RUTGERS
New Jersey Agricultural
Experiment Station

Draft

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

Prepared for Old Bridge Township by the
Rutgers Cooperative Extension Water Resources Program

November 16, 2015

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Introduction

Located in Middlesex County in central New Jersey, Old Bridge Township covers approximately 38.7 square miles south of Sayreville. Figures 1 and 2 illustrate that Old Bridge Township is dominated by urban land uses. A total of 36.3% of the municipality's land use is classified as urban. Of the urban land in Old Bridge 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 Old Bridge 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 Old Bridge Township. Based upon the 2007 NJDEP land use/land cover data, approximately 13.7% of Old Bridge Township has impervious cover. This level of impervious cover suggests that the streams in Old Bridge Township are likely impacted.[1]

Methodology

Old Bridge Township contains portions of ten 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

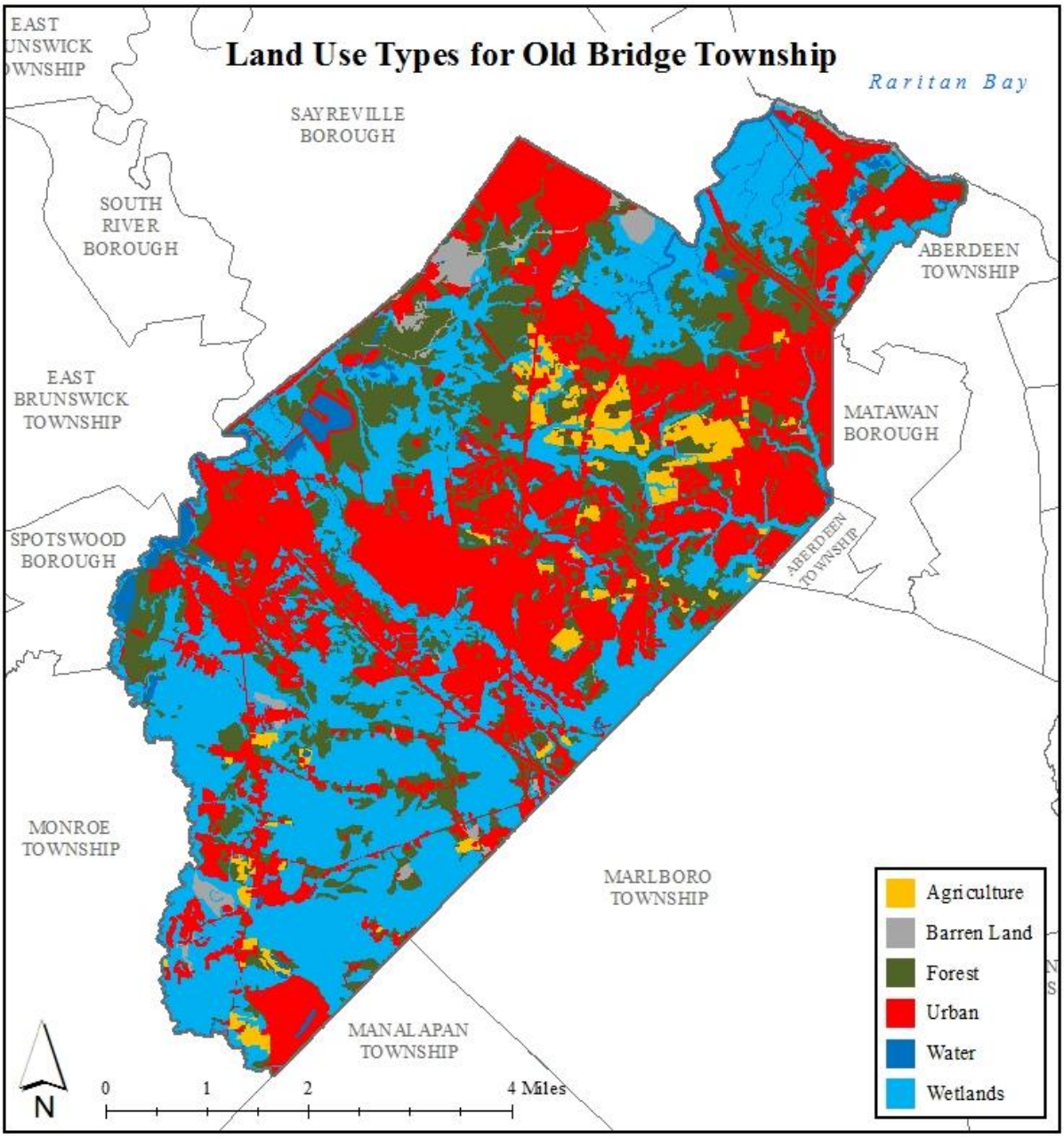


Figure 1: Map illustrating the land use in Old Bridge Township

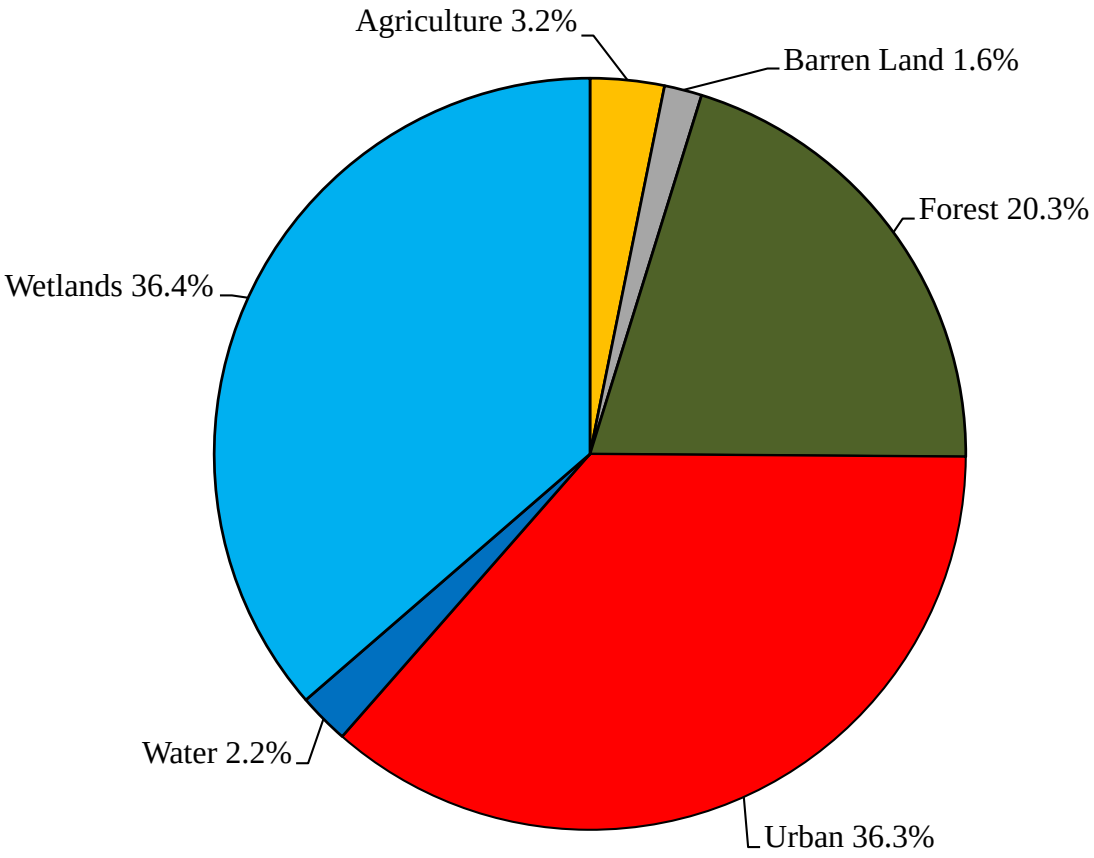


Figure 2: Pie chart illustrating the land use in Old Bridge Township

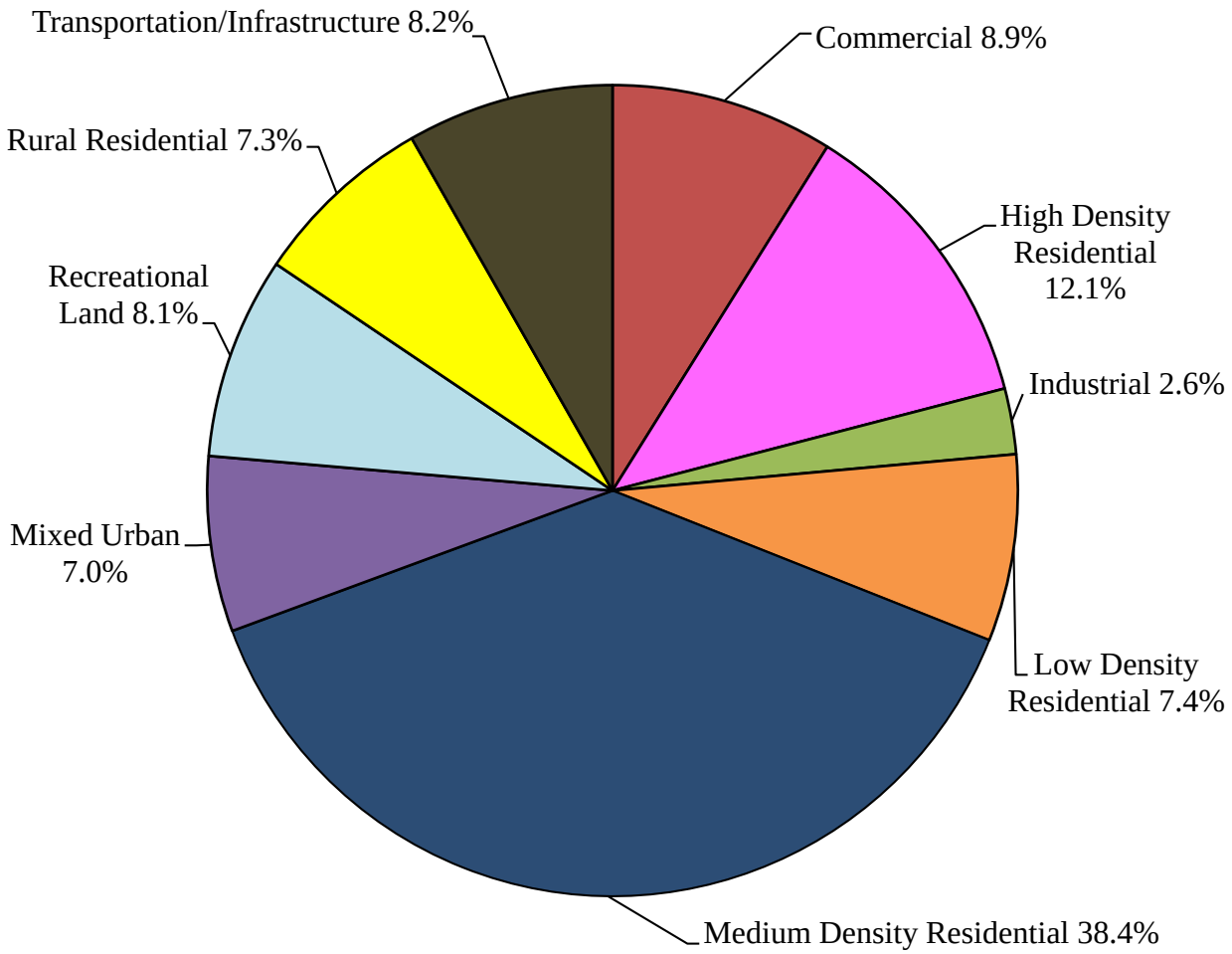


Figure 3: Pie chart illustrating the various types of urban land use in Old Bridge Township

