RUTGERS
New Jersey Agricultural
Experiment Station

Draft

Impervious Cover Reduction Action Plan
for
Somerville Borough, Somerset County, New Jersey

Prepared for Somerville Borough by the
Rutgers Cooperative Extension Water Resources Program

September 30, 2015

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Introduction

Located in Somerset County in central New Jersey, Somerville Borough covers approximately 2.3 square miles. Figures 1 and 2 illustrate that Somerville Borough is dominated by urban land uses. A total of 83.8% of the municipality's land use is classified as urban. Of the urban land in Somerville Borough, medium density residential is the dominant urban land use (Figure 3).

The New Jersey Department of Environmental Protection (NJDEP) 2007 land use/land cover geographical information system (GIS) data layer categorizes Somerville Borough 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 Somerville Borough. Based upon the NJDEP 2007 land use/land cover data, approximately 8.0% of Somerville Borough has impervious cover. This level of impervious cover suggests that the streams in Somerville Borough are likely sensitive streams.[1]

Methodology

Somerville Borough contains portions of three 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

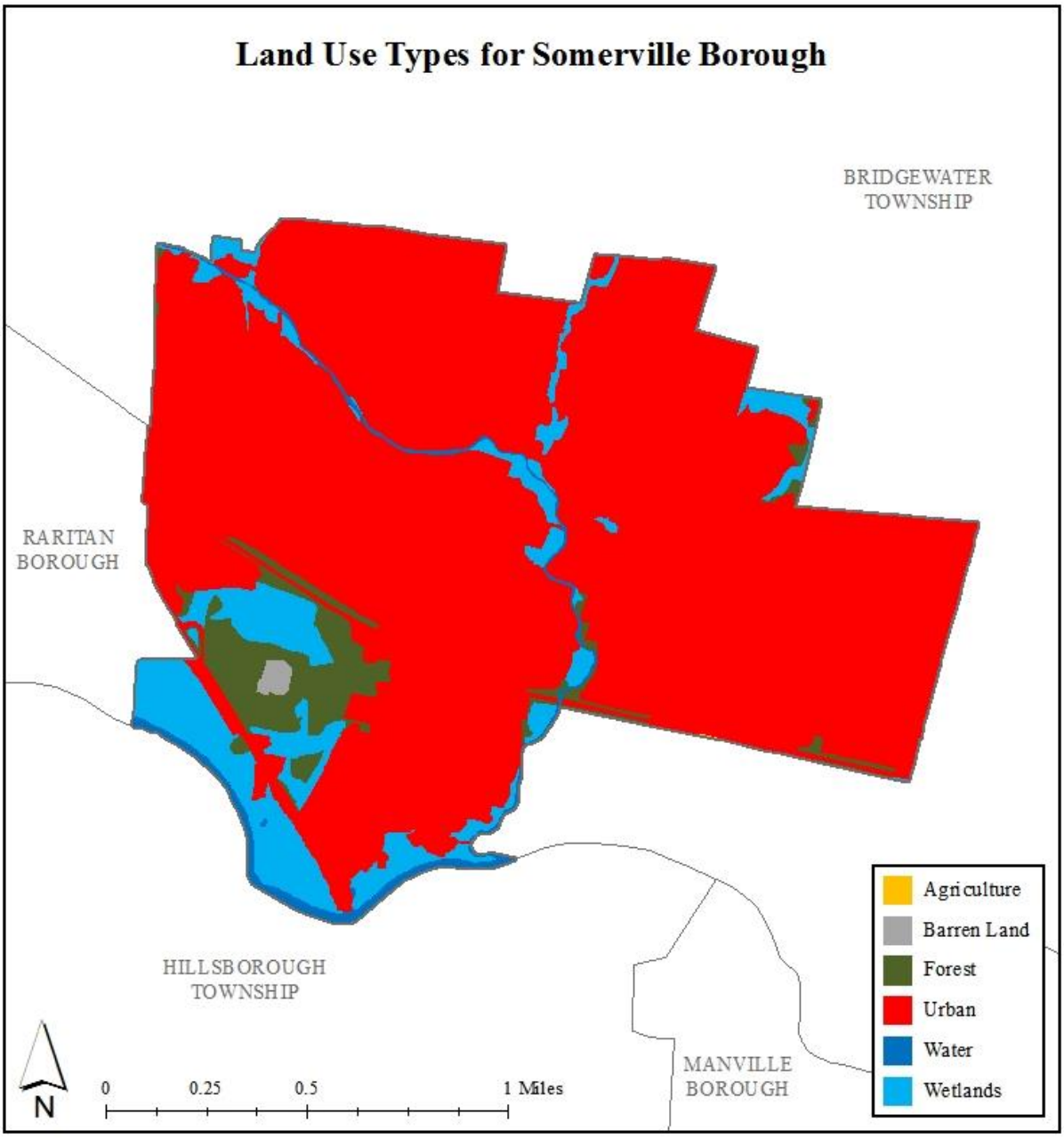


Figure 1: Map illustrating the land use in Somerville Borough

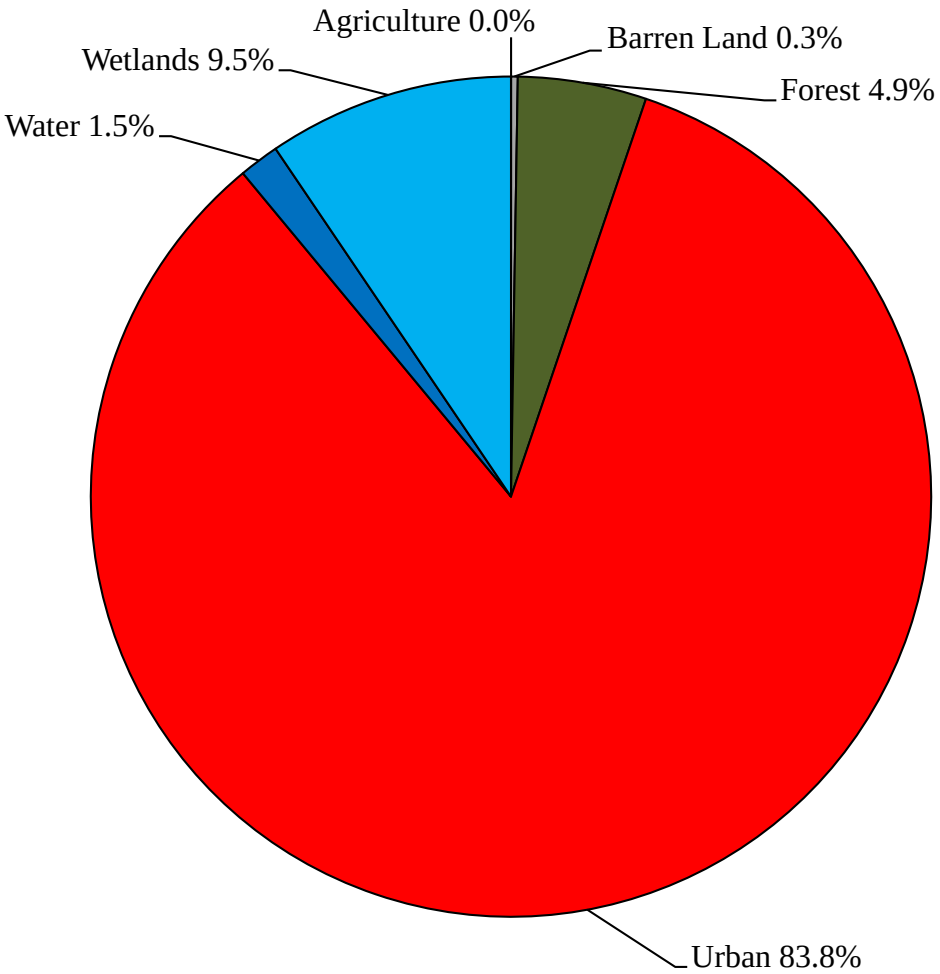


Figure 2: Pie chart illustrating the land use in Somerville Borough

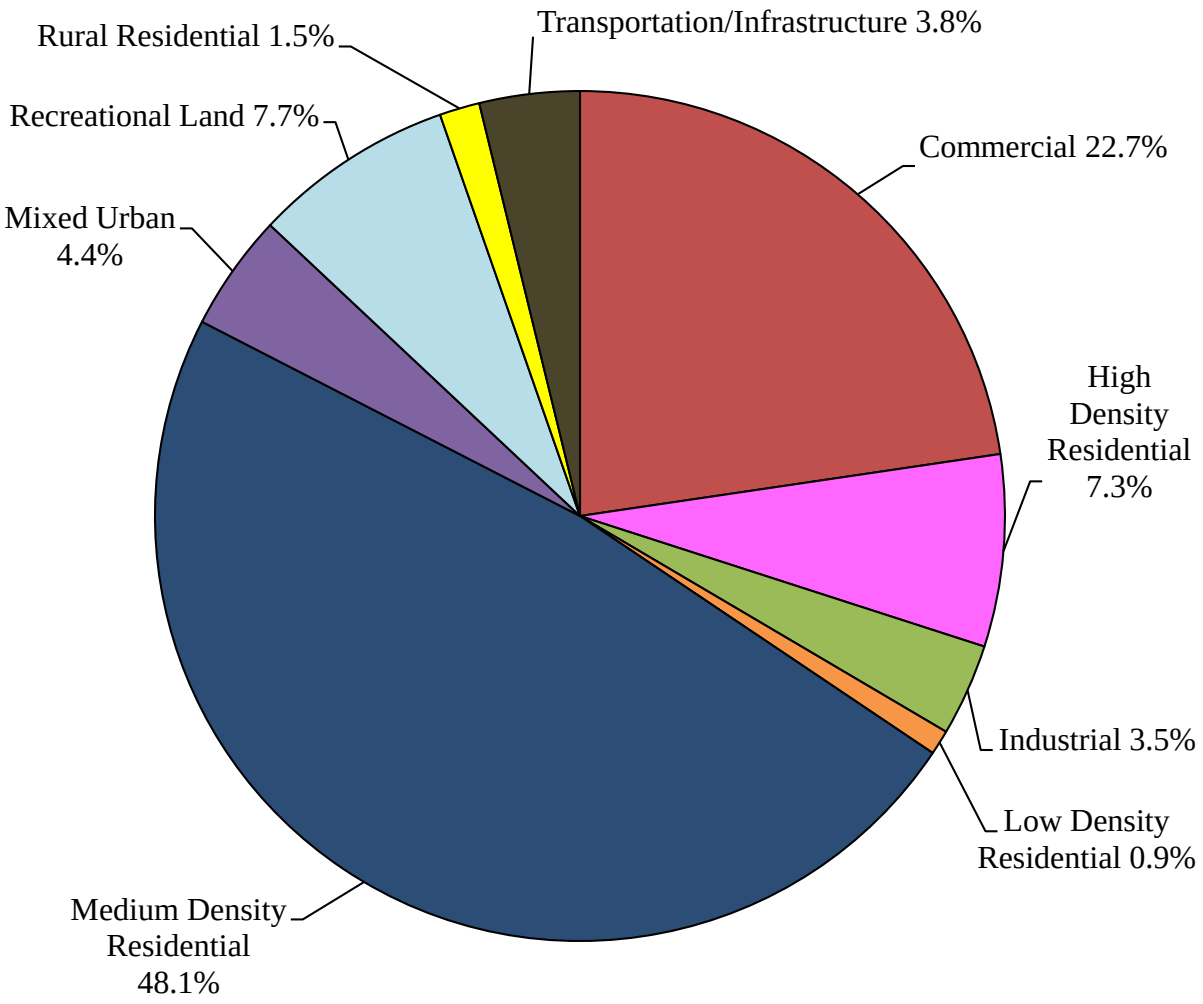


Figure 3: Pie chart illustrating the various types of urban land use in Somerville Borough

