Mendham Township

Introduction

Located in Morris County in New Jersey, Mendham Township covers about 18.0 square miles. With a population of 6,016 (2020 United States Census), Mendham Township consists of 33.0% of urban land uses by area. Of that urban land use, approximately 74.4% 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 61.2% of Mendham Township.

Mendham Township contains portions of ten subwatersheds (Table 1). There are approximately 48.2 miles of rivers and streams within the municipality; these include Burnett Brook and its tributaries, Dawsons Brook and its tributaries, tributaries to Gladstone Brook, Harmony Brook and its tributaries, India Brook and its tributaries, McVickers Brook and its tributaries, North Branch Raritan River and its tributaries, Passaic River and its tributaries, Whippany River and its tributaries, and several uncoded tributaries. Mendham Township is within the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Areas (WMA) 6 (Upper Passaic, Whippany, and Rockaway) and 8 (North and South Branch Raritan).

Table 1: Subwatersheds of Mendham Township

Subwatershed	HUC14
Passaic River Upper (above Osborn Mills)	02030103010010
Primrose Brook	02030103010020
Whippany River (above road at 74d 33m)	02030103020010
Whippany River (Washington Valley Road to 74d 33m)	02030103020020
Whippany River (Lake Pocahontas to Washington Valley Road)	02030103020040
Raritan River North Branch (above/including India Brook)	02030105060010
Burnett Brook (above Old Mill Road)	02030105060020
Raritan River North Branch (including McVickers to India Brook)	02030105060030
Raritan River North Branch (Peapack Brook to McVickers Brook)	02030105060040

Peapack Brook (above/including Gladstone Brook)	02030105060050

The purpose of this report is to provide a comprehensive understanding of key, defining features within the subwatersheds throughout Mendham 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 Mendham 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 Mendham Township in relation to the study area. Figure 2 shows the portions of the ten HUC14s in Mendham Township and highlights the HUC14s that are contained within the study area. Figure 3 illustrates the land use in Mendham Township. A detailed land use analysis and nonpoint source loading analysis was completed for each HUC14 in Mendham Township and is presented in Table 2. Figure 4 shows the impervious cover in Mendham Township based upon NJDEP's 2015 impervious cover layer. An impervious cover analysis was completed for each HUC14 in Mendham 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 (identified as type "D") could benefit from naturalization (i.e., conversion from a detention basin to a bioretention basin). Detention basins 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. Retention basins that already have a vegetative shoreline buffer are listed as type "RB". No retention basins without vegetative shoreline buffers were identified in Mendham Township within the study area.

The Q-Farms in Mendham 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 Mendham 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 647.9 acres of agricultural land use in Mendham Township, of which, 412.0 acres lie within the study area for this Watershed Restoration and Protection Plan. There are 89 Q-Farms in the study area portion of Mendham Township, totaling 1,203.7 acres. Within the 89 Q-Farms, there are approximately 311.4 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 Mendham 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. Five HUC14s are included in the study area (02030105060010, 02030105060020, 02030105060030, 02030105060040, 02030105060050). Within these five HUC14s, there are 72.3 acres of buildings and 128.0 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 Mendham Township, approximately 4.5 acres of rooftop runoff would be managed with 0.90 acres of rain gardens. The plan also calls for the management of 10% of the roadways with bioswales. For the study area within Mendham Township, approximately 12.8 acres of roadway would be managed, or 3.5 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 Mendham 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. Four 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 five classifications that apply to the streams in Mendham Township. Figure 13 depicts the water quality classifications of surface waters throughout Mendham 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 Mendham Township have identified several locations throughout the municipality that are particularly susceptible to flooding during heavy rainfall or storm events. The municipal building parking area has been observed to experience flooding when the adjacent Harmony Brook overflows after heavy rainfall. East Main Street, near Dismal Harmony Natural Area, has also been identified as an area prone to flooding. Mendham Township administrators believe that dredging of an old pond nearby may reduce flooding concerns. Dredging the pond would increase its storage capacity and subsequently help reduce the volume and speed of runoff to nearby areas. Mosle Bridge over the North Branch Raritan River has also been reported to experience flooding after storm events. Some repairs have been made to the bridge and the stream bank has undergone stabilization in efforts reduce flooding in the area. Figure 14 shows the locations of the aforementioned areas of concern.

