RUTGERS
New Jersey Agricultural
Experiment Station

Draft

Impervious Cover Reduction Action Plan for Deal Lake Watershed Monmouth County, New Jersey

Prepared for the Deal Lake Watershed Alliance by the Rutgers Cooperative Extension Water Resources Program

January 25, 2019

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Introduction

Located in Monmouth County in coastal New Jersey, the Deal Lake Watershed covers approximately 6.9 square miles. Figures 1 and 2 illustrate that the Deal Lake Watershed is dominated by urban land uses. A total of 78.1% of the municipality's land use is classified as urban. Of the urban land in the Deal Lake Watershed, medium density residential is the dominant land use (Figure 3).

The New Jersey Department of Environmental Protection's (NJDEP) 2012 land use/land cover geographical information system (GIS) data layer categorizes the Deal Lake Watershed 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 the Deal Lake Watershed. Based upon the 2012 NJDEP land use/land cover data, approximately 32.2% of the Deal Lake Watershed is classified as impervious cover. This level of impervious cover suggests that the streams in the Deal Lake Watershed are likely non-supporting streams.[1]

Methodology

The Deal Lake Watershed contains portions of seven municipalities (Figure 4). For this impervious cover reduction action plan, projects have been identified in each of these municipalities. 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.

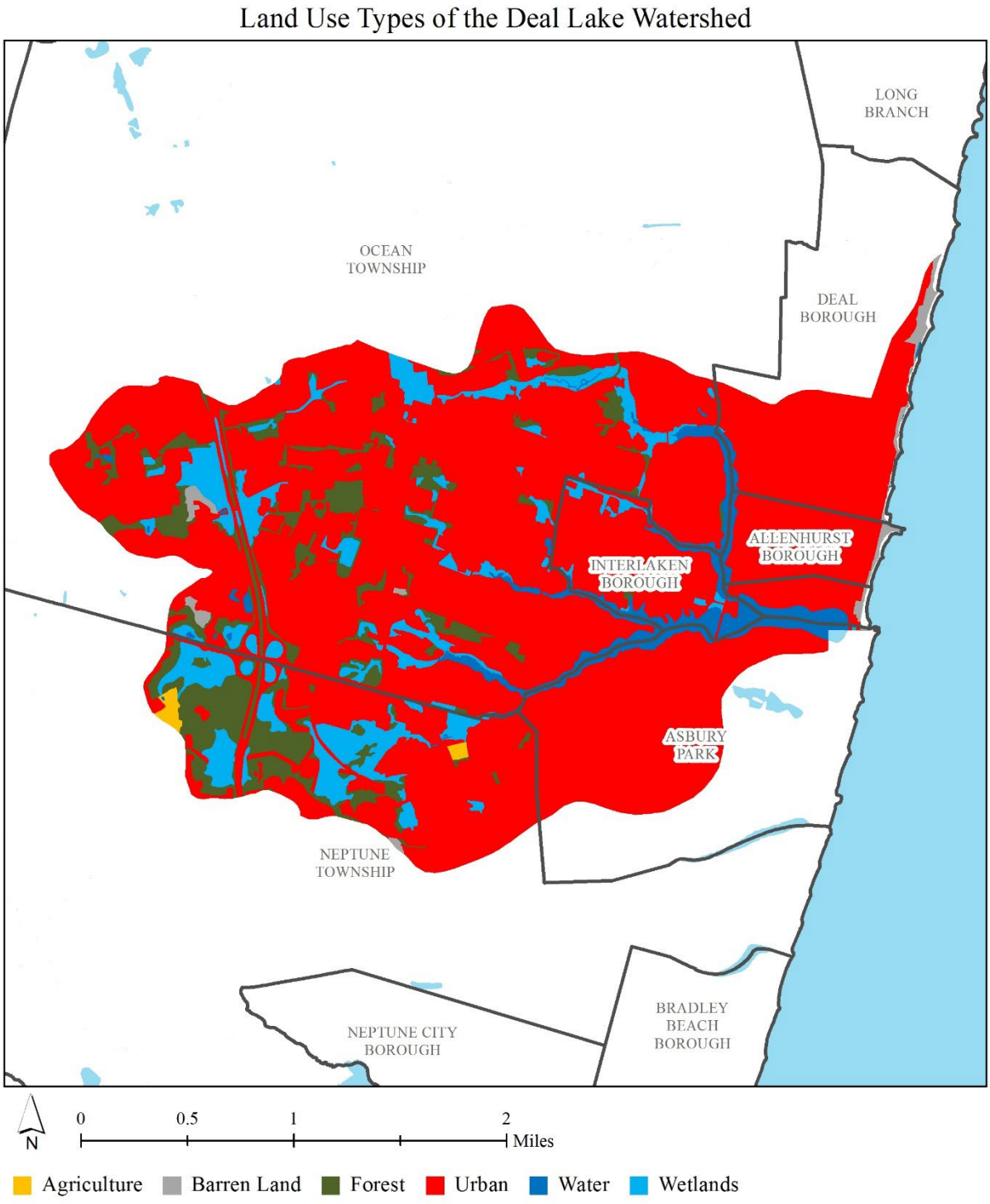


Figure 1: Map illustrating land use in the Deal Lake Watershed

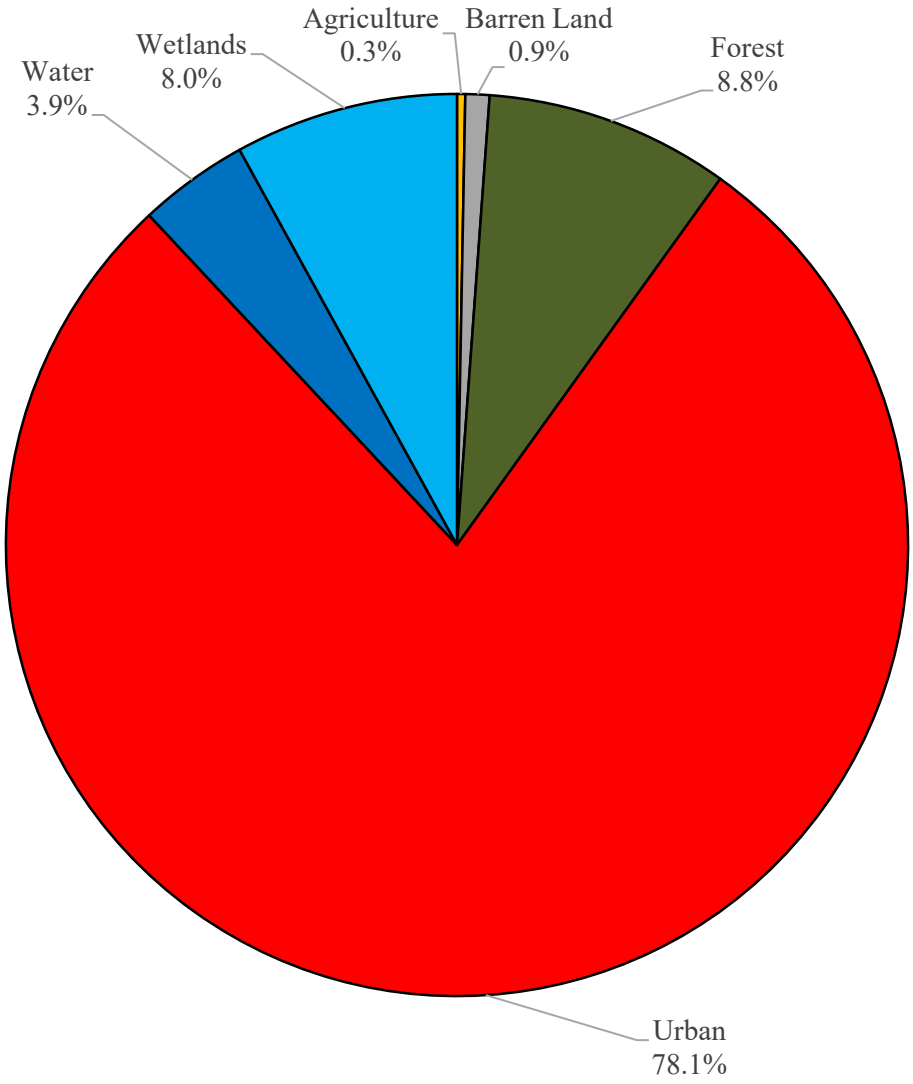


Figure 2: Pie chart illustrating land use in the Deal Lake Watershed

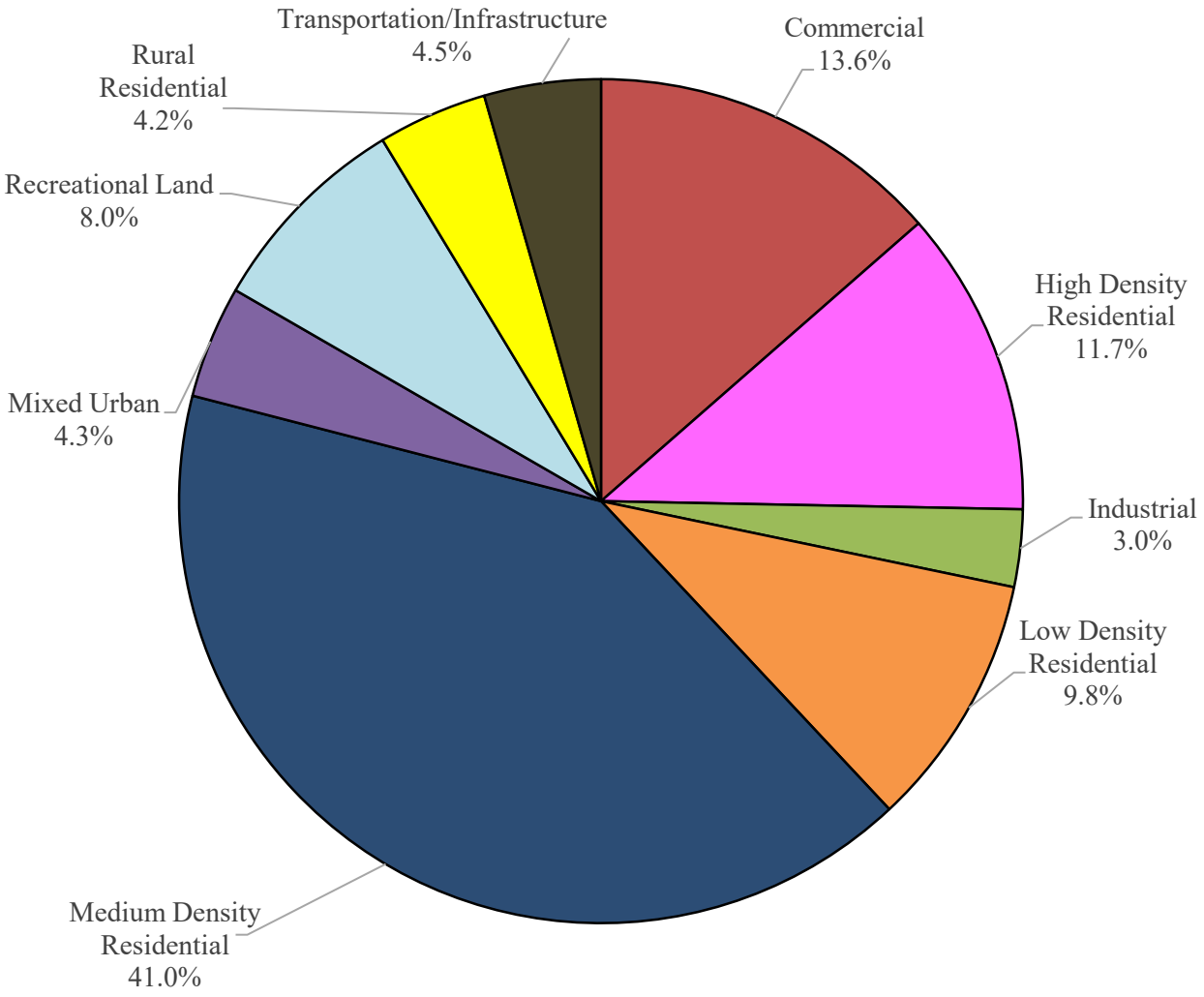