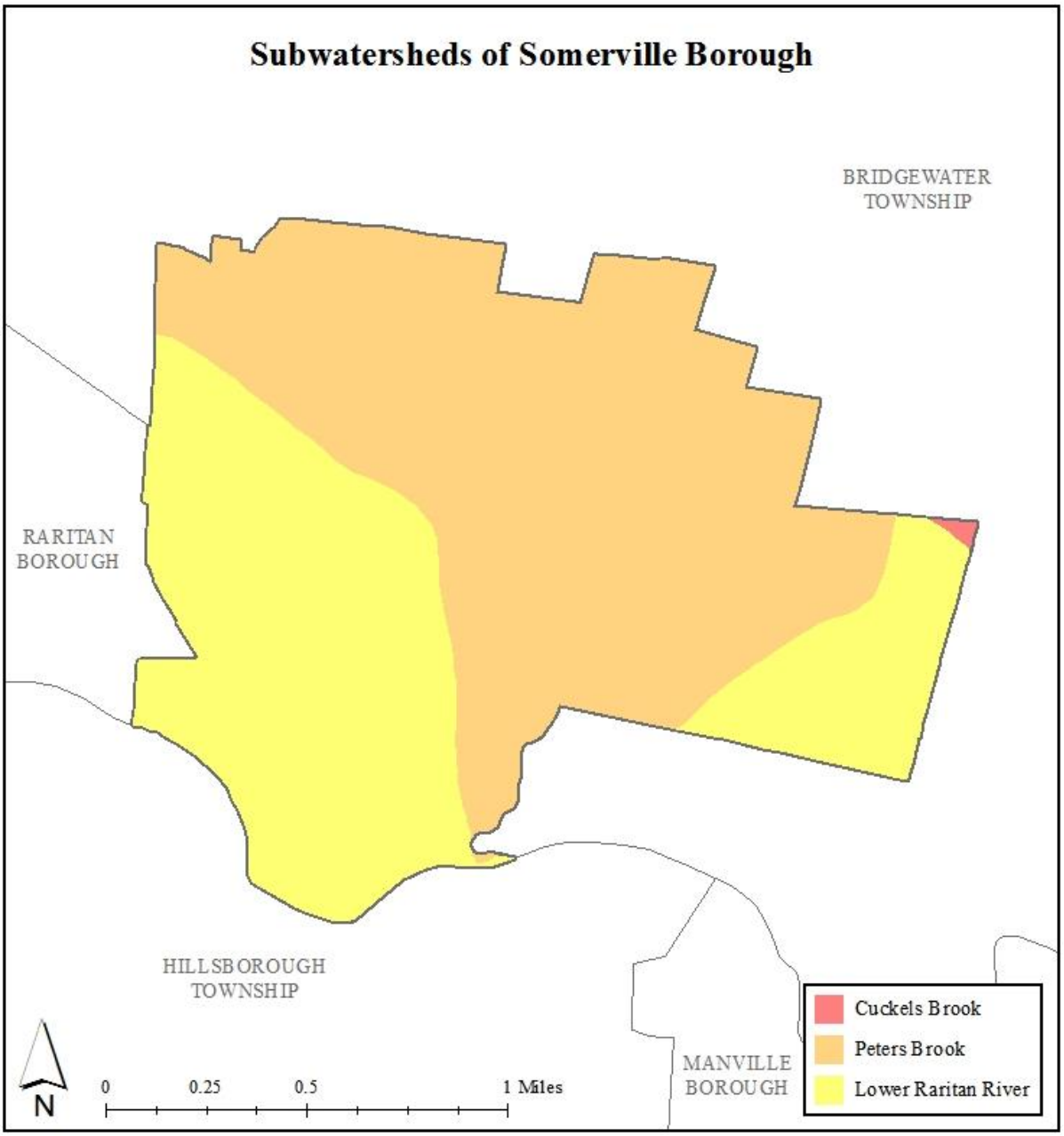


Figure 4: Map of the subwatersheds in Somerville Borough

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 Somerville Borough 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 Somerville Borough. Each practice is discussed below.

Disconnected downspouts

This is often referred to as simple disconnection. A downspout is simply disconnected, 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

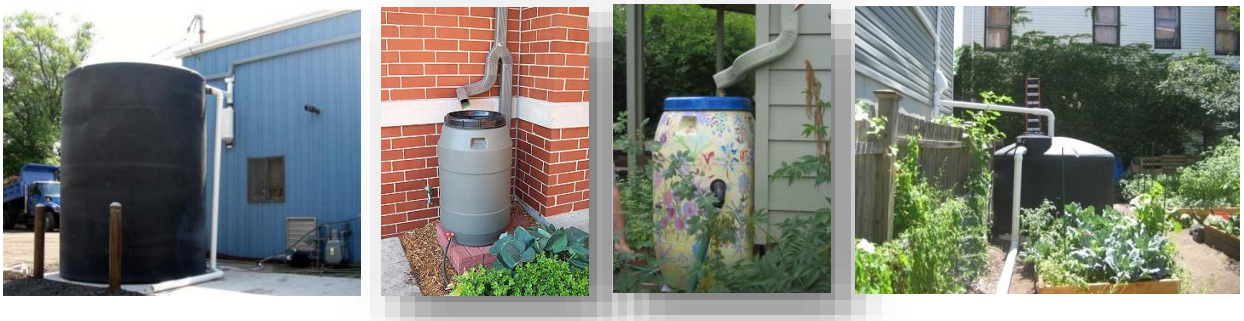
These are landscaped features that are designed to capture, treat, and infiltrate stormwater runoff. These systems can easily be incorporated into existing landscapes, improving aesthetics and creating a wildlife habitat while managing stormwater runoff. Bioretention systems also can be used in soils 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*.

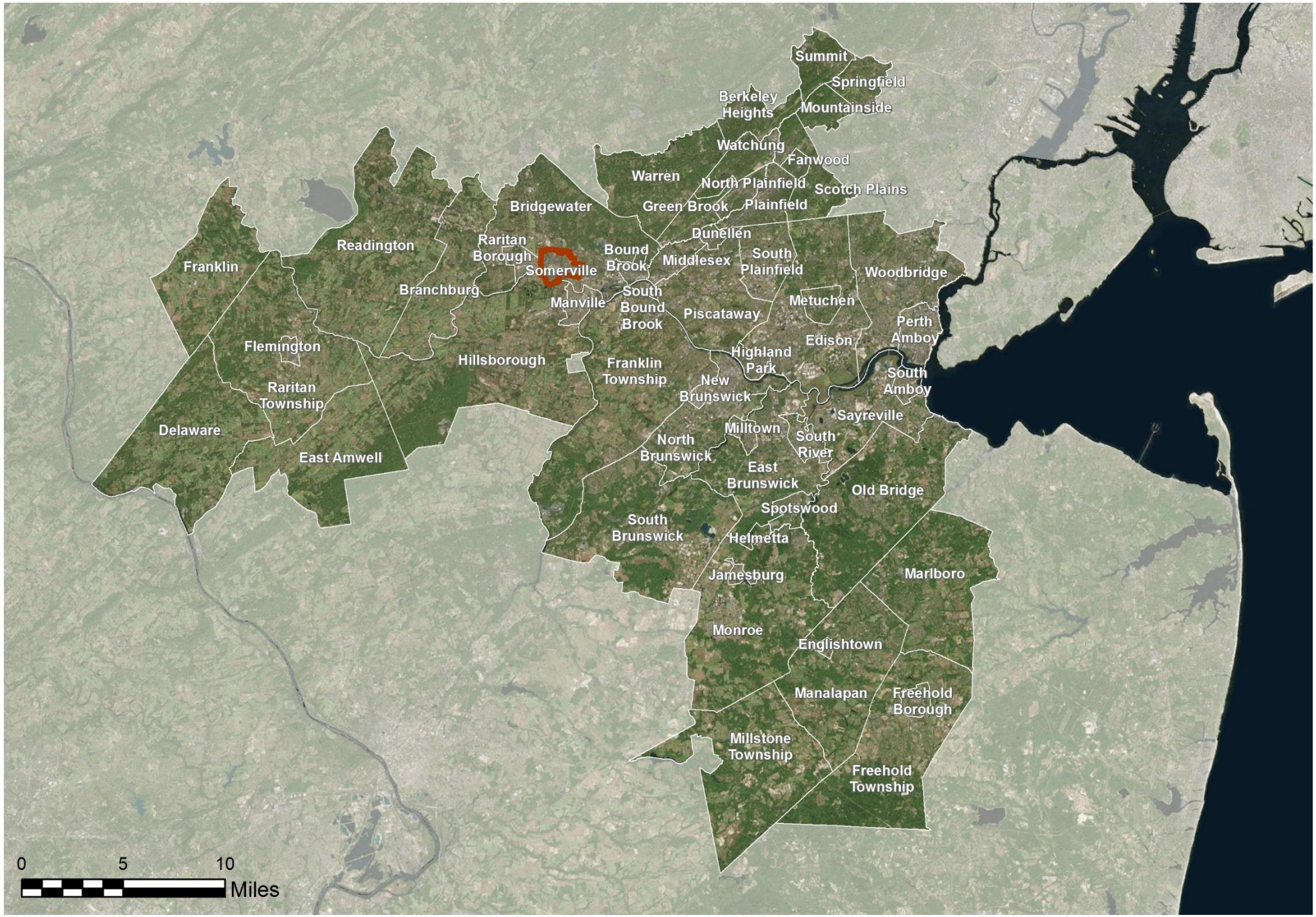
Conclusion

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.

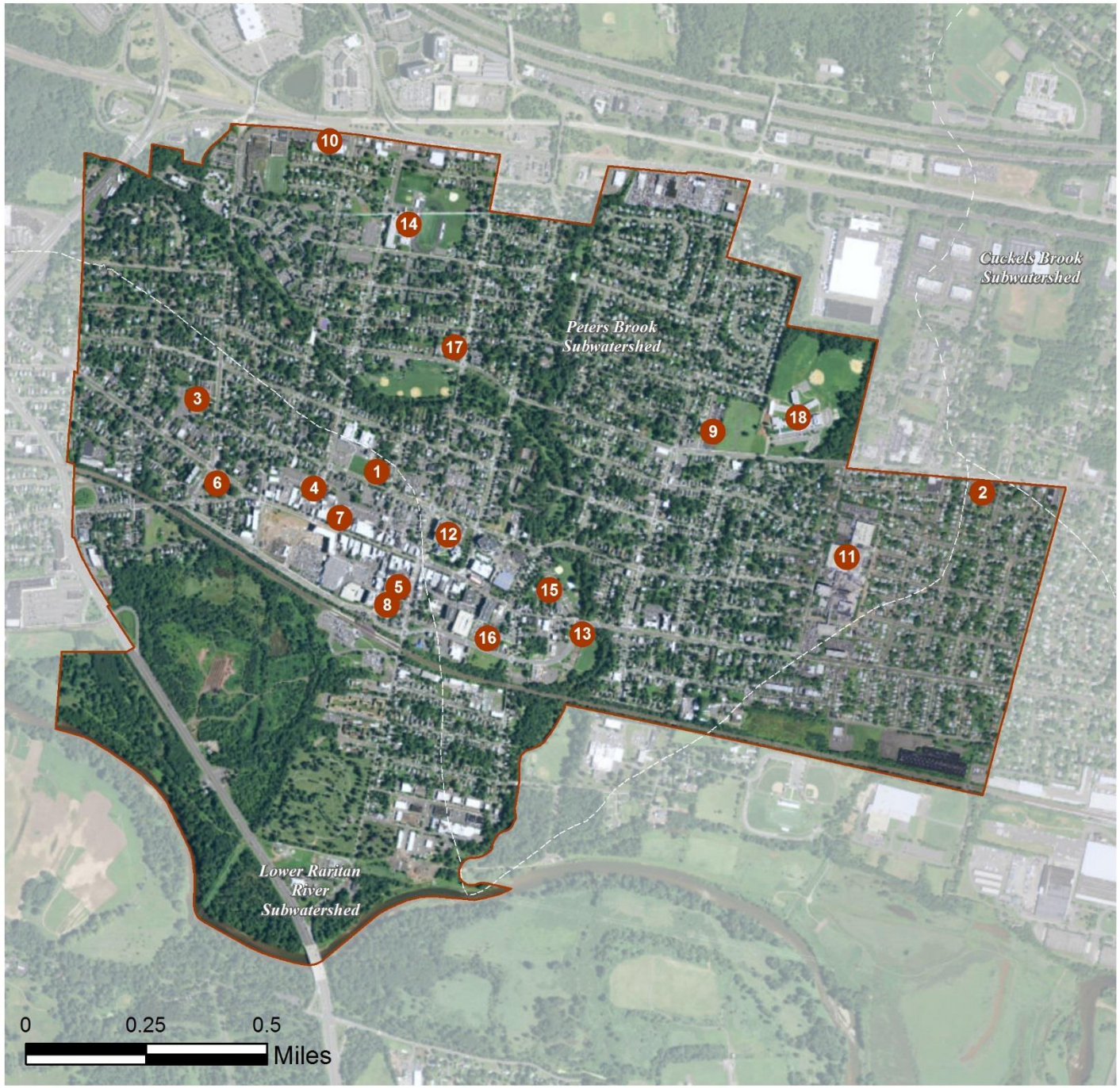
a. Overview Map of the Project

SOMERVILLE: CLIMATE RESILIENT GREEN INFRASTRUCTURE FOR THE RARITAN BASIN



b. Green Infrastructure Sites

SOMERVILLE: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE LOWER RARITAN RIVER SUBWATERSHED:

1. First United Methodist Church
2. Good Shepherd Lutheran Church
3. Immaculate Conception School and Church
4. Social Security Administration
5. Somerville Police Department
6. Somerville Public Library & Clerk's Office
7. United Reformed Church
8. US Post Office

SITES WITHIN THE PETERS BROOK SUBWATERSHED:

9. NJ Motor Vehicle Commission
10. Post Ace Hardware
11. Robert Wood Johnson University Hospital
12. Somerset Courthouse
13. Somerville Fire Station / Michael Lepp Park
14. Somerville High School
15. Somerville Rescue Squad
16. Somerville Unemployment Services
17. Somerset Valley YMCA
18. Van Deerver Elementary School

c. Proposed Green Infrastructure Concepts

FIRST UNITED METHODIST CHURCH

Subwatershed: Lower Raritan River

Site Area: 33,502 sq. ft.

