Lebanon Township

Introduction

Located in Hunterdon County in New Jersey, Lebanon Township covers about 31.7 square miles. With a population of 6,195 (2020 United States Census), Lebanon Township consists of 20.1% of urban land uses by area. Of that urban land use, approximately 73.1% is comprised of rural residential properties (NJDEP Open Data). In addition to residential development, urban land use also includes land used for commercial, industrial, recreational, and transportation purposes. Natural lands (forests, wetlands, and water) make up approximately 63.2% of Lebanon Township.

Lebanon Township contains portions of eleven subwatersheds (Table 1). There are approximately 78.0 miles of rivers and streams within the municipality; these include Beatty's Brook and its tributaries, Guinea Hollow Brook, Hickory Run and its tributaries, Little Brook and its tributaries, Musconetcong River and its tributaries, Rocky Run and its tributaries, South Branch Raritan River and its tributaries, Spruce Run and its tributaries, Teetertown Brook and its tributaries, Willoughby Brook and its tributaries, and several uncoded tributaries. Lebanon Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 1 (Upper Delaware) and 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Lebanon Township

Subwatershed	HUC14
Raritan River South Branch (Califon bridge to Long Valley)	02030105010060
Raritan River South Branch (Stone Mill gage to Califon)	02030105010070
Raritan River South Branch (Spruce Run to Stone Mill gage)	02030105010080
Spruce Run (above Glen Gardner)	02030105020010
Spruce Run (Reservoir to Glen Gardner)	02030105020020
Spruce Run Reservoir / Willoughby Brook	02030105020040
Beaver Brook (Clinton)	02030105020050
Rockaway Creek (above McCrea Mills)	02030105050080
Musconetcong River (Changewater to Hances Brook)	02040105160020

Musconetcong River (Route 31 to Changewater)	02040105160030
Musconetcong River (75d 00m to Route 31)	02040105160040

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Lebanon Township. This involves gathering, organizing, and presenting information about existing conditions and infrastructure within each subwatershed. It aims to serve as a tool for informed decision-making, planning, and implementation of sustainable watershed management strategies aimed to protect and enhance the health of the watershed, its associated ecosystems, and the surrounding communities.

A geographic information system (GIS) was used to visualize data pertaining to the existing stormwater infrastructure, land cover, watershed delineation, and water quality classification and impairments within separate layers. Datasets from the New Jersey Department of Environmental Protection's (NJDEP's) GIS database was used to populate the watershed inventory map, from which the relevant data were isolated. Datasets representing Lebanon Township's existing stormwater infrastructure were provided by the municipality and were manipulated, if necessary, for the specific purposes of this report.

Analysis by Municipality

An analysis was completed by municipality. Figure 1 shows Lebanon Township in relation to the study area. Figure 2 shows the portions of the eleven HUC14s in Lebanon Township and highlights the HUC14s that are contained within the Study Area. Figure 3 illustrates the land use in Lebanon Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Lebanon Township and is presented in Table 2. Figure 4 shows the impervious cover in Lebanon Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Lebanon Township and is presented in Table 3.

For the area of the municipality in the study area, a stormwater facilities analysis was completed (see Figure 5). Two sources were used to identify stormwater facilities. The first data source was the New Jersey Hydrologic Modeling Database (SCS, 2024) that was prepared by the Soil Conservation Districts (SCD) and Rutgers University. The second data source was the NJDEP 2020 land use/land cover GIS Layer. Land use data uses a land use code (1499) to identify stormwater basins. Each stormwater basin was inspected (see Table 4). The detention basins in Table 4 that are already naturalized are identified as type "N". The retention basins in Table 4 (identified as type "R") could benefit from the addition of vegetative shoreline buffers. The retention basins in Table 4 that already have a vegetative shoreline buffer are listed as type "RB". Only naturalized detention basins and retention basins with a vegetative shoreline buffer were identified in Lebanon Township within the study area.

The Q-Farms in Lebanon Township have been identified (see Figure 6). Table 5 presents the data available for each Q-Farm parcel. Q-Farms are the parcels that have been qualified for farmland tax assessment. The Q-Farms in the study area of Lebanon Township have been identified (see Figure 7 and Table 6). It is important to note that the land use on a Q-Farm is often not all agriculture. Figure 8 illustrates the land use on the Q-Farms, which is summarized in Table 7. There are 3,336.5 acres of agricultural land use in Lebanon Township, of which, 933.8 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 90 Q-Farms and portions of 18 Q-Farms in the study area portion of Lebanon Township, totaling 2,146.5 acres. Within the 90 Q-Farms and portions of 18 Q-Farms, there are approximately 724.9 acres of agricultural land use. Aerial photography (see Figure 9) was used to identify areas where riparian buffers may be able to be enhanced to further protect the waterways from agricultural impacts. Based upon the aerial photograph and site visits, recommendations for the agricultural lands in the study area in Lebanon Township are presented in Table 8.

The impervious cover analysis was used to calculate targets for areas of rooftops to be treated with rain gardens and length of roadways to be managed with bioswales. Three HUC14s are included in the study area (02030105010060, 02030105010070, 02030105010080). Within these three HUC14s, there are 66.8 acres of buildings and 144.8 acres of roadway. The Watershed Restoration and Protection Plan recommends managing stormwater runoff from ¼ of 25% of the building rooftops. For the study area within Lebanon Township, approximately 4.2 acres of rooftop runoff would be managed with 0.84 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Lebanon Township, approximately 14.5 acres of roadway would be managed, or 4.0 miles of roadway.

Finally, the parcel data was used to identify parcels that are classified as Property Class 15. Property Class 15 parcels are tax-exempt, and include six subcategories:

15A – Public School Property

15B- Other School Property

15C- Public Property

15D- Church and Charitable Property

15E- Cemeteries and Graveyards

15F- Other Exempt

The Property Class 15 parcels for Lebanon Township are shown in Figure 10 and presented in Table 9. When the municipality develops their Watershed Improvement Plan to satisfy their Municipal Separate Storm Sewer System (MS4) permit, these are the first sites that are assessed for opportunities to install watershed improvement projects. This assessment was completed for the Property Class 15 parcels in the study area (see Figure 11). Available information for each parcel in the study area is presented in Table 10. Class 15E parcels were excluded from the assessment. Six of these properties offer opportunities to be retrofitted with green infrastructure to help reduce pollutant loads. These properties are identified in Table 10 and represent watershed improvement projects that can be included in the municipality's Watershed Improvement Plan. Figure 12 shows parcels within the entire municipality that offer opportunities to be retrofitted with green infrastructure. These sites are included in the

Impervious Cover Reduction Action Plan that was completed by the RCE Water Resources Program for the municipality.

Water Quality Classification

The New Jersey Department of Environmental Protection (NJDEP) Surface Water Quality Standards (SWQS) are regulations that govern the water quality goals and pollution limitations for surface waters in New Jersey. Surface waters are classified based on their designated uses, such as drinking water supply, aquatic life habitat, recreation, or shellfish harvesting. The SQWS are used to protect those uses and guide permitting, monitoring, and water quality restoration efforts.

Under the SWQS, freshwaters are classified as Fresh Water 1 (FW1), Fresh Water 2 (FW2), or Pinelands (PL). FW1 waters are nondegradation waters with unique ecological significance, in which man-made wastewater discharges are not permitted. FW2 waters are all other freshwaters except for Pinelands waters. FW2 waters are further classified based on their ability to support trout. Trout Production waters (TP) are designated for use by trout for spawning or nursery purposes during their first summer. Trout Maintenance waters (TM) are designated for the support of trout throughout the year. Nontrout waters (NT) are generally unsuitable for trout due to their physical, chemical, or biological characteristics. Pinelands waters – which may be either fresh or saline waters – are surface waters within the Pinelands Protection and Preservation areas.

Saline waters that are not PL are classified under the SWQS as either Saline Estuarine (SE) or Saline Coastal (SC). SE waters are further classified based on their ability to support recreation, shellfish harvesting, and warm water fish species. SE1 waters have the highest protection within the SE category, and must support the maintenance, migration, and propagation of fish and aquatic life, as well as shellfish harvesting. SE2 waters must support the maintenance, migration, and propagation of fish and aquatic life but do not need to support shellfish harvesting. SE3 waters must support the migration of fish but do not need to support permanent aquatic biota populations or shellfish harvesting. Some coastal waters have dual classifications where the waters change from freshwater to saltwater as they drain into the estuary or ocean.

Finally, there are three antidegradation classifications assigned to all New Jersey surface waters. Outstanding National Resource Waters (ONRW) is the most protective classification and applies to all F1 and PL waters. No degradation is permitted in ONRW waters. Category One waters (C1) are protected from any measurable change to existing water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources. Category Two waters (C2) permit some measurable degradation in water quality, but the changes must be limited and justified. C2 is the default classification for all surface waters that are not categorized as F1, PL, or C1.
There are four classifications that apply to the streams in Lebanon Township. Figure 13 depicts the water quality classifications of surface waters throughout Lebanon Township and Table 11 summarizes the total miles and percentage of each surface water quality classification in the municipality.

Areas Prone to Flooding

Administrators from Lebanon Township have identified several locations throughout the municipality that are particularly susceptible to flooding during heavy rainfall or storm events. The lawns in front of Bunnvale Library and several houses have been reported to flood following storm events. Several locations along Raritan River Road and Musconetcong River Road have also been observed to flood frequently, posing risks to public safety. Figure 14 shows the locations of the aforementioned areas of concern.

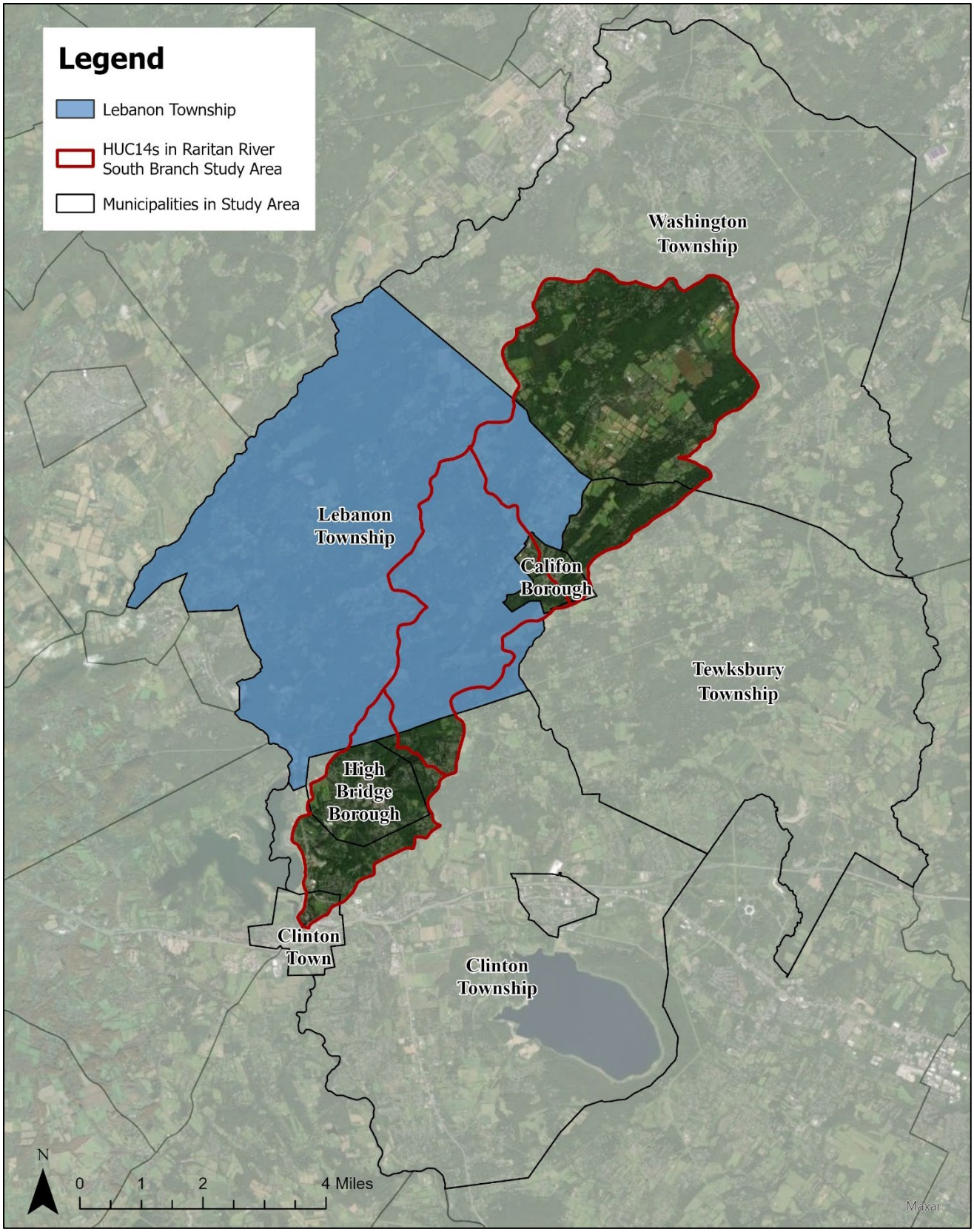


Figure 1: Municipalities in the Study Area

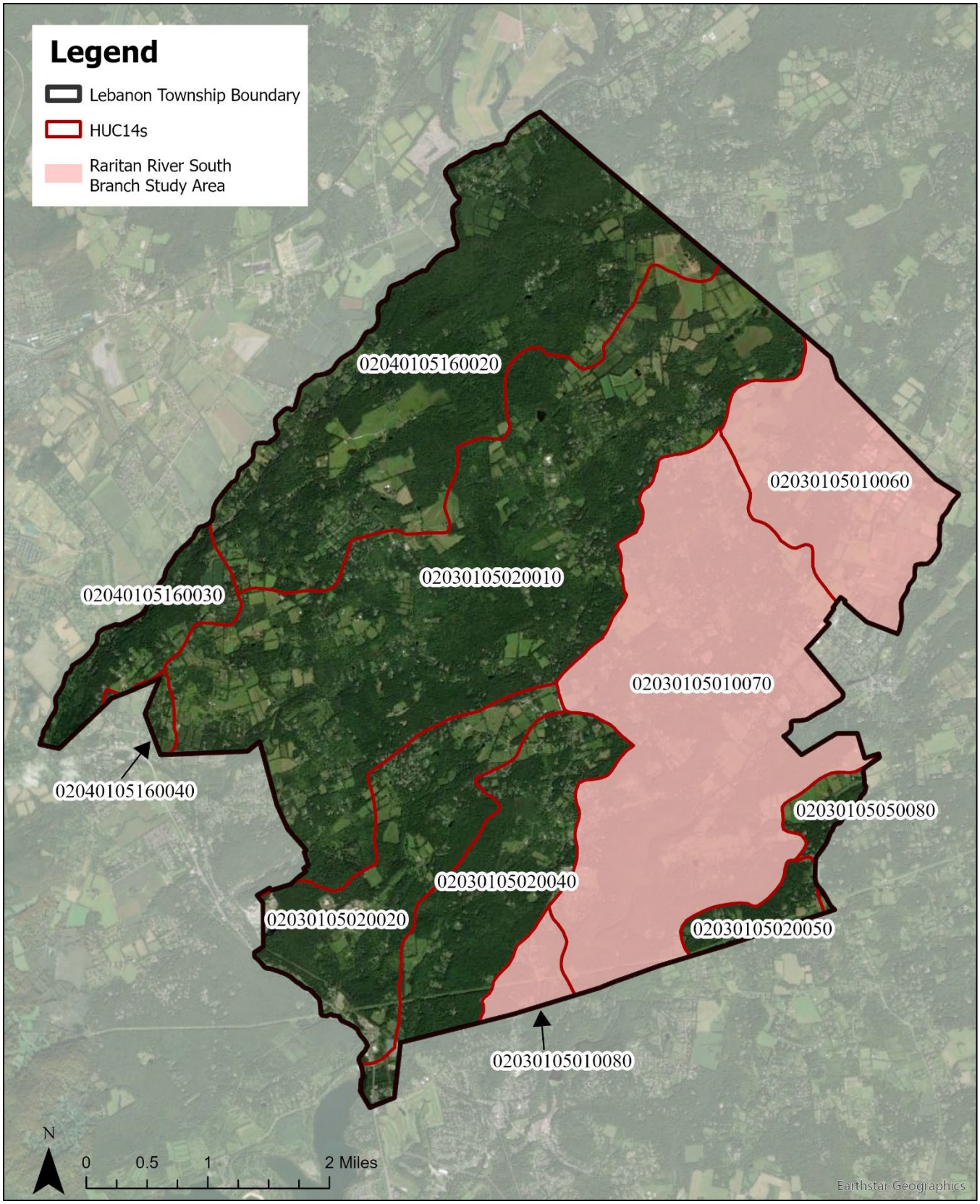


Figure 2: Portions of eleven HUC14s are in Lebanon Township

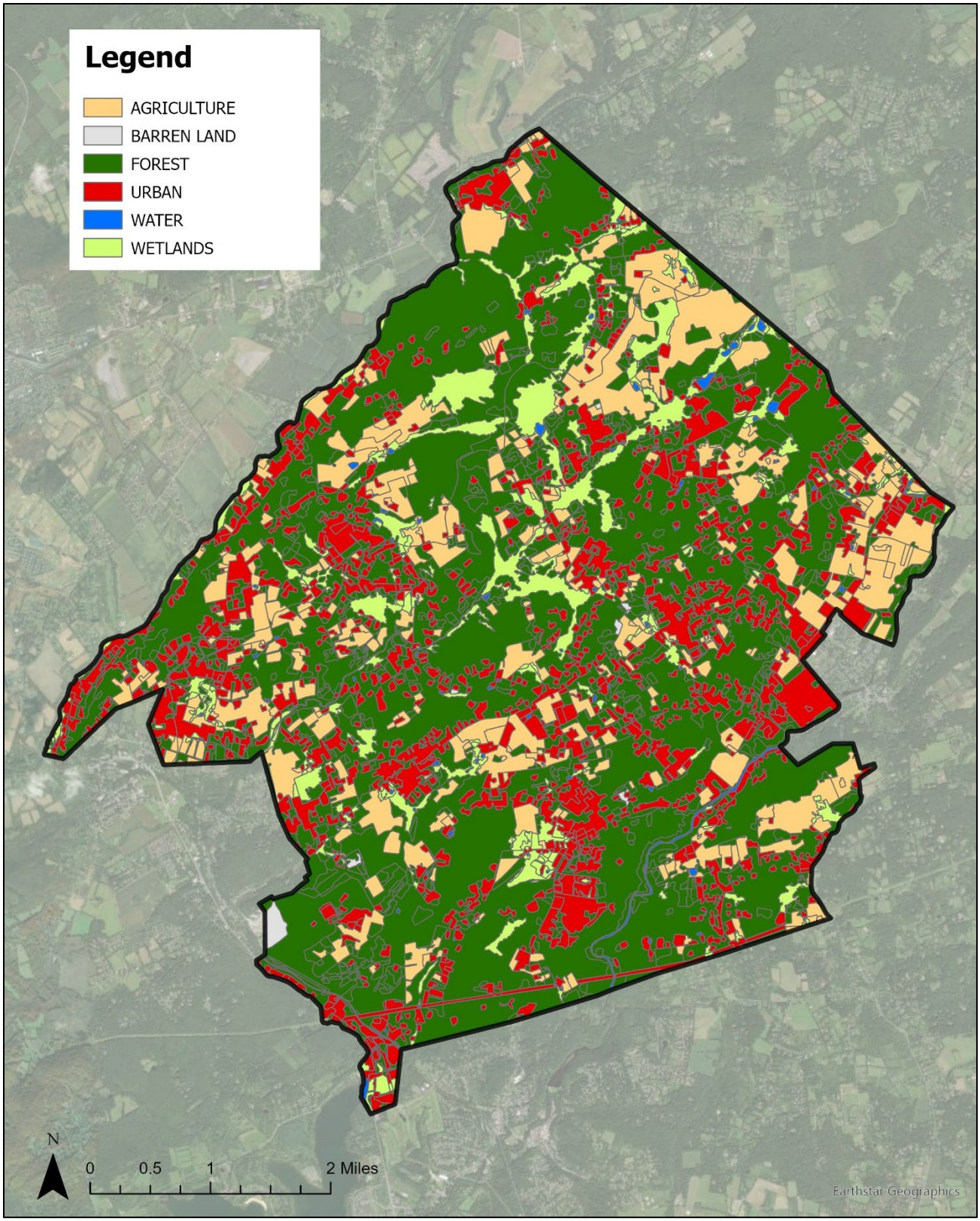


Figure 3: Land Use in Lebanon Township

Table 2: Land Use Analysis and Nonpoint Source Loading Analysis by HUC14 for Lebanon Township