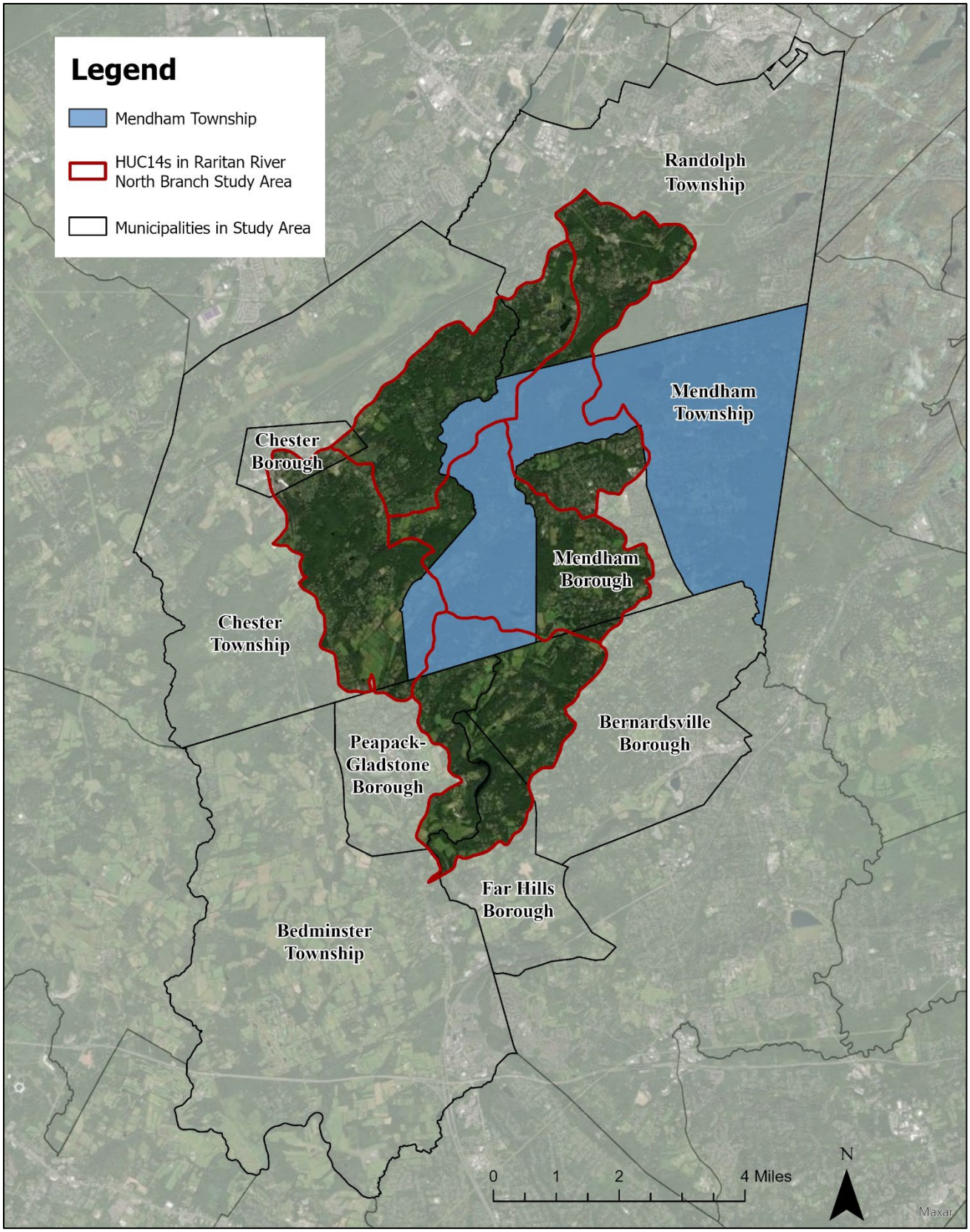


Figure 1: Municipalities in the Study Area

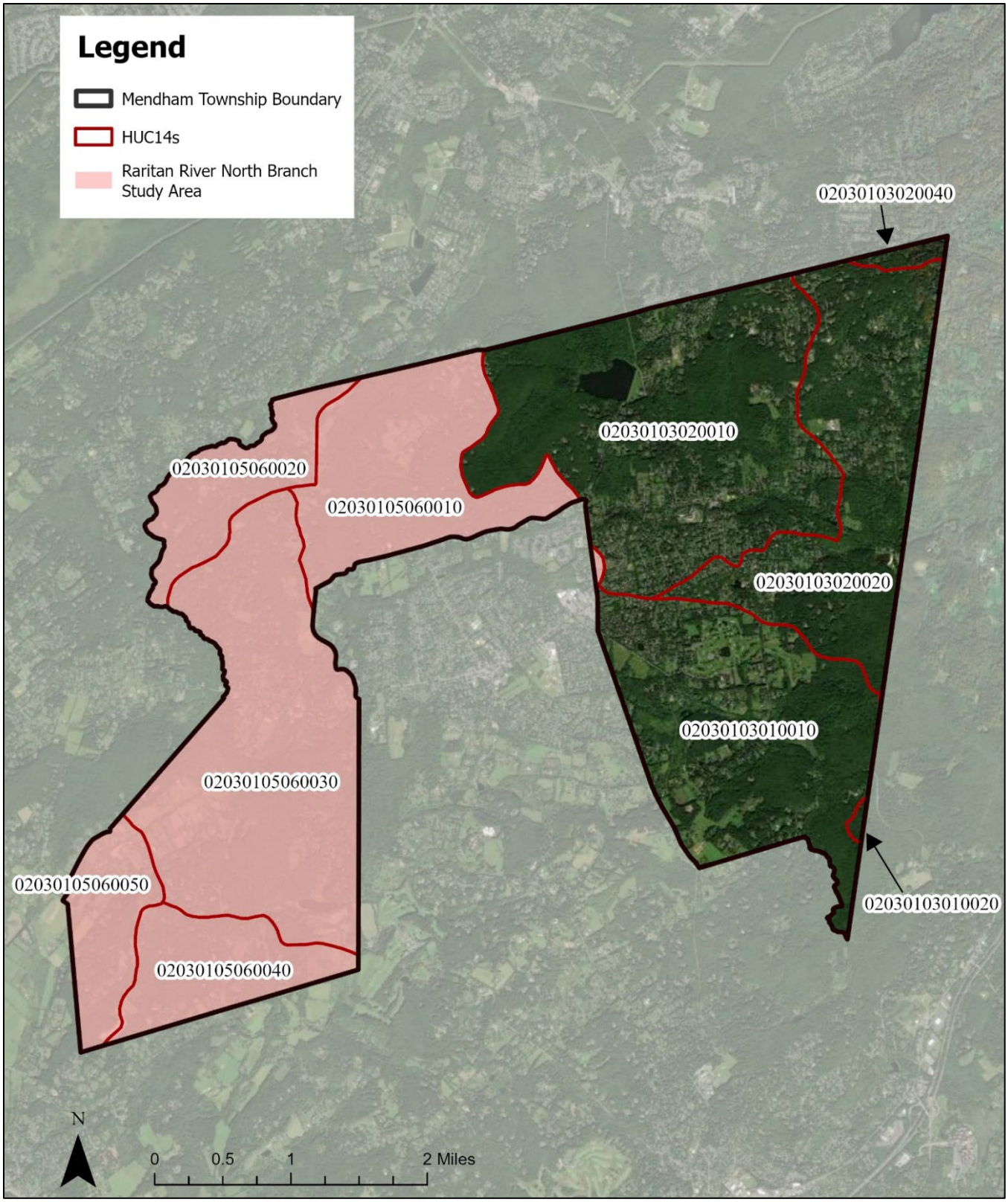


Figure 2: Portions of ten HUC14s are in Mendham Township

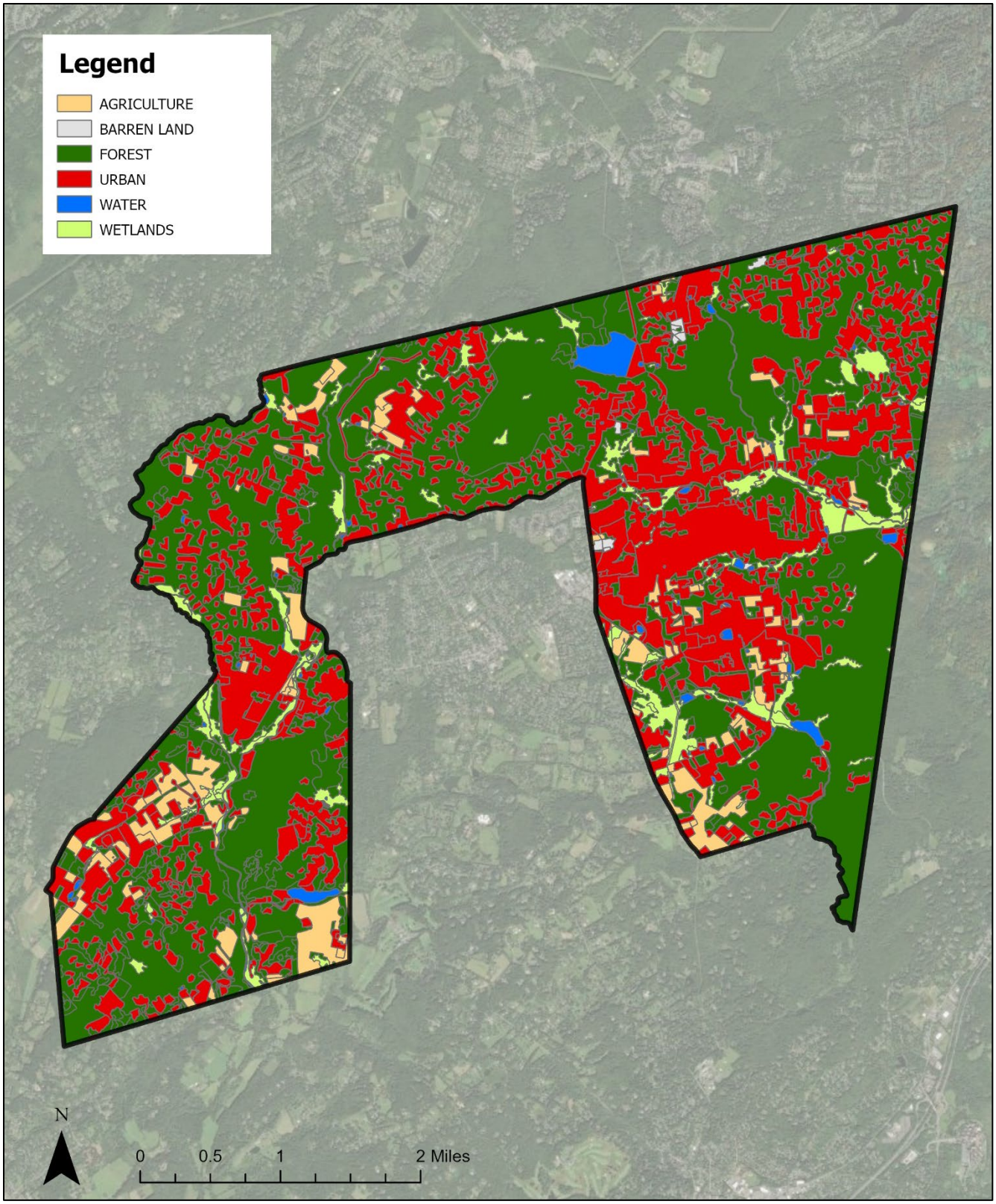


Figure 3: Land Use in Mendham Township

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

Land Use Type	Area (acres)	TP Load (lbs/yr)	TN Load (lbs/yr)	TSS Load (lbs/yr)
02030103010010				
Agriculture	184.6	240.0	1,846.5	55,393.7
Barren Land	0.0	0.0	0.0	0.0
Forest	928.3	92.8	2,784.8	37,131.1
Urban	636.1	890.6	9,542.2	89,060.3
Water	33.9	3.4	101.7	1,355.8
Wetlands	148.1	14.8	444.4	5,925.1
TOTAL =	**1,931.1**	**1,241.7**	**14,719.5**	**188,866.0**
02030103010020				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	17.6	1.8	52.9	706.0
Urban	0.0	0.0	0.0	0.0
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0
TOTAL =	**17.6**	**1.8**	**52.9**	**706.0**
02030103020010				
Agriculture	37.8	49.1	378.0	11,341.3
Barren Land	19.2	9.6	96.2	1,154.8
Forest	1,407.6	140.8	4,222.7	56,302.1
