Draft

Impervious Cover Reduction Action Plan for Elsinboro Township, Salem County, New Jersey

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

November 29, 2018

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Introduction

Located in Salem County, New Jersey, Elsinboro Township covers approximately 17.6 square miles. Figures 1 and 2 illustrate that Elsinboro Township is dominated by wetlands. A total of 6.7% of the municipality's land use is classified as urban. Of the urban land in Elsinboro Township, rural 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 Elsinboro 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 Elsinboro Township. Based upon the 2012 NJDEP land use/land cover data, approximately 1.5% of Elsinboro Township has impervious cover. This level of impervious cover suggests that the streams in Elsinboro Township are sensitive streams. [1]

Methodology

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

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

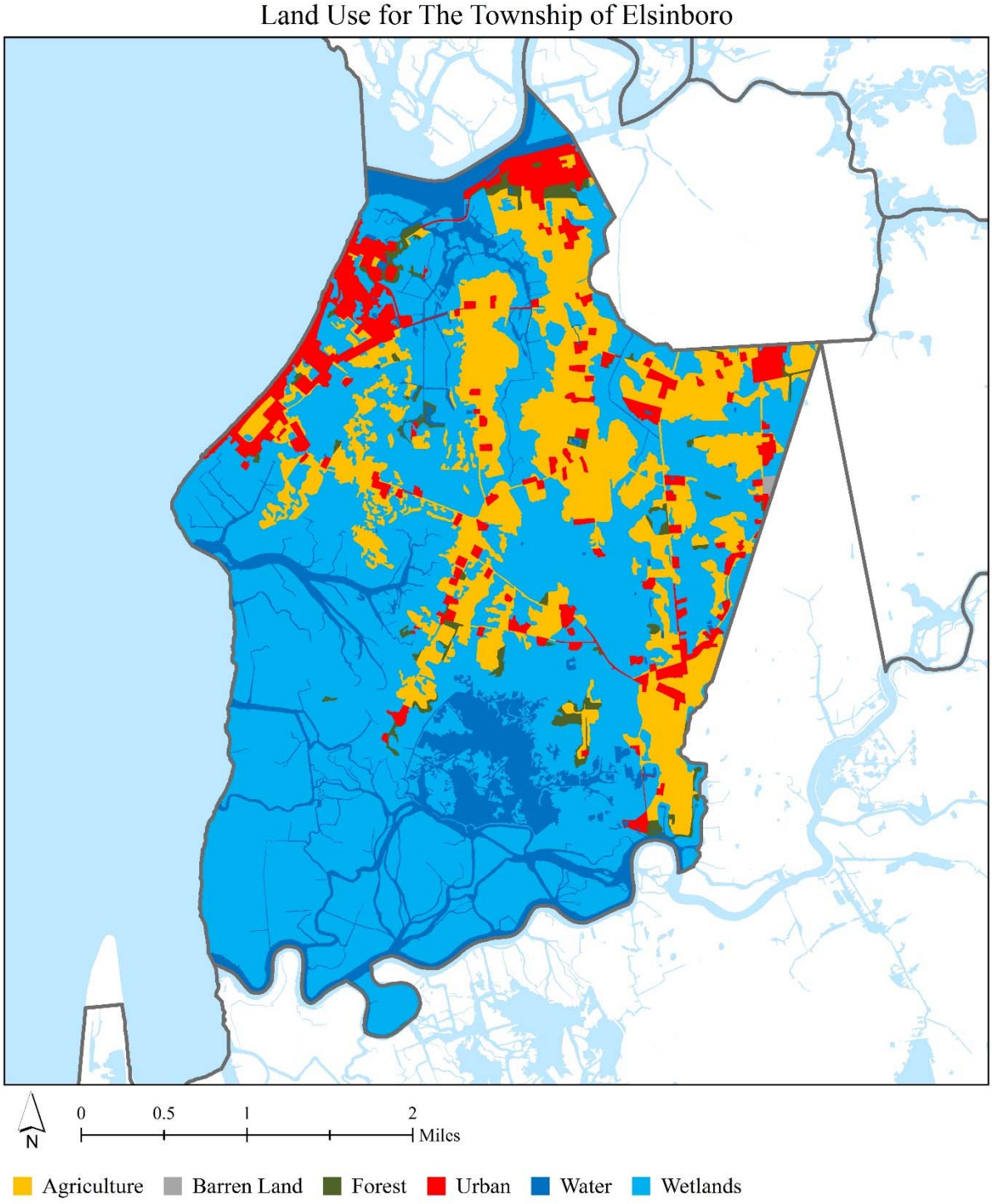


Figure 1: Map illustrating the land use in Elsinboro Township

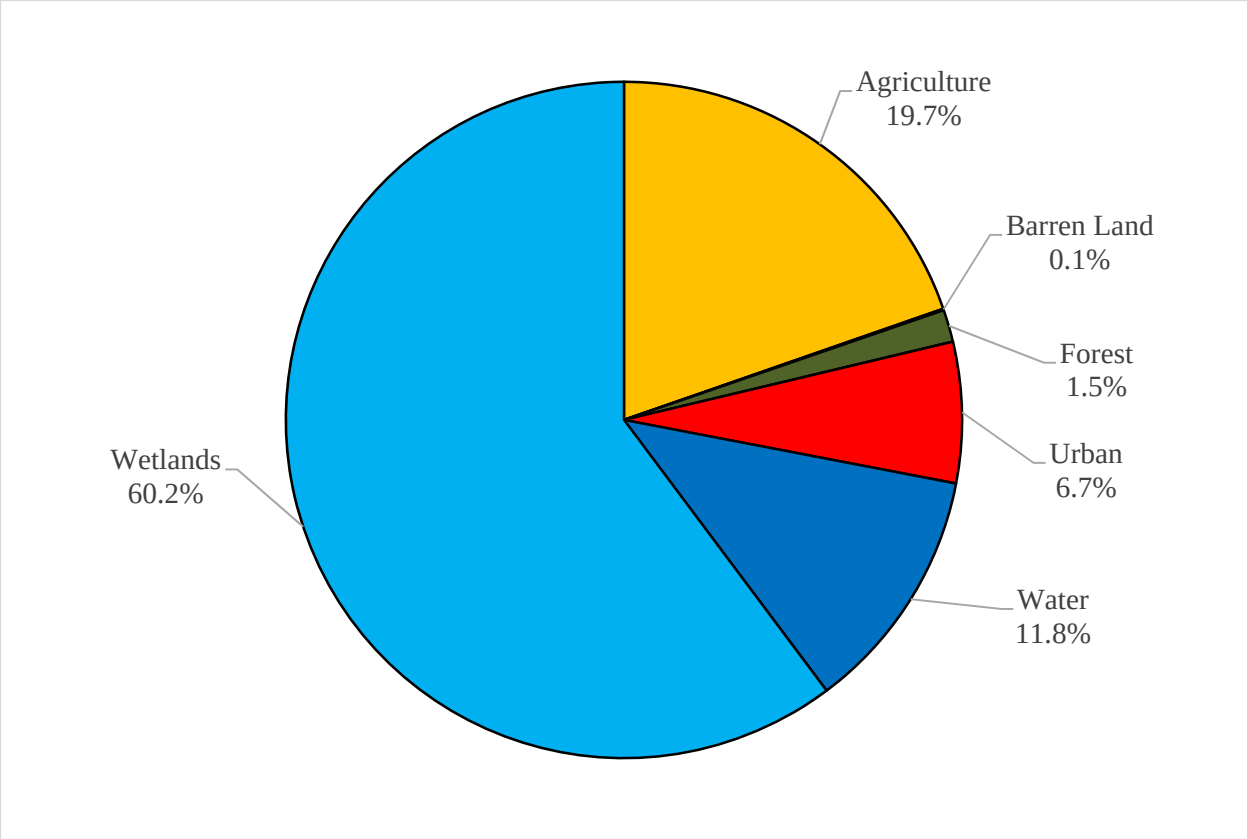


Figure 2: Pie chart illustrating the land use in Elsinboro Township

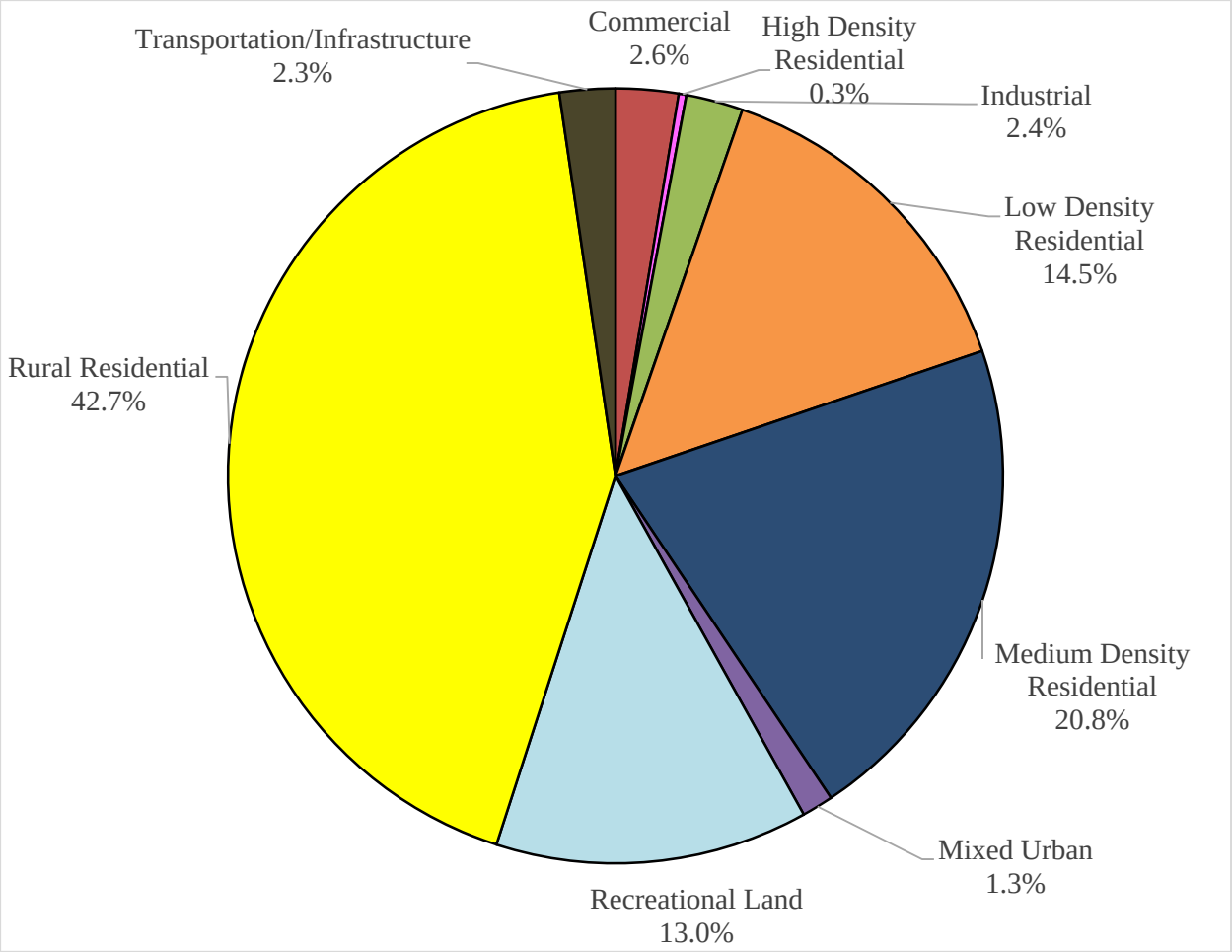


Figure 3: Pie chart illustrating the various types of urban land use in Elsinboro Township