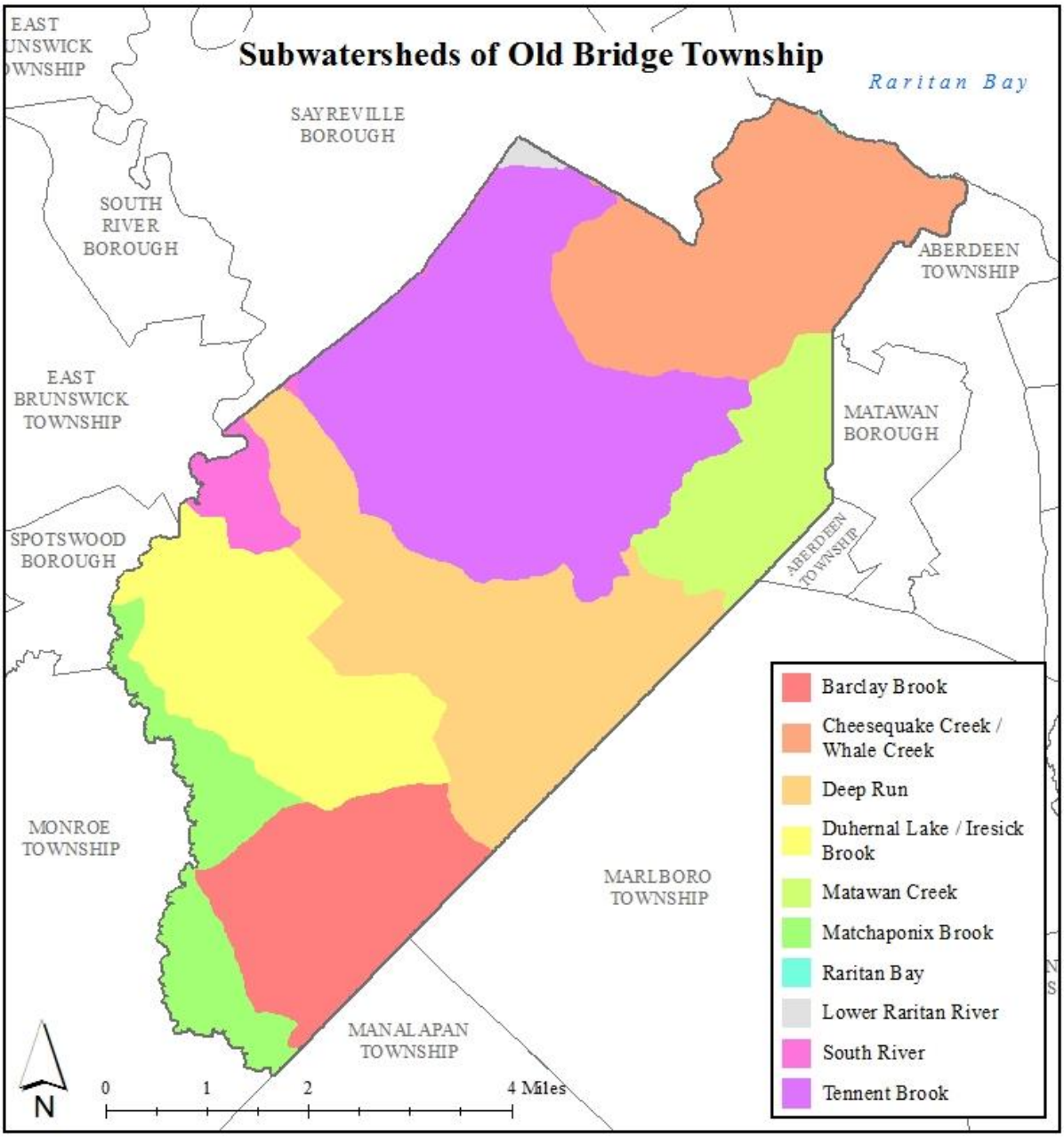


Figure 4: Map of the subwatersheds in Old Bridge Township

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 Old Bridge 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 Old Bridge 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

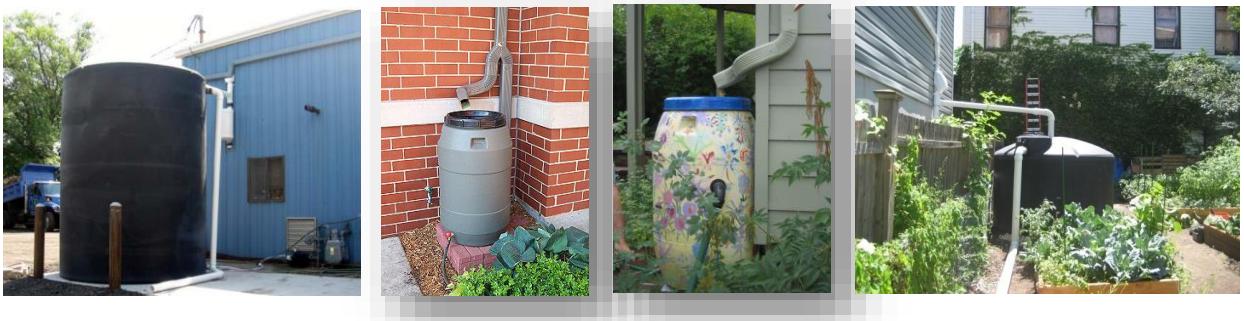
These are landscaped features that are designed to capture, treat, and infiltrate stormwater runoff. These systems can easily be incorporated into existing landscapes, improving aesthetics and creating a wildlife habitat while managing stormwater runoff. Bioretention systems also can be used in soils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

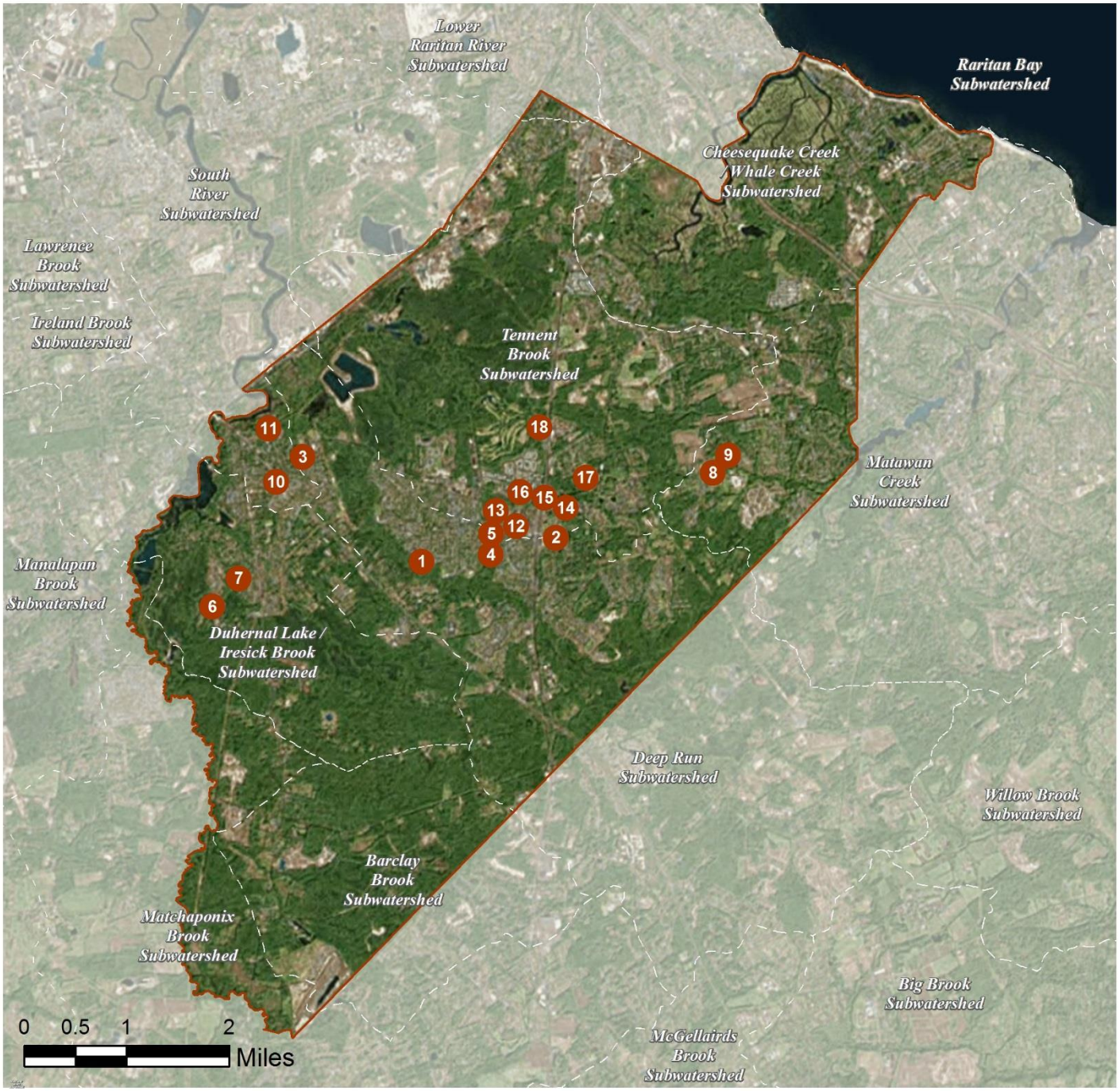
Additionally, development projects that are in need of providing off-site compensation for stormwater impacts can use the projects in this plan as a starting point. The municipality can quickly convert this impervious cover reduction action plan into a stormwater mitigation plan and incorporate it into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

a. Overview Map of the Project

OLD BRIDGE TOWNSHIP: CLIMATE RESILIENT GREEN INFRASTRUCTURE FOR THE RARITAN BASIN

b. Green Infrastructure Sites

OLD BRIDGE TOWNSHIP: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE DEEP RUN SUBWATERSHED:

1. John H. Glenn Junior School
2. Rotary Senior Center
3. Southwood Elementary School
4. Walter M. Schirra Elementary School

SITES WITHIN THE DEEP RUN/ TENNENT BROOK SUBWATERSHED:

5. Saint Ambrose Roman Catholic Church

SITES WITHIN THE DUHERNAL LAKE / IRESICK BROOK SUBWATERSHED:

6. Jonas Salk Middle School
7. Raymond E. Voorhees Elementary School

SITES WITHIN THE MATAWAN CREEK SUBWATERSHED:

8. Geick Park
9. Old Bridge High School

SITES WITHIN THE SOUTH RIVER SUBWATERSHED:

10 Saint Thomas the Apostle Roman Catholic Church

11. William A. Miller Elementary School

SITES WITHIN THE TENNENT BROOK SUBWATERSHED:

12. 42 Throckmorton Ln
13. Alan B. Shepard School
14. Carl Sandburg Middle School
15. Good Shepherd Lutheran Church
16. Old Bridge Fire Company
17. Old Bridge Municipal Complex
18. Sayre Woods Bible Church

c. Proposed Green Infrastructure Concepts

JOHN H. GLENN JUNIOR SCHOOL

Subwatershed: Deep Run

Site Area: 736,166 sq. ft.