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030105010060				
Agriculture	473.6	615.7	4,736.5	142,094.0
Barren Land	0.0	0.0	0.0	0.0
Forest	685.7	68.6	2,057.1	27,427.5
Urban	291.5	408.1	4,372.5	40,809.9
Water	21.7	2.2	65.2	868.7
Wetlands	70.2	7.0	210.5	2,806.1
TOTAL =	**1,542.7**	**1,101.6**	**11,441.6**	**214,006.2**
02030105010070				
Agriculture	445.9	579.7	4,459.1	133,773.3
Barren Land	8.9	4.4	44.3	531.2
Forest	2,601.4	260.1	7,804.2	104,056.0
Urban	1,134.4	1,588.1	17,015.7	158,813.1
Water	44.9	4.5	134.7	1,795.6
Wetlands	55.0	5.5	165.0	2,199.3
TOTAL =	**4,290.4**	**2,442.4**	**29,622.9**	**401,168.5**
02030105010080				
Agriculture	14.3	18.6	142.9	4,286.2
Barren Land	0.0	0.0	0.0	0.0
Forest	158.3	15.8	474.8	6,330.5
Urban	55.8	78.2	837.4	7,816.1
Water	0.7	0.1	2.2	29.0
Wetlands	2.0	0.2	6.0	79.8
TOTAL =	**231.1**	**112.8**	**1,463.3**	**18,541.6**
02030105020010				
Agriculture	1,087.2	1,413.3	10,871.7	326,151.4
Barren Land	8.0	4.0	40.1	481.6
Forest	3,033.3	303.3	9,099.9	121,332.2
Urban	1,034.2	1,447.9	15,513.0	144,788.2
Water	41.9	4.2	125.6	1,674.1
Wetlands	684.7	68.5	2,054.1	27,388.2
TOTAL =	**5,889.3**	**3,241.2**	**37,704.5**	**621,815.8**
02030105020020				
Agriculture	279.2	363.0	2,792.4	83,770.8
Barren Land	31.8	15.9	159.2	1,910.5
Forest	941.7	94.2	2,825.2	37,669.3
Urban	340.3	476.5	5,105.2	47,648.6
Water	9.7	1.0	29.2	388.8
Wetlands	58.8	5.9	176.3	2,350.7

TOTAL =	**1,661.6**	**956.4**	**11,087.4**	**173,738.7**
02030105020040				
Agriculture	157.7	205.1	1,577.3	47,320.0
Barren Land	0.0	0.0	0.0	0.0
Forest	873.7	87.4	2,621.2	34,949.9
Urban	327.3	458.3	4,910.1	45,828.0
Water	8.7	0.9	26.1	348.2
Wetlands	133.0	13.3	398.9	5,318.2
TOTAL =	**1,500.5**	**764.9**	**9,533.7**	**133,764.3**
02030105020050				
Agriculture	32.1	41.7	321.1	9,633.9
Barren Land	0.0	0.0	0.0	0.0
Forest	142.9	14.3	428.8	5,717.6
Urban	56.7	79.4	851.0	7,942.4
Water	0.7	0.1	2.1	28.4
Wetlands	22.1	2.2	66.3	883.9
TOTAL =	**254.6**	**137.7**	**1,669.3**	**24,206.1**
02030105050080				
Agriculture	86.8	112.9	868.3	26,047.7
Barren Land	0.0	0.0	0.0	0.0
Forest	56.1	5.6	168.2	2,242.4
Urban	23.1	32.4	346.7	3,235.6
Water	0.0	0.0	0.0	0.0
Wetlands	17.2	1.7	51.6	687.6
TOTAL =	**183.2**	**152.6**	**1,434.7**	**32,213.4**
02040105160020				
Agriculture	679.6	883.4	6,795.6	203,867.8
Barren Land	0.0	0.0	0.0	0.0
Forest	2,323.3	232.3	6,969.9	92,931.3
Urban	583.9	817.5	8,758.7	81,747.7
Water	35.3	3.5	106.0	1,413.5
Wetlands	401.8	40.2	1,205.4	16,071.9
TOTAL =	**4,023.9**	**1,976.9**	**23,835.5**	**396,032.2**
02040105160030				
Agriculture	66.0	85.8	659.8	19,793.1
Barren Land	0.0	0.0	0.0	0.0
Forest	330.8	33.1	992.5	13,233.4
Urban	182.2	255.0	2,732.5	25,503.4
Water	11.9	1.2	35.6	474.4
Wetlands	24.5	2.5	73.6	981.5
TOTAL =	**615.4**	**377.5**	**4,494.0**	**59,985.8**
02040105160040				
Agriculture	14.0	18.2	140.0	4,199.7

Barren Land	0.0	0.0	0.0	0.0
Forest	22.7	2.3	68.2	909.1
Urban	41.6	58.2	623.4	5,818.8
Water	0.0	0.0	0.0	0.0
Wetlands	1.1	0.1	3.3	43.5
TOTAL =	**79.4**	**78.8**	**834.9**	**10,971.1**
All HUCs				
Agriculture	3,336.5	4,337.4	33,364.6	1,000,938.1
Barren Land	48.7	24.4	243.6	2,923.2
Forest	11,170.0	1,117.0	33,509.9	446,799.1
Urban	4,071.1	5,699.5	61,066.3	569,951.9
Water	175.5	17.6	526.6	7,020.8
Wetlands	1,470.3	147.0	4,410.8	58,810.7
TOTAL =	**20,272.0**	**11,342.9**	**133,121.8**	**2,086,443.7**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Lebanon Township that have been covered with materials that are highly resistant to infiltration by water, rendering them impervious. These surfaces include rooftops, roadways, sidewalks, and other paved areas. These impervious cover values were used to estimate the impervious coverage for Lebanon Township. Based upon the NJDEP impervious surface data, Lebanon Township has impervious cover totaling 5.3%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Lebanon Township is shown in Figure 4.

The literature suggests a link between impervious cover and stream ecosystem impairment (Schueler, 1994; Arnold and Gibbons, 1996; May et al., 1997). Impervious cover may be linked to the quality of lakes, reservoirs, estuaries, and aquifers (Caraco et al., 1998), and the amount of impervious cover in a watershed can be used to project the current and future quality of streams. Based on scientific literature, Caraco et al. (1998) classified urbanizing streams into the following three categories: sensitive streams, impacted streams, and non-supporting streams.

Schueler (1994, 2004) developed an impervious cover model that classified "sensitive streams" as typically having a watershed impervious surface cover from 0-10%. "Impacted streams" have a watershed impervious cover ranging from 11-25% and typically show clear signs of degradation from urbanization. "Non-supporting streams" have a watershed impervious cover of greater than 25%; at this high level of impervious cover, streams are simply conduits for stormwater flow and no longer support a diverse stream community.

Schueler et al. (2009) reformulated the impervious cover model based upon new research that had been conducted. This analysis determined that stream degradation was first detected at 2 to 15% impervious cover. The updated impervious cover model recognizes the wide variability of stream degradation at impervious cover below 10%. The updated model also moves away from having a fixed line between stream quality classifications. For example, 5 to 10% impervious cover is included for the transition from sensitive to impacted, 20 to 25% impervious cover for

the transition between impacted and non-supporting, and 60 to 70% impervious cover for the transition from non-supporting to urban drainage.

Based upon this information, Lebanon Township's impervious cover percentage would suggest that its waterways are primarily sensitive and most likely preventing degradation of the state's surface water quality standards.

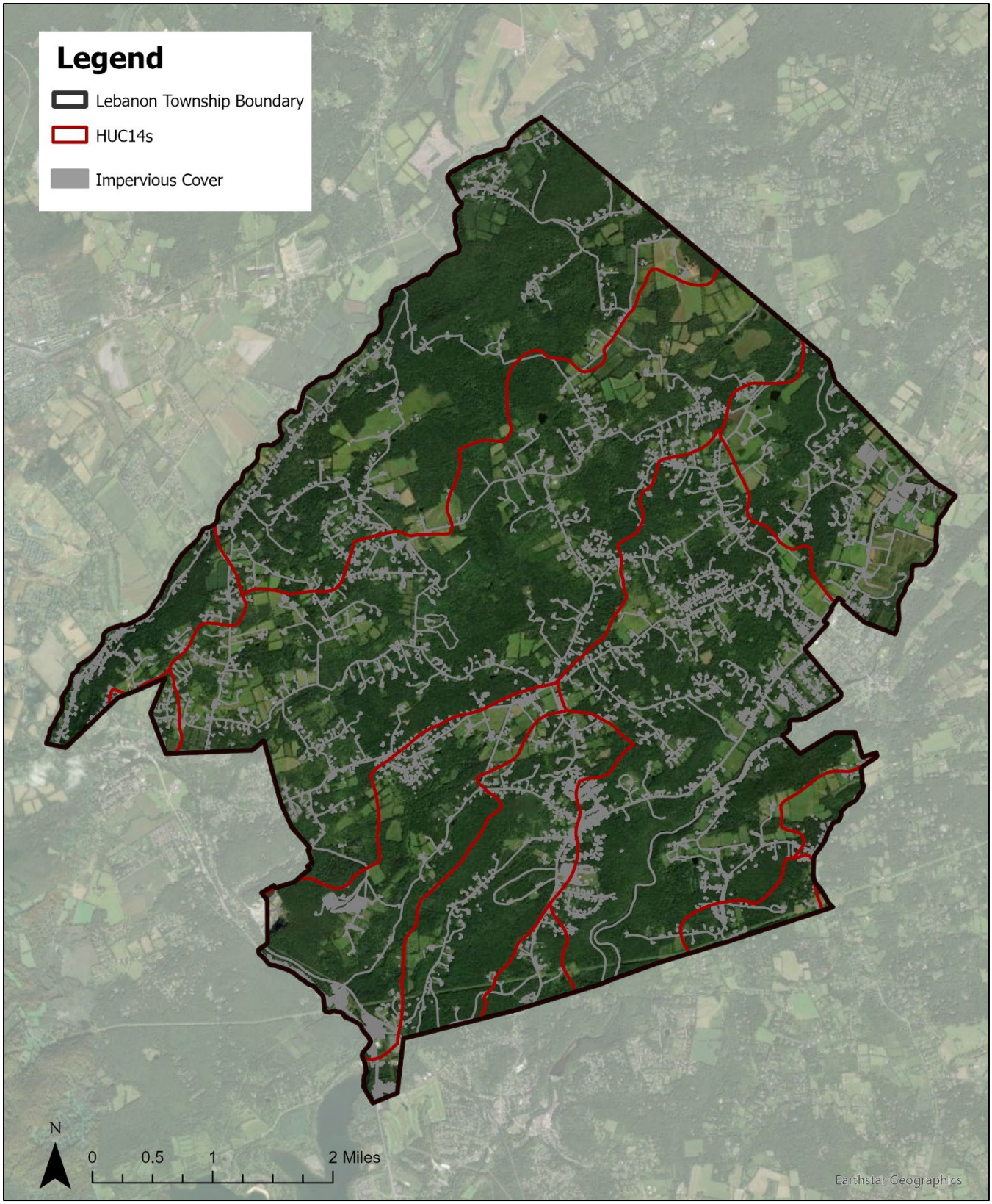


Figure 4: Impervious Cover in Lebanon Township

Table 3: Impervious Cover Analysis by HUC14 for Lebanon Township

Class	Area (acres)	HUC Impervious Cover (%)
02030105010060		
Building	14.69	
Other	52.30	
Road	35.53	
TOTAL =	**102.5**	**6.6%**
02030105010070		
Building	50.01	
Other	133.75	
Road	102.38	
TOTAL =	**286.1**	**6.7%**
02030105010080		
Building	2.09	
Other	4.84	
Road	6.89	
TOTAL =	**13.8**	**6.0%**
02030105020010		
Building	40.44	
Other	100.55	
Road	99.31	
TOTAL =	**240.3**	**4.1%**
02030105020020		
Building	16.65	
Other	60.07	
Road	46.74	
TOTAL =	**123.5**	**7.4%**
02030105020040		
Building	15.24	
Other	42.31	
Road	40.50	
TOTAL =	**98.1**	**6.5%**
02030105020050		
Building	2.35	
Other	5.36	
Road	5.85	
TOTAL =	**13.6**	**5.3%**
02030105050080		
Building	1.93	
Other	2.84	
Road	3.21	
TOTAL =	**8.0**	**4.4%**
02040105160020		
Building	21.92	
Other	50.96	
Road	64.89	
TOTAL =	**137.8**	**3.4%**

02040105160030		
Building	8.01	
Other	17.30	
Road	18.33	
TOTAL =	**43.6**	**7.1%**
02040105160040		
Building	1.29	
Other	3.70	
Road	2.60	
TOTAL =	**7.6**	**9.6%**
All HUCs		
Building	174.61	
Other	474.00	
Road	426.22	
TOTAL =	**1,074.8**	**5.3%**

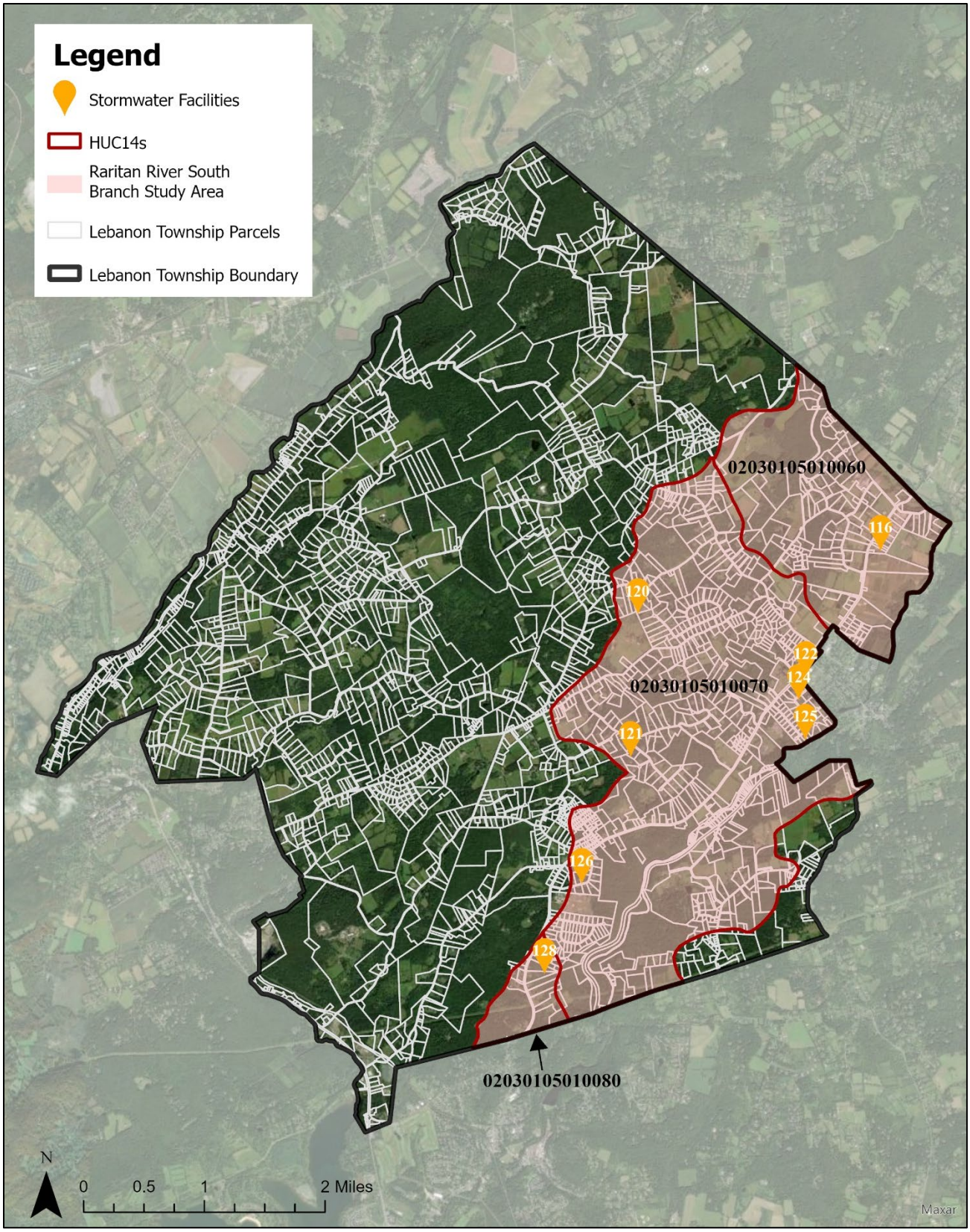


Figure 5: Stormwater Facilities in the Study Area of Lebanon Township

Table 4: Location of Stormwater Facilities in the Study Area of Lebanon Township

Raritan River South Branch Study Area		
ID	**Address**	**Type**
116	514 Route 513	N
120	435 Little Brook Road	N
121	1 Lance Drive	N
122	429 Route 513	N
124	1 Windy Heights Road	N
125	17 Windy Heights Road	RB
126	17 Country Woods Drive	N
128	109 Forest Drive	N