Address: 48 West High Street
Somerville, NJ 08876

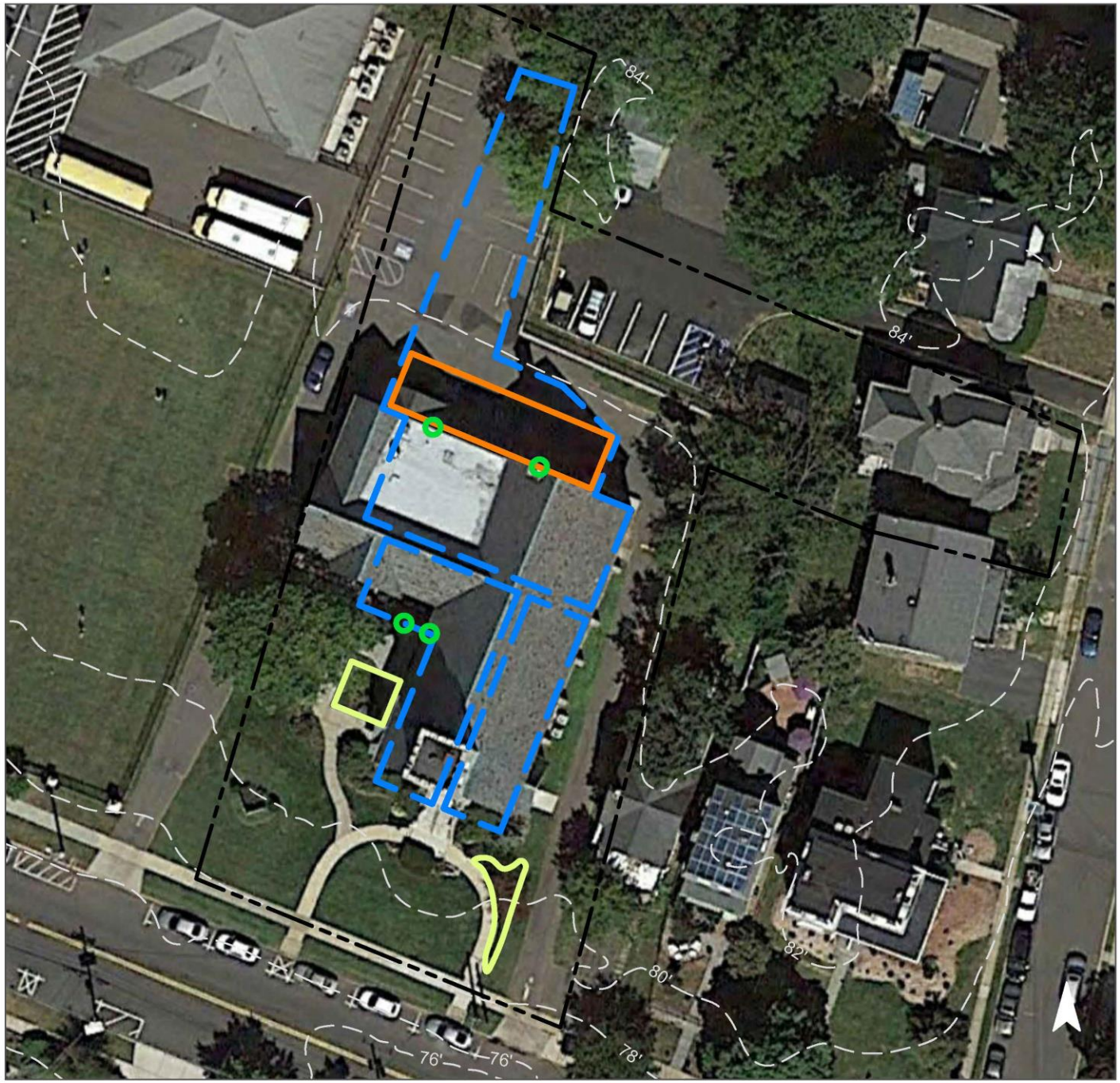
Block and Lot: Block 111, Lot 2

Parking spaces adjacent to the rear of the church can be replaced with pervious pavement to infiltrate stormwater. Bioretention systems can be installed to capture roof runoff by disconnecting and redirecting two nearby downspouts. 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"
84	28,081	1.4	14.2	128.9	0.022	0.77

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	0.094	16	6,882	0.26	250	$1,250
Pervious pavements	0.182	31	13,382	0.50	1,300	$32,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



First United Methodist Church

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

0 30' 60'

GOOD SHEPHERD LUTHERAN CHURCH

Subwatershed: Lower Raritan River

Site Area: 97,042 sq. ft.

Address: 300 Union Avenue
Somerville, NJ 08876

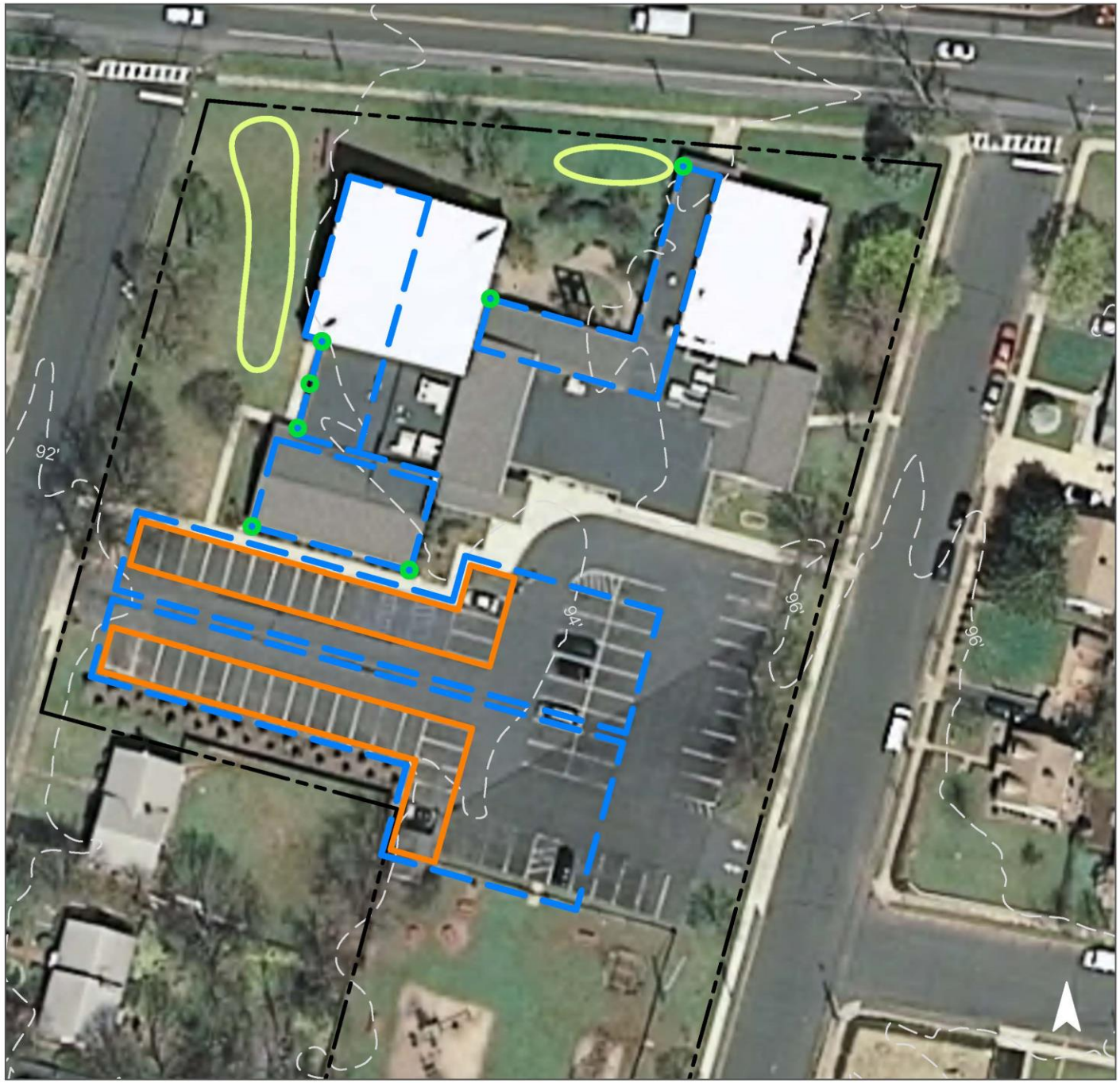
Block and Lot: Block 29.03, Lot 13

This church has two existing rain gardens and a rain barrel that captures roof runoff. Two additional rain gardens can be installed to infiltrate additional roof runoff. Parking spaces can be replaced with porous asphalt to reduce impervious cover and manage 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"
63	61,199	3.0	30.9	281.0	0.048	1.68

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	0.147	25	10,801	0.41	2,300	$11,500
Pervious pavements	0.519	87	38,043	1.43	6,300	$157,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Good Shepherd Lutheran Church

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

0 30' 60'

IMMACULATE CONCEPTION SCHOOL AND CHURCH

Subwatershed: Lower Raritan River

Site Area: 210,693 sq. ft.