Address: 185 Cindy Street
Old Bridge, NJ 08857

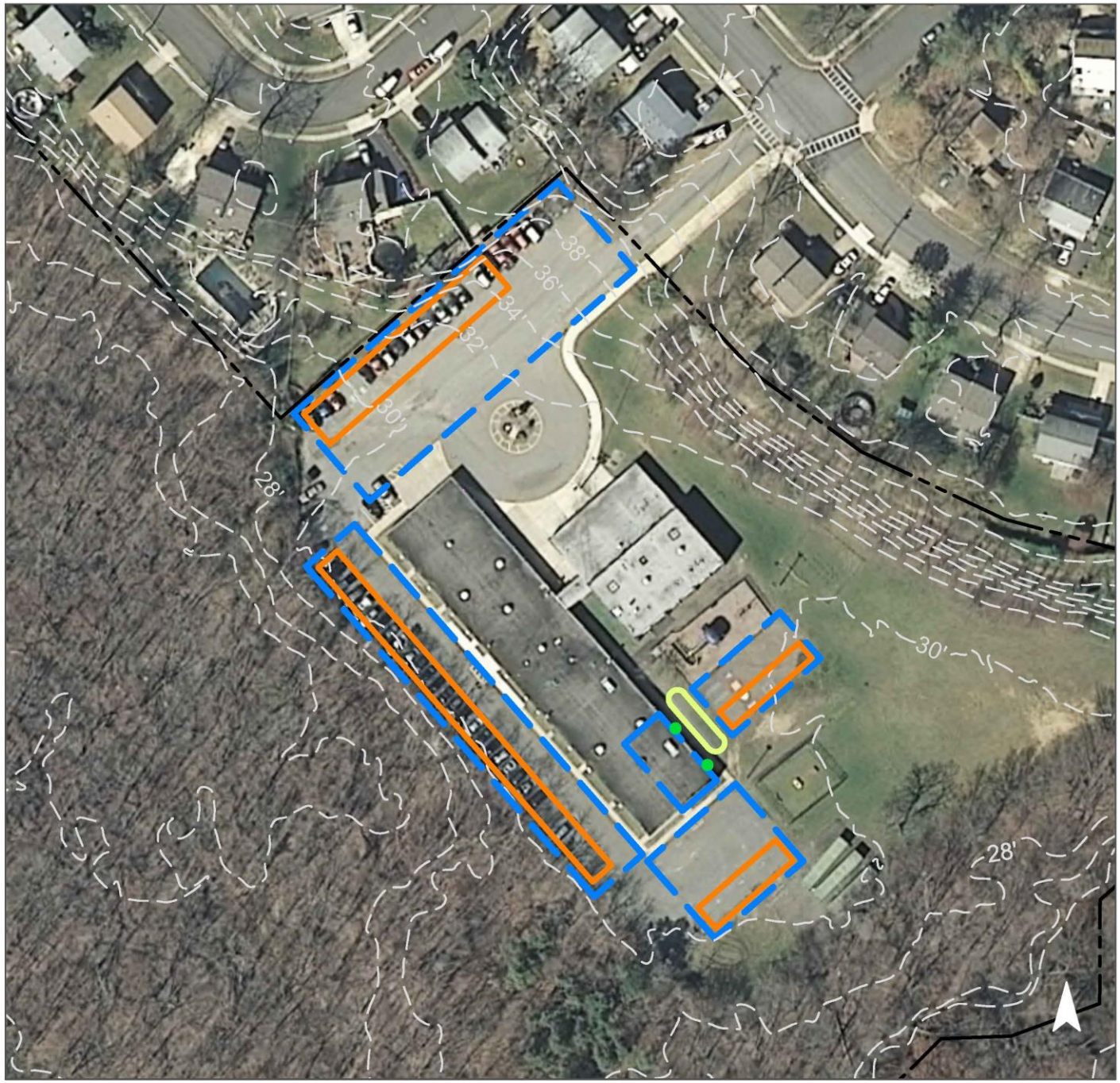
Block and Lot: Block 15000, Lot 11

Multiple areas of pavement surrounding the school can be replaced with porous asphalt to capture and infiltrate stormwater. A rain garden can be installed adjacent to the paved playground to capture, infiltrate and treat 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"
12	87,426	4.2	44.2	401.4	0.068	2.40

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	0.045	8	3,314	0.12	550	$2,750
Pervious pavements	1.032	173	75,750	2.85	10,675	$266,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



John H. Glenn Junior School

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

0 50' 100'

ROTARY SENIOR CENTER

Subwatershed: Deep Run

Site Area: 221,806 sq. ft.

Address: 100 Ticetown Road
Old Bridge, NJ 08857

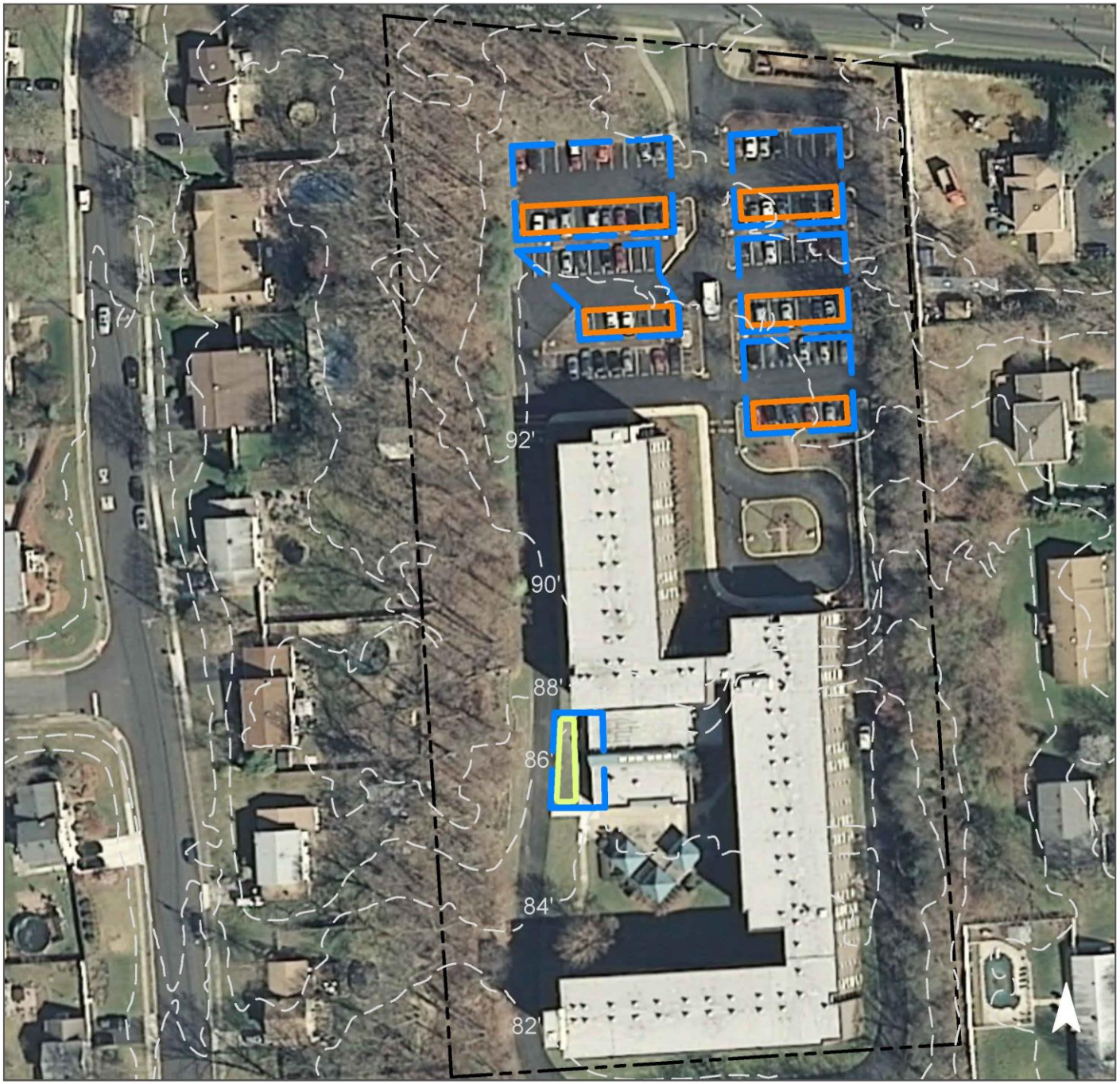
Block and Lot: Block 1.12, Lot 13001

Parking spots north of the building can be replaced with porous asphalt to capture and infiltrate stormwater. A rain garden adjacent to the west side of the building can 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"
74	164,360	7.9	83.0	754.6	0.128	4.51

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	0.054	9	3,987	0.15	569	$2,845
Pervious pavements	0.613	103	44,747	1.69	5,833	$145,825

GREEN INFRASTRUCTURE RECOMMENDATIONS



Rotary Senior Center

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

0 50' 100'

SOUTHWOOD ELEMENTARY SCHOOL

Subwatershed: Deep Run

Site Area: 561,623 sq. ft.

Address: 64 Southwood Drive
Old Bridge, NJ 08857

Block and Lot: Block 18066, Lot 47

Stormwater is currently directed to an existing detention basin. Parking spaces by the northern building can be replaced with porous asphalt to capture and infiltrate stormwater. A bioretention system can be installed adjacent to the driveway to capture, treat, and infiltrate rooftop 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"
18	102,810	5.0	51.9	472.0	0.080	2.82

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
Bioretention systems	0.039	7	2,857	0.11	402	$2,010
Pervious pavements	0.891	149	65,390	2.46	9,027	$225,675

GREEN INFRASTRUCTURE RECOMMENDATIONS

Southwood Elementary School

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

0 25' 50'

WALTER M. SCHIRRA ELEMENTARY SCHOOL

Subwatershed: Deep Run

Site Area: 536,478 sq. ft.

Address: 1 Awn Street
Old Bridge, NJ 08857

Block and Lot: Block 15000, Lot 6

Parking spots and the existing asphalt playground can be replaced with porous asphalt to capture and infiltrate stormwater. A rain garden can be installed south of the parking lot to capture, treat, and infiltrate 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"
18	98,314	4.7	49.7	451.4	0.077	2.70

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	0.117	20	8,587	0.32	1,142	$5,710
Pervious pavements	1.172	196	336,458	3.23	10,829	$270,725

GREEN INFRASTRUCTURE RECOMMENDATIONS

Walter M. Schirra Elementary School

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

0 50' 100'

SAINT AMBROSE ROMAN CATHOLIC CHURCH

Subwatershed: Tennent Brook / Deep Run

Site Area: 572,146 sq. ft.