Urban	1,015.6	1,421.9	15,234.2	142,185.4
Water	74.4	7.4	223.1	2,975.0
Wetlands	118.7	11.9	356.0	4,746.9
TOTAL =	**2,673.3**	**1,640.7**	**20,510.2**	**218,705.4**
02030103020020				
Agriculture	13.5	17.6	135.2	4,056.1
Barren Land	1.2	0.6	5.8	69.8
Forest	914.6	91.5	2,743.7	36,583.3
Urban	603.6	845.0	9,053.5	84,499.2
Water	15.1	1.5	45.4	605.6
Wetlands	121.8	12.2	365.4	4,872.2
TOTAL =	**1,669.8**	**968.3**	**12,349.1**	**130,686.2**
02030103020040				
Agriculture	0.0	0.0	0.0	0.0
Barren Land	0.0	0.0	0.0	0.0
Forest	33.1	3.3	99.2	1,323.2
Urban	26.3	36.9	395.1	3,687.8
Water	0.0	0.0	0.0	0.0
Wetlands	0.0	0.0	0.0	0.0

TOTAL =	**59.4**	**40.2**	**494.4**	**5,011.0**
02030105060010				
Agriculture	56.2	73.0	561.7	16,852.0
Barren Land	3.1	1.6	15.5	186.3
Forest	731.2	73.1	2,193.6	29,247.6
Urban	382.2	535.1	5,733.5	53,512.3
Water	10.8	1.1	32.4	432.3
Wetlands	49.2	4.9	147.5	1,966.8
TOTAL =	**1,232.7**	**688.8**	**8,684.2**	**102,197.2**
02030105060020				
Agriculture	24.9	32.3	248.6	7,457.9
Barren Land	0.0	0.0	0.0	0.0
