

LOWER TOWNSHIP: GREEN INFRASTRUCTURE SITES



SITES WITHIN THE COX HALL CREEK/ MICKELS RUN SUBWATERSHED

1. Cape May County Library

SITES WITHIN THE FISHING CREEK/FISHING MILL STREAM SUBWATERSHED

2. Erma Volunteer Fire Company
3. Mister Softee Ice Cream

SITES WITHIN THE MILL CREEK/JONES CREEK/TAYLOR CREEK SUBWATERSHED

4. Kingdom Hall of Jehovah's Witnesses
5. Lower Cape May Regional High School

SITES WITHIN THE POND CREEK/CAPE MAY CANAL WEST SUBWATERSHED

6. Cape May Veterinary Hospital
7. North Cape Center

CAPE MAY COUNTY LIBRARY



Subwatershed: Cox Hall Creek/Mickels Run

Site Area: 655,740 sq. ft.

Address: 2,600 Bayshore Road
Villas, NJ 08251

Block and Lot: Block 410.01, Lot 59.02



Three bioretention system locations have been identified around the north side of the building which can capture and infiltrate stormwater runoff from the rooftop 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"
30	198,250	9.6	100.1	910.2	0.154	5.44

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.071	12	5,230	0.20	685	\$3,425

GREEN INFRASTRUCTURE RECOMMENDATIONS



Cape May County Library

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



ERMA VOLUNTEER FIRE COMPANY



Subwatershed: Fishing Creek/Fishing Mill Stream
Site Area: 398,810 sq. ft.
Address: 415 Breakwater Road
Cape May, NJ 08204
Block and Lot: Block 410.01, Lots 37 & 37.01



Bioretention systems can be installed south of the building to capture and infiltrate stormwater runoff from the rooftop of the building. Two cisterns can be installed on either side of the door bays for the stormwater to be reused for non-potable uses such as washing vehicles. 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"
43	1173,090	8.3	87.4	794.7	0.135	4.75

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	0.050	8	3,690	0.14	480	\$2,400
Rainwater harvesting	0.126	21	3,800	0.14	3,800 (gal)	\$7,600

GREEN INFRASTRUCTURE RECOMMENDATIONS



Erma Volunteer Fire Company

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



MISTER SOFTEE ICE CREAM



Subwatershed: Fishing Creek/Fishing Mill Stream

Site Area: 25,400 sq. ft.