Figure 3: Pie chart illustrating the various types of urban land use in the Deal Lake Watershed

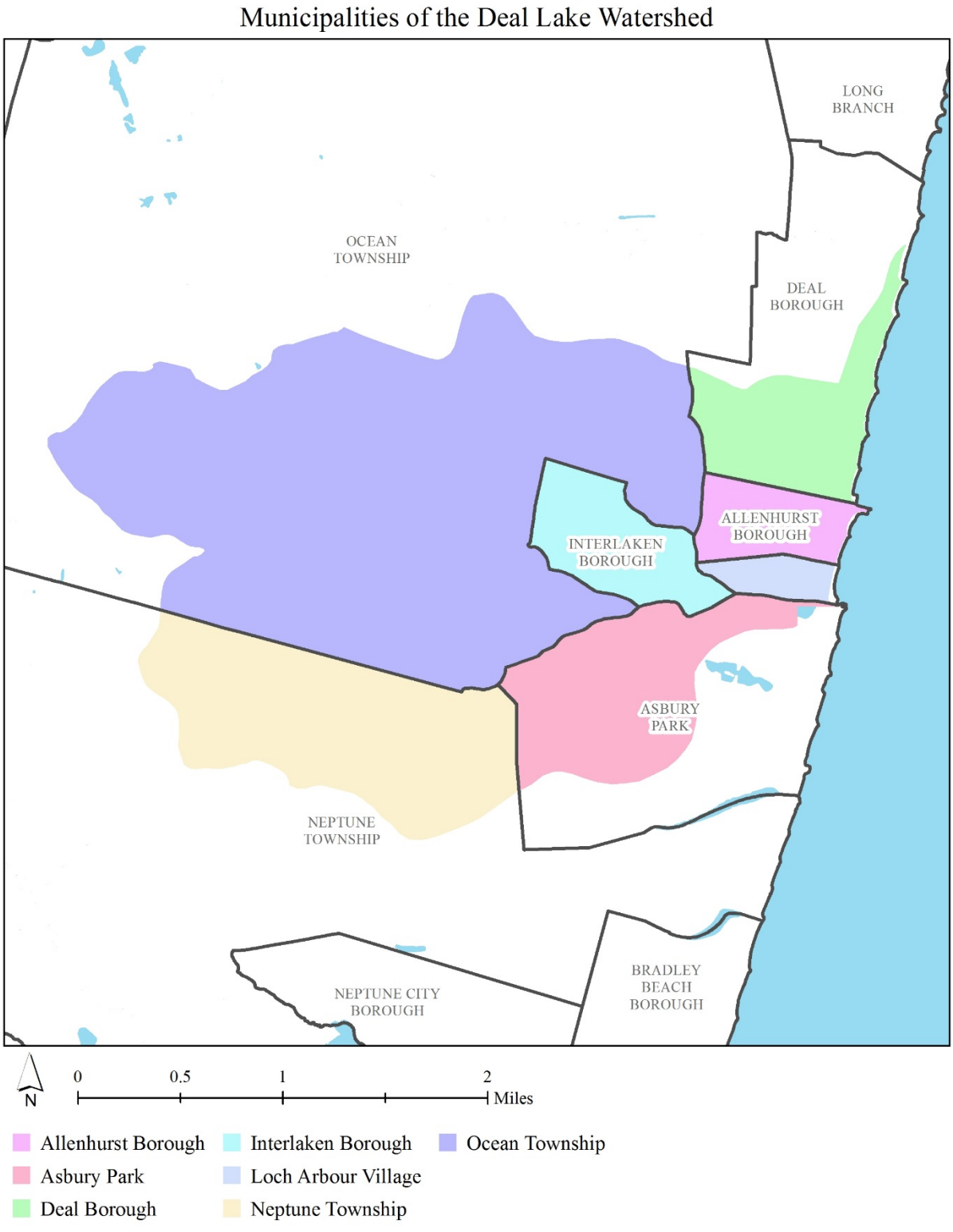


Figure 4: Map of the municipalities in the Deal Lake Watershed

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 2012 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 the Deal Lake Watershed 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 the Deal Lake Watershed. 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 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.

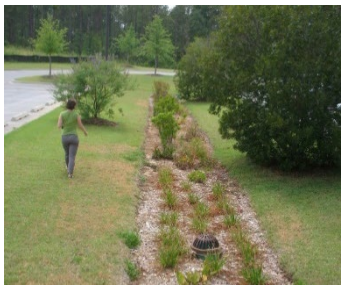
Downspout planter boxes

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

Appendix A contains information on potential project sites where green infrastructure practices could be installed as well as information on existing site conditions. The recommended green infrastructure practices and the drainage area that the green infrastructure practices can treat are identified for each potential project site. For each practice, the recharge potential, TSS removal potential, maximum volume reduction potential per storm, the peak reduction potential, and estimated costs 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

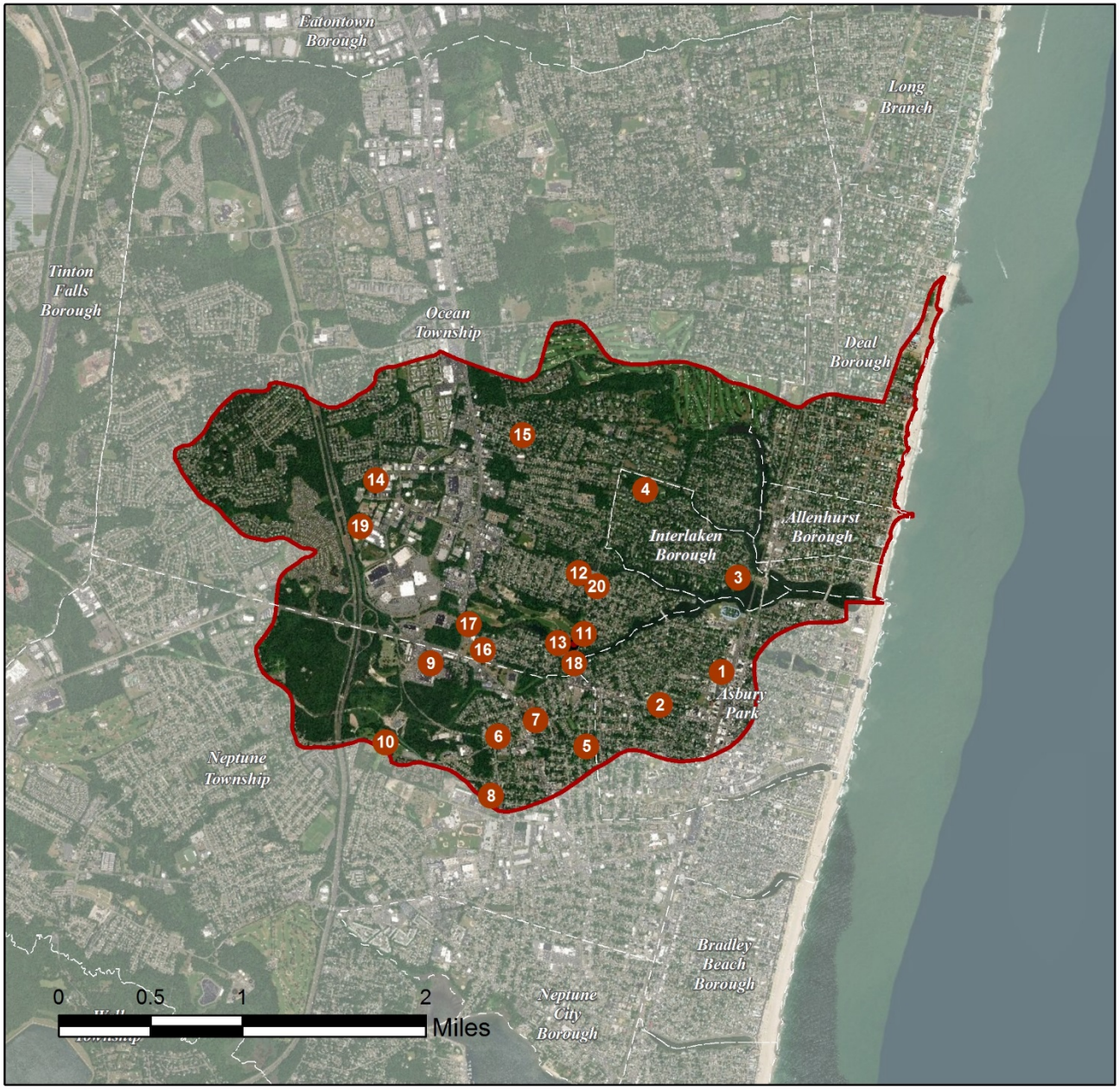
This impervious cover reduction action plan is meant to provide the municipalities in the Deal Lake Watershed with a blueprint for implementing green infrastructure practices that will reduce the impact of stormwater runoff from impervious surfaces. These projects can be implemented by a wide variety 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 municipalities in the Deal Lake Watershed can quickly convert this impervious cover reduction action plan into a stormwater mitigation plan and incorporate it into the municipal stormwater control ordinance.