Forest	370.4	37.0	1,111.2	14,816.6
Urban	141.2	197.7	2,118.1	19,769.3
Water	6.9	0.7	20.6	274.6
Wetlands	9.1	0.9	27.4	364.9
TOTAL =	**552.5**	**268.7**	**3,525.9**	**42,683.3**
02030105060030				
Agriculture	198.4	257.9	1,984.1	59,522.2
Barren Land	0.0	0.0	0.0	0.0
Forest	1,233.4	123.3	3,700.3	49,336.9
Urban	700.3	980.4	10,504.1	98,038.2
Water	39.9	4.0	119.7	1,596.4
Wetlands	120.9	12.1	362.7	4,835.3
TOTAL =	**2,292.9**	**1,377.7**	**16,670.8**	**213,329.1**
02030105060040				
Agriculture	76.1	99.0	761.2	22,835.2
Barren Land	0.0	0.0	0.0	0.0
Forest	391.3	39.1	1,174.0	15,653.4
Urban	126.4	177.0	1,896.4	17,700.2
Water	4.7	0.5	14.0	187.2
Wetlands	21.8	2.2	65.4	872.2
TOTAL =	**620.4**	**317.7**	**3,911.1**	**57,248.2**
02030105060050				
Agriculture	56.4	73.3	563.9	16,916.6
Barren Land	0.0	0.0	0.0	0.0
Forest	241.7	24.2	725.2	9,669.3
Urban	171.0	239.4	2,564.7	23,937.3
Water	3.0	0.3	8.9	119.2
Wetlands	5.1	0.5	15.2	202.1
TOTAL =	**477.1**	**337.7**	**3,877.9**	**50,844.6**
All HUCs				
Agriculture	647.9	842.3	6,479.2	194,375.1