Address: 96 Throckmorton Lane
Old Bridge, NJ 08857

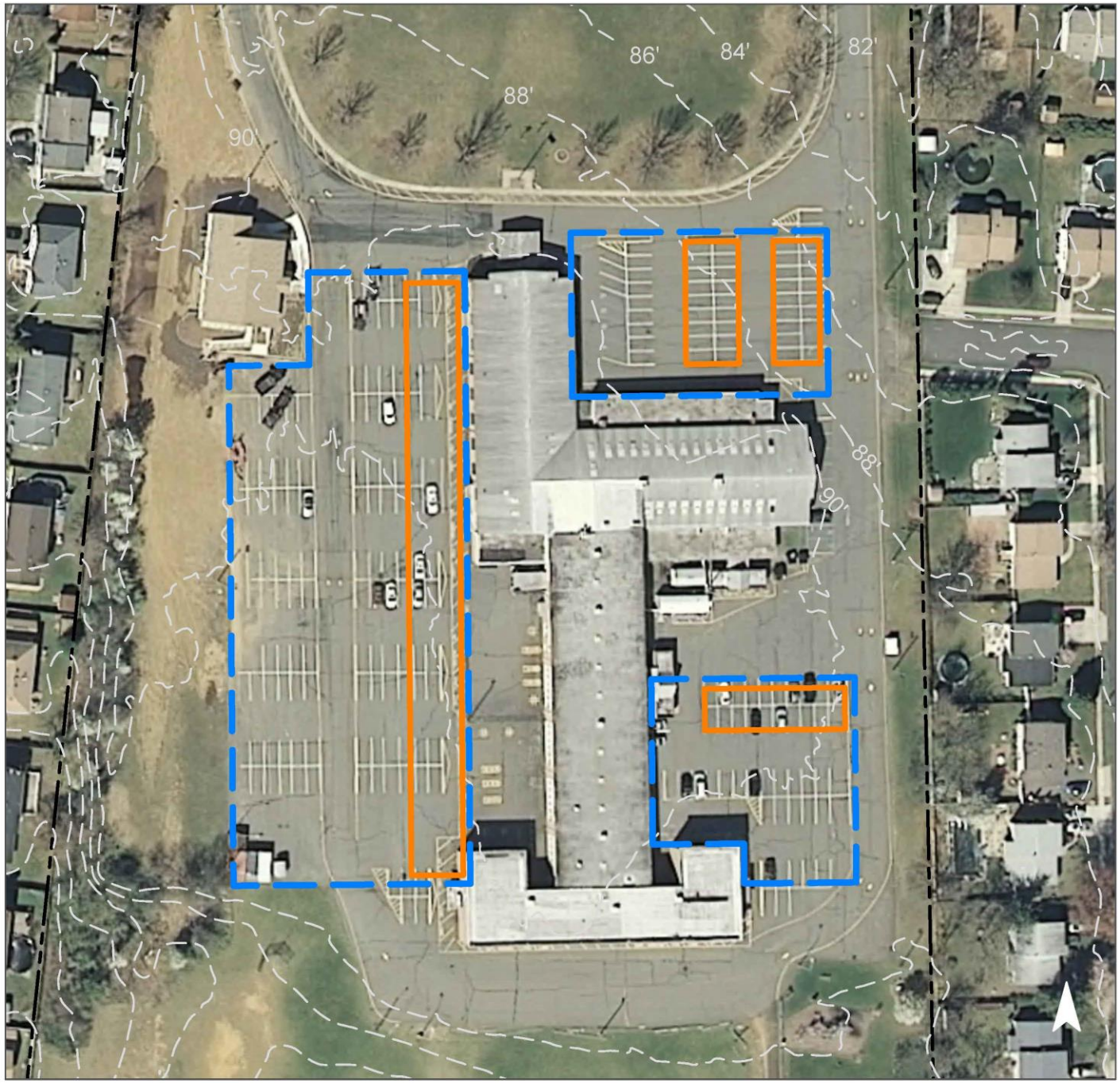
Block and Lot: Block 15000, Lot 7

Parking spaces around the school 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"
47	271,283	13.1	137.0	1,245.6	0.211	7.44

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
Pervious pavements	2.435	408	178,697	6.72	20,970	$524,250

GREEN INFRASTRUCTURE RECOMMENDATIONS



Saint Ambrose Roman Catholic Church

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

0 25' 50'

JONAS SALK MIDDLE SCHOOL

Subwatershed: Duhernal Lake / Iresick Brook

Site Area: 1,728,935 sq. ft.

Address: 155 West Greystone Road
Old Bridge, NJ 08857

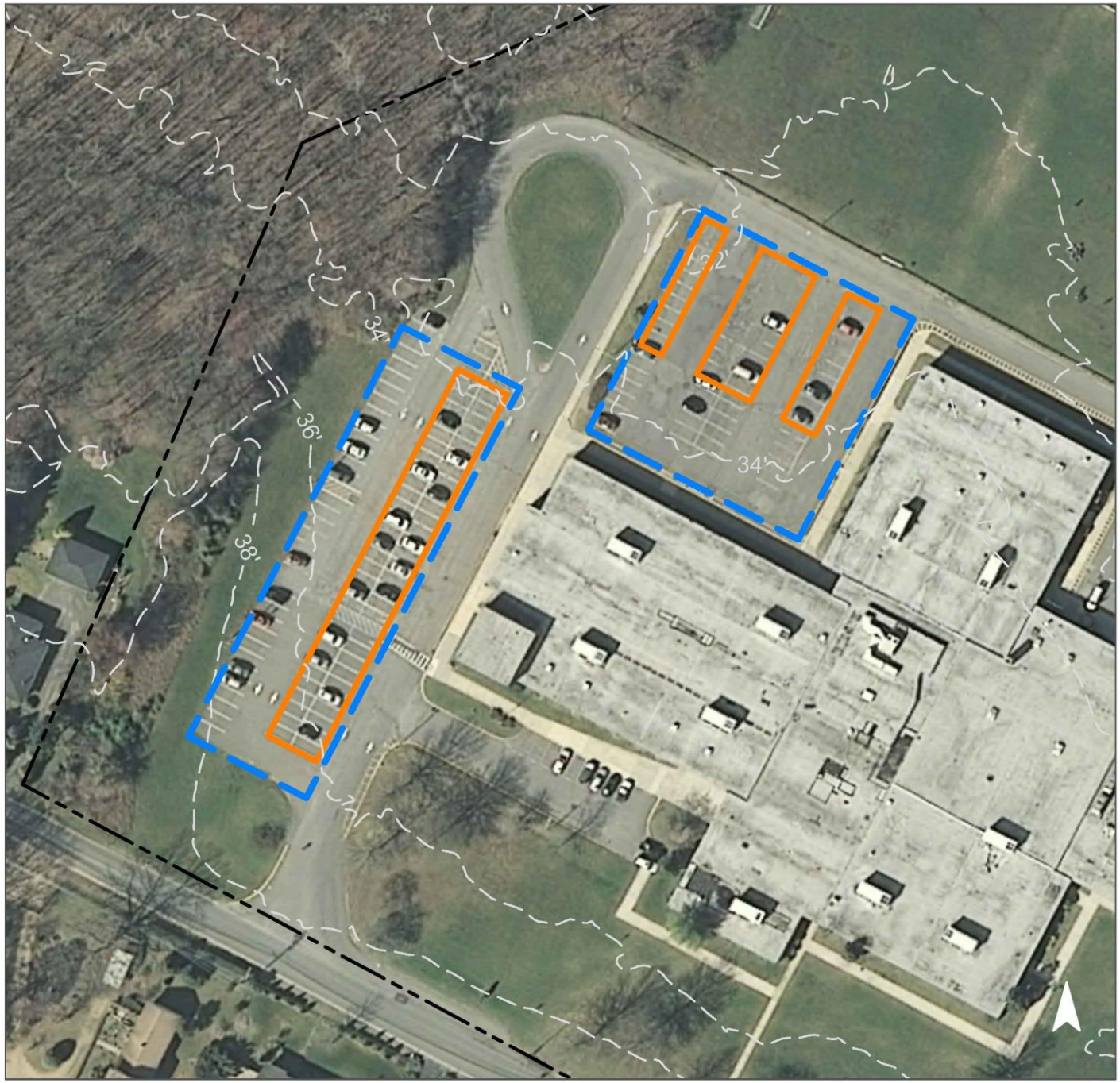
Block and Lot: Block 26052, Lot 17

Stormwater is currently directed to an existing detention basin. Parking spots can be replaced with porous asphalt to capture 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"
15	253,221	12.2	127.9	1,162.6	0.197	6.94

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
Pervious pavements	1.347	225	98,833	3.72	17,049	$426,225

GREEN INFRASTRUCTURE RECOMMENDATIONS



Jonas Salk Middle School

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

0 50' 100'

RAYMOND E. VOORHEES ELEMENTARY SCHOOL

Subwatershed: Duhernal Lake / Iresick Brook

Site Area: 190,065 sq. ft.

Address: 11 Liberty Street
Old Bridge, NJ 08857

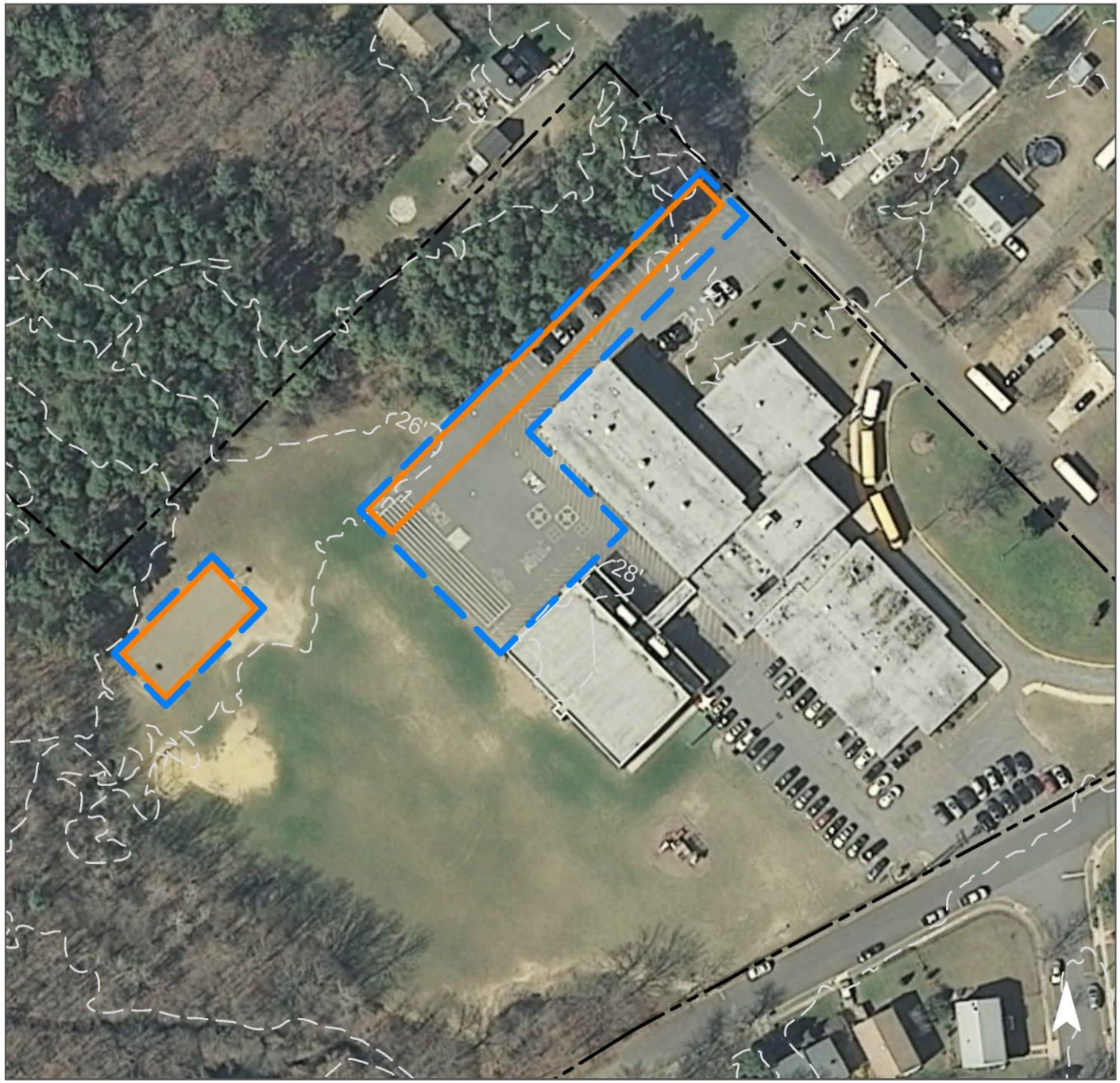
Block and Lot: Block 26008, Lot 456

The existing basketball court and a row of parking spaces can be replaced with porous asphalt to capture 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"
49	93,584	4.5	47.3	429.7	0.073	2.57

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	0.725	121	53,228	2.00	10,005	$250,125

GREEN INFRASTRUCTURE RECOMMENDATIONS



Raymond E. Voorhees Elementary School

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

0 50' 100'

GEICK PARK

Subwatershed: Matawan Creek

Site Area: 1,717,348 sq. ft.