Address: 41 Mountain Avenue
Somerville, NJ 08876

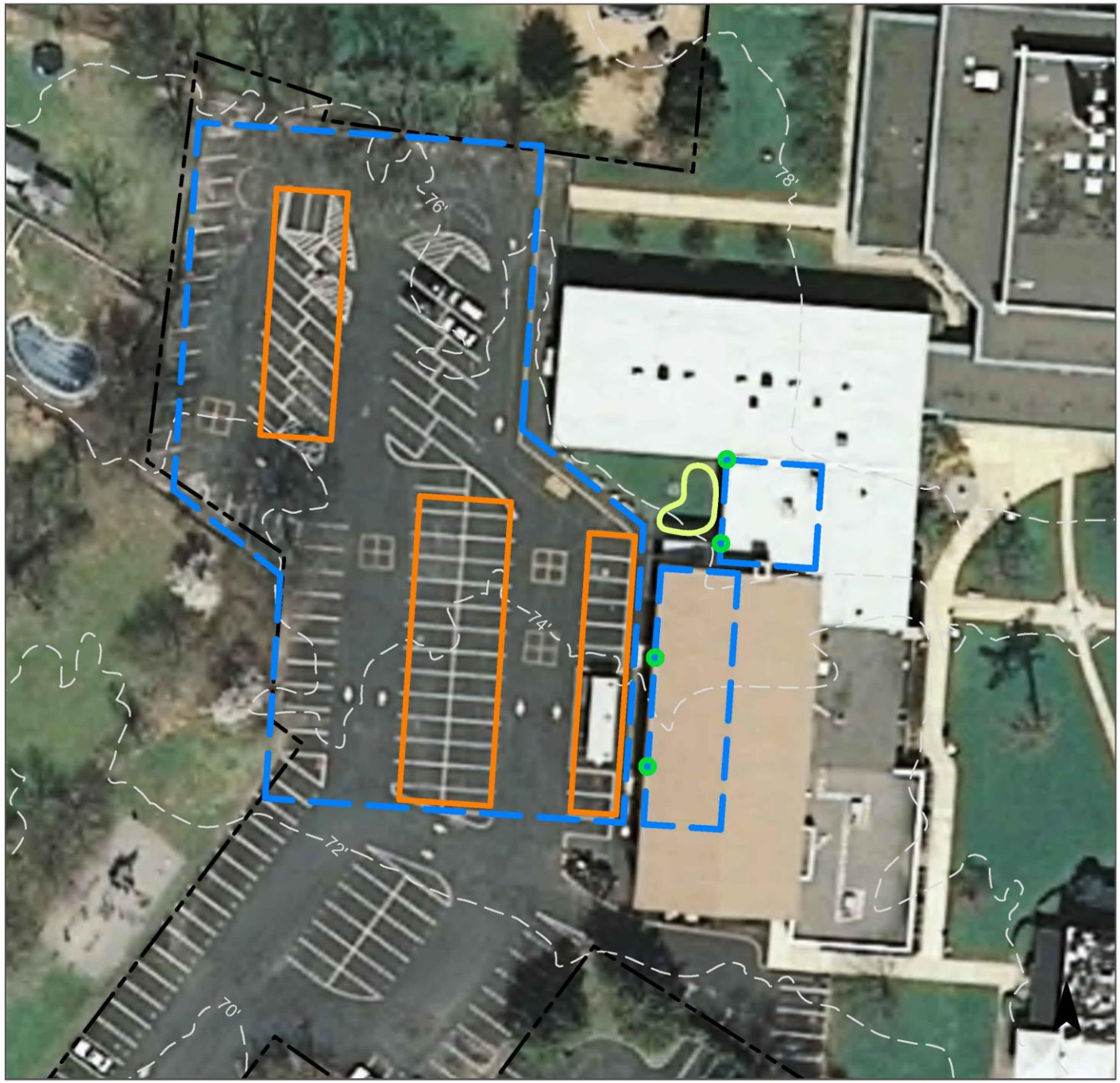
Block and Lot: Block 136, Lot 12

Parking spaces can be replaced with pervious pavement to infiltrate parking lot and roof runoff. A rain garden can also capture, treat, and infiltrate roof 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"
66	138,263	6.7	69.8	634.8	0.108	3.79

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	0.039	7	2,865	0.11	400	$2,000
Pervious pavements	1.068	179	78,383	2.95	9,000	$225,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Immaculate Conception School and Church

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

0 30' 60'

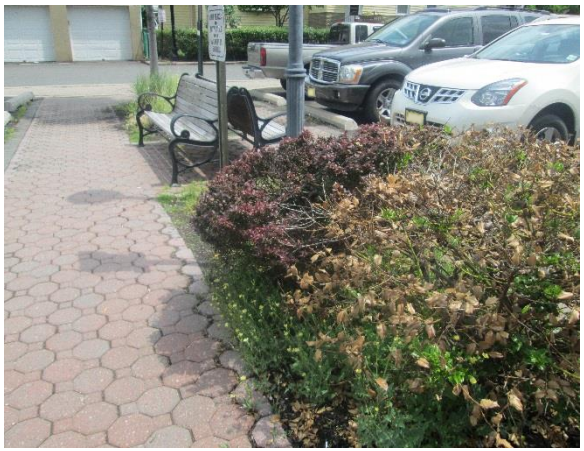
SOCIAL SECURITY ADMINISTRATION

Subwatershed: **Lower Raritan River**

Site Area: **23,224 sq. ft.**

Address: **29 Davenport Street**
Somerville, NJ 08876

Block and Lot: **Block 115, Lot 17**

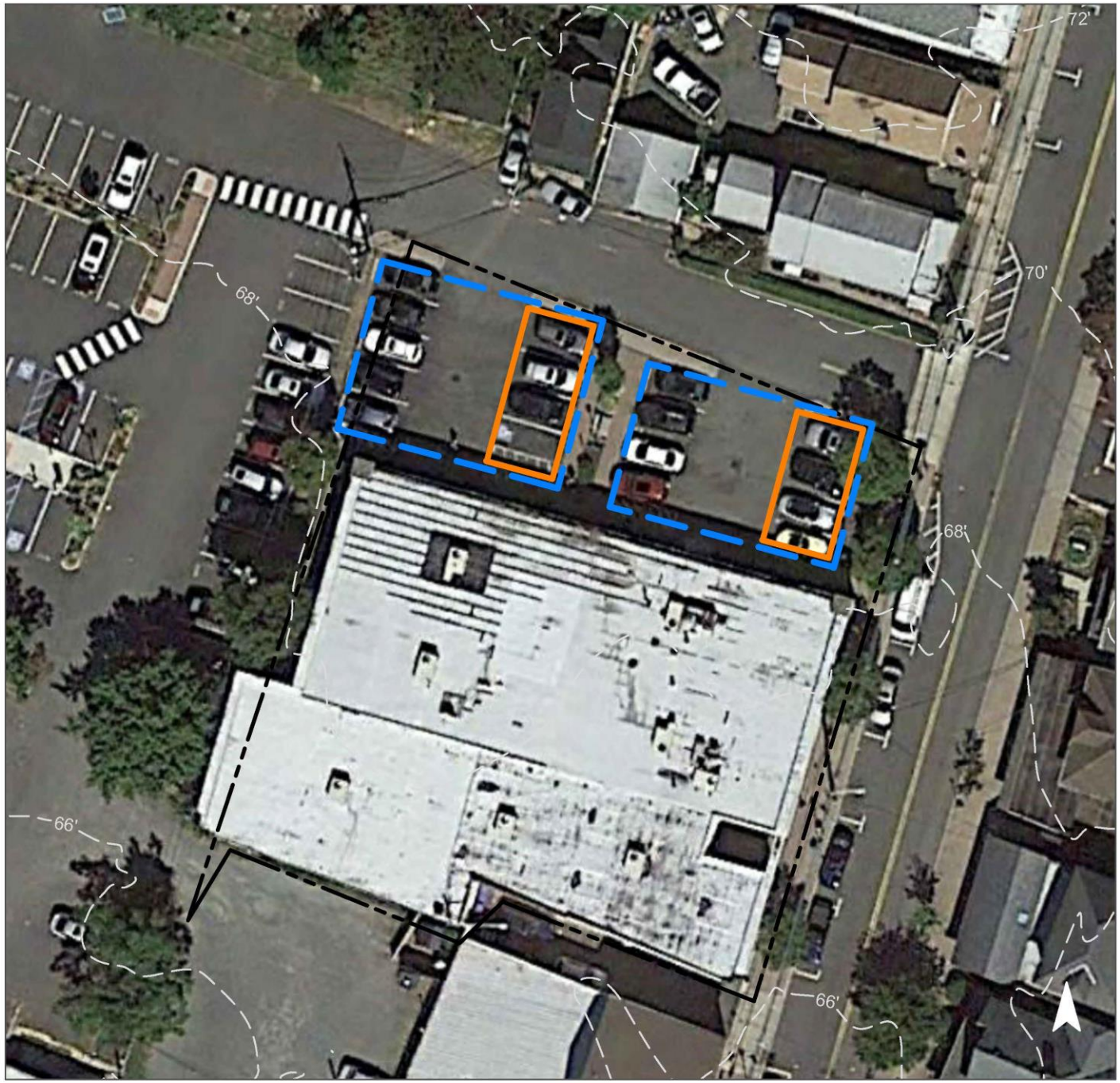


Parking lots were in poor condition at the time of assessment. Parking spaces can be converted into pervious pavement when the parking lot is repaved. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
95	22,063	1.1	11.1	101.3	0.017	0.61

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	0.133	22	9,754	0.37	1,365	$34,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Social Security Administration

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

0 20' 40'

SOMERVILLE POLICE DEPARTMENT

Subwatershed: Lower Raritan River

Site Area: 27,233 sq. ft.

Address: 24 S Bridge Street
Somerville, NJ 08876

Block and Lot: Block 119, Lot 14

Parking spaces can be converted into pervious pavement to infiltrate stormwater runoff from the surrounding paved surfaces as well as the downspouts that are currently draining onto the 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"
95	25,870	1.2	13.1	118.8	0.020	0.071

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	0.279	47	20,458	0.77	2,880	$72,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Somerville Police Department

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

0 20' 40'

SOMERVILLE PUBLIC LIBRARY & CLERK'S OFFICE

Subwatershed: Lower Raritan River

Site Area: 73,799 sq. ft.

Address: 35 West End Avenue
Somerville, NJ 08876

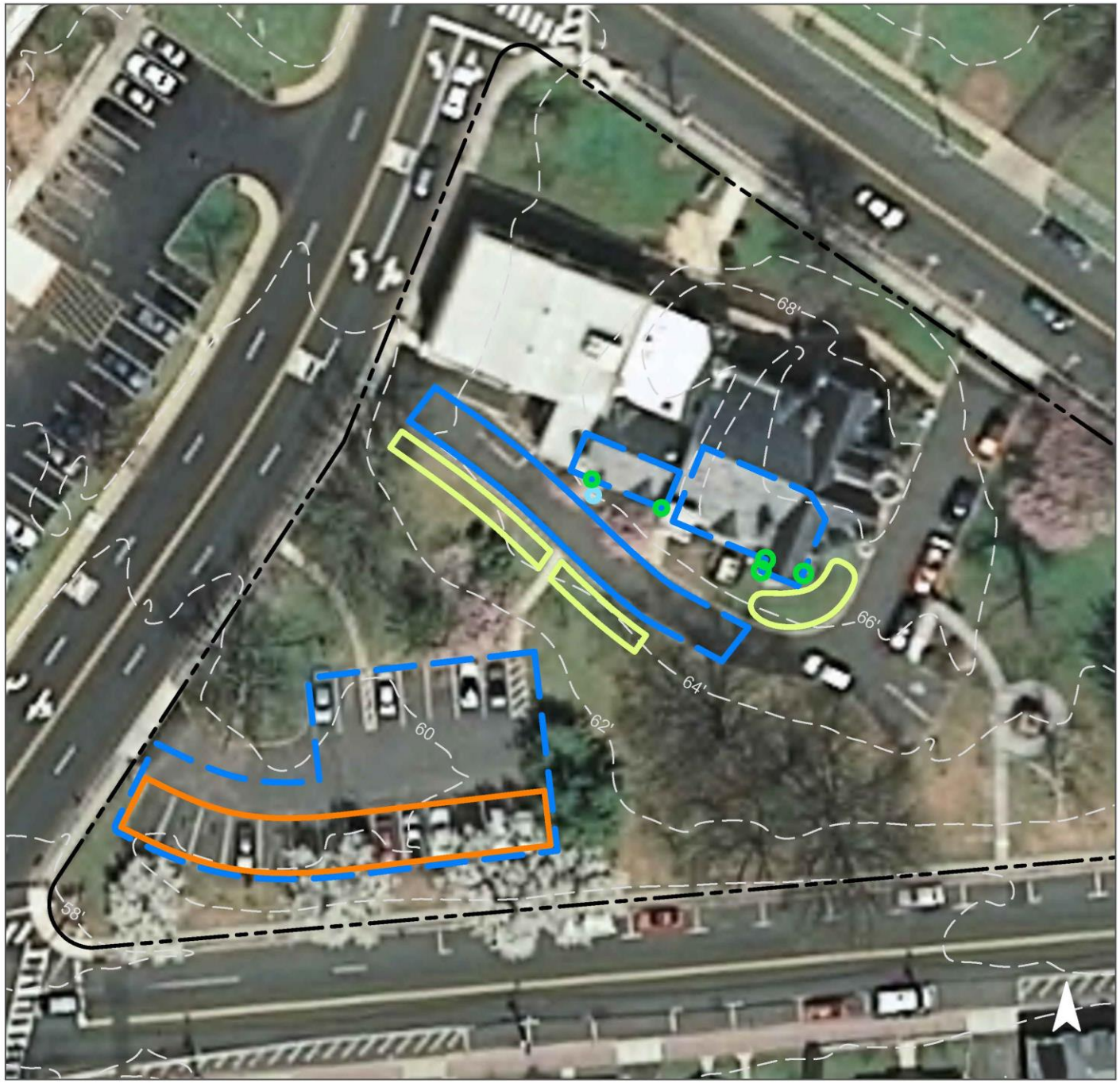
Block and Lot: Block 129, Lot 1

Rain gardens can be installed to capture, treat, and infiltrate driveway and roof runoff. Porous asphalt can replace existing parking spaces to capture 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"
60	44,391	2.1	22.4	203.8	0.035	1.22

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	0.078	13	5,790	0.22	800	$4,000
Pervious pavements	0.182	31	13,382	0.50	2,500	$62,500
Rainwater harvesting systems	0.011	2	400	0.03	400 (gal)	$800

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerville Public Library & Clerk's Office

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

0 25' 50'

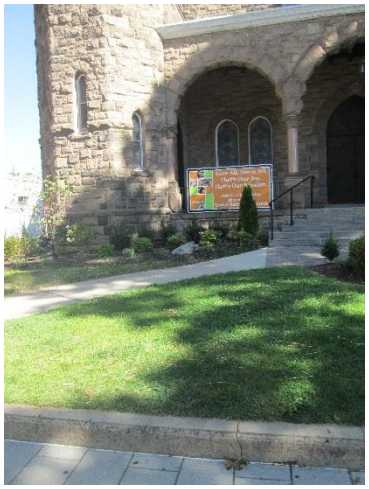
UNITED REFORMED CHURCH

Subwatershed: Lower Raritan River

Site Area: 96,385 sq. ft.