"RB" = Retention with Buffer, "N" = Naturalized

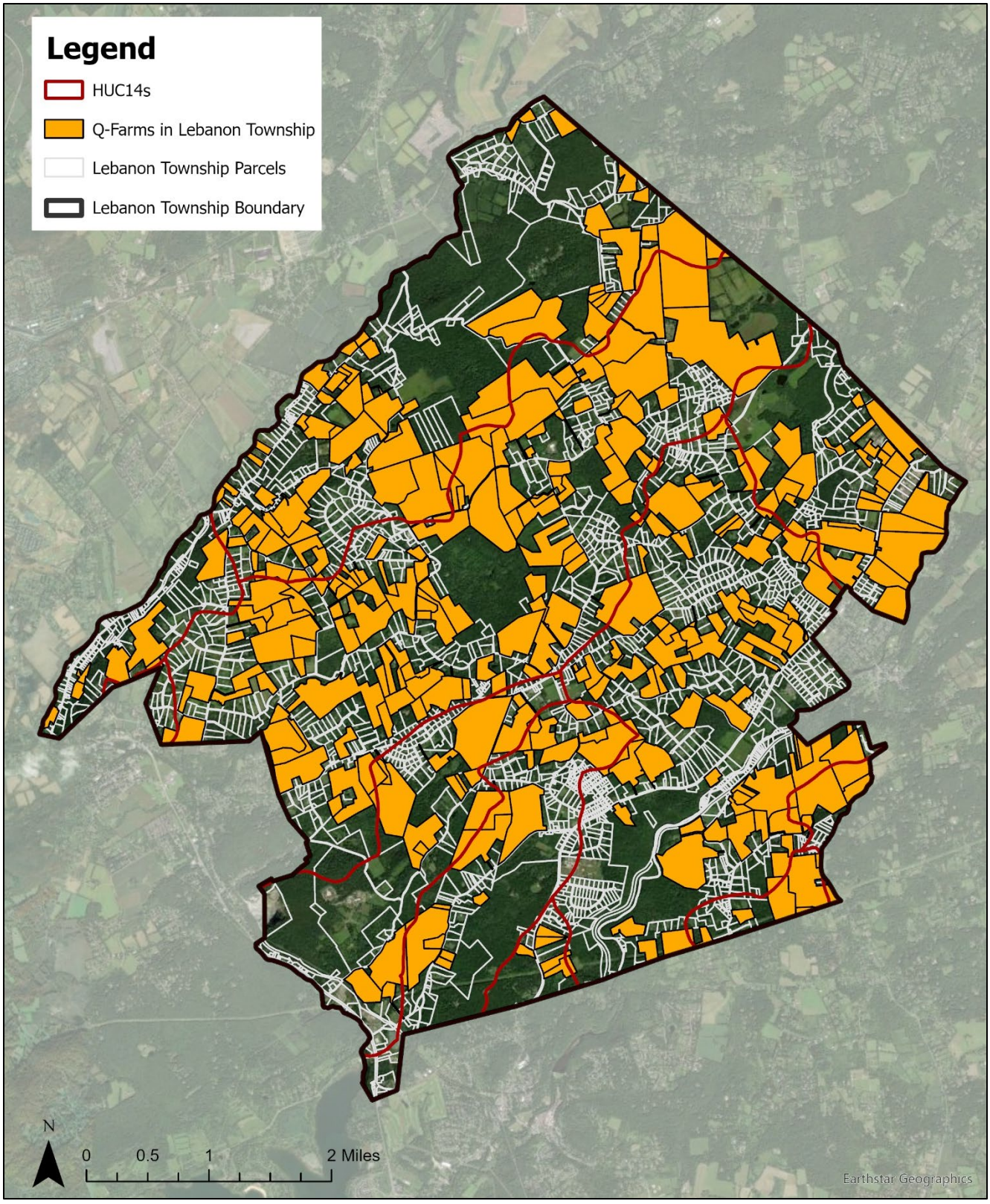


Figure 6: Q-Farm Parcels in Lebanon Township

Table 5: Q-Farm Parcels in Lebanon Township

Block	Lot	Q-Code	Prop Class	Location
10	3.02	Q0001		Wendy Way
10	1	Q0002	3B	207-217 Rocky Run Road
10	55	Q0003	3B	154 Buffalo Hollow Road
30	48	Q0003	3B	258 Rocky Run Road
30	48.01	Q0003	3B	254 Rocky Run Road
10	39	Q0005	3B	212-188 Buffalo Hollow Rd
10	40	Q0006	3B	291 Rocky Run Road
10	41	Q0007		Buffalo Hollow Rd
10	56.01	Q0008	3B	148-152 Buffalo Hollow Rd
11	8	Q0009		Buffalo Hollow Rd
11	8.04	Q0010		Buffalo Hollow Rd
11	17	Q0012	3B	163 Buffalo Hollow Road
24	3	Q0013		Bunnvale Rd
11	43	Q0014		County Route 513
12	3	Q0015	3B	204 Route 513
10	3	Q0016	3B	221-225 Rocky Run Road
12	5	Q0017	3B	210 Route 513
12	8	Q0018		County Route 513
12	9	Q0018		County Route 513
24	5.11	Q0019	3B	506 Kubin Court
24	5.01	Q0020	3B	62 Bunnvale Road
12	57	Q0021	3B	314 Route 513
12	65	Q0022	3B	356-360 Route 513
24	37	Q0023	3B	323 Wilde Lane
16	17	Q0024		Hoffmans Crossing Rd
16	20	Q0024		Hoffmans Crossing Rd
16	66	Q0025	3B	60 Old Readingsburg Rd
18	6	Q0026	3B	20 Hoffmans Crossing Road
18	9	Q0026	3B	16 Hoffmans Crossing Road
18	11	Q0026	3B	14 Hoffmans Crossing Road
17	28	Q0027		Califon Cokesbury Rd
17	29	Q0028	3B	1121 Califon-Cokesbury Rd
65	20.03	Q0029	3B	4 American Way
54	19	Q0030	3B	384 Penwell Road
18	44	Q0031	3B	1209 Califon-Cokesbury Rd
18	20	Q0032	3B	off Raritan Rvr Rd
18	21	Q0032	3B	off Raritan Rvr Rd
18	22	Q0032	3B	off Raritan Rvr Rd
18	28	Q0033	3B	1221 Califon-Cokesbury Rd
18	47	Q0034	1	157 Mt Grove Road
18	1	Q0035	3B	34-58 Hoffmans Crossing R

18	49.03	Q0035	3B	147 Mt Grove Road
30	42	Q0036		Rocky Run Rd
24	8	Q0037	3B	46 Hickory Run Road
38	103	Q0038	3B	307 Goberman Road
24	2	Q0039		Bunnvale Rd
29	17	Q0039	3B	45 Bunnvale Road
38	7	Q0040	3B	17 Hickory Run Road
18	44.02	Q0041	3B	163 Mt Grove Road
29	6.03	Q0042	3B	5 Briar Lane
38	8	Q0043	3B	1 Hickory Run Road
24	8.06	Q0044	3B	560 East Hill Road
24	8.01	Q0045	3B	548 East Hill Road
24	8.02	Q0046	3B	42 Hickory Run Road
24	16	Q0047		Hickory Run Rd
24	32	Q0048	3B	333-335 Route 513
24	8.05	Q0049	3B	558 East Hill Road
30	5.01	Q0050	3B	8 Farrell Lane
36	29	Q0051	3B	304 Newport Road
29	32.07	Q0052	3B	38 Berk Lane
29	32	Q0053	3B	102 Hidden Hollow Lane
30	41	Q0054	3B	508 West Hill Road
29	32.06	Q0055	3B	526 West Hill Road
30	39	Q0056	3B	4 Kodiak Trail
35	56	Q0057	3B	515 West Hill Road
30	19	Q0058	3B	5 Echo Lane
30	20	Q0059	3B	4 Echo Lane
30	43	Q0060		Rocky Run Rd
30	44	Q0060		Rocky Run Rd
34	2	Q0061	3B	4 Sturbridge Ct
34	7	Q0062	3B	1 Spring Brook Lane
34	9	Q0063	3B	2 Spring Brook Lane
30	3	Q0064	3B	448 West Hill Road
35	34	Q0065	3B	401 Antler Road
35	36	Q0066	3B	405 Antler Road
35	73	Q0066	3B	406 Antler Road
35	38	Q0067	3B	51 Onahil Lane
35	64	Q0068	3B	5 Red Mill Road
36	6	Q0068	3B	6 Red Mill Road
49	46	Q0069	3B	410 Little Brook Road
36	39	Q0070	3B	22 Red Mill Road
35	76.01	Q0071	3B	75 Bull Run Lane
37	30	Q0072		Sliker Rd
35	76.03	Q0073	3B	81 Red Mill Road
30	20.02	Q0074		Echo Ln

35	87	Q0075	3B	93 Red Mill Road
37	25	Q0076	3B	637 East Hill Road
36	15	Q0077	3B	653 Woodglen Road
36	16	Q0078	3B	657 Woodglen Road
36	17	Q0079	3B	661 Woodglen Road
18	29	Q0080	3B	1213 Califon-Cokesbury Rd
36	18	Q0081		Woodglen Rd
36	23	Q0082	3B	85-107 Anthony Road
57	29	Q0082	3B	86 Anthony Road
36	26	Q0083	3B	109 Anthony Road
57	32	Q0083	3B	128 Anthony Road
65	20.01	Q0084	3B	222 Mt Airy Road
38	1.01	Q0085	3B	1 Rountree Lane
37	19	Q0086	3B	591 East Hill Road
35	67	Q0087	3B	25-29 Red Mill Road
36	29.06	Q0088	3B	310 Newport Road
37	29	Q0089	3B	55 Sliker Road
36	18.01	Q0090	3B	683 Woodglen Road
37	36	Q0091	3B	425 Little Brook Road
36	29.02	Q0092	3B	306 Newport Road
17	9	Q0093		Stevenson Ln
61	36	Q0094	3B	238 Mt Airy Road
36	29.03	Q0095	3B	320 Newport Road
38	2	Q0096	3B	39-41 Hickory Run Road
38	5	Q0096		Hickory Run Rd
41	11.01	Q0097	3B	472-478 Route 513
41	11.02	Q0097	3B	496-502 Route 513
38	5.05	Q0098	3B	23 Hickory Run Road
38	13	Q0099		Stone Gate Ter
38	19.01	Q0100		County Route 513
49	39	Q0101	3B	Little Brook Rd Rear
49	44	Q0101	3B	426 Little Brook Road
38	19.03	Q0102	3B	409 Route 513
18	25	Q0103	3B	Off Raritan Rvr Rd
38	21	Q0104	3B	417 Route 513
38	88	Q0105	3B	618 East Hill Road
38	84.01	Q0106	3B	500 Danforth Lane
38	87	Q0106	3B	500 Danforth Ln Rear
35	39	Q0107	3B	Whiteoak Ridge Road
35	42	Q0107	3B	Whiteoak Ridge Road
38	106.01	Q0108	3B	206 Sassafras Lane
40	5.02	Q0109		Maple Ln
40	10	Q0110	3B	463 Route 513
40	13	Q0111	3B	16 Sliker Road

57	32.01	Q0112	3B	112 Anthony Road
41	2.01	Q0113	3B	371 Vernoy Road
41	10	Q0113	3B	369 Vernoy Road
44	23	Q0114	3B	141 Hollow Brook Road
41	11	Q0115	3B	486-492 Route 513
41	13	Q0116	3B	470 Route 513
40	5	Q0117	3B	205 Maple Lane
44	19	Q0118	3B	400 Trimmer Rd
43	1.01	Q0119	3B	405 Trimmer Road
43	1.02	Q0120	3B	413 Trimmer Road
43	1.03	Q0120	3B	411 Trimmer Road
44	21	Q0120	3B	414 Trimmer Road
44	22.02	Q0121	3B	420 Trimmer Road
46	21	Q0122	3B	301-303 Teetertown Road
51	5	Q0123		Mount Lebanon Rd
53	12	Q0123		Mount Lebanon Rd
46	29.01	Q0124		Sliker Rd & White Tail Ln
57	26	Q0125	3B	72 Anthony Road
46	29.03	Q0126	3B	50 Pleasant Grove Road
48	1	Q0127	3B	41 Pleasant Grove Road
49	89	Q0128	3B	16-24 Shady Lane
46	33	Q0130	3B	10 Whitetail Lane
36	22	Q0131	3B	79 - 83 Anthony Road
49	4.01	Q0132	3B	676 Woodglen Road
49	2	Q0133	3B	682 Woodglen Road
49	1	Q0134	3B	688 Woodglen Road
49	49	Q0135	3B	67 Sliker Road
38	104	Q0136	3B	211 Sassafras Lane
49	72	Q0137	3B	25-31 Anthony Road
49	75	Q0138	3B	37 Anthony Road
50	2	Q0139	3B	2 Rocky Top Lane
50	9	Q0140	3B	92 Mt Lebanon Road
50	10	Q0141		Sharrer Rd
51	1	Q0141		Sharrer Rd
50	12	Q0142	3B	16 Sharrer Road
50	18	Q0143	3B	14 Anthony Road
66	3.06	Q0144	3B	65 Forge Hill Road
51	6	Q0145	3B	26 Mt Lebanon Road
43	2	Q0146	3B	515 Route 513
59	55	Q0147	3B	30 Hollow Road (Rear)
66	2	Q0148	3B	41 Forge Hill Road
53	4	Q0149		Turkey Top Rd
56	14	Q0150		Turkey Top Rd
56	14.03	Q0150		Turkey Top Rd

56	14.04	Q0150		Turkey Top Rd
56	14.05	Q0150		Turkey Top Rd
49	79	Q0151		Shady Ln
53	19	Q0152	3B	383 Penwell Road
49	50.04	Q0154	3B	71 Sliker Road
54	23.01	Q0156	3B	205 Old Turnpike Road
57	14	Q0157	3B	99 Mt Lebanon Road
56	10	Q0159	3B	24 Point Mountain Road
56	13	Q0160	3B	79 Mt Lebanon Road
51	7	Q0161		Ascot Dr
59	64	Q0162		Hollow Rd
57	13	Q0163		Mount Lebanon Rd
57	21.01	Q0164	3B	5 Beech Brook Lane
57	27	Q0165	3B	10 Stillwatters Way
57	28	Q0165	3B	80-84 Anthony Road
57	38	Q0166	3B	106 Mountain Top Road
57	40	Q0167	3B	112 Mountain Top Road
57	41	Q0168	3B	122 Mountain Top Road
59	34	Q0168	3B	129 Mountain Top Road
59	34.02	Q0168	3B	127 Mountain Top Road
57	47.01	Q0169	3B	130 Mountain Top Road
59	20	Q0171	3B	244 Musconetcong River Rd
58	5.02	Q0172	3B	259 Musconetcong River Rd
59	11	Q0173	3B	224 Musconetcong River Rd
59	12	Q0173	3B	226 Musconetcong River Rd
59	18	Q0174	3B	4 Safari Trail
59	19	Q0174		Musconetcong River Rd
59	22	Q0174		Musconetcong River Rd
59	22.01	Q0174		Musconetcong River Rd
59	33	Q0174	3B	4 Safari Trail
66	3.03	Q0175		Sunset Farm Rd
61	40.03	Q0176	3B	250 Mt Airy Road
61	34	Q0177	3B	228 Mt Airy Road
59	24	Q0178	3B	262 Musconetcong River Rd
61	8	Q0179	3B	1 Stonehill Run
60	1	Q0180		Musconetcong River Rd
60	4	Q0180	3B	183 Musconetcong River Rd
60	7	Q0180	3B	189 Musconetcong River Rd
60	11.01	Q0181	3B	209 Musconetcong River Rd
60	11.03	Q0182	3B	205 Musconetcong River Rd
61	7	Q0183	3B	7 Derry Run Lane
61	20	Q0184	3B	39 Hollow Road
61	40	Q0186	3B	260 Mt Airy Road
61	40.02	Q0186	3B	258 Mt Airy Road

65	20	Q0187	3B	5 Terre Lane
65	2	Q0188	3B	167 Anthony Road
65	2.04	Q0188	3B	181 Anthony Road
65	2.07	Q0188	3B	173 Anthony Road
64	7	Q0189		Newport Rd
65	14	Q0190		Newport Rd
66	3.04	Q0191	3B	71 Forge Hill Road
61	6	Q0192	3B	3 Derry Run Lane
66	2.09	Q0193	3B	47 Forge Hill Road
69	1.01	Q0194	3B	73 Mackenzie Road
65	2.05	Q0195	3B	179 Anthony Road
65	2.06	Q0195	3B	177 Anthony Road
69	49	Q0197	3B	106 Forge Hill Road
66	14	Q0198	3B	245 Mt Airy Road
66	14.03	Q0199	3B	237 Mt Airy Road
66	3.07	Q0200	3B	1 Sunset Farm Lane
66	3.08	Q0200	3B	4 Sunset Farm Lane
66	3.09	Q0200	3B	79-83 Forge Hill Road
66	16	Q0200	3B	213 Mt Airy Road
66	16.01	Q0201	3B	207 Mt Airy Road
69	1	Q0202	3B	42 Forge Hill Road
65	6.02	Q0203	3B	29 Dewey Lane
65	15	Q0204		Newport Rd
58	5.01	Q0205	3B	257 Musconetcong River Rd
66	17.04	Q0206	3B	98 Red Mill Road
66	18	Q0207	3B	110 Red Mill Road
66	12.03	Q0208	3B	257 Mt Airy Road
68	1	Q0209	3B	74-82 Mackenzie Road
56	10.01	Q0210	3B	30 Point Mountain Road
64	1	Q0211	3B	32 Dewey Lane
69	3	Q0212	3B	142 Dutch Hollow Rd
72	4	Q0215		Musconetcong River Rd
46	17	Q0216	3B	315 Teetertown Road
46	18	Q0216	3B	317 Teetertown Road
51	13	Q0217	3B	29 Pleasant Grove Road
69	2.04	Q0218		Dutch Hill Rd
77	9.02	Q0219		Old Turnpike Rd
40	23	Q0220	3B	304 Teetertown Road
17	3.01	Q0221		Mount Grove Rd
38	106	Q0222	3B	594 East Hill Road
55	1	Q0223	3B	222 Old Turnpike Road
43	2.04	Q0226	3B	214 Maple Lane
43	2.05	Q0227	3B	218 Maple Lane
43	2.06	Q0228	3B	511 Route 513

66	12.07	Q0229	3B	5 Lebanon Farm Lane
66	12.08	Q0229	3B	3 Lebanon Farm Lane
10	56	Q0230	3B	146 Buffalo Hollow Road
16	67	Q0231		Old Readingsburg Rd
35	8	Q0232	3B	449-451 West Hill Road
49	78	Q0233	3B	20 Shady Lane
49	82	Q0238		Shady Ln
46	24	Q0239	3B	6 Oak Hill Trail
35	38.01	Q0240	3B	49 Onahil Lane
46	15	Q0241	3B	329-335 Teetertown Rd
18	47.01	Q0243		Mount Grove Rd
18	49.01	Q0243	3B	151 Mt Grove Road
17	31	Q0244		Stevenson Ln
65	20.02	Q0245	3B	224 Mt Airy Road
36	28.01	Q0246	3B	619 Woodglen Rd-Rear
36	28.02	Q0246	3B	615 Woodglen Road
35	76	Q0247		Red Mill Rd
38	103.01	Q0248	3B	208 Sassafras Lane
57	16	Q0249	3B	113 Mt Lebanon Road
38	92	Q0250	3B	406 Berry Drive
38	19.04	Q0252	3B	413 Route 513
36	9	Q0253	3B	617-635 Woodglen Road
44	24.08	Q0256	3B	911 Ravine Road
37	42.03	Q0259		Little Brook Rd
50	21	Q0260	3B	28 Anthony Road
17	16	Q0262	3B	158 Mt Grove Road
73	54	Q0263	15F	41-43 Dutch Hill Road
73	45	Q0264		Dogwood Dr
73	46	Q0264		Musconetcong River Rd
61	35	Q0265	1	232 Mt Airy Road
36	18.02	Q0266		Woodglen Rd
65	11	Q0267		Dewey Ln
58	1	Q0268	3B	2 Mowder Rd
59	48	Q0269	3B	20 Hollow Road
57	32.02	Q0271	3B	110 Anthony Road
16	12	Q0272	3B	73 Old Readingsburg Road
29	35	Q0274	3B	12-28 Berk Lane
38	21.01	Q0276	3B	417a Route 513
38	21.02	Q0277	3B	417b Route 513