Address: 4209 Route 516
Old Bridge, NJ 08857

Block and Lot: Block 12261, Lot 13

Stormwater is currently directed to an existing detention basin. Parking spots near the basketball courts can be replaced with porous asphalt to capture and infiltrate stormwater. A rain garden can be installed adjacent to the pavilion to 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"
12	205,689	9.9	103.9	944.4	0.160	5.64

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	0.027	5	7,749	0.07	301	$1,505
Pervious pavements	0.445	75	127,886	1.23	3,389	$84,725

GREEN INFRASTRUCTURE RECOMMENDATIONS

Geick Park

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

0 30' 60'

OLD BRIDGE HIGH SCHOOL

Subwatershed: Matawan Creek

Site Area: 2,599,381 sq. ft.

Address: 4209 Route 516
Old Bridge, NJ 08857

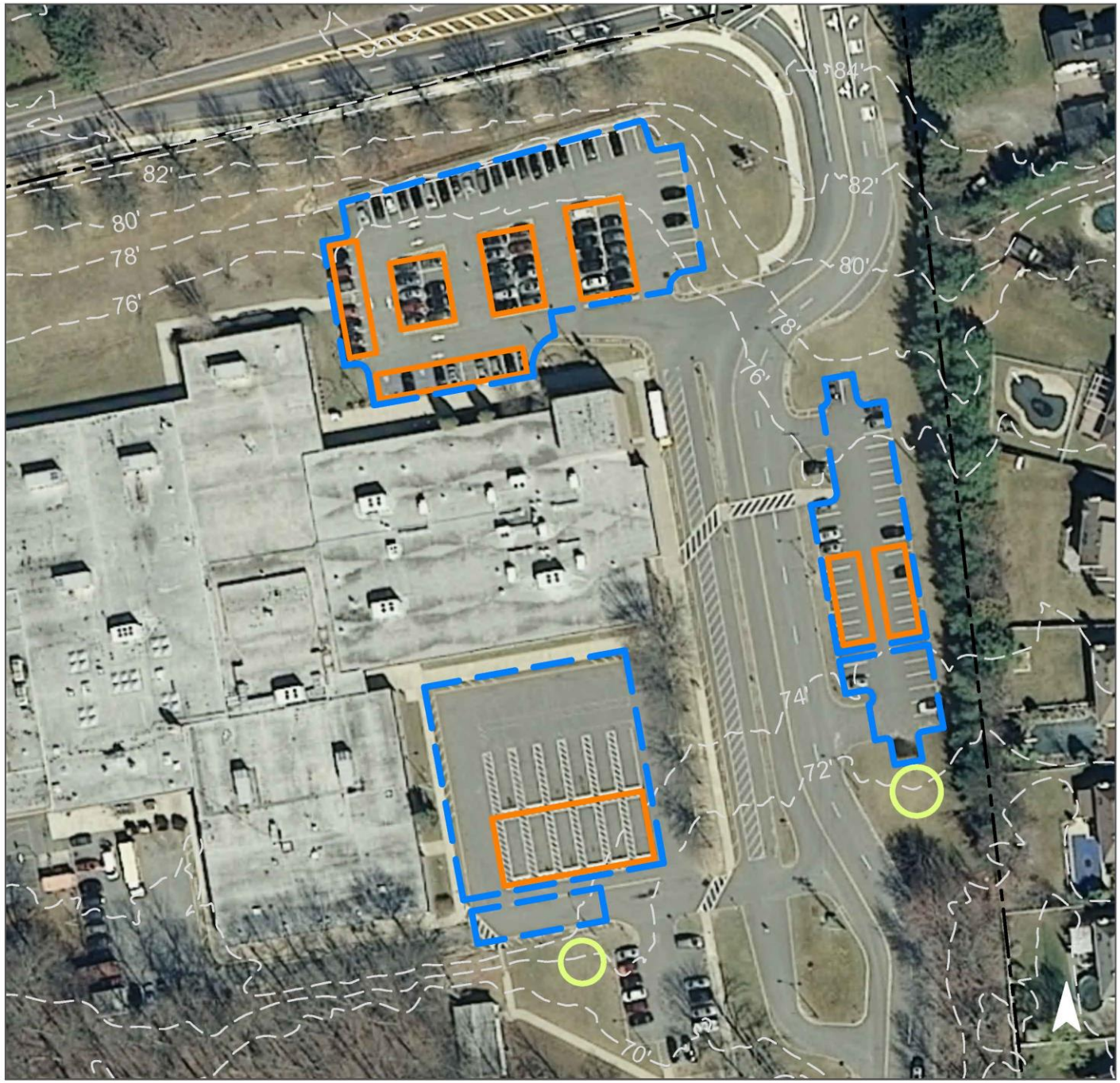
Block and Lot: Block 12261, Lot 11

Stormwater is currently directed to an existing detention basin. Bioretention systems can be installed to capture, treat, and infiltrate parking lot runoff. Parking spaces can be replaced with pervious pavement 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"
47	1,220,249	58.8	616.3	5,602.6	0.951	33.47

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	0.130	22	37,415	0.36	1,420	$7,100
Pervious pavements	3.068	514	225,081	8.46	29,991	$749,775

GREEN INFRASTRUCTURE RECOMMENDATIONS

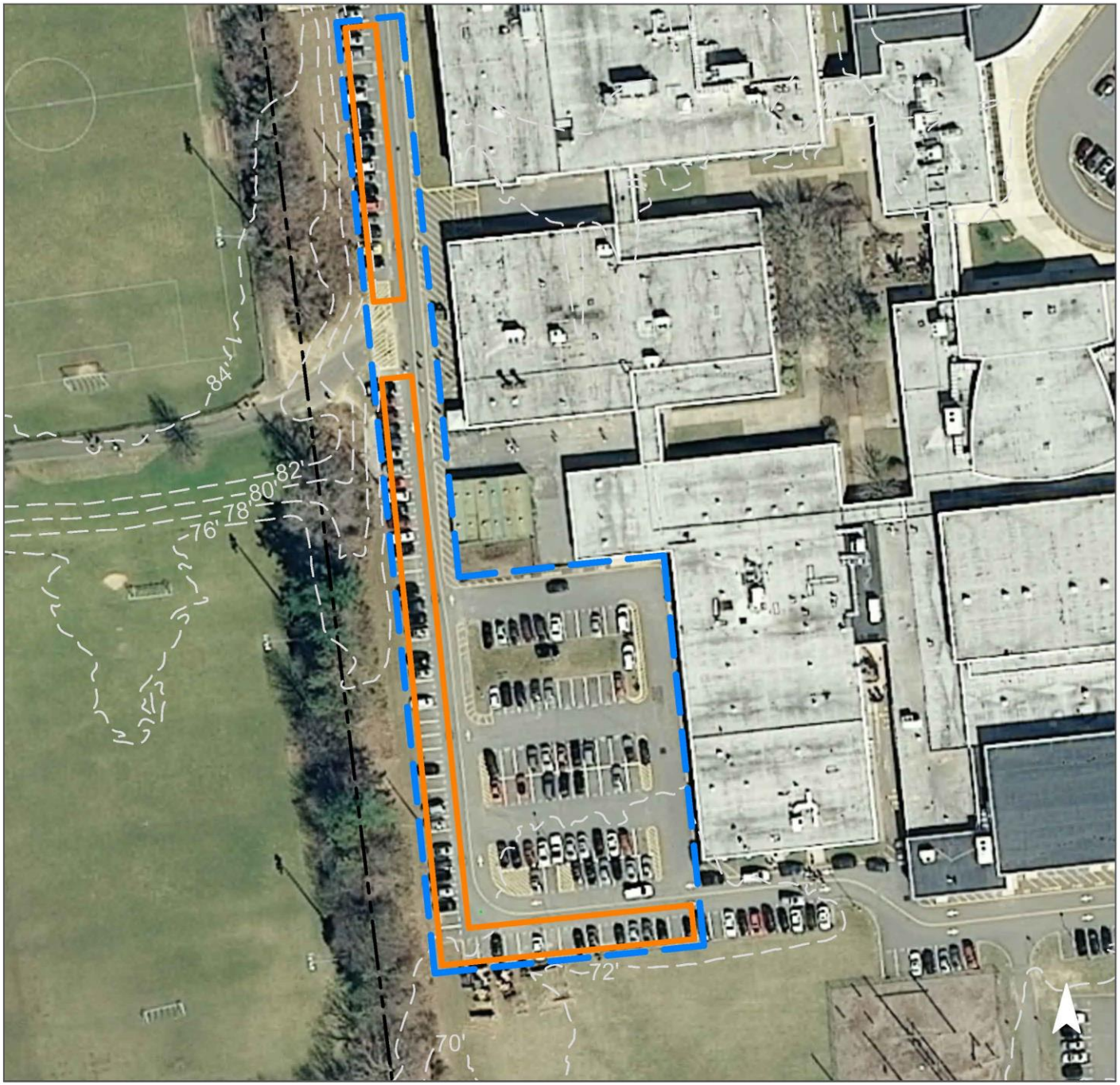


Old Bridge High School Upper

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

0 50' 100'

GREEN INFRASTRUCTURE RECOMMENDATIONS



Old Bridge High School Lower

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

0 50' 100'

SAINT THOMAS THE APOSTLE ROMAN CATHOLIC CHURCH

Subwatershed: South River

Site Area: 519,336 sq. ft.

Address: 1 St. Thomas Plaza
Old Bridge, NJ 08857

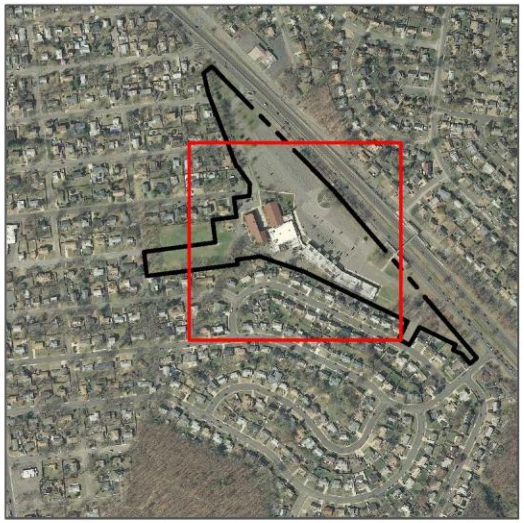
Block and Lot: Block 18074, Lot 22.11

Parking spaces can be replaced with pervious pavement to capture and infiltrate stormwater. A rain garden can be installed to capture, treat, and infiltrate 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"
62	320,251	15.4	161.7	1,470.4	0.250	8.78

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	4,413	0.17	805	$4,025
Pervious pavements	3.802	637	278,997	10.49	32,915	$822,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



Saint Thomas the Apostle Roman Catholic Church

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

0 75' 150'

WILLIAM A. MILLER ELEMENTARY SCHOOL

Subwatershed: South River

Site Area: 388, 269 sq. ft.