Barren Land	23.5	11.8	117.6	1,410.9
Forest	6,269.2	626.9	18,807.7	250,769.5
Urban	3,802.8	5,323.9	57,041.8	532,390.0
Water	188.7	18.9	566.0	7,546.0
Wetlands	594.6	59.5	1,783.9	23,785.5
TOTAL =	**11,526.7**	**6,883.2**	**84,796.1**	**1,010,276.9**

Impervious Cover Analysis

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Mendham 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 Mendham Township. Based upon the NJDEP impervious surface data, Mendham Township has impervious cover totaling 7.8%. Table 3 shows impervious cover for each HUC14. The extent of the impervious cover in Mendham 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, Mendham 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.

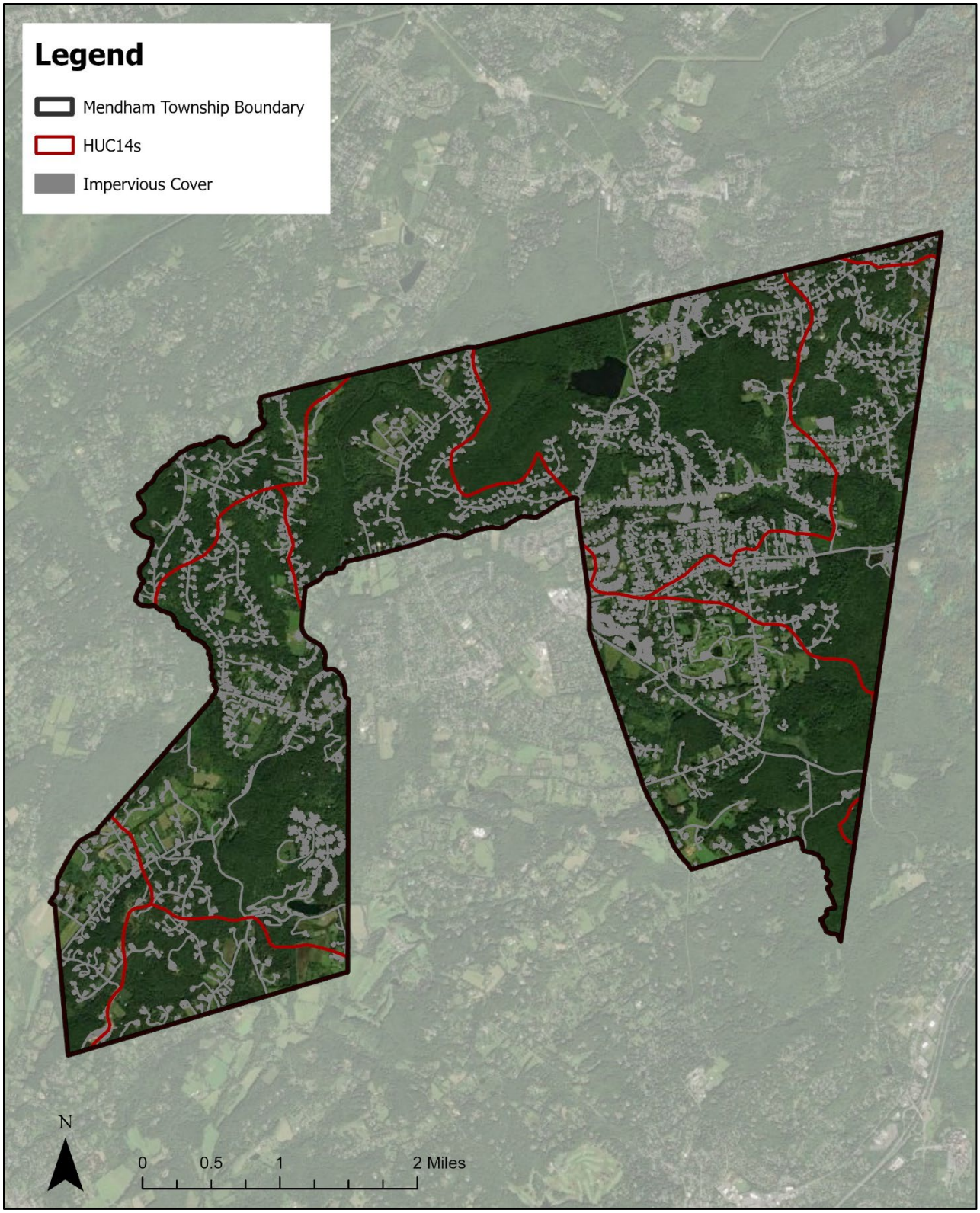


Figure 4: Impervious Cover in Mendham Township

Table 3: Impervious Cover Analysis by HUC14 for Mendham Township

Class	Area (acres)	HUC Impervious Cover (%)
02030103010010		
Building	23.47	
Other	58.84	
Road	41.72	
TOTAL =	**124.0**	**6.4%**
02030103010020		
Building	0.01	
Other	0.00	
Road	0.00	
TOTAL =	**0.01**	**0.1%**
02030103020010		
Building	58.62	
Other	105.95	
Road	77.30	
TOTAL =	**241.9**	**9.0%**
02030103020020		
Building	30.92	
Other	68.98	
Road	44.33	
TOTAL =	**144.2**	**8.6%**
02030103020040		
Building	1.84	
Other	3.28	
Road	2.10	
TOTAL =	**7.2**	**12.2%**
02030105060010		
Building	18.13	
Other	46.33	
Road	28.07	
TOTAL =	**92.5**	**7.5%**
02030105060020		
Building	7.67	
Other	20.19	
Road	12.57	
TOTAL =	**40.4**	**7.3%**
02030105060030		
Building	32.94	
Other	77.95	
Road	66.32	
TOTAL =	**177.2**	**7.7%**
02030105060040		
Building	6.33	
Other	19.44	
Road	8.76	
TOTAL =	**34.5**	**5.6%**

02030105060050		
Building	7.27	
Other	20.72	
Road	12.32	
TOTAL =	**40.3**	**8.4%**
All HUCs		
Building	187.19	
Other	421.68	
Road	293.49	
TOTAL =	**902.4**	**7.8%**