Appendix A: Climate Resilient Green Infrastructure

a. Green Infrastructure Sites

Deal Lake Subwatershed: Green Infrastructure Sites



SITES WITHIN ASBURY PARK

1. Asbury Park Board of Education
2. Our Lady of Mount Carmel Church

SITES WITHIN INTERLAKEN

3. Interlaken Borough Office
4. Interlaken Park

SITES WITHIN NEPTUNE CITY

5. Church of God of Prophecy
6. Good Samaritan Church
7. Liberty Park
8. Loffredo Fields
9. Monmouth County Vocational School District Neptune Annex
10. Neptune Shopping Plaza

SITES WITHIN OCEAN TOWNSHIP

11. Colonial Terrace Golf Club
12. Dollar General
13. Ocean Township Community Center
14. Ocean Township Maintenance Shop
15. Open Grass Lot on Logan Road
16. Planning Incentive
17. Super 8 by Windham Asbury Park
18. Vacant Lot on Wickapecko Drive
19. Wannamassa Firemen's Field
20. Wannamassa First Aid & Fire Police

b. Proposed Green Infrastructure Concepts

ASBURY PARK BOARD OF EDUCATION

Subwatershed: Deal Lake

Site Area: 15,194 sq. ft.

Address: 800 Main Street
Asbury Park, NJ 07712

Block and Lot: Block 16, Lot 11

A section of sidewalk can be converted to a stormwater planter to capture, treat, and infiltrate stormwater runoff from the Board of Education's building roof and sidewalk. 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"
90	13,675	0.7	6.9	62.8	0.011	0.38

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
Stormwater planter	0.022	4	1,610	0.06	210	$78,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Asbury Park Board of Education

- stormwater planter
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

OUR LADY OF MOUNT CARMEL CHURCH

Subwatershed: Deal Lake

Site Area: 32,499 sq. ft.

Address: 1201 Asbury Avenue
Asbury Park, NJ 07712

Block and Lot: Block 40, Lot 6

A section of parking spaces can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A rain garden can be installed at the back of the building to capture, treat, and infiltrate stormwater runoff from the roof. A section of the sidewalk can be converted to a stormwater planter to manage the stormwater from the sidewalk area. 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"
95	30,874	1.5	15.6	141.8	0.024	0.85

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 system	0.048	8	3,540	0.13	470	$2,350
Pervious pavement	0.059	10	4,340	0.16	12,710	$317,750
Stormwater planter	0.033	6	2,450	0.09	320	$120,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Our Lady of Mount Carmel Church

- bioretention system
- pervious pavement
- stormwater planter
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

INTERLAKEN BOROUGH OFFICE

Subwatershed: Deal Lake

Site Area: 53,396 sq. ft.

Address: 100 Grassmere Avenue
Interlaken, NJ 07712

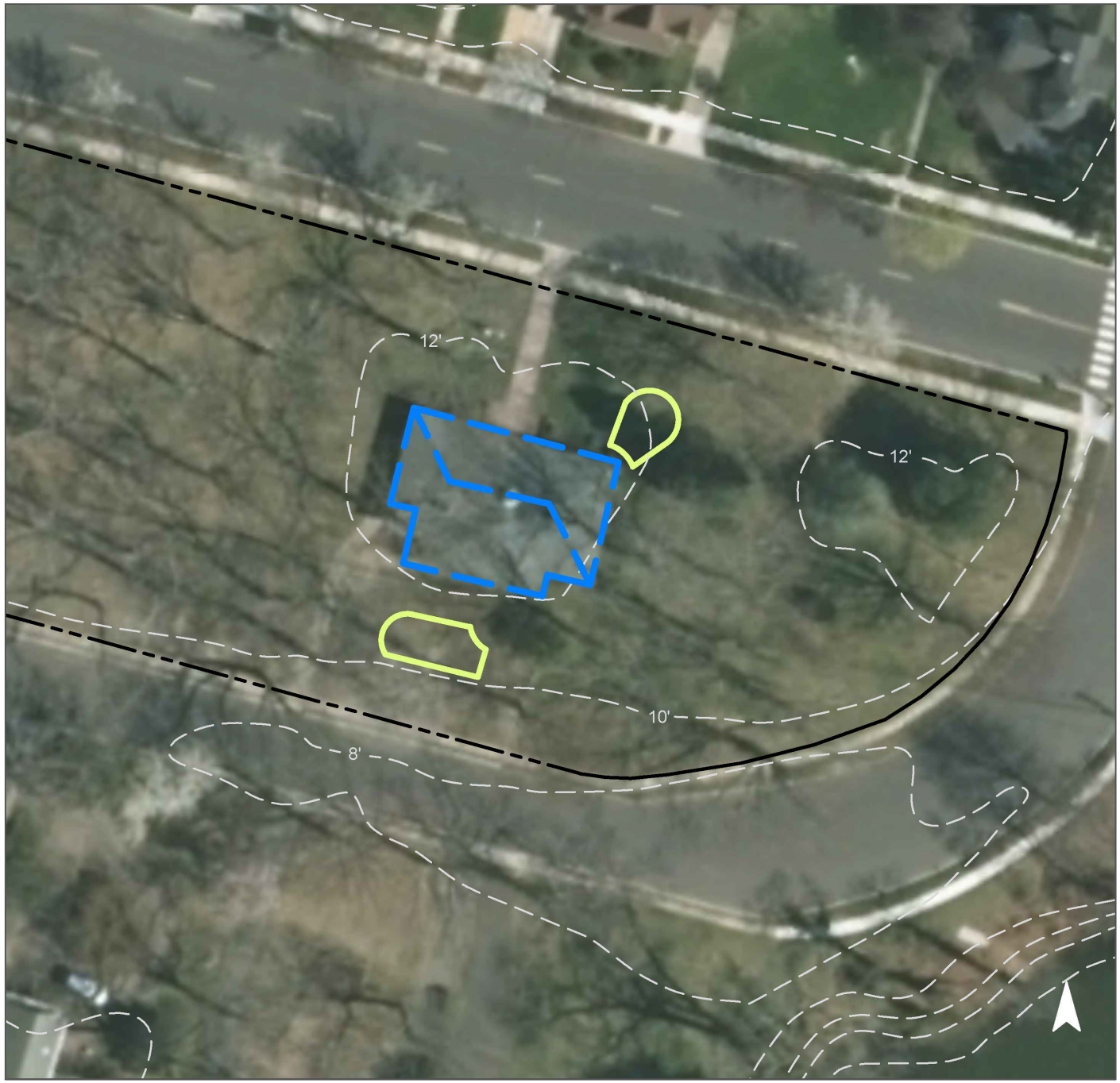
Block and Lot: Block 4, Lot 1

Rain gardens can be installed in the turfgrass area surrounding the building. The downspouts can be connected to the rain gardens so that they capture, treat, and infiltrate stormwater from the roof of the building. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
10	5,340	0.3	2.7	24.5	0.004	0.15

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	0.083	14	6,120	0.23	800	$4,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Interlaken Borough Office

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

INTERLAKEN PARK

Subwatershed: Deal Lake

Site Area: 281,538 sq. ft.

Address: 706 Bridlemere Avenue
Interlaken, NJ 07712

Block and Lot: Block 30, Lot 20

Two stormwater planters can be installed on the south side of the park to capture, treat, and infiltrate stormwater runoff from the adjacent road. 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"
9	25,616	1.2	12.9	117.6	0.020	0.70

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
Stormwater planters	0.396	66	29,060	1.09	3,800	$1,425,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Interlaken Park

- stormwater planter
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 50' 100'

CHURCH OF GOD PROPHECY

Subwatershed: Deal Lake

Site Area: 18,345 sq. ft.

Address: 1700 Bangs Avenue
Neptune City, NJ 07753

Block and Lot: Block 193, Lot 10.01

A rain garden can be installed near the parking lot to capture, treat, and infiltrate stormwater runoff from the parking lot. The rain garden will also improve pollinator habitat. 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"
35	6,421	0.3	3.2	29.5	0.005	0.18

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
Bioretention system	0.027	5	1,990	0.07	260	$1,300

GREEN INFRASTRUCTURE RECOMMENDATIONS

Church of God of Prophecy

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 15' 30'

GOOD SAMARITAN CHURCH

Subwatershed: Deal Lake

Site Area: 34,806 sq. ft.