Address: 100 West Main Street
Somerville, NJ 08876

Block and Lot: Block 114, Lot 28



Parking spaces can be replaced with pervious pavement to infiltrate stormwater. A cistern can be set up to harvest rainwater to water existing landscaping. A rain garden can be installed on the western side of the church 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"
95	91,284	4.4	46.1	419.1	0.071	2.50

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	0.060	10	4,398	0.17	400	$2,000
Pervious pavements	0.860	144	63,094	2.37	8,000	$200,000
Rainwater harvesting systems	0.029	5	1,000	0.08	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

United Reformed Church

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

0 40' 80'

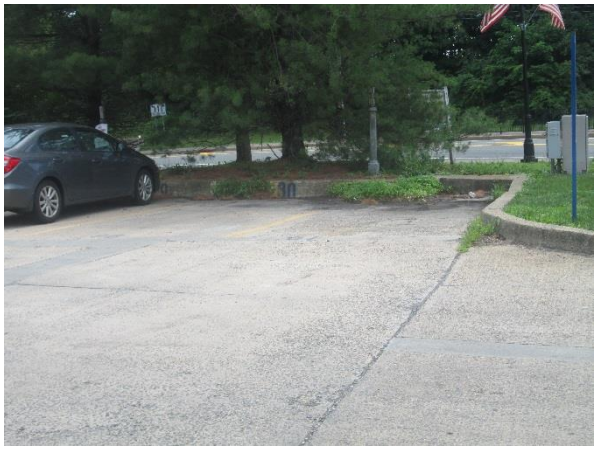
US POST OFFICE

Subwatershed: **Lower Raritan River**

Site Area: **39,853 sq. ft.**

Address: **39 Division Street**
Somerville, NJ 08876

Block and Lot: **Block 120, Lot 1**



Parking spaces along the southern section of the parking lot can be converted into pervious pavement to infiltrate stormwater 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"
95	37,860	1.8	19.1	173.8	0.029	1.04

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	0.293	49	21,505	0.81	2,550	$63,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

US Post Office

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

0 25' 50'

NJ MOTOR VEHICLE COMMISSION

Subwatershed: **Peters Brook**

Site Area: **74,971 sq. ft.**

Address: **10 Roosevelt Place**
Somerville, NJ 08876

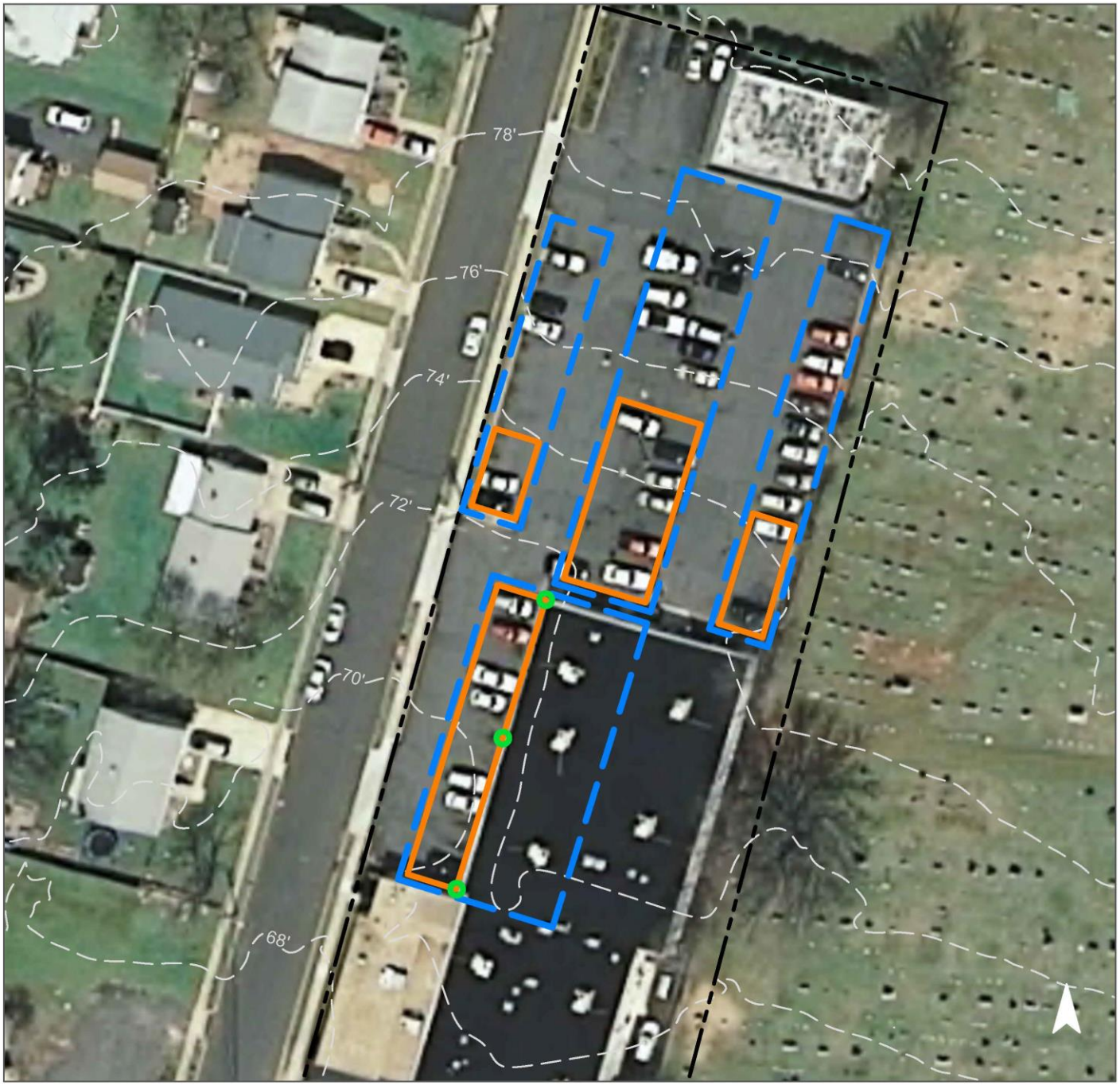
Block and Lot: **Block 83.01, Lot 3**

Parking spaces can be converted into pervious pavement to capture and infiltrate roof and parking lot 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"
81	60,737	2.9	30.7	278.9	0.047	1.67

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	0.555	93	40,721	1.53	6,200	$155,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



NJ Motor Vehicle Commission

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

0 30' 60'

POST ACE HARDWARE

Subwatershed: Peters Brook

Site Area: 106,567 sq. ft.

Address: 890 U.S. 22
Somerville, NJ 08876

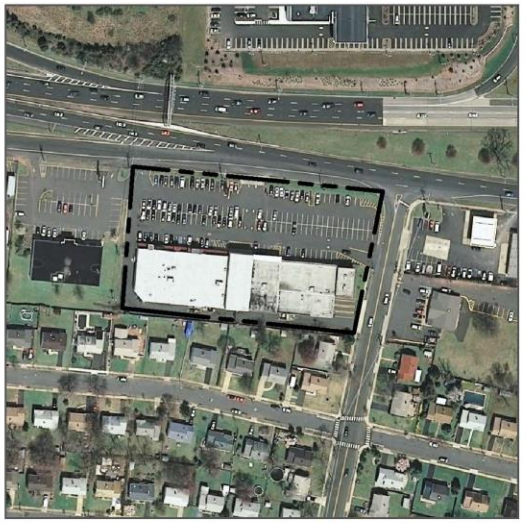
Block and Lot: Block 149, Lot 3

The center lanes of the parking lot can be replaced with porous asphalt to capture 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"
100	106,554	5.1	53.8	489.2	0.083	2.92

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	0.883	148	64,814	2.44	14,000	$350,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Post Ace Hardware

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

0 40' 80'

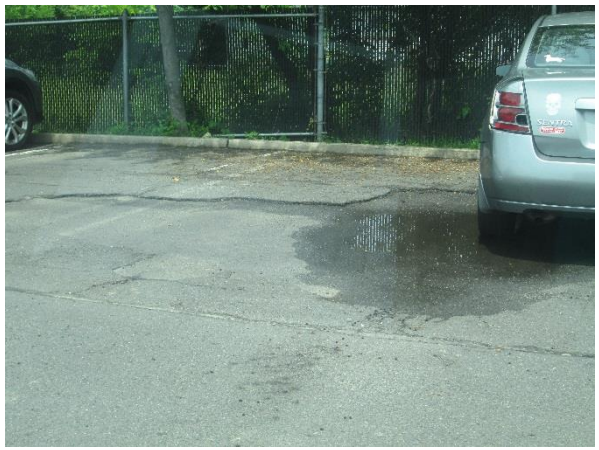
ROBERT WOOD JOHNSON UNIVERSITY HOSPITAL

Subwatershed: Peters Brook

Site Area: 618,156 sq. ft.

Address: 100 Rehill Avenue
Somerville, NJ 08876

Block and Lot: Block 13.01, Lot 1.02



Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining soil 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"
89	552,826	26.7	279.2	2,538.2	0.431	15.16

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	0.766	128	56,205	2.11	12,000	$300,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Robert Wood Johnson University Hospital

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

0 30' 60'

SOMERSET COURTHOUSE

Subwatershed: **Peters Brook**

Site Area: **239,399 sq. ft.**

Address: **20 N Bridge Street**
Somerville, NJ 08876

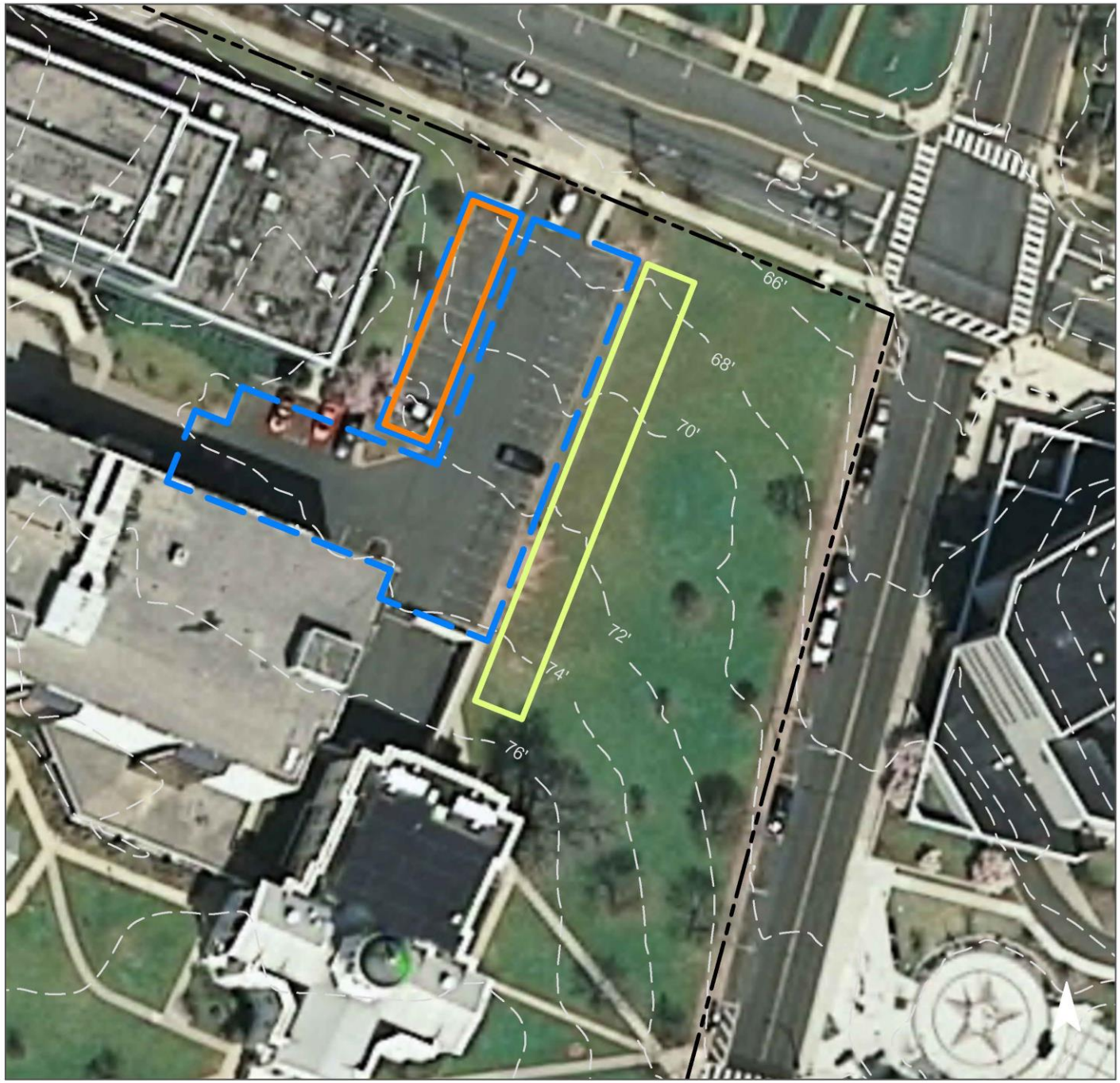
Block and Lot: **Block 69.01, Lot 1.01**