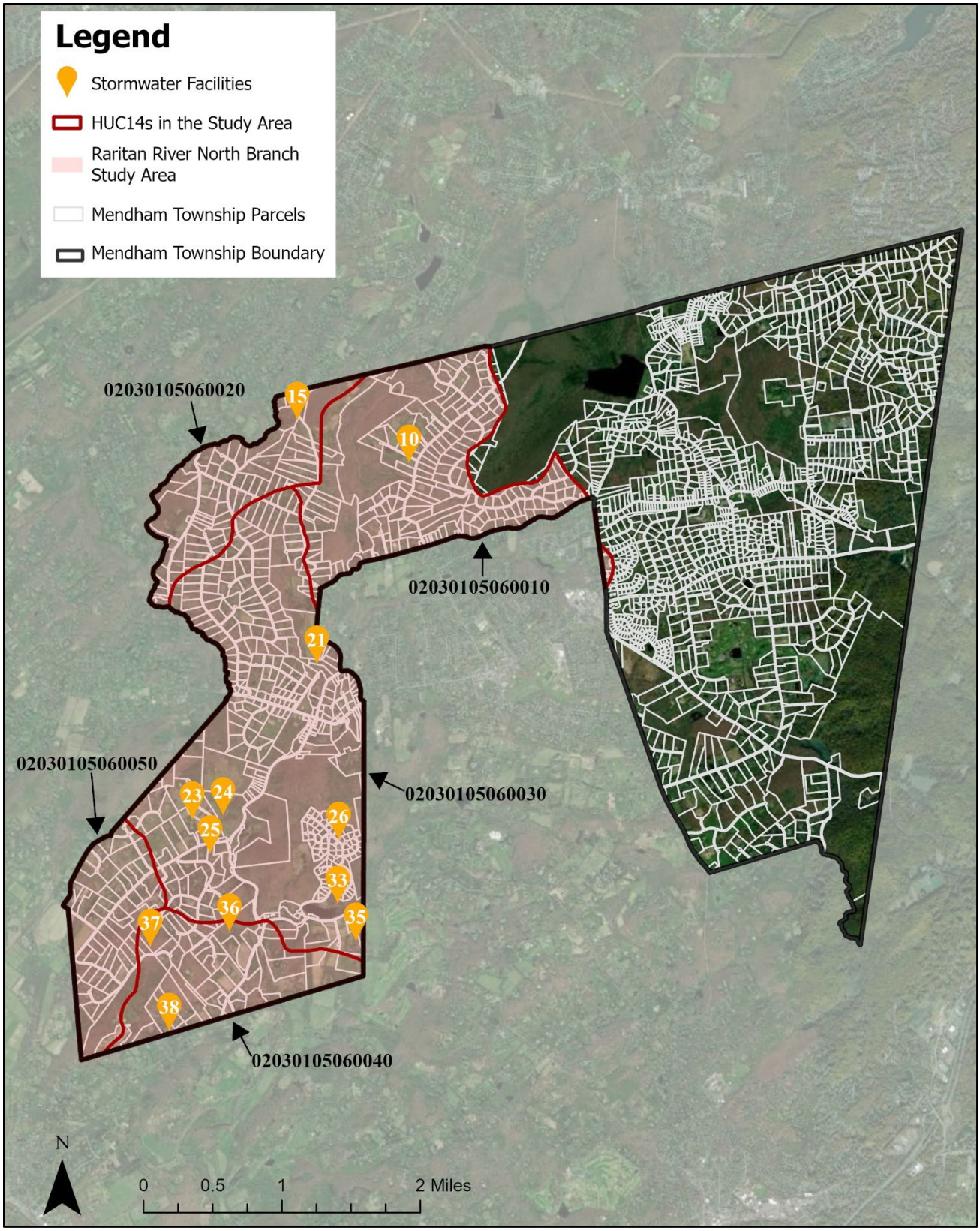


Figure 5: Stormwater Facilities in the Study Area of Mendham Township

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

Raritan River North Branch Study Area		
ID	**Address**	**Type**
10	2 Barer Ln	I
15	107 Ironia Rd	I
21	32 Ironia Rd	D
23	4 Pine Hollow Ln	N
24	3 Pine Hollow Ln	N
25	4 Pine Hollow Ln	N
26	92 Rockwell Ct	N
33	Brookrace Dr	N
35	306 Pleasant Valley Rd	RB
36	4 Rainetree Rdg	N
37	11 Wright Ln	D
38	99 Mosle Rd	I

"D" = Detention, "N" = Naturalized, "I" = Infiltration, "RB" = Retention with Buffer