Address: 1812 Monroe Avenue
Neptune City, NJ 07753

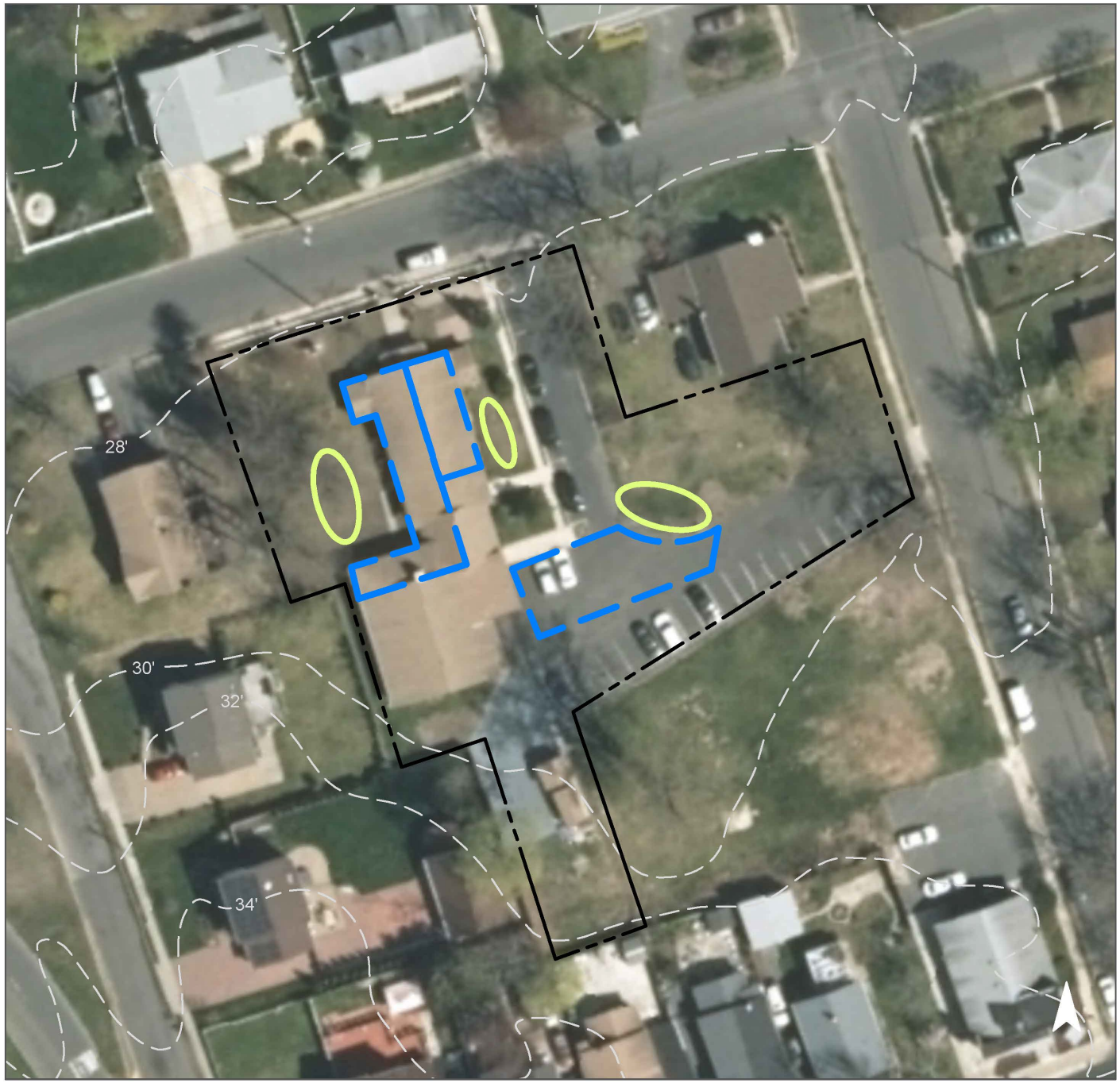
Block and Lot: Block 248, Lot 1

Rain gardens can be installed at three locations on the property to capture, treat, and infiltrate stormwater runoff from the parking lot and 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"
35	12,212	0.6	6.2	56.1	0.010	0.33

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.070	12	5,120	0.19	670	$3,350

GREEN INFRASTRUCTURE RECOMMENDATIONS



Good Samaritan Church

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 30' 60'

LIBERTY PARK

Subwatershed: Deal Lake

Site Area: 82,706 sq. ft.

Address: 1606 Monroe Avenue
Neptune City, NJ 07753

Block and Lot: Block 231, Lot 40

A rain garden can be installed adjacent to the basketball court to capture, treat, and infiltrate runoff from the basketball court. The rain garden can also serve as an educational demonstration for sustainable stormwater management. A rain barrel can be installed next to a shade structure to capture and reuse stormwater runoff for watering garden plots. 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"
8	6,991	0.3	3.5	32.1	0.005	0.19

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 system	0.005	1	400	0.02	840	$4,200
Rainwater harvesting	0.004	1	100	0.00	100 (gal)	$200

GREEN INFRASTRUCTURE RECOMMENDATIONS

Liberty Park

- bioretention system
- rainwater harvesting
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

LOFFREDO FIELDS

Subwatershed: Deal Lake

Site Area: 425,461 sq. ft.

Address: 2556 West Bangs Avenue
Neptune City, NJ 07753

Block and Lot: Block 1008, Lot 13

Rain gardens can be installed around the football field to capture, treat, and infiltrate stormwater runoff from the parking lot and roadway. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
30	129,318	6.2	65.3	593.7	0.101	3.55

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	0.198	33	14,530	0.55	1,900	$11,100

GREEN INFRASTRUCTURE RECOMMENDATIONS

Loffredo Fields

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 50' 100'

MONMOUTH COUNTY VOCATIONAL SCHOOL DISTRICT NEPTUNE ANNEX

Subwatershed: Deal Lake

Site Area: 430,128 sq. ft.

Address: 105 Neptune Boulevard
Neptune City, NJ 07753

Block and Lot: Block 3000, Lot 42

Sections of parking spaces can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
36	155,599	7.5	78.6	714.4	0.121	4.27

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.956	160	70,130	2.64	6,550	$163,750

GREEN INFRASTRUCTURE RECOMMENDATIONS

Monmouth County Vocational School District Neptune Annex

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 50' 100'

NEPTUNE SHOPPING PLAZA

Subwatershed: Deal Lake

Site Area: 931,120 sq. ft.

Address: 2200 NJ-66
Neptune City, NJ 07753

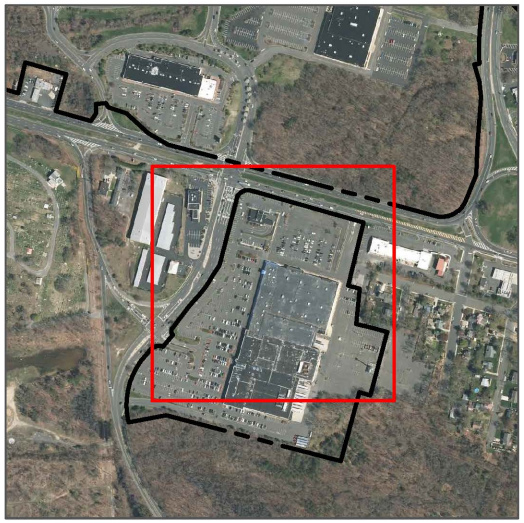
Block and Lot: Block 1007, Lot 61

Sections of parking spaces can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A parking lot island can be converted to a rain garden to capture, treat, and infiltrate stormwater runoff from the parking lot as well. 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"
89	826,033	39.8	417.2	3,792.6	0.644	22.66

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
Bioretention system	0.097	16	7,150	0.27	935	$4,675
Pervious pavement	1.090	182	79,990	3.01	7,470	$186,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Neptune Shopping Plaza

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 50' 100'

COLONIAL TERRACE GOLF CLUB

Subwatershed: Deal Lake

Site Area: 2,357,614 sq. ft.

Address: 1005 Wickapecko Drive
Ocean Township, NJ 07712

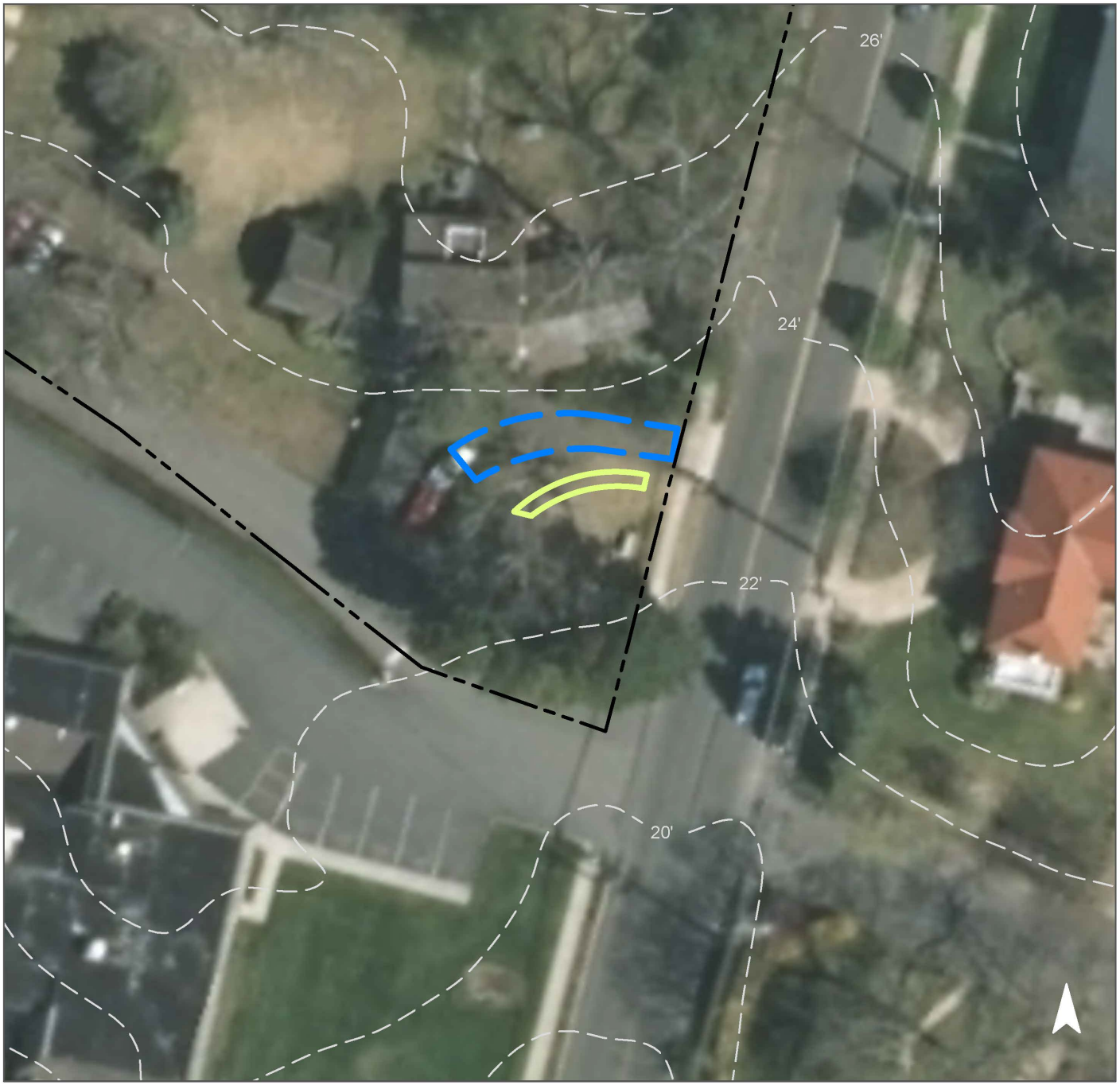
Block and Lot: Block 140, Lots 69, 71, 72, 74, 75, 76, 79, 80