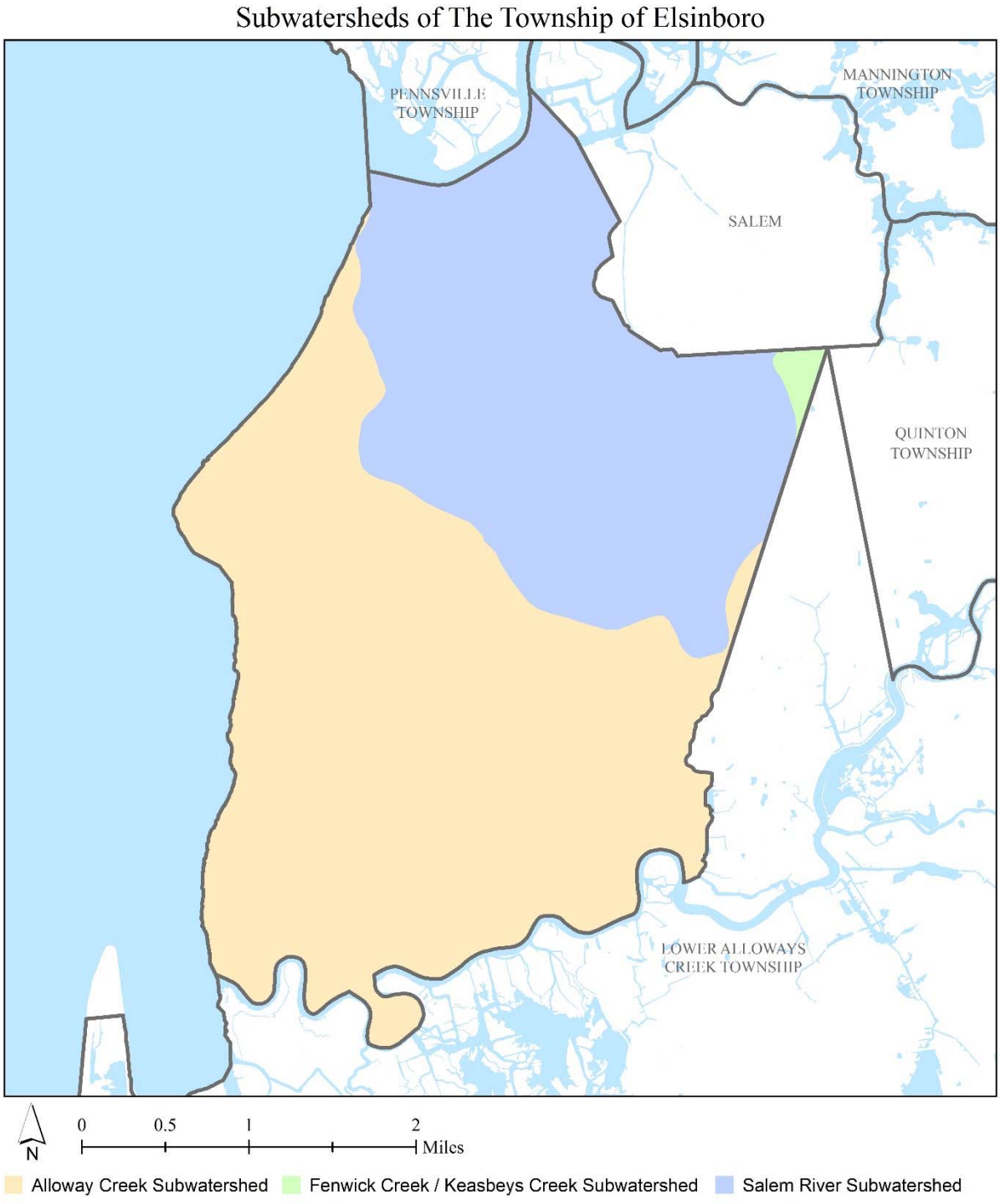


Figure 4: Map of the subwatersheds in Elsinboro Township

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 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 Elsinboro 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 Elsinboro Township. 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*.

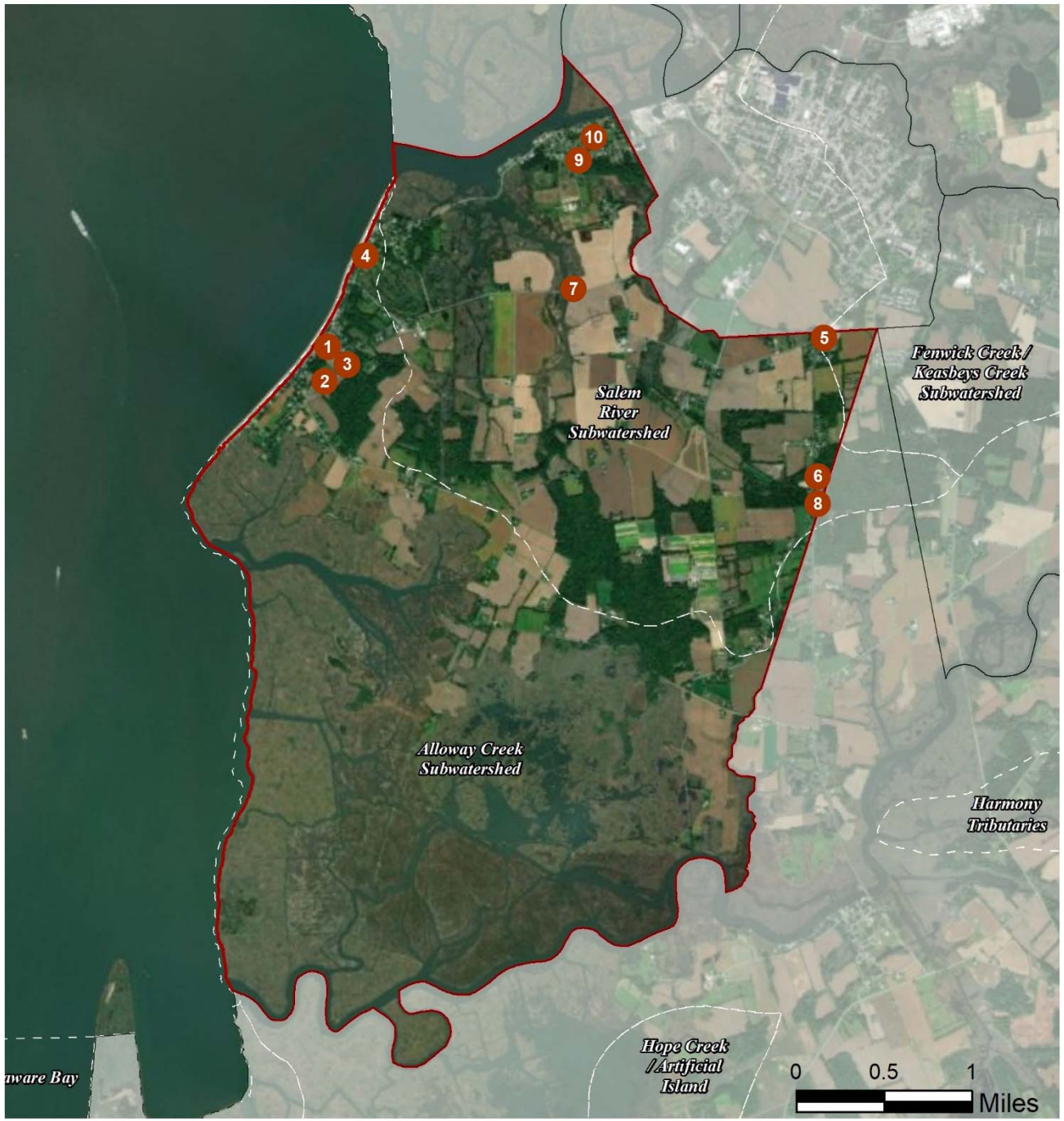
Conclusion

This impervious cover reduction action plan is meant to provide the 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. Green Infrastructure Sites

ELSINBORO TOWNSHIP: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE ALLOWAY CREEK SUBWATERSHED

1. Elsinboro Fire Company
2. Elsinboro School
3. Elsinboro Town Hall
4. The Inn at Salem Country Club

SITES WITHIN THE FENWICK/KEASBEYS CREEK SUBWATERSHED

5. Ross Fogg & Son Oil Company

SITES WITHIN THE SALEM RIVER SUBWATERSHED

6. Holladay's Auto Parts
7. Kurt's Package Store
8. Little Brown Derby
9. Seagraves Steak And Submarine
10. Veterans Of Foreign Wars

b. Proposed Green Infrastructure Concepts

ELSINBORO FIRE COMPANY

Subwatershed: Alloway Creek

Site Area: 87,355 sq. ft.