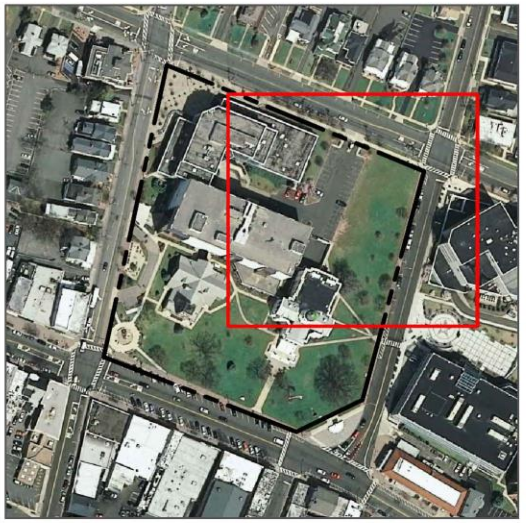
A rain garden can be installed to capture, treat, and infiltrate runoff from the parking lot. Additional stormwater can be infiltrated by replacing existing parking spaces with pervious pavement. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
60	143,640	6.9	72.5	659.5	0.112	3.94

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	0.294	49	21,602	0.81	3,660	$18,300
Pervious pavements	0.044	7	3,254	0.12	1,700	$42,500

GREEN INFRASTRUCTURE RECOMMENDATIONS





Somerset Courthouse

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

0 30' 60'

SOMERVILLE FIRE STATION / MICHAEL LEPP PARK

Subwatershed: Peters Brook

Site Area: 232,980 sq. ft.

Address: 170 E Main Street
Somerville, NJ 08876

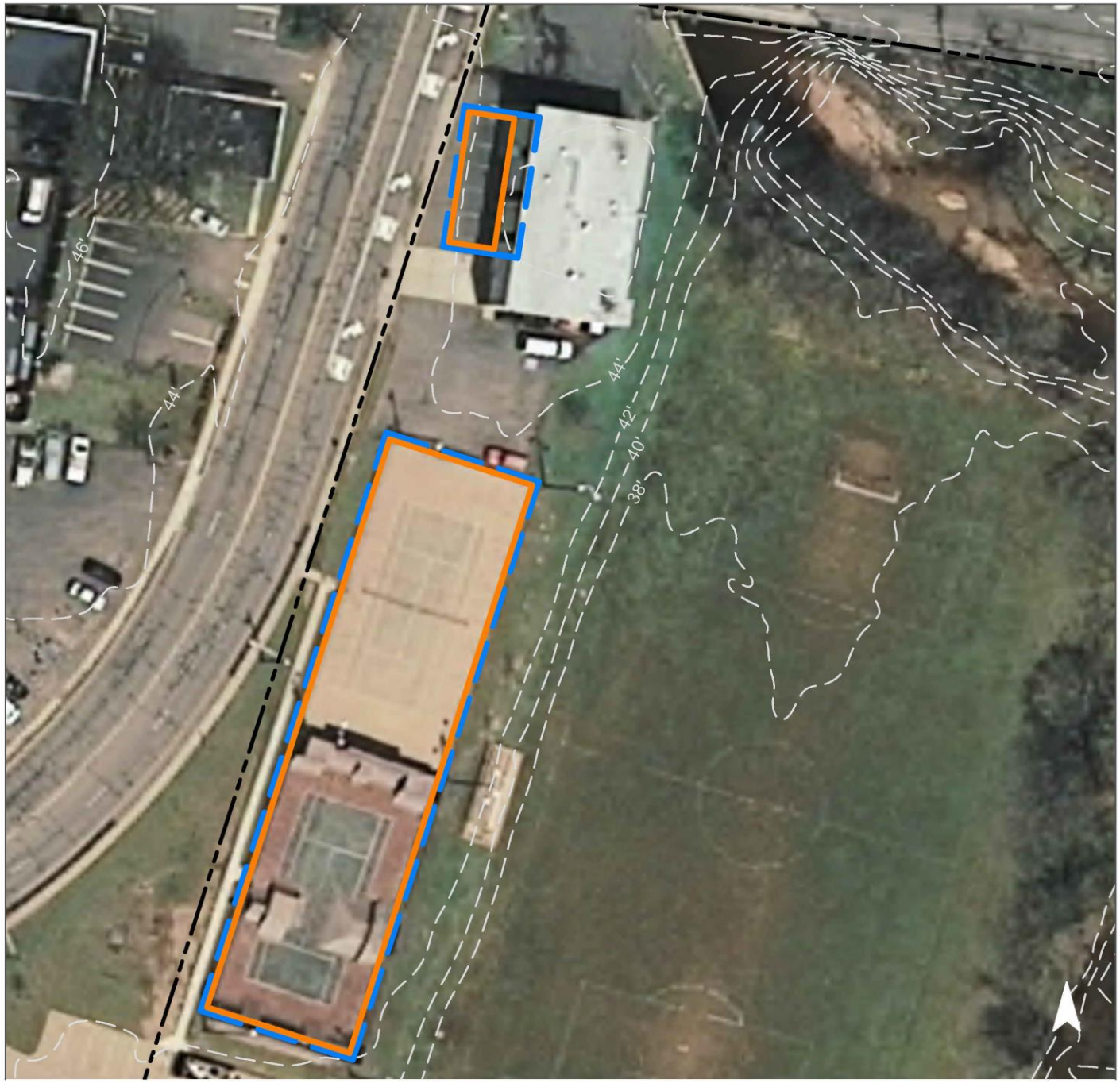
Block and Lot: Block 58, Lot 1

The parking spaces located on the western side of the building can be replaced with porous asphalt. Pervious pavement can also be used to replace the existing tennis courts. 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"
20	47,602	2.3	24.0	218.6	0.037	1.31

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	0.443	74	32,501	1.22	14,700	$367,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerville Fire Station / Michael Lepp Park

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

0 30' 60'

SOMERVILLE HIGH SCHOOL

Subwatershed: **Peters Brook**

Site Area: **682,132 sq. ft.**

Address: **222 Davenport Street**
Somerville, NJ 08876

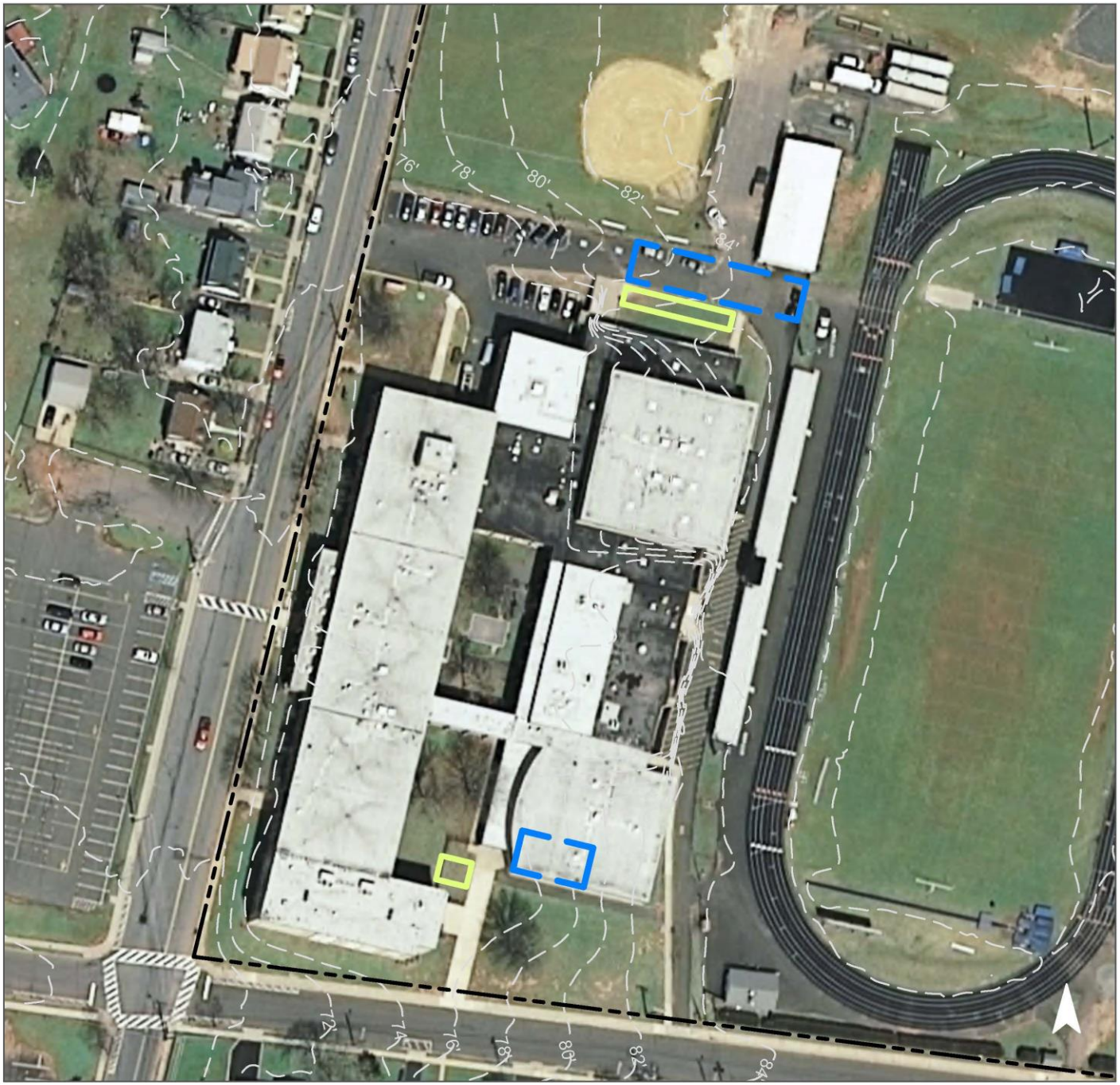
Block and Lot: **Block 94.01, Lot 7**

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"
24	161,908	7.8	81.1	743.4	0.126	4.44

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	0.108	18	7,936	0.30	1,120	$5,600

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerville High School

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

0 50' 100'

SOMERVILLE RESCUE SQUAD

Subwatershed: Peters Brook

Site Area: 35,914 sq. ft.