A rain garden can be installed in the turfgrass area in the front of the main building of the golf course to capture, treat, and infiltrate stormwater runoff from the road. 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"
2	37,479	1.8	18.9	172.1	0.029	1.03

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 system	0.015	2	1,070	0.04	140	$700

GREEN INFRASTRUCTURE RECOMMENDATIONS



Colonial Terrace Golf Club

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

DOLLAR GENERAL

Subwatershed: Deal Lake

Site Area: 89,499 sq. ft.

Address: 2201 Sunset Avenue
Ocean Township, NJ 07712

Block and Lot: Block 99, Lot 4

A section of parking spaces can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot before it enters the nearby waterway. 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"
92	82,673	4.0	41.8	379.6	0.064	2.27

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.482	81	35,330	1.33	3,300	$82,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Dollar General

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 30' 60'

FORMERLY: NORTHERN SHORE DISTRICT UNITED METHODIST CHURCH

Subwatershed: Deal Lake

Site Area: 55,035 sq. ft.

Address: 1001 Wickapecko Drive
Ocean Township, NJ 07712

Block and Lot: Block 140, Lot 81

Runoff from the parking lot is directed to the stream behind the building. Parking spots can be replaced with porous asphalt to capture and infiltrate stormwater. The installation of a rain garden adjacent to the building 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"
57	31,629	1.5	16.0	145.2	0.025	0.87

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	0.085	14	2,266	0.09	880	$4,400
Pervious pavement	0.515	86	37,804	1.42	5,260	$131,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Formerly: Northern Shore District United Methodist

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

OCEAN TOWNSHIP MAINTENANCE SHOP

Subwatershed: Deal Lake

Site Area: 63,357 sq. ft.

Address: 1313 Roller Road
Ocean Township, NJ 07712

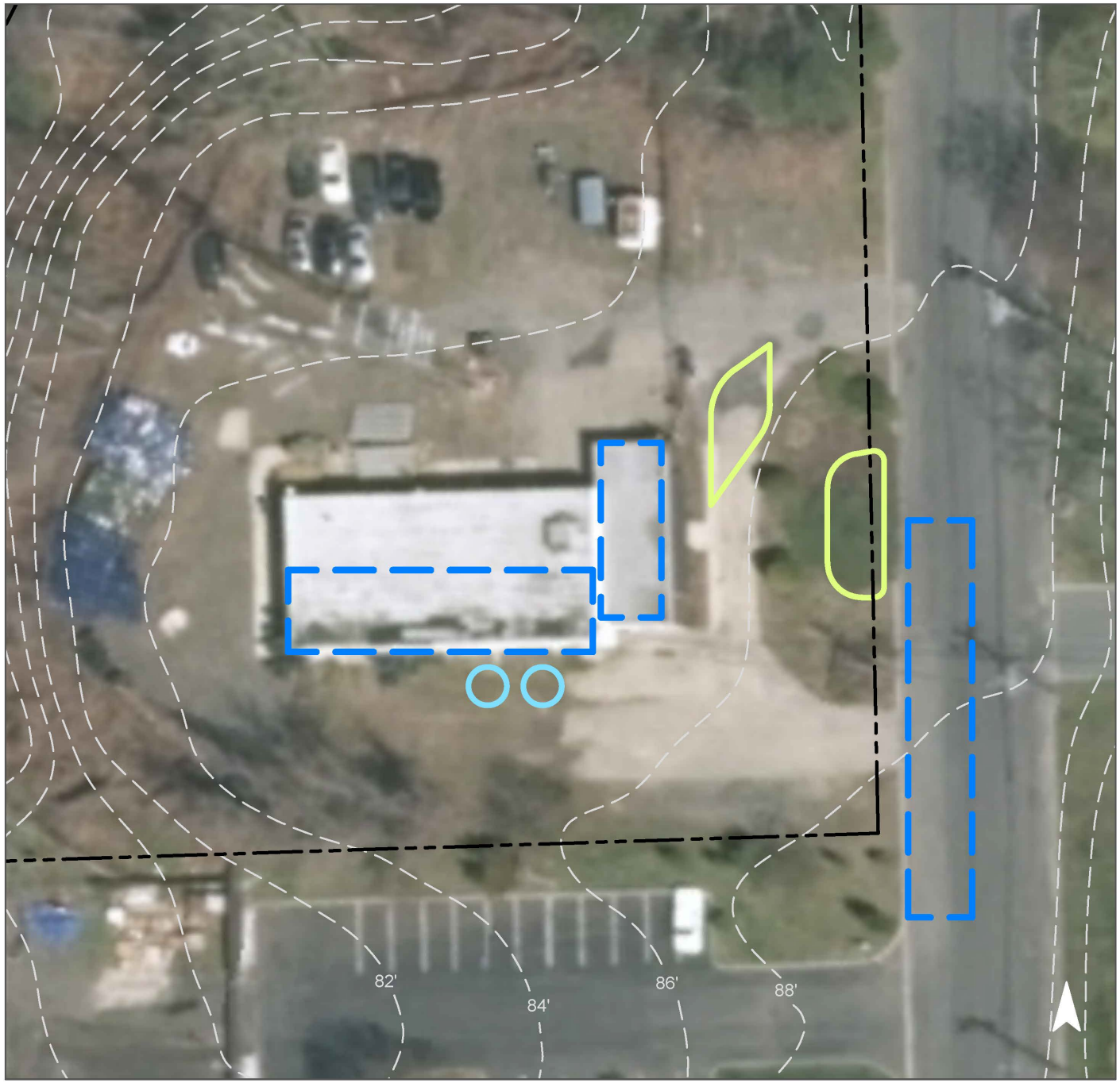
Block and Lot: Block 142, Lot 36

Rain gardens can be installed to capture, treat, and infiltrate stormwater runoff from the roadway and from the roof. Two cisterns can be installed adjacent to the building to capture stormwater runoff, and the water can be reused for watering plants, washing vehicles, or for other non-potable purposes. 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"
31	19,613	0.9	9.9	90.0	0.015	0.54

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.064	11	4,700	0.18	615	$3,075
Rainwater harvesting	0.044	7	1,500	0.06	1,500 (gal)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Ocean Township Maintenance Shop

- bioretention system
- rainwater harvesting
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

OPEN GRASS LOT ON LOGAN ROAD

Subwatershed: Deal Lake

Site Area: 7,596 sq. ft.