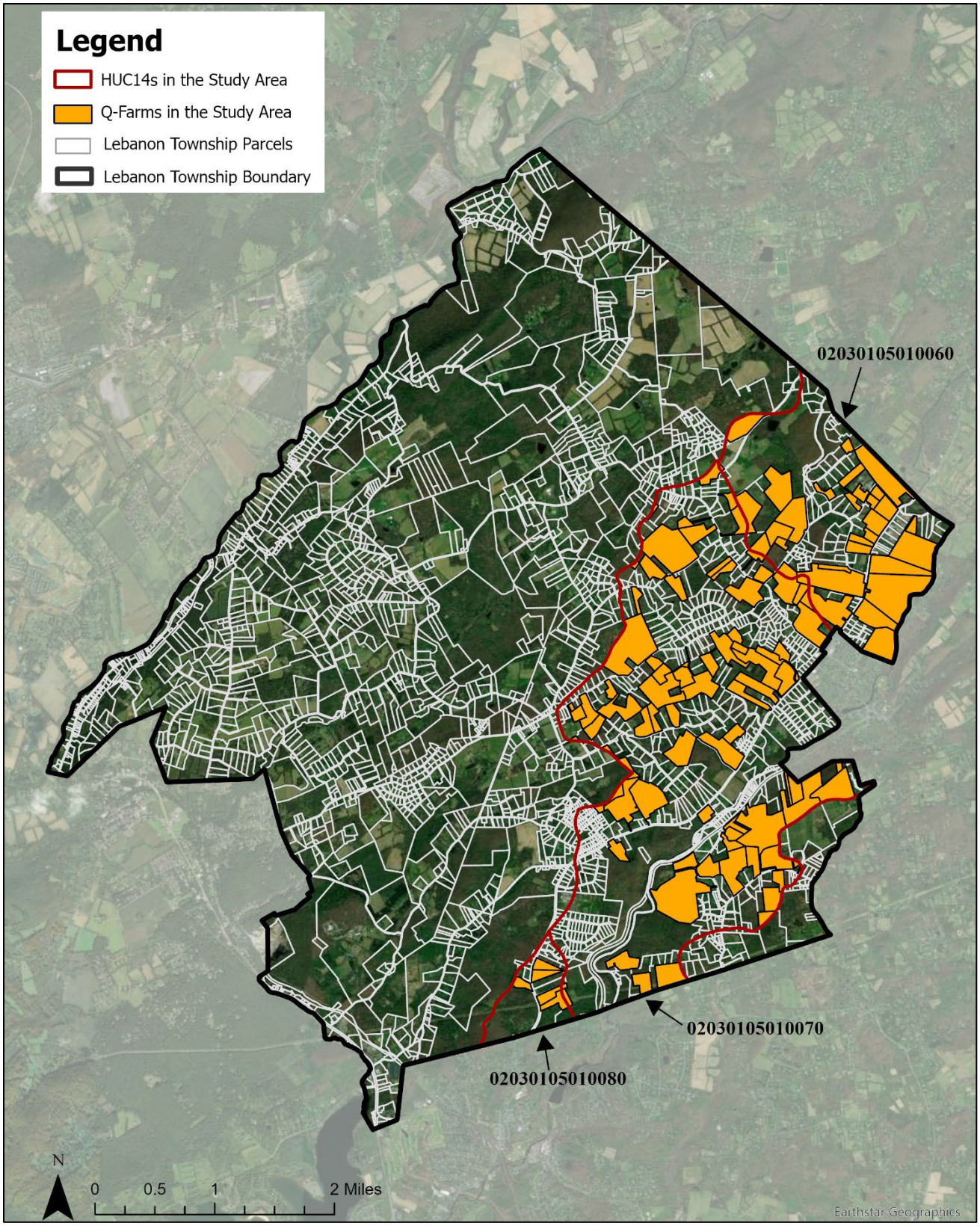


Figure 7: Q-Farm Parcels in the Study Area of Lebanon Township

Table 6: Q-Farm Parcels in the Study Area of Lebanon Township

Block	Lot	Q-Code	Prop Class	Location
11	43	Q0014		County Route 513
12	3	Q0015	3B	204 Route 513
12	5	Q0017	3B	210 Route 513
12	8	Q0018		County Route 513
12	9	Q0018		County Route 513
*24	5.11	Q0019	3B	506 Kubin Court
*24	5.01	Q0020	3B	62 Bunnvale Road
12	57	Q0021	3B	314 Route 513
12	65	Q0022	3B	356-360 Route 513
24	37	Q0023	3B	323 Wilde Lane
16	17	Q0024		Hoffmans Crossing Rd
16	20	Q0024		Hoffmans Crossing Rd
*16	66	Q0025	3B	60 Old Readingsburg Rd
18	6	Q0026	3B	20 Hoffmans Crossing Road
18	9	Q0026	3B	16 Hoffmans Crossing Road
18	11	Q0026	3B	14 Hoffmans Crossing Road
*17	29	Q0028	3B	1121 Califon-Cokesbury Rd
*18	44	Q0031	3B	1209 Califon-Cokesbury Rd
18	20	Q0032	3B	Off Raritan Rvr Rd
18	21	Q0032	3B	Off Raritan Rvr Rd
18	22	Q0032	3B	Off Raritan Rvr Rd
*18	28	Q0033	3B	1221 Califon-Cokesbury Rd
*18	47	Q0034	1	157 Mt Grove Road
18	1	Q0035	3B	34-58 Hoffmans Crossing R
18	49.03	Q0035	3B	147 Mt Grove Road
24	8	Q0037	3B	46 Hickory Run Road
38	103	Q0038	3B	307 Goberman Road
*24	2	Q0039		Bunnvale Rd
38	7	Q0040	3B	17 Hickory Run Road
*18	44.02	Q0041	3B	163 Mt Grove Road
38	8	Q0043	3B	1 Hickory Run Road
24	8.06	Q0044	3B	560 East Hill Road
*24	8.01	Q0045	3B	548 East Hill Road
24	8.02	Q0046	3B	42 Hickory Run Road
24	16	Q0047		Hickory Run Rd
24	32	Q0048	3B	333-335 Route 513
24	8.05	Q0049	3B	558 East Hill Road
*49	46	Q0069	3B	410 Little Brook Road
37	30	Q0072		Sliker Rd
37	25	Q0076	3B	637 East Hill Road
38	1.01	Q0085	3B	1 Rountree Lane

*37	19	Q0086	3B	591 East Hill Road
37	29	Q0089	3B	55 Sliker Road
37	36	Q0091	3B	425 Little Brook Road
*17	9	Q0093		Stevenson Ln
38	2	Q0096	3B	39-41 Hickory Run Road
38	5	Q0096		Hickory Run Rd
41	11.01	Q0097	3B	472-478 Route 513
41	11.02	Q0097	3B	496-502 Route 513
38	5.05	Q0098	3B	23 Hickory Run Road
38	13	Q0099		Stone Gate Ter
38	19.01	Q0100		County Route 513
*49	39	Q0101	3B	Little Brook Rd Rear
49	44	Q0101	3B	426 Little Brook Road
38	19.03	Q0102	3B	409 Route 513
18	25	Q0103	3B	Off Raritan Rvr Rd
38	21	Q0104	3B	417 Route 513
38	88	Q0105	3B	618 East Hill Road
38	84.01	Q0106	3B	500 Danforth Lane
38	87	Q0106	3B	500 Danforth Ln Rear
38	106.01	Q0108	3B	206 Sassafras Lane
40	5.02	Q0109		Maple Ln
40	10	Q0110	3B	463 Route 513
40	13	Q0111	3B	16 Sliker Road
41	2.01	Q0113	3B	371 Vernoy Road
41	10	Q0113	3B	369 Vernoy Road
44	23	Q0114	3B	141 Hollow Brook Road
41	11	Q0115	3B	486-492 Route 513
41	13	Q0116	3B	470 Route 513
40	5	Q0117	3B	205 Maple Lane
44	19	Q0118	3B	400 Trimmer Rd
43	1.01	Q0119	3B	405 Trimmer Road
43	1.02	Q0120	3B	413 Trimmer Road
43	1.03	Q0120	3B	411 Trimmer Road
44	21	Q0120	3B	414 Trimmer Road
44	22.02	Q0121	3B	420 Trimmer Road
46	21	Q0122	3B	301-303 Teetertown Road
46	29.01	Q0124		Sliker Rd & White Tail Ln
46	29.03	Q0126	3B	50 Pleasant Grove Road
*48	1	Q0127	3B	41 Pleasant Grove Road
46	33	Q0130	3B	10 Whitetail Lane
49	49	Q0135	3B	67 Sliker Road
38	104	Q0136	3B	211 Sassafras Lane
43	2	Q0146	3B	515 Route 513
49	50.04	Q0154	3B	71 Sliker Road

46	17	Q0216	3B	315 Teetertown Road
46	18	Q0216	3B	317 Teetertown Road
*51	13	Q0217	3B	29 Pleasant Grove Road
40	23	Q0220	3B	304 Teetertown Road
38	106	Q0222	3B	594 East Hill Road
43	2.04	Q0226	3B	214 Maple Lane
43	2.05	Q0227	3B	218 Maple Lane
43	2.06	Q0228	3B	511 Route 513
16	67	Q0231		Old Readingsburg Rd
*49	82	Q0238		Shady Ln
46	24	Q0239	3B	6 Oak Hill Trail
46	15	Q0241	3B	329-335 Teetertown Rd
*18	47.01	Q0243		Mount Grove Rd
18	49.01	Q0243	3B	151 Mt Grove Road
38	103.01	Q0248	3B	208 Sassafras Lane
38	92	Q0250	3B	406 Berry Drive
38	19.04	Q0252	3B	413 Route 513
44	24.08	Q0256	3B	911 Ravine Road
37	42.03	Q0259		Little Brook Rd
17	16	Q0262	3B	158 Mt Grove Road
16	12	Q0272	3B	73 Old Readingsburg Road
38	21.01	Q0276	3B	417a Route 513
38	21.02	Q0277	3B	417b Route 513

*Only a portion of the Q-Farm is within the study area

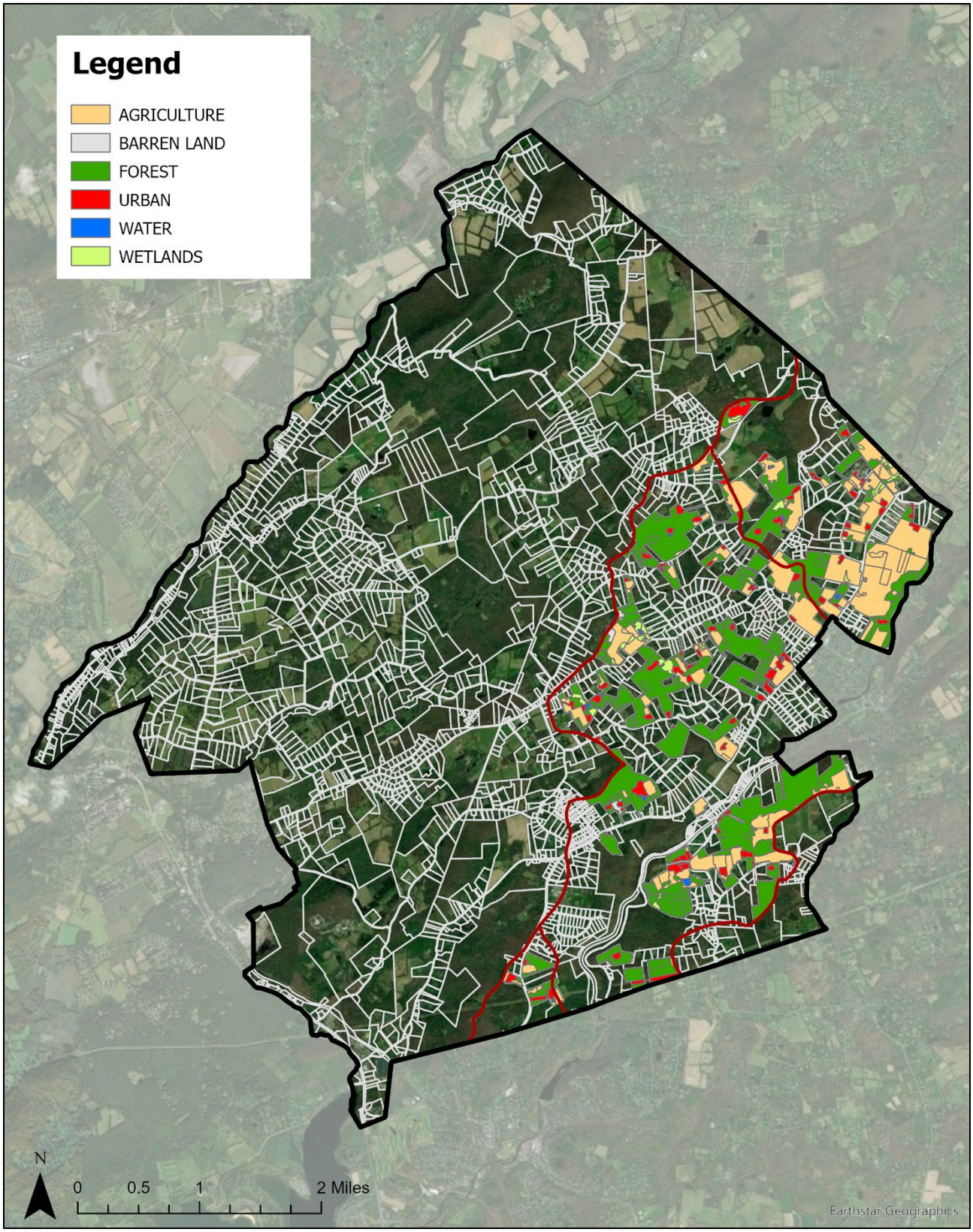


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Lebanon Township

Table 7: Land Use on Q-Farms in the Study Area of Lebanon Township

Land Use	Area (acres)
Agriculture	724.9
Barren Land	8.9
Forest	1,162.5
Urban	175.3
Water	17.3
Wetlands	57.6
Total:	**2,146.5**

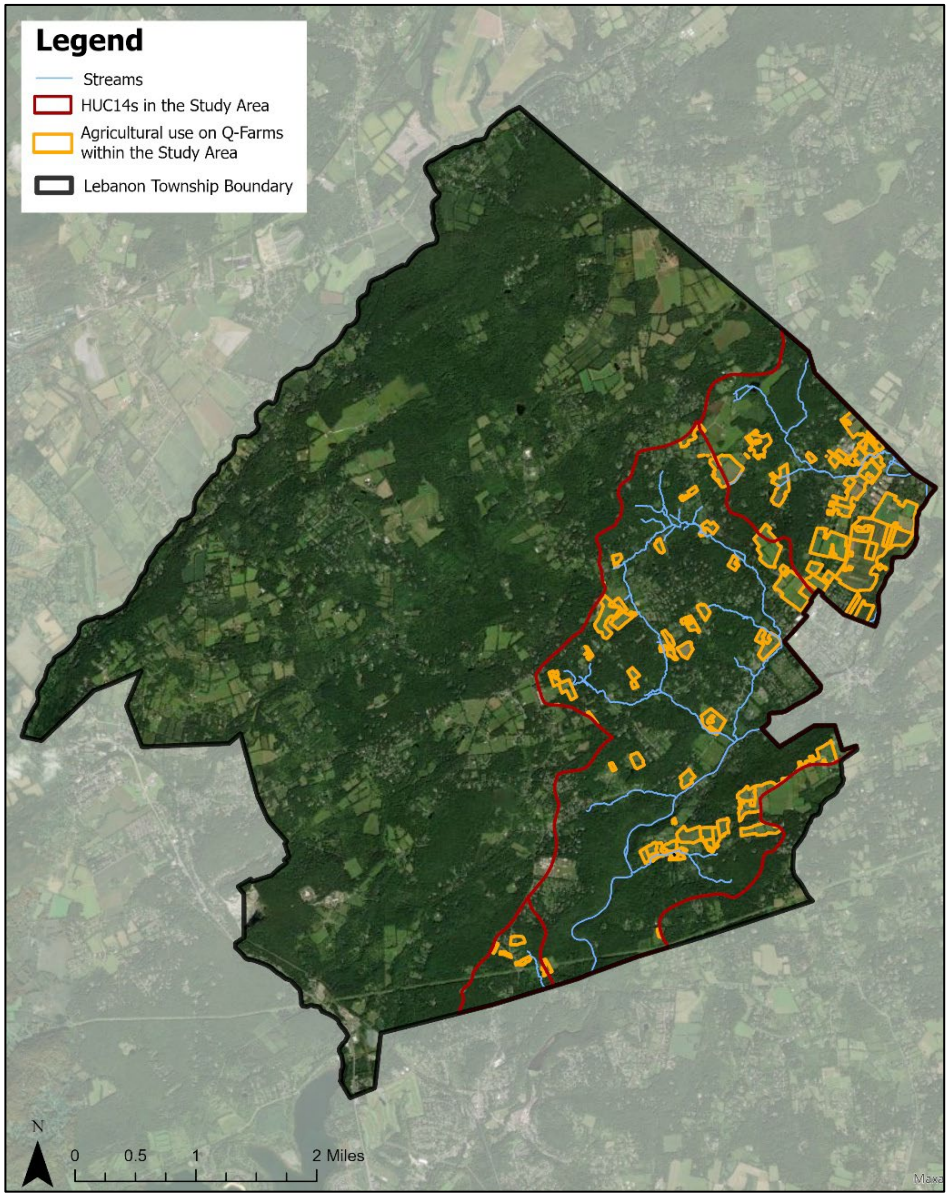


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Lebanon Township

Table 8: Recommendations for Specific Farms in the Study Area of Lebanon Township

South Branch Raritan River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
12	3	Q0015				X		X
12	5	Q0017				X		
16	20	Q0024			X	X		
18	49.03	Q0035						X
41	11.01	Q0097	X		X	X		
41	10	Q0113				X		X
41	11	Q0115	X	X				
41	13	Q0116	X					
44	19	Q0118				X		X