Address: 35 Delaware Avenue
Salem, NJ 08079

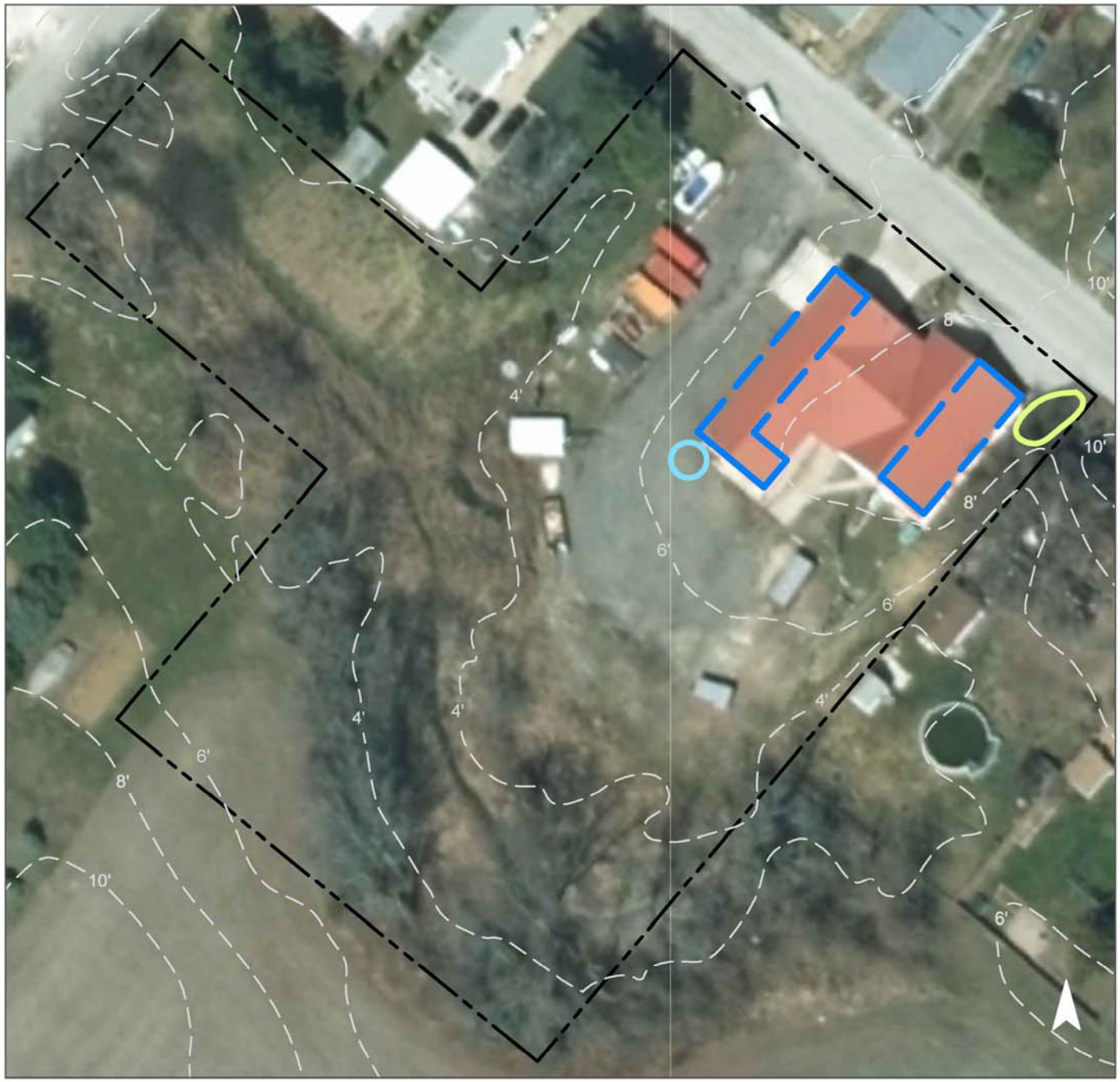
Block and Lot: Block 20, Lot 7.01, 14, 15

A rain garden can capture stormwater from the eastern portion of the building while removing pollutants and allowing infiltration. Rainwater can be harvested from the roof of the building and stored in a cistern at the southwestern corner of the building. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
19	16,171	0.8	8.2	74.2	0.013	0.44

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.034	6	2,520	0.09	330	$1,650
Rainwater harvesting	0.044	7	1,300	0.05	1,300 (gal)	$2,600

GREEN INFRASTRUCTURE RECOMMENDATIONS



Elsinboro Fire Company

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

0 30' 60'

ELSINBORO SCHOOL

Subwatershed: Alloway Creek

Site Area: 321,803 sq. ft.

Address: 631 Salem Fort Elfsborg Road
Salem, NJ 08079

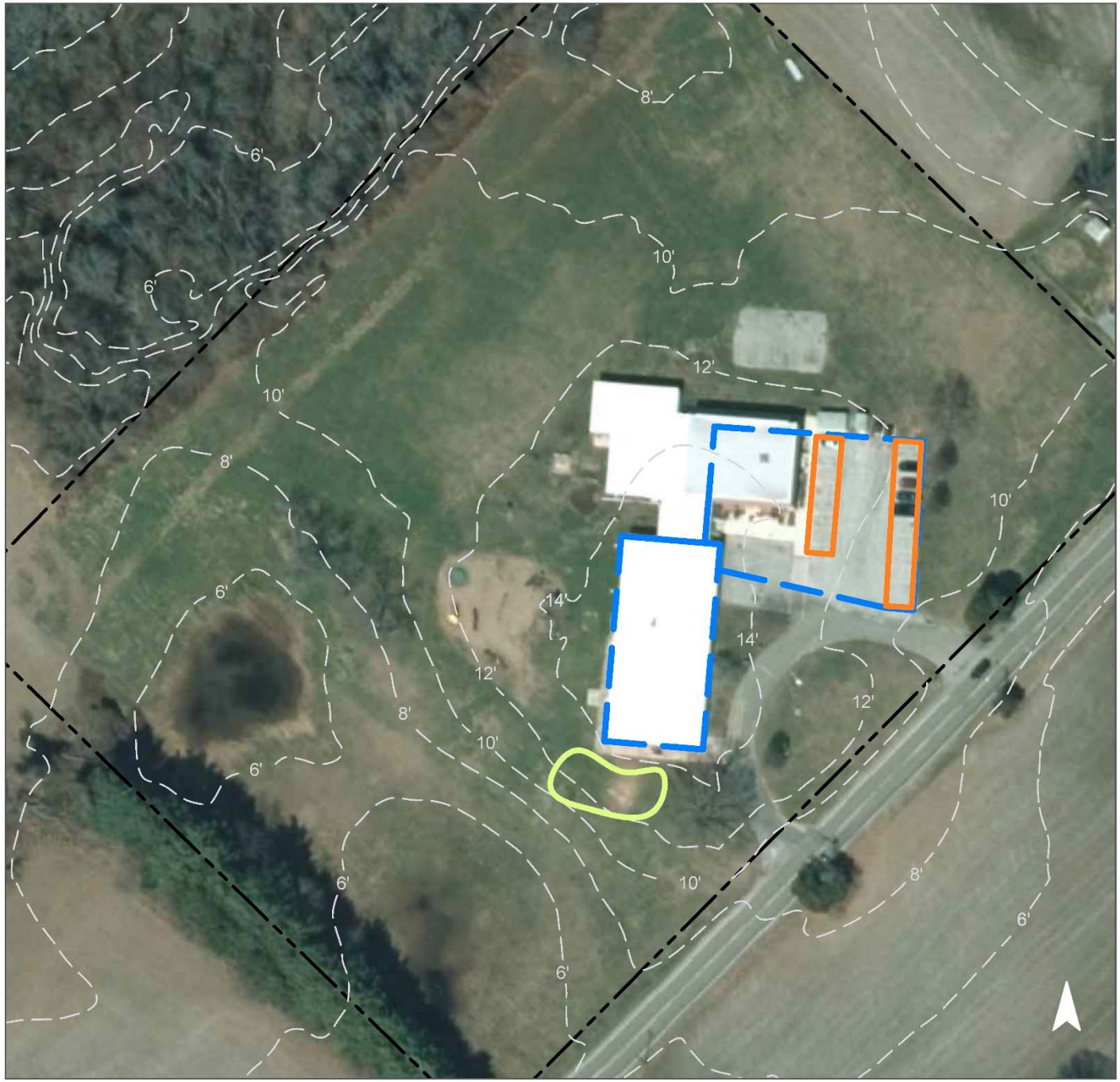
Block and Lot: Block 20, Lot 8

A bioretention system at the southwest corner of the building could capture, treat, and infiltrate rooftop runoff. Two strips of parking spaces in the parking lot can be replaced with pervious pavement to allow stormwater runoff to infiltrate the ground. 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"
13	41,234	2.0	20.8	189.3	0.032	1.13

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
Bioretention system	0.229	38	16,780	0.63	2,200	$11,000
Pervious pavement	0.365	61	26,760	1.01	3,580	$89,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Elsinboro School

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

0 50' 100'

ELSINBORO TOWN HALL

Subwatershed: Alloway Creek

Site Area: 27,756 sq. ft.