Address: 21 Park Avenue
Somerville, NJ 08876

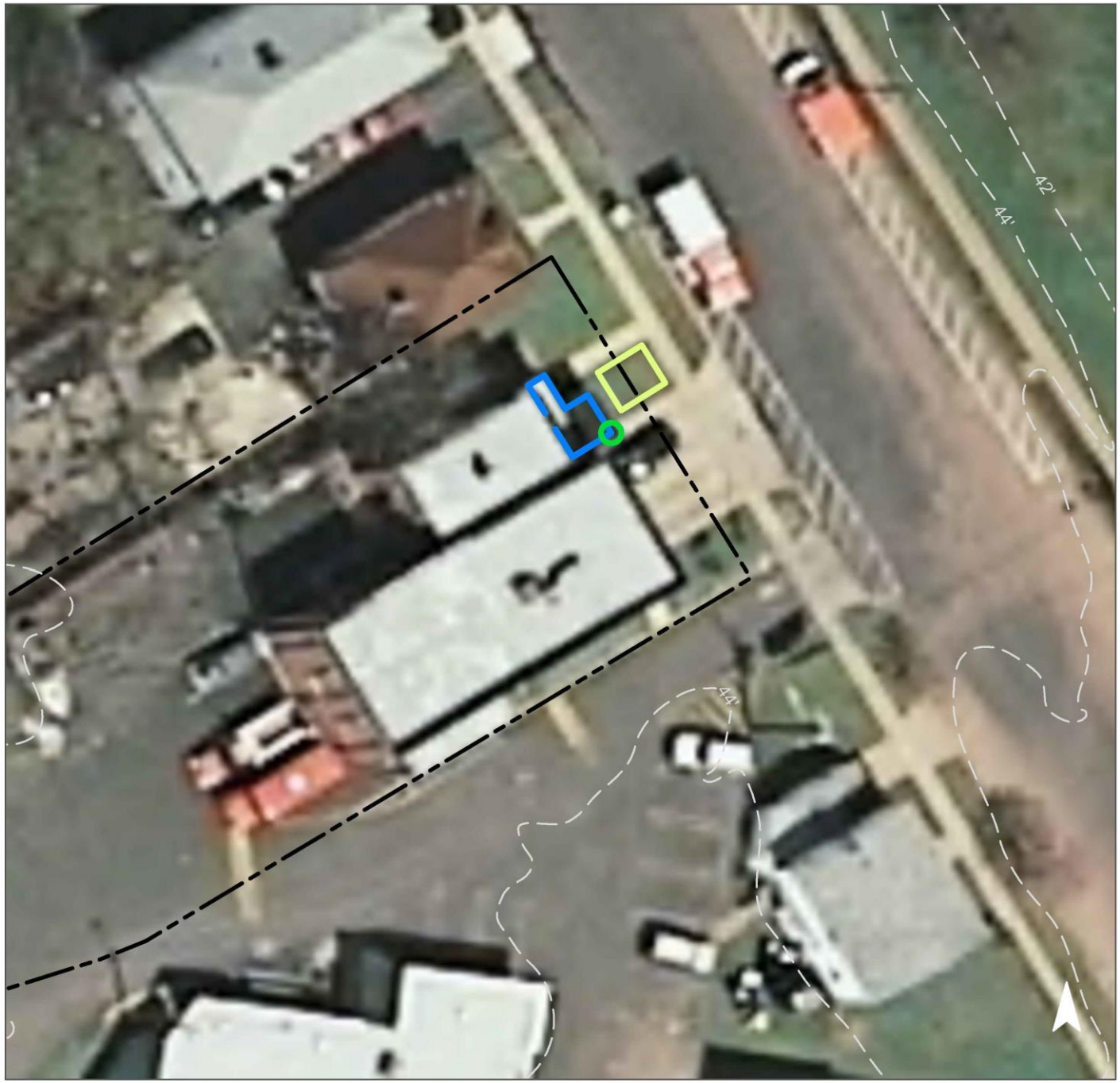
Block and Lot: Block 68, Lot 15

A rain garden can be installed to capture, treat, and infiltrate runoff from the roof. 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"
84.0	30,167	1.5	15.2	138.5	0.024	0.83

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	0.003	0	209	0.01	90	$450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Somerville Rescue Squad

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

0 20' 40'

SOMERVILLE UNEMPLOYMENT SERVICES

Subwatershed: Peters Brook

Site Area: 100,804 sq. ft.

Address: 75 Veterans Memorial Drive
Somerville, NJ 08876

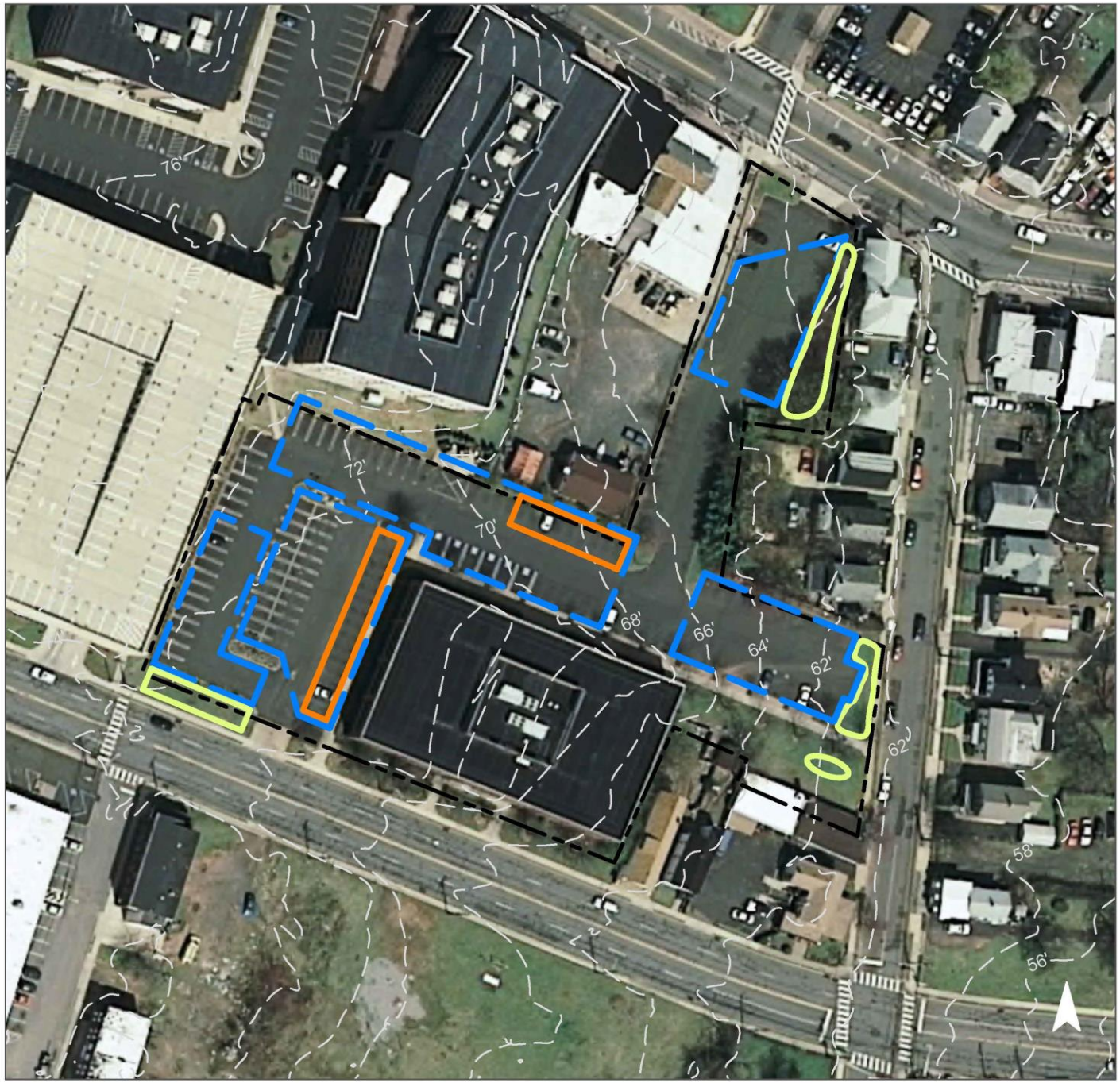
Block and Lot: Block 63, Lot 12

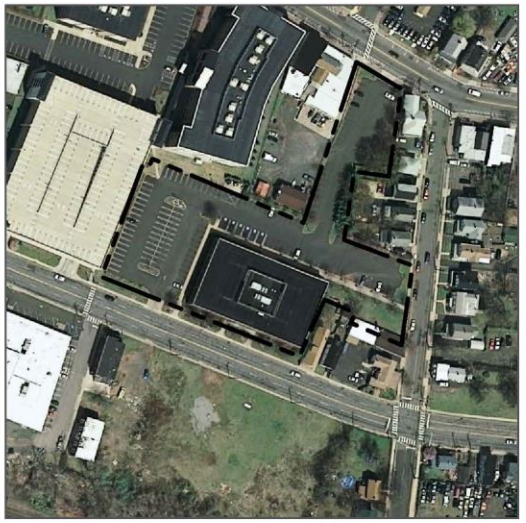
Several bioretention systems can be installed to capture, treat, and infiltrate parking lot runoff. Porous asphalt can replace parking spaces to infiltrate additional runoff. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
84	84,532	4.1	42.7	388.1	0.066	2.32

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	0.443	74	33,840	1.27	3,800	$19,000
Pervious pavements	0.594	99	43,593	1.64	3,700	$92,500

GREEN INFRASTRUCTURE RECOMMENDATIONS





Somerville Unemployment Services

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

0 50' 100'

SOMERSET VALLEY YMCA

Subwatershed: **Peters Brook**

Site Area: **76,205 sq. ft.**

Address: **2 Green Street**
Somerville, NJ 08876

Block and Lot: **Block 106, Lot 21**

Parking spaces can be replaced with pervious pavement to infiltrate stormwater 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"
79	60,558	2.9	30.6	278.0	0.047	1.66

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	0.477	80	34,984	1.32	8,000	$200,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Somerville Valley YMCA

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

0 30' 60'

VAN DEERVER ELEMENTARY SCHOOL

Subwatershed: Peters Brook

Site Area: 1,440,319 sq. ft.

Address: 51 Union Avenue
Somerville, NJ 08876

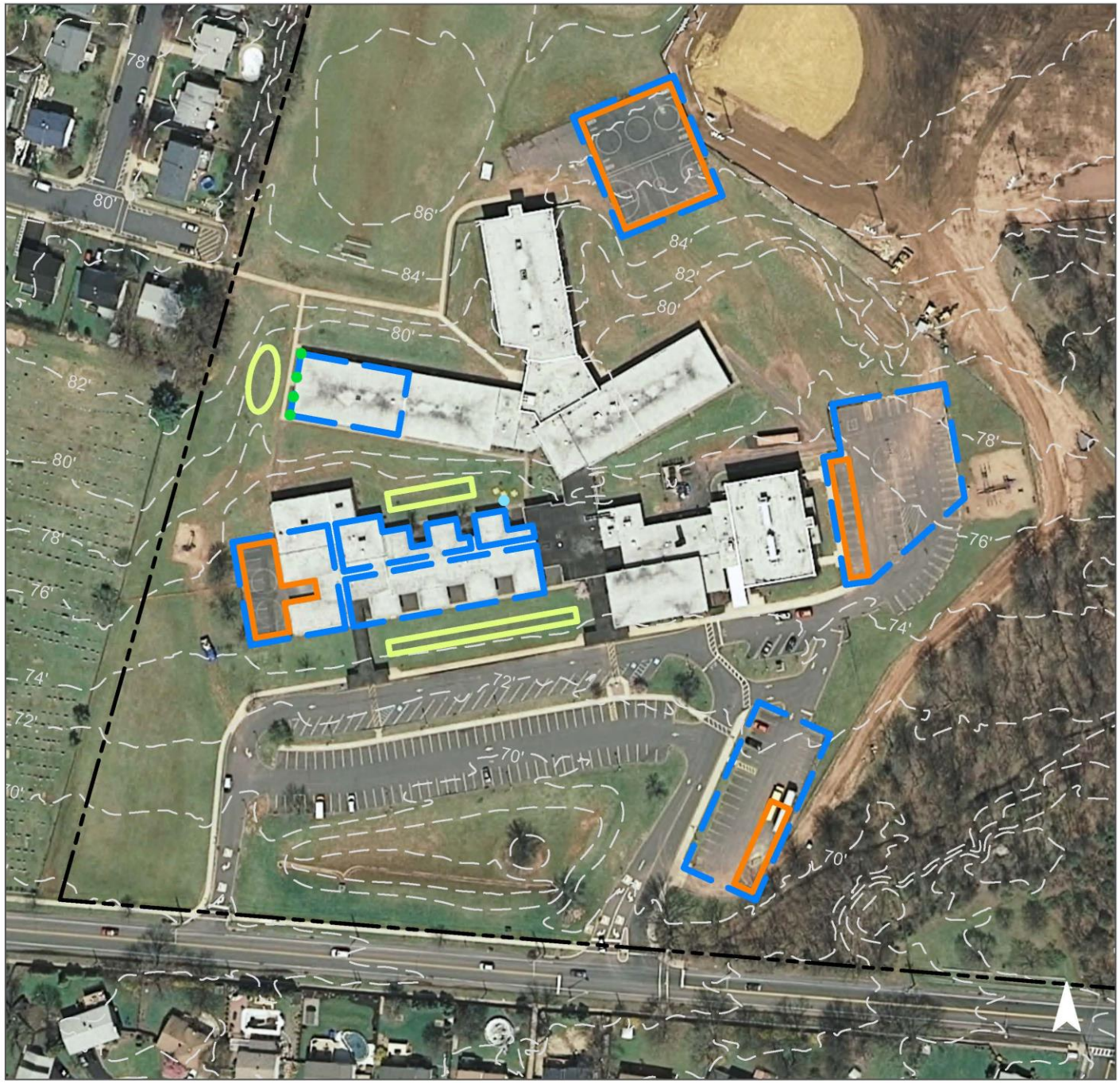
Block and Lot: Block 83.01, Lot 1

Rain gardens can be installed to capture, treat, and infiltrate roof runoff. A cistern can be set up in the central courtyard to harvest rainwater to use in the existing gardens. Parking spaces can be replaced with pervious pavement to infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining soil 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	279,581	13.5	141.2	1,283.7	0.218	7.67