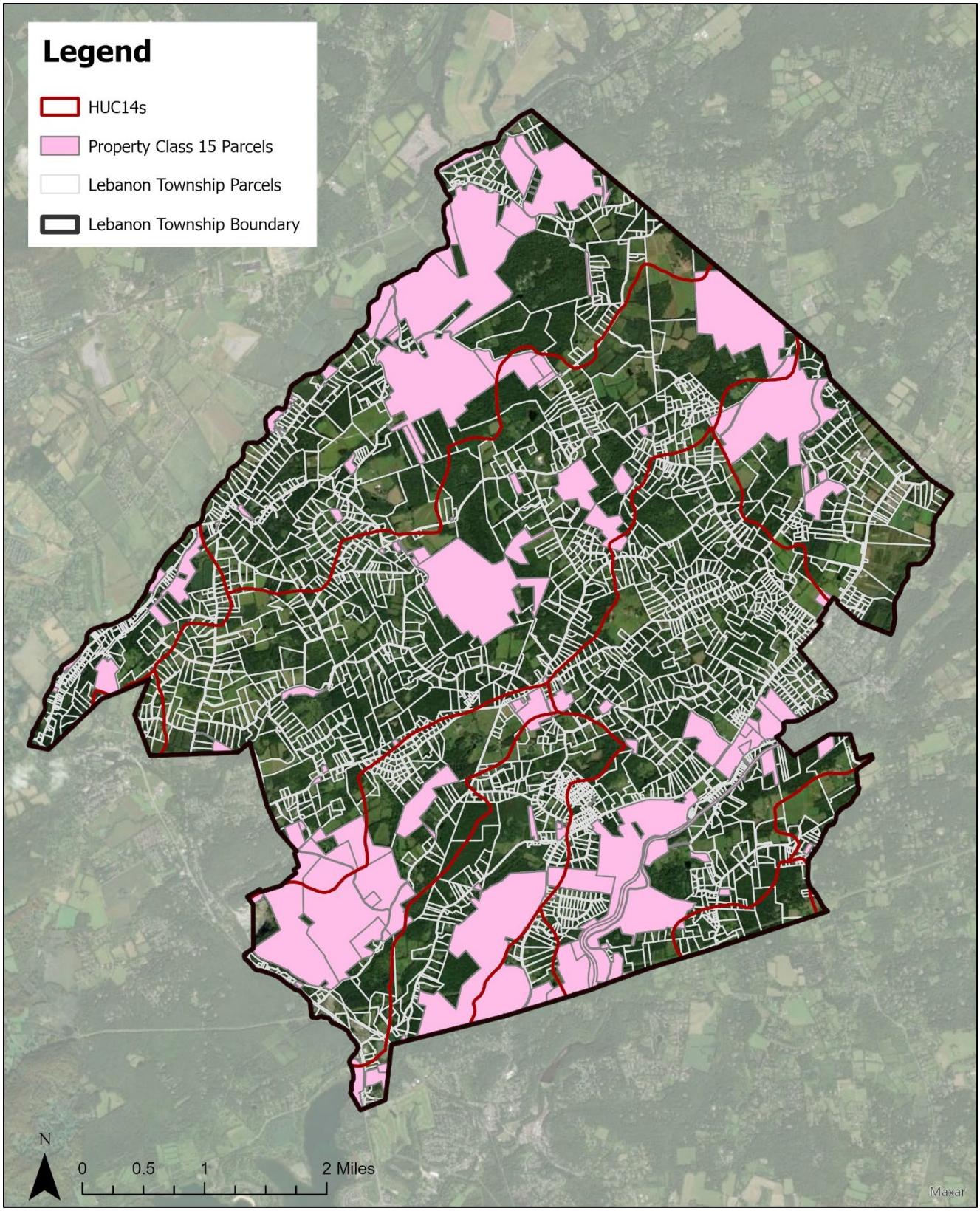


Figure 10: Property Class 15 Parcels in Lebanon Township

Table 9: Property Class 15 Parcels in Lebanon Township

Block	Lot	Prop Class	Location	Facility Type
12	44.01	15A	256 County Road 513	Voorhees H S
21	8	15A	400 Route 513	School
24	6	15A	70 Bunnvale Road	Schools
16	16	15B	104-105 Lockheed Road	Esc
16	20.01	15B	43 Hoffmans Crossing Road	Educational Facility
1	2	15C	171 Cregar Road	Golf Course
2	3	15C	1 Van Syckles Rd	Fish/Wildlife Offic
3	3	15C	Route 31	Reservoir
4	2	15C	2 Van Syckles Rd	Reservoir
4	3	15C	Route 31	Union Furnace Nature
5	1.01	15C	201 Poplar Road	Vacant Land
7	2	15C	2023 Route 31	Union Furnace Nature
7	8	15C	2045 Route 31	Green Acres
7	9.01	15C	2047 Route 31	Wildlife Management
7	10	15C	2057 Route 31	Wildlife Management
8	4	15C	2044 Route 31	Vacant Land
9	1	15C	230 Rocky Run Road	Highlands Greenway
9	7	15C	Sanatorium Road	Veterans Haven North
10	6	15C	231 Rocky Run Road	Highlands Greenway
10	31	15C	3 Bunnvale Road	Library
10	38	15C	214 Buffalo Hollow Road	Water Bldg
11	37	15C	201+251 Route 513	Voorhees State Park
11	45	15C	High Bridge-Califon	Vacant Land
12	1	15C	530 Cokesbury Rd	Conservation-Green
12	2	15C	200 Route 513	Voorhees State Park
12	56	15C	308 Route 513	Ken Lockwood Gorge
14	3	15C	Lockwood Gorge	Vacant Land
16	1	15C	Raritan River Rd So	Ken Lockwood Gorge
16	13	15C	Lockwood Gorge	Ken Lockwood Gorge
16	68	15C	Raritan River Rd	Open Space
17	5	15C	128 Mt Grove Road	Vacant Land
18	16	15C	Off Raritan Rvr Rd	Vacant Land
18	24	15C	Off Raritan Rvr Rd	Conservation
19	16	15C	139 Raritan River Road	Vacant Land
20	16	15C	139 Raritan River Road	Vacant Land
21	5	15C	High Bridge-Califon	Vacant Land
21	6	15C	366-382 Route 513	Vacant Land
24	17	15C	2-10 Hickory Run Road	Water Shed
24	43	15C	Windswept Lane	Vacant Land
29	32.01	15C	530 West Hill Road	Municipal Bldg/Park
29	32.03	15C	67 Bunnvale Road	Memorial Park
30	1	15C	Sanatorium/Skinner Rd	Vacant Land
30	2.01	15C	100 Sanatorium Road	Dedicated Open Space
30	46.01	15C	264 Rocky Run Rd	Raritan River Gree
33	4	15C	73 Mt Kipp Road	Residence
35	88	15C	97 Red Mill Road	Vacant Land

36	18.04	15C	669 Woodglen Road	Green Acres
36	26.03	15C	133 Anthony Road	Reservoir
36	27	15C	332 Newport Road	Vacant Land
36	28	15C	326 Newport Road	Miquoin Woods
40	39	15C	225-235 Maple Lane	Vacant Land
44	3	15C	19 Hollow Brook Road	Vacant Land
44	18	15C	Ravine Road	Vacant Land
44	24.03	15C	133 Hollow Brook Road	Vacant Land
45	2	15C	230 Maple Lane	Game Preserve
45	4.01	15C	236 Maple Lane	Vacant Land
46	7	15C	134 Hollow Brook Road	Vacant Land
46	10	15C	140 Hollow Brook Road	Vacant Land
46	34	15C	20-40 Pleasant Grove Road	Park
48	27	15C	31-39 Pleasant Grove Road	Park
49	4.02	15C	51-55 Anthony Road	Open Space
49	89.01	15C	16-24 Shady Lane	Green Acres
49	89.02	15C	16-24 Shady Lane	Green Acres
51	9	15C	21 Pleasant Grove Rd	Green Acres/Environ
54	14	15C	219 Old Turnpike	Park
55	1.01	15C	Old Turnpike Road	Vacant Land
56	1	15C	80 Point Mountain Rd	Game Preserve
56	15	15C	315 Turkey Top Road	Vacant Land
56	21	15C	409-419 Penwell Road	Vacant Land
56	30	15C	Penwell Road	Vacant Land
57	1	15C	272-278 Musconetcong Rive	Vacant Land
57	4	15C	132 Mountain Top Rd	Point Mountain
57	12	15C	11-29 Point Mountain Rd	Pitha Tract
57	13.01	15C	5 Point Mountain Road	Vacant Land
57	13.02	15C	3 Point Mountain Road	Vacant Land
57	43	15C	Off Mountain Top Road	Conservation/Recrea
58	6	15C	267-279 Musconetcong Rvr	Vacant Land
59	21	15C	248 Musconetcong River Rd	Vacant Land
59	71	15C	68 Hollow Road	Vacant Land
60	13	15C	9 Butlers Park Road	Green Acres
64	8	15C	339 Newport Road	Garage
69	29	15C	Off Musconetcong River Rd	Highlands Greenway
70	24.01	15C	135 Musconetcong River Rd	Vacant Land
71	1	15C	59 Musconetcong River Rd	Vacant Land
71	3	15C	57 Musconetcong River Rd	Historic Site
72	14	15C	39 Musconetcong River Rd	Vacant Land
73	55.09	15C	Pine Stone Drive	Vacant Land
77	7.02	15C	Off Penwell Along River	Vacant Land
77	9	15C	603-615 Hermit's Lane	Park
77	9.01	15C	Off Penwell Along River	Vacant Land
300	1	15C	Off Raritan River Road	Vacant Land
300	1.01	15C	Near Hoffmans Crossing	Vacant Land
300	1.02	15C	Near Hoffmans Crossing	Vacant Land
10	29	15D	11 Bunnvale Road	Pastor Residence
10	30	15D	285 Route 513	Church

12	15	15D	101 Voorhees Road	Church
21	6.01	15D	384 Route 513	Medical Offices
21	7	15D	398 Route 513	Church
21	7.02	15D	390 Route 513	Parsonage
30	11	15D	442 West Hill Road	Church
35	2	15D	447 West Hill Road	Parsonage
40	12	15D	2 Sliker Road	Parking & Playground
57	31	15D	110 Anthony Road	Swack Historic Site
69	46	15D	180 Musconetcong River Rd	Church
3	6.01	15F	2010 Route 31	Playground
9	7.01	15F	Sanatorium Rd	Hagadorn Preserve
10	7	15F	235 Rocky Run Road	Vacant Land
11	22	15F	175 Buffalo Hollow Road	100% Disabled Vet
18	40	15F	173 Mt Grove Road	Disabled Vet
24	5.04	15F	36 Hickory Run Road	Disabled Veteran
24	10.05	15F	5 Evergreen Lane	100% Disabled Vet
29	32.04	15F	532 West Hill Road	Firehouse
29	32.05	15F	528 West Hill Road	Rescue Sqd
30	1.01	15F	Sanatorium Rd	Vacant Land
33	5.01	15F	79 Mt Kipp Road	100% Widow Vet
35	31.15	15F	5 Whiteoak Ridge Road	Disabled Veteran
36	22.03	15F	71 Anthony Road	Disabled Veteran
37	3	15F	551 East Hill Road	Disabled Veteran
49	71	15F	107 Sliker Road	100% Disabled Vet
50	1	15F	36 Anthony Road	100% Disabled Vet
53	3	15F	334 Turkey Top Road	Camp
56	12	15F	97 Mt Lebanon Road	Grave Yard & Church
57	2	15F	65 Point Mountain Road	Disabled Veteran
58	4	15F	253 Musconetcong River Rd	100% Disabled Vet
59	41	15F	109 Mountain Top Road	Disabled Veteran
61	23.02	15F	5 Harber Drive	100% Disabled Vet
64	12	15F	143 Anthony Road	Firehouse
67	1	15F	37 Forge Hill Road	100% Disabled Vet
73	54	15F	41-43 Dutch Hill Road	Rehab Facility

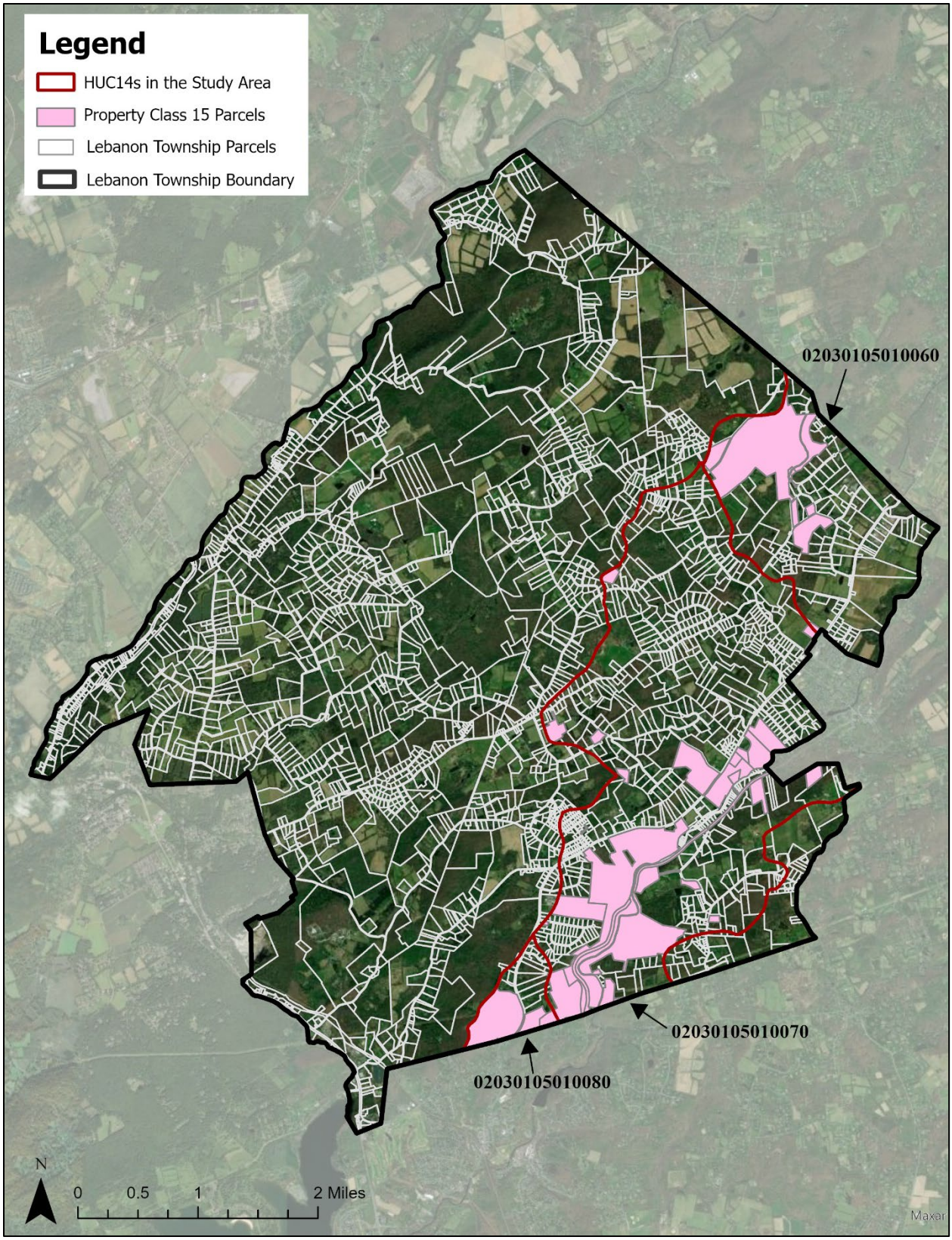


Figure 11: Property Class 15 parcels in the Study Area of Lebanon Township

Table 10: Property Class 15 Parcels in the Study Area of Lebanon Township

Block	Lot	Prop Class	Location	Facility Type
***12[2]**	**44.01**	**15A**	**256 County Road 513**	**Voorhees H S**
21	8	15A	400 Route 513	School
24[2]	6	15A	70 Bunnvale Road	Schools
16	16	15B	104-105 Lockheed Road	Esc
16	20.01	15B	43 Hoffmans Crossing Road	Educational Facility
***10[2]**	**31**	**15C**	**3 Bunnvale Road**	**Library**
***11[2]**	**37**	**15C**	**201+251 Route 513**	**Voorhees State Park**
11	45	15C	High Bridge-Califon	Vacant Land
12	1	15C	530 Cokesbury Rd	Conservation-Green
12	2	15C	200 Route 513	Voorhees State Park
12	56	15C	308 Route 513	Ken Lockwood Gorge
14	3	15C	Lockwood Gorge	Vacant Land
16	1	15C	Raritan River Rd So	Ken Lockwood Gorge
16[2]	13	15C	Lockwood Gorge	Ken Lockwood Gorge
16	68	15C	Raritan River Rd	Open Space
17	5	15C	128 Mt Grove Road	Vacant Land
18	16	15C	off Raritan Rvr Rd	Vacant Land
18	24	15C	off Raritan Rvr Rd	Conservation
19	16	15C	139 Raritan River Road	Vacant Land
20	16	15C	139 Raritan River Road	Vacant Land
21	5	15C	High Bridge-Califon	Vacant Land
21	6	15C	366-382 Route 513	Vacant Land
24	17	15C	2-10 Hickory Run Road	Water Shed
24	43	15C	Windswept Lane	Vacant Land
40	39	15C	225-235 Maple Lane	Vacant Land
44	3	15C	19 Hollow Brook Road	Vacant Land
44	18	15C	Ravine Road	Vacant Land
44	24.03	15C	133 Hollow Brook Road	Vacant Land
45	2	15C	230 Maple Lane	Game Preserve
45	4.01	15C	236 Maple Lane	Vacant Land
46	7	15C	134 Hollow Brook Road	Vacant Land
46	10	15C	140 Hollow Brook Road	Vacant Land
46[2]	34	15C	20-40 Pleasant Grove Road	Park
48[2]	27	15C	31-39 Pleasant Grove Road	Park
49[2]	89.01	15C	16-24 Shady Lane	Green Acres
300	1	15C	Off Raritan River Road	Vacant Land
300	1.01	15C	Near Hoffmans Crossing	Vacant Land
300	1.02	15C	Near Hoffmans Crossing	Vacant Land
***10**	**30**	**15D**	**285 Route 513**	**Church**
***12[2]**	**15**	**15D**	**101 Voorhees Road**	**Church**
21	6.01	15D	384 Route 513	Medical Offices
***21[1]**	**7**	**15D**	**398 Route 513**	**Church**
***21[1]**	**7.02**	**15D**	**390 Route 513**	**Parsonage**
40	12	15D	2 Sliker Road	Parking & Playground
24	5.04	15F	36 Hickory Run Road	Disabled Veteran
24	10.05	15F	5 Evergreen Lane	100% Disabled Vet

*** Sites that can be retrofitted with green infrastructure**

Site includes two tax-exempt parcels

[2] Only a portion of the parcel is within the study areas

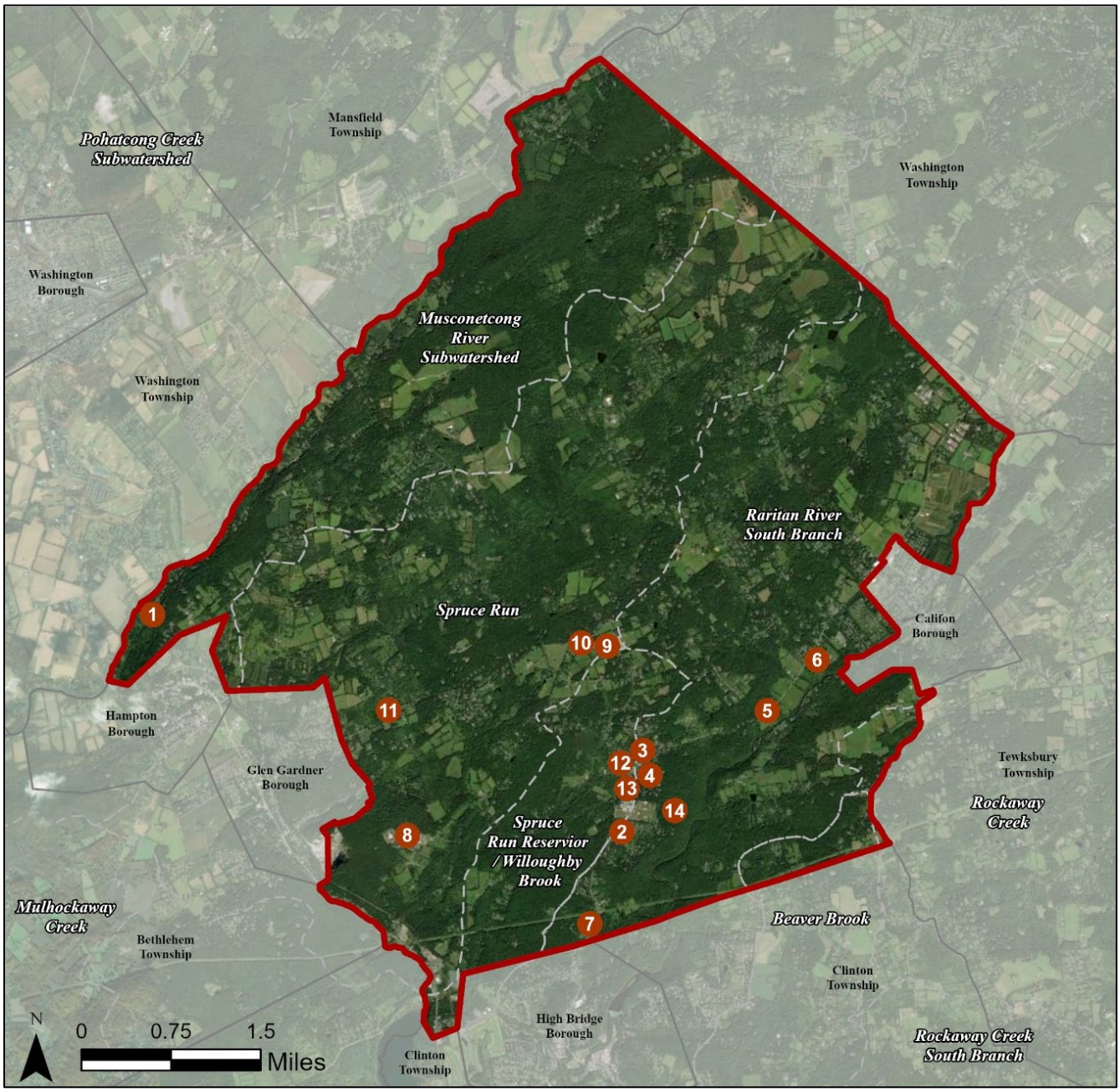


Figure 12: Sites with Green Infrastructure Opportunities in Lebanon Township

LEBANON TOWNSHIP MUSEUM

RAP ID: 1

Subwatershed: Musconetcong River

HUC14 ID: 02040105160030

Site Area: 20,970 sq. ft.

