Middlesex County College**											
	Bioretention systems/rain gardens	6,146	0.14	0.160	27	11,751	0.44	4,660	5	SF	$23,300	0.2%
	Pervious pavements	230,973	5.30	6.018	1,007	441,582	16.60	66,803	25	SF	$1,670,075	8.0%
	Total Site Info	**237,119**	**5.44**	**6.178**	**1,034**	**453,333**	**17.04**	**71,463**			**$1,693,375**	**8.2%**

Summary of Proposed Green Infrastructure Practies

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area		Recharge Potential	TSS Removal Potential	Max Volume Reduction Potential	Peak Discharge Reduction Potential	Size of BMP	Unit Cost	Unit	Total Cost	I.C. Treated
		Area (SF)	Area (ac)	(Mgal/yr)	(lbs/yr)	(gal/storm)	(cfs)	(SF)	($)		($)	%
	RAHWAY RIVER ROBINSON'S BRANCH SUBWATERSHED	**672,405**	**15.43**	**17.492**	**2,932**	**1,284,099**	**48.31**	**169,841**			**$4,062,263**	**22.5%**
14	**Bishop George Ahr High School**											
	Pervious pavements	79,641	1.83	2.075	347	152,263	5.72	21,703	25	SF	$542,575	25.9%
	Total Site Info	**79,641**	**1.83**	**2.075**	**347**	**152,263**	**5.72**	**21,703**			**$542,575**	**25.9%**
15	**Inman Grove Center**											
	Pervious pavements	231,121	5.31	6.000	1,008	441,866	16.61	35,786	25	SF	$894,650	43.1%
	Total Site Info	**231,121**	**5.31**	**6.000**	**1,008**	**441,866**	**16.61**	**35,786**			**$894,650**	**43.1%**
16	**John Adams Middle School**											
	Bioretention systems/rain gardens	2,772	0.06	0.072	12	5,303	0.20	693	5	SF	$3,465	0.4%
	Pervious pavements	73,405	1.69	1.913	320	140,340	5.28	26,306	25	SF	$657,650	9.4%
	Total Site Info	**76,177**	**1.75**	**1.985**	**332**	**145,643**	**5.48**	**26,999**			**$661,115**	**9.8%**
17	**John P. Stevens High School**											
	Bioretention systems/rain gardens	8,610	0.20	0.224	38	16,463	0.62	4,256	5	SF	$21,280	1.1%
	Pervious pavements	108,541	2.49	2.828	473	207,510	7.80	30,081	25	SF	$752,025	13.9%
	Total Site Info	**117,151**	**2.69**	**3.052**	**511**	**223,973**	**8.42**	**34,337**			**$773,305**	**15.0%**
18	**Martin Luther King Elementary School**											
	Pervious pavements	56,363	1.29	1.469	246	107,757	4.05	17,584	25	SF	$439,600	37.1%
	Total Site Info	**56,363**	**1.29**	**1.469**	**246**	**107,757**	**4.05**	**17,584**			**$439,600**	**37.1%**
19	**Mount Pleasant Baptist Church**											
	Pervious pavements	8,643	0.20	0.225	38	16,523	0.62	3,234	25	SF	$80,850	31.2%
	Total Site Info	**8,643**	**0.20**	**0.225**	**38**	**16,523**	**0.62**	**3,234**			**$80,850**	**31.2%**
20	**New Dover Cemetery**											
	Bioretention systems/rain gardens	2,178	0.05	0.057	10	4,166	0.16	545	5	SF	$2,723	3.4%
	Pervious pavements	24,751	0.57	0.645	108	47,318	1.78	5,571	25	SF	$139,275	38.6%
	Rainwater harvesting systems	1,485	0.03	0.033	6	1,400	0.11	1,400	2	gal	$2,800	3.5%
	Total Site Info	**28,414**	**0.65**	**0.735**	**123**	**52,884**	**2.05**	**7,516**			**$144,798**	**45.5%**

Summary of Proposed Green Infrastructure Practies

	Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area Area (SF)	Potential Management Area Area (ac)	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Max Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cfs)	Size of BMP (SF)	Unit Cost ($)	Unit	Total Cost ($)	I.C. Treated %
21	**The Wardlaw-Hartridge School**											
	Bioretention systems/rain gardens	4,787	0.11	0.125	21	9,156	0.34	2,084	5	SF	$10,420	1.4%
	Pervious pavements	70,108	1.61	1.827	306	134,034	5.02	20,598	25	SF	$514,950	20.7%
	Total Site Info	**74,895**	**1.72**	**1.951**	**327**	**143,190**	**5.36**	**22,682**			**$525,370**	**22.2%**
	RAHWAY RIVER SOUTH BRANCH SUBWATERSHED	**51,609**	**1.18**	**1.345**	**225**	**98,669**	**3.71**	**10,609**			**$200,865**	**16.6%**
22	**Lakeview School**											
	Bioretention systems/rain gardens	14,836	0.34	0.387	65	28,364	1.07	3,218	5	SF	$16,090	4.8%
	Pervious pavements	36,773	0.84	0.958	160	70,305	2.64	7,391	25	SF	$184,775	11.8%
	Total Site Info	**51,609**	**1.18**	**1.345**	**225**	**98,669**	**3.71**	**10,609**			**$200,865**	**16.6%**
	RED ROOT CREEK/ CROWS MILL CREEK SUBWATERSHED	**147,577**	**3.39**	**3.845**	**644**	**282,146**	**10.61**	**61,286**			**$1,459,450**	**21.8%**
23	**Middlesex County Prosecutor's Office Training Center**											
	Bioretention systems/rain gardens	15,999	0.37	0.417	70	30,586	1.15	3,635	5	SF	$18,175	25.3%
	Pervious pavements	24,628	0.57	0.642	107	47,087	1.77	9,808	25	SF	$245,200	38.9%
	Total Site Info	**40,627**	**0.93**	**1.059**	**177**	**77,673**	**2.92**	**13,443**			**$263,375**	**64.2%**
24	**Thomas A. Edison Park**											
	Pervious pavements	106,950	2.46	2.787	466	204,473	7.69	47,843	25	SF	$1,196,075	17.4%
	Total Site Info	**106,950**	**2.46**	**2.787**	**466**	**204,473**	**7.69**	**47,843**			**$1,196,075**	**17.4%**