Address: 2 Old Matawan Road
Old Bridge, NJ 08857

Block and Lot: Block 8003, Lot 10.01

Stormwater is currently directed to an existing detention basin. Parking spots southwest of the school 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"
32	124,341	6.0	62.8	570.9	0.097	3.41

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	0.259	43	18,984	0.71	2,133	$53,325

GREEN INFRASTRUCTURE RECOMMENDATIONS

William A. Miller Elementary School

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

0 30' 60'

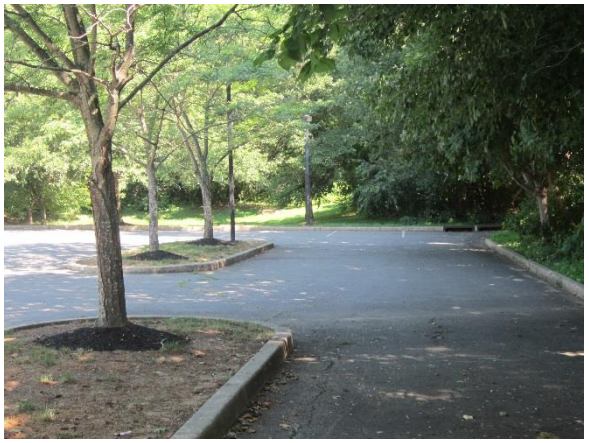
42 THROCKMORTON LANE

Subwatershed: Tennent Brook

Site Area: 143,029 sq. ft.

Address: 42 Throckmorton Lane
Old Bridge, NJ 08857

Block and Lot: Block 15506, Lot 14,16



Parking spots west of the office suites 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"
56	79,608	3.8	40.2	365.5	0.062	2.18

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	0.928	155	68,113	2.56	8,190	$204,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

42 Throckmorton Lane

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

0 30' 60'

ALAN B. SHEPARD SCHOOL

Subwatershed: Tennent Brook

Site Area: 319,010 sq. ft.

Address: 33 Bushnell Road
Old Bridge, NJ 08857

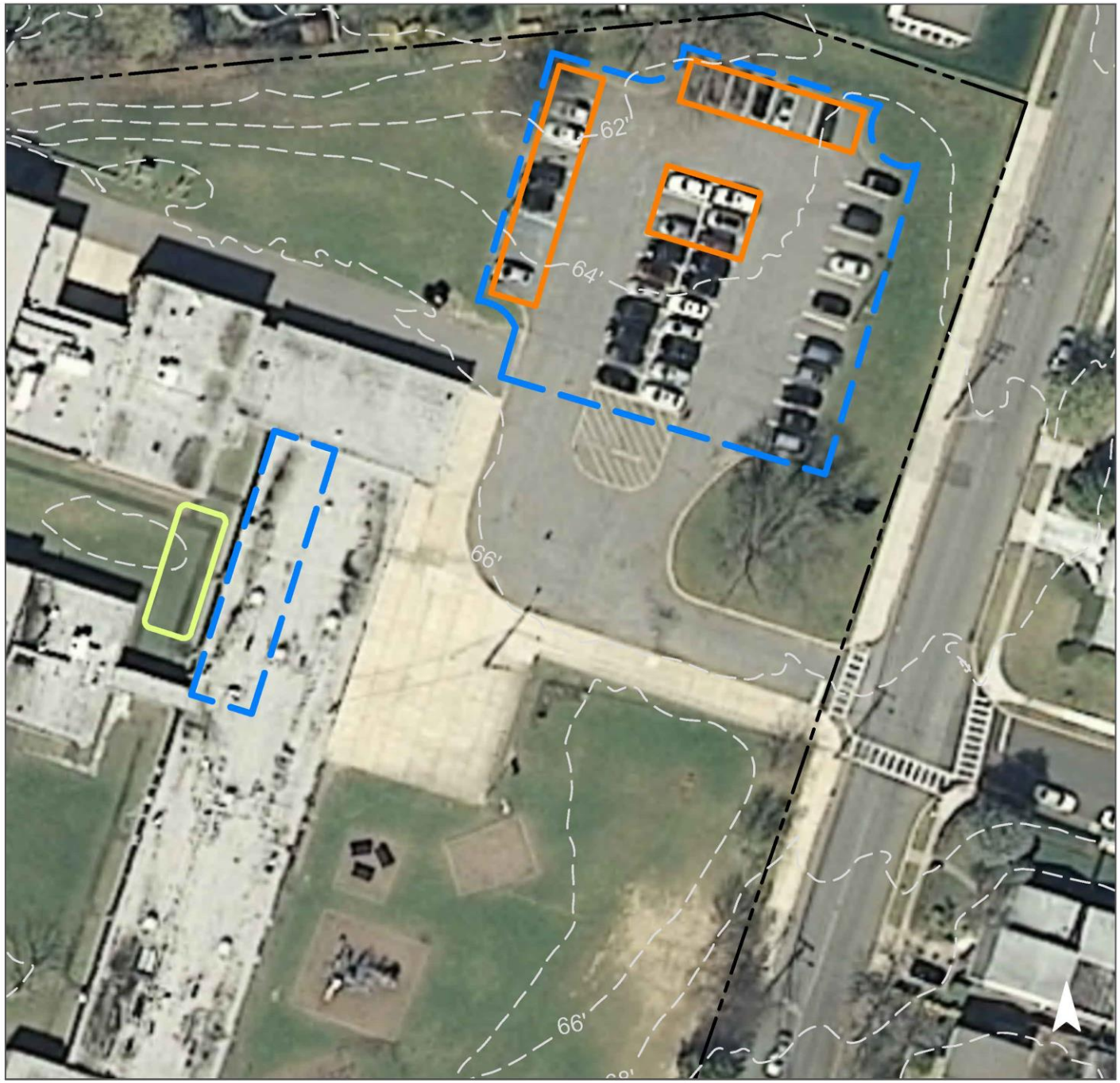
Block and Lot: Block 15507, Lot 1

Parking spots northeast of the school can be replaced with porous asphalt to capture and infiltrate stormwater. A rain garden can be installed to capture, treat, and infiltrate rooftop 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"
36	113,411	5.5	57.3	520.7	0.088	3.11

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	0.071	12	5,184	0.19	945	$4,725
Pervious pavements	0.526	88	38,574	1.45	3,945	$98,625

GREEN INFRASTRUCTURE RECOMMENDATIONS



Alan B. Shepard School

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

0 30' 60'

CARL SANDBURG MIDDLE SCHOOL

Subwatershed: Tennent Brook

Site Area: 2,078,084 sq. ft.

Address: 3439 Route 516
Old Bridge, NJ 08857

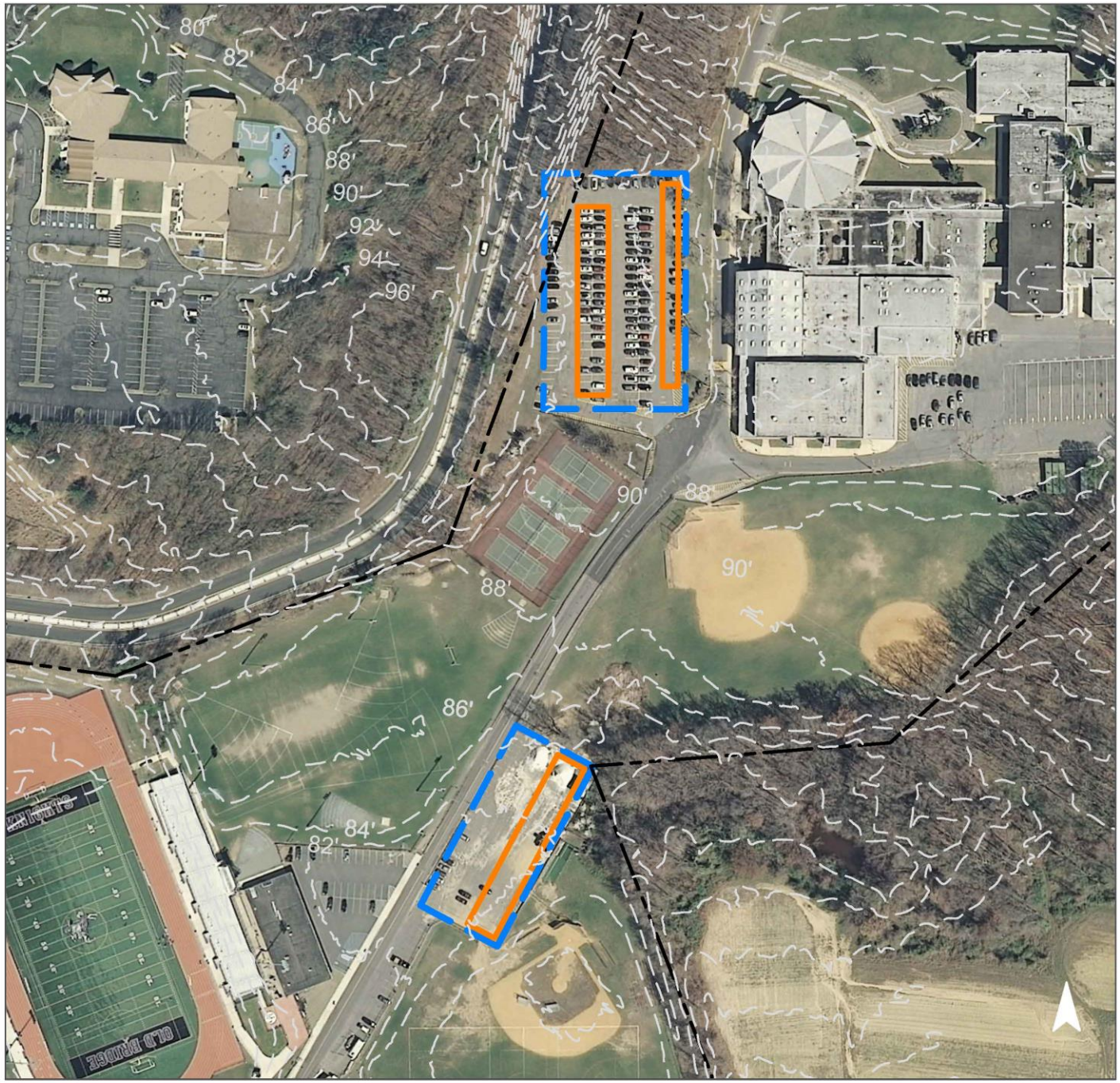
Block and Lot: Block 14263, Lot 3

Parking spaces north of the school and near the baseball field 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"
31	635,915	30.7	321.2	2,919.7	0.495	17.44

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
Pervious pavements	2.291	384	168,113	6.32	25,555	$638,875

GREEN INFRASTRUCTURE RECOMMENDATIONS



Carl Sandburg Middle School

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

0 100' 200'

GOOD SHEPHERD LUTHERAN CHURCH

Subwatershed: Tennent Brook

Site Area: 568,248 sq. ft.