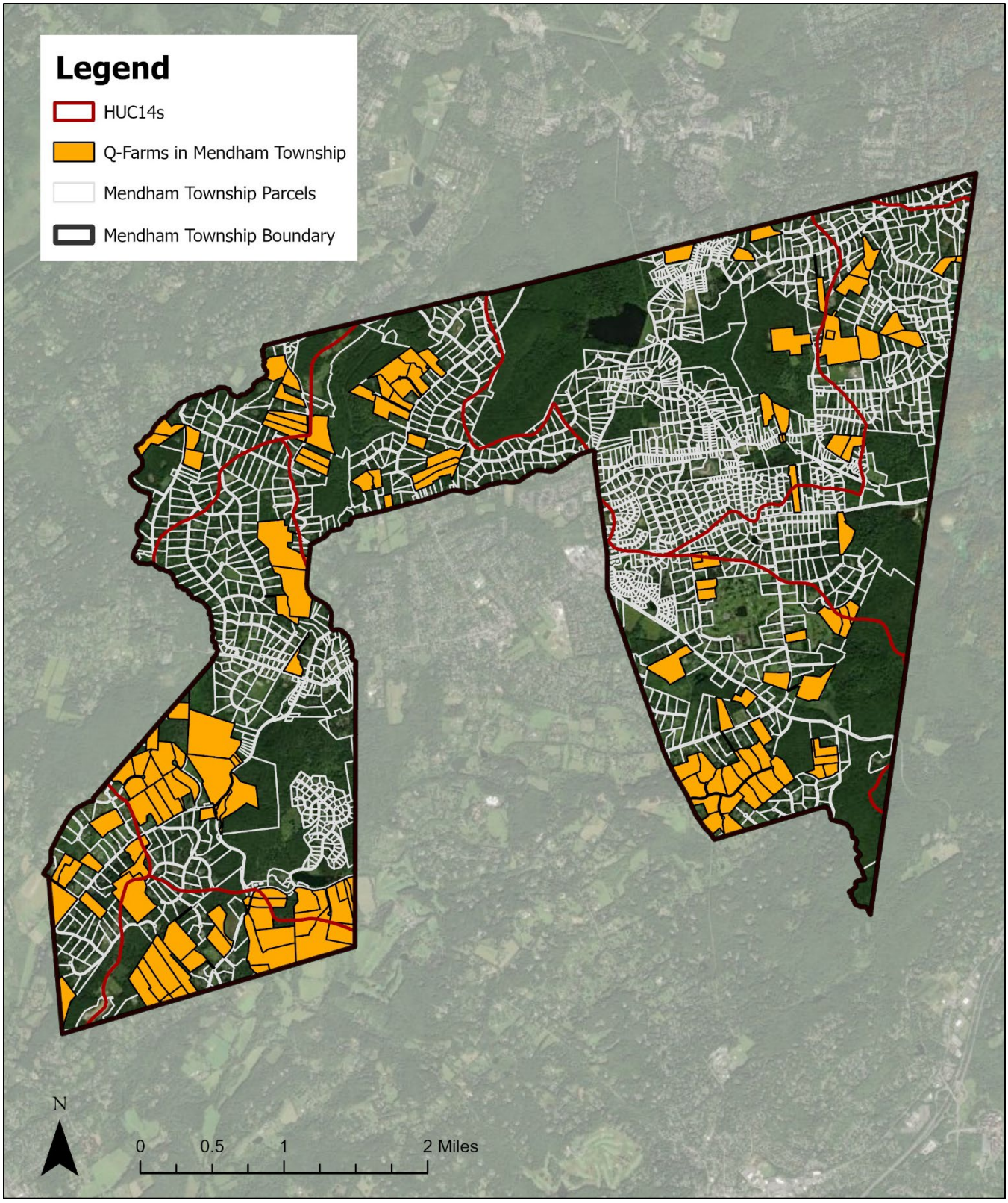


Figure 6: Q-Farm Parcels in Mendham Township

Table 5: Q-Farm Parcels in Mendham Township

Block	Lot	Q-Code	Prop Class	Location
27	6.02	QFARM	3B	38 Old Mill Rd
100	15	QFARM	3B	Roxiticus Rd
100	19	QFARM	3B	99 Mosle Rd
100	20	QFARM	3B	103 Mosle Rd
100	21	QFARM	3B	107 Mosle Rd
100	22	QFARM	3B	109 Mosle Rd
100	23	QFARM	3B	105 Mosle Rd
100	24	QFARM	3B	113 Mosle Rd
100	26.01	QFARM	3B	123 Mosle Rd
100	27.06	QFARM	3B	127 Mosle Rd
100	27.07	QFARM	3B	3 Timber Ridge Rd
100	29	QFARM		Mosle Rd
100	31	QFARM	3B	Mosle Rd
100	32	QFARM	3B	139 Mosle Rd
100	37	QFARM	3B	34 Roxiticus Rd
100	52	QFARM	3B	11 Wright Ln
100	63	QFARM	3B	78 Roxiticus Rd
100	64	QFARM	3B	76a Roxiticus Rd
100	71	QFARM	3B	94 Roxiticus Rd
103	1	QFARM		Brookrace Dr
103	2	QFARM	3B	140 Mosle Rd
103	3	QFARM	3B	138 Mosle Rd
103	4	QFARM	3B	320 Pleasant Valley Rd
103	5	QFARM	3B	316 Pleasant Valley Rd
103	6	QFARM	3B	314 Pleasant Valley Rd
103	7	QFARM	3B	304 Pleasant Valley Rd
103	8	QFARM	3B	304 Pleasant Valley Rd
103	9	QFARM	3B	306 Pleasant Valley Rd
103	10	QFARM	3B	302 Pleasant Valley Rd
103	11	QFARM	3B	136 Mosle Rd
103	12	QFARM	3B	134 Mosle Rd
103	13	QFARM	3B	61 Stevens Ln