Address: 1890 Bayshore Road
Villas, NJ 08204

Block and Lot: Block 326, Lots 1 - 6

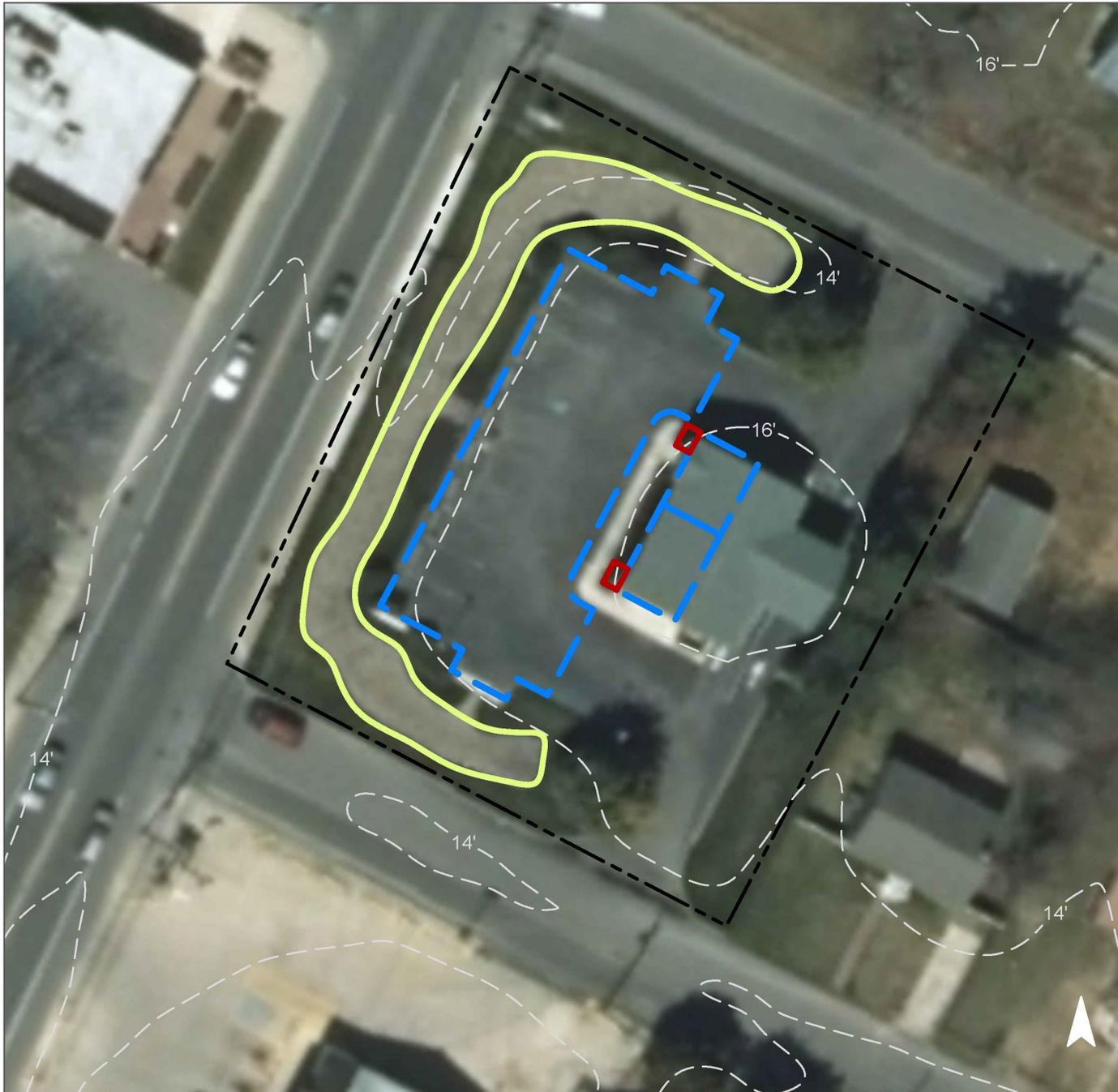


A bioretention system can be installed in the existing rock swale to capture and promote infiltration of stormwater runoff from the parking lot. Planter boxes can be installed adjacent to the building to capture and treat stormwater from the rooftop. A preliminary soil assessment suggests that the soils 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"
69	17,600	0.8	8.9	80.8	0.014	0.48

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.126	21	9,250	0.35	3,515	\$17,575
Planter boxes	N/A	2	N/A	N/A	2 (boxes)	\$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mister Softee Ice Cream

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



KINGDOM HALL OF JEHOVAH'S WITNESSES



Subwatershed: Mill Creek/Jones
Creek/Taylor Creek

Site Area: 153,760 sq. ft.