Address: 57 Musconetcong River Road
Hampton, NJ 08827

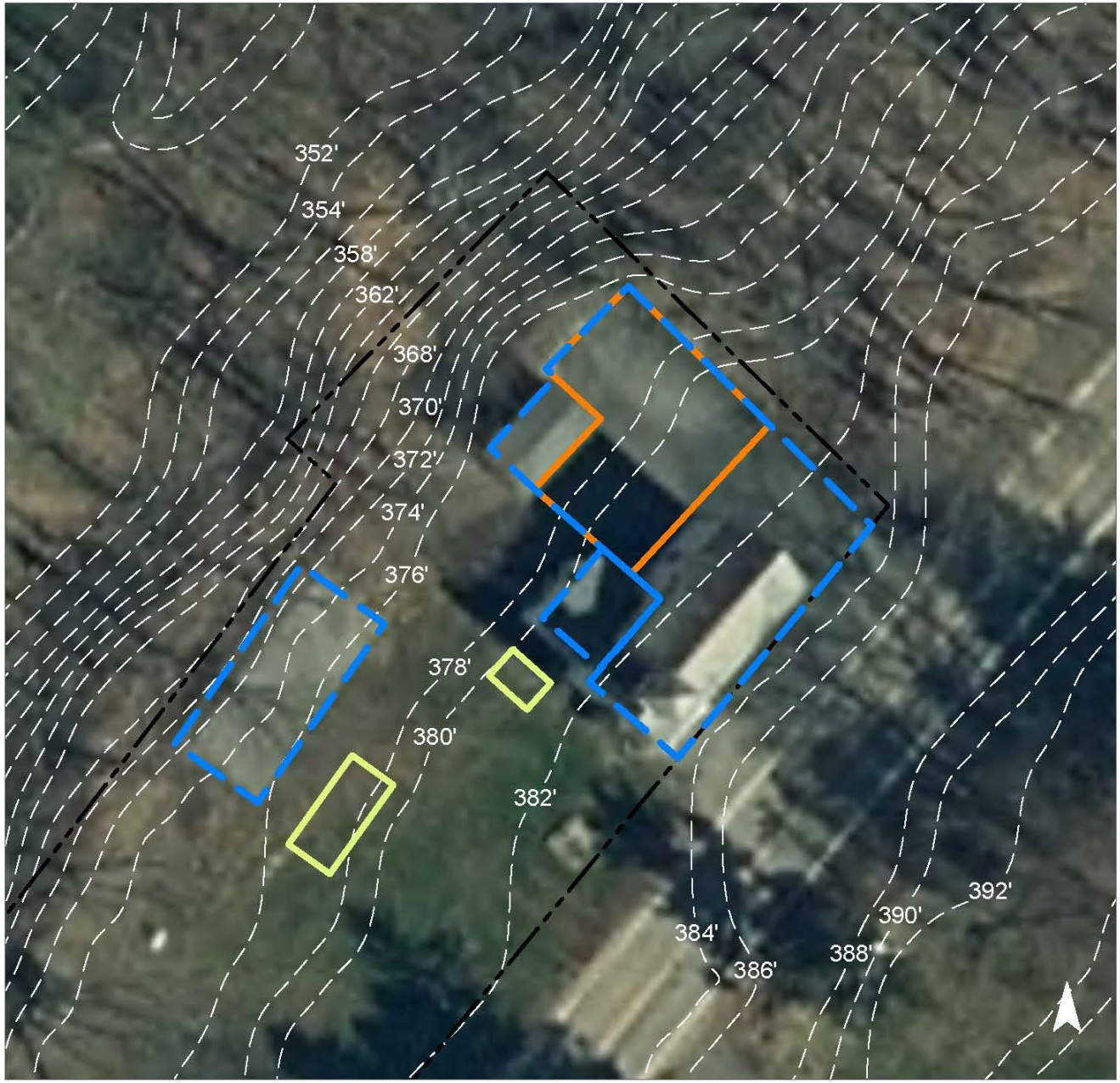
Block and Lot: Block 71, Lot 3

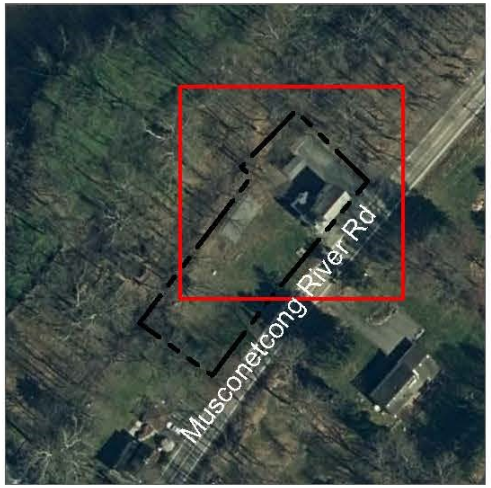
A rain garden can be installed to the southwest of the building using the existing disconnected downspouts to capture, treat, and infiltrate the stormwater runoff from the rooftop. An additional rain garden can be constructed to the south of the western shed to capture, treat, and infiltrate the stormwater runoff from the rooftop. The existing gravel parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the lot, driveway, road, and northern shed. A gutter system can be installed on both sheds to maximize the drainage area being managed. A preliminary soil assessment suggests that the soils have suitable drainage characteristicsfor 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 49.4"
21	4,360	0.2	2.2	20.0	0.003	0.13

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	1,130	0.033	6	2,270	0.09	285	$2,850
Pervious pavement	3,200	0.094	13	6,420	0.24	1,345	$33,625

GREEN INFRASTRUCTURE RECOMMENDATIONS





Lebanon Township Museum

- bioretention system
- pervious pavement
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 15' 30'

BODY OF CHRIST MINISTRIES

RAP ID: 2

Subwatershed: Raritan River South Branch

Site Area: 205,769 sq. ft.

Address: 101 Voorhees Road
Glen Gardner, NJ 08826

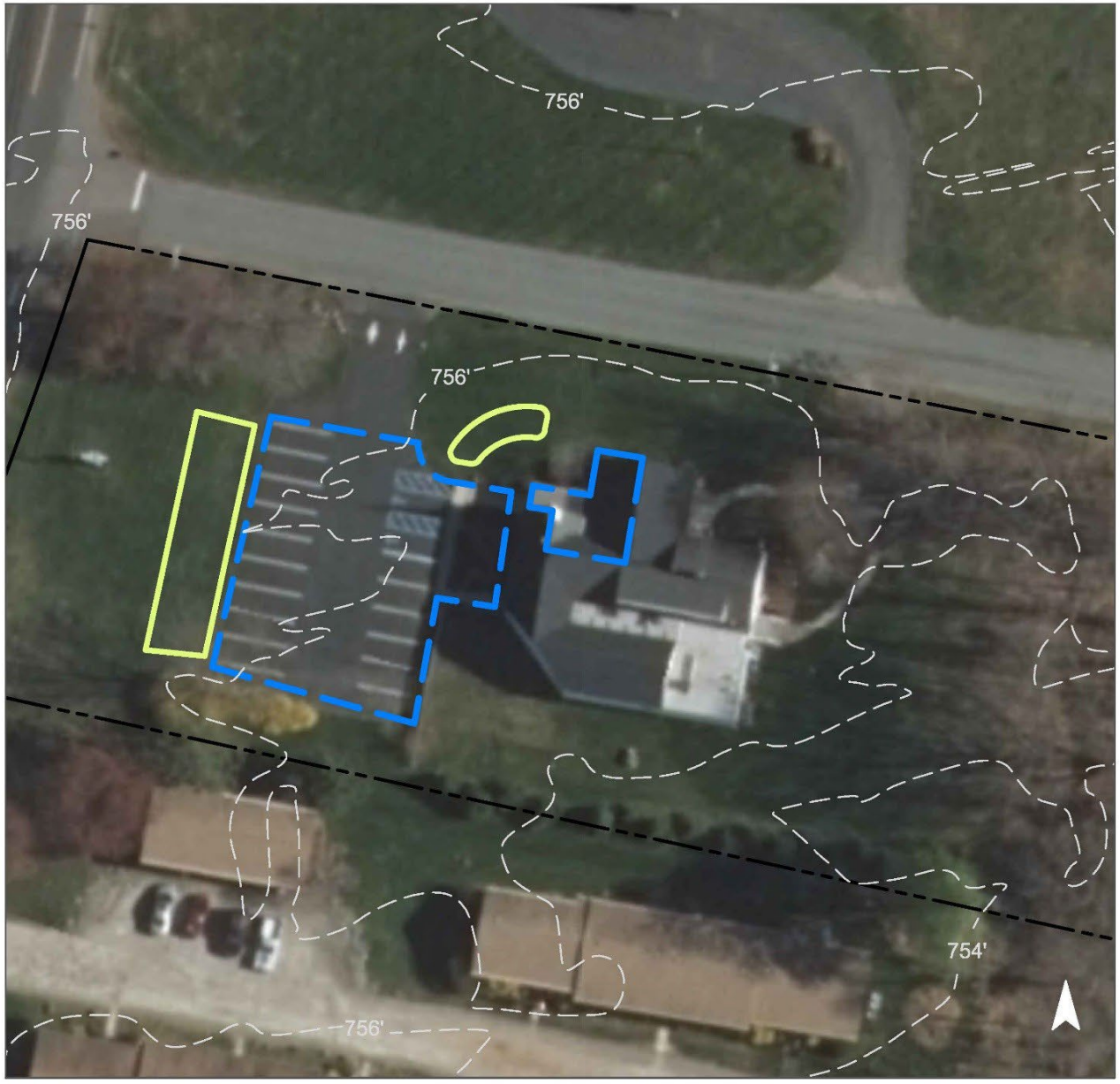
Block and Lot: Block 12, Lot 15

Two bioretention systems are proposed to infiltrate the water from the sloped lawn and a disconnected downspout. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
49	101,155	4.9	51.1	464.4	0.079	2.77

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.187	31	13,730	0.52	1,800	$9,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Body of Christ Ministries

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

0 25' 50'

BUNNVALE LIBRARY

RAP ID: 3

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010070

Site Area: 43,965 sq. ft.

Address: 7 Bunnvale Road
Califon, NJ 07830

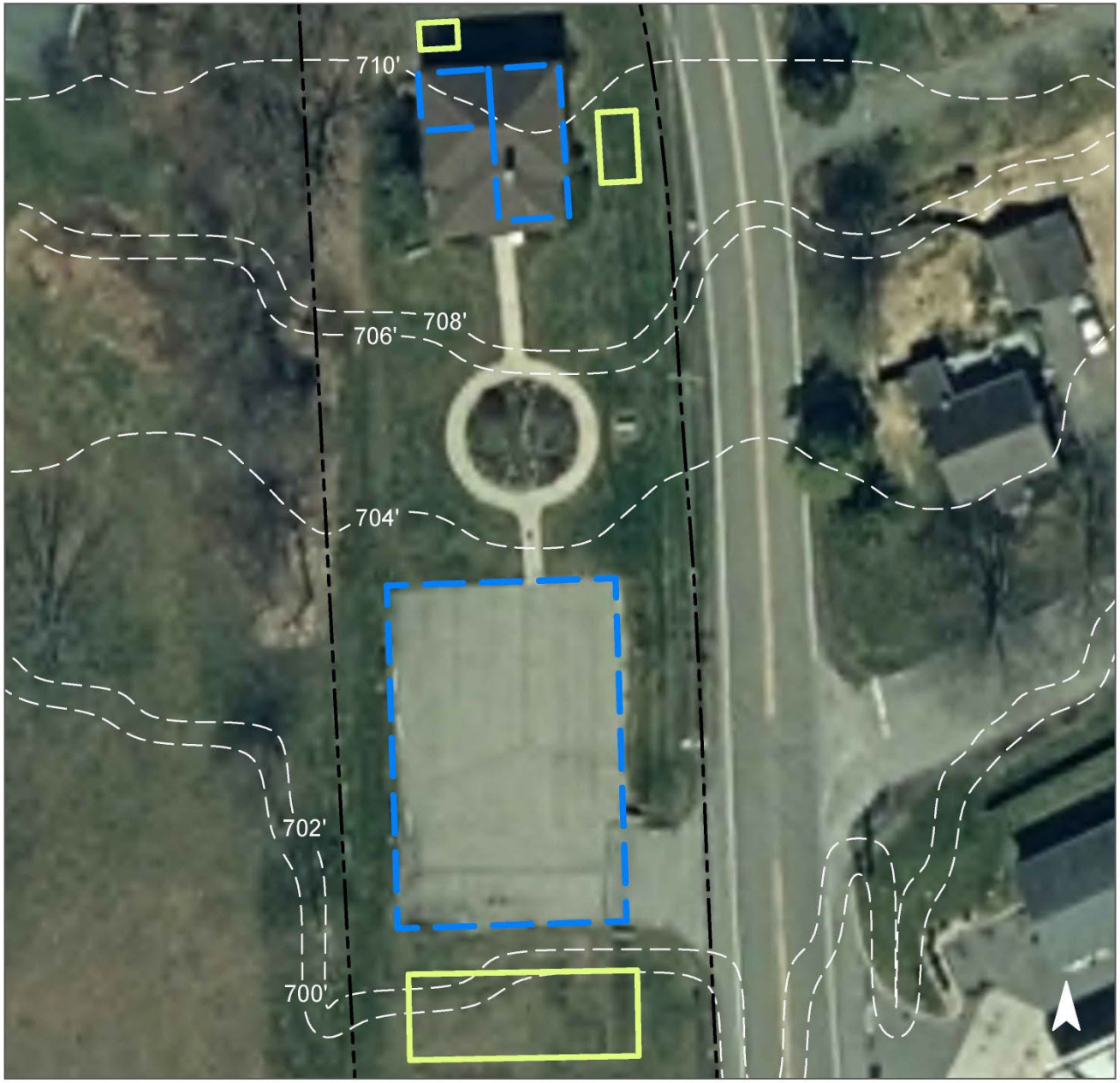
Block and Lot: Block 10, Lot 31

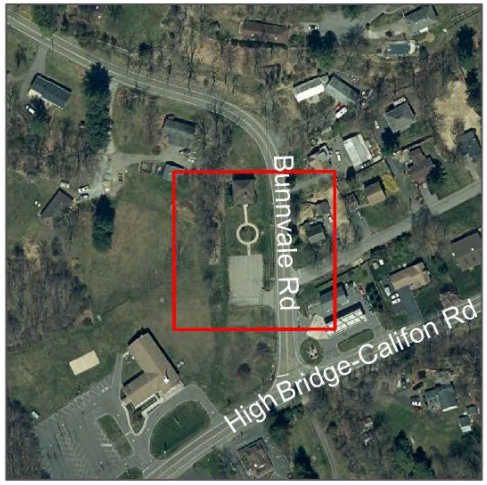
Rain gardens can be installed to the northeast and to the west of the building using the existing disconnected downspouts to capture, treat, and infiltrate the stormwater runoff from the rooftop. Downspout redirection may be needed. An additional rain garden can be constructed to the south of the parking lot to capture, treat, and infiltrate the stormwater runoff from the asphalt. 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 49.4"
31	13,775	0.7	7.0	63.2	0.011	0.42

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	6,420	0.188	29	12,870	0.48	1,605	$16,050

GREEN INFRASTRUCTURE RECOMMENDATIONS





Bunnvale Library

- bioretention system
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 20' 40'

GROENDYKE ASSOCIATES

RAP ID: 4

Subwatershed: Raritan River South Branch

Site Area: 26,175 sq. ft.