Address: 3139 Route 516
Old Bridge, NJ 08857

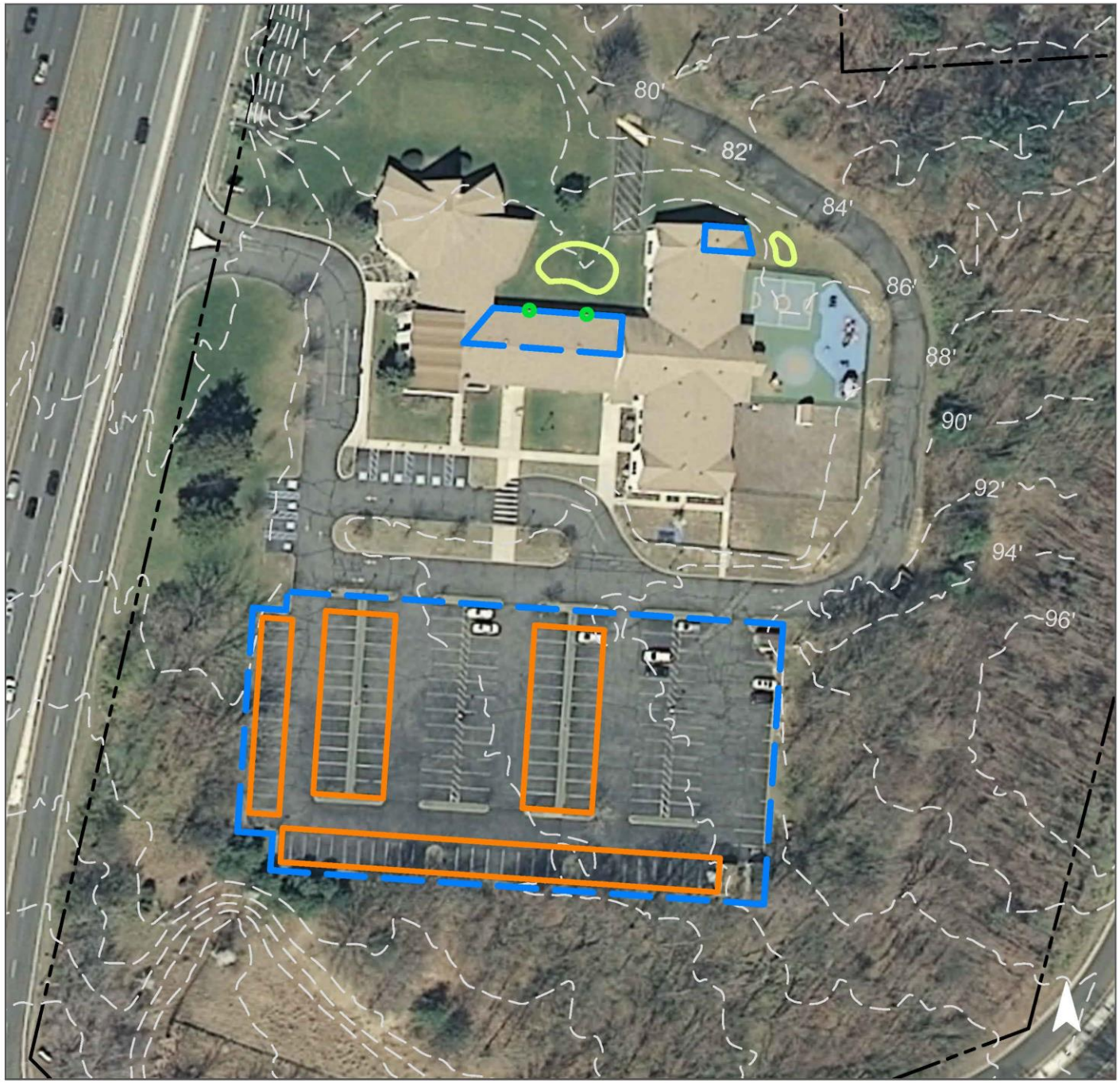
Block and Lot: Block 14263, Lot 1

Parking spots south of the church can be replaced with porous asphalt to capture and infiltrate stormwater. Bioretention systems can be installed north of the church to capture, treat, and infiltrate rooftop 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"
28	159,039	7.7	80.3	730.2	0.124	4.36

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	5,311	0.20	1,342	$6,710
Pervious pavements	1.640	275	120,331	4.52	19,976	$499,400

GREEN INFRASTRUCTURE RECOMMENDATIONS



Good Shepherd Lutheran Church

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

0 50' 100'

OLD BRIDGE FIRE COMPANY

Subwatershed: Tennent Brook

Site Area: 6,518 sq. ft.

Address: 3098 Route 516
Old Bridge, NJ 08857

Block and Lot: Block 9000, Lot 17

Rainwater can be harvested by installing a cistern off of the northeast corner of the firehouse. The water can be used for cleaning emergency vehicles or for conducting car wash fundraisers. 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"
72	4,663	0.2	2.4	21.4	0.004	0.13

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
Rainwater harvesting systems	0.023	4	800	0.08	800 (gal)	$1,600

GREEN INFRASTRUCTURE RECOMMENDATIONS

Old Bridge Fire Company

- rainwater harvesting
- drainage areas
- property line
- 2012 Aerial: NJOIT, OGIS

0 25' 50'

OLD BRIDGE MUNICIPAL COMPLEX

Subwatershed: Tennent Brook

Site Area: 1,727,612 sq. ft.

Address: 1 Old Bridge Plaza
Old Bridge, NJ 08857

Block and Lot: Block 10000, Lot 1

Multiple rows of parking spaces around the complex can be replaced with porous asphalt to capture and infiltrate stormwater. A rain gardens can b e installed east of the library to capture, treat, and infiltrate 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"
44	760,373	36.7	384.0	3,491.2	0.592	20.85

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	0.110	18	8,041	0.30	2,019	$10,095
Pervious pavement	5.235	876	384,105	14.44	52,001	$1,300,025

GREEN INFRASTRUCTURE RECOMMENDATIONS

Old Bridge Municipal Complex

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

0 75' 150'

SAYRE WOODS BIBLE CHURCH

Subwatershed: Tennent Brook

Site Area: 222,370 sq. ft.

Address: 2290 U.S. 9
Old Bridge, NJ 08857

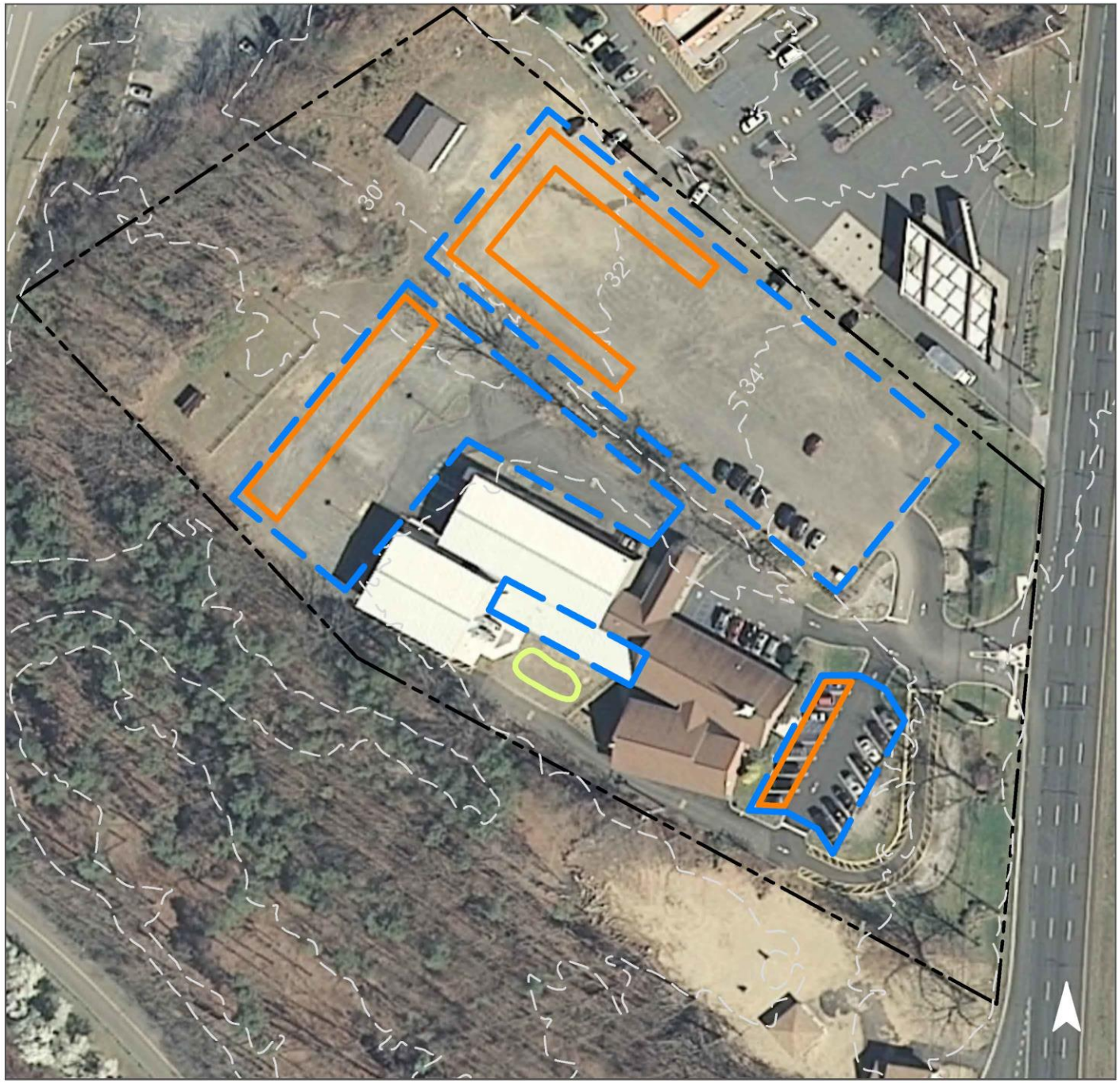
Block and Lot: Block 9000, Lot 26.11

Parking spaces can be replaced with porous asphalt to capture and infiltrate stormwater. Building a rain garden adjacent to the church can 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"
42	93,122	4.5	47.0	427.6	0.073	2.55

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	0.063	11	4,638	0.17	750	$3,750
Pervious pavements	1.897	318	139,180	5.23	12,111	$302,775

GREEN INFRASTRUCTURE RECOMMENDATIONS



Sayre Woods Bible Church

- pervious pavements
- bioretention / rain gardens
- 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)
DEEP RUN SUBWATERSHED	**47.20**	**2,056,074**			**21.8**	**228.7**	**2,079.5**		**10.40**	**452,910**	**0.353**	**12.42**
John H. Glenn Junior School												
Total Site Info	16.90	736,166	15000	11	4.2	44.2	401.4	12	2.01	87,426	0.068	2.40
Rotary Senior Center												
Total Site Info	5.09	221,806	13001.14	1.12	7.9	83.0	754.6	74	3.77	164,360	0.128	4.51
Southwood Elementary School												
Total Site Info	12.89	561,623	18066	47	5.0	51.9	472.0	18	2.36	102,810	0.080	2.82
Walter M. Schirra Elementary School												
Total Site Info	12.32	536,478	15000	6	4.7	49.7	451.4	18	2.26	98,314	0.077	2.70
DEEP RUN / TENNENT BROOK SUBWATERSHED	**13.13**	**572,146**			**13.1**	**137.0**	**1,245.6**		**6.23**	**271,283**	**0.211**	**7.44**
Saint Ambrose Roman Catholic Church												
Total Site Info	13.13	572,146	15000	7	13.1	137.0	1,245.6	47	6.23	271,283	0.211	7.44
DUHERNAL LAKE / IRESICK BROOK SUBWATERSHED	**44.05**	**1,919,000**			**16.7**	**175.2**	**1,592.3**		**7.96**	**346,805**	**0.270**	**9.51**
Jonas Salk Middle School												
Total Site Info	39.69	1,728,935	26052	17	12.2	127.9	1,162.6	15	5.81	253,221	0.197	6.94
Raymond E. Voorhees Elementary School												
Total Site Info	4.36	190,065	26008	456	4.5	47.3	429.7	49	2.15	93,584	0.073	2.57
MATAWAN CREEK SUBWATERSHED	**99**	**4,316,729**			**68.7**	**720.2**	**6,547.0**		**32.74**	**1,425,938**	**1.111**	**39.11**
Geick Park												
Total Site Info	39.42	1,717,348	12261	13	9.9	103.9	944.4	12	4.72	205,689	0.160	5.64
Old Bridge High School												
Total Site Info	59.67	2,599,381	12261	11	58.8	616.3	5,602.6	47	28.01	1,220,249	0.951	33.47