104	27.01	QFARM	3B	44 Roxiticus Rd
104	27.02	QFARM	3B	2 Union Schoolhouse Rd
104	27.05	QFARM	3B	50 Roxiticus Rd
105	1	QFARM	3B	Roxiticus Rd
106	4	QFARM	3B	71 East Fox Chase Rd
106	5	QFARM	3B	65 East Fox Chase Rd
106	8.03	QFARM	3B	2 Winston Farm Ln
106	8.12	QFARM	3B	87 Roxiticus Rd
107	44	QFARM	3B	2 Mount Paul Rd

107	45	QFARM	3B	51 Roxiticus Rd
107	46	QFARM	3B	55-57 Roxiticus Rd
107	48.03	QFARM	3B	5 Pine Hollow Ln
107	48.04	QFARM	3B	6 Pine Hollow Ln
107	48.06	QFARM	3B	4 Pine Hollow Ln
107	50	QFARM	3B	67 Roxiticus Rd
107	51	QFARM	3B	69 Roxiticus Rd
107	52	QFARM	3B	71 Roxiticus Rd
107	53	QFARM	3B	73 Roxiticus Rd
107	58	QFARM	3B	1 Bittersweet Ln
107	59	QFARM	3B	3 Bittersweet Ln
107	60	QFARM	3B	4 Bittersweet Ln
107	61	QFARM	3B	2 Bittersweet Ln
107	66	QFARM	3B	23 Mt Paul Rd
*107	69	QFARM	3B	5 Mount Paul Rd
109	22	QFARM	3B	36 Ironia Rd
109	23	QFARM	3B	32 Ironia Rd
109	34	QFARM	3B	327 Mendham Rd West
109	53	QFARM	3B	9 North Gate Rd
112	1	QFARM	3B	18 Burnett Rd
112	13	QFARM	3B	72 Old Mill Rd
113	2	QFARM	3B	81 Old Mill Rd
113	2.01	QFARM	3B	79 Old Mill Rd
114	3	QFARM	3B	102 Ironia Rd
114	4	QFARM	3B	100 Ironia Rd
114	6	QFARM	3B	96 Ironia Rd
114	8	QFARM	3B	92 Ironia Rd
114	9	QFARM	3B	88 Ironia Rd
114