Address: 2310 Logan Road
Ocean Township, NJ 07712

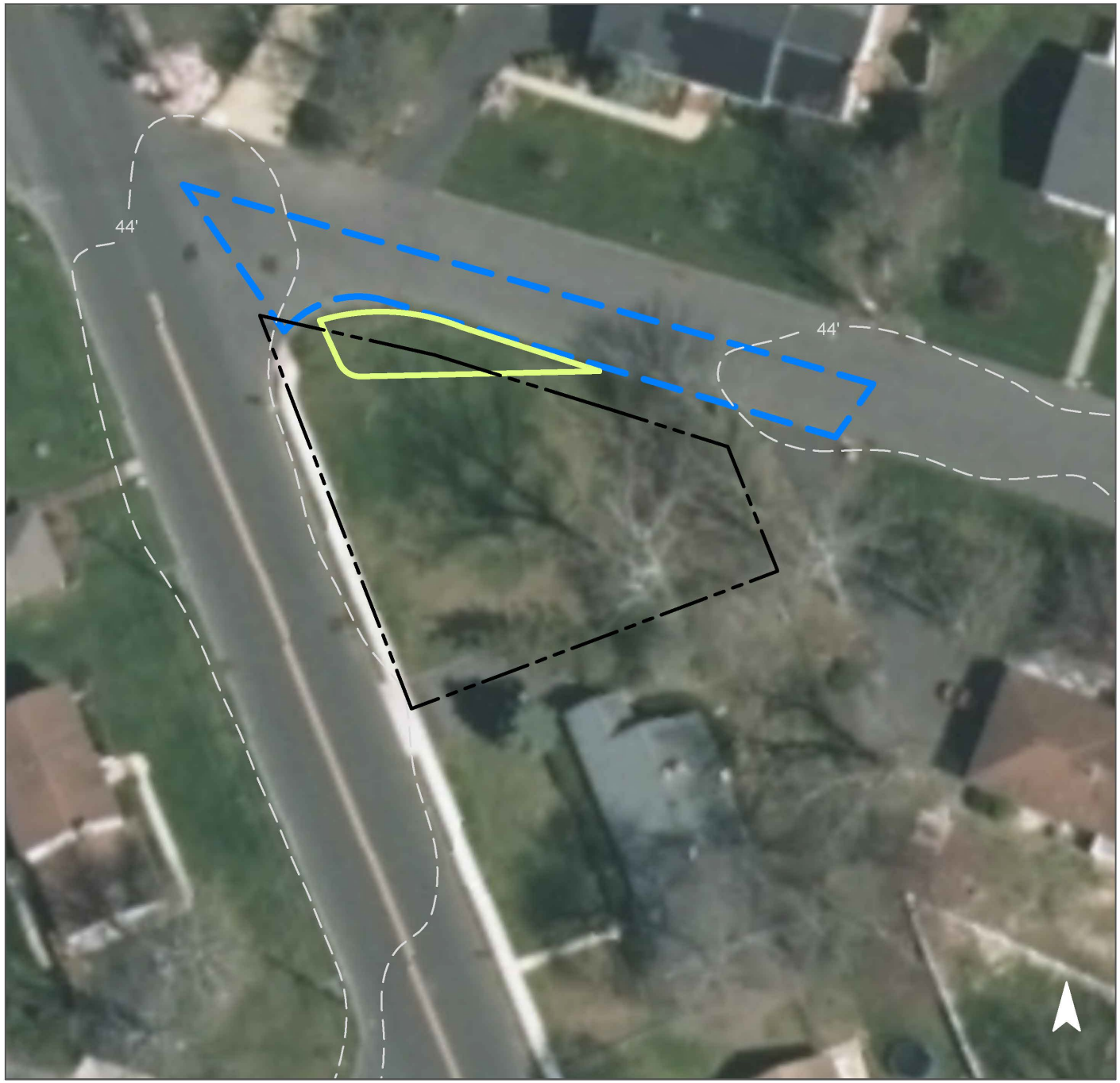
Block and Lot: Block 40.12, Lot 1

A rain garden can be installed near the road to capture, treat, and infiltrate stormwater runoff from the roadway and improve pollinator habitat. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
30	2,279	0.1	1.2	10.5	0.002	0.06

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 system	0.078	13	5,740	0.22	750	$3,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Open Grass Lot on Logan Road

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 20' 40'

PLANNING INCENTIVE

Subwatershed: Deal Lake

Site Area: 26,547 sq. ft.

Address: 200 Bingham Avenue
Ocean Township, NJ 07712

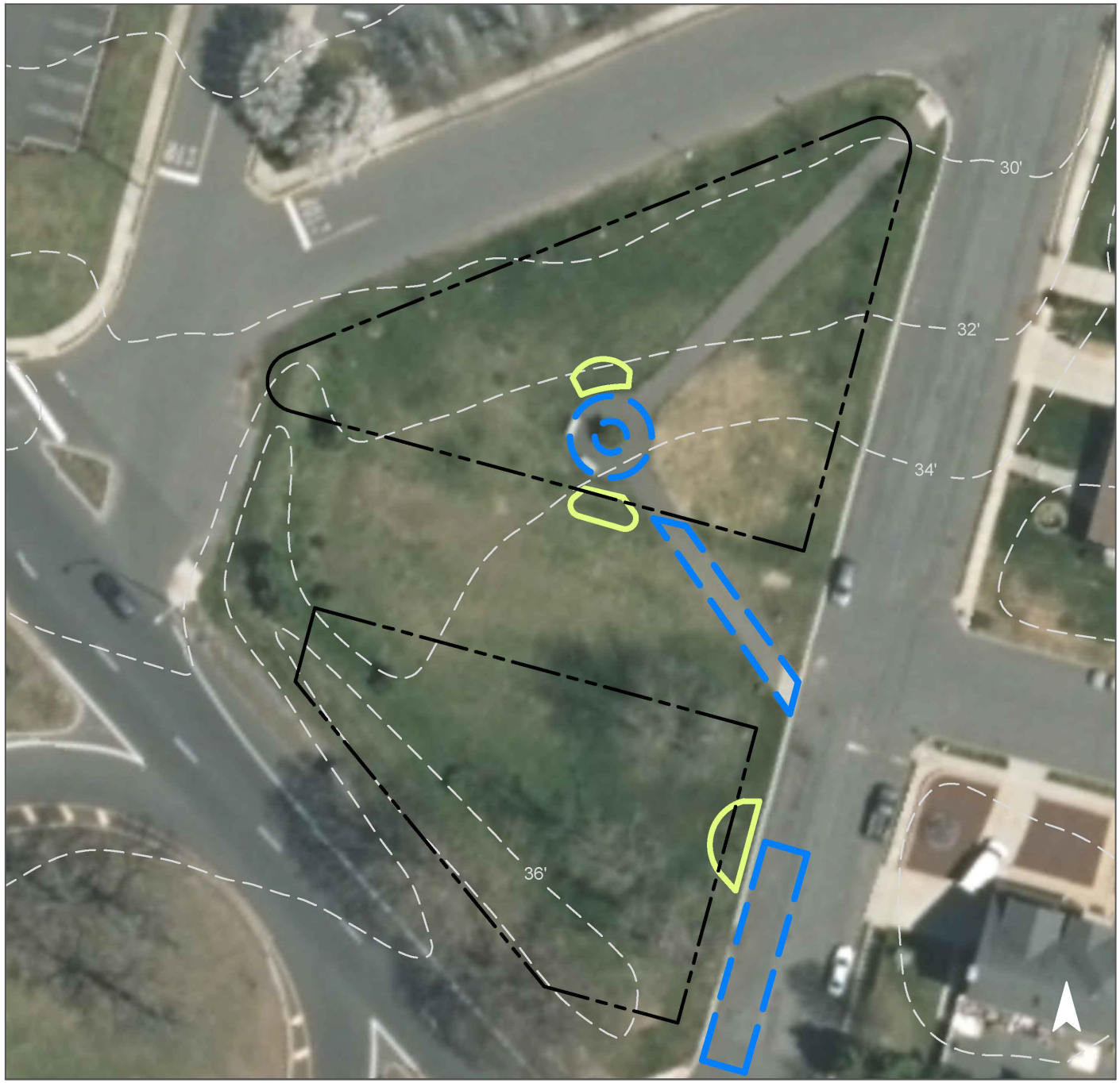
Block and Lot: Blocks 140.07, 140.19, Lot 1

Rain gardens can be installed near the pathways and along the roadway to capture, treat, and infiltrate stormwater runoff from those areas. 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"
15	3,982	0.2	2.0	18.3	0.003	0.11

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	0.055	9	4,020	0.15	530	$2,650

GREEN INFRASTRUCTURE RECOMMENDATIONS



Planning Incentive

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

SUPER 8 BY WINDHAM ASBURY PARK

Subwatershed: Deal Lake

Site Area: 75,337 sq. ft.

Address: 735 NJ-35
Ocean Township, NJ 07712

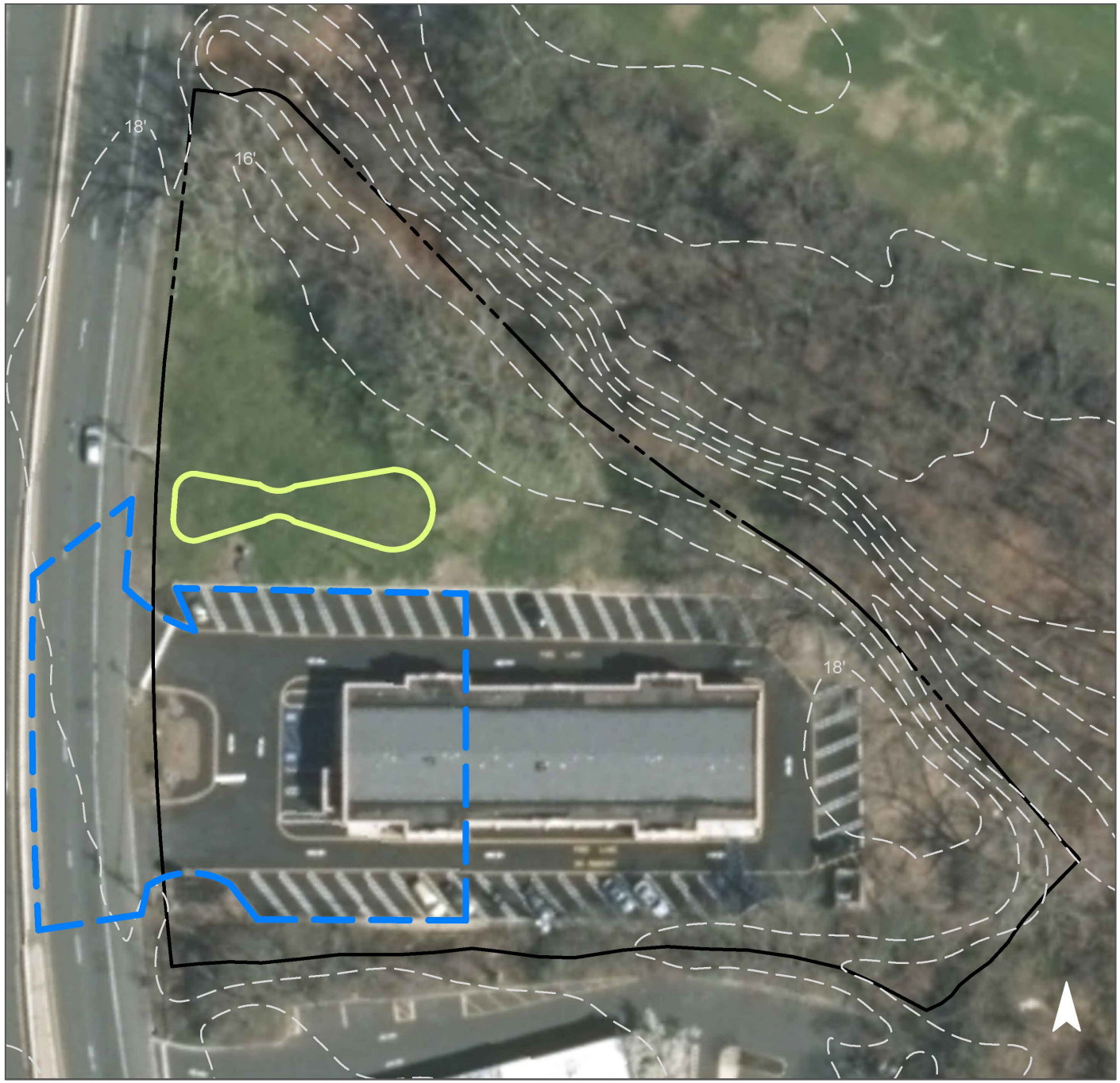
Block and Lot: Block 140, Lot 108

A rain garden can be installed north of the main exit to capture, treat, and infiltrate stormwater runoff from the roadway, parking lot, and roof of the building. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
68	50,951	2.5	25.7	233.9	0.040	1.40

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 system	0.560	94	41,100	1.54	2,185	$10,925

GREEN INFRASTRUCTURE RECOMMENDATIONS



Super 8 By Windham Asbury Park

- bioretention system
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 30' 60'

VACANT LOT ON WICKAPECKO DRIVE

Subwatershed: Deal Lake

Site Area: 38,842 sq. ft.