Address: 827 Seashore Road
Cape May, NJ 08204

Block and Lot: Block 505, Lot 21

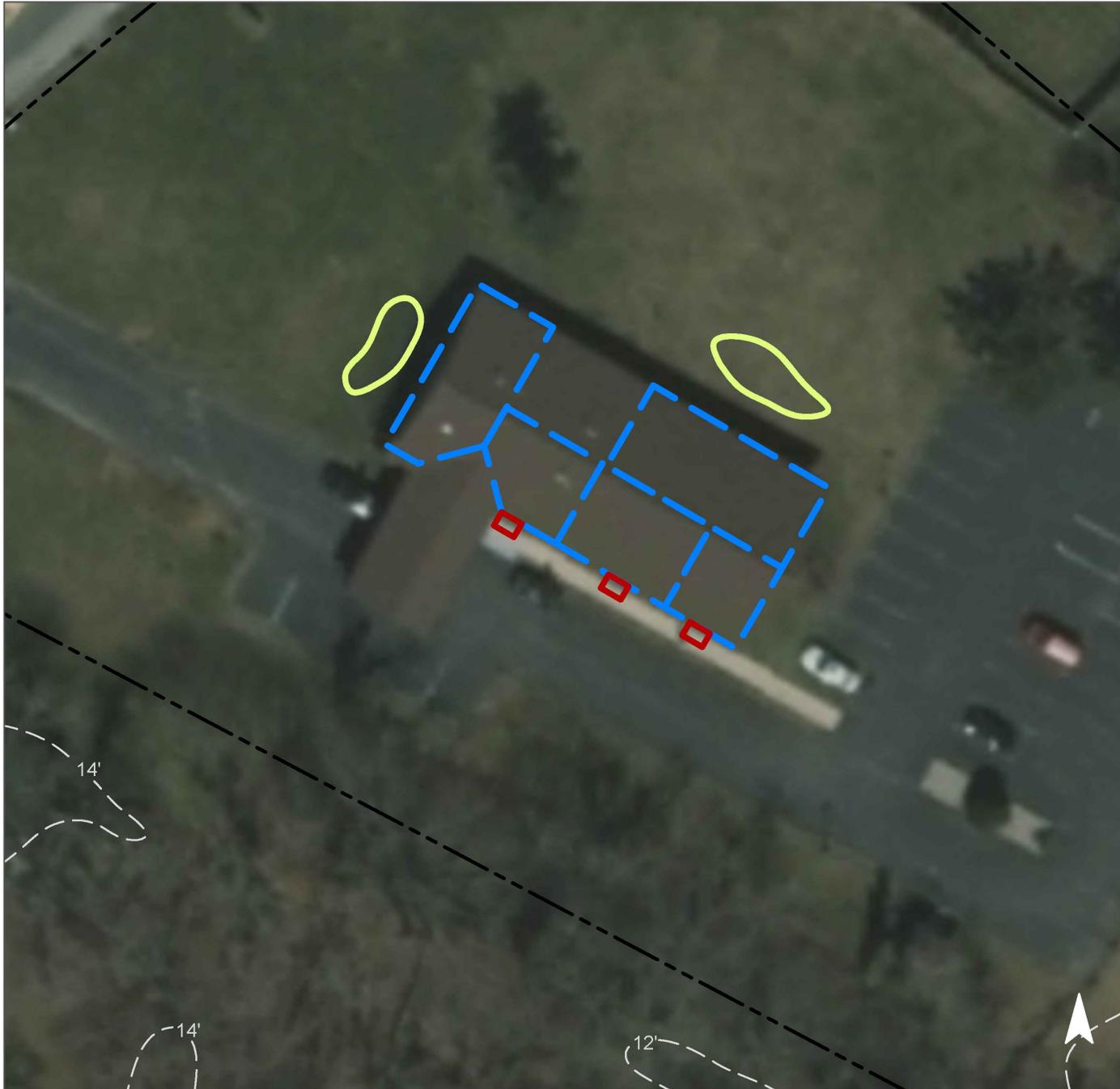


Bioretention systems can be installed north and west of the building to capture, treat, and infiltrate stormwater runoff from the rooftop of the building. Planter boxes can be installed south of the building nearby the sidewalk to help capture and infiltrate the stormwater from the rooftop of the building. 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"
36	55,845	2.7	28.2	256.4	0.044	1.53

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	0.059	10	4,320	0.16	565	\$2,825
Planter boxes	N/A	2	N/A	N/A	3 (boxes)	\$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Kingdom Hall of Jehovah's Witnesses

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



LOWER CAPE MAY REGIONAL HIGH SCHOOL



Subwatershed: Mill Creek/Jones
Creek/Taylor Creek

Site Area: 2,863,410 sq. ft.