Address: 619 Salem Fort Elfsborg Road
Salem, NJ 08079

Block and Lot: Block 20, Lot 7.02

Bioretention systems can be installed in the turfgrass area on either side of the town hall entrance on the southeast side of the building. A strip of parking spaces can be replaced with pervious pavement along the northwest side of the building 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"
53	14,780	0.7	7.5	67.9	0.012	0.41

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
Bioretention systems	0.068	11	4,970	0.19	650	$3,250
Pervious pavement	0.208	35	15,240	0.57	1,800	$45,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Elsinboro Town Hall

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

0 20' 40'

THE INN AT SALEM COUNTRY CLUB

Subwatershed: Alloway Creek

Site Area: 3,129,911 sq. ft.

Address: 91 Salem Country Club Road
Salem, NJ 08079

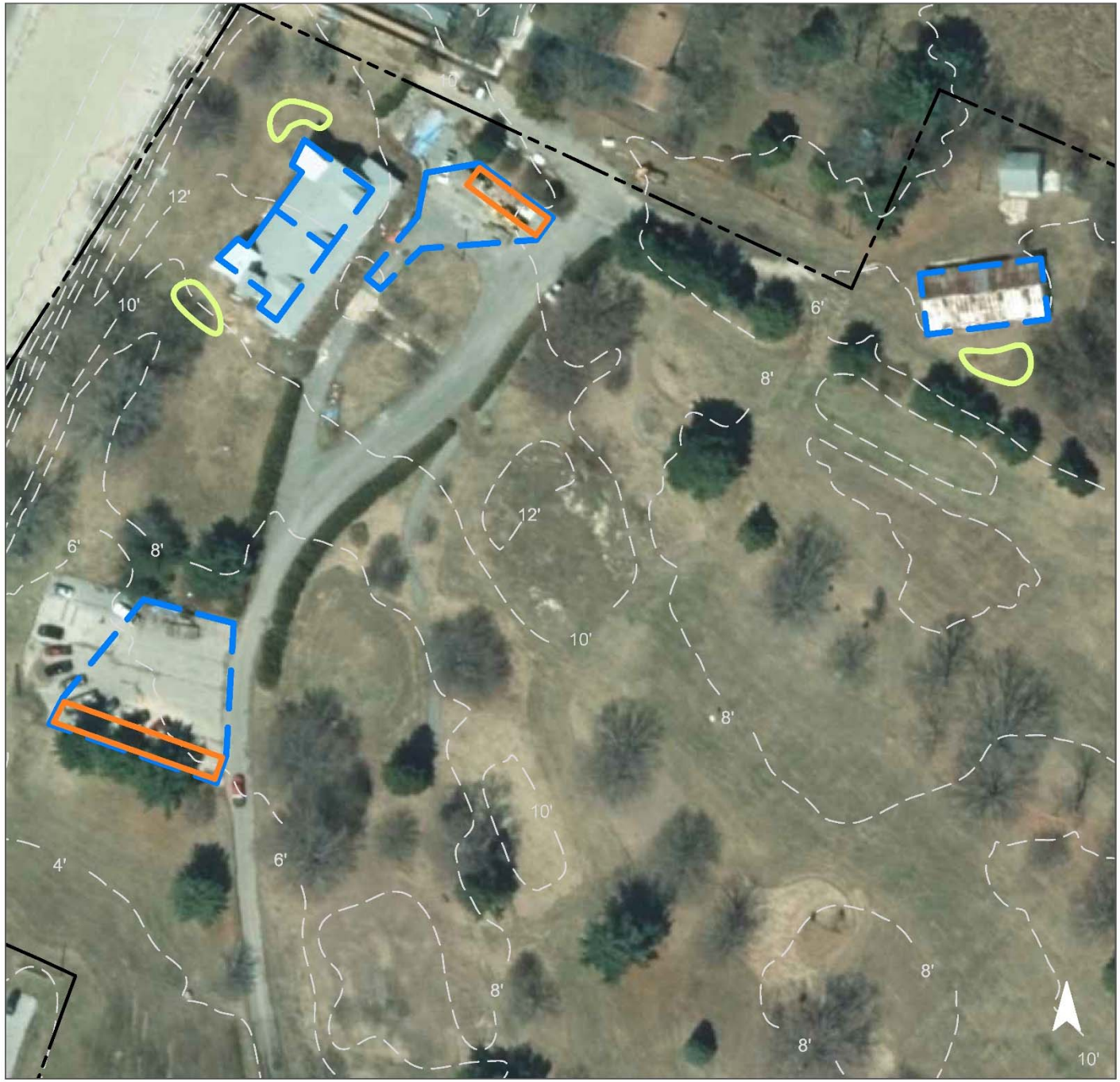
Block and Lot: Block 3;18, Lot 1;1

A bioretention system can capture stormwater from the south side of the inn. Additional bioretention systems can be implemented on the north side of the inn to capture rooftop runoff. Strips of parking spaces can be replaced with pervious pavement in the north and south parking lots. A bioretention system can be installed on the south side of the existing storage building on the east side of the site. An artificial wetland could possibly be installed in the large portions of land that do not drain well on the east side of the site. 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"
2	68,248	3.3	34.5	313.4	0.053	1.87

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	0.206	35	15,120	0.57	1,975	$9,875
Pervious pavement	0.348	58	25,520	0.96	3,265	$81,625

GREEN INFRASTRUCTURE RECOMMENDATIONS



The Inn at Salem Country Club

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

0 50' 100'

ROSS FOGG & SON OIL COMPANY

Subwatershed: Fenwick/Keasbeys Creek

Site Area: 615,990 sq. ft.

Address: 182 Salem Hancocks Bridge Road
Salem, NJ 08079

Block and Lot: Block 32; 92, Lot 2; 2

A bioretention system can be installed west of the main building to capture, treat, and infiltrate stormwater from the rooftop. Cisterns can be implemented on the side of each of the two buildings on the east side of the site. 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"
21	130,661	6.3	66.0	599.9	0.102	3.58

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	0.052	9	3,820	0.14	500	$2,500
Rainwater harvesting	0.268	45	8,000	0.30	8,000 (gal)	$16,000

GREEN INFRASTRUCTURE RECOMMENDATIONS

Ross Fog & Son Oil Company

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

0 50' 100'

HOLLADAY'S AUTO PARTS

Subwatershed: Salem River

Site Area: 236,400 sq. ft.