Address: 101 Bimbler Boulevard
Ocean Township, NJ 07712

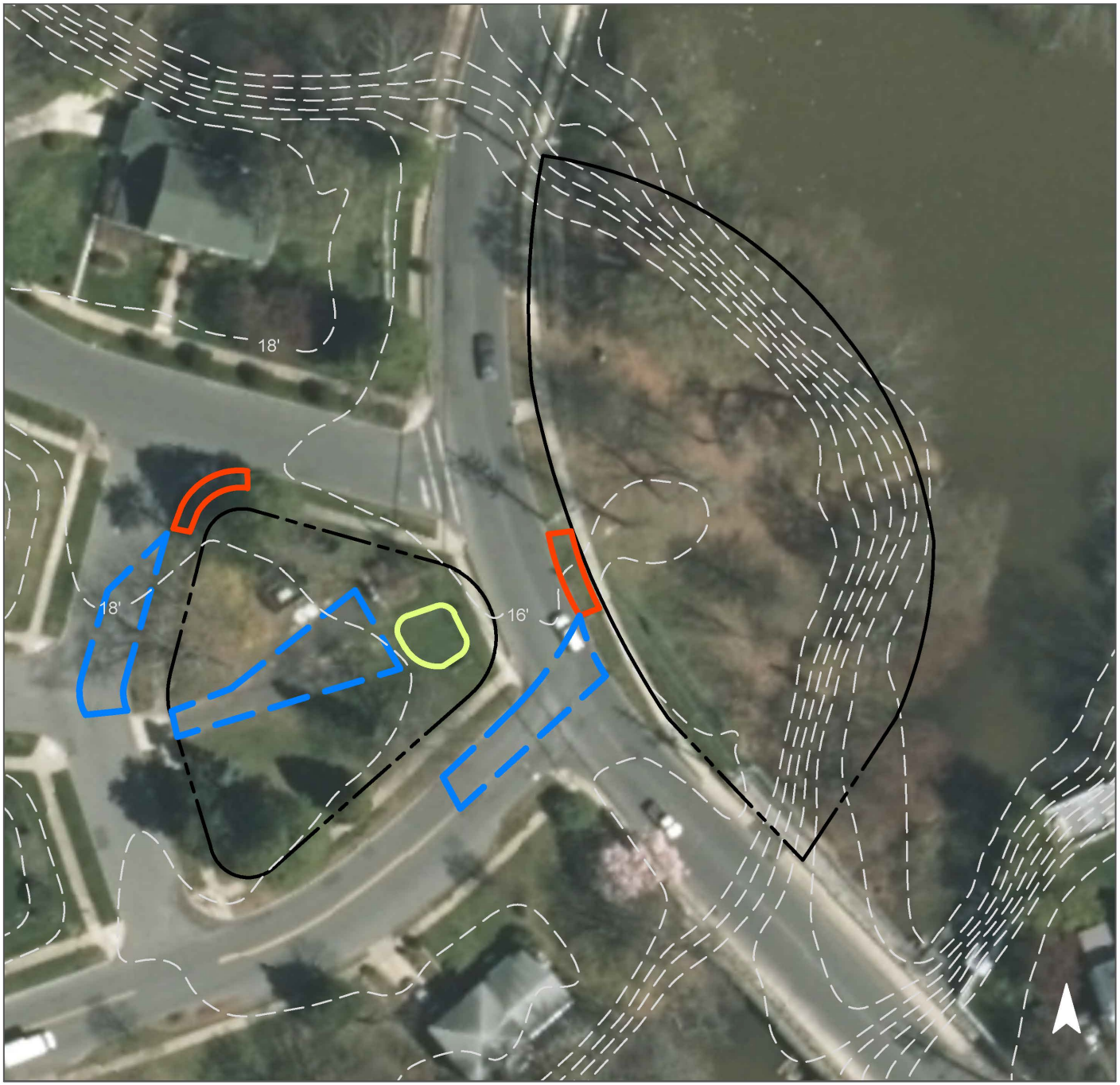
Block and Lot: Blocks 123.01, 136, Lot 1

Stormwater planters can be installed along the roadsides, and a rain garden can be installed in the middle of the triangle to capture, treat, and infiltrate stormwater runoff from the road and paved areas. 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"
34	13,458	0.6	6.8	61.8	0.010	0.37

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 system	0.046	8	3,370	0.13	440	$2,200
Stormwater planters	0.067	11	4,930	0.19	650	$243,750

GREEN INFRASTRUCTURE RECOMMENDATIONS



Vacant Lot on Wickapecko Drive

- bioretention system
- stormwater planter
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 30' 60'

WANNAMASSA FIREMEN'S FIELD

Subwatershed: Deal Lake

Site Area: 447,608 sq. ft.

Address: 1001 Hopewell Avenue
Ocean Township, NJ 07712

Block and Lot: Block 142, Lot 47

A rain garden can be installed near the gazebo to capture, treat, and infiltrate stormwater runoff from the roof. A section of parking spaces in the parking lot on the south side of the property can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
8	35,575	1.7	18.0	163.3	0.028	0.98

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 system	0.141	24	10,380	0.39	970	$24,250
Pervious pavement	0.027	5	2,000	0.08	270	$1,350

GREEN INFRASTRUCTURE RECOMMENDATIONS

Wannamassa
Fireman's Field

- bioretention system
- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 50' 100'

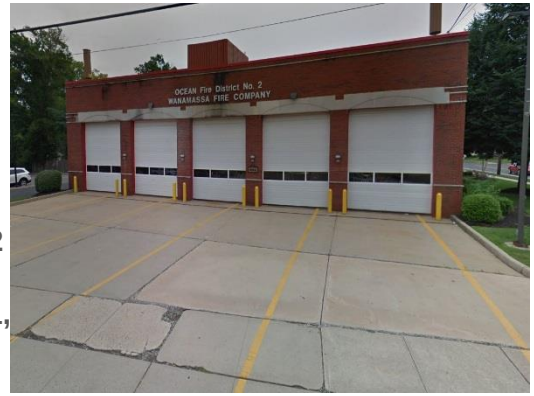
WANNAMASSA FIRST AID & FIRE POLICE

Subwatershed: Deal Lake

Site Area: 47,637 sq. ft.

Address: 1401 Wickapecko Drive
Ocean Township, NJ 07712

Block and Lot: Block 114, Lots 1, 2, 3, 4.01, 4.02, 5, 6, 7, 12



A section of parking spaces can be converted to porous pavement to capture and infiltrate stormwater runoff from the parking lot. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
94	44,669	2.2	22.6	205.1	0.035	1.23

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 pavement	0.306	51	22,480	0.84	2,100	$52,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Wanamassa First Aid

- pervious pavement
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 25' 50'

c. Summary of Existing Conditions

Summary of Existing Conditions

	Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	I.C. %	I.C. Area (SF)	Existing Annual Loads (Commercial)			Runoff Volumes from I.C.	
								TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	Water Quality Storm (1.25" over 2-hours) (Mgal)	Annual (Mgal)
	ASBURY PARK SITES	**1.09**	**47,694**				**44,549**	**2.1**	**22.5**	**204.5**	**0.035**	**1.22**
1	**Asbury Park Board of Education**											
	Total Site Info	0.35	15,194	16	11	90	13,675	0.7	6.9	62.8	0.011	0.38
2	**Our Lady of Mount Carmel Church**											
	Total Site Info	0.75	32,499	40	6	95	30,874	1.5	15.6	141.8	0.024	0.85
	INTERLAKEN SITES	**7.69**	**334,933**				**30,956**	**1.5**	**15.6**	**142.1**	**0.024**	**0.85**
3	**Interlaken Borough Office**											
	Total Site Info	1.23	53,396	4	1	10	5,340	0.3	2.7	24.5	0.004	0.15
4	**Interlaken Park**											
	Total Site Info	6.46	281,538	30	20	9	25,616	1.2	12.9	117.6	0.020	0.70
	NEPTUNE CITY SITES	**44.14**	**1,922,566**				**1,136,574**	**54.8**	**574.0**	**5,218.4**	**0.886**	**31.17**
5	**Church of God of Prophecy**											
	Total Site Info	0.42	18,345	193	10.01	35	6,421	0.3	3.2	29.5	0.005	0.18
6	**Good Samaritan Church**											
	Total Site Info	0.80	34,806	248	1	35	12,212	0.6	6.2	56.1	0.010	0.33
7	**Liberty Park**											
	Total Site Info	1.90	82,706	231	40	8	6,991	0.3	3.5	32.1	0.005	0.19
8	**Loffredo Fields**											
	Total Site Info	9.77	425,461	1008	13	30	129,318	6.2	65.3	593.7	0.101	3.55
9	**Monmouth County Vocational School District Neptune Annex**											
	Total Site Info	9.87	430,128	3000	42	36	155,599	7.5	78.6	714.4	0.121	4.27
10	**Neptune Shopping Plaza**											
	Total Site Info	21.38	931,120	1007	61	89	826,033	39.8	417.2	3,792.6	0.644	22.66