Address: 687 U.S. 9
Cape May, NJ 08204

Block and Lot: Block 510, Lot 7.02



Multiple rain gardens can be installed around both the main school building as well as the field house to the south of the school. Additionally, parking spaces in the southern parking lot can be converted to pervious pavement to aid in the capture and infiltration of the stormwater 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"
32	911,030	43.9	460.1	4,182.9	0.710	24.99

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	0.235	39	17,260	0.65	2,255	\$11,275
Pervious pavement	0.788	132	57,810	2.17	5,400	\$135,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Lower Cape May Regional High School

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



CAPE MAY VETERINARY HOSPITAL



Subwatershed: Pond Creek/Cape May Canal West

Site Area: 47,742 sq. ft.

Address: 694 Petticoat Creek Lane
Cape May, NJ 08204

Block and Lot: Block 741.04, Lot 13.08



A rain garden can be installed on the southwestern side of the building to capture and infiltrate stormwater runoff from the roof of the building. Additionally, pervious pavement can be installed in the front parking lot to capture the 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"
40	19,100	0.9	9.6	87.7	0.015	0.52

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	340	0.01	45	\$225
Pervious pavement	0.129	22	9,490	0.36	1,000	\$25,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Cape May Veterinary Hospital

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



NORTH CAPE CENTER



Subwatershed: Pond Creek/Cape May Canal West

Site Area: 936,590 sq. ft.