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)
SOUTH RIVER SUBWATERSHED	**20.84**	**907,604**			**21.4**	**224.5**	**2,041.3**		**10.21**	**444,592**	**0.346**	**12.19**
Saint Thomas the Apostle Roman Catholic Church												
Total Site Info	11.92	519,336	18074	22.11	15.4	161.7	1,470.4	62	7.35	320,251	0.250	8.78
William A. Miller Elementary School												
Total Site Info	8.91	388,269	8003	10.01	6.0	62.8	570.9	32	2.85	124,341	0.097	3.41
TENNENT BROOK SUBWATERSHED	**116.27**	**5,064,871**			**89.0**	**932.4**	**8,476.3**		**42.38**	**1,846,130**	**1.438**	**50.63**
42 Throckmorton Ln												
Total Site Info	3.28	143,029	15506	14, 16	3.8	40.2	365.5	56	1.83	79,608	0.062	2.18
Alan B. Shepard School												
Total Site Info	7.32	319,010	15507	1	5.5	57.3	520.7	36	2.60	113,411	0.088	3.11
Carl Sandburg Middle School												
Total Site Info	47.71	2,078,084	14263	3	30.7	321.2	2,919.7	31	14.60	635,915	0.495	17.44
Good Shepherd Lutheran Church												
Total Site Info	13.05	568,248	14263	1	7.7	80.3	730.2	28	3.65	159,039	0.124	4.36
Old Bridge Fire Company												
Total Site Info	0.15	6,518	9000	17	0.2	2.4	21.4	72	0.11	4,663	0.004	0.13
Old Bridge Municipal Complex												
Total Site Info	39.66	1,727,612	10000	1	36.7	384.0	3,491.2	44	17.46	760,373	0.592	20.85
Sayre Woods Bible Church												
Total Site Info	5.10	222,370	9000	26.11	4.5	47.0	427.6	42	2.14	93,122	0.073	2.55

e. Summary of Proposed Green Infrastructure Practices

Summary of Existing Site Conditions

	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 %
	DEEP RUN SUBWATERSHED	**152,120**	**3.49**	**3.964**	**664**	**541,090**	**10.93**	**39,027**			**$922,415**	**33.6%**
1	**John H. Glenn Junior School**											
	Bioretention systems/rain gardens	1,732	0.04	0.045	8	3,314	0.12	550	5	SF	$2,750	2.0%
	Pervious pavements	39,623	0.91	1.032	173	75,750	2.85	10,675	25	SF	$266,875	45.3%
	Total Site Info	**41,355**	**0.95**	**1.078**	**180**	**79,064**	**2.97**	**11,225**			**$269,625**	**47.3%**
2	**Rotary Senior Center**											
	Bioretention systems/rain gardens	2,087	0.05	0.054	9	3,987	0.15	569	5	SF	$2,845	1.3%
	Pervious pavements	23,510	0.54	0.613	103	44,747	1.69	5,833	25	SF	$145,825	14.3%
	Total Site Info	**25,597**	**0.59**	**0.667**	**112**	**48,734**	**1.84**	**6,402**			**$148,670**	**15.6%**
3	**Southwood Elementary School**											
	Bioretention systems/rain gardens	1,493	0.03	0.039	7	2,857	0.11	402	5	SF	$2,010	1.5%
	Pervious pavements	34,201	0.79	0.891	149	65,390	2.46	9,027	25	SF	$225,675	33.3%
	Total Site Info	**35,694**	**0.82**	**0.930**	**156**	**68,247**	**2.57**	**9,429**			**$227,685**	**34.7%**
4	**Walter M. Schirra Elementary School**											
	Bioretention systems/rain gardens	4,493	0.10	0.117	20	8,587	0.32	1,142	5	SF	$5,710	4.6%
	Pervious pavements	44,981	1.03	1.172	196	336,458	3.23	10,829	25	SF	$270,725	45.8%
	Total Site Info	**49,474**	**1.14**	**1.289**	**216**	**345,045**	**3.55**	**11,971**			**$276,435**	**50.3%**
	DEEP RUN / TENNENT BROOK SUBWATERSHED	**93,470**	**2.15**	**2.435**	**408**	**178,697**	**6.72**	**20,970**			**$524,250**	**34.5%**
5	**Saint Ambrose Roman Catholic Church**											
	Pervious pavements	93,470	2.15	2.435	408	178,697	6.72	20,970	25	SF	$524,250	34.5%
	Total Site Info	**93,470**	**2.15**	**2.435**	**408**	**178,697**	**6.72**	**20,970**			**$524,250**	**34.5%**
	DUHERNAL LAKE / IRESICK BROOK SUBWATERSHED	**79,536**	**1.83**	**2.072**	**347**	**152,061**	**5.72**	**27,054**			**$676,350**	**22.9%**
6	**Jonas Salk Middle School**											
	Pervious pavements	51,696	1.19	1.347	225	98,833	3.72	17,049	25	SF	$426,225	20.4%
	Total Site Info	**51,696**	**1.19**	**1.347**	**225**	**98,833**	**3.72**	**17,049**			**$426,225**	**20.4%**

Summary of Existing Site Conditions

	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 %
7	**Raymond E. Voorhees Elementary School**											
	Pervious pavements	27,840	0.64	0.725	121	53,228	2.00	10,005	25	SF	$250,125	29.7%
	Total Site Info	**27,840**	**0.64**	**0.725**	**121**	**53,228**	**2.00**	**10,005**			**$250,125**	**29.7%**
	MATAWAN CREEK SUBWATERSHED	**140,866**	**3.23**	**3.670**	**614**	**398,131**	**10.12**	**35,101**			**$843,105**	**9.9%**
8	**Geick Park**											
	Bioretention systems/rain gardens	1,036	0.02	0.027	5	7,749	0.07	301	5	SF	$1,505	0.5%
	Pervious pavements	17,097	0.39	0.445	75	127,886	1.23	3,389	25	SF	$84,725	8.3%
	Total Site Info	**18,133**	**0.42**	**0.472**	**79**	**135,635**	**1.30**	**3,690**			**$86,230**	**8.8%**
9	**Old Bridge High School**											
	Bioretention systems/rain gardens	5,002	0.11	0.130	22	37,415	0.36	1,420	5	SF	$7,100	0.4%
	Pervious pavements	117,731	2.70	3.068	514	225,081	8.46	29,991	25	SF	$749,775	9.6%
	Total Site Info	**122,733**	**2.82**	**3.198**	**535**	**262,496**	**8.82**	**31,411**			**$756,875**	**10.1%**
	SOUTH RIVER SUBWATERSHED	**158,167**	**3.63**	**4.121**	**690**	**302,394**	**11.37**	**35,853**			**$880,225**	**35.6%**
10	**Saint Thomas the Apostle Roman Catholic Church**											
	Bioretention systems/rain gardens	2,308	0.05	0.060	10	4,413	0.17	805	5	SF	$4,025	0.7%
	Pervious pavements	145,929	3.35	3.802	637	278,997	10.49	32,915	25	SF	$822,875	45.6%
	Total Site Info	**148,237**	**3.40**	**3.862**	**647**	**283,410**	**10.66**	**33,720**			**$826,900**	**46.3%**
11	**William A. Miller Elementary School**											
	Pervious pavements	9,930	0.23	0.259	43	18,984	0.71	2,133	25	SF	$53,325	8.0%
	Total Site Info	**9,930**	**0.23**	**0.259**	**43**	**18,984**	**0.71**	**2,133**			**$53,325**	**8.0%**
	TENNENT BROOK SUBWATERSHED	**493,380**	**11.33**	**12.855**	**2,152**	**942,390**	**35.46**	**127,634**			**$3,071,330**	**26.7%**
12	**42 Throckmorton Ln**											
	Pervious pavements	35,625	0.82	0.928	155	68,113	2.56	8,190	25	SF	$204,750	44.8%
	Total Site Info	**35,625**	**0.82**	**0.928**	**155**	**68,113**	**2.56**	**8,190**			**$204,750**	**44.8%**

Summary of Existing Site Conditions

	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 %
13	**Alan B. Shepard School**											
	Bioretention systems/rain gardens	2,713	0.06	0.071	12	5,184	0.19	945	5	SF	$4,725	2.4%
	Pervious pavements	20,175	0.46	0.526	88	38,574	1.45	3,945	25	SF	$98,625	17.8%
	Total Site Info	**22,888**	**0.53**	**0.596**	**100**	**43,758**	**1.64**	**4,890**			**$103,350**	**20.2%**
14	**Carl Sandburg Middle School**											
	Pervious pavements	87,931	2.02	2.291	384	168,113	6.32	25,555	25	SF	$638,875	13.8%
	Total Site Info	**87,931**	**2.02**	**2.291**	**384**	**168,113**	**6.32**	**25,555**			**$638,875**	**13.8%**
15	**Good Shepherd Lutheran Church**											
	Bioretention systems/rain gardens	2,778	0.06	0.072	12	5,311	0.20	1,342	5	SF	$6,710	1.7%
	Pervious pavements	62,939	1.44	1.640	275	120,331	4.52	19,976	25	SF	$499,400	39.6%
	Total Site Info	**65,717**	**1.51**	**1.712**	**287**	**125,642**	**4.72**	**21,318**			**$506,110**	**41.3%**
16	**Old Bridge Fire Company**											
	Rainwater harvesting systems	882	0.02	0.023	4	800	0.08	800	2	gal	$1,600	18.9%
	Total Site Info	**882**	**0.02**	**0.023**	**4**	**800**	**0.08**	**800**			**$1,600**	**18.9%**
17	**Old Bridge Municipal Complex**											
	Bioretention systems/rain gardens	4,206	0.10	0.110	18	8,041	0.30	2,019	5	SF	$10,095	0.6%
	Pervious pavements	200,908	4.61	5.235	876	384,105	14.44	52,001	25	SF	$1,300,025	26.4%
	Total Site Info	**205,114**	**4.71**	**5.344**	**895**	**392,146**	**14.74**	**54,020**			**$1,310,120**	**27.0%**
18	**Sayre Woods Bible Church**											
	Bioretention systems/rain gardens	2,425	0.06	0.063	11	4,638	0.17	750	5	SF	$3,750	2.6%
	Pervious pavements	72,798	1.67	1.897	318	139,180	5.23	12,111	25	SF	$302,775	78.2%
	Total Site Info	**75,223**	**1.73**	**1.960**	**328**	**143,818**	**5.40**	**12,861**			**$306,525**	**80.8%**