Address: 295 County Road 513
Califon, NJ 07830

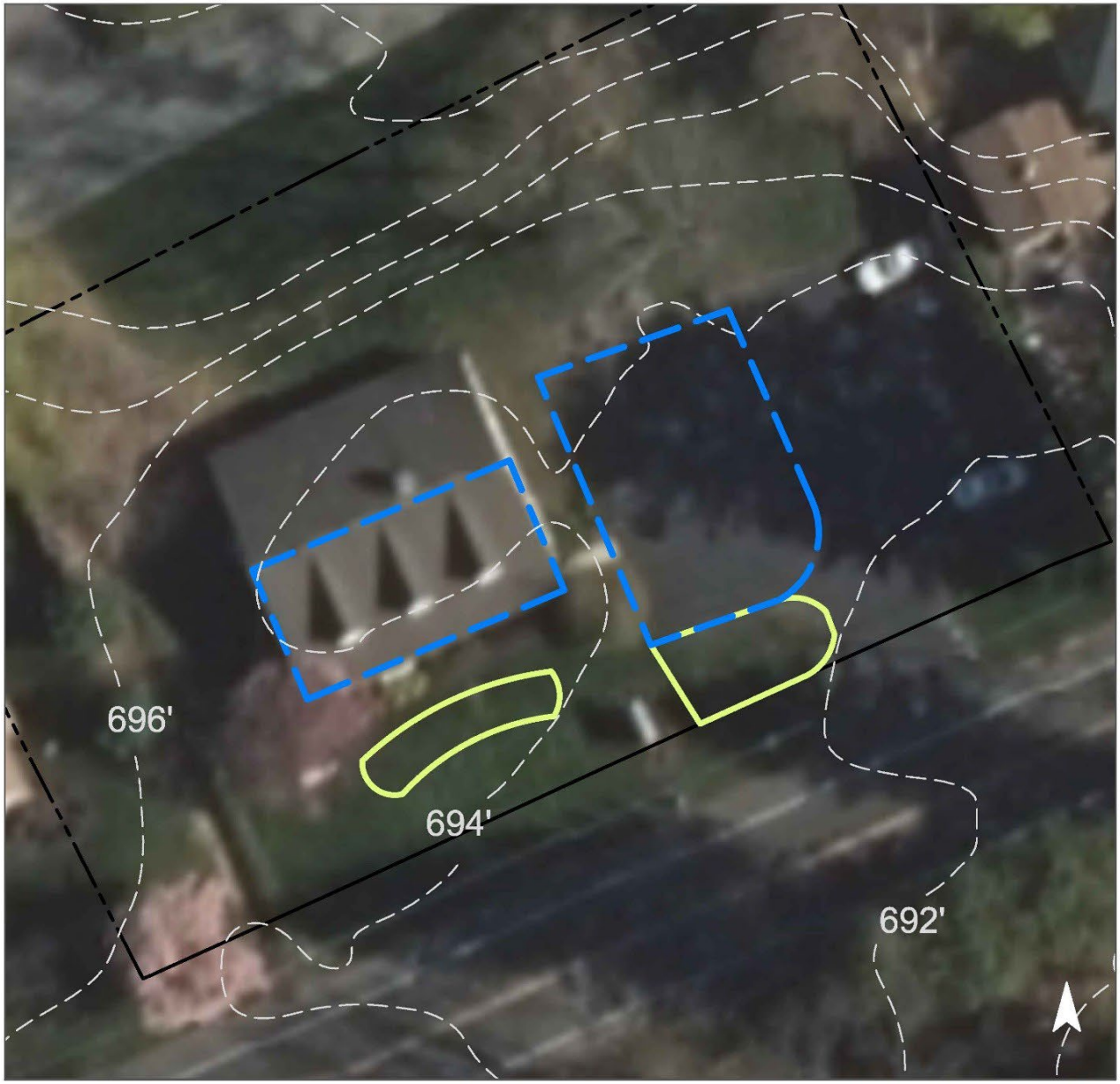
Block and Lot: Block 25, Lot 9

Two bioretention systems are proposed in the front of the building to infiltrate the water from the roof as well as the downspouts. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
57	15,042	0.7	7.6	69.1	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	0.093	16	6,800	0.26	890	$4,450

GREEN INFRASTRUCTURE RECOMMENDATIONS



Groendyke Associates

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

0 25' 50'

OLDWICK VILLAGE AUTO BODY

RAP ID: 5

Subwatershed: Raritan River South Branch

Site Area: 167,230 sq. ft.

Address: 363 County Road 513
Califon, NJ 07830

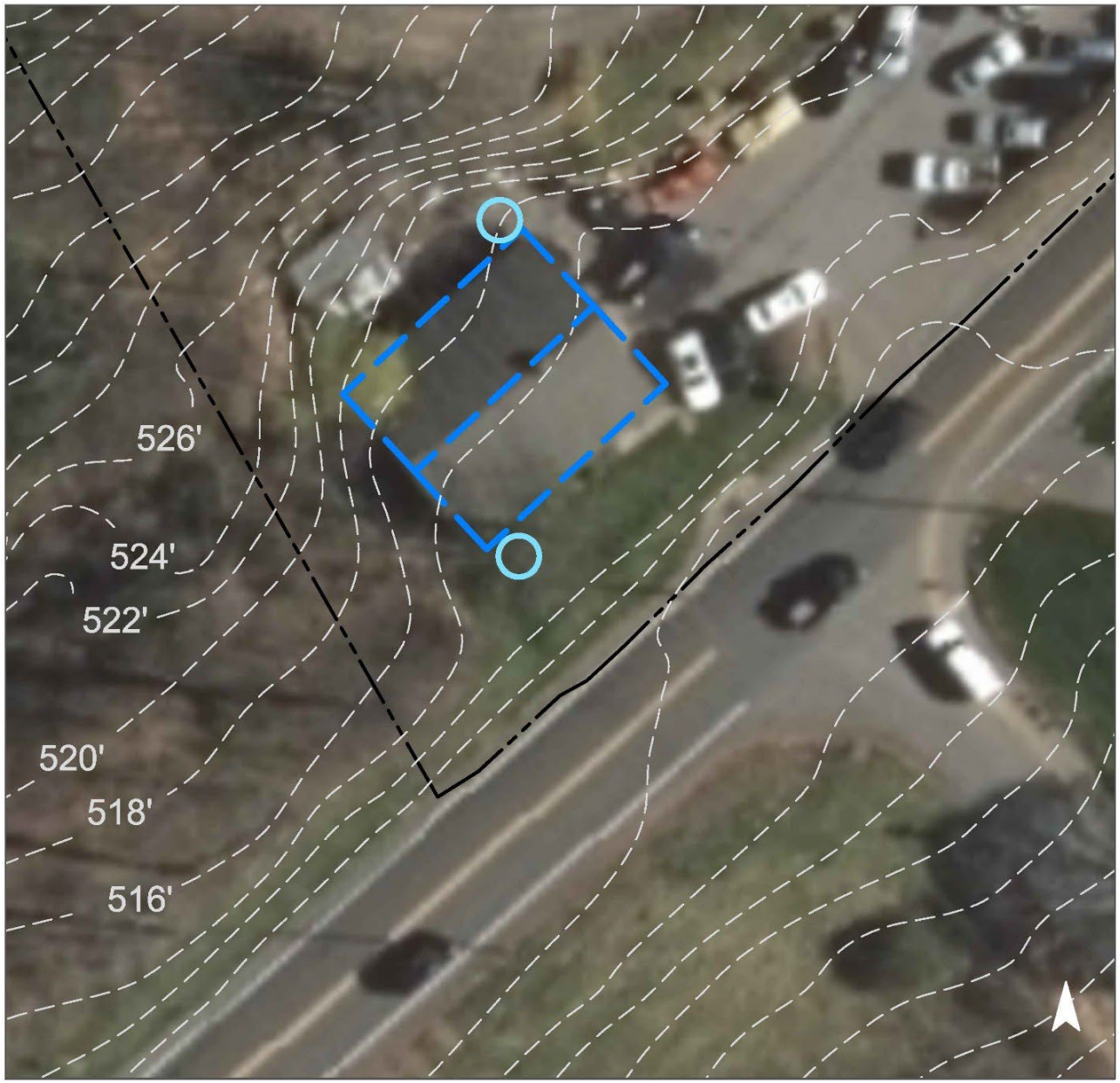
Block and Lot: Block 24, Lot 20

Two rainwater harvesting cisterns are proposed on opposite corners of the building to capture stormwater runoff from the roof. The water can be used for washing vehicles, watering plants, or other non-potable purposes. 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"
7	12,467	0.6	6.3	57.2	0.010	0.34

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	0.052	9	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Oldwick Village Auto Body

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

0 25' 50'

ST. JOHN NEUMANN ROMAN CATHOLIC CHURCH

RAP ID: 6

Subwatershed: Raritan River South Branch

HUC14 ID: 02030105010070

Site Area: 1,350,160 sq. ft.

Address: 398 County Road 513
Califon, NJ 07830

Block and Lot: Block 21, Lots 7 & 7.02

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from various rooftops. This may require downspout redirections and disconnections, as well as trench drains. Existing parking spaces in the northern, southern, and western parking lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt, roadway, and sidewalks. This may require trench drains. 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 49.4"
9	122,936	5.9	62.1	564.4	0.096	3.79

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	9,830	0.288	44	19,710	0.74	2,460	$24,600
Pervious pavement	43,010	1.258	188	86,240	3.24	10,050	$251,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

St. John Neumann Roman Catholic Church

- bioretention system
- pervious pavement
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 100' 200'

VOORHEES RESIDENTIAL COMMUNITY HOME

RAP ID: 7

Subwatershed: Raritan River South Branch

Site Area: 18,782,281 sq. ft.

Address: 201 County Road 513
Glen Gardner, NJ 08826

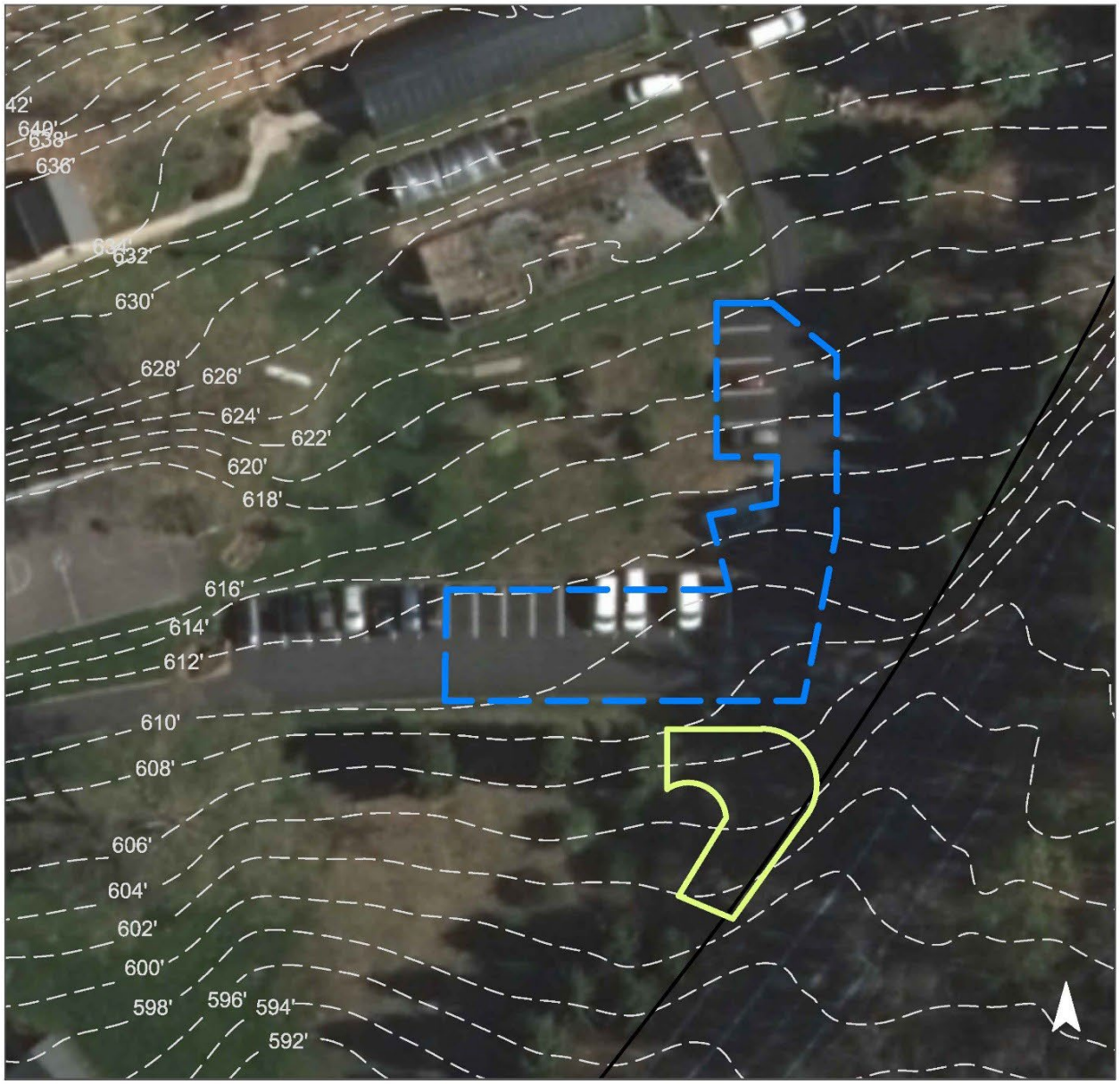
Block and Lot: Block 11, Lot 37

A bioretention system is proposed at the entrance of the property to reduce erosion and infiltrate the stormwater runoff from the parking area. 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"
3	626,716	30.2	316.5	2,877.5	0.488	17.19

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	0.195	33	14,300	0.54	1,830	$9,150

GREEN INFRASTRUCTURE RECOMMENDATIONS



Voorhees Residential Community Home

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

0 25' 50'

FREEDOM HOUSE

RAP ID: 8

Subwatershed: Spruce Run

Site Area: 10,391,842 sq. ft.

Address: 3 Pavilion Road
Glen Gardner, NJ 08826

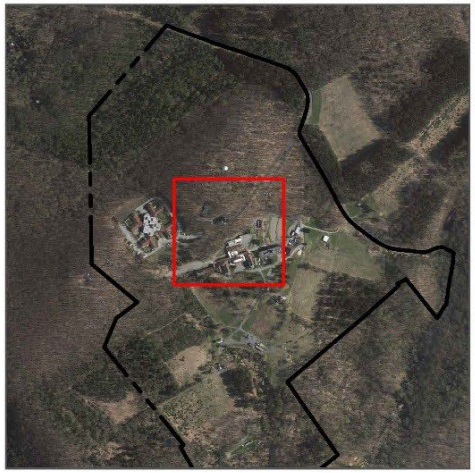
Block and Lot: Block 9, Lot 7

A bioretention system is proposed on the south side of the building to infiltrate the water from the downspouts of the building and to prevent erosion and flooding at the bottom of the hill. A rainwater harvesting cistern is proposed at the north side of the building to capture stormwater runoff from the roof. This water can be reused for non-potable purposes. 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	957,328	46.2	483.5	4,395.4	0.746	26.26

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	0.020	3	1,480	0.06	195	$975
Rainwater harvesting	0.026	4	1,000	0.04	1,000 (gal)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Freedom House

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

0 25' 50'

LEBANON TOWNSHIP MEMORIAL PARK

RAP ID: 9

Subwatershed: Spruce Run

HUC14 ID: 02030105020020

Site Area: 1,560,808 sq. ft.

Address: 67 Bunnvale Road
Califon, NJ 07830

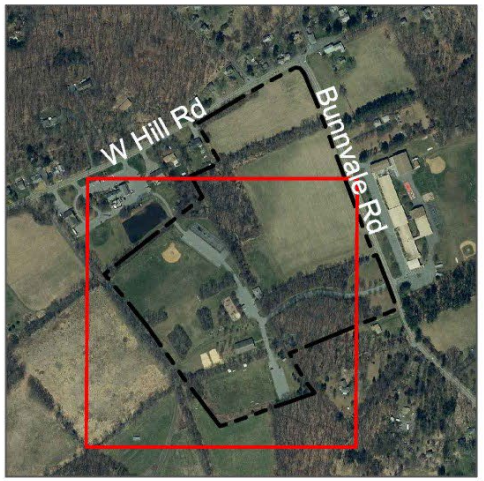
Block and Lot: Block 29, Lot 32.03

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from rooftops. Existing parking spaces in the middle and southern lots can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. The tennis courts can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the courts and from the northern parking lot. Trench drains may be needed to intercept and redirect stormwater to the pervious pavement. 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 49.4"
8	119,931	5.8	60.6	550.6	0.093	3.69

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	2,975	0.087	13	5,960	0.22	745	$7,450
Pervious pavement	53,200	1.556	232	106,660	4.01	17,105	$427,625

GREEN INFRASTRUCTURE RECOMMENDATIONS



Lebanon Township Memorial Park

- bioretention system
- pervious pavement
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 100' 200'

LEBANON TOWNSHIP MUNICIPAL BUILDING & FIRE DEPARTMENT

RAP ID: 10

Subwatershed: Spruce Run

HUC14 ID: 02030105020020

Site Area: 284,800 sq. ft.

Address: 530 West Hill Road
Glen Gardner, NJ 08826

Block and Lot: Block 29, Lots 32.01, 32.04 & 32.05

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater ru noff from the rooftops, driveways, parking lots, and roadway. This may require downspout redirections and trench drains. Existing parking spaces to t he south and west in the eastern parking area can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt . Downspouts on the adjacent building can also be disconnected to direct rooftop runoff to the pervious pavement. A cistern can be installed to the west of the fire department building to divert and detain the stormwater runoff from the rooftop for later non -potable reuse 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 49.4"
36	102,155	4.9	51.6	469.0	0.080	3.15

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	6,485	0.190	29	13,000	0.49	1,625	$16,250
Pervious pavement	10,545	0.308	46	21,150	0.79	2,100	$52,500
Rainwater harvesting	850	0.025	4	700	N/A	700 (gal)	$2,100

GREEN INFRASTRUCTURE RECOMMENDATIONS

Lebanon Township Municipal Building & Fire Department

- bioretention system
- pervious pavement
- rainwater harvesting
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 50' 100'

SPRUCE RUN LUTHERAN CHURCH

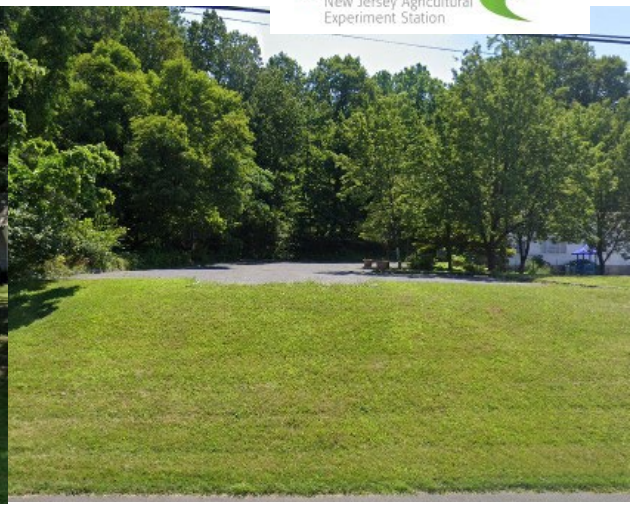
RAP ID: 11

Subwatershed: Spruce Run

HUC14 ID: 02030105020020

Site Area: 73,543 sq. ft.