Address: 700 Town Bank Road
North Cape May, NJ 08204

Block and Lot: Block 742.04, Lot 1.02

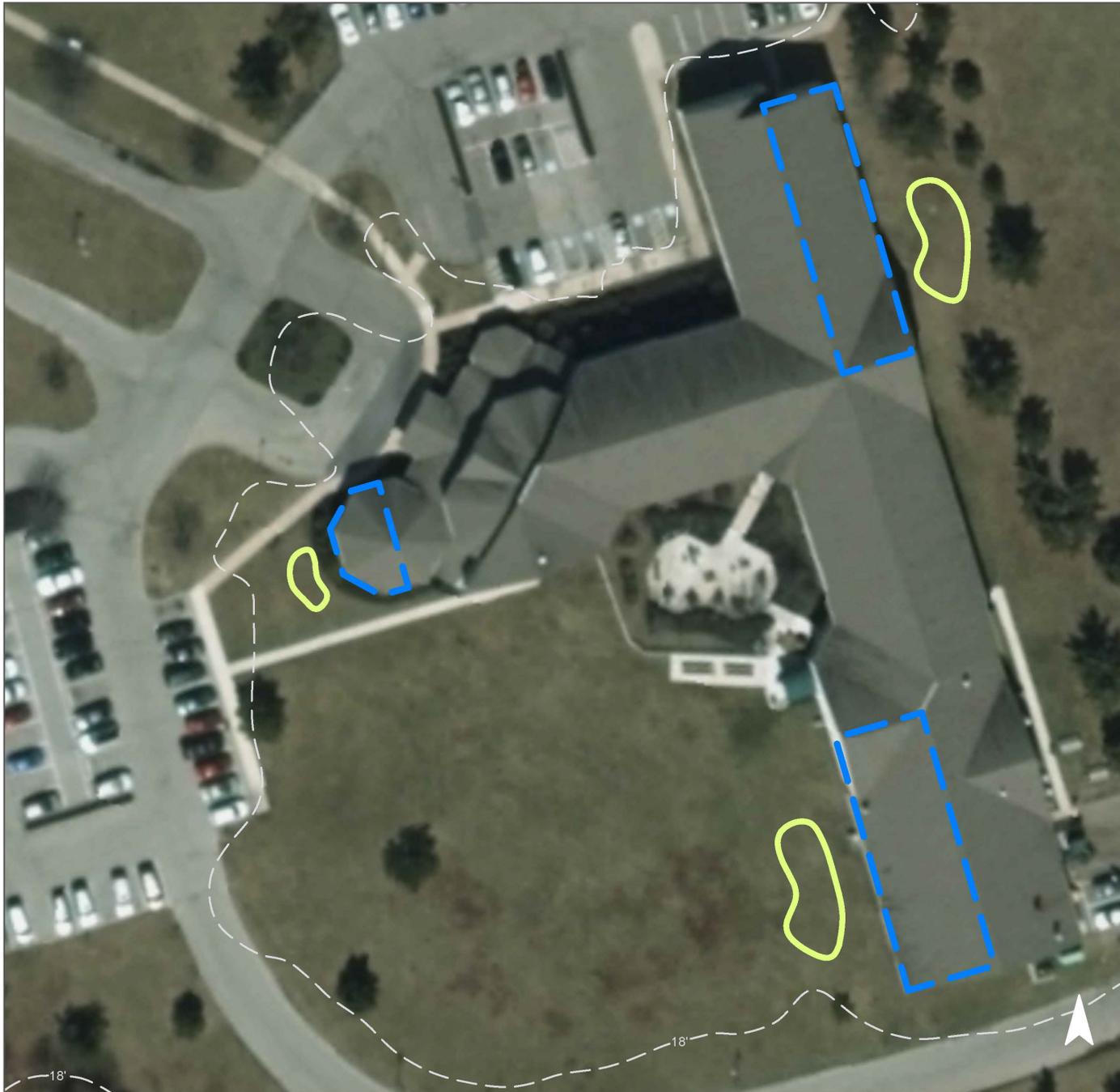


Bioretention systems can be installed around the building to capture and infiltrate stormwater runoff from the rooftop. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

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"
17	163,870	7.9	82.8	752.4	0.128	4.49

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	0.195	33	14,290	0.54	1,870	\$9,350

GREEN INFRASTRUCTURE RECOMMENDATIONS



North Cape Center

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



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.		Runoff Volumes from I.C.	
								TP (lb/yr)	TN (lb/yr)	TSS (lb/yr)	Water Quality Storm (1.25" over 2-hours)	Annual (cu.ft.)	Water Quality Storm (1.25" over 2-hours)	Annual (Mgal)
											(cu.ft.)	(cu.ft.)	(Mgal)	(Mgal)
Cox Hall Creek/Mickels Run Sites	15.05	655,740				4.55	198,250	9.6	100.1	910.2	20,651	726,917	0.154	5.44
1 Cape May Library Total Site Info	15.05	655,740	410.01	59.02	30	4.55	198,250	9.6	100.1	910.2	20,651	726,917	0.154	5.44
Fishing Creek/Fishing Mill Stream Sites	9.74	424,210				4.38	190,690	9.2	96.3	875.5	19,864	699,197	0.149	5.23
2 Erma Volunteer Fire Company Total Site Info	9.16	398,810	410.01	37 & 37.01	43	3.97	173,090	8.3	87.4	794.7	18,030	634,663	0.135	4.75
3 Mister Softee Ice Cream Total Site Info	0.58	25,400	326	1 - 6	69	0.40	17,600	0.8	8.9	80.8	1,833	64,533	0.014	0.48
Mill Creek/Jones Creek/Taylor Creek Sites	69.26	3,017,170				22.20	966,875	46.6	488.3	4439.3	100,716	3,545,208	0.753	26.52
4 Kindgom Hall of Jehovah's Witnessess Total Site Info	3.53	153,760	505	21	36	1.28	55,845	2.7	28.2	256.4	5,817	204,765	0.044	1.53
5 Lower Cape May Regional High School Total Site Info	65.73	2,863,410	510	7.02	32	20.91	911,030	43.9	460.1	4182.9	94,899	3,340,443	0.710	24.99
Pond Creek/ Cape May Canal West Sites	22.60	984,330				4.20	182,970	8.8	92.4	840.1	19,059	670,890	0.143	5.02
6 Cape May Veterinary Hospital Total Site Info	1.10	47,740	741.04	13.08	40	0.44	19,100	0.9	9.6	87.7	1,990	70,033	0.015	0.52
7 North Care Center Total Site Info	21.50	936,590	742.04	1.02	17	3.76	163,870	7.9	82.8	752.4	17,070	600,857	0.128	4.49