Address: 242 Salem Hancocks Bridge Road
Salem, NJ 08079

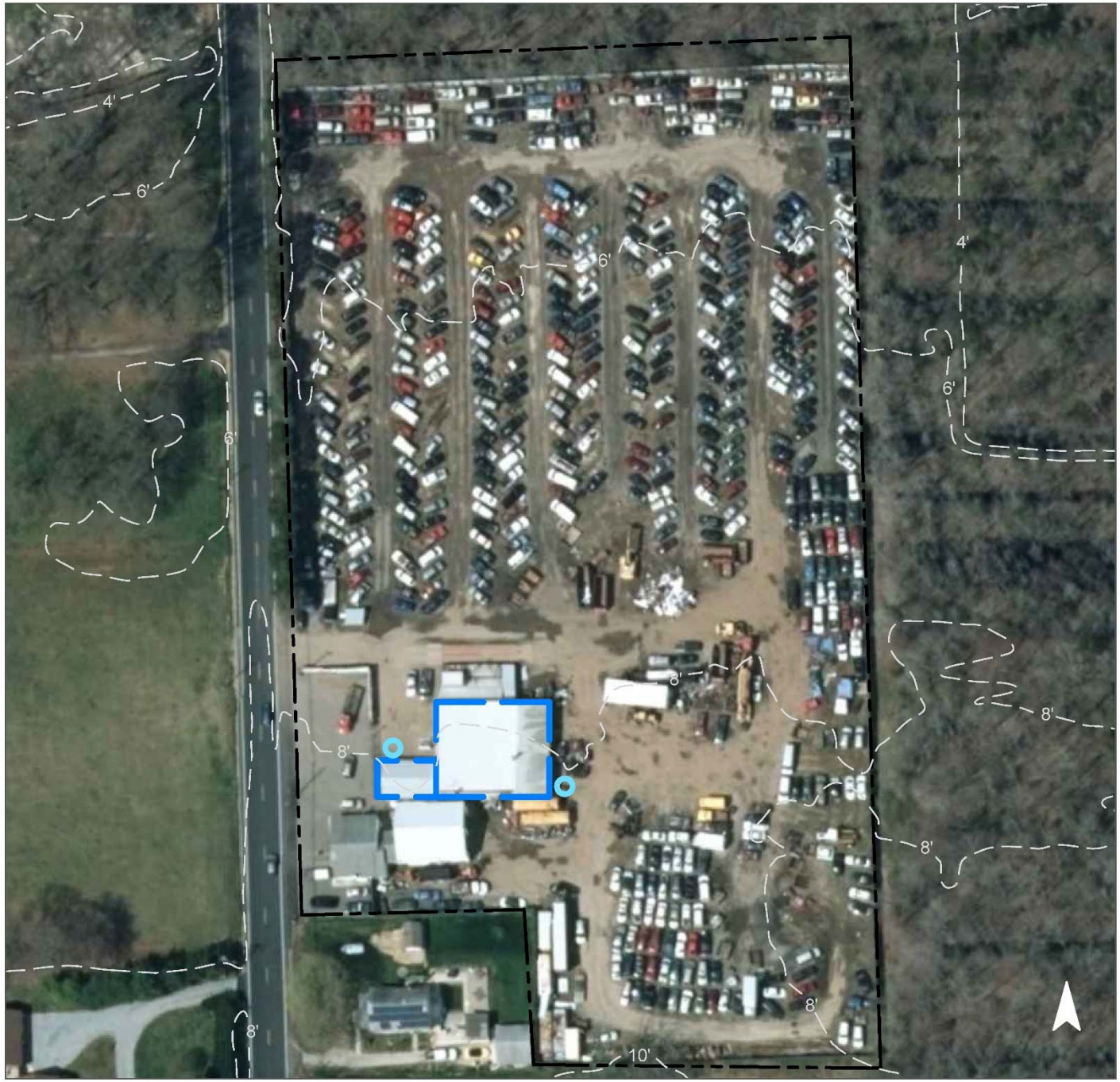
Block and Lot: Block 2; 32, Lot 12; 35

Two cisterns can be installed around the building to store rooftop runoff for reuse in washing vehicles. 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"
10	23,834	1.1	12.0	109.4	0.019	0.65

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	0.141	24	4,225	0.16	4,225 (gal)	$8,450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Holladay's Auto Parts

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

0 50' 100'

KURT'S PACKAGE STORE

Subwatershed: Salem River

Site Area: 70,546 sq. ft.