Summary of Existing Conditions

	Subwatershed/Site Name/Total Site Info/GI Practice	Area (ac)	Area (SF)	Block	Lot	I.C. %	I.C. Area (SF)	Existing Annual Loads (Commercial)			Runoff Volumes from I.C.	
								TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	Water Quality Storm (1.25" over 2-hours) (Mgal)	Annual (Mgal)
	OCEAN TOWNSHIP SITES	**68.65**	**2,990,201**				**157,054**	**7.6**	**79.3**	**721.1**	**0.122**	**4.31**
11	**Colonial Terrace Golf Club**											
	Total Site Info	54.12	2,357,614	140	72, 74, 75, 7(	2	37,479	1.8	18.9	172.1	0.029	1.03
12	**Dollar General**											
	Total Site Info	2.05	89,499	99	4	92	82,673	4.0	41.8	379.6	0.064	2.27
13	***Ocean Township Community Center***											
	Total Site Info	1.26	55,035	140	81	57	31,629	1.5	16.0	145.2	0.025	0.87
14	**Ocean Township Maintenance Shop**											
	Total Site Info	1.45	63,357	142	36	31	19,613	0.9	9.9	90.0	0.015	0.54
15	**Open Grass Lot on Logan Road**											
	Total Site Info	0.17	7,596	40.12	1	30	2,279	0.1	1.2	10.5	0.002	0.06
16	**Planning Incentive**											
	Total Site Info	0.61	26,547	40.07, 140.	1	15	3,982	0.2	2.0	18.3	0.003	0.11
17	**Super 8 by Windham Asbury Park**											
	Total Site Info	1.73	75,337	140	108	68	50,951	2.5	25.7	233.9	0.040	1.40
18	**Vacant Lot on Wickapecko Drive**											
	Total Site Info	0.91	39,842	123.01, 13(	1	34	13,458	0.6	6.8	61.8	0.010	0.37
19	**Wannamassa Firemen's Field**											
	Total Site Info	10.28	447,608	142	47	8	35,575	1.7	18.0	163.3	0.028	0.98
20	**Wannamassa First Aid & Fire Police**											
	Total Site Info	1.09	47,637	114	4.01, 4.02, 5,	94	44,669	2.2	22.6	205.1	0.035	1.23

d. Summary of Proposed Green Infrastructure Practices

Summary of Proposed Green Infrastructure Practices

	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	Unit Cost ($/unit)	Unit	Total Cost ($)	I.C. Treated %
	ASBURY PARK SITES	**4,960**	**0.11**	**0.129**	**22**	**9,490**	**0.35**				**$398,850**	**23.6%**
1	**Asbury Park Board of Education**											
	Stormwater planter	840	0.02	0.022	4	1,610	0.06	210	$375	SF	$78,750	6.1%
	Total Site Info	**840**	**0.02**	**0.022**	**4**	**1,610**	**0.06**				**$78,750**	**6.1%**
2	**Our Lady of Mount Carmel Church**											
	Bioretention system	1,850	0.04	0.048	8	3,540	0.13	470	$5	SF	$2,350	6.0%
	Pervious pavement	2,270	0.05	0.059	10	4,340	0.16	12,710	$25	SF	$317,750	7.4%
	Stormwater planter	1,280	0.03	0.033	6	2,450	0.09	320	$375	SF	$120,000	4.1%
	Total Site Info	**4,120**	**0.09**	**0.107**	**18**	**7,880**	**0.29**				**$320,100**	**17.5%**
	INTERLAKEN SITES	**18,400**	**0.42**	**0.479**	**80**	**35,180**	**1.32**				**$1,429,000**	**119.3%**
3	**Interlaken Borough Office**											
	Bioretention systems	3,200	0.07	0.083	14	6,120	0.23	800	$5	SF	$4,000	59.9%
	Total Site Info	**3,200**	**0.07**	**0.083**	**14**	**6,120**	**0.23**				**$4,000**	**59.9%**
4	**Interlaken Park**											
	Stormwater planters	15,200	0.35	0.396	66	29,060	1.09	3,800	$375	SF	$1,425,000	59.3%
	Total Site Info	**15,200**	**0.35**	**0.396**	**66**	**29,060**	**1.09**				**$1,425,000**	**59.3%**
	NEPTUNE CITY SITES	**93,940**	**2.15**	**2.448**	**410**	**179,410**	**6.75**				**$375,325**	**8.3%**
5	**Church of God of Prophecy**											
	Bioretention system	1,040	0.02	0.027	5	1,990	0.07	260	$5	SF	$1,300	16.2%
	Total Site Info	**1,040**	**0.02**	**0.027**	**5**	**1,990**	**0.07**				**$1,300**	**16.2%**
6	**Good Samaritan Church**											
	Bioretention systems	2,680	0.06	0.070	12	5,120	0.19	670	$5	SF	$3,350	21.9%
	Total Site Info	**2,680**	**0.06**	**0.070**	**12**	**5,120**	**0.19**				**$3,350**	**21.9%**
7	**Liberty Park**											
	Bioretention system	210	0.00	0.005	1	400	0.02	840	$5	SF	$4,200	3.0%
	Rainwater harvesting	150	0.00	0.004	1	100	0.00	100	$2	gal	$200	2.1%
	Total Site Info	**360**	**0.00**	**0.009**	**2**	**500**	**0.02**				**$4,400**	**5.1%**

Summary of Proposed Green Infrastructure Practices

	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	Unit Cost ($/unit)	Unit	Total Cost ($)	I.C. Treated %
8	**Loffredo Fields**											
	Bioretention systems	7,600	0.17	0.198	33	14,530	0.55	2,220	$5	SF	$11,100	5.9%
	Total Site Info	**7,600**	**0.17**	**0.198**	**33**	**14,530**	**0.55**				**$11,100**	**5.9%**
9	**Monmouth County Vocational School District N**											
	Pervious pavement	36,680	0.84	0.956	160	70,130	2.64	6,550	$25	SF	$163,750	23.6%
	Total Site Info	**36,680**	**0.84**	**0.956**	**160**	**70,130**	**2.64**				**$163,750**	**23.6%**
10	**Neptune Shopping Plaza**											
	Bioretention system	3,740	0.09	0.097	16	7,150	0.27	935	$5	SF	$4,675	0.5%
	Pervious pavement	41,840	0.96	1.090	182	79,990	3.01	7,470	$25	SF	$186,750	5.1%
	Total Site Info	**45,580**	**1.05**	**1.188**	**199**	**87,140**	**3.28**				**$191,425**	**5.5%**
	OCEAN TOWNSHIP SITES	**72,380**	**1.66**	**1.886**	**316**	**136,620**	**5.15**				**$430,650**	**46.1%**
11	**Colonial Terrace Golf Club**											
	Bioretention system	560	0.01	0.015	2	1,070	0.04	140	$5	SF	$700	1.5%
	Total Site Info	**560**	**0.01**	**0.015**	**2**	**1,070**	**0.04**				**$700**	**1.5%**
12	**Dollar General**											
	Pervious pavement	18,480	0.42	0.482	81	35,330	1.33	3,300	$25	SF	$82,500	22.4%
	Total Site Info	**18,480**	**0.42**	**0.482**	**81**	**35,330**	**1.33**				**$82,500**	**22.4%**
13	***Ocean Township Community Center***											
	Total Site Info	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**				**N/A**	**N/A**
14	**Ocean Township Maintenance Shop**											
	Bioretention systems	2,460	0.06	0.064	11	4,700	0.18	615	$5	SF	$3,075	12.5%
	Rainwater harvesting	1,700	0.04	0.044	7	1,500	0.06	1,500	$2	gal	$3,000	8.7%
	Total Site Info	**4,160**	**0.10**	**0.108**	**18**	**6,200**	**0.24**				**$6,075**	**21.2%**
15	**Open Grass Lot on Logan Road**											
	Bioretention system	3,000	0.07	0.078	13	5,740	0.22	750	$5	SF	$3,750	131.6%
	Total Site Info	**3,000**	**0.07**	**0.078**	**13**	**5,740**	**0.22**				**$3,750**	**131.6%**

Summary of Proposed Green Infrastructure Practices

	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	Unit Cost ($/unit)	Unit	Total Cost ($)	I.C. Treated %
16	**Planning Incentive**											
	Bioretention systems	2,100	0.05	0.055	9	4,020	0.15	530	$5	SF	$2,650	52.7%
	Total Site Info	**2,100**	**0.05**	**0.055**	**9**	**4,020**	**0.15**				**$2,650**	**52.7%**
17	**Super 8 by Windham Asbury Park**											
	Bioretention system	21,500	0.49	0.560	94	41,100	1.54	2,185	$5	SF	$10,925	42.2%
	Total Site Info	**21,500**	**0.49**	**0.560**	**94**	**41,100**	**1.54**				**$10,925**	**42.2%**
18	**Vacant Lot on Wickapecko Drive**											
	Bioretention system	1,760	0.04	0.046	8	3,370	0.13	440	$5	SF	$2,200	13.1%
	Stormwater planters	2,580	0.06	0.067	11	4,930	0.19	650	$375	SF	$243,750	19.2%
	Total Site Info	**4,340**	**0.10**	**0.113**	**19**	**8,300**	**0.32**				**$245,950**	**32.2%**
19	**Wannamassa Firemen's Field**											
	Bioretention system	1,050	0.02	0.027	5	2,000	0.08	270	$5	SF	$1,350	3.0%
	Pervious pavement	5,430	0.12	0.141	24	10,380	0.39	970	$25	SF	$24,250	15.3%
	Total Site Info	**6,480**	**0.15**	**0.169**	**28**	**12,380**	**0.47**				**$25,600**	**18.2%**
20	**Wannamassa First Aid & Fire Police**											
	Pervious pavement	11,760	0.27	0.306	51	22,480	0.84	2,100	$25	SF	$52,500	26.3%
	Total Site Info	**11,760**	**0.27**	**0.306**	**51**	**22,480**	**0.84**				**$52,500**	**26.3%**