Summary of Proposed Green Infrastructure Practices

Subwatershed/Site Name/Total Site Info/GI Practice	Potential Management Area		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 %
	Area (SF)	Area (ac)									
Cox Hall Creek/Mickels Run Sites	2,735	0.06	0.07126	12	5,230	0.20				\$3,425	1.38%
1 Cape May Library											
Bioretention systems	2,735	0.06	0.07126	12	5,230	0.20	685	5	SF	\$3,425	1.38%
Total Site Info	2,735	0.06	0.07126	12	5,230	0.20				\$3,425	1.38%
Fishing Creek/Fishing Mill Stream Sites	12,025	0.28	0.30211	52	16,740	0.63				\$29,575	6.31%
2 Erma Volunteer Fire Company											
Bioretention systems	1,930	0.04	0.05029	8	3,690	0.14	480	5	SF	\$2,400	1.12%
Rainwater harvesting	4,830	0.11	0.12585	21	3,800	0.14	3,800	2	gal	\$7,600	2.79%
Total Site Info	6,760	0.16	0.17613	29	7,490	0.28				\$10,000	3.91%
3 Mister Softee Ice Cream											
Bioretention system	4,835	0.11	0.12598	21	9,250	0.35	3,515	5	SF	\$17,575	27.47%
Planter boxes	430	0.01	n/a	2	n/a	n/a	2	1000	box	\$2,000	2.44%
Total Site Info	5,265	0.12	0.12598	23	9,250	0.35				\$19,575	29.91%
Mill Creek/Jones Creek/Taylor Creek Sites	42,170	0.97	1.08195	183	79,390	2.98				\$152,100	4.36%
4 Kindgom Hall of Jehovah's Witnesses											
Bioretention systems	2,260	0.05	0.05889	10	4,320	0.16	565	5	SF	\$2,825	4.05%
Planter boxes	645	0.01	n/a	2	n/a	n/a	3	1000	box	\$3,000	1.15%
Total Site Info	2,905	0.07	0.05889	12	4,320	0.16				\$5,825	5.20%
5 Lower Cape May Regional High School											
Bioretention systems	9,025	0.21	0.23515	39	17,260	0.65	2,255	5	SF	\$11,275	0.99%
Pervious pavement	30,240	0.69	0.78791	132	57,810	2.17	5,400	25	SF	\$135,000	3.32%
Total Site Info	39,265	0.90	1.02306	171	75,070	2.82				\$146,275	4.31%
Pond Creek/ Cape May Canal West Sites	12,620	0.29	0.32882	55	24,120	0.91				\$34,575	6.90%
6 Cape May Veterinary Hospital											
Bioretention system	180	0.00	0.00469	1	340	0.01	45	5	SF	\$225	0.94%
Pervious pavement	4,965	0.11	0.12936	22	9,490	0.36	1,000	25	SF	\$25,000	25.99%
Total Site Info	5,145	0.12	0.13405	22	9,830	0.37				\$25,225	26.94%
7 North Care Center											
Bioretention systems	7,475	0.17	0.19476	33	14,290	0.54	1,870	5	SF	\$9,350	4.56%
Total Site Info	7,475	0.17	0.19476	33	14,290	0.54				\$9,350	4.56%