Address: 441 Salem Fort Elfsborg Road
Salem, NJ 08079

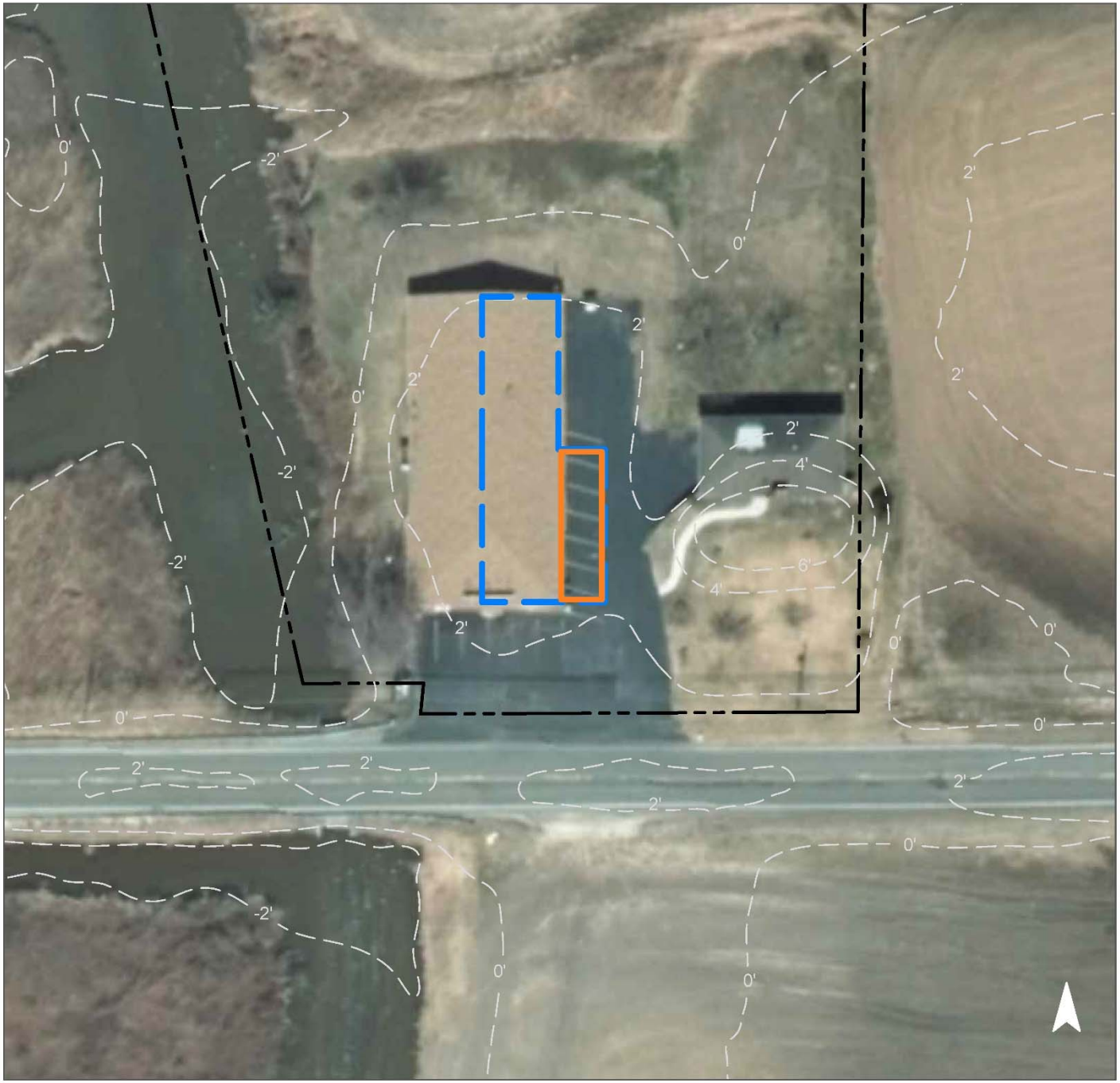
Block and Lot: Block 4, Lot 15

A strip of parking spaces on the east side of the building can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining 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"
23	16,506	0.8	8.3	75.8	0.013	0.45

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.122	20	8,950	0.34	1,080	$27,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Kurt's Package Store

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

0 30' 60'

LITTLE BROWN DERBY

Subwatershed: Salem River

Site Area: 138,990 sq. ft.

Address: 248 Salem Hancocks Bridge Road
Salem, NJ 08079

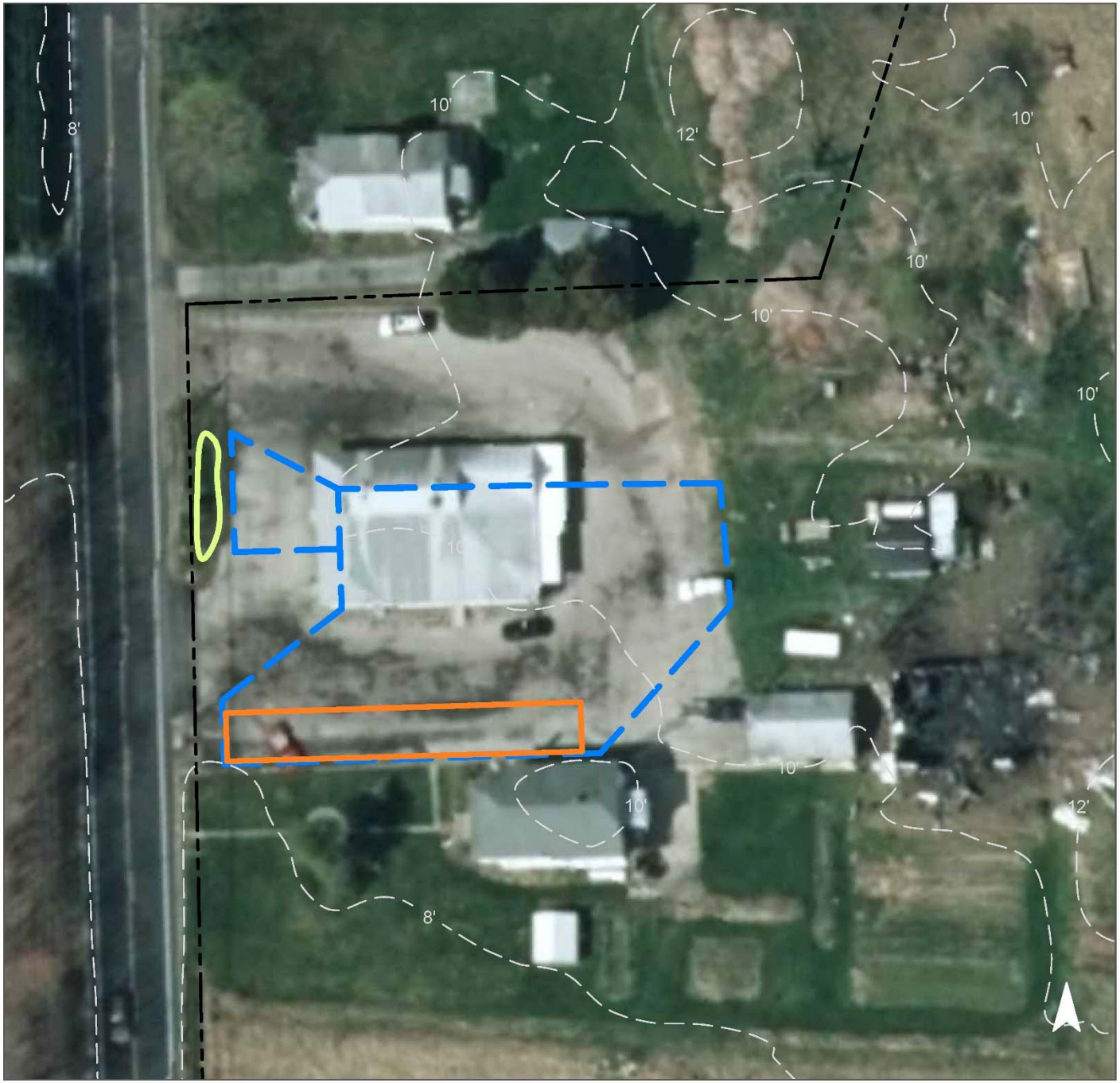
Block and Lot: Block 2; 32, Lot 13; 37

A bioretention system can be installed in the turfgrass at the front of the building to capture stormwater from the entrance area. A strip of parking spaces along the south side of the building can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining 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	42,832	2.1	21.6	196.7	0.033	1.17

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.026	4	1,910	0.07	250	$1,250
Pervious pavement	0.301	50	22,080	0.83	2,100	$52,500

GREEN INFRASTRUCTURE RECOMMENDATIONS



Little Brown Derby

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

0 25' 50'

SEAGRAVES STEAK AND SUBMARINE

Subwatershed: Salem River

Site Area: 16,607 sq. ft.

Address: 1 South Tilbury Road
Salem, NJ 08079

Block and Lot: Block 9, Lot 1

Parking spaces on the north side of the building can be replaced with pervious pavement to capture and infiltrate stormwater. A preliminary soil assessment suggests that more soil testing would be required before determining 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	4,979	0.2	2.5	22.9	0.004	0.14

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	0.039	7	2,860	0.11	275	$6,875

GREEN INFRASTRUCTURE RECOMMENDATIONS

Seagraves Steak and Submarine

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

0 15' 30'

VETERANS OF FOREIGN WARS

Subwatershed: Salem River

Site Area: 126,206 sq. ft.