Address: 442 West Hill Road
Glen Gardner, NJ 08826



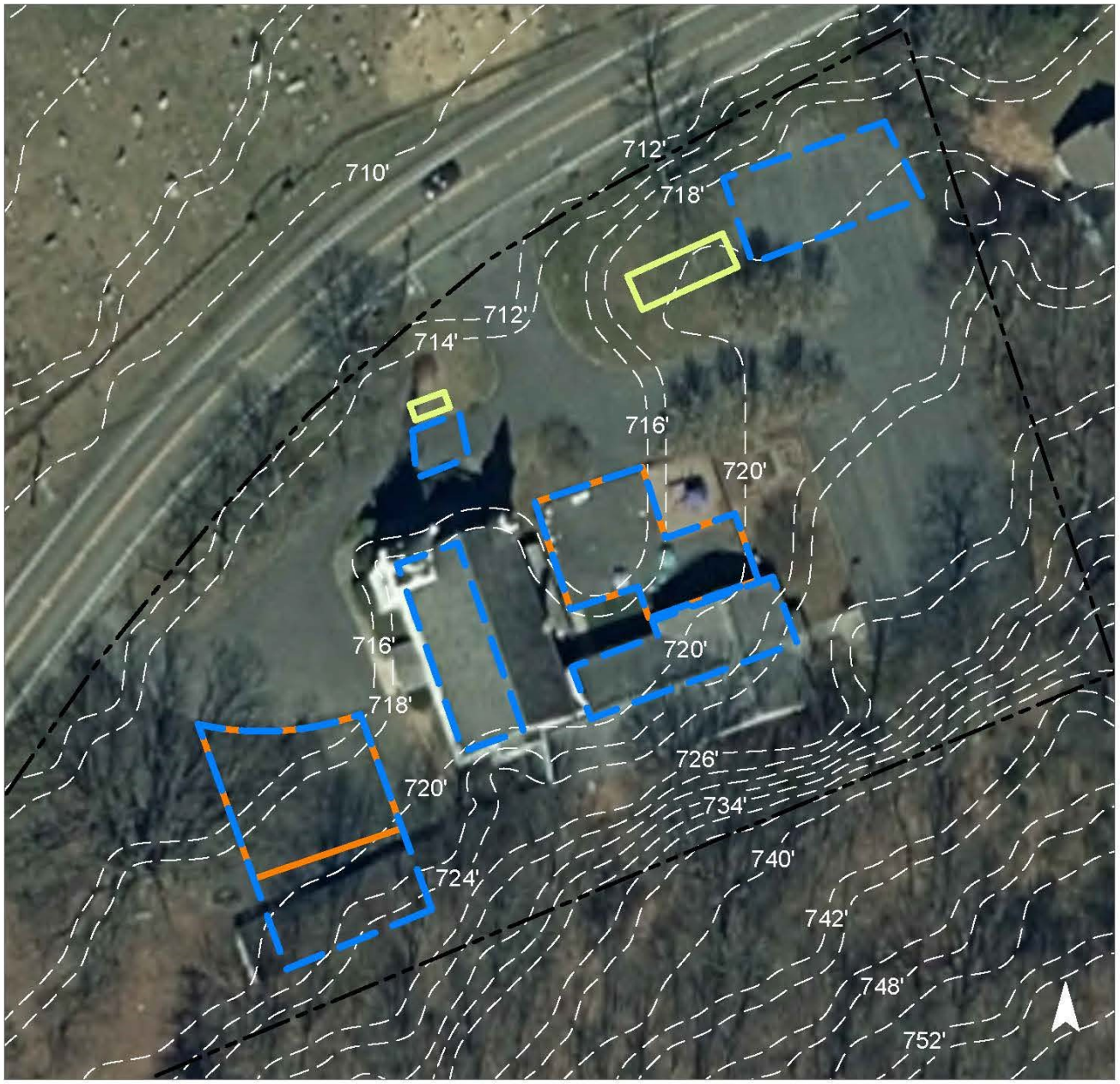
Block and Lot: Block 30, Lot 11

Rain gardens can be installed in multiple grass areas to capture, treat, and infiltrate the stormwater runoff from the driveway and parking lot. This may require trench drains and curb cuts. The existing asphalt playground can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the play area. The western gravel parking lot can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the lot and the shed rooftop. Building downspouts can be disconnected and redirected to both pervious pavement areas to increase the drainage area being managed. 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 49.4"
38	27,805	1.3	14.0	127.7	0.022	0.86

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	1,910	0.056	8	3,830	0.14	475	$4,750
Pervious pavement	8,745	0.256	38	17,530	0.66	4,335	$108,375

GREEN INFRASTRUCTURE RECOMMENDATIONS



Spruce Run Lutheran Church

- bioretention system
- pervious pavement
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 25' 50'

BUNNVALE ASSEMBLY OF GOD

RAP ID: 12

Subwatershed: Spruce Run Reservoir / Willoughby Brook

HUC14 ID: 02030105020040

Site Area: 203,876 sq. ft.

Address: 285 County Road 513 #1
Glen Gardner, NJ 08826

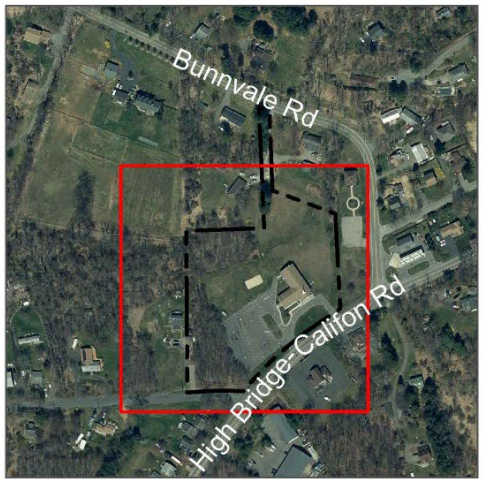
Block and Lot: Block 10, Lot 30

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate the stormwater runoff from the rooftop, driveway, and parking lot. This may require downspout disconnections, redirections, and trench drains. A preliminarysoil 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 49.4"
27	55,863	2.7	28.2	256.5	0.044	1.71

Recommended Green Infrastructure Practices	Drainage Area (sq. ft.)	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	32,895	0.962	144	65,960	2.48	8,230	$82,300

GREEN INFRASTRUCTURE RECOMMENDATIONS



Bunnvale Assembly of God

- bioretention system
- captured drainage area
- property line
- 2020 Aerial: NJOIT, OGIS

0 50' 100'

ONO ROSA RESTAURANT

RAP ID: 13

Subwatershed: Spruce Run Reservoir / Willoughby Brook

Site Area: 36,744 sq. ft.

Address: 282 County Road 513
Glen Gardner, NJ 08826

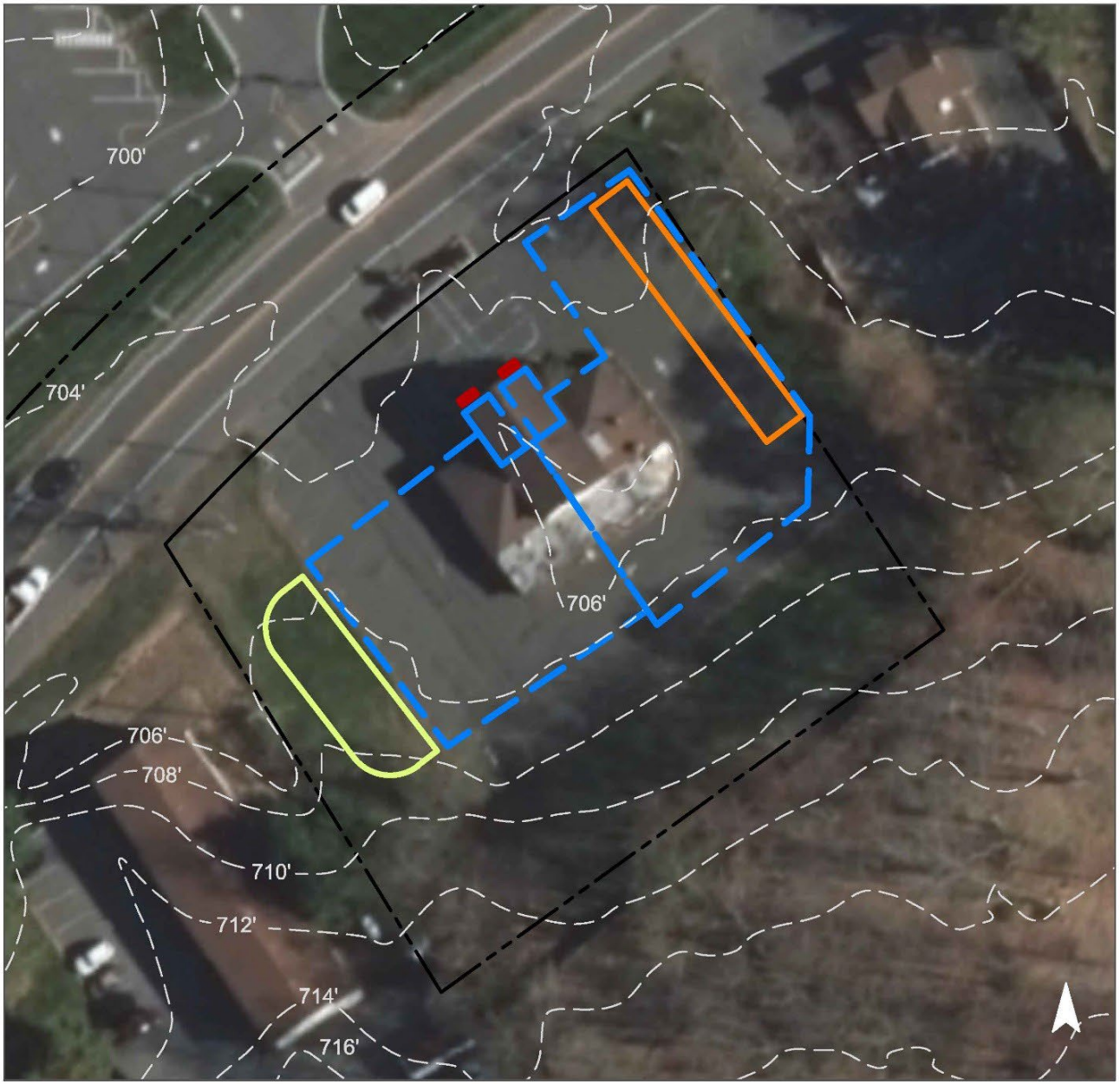
Block and Lot: Block 12, Lot 46

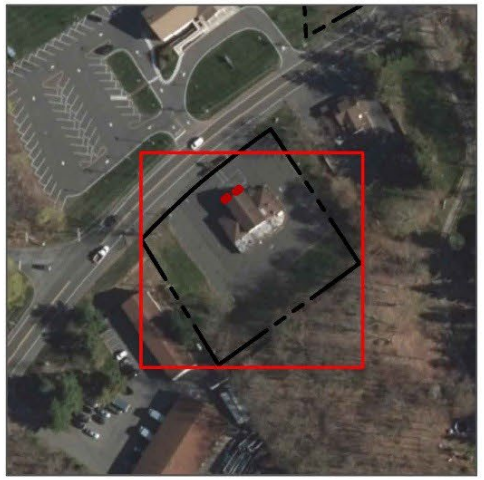
A bioretention system is proposed in the turfgrass to capture, treat, and infiltrate the west side of the parking lot and rooftop. Parking spaces on the east side of the parking lot can be converted to porous pavement to capture and infiltrate stormwater from the parking lot and rooftop. Planter boxes can be added to both entrances to capture runoff from the downspouts. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
69	25,259	1.2	12.8	116.0	0.020	0.69

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	0.159	27	11,700	0.44	1,530	$7,650
Pervious pavement	0.204	34	14,990	0.56	1,400	$35,000
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS





Ono Rosa Restaurant

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

0 25' 50'

VOORHEES HIGH SCHOOL

RAP ID: 14

Subwatershed: Spruce Run Reservoir / Willoughby Brook

Site Area: 2,417,193 sq. ft.

Address: 256 County Road 513
Glen Gardner, 08826

Block and Lot: Block 12, Lot 44.01

Two mowed detention basins at the east entrance can be retrofitted with rain gardens to capture, treat, and infiltrate stormwater runoff from the driveway and enhance pollinator habitat. Two sections of parking spaces can be converted to porous pavement to capture and infiltrate 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"
25	596,442	28.8	301.2	2,738.5	0.465	16.36

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention systems	0.366	61	26,890	1.01	3,515	$17,575
Pervious pavement	1.811	303	132,870	4.99	12,140	$303,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Voorhees High School

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

0 100' 200'

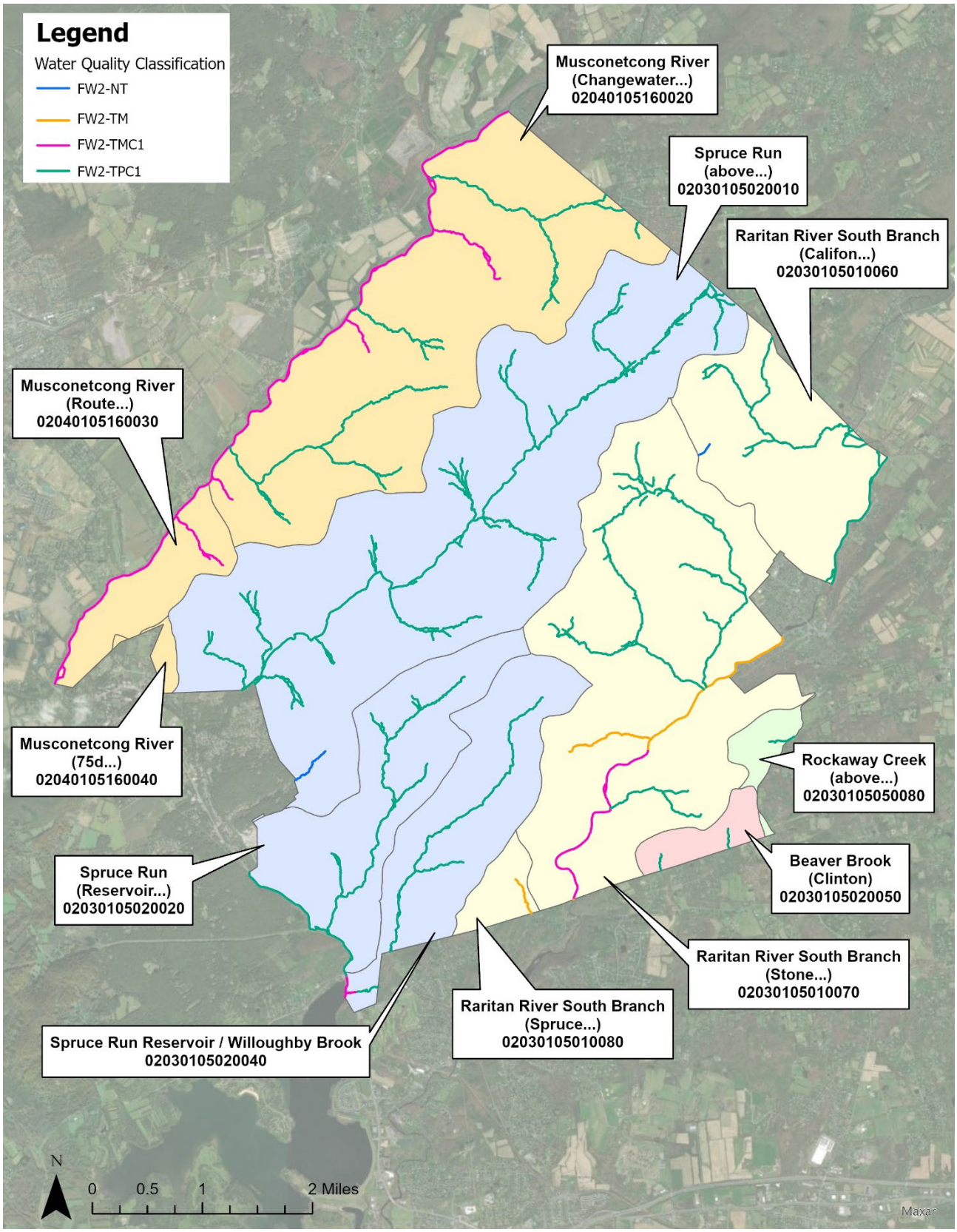


Figure 13. Water Quality Classification of Surface Waters in Lebanon Township

Table 11. Water Quality Classification of Surface Waters in Lebanon Township

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	0.6	0.7%
Freshwater 2, trout production, Category One	FW2-TPC1	61.4	78.7%
Freshwater 2, trout maintenance	FW2-TM	3.0	3.9%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	13.0	16.7%

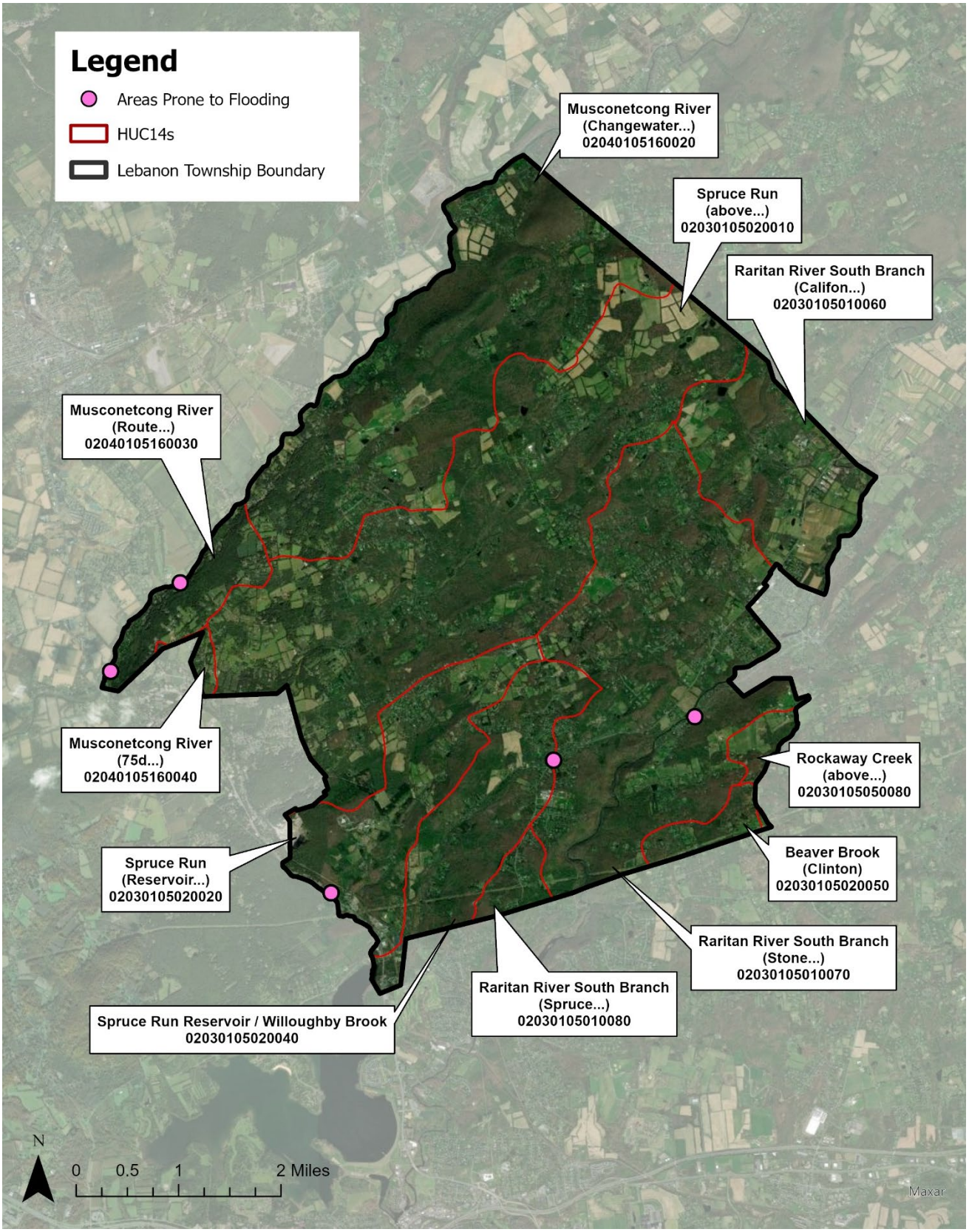


Figure 14. Areas Prone to Flooding in Lebanon Township