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	0.516	86	37,856	1.42	5,090	$25,450
Pervious pavements	1.459	244	107,061	4.03	18,450	$461,250
Rainwater harvesting systems	0.031	5	1,200	0.09	1,200 (gal)	$2,400

GREEN INFRASTRUCTURE RECOMMENDATIONS



Van Deerver Elementary School

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

0 75' 150'

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)
LOWER RARITAN RIVER	**13.81**	**601,730**			**21.6**	**226.8**	**2,061.6**		**10.31**	**449,011**	**0.350**	**12.31**
First United Methodist Church												
Total Site Info	0.77	33,502	111	2	1.4	14.2	128.9	84	0.64	28,081	0.022	0.77
Good Shepherd Lutheran Church												
Total Site Info	2.23	97,042	29.03	13	3.0	30.9	281.0	63	1.40	61,199	0.048	1.68
Immaculate Conception School and Church												
Total Site Info	4.84	210,693	136	12	6.7	69.8	634.8	66	3.17	138,263	0.108	3.79
Social Security Administration												
Total Site Info	0.53	23,224	115	17	1.1	11.1	101.3	95	0.51	22,063	0.017	0.61
Somerville Police Department												
Total Site Info	0.63	27,233	119	14	1.2	13.1	118.8	95	0.59	25,870	0.020	0.71
Somerville Public Library & Clerk's Office												
Total Site Info	1.69	73,799	129.02	1	2.1	22.4	203.8	60	1.02	44,391	0.035	1.22
United Reformed Church												
Total Site Info	2.21	96,385	114	28	4.4	46.1	419.1	95	2.10	91,284	0.071	2.50
US Post Office												
Total Site Info	0.91	39,853	120	1	1.8	19.1	173.8	95	0.87	37,860	0.029	1.04
PETERS BROOK SUBWATERSHED	**82.82**	**3,607,447**			**73.7**	**771.8**	**7,016.1**		**35.08**	**1,528,105**	**1.191**	**41.91**
NJ Motor Vehicle Commission												
Total Site Info	1.72	74,971	83.01	3	2.9	30.7	278.9	81	1.39	60,737	0.047	1.67
Post Ace Hardware												
Total Site Info	2.45	106,567	149	3	5.1	53.8	489.2	100	2.45	106,554	0.083	2.92
Robert Wood Johnson University Hospital												
Total Site Info	14.19	618,156	13.01	1.02	26.7	279.2	2,538.2	89	12.69	552,826	0.431	15.16

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)
Somerset Courthouse												
Total Site Info	5.50	239,399	69.01	1.01	6.9	72.5	659.5	60	3.30	143,640	0.112	3.94
Somerville Fire Station / Michael Lepp Park												
Total Site Info	5.35	232,980	58	1	2.3	24.0	218.6	20	1.09	47,602	0.037	1.31
Somerville High School												
Total Site Info	15.66	682,132	94.01	7	7.8	81.8	743.4	24	3.72	161,908	0.126	4.44
Somerville Rescue Squad												
Total Site Info	0.82	35,914	68	15	1.5	15.2	138.5	84	0.69	30,167	0.024	0.83
Somerville Unemployment Services												
Total Site Info	2.31	100,804	63	12.01	4.1	42.7	388.1	84	1.94	84,532	0.066	2.32
Somerset Valley YMCA												
Total Site Info	1.75	76,205	106	21	2.9	30.6	278.0	79	1.39	60,558	0.047	1.66
Van Deerver Elementary School												
Total Site Info	33.07	1,440,319	83.01	1	13.5	141.2	1,283.7	19	6.42	279,581	0.218	7.67

e. Summary of Proposed Green Infrastructure Practices

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 %
	LOWER RARITAN RIVER SUBWATERSHED	**152,540**	**3.50**	**3.974**	**665**	**290,136**	**10.98**	**39,445**			**$870,925**	**34.0%**
1	**First United Methodist Church**											
	Bioretention systems/ rain gardens	3,600	0.08	0.094	16	6,882	0.26	250	5	SF	$1,250	12.8%
	Pervious pavements	7,000	0.16	0.182	31	13,382	0.50	1,300	25	SF	$32,500	24.9%
	Total Site Info	**10,600**	**0.24**	**0.276**	**46**	**20,263**	**0.76**	**1,550**			**$33,750**	**37.7%**
2	**Good Shepherd Lutheran Church**											
	Bioretention systems/ rain gardens	5,650	0.13	0.147	25	10,801	0.41	2,300	5	SF	$11,500	9.2%
	Pervious pavements	19,900	0.46	0.519	87	38,043	1.43	6,300	25	SF	$157,500	32.5%
	Total Site Info	**25,550**	**0.59**	**0.666**	**111**	**48,844**	**1.84**	**8,600**			**$169,000**	**41.7%**
3	**Immaculate Conception School and Church**											
	Bioretention systems/ rain gardens	1,500	0.03	0.039	7	2,865	0.11	400	5	SF	$2,000	1.1%
	Pervious pavements	41,000	0.94	1.068	179	78,383	2.95	9,000	25	SF	$225,000	29.7%
	Total Site Info	**42,500**	**0.98**	**1.107**	**185**	**81,248**	**3.06**	**9,400**			**$227,000**	**30.7%**
4	**Social Security Administration**											
	Pervious pavements	5,100	0.12	0.133	22	9,754	0.37	1,365	25	SF	$34,125	23.1%
	Total Site Info	**5,100**	**0.12**	**0.133**	**22**	**9,754**	**0.37**	**1,365**			**$34,125**	**23.1%**
5	**Somerville Police Department**											
	Pervious pavements	10,700	0.25	0.279	47	20,458	0.77	2,880	25	SF	$72,000	41.4%
	Total Site Info	**10,700**	**0.25**	**0.279**	**47**	**20,458**	**0.77**	**2,880**			**$72,000**	**41.4%**
6	**Somerville Public Library & Clerk's Office**											
	Bioretention systems/ rain gardens	3,000	0.07	0.078	13	5,790	0.22	800	5	SF	$4,000	6.8%
	Pervious pavements	7,000	0.16	0.182	31	13,382	0.50	2,500	25	SF	$62,500	15.8%
	Rainwater harvesting systems	440	0.01	0.011	2	400	0.03	400	2	gal	$800	1.0%
	Total Site Info	**10,440**	**0.24**	**0.272**	**46**	**19,572**	**0.75**	**3,700**			**$67,300**	**23.5%**
7	**United Reformed Church**											
	Bioretention systems/ rain gardens	2,300	0.05	0.060	10	4,398	0.17	400	5	SF	$2,000	2.5%
	Pervious pavements	33,000	0.76	0.860	144	63,094	2.37	8,000	25	SF	$200,000	36.2%
	Rainwater harvesting systems	1,100	0.03	0.029	5	1,000	0.08	1,000	2	gal	$2,000	1.2%
	Total Site Info	**36,400**	**0.84**	**0.948**	**159**	**68,492**	**2.62**	**9,400**			**$204,000**	**39.9%**

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	**US Post Office**											
	Pervious pavements	11,250	0.26	0.293	49	21,505	0.81	2,550	25	SF	$63,750	29.7%
	Total Site Info	**11,250**	**0.26**	**0.293**	**49**	**21,505**	**0.81**	**2,550**			**$63,750**	**29.7%**
	PETERS BROOK SUBWATERSHED	**253,960**	**5.83**	**6.617**	**1,108**	**485,777**	**18.30**	**93,670**			**$2,040,750**	**16.6%**
9	**NJ Motor Vehicle Commission**											
	Pervious pavements	21,300	0.49	0.555	93	40,721	1.53	6,200	25	SF	$155,000	35.1%
	Total Site Info	**21,300**	**0.49**	**0.555**	**93**	**40,721**	**1.53**	**6,200**			**$155,000**	**35.1%**
10	**Post Ace Hardware**											
	Pervious pavements	33,900	0.78	0.883	148	64,814	2.44	14,000	25	SF	$350,000	31.8%
	Total Site Info	**33,900**	**0.78**	**0.883**	**148**	**64,814**	**2.44**	**14,000**			**$350,000**	**31.8%**
11	**Robert Wood Johnson University Hospital**											
	Pervious pavements	29,400	0.67	0.766	128	56,205	2.11	12,000	25	SF	$300,000	5.3%
	Total Site Info	**29,400**	**0.67**	**0.766**	**128**	**56,205**	**2.11**	**12,000**			**$300,000**	**5.3%**
12	**Somerset Courthouse**											
	Bioretention systems/ rain gardens	11,300	0.26	0.294	49	21,602	0.81	3,660	5	SF	$18,300	7.9%
	Pervious pavements	1,700	0.04	0.044	7	3,254	0.12	1,700	25	SF	$42,500	1.2%
	Total Site Info	**13,000**	**0.30**	**0.339**	**57**	**24,856**	**0.93**	**5,360**			**$60,800**	**9.1%**
13	**Somerville Fire Station / Michael Lepp Park**											
	Pervious pavements	17,000	0.39	0.443	74	32,501	1.22	14,700	25	SF	$367,500	35.7%
	Total Site Info	**17,000**	**0.39**	**0.443**	**74**	**32,501**	**1.22**	**14,700**			**$367,500**	**35.7%**
14	**Somerville High School**											
	Bioretention systems/ rain gardens	4,150	0.10	0.108	18	7,936	0.30	1,120	5	SF	$5,600	2.6%
	Total Site Info	**4,150**	**0.10**	**0.108**	**18**	**7,936**	**0.30**	**1,120**			**$5,600**	**2.6%**
15	**Somerville Rescue Squad**											
	Bioretention systems/ rain gardens	110	0.00	0.003	0	209	0.01	90	5	SF	$450	0.4%
	Total Site Info	**110**	**0.00**	**0.003**	**0**	**209**	**0.01**	**90**			**$450**	**0.4%**

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 %
16	**Somerville Unemployment Services**											
	Bioretention systems/ rain gardens	17,000	0.39	0.443	74	33,840	1.27	3,800	5	SF	$19,000	20.1%
	Pervious pavements	22,800	0.52	0.594	99	43,593	1.64	3,700	25	SF	$92,500	27.0%
	Total Site Info	**39,800**	**0.91**	**1.037**	**174**	**77,433**	**2.91**	**7,500**			**$111,500**	**47.1%**
17	**Somerset Valley YMCA**											
	Pervious pavements	18,300	0.42	0.477	80	34,984	1.32	8,000	25	SF	$200,000	30.2%
	Total Site Info	**18,300**	**0.42**	**0.477**	**80**	**34,984**	**1.32**	**8,000**			**$200,000**	**30.2%**
18	**Van Deerver Elementary School**											
	Bioretention systems/ rain gardens	19,800	0.45	0.516	86	37,856	1.42	5,000	5	SF	$25,000	7.1%
	Pervious pavements	56,000	1.29	1.459	244	107,061	4.02	18,500	25	SF	$462,500	20.0%
	Rainwater harvesting systems	1,200	0.03	0.031	5	1,200	0.09	1,200	2	gal	$2,400	0.4%
	Total Site Info	**77,000**	**1.77**	**2.006**	**336**	**146,117**	**5.53**	**24,700**			**$489,900**	**27.5%**