Address: 20 Philip Drive
Salem, NJ 08079

Block and Lot: Block 7, Lot 13

A bioretention system can be installed at the southwest corner of the building by redirecting downspouts to capture rooftop runoff. A strip of parking spaces to the west side of the building 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"
30	38,489	1.9	19.4	176.7	0.030	1.06

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	0.014	2	1,050	0.04	140	$700
Pervious pavement	0.083	14	6,120	0.23	1,460	$36,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Veterans of Foreign Wars

- bioretention system
- 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 (ac)	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)
	ALLOWAY CREEK SUBWATERSHED	**81.88**	**3,566,825**				**3.22**	**140,433**	**6.8**	**70.9**	**644.8**	**0.109**	**3.85**
1	**Elsinboro Fire Company**												
	Total Site Info	2.01	87,355	20	7.01, 14, 15	19	0.37	16,171	0.8	8.2	74.2	0.013	0.44
2	**Elsinboro School**												
	Total Site Info	7.39	321,803	20	8	13	0.95	41,234	2.0	20.8	189.3	0.032	1.13
3	**Elsinboro Town Hall**												
	Total Site Info	0.64	27,756	20	7.02	53	0.34	14,780	0.7	7.5	67.9	0.012	0.41
4	**The Inn at Salem Country Club**												
	Total Site Info	71.85	3,129,911	3; 18	1;1	2	1.57	68,248	3.3	34.5	313.4	0.053	1.87
	FENWICK CREEK/KEASBEYS CREEK SUBWATERSHED	**14.14**	**615,990**				**3.00**	**130,661**	**6.3**	**66.0**	**599.9**	**0.102**	**3.58**
5	**Ross Fogg & Son Oil Company**												
	Total Site Info	14.14	615,990	32; 92	2; 2	21	3.00	130,661	6.3	66.0	599.9	0.102	3.58
	SALEM RIVER SUBWATERSHED	**13.52**	**588,748**				**2.91**	**126,639**	**6.1**	**64.0**	**581.4**	**0.099**	**3.47**
6	**Holladay's Auto Parts**												
	Total Site Info	5.43	236,400	2; 32	12; 35	10	0.55	23,834	1.1	12.0	109.4	0.019	0.65
7	**Kurt's Package Store**												
	Total Site Info	1.62	70,546	4	15	23	0.38	16,506	0.8	8.3	75.8	0.013	0.45
8	**Little Brown Derby**												
	Total Site Info	3.19	138,990	2; 32	13; 37	31	0.98	42,832	2.1	21.6	196.7	0.033	1.17
9	**Seagraves Steak & Submarine Shop**												
	Total Site Info	0.38	16,607	9	1	30	0.11	4,979	0.2	2.5	22.9	0.004	0.14
10	**Veterans of Foreign Wars**												
	Total Site Info	2.90	126,206	7	13	30	0.88	38,489	1.9	19.4	176.7	0.030	1.06

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 %
	ALLOWAY CREEK SUBWATERSHED	**57,595**	**1.32**	**1.501**	**251**	**108,210**	**4.07**	**15,100**			**$244,500**	**41.0%**
1	**Elsinboro Fire Company**											
	Bioretention system	1,320	0.03	0.034	6	2,520	0.09	330	$5	SF	$1,650	8.2%
	Rainwater harvesting	1,670	0.04	0.044	7	1,300	0.05	1,300	$2	gal	$2,600	10.3%
	Total Site Info	**2,990**	**0.07**	**0.078**	**13**	**3,820**	**0.14**	**1,630**			**$4,250**	**18.5%**
2	**Elsinboro School**											
	Bioretention system	8,775	0.20	0.229	38	16,780	0.63	2,200	$5	SF	$11,000	21.3%
	Pervious pavement	14,000	0.32	0.365	61	26,760	1.01	3,580	$25	SF	$89,500	34.0%
	Total Site Info	**22,775**	**0.52**	**0.593**	**99**	**43,540**	**1.64**	**5,780**			**$100,500**	**55.2%**
3	**Elsinboro Town Hall**											
	Bioretention systems	2,600	0.06	0.068	11	4,970	0.19	650	$5	SF	$3,250	17.6%
	Pervious pavement	7,970	0.18	0.208	35	15,240	0.57	1,800	$25	SF	$45,000	53.9%
	Total Site Info	**10,570**	**0.24**	**0.275**	**46**	**20,210**	**0.76**	**2,450**			**$48,250**	**71.5%**
4	**The Inn at Salem Country Club**											
	Bioretention systems	7,910	0.18	0.206	35	15,120	0.57	1,975	$5	SF	$9,875	11.6%
	Pervious pavement	13,350	0.31	0.348	58	25,520	0.96	3,265	$25	SF	$81,625	19.6%
	Total Site Info	**21,260**	**0.49**	**0.554**	**93**	**40,640**	**1.53**	**5,240**			**$91,500**	**31.2%**
	FENWICK CREEK/KEASBEYS CREEK SUBWATERSHED	**12,270**	**0.28**	**0.320**	**54**	**11,820**	**0.44**	**8,500**			**$18,500**	**9.4%**
5	**Ross Fogg & Son Oil Company**											
	Bioretention system	2,000	0.05	0.052	9	3,820	0.14	500	$5	SF	$2,500	1.5%
	Rainwater harvesting	10,270	0.24	0.268	45	8,000	0.30	8,000	$2	gal	$16,000	7.9%
	Total Site Info	**12,270**	**0.28**	**0.320**	**54**	**11,820**	**0.44**	**8,500**			**$18,500**	**9.4%**
	SALEM RIVER SUBWATERSHED	**27,880**	**0.64**	**0.726**	**122**	**47,195**	**1.78**				**$133,275**	**22.0%**
6	**Holladay's Auto Parts**											
	Rainwater harvesting	5,400	0.12	0.141	24	4,225	0.16	4,225	$2	gal	$8,450	22.7%
	Total Site Info	**5,400**	**0.12**	**0.141**	**24**	**4,225**	**0.16**				**$8,450**	**22.7%**

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 %
7	**Kurt's Package Store**											
	Pervious pavement	4,680	0.11	0.122	20	8,950	0.34	1,080	$25	SF	$27,000	28.4%
	Total Site Info	**4,680**	**0.11**	**0.122**	**20**	**8,950**	**0.34**				**$27,000**	**28.4%**
8	**Little Brown Derby**											
	Bioretention system	1,000	0.02	0.026	4	1,910	0.07	250	$5	SF	$1,250	2.3%
	Pervious pavement	11,550	0.27	0.301	50	22,080	0.83	2,100	$25	SF	$52,500	27.0%
	Total Site Info	**12,550**	**0.29**	**0.327**	**55**	**23,990**	**0.90**				**$53,750**	**29.3%**
9	**Seagraves Steak & Submarine Shop**											
	Pervious pavement	1,500	0.03	0.039	7	2,860	0.11	275	$25	SF	$6,875	30.1%
	Total Site Info	**1,500**	**0.03**	**0.039**	**7**	**2,860**	**0.11**				**$6,875**	**30.1%**
10	**Veterans of Foreign Wars**											
	Bioretention system	550	0.01	0.014	2	1,050	0.04	140	$5	SF	$700	1.4%
	Pervious pavement	3,200	0.07	0.083	14	6,120	0.23	1,460	$25	SF	$36,500	8.3%
	Total Site Info	**3,750**	**0.09**	**0.098**	**16**	**7,170**	**0.27**				**$37,200**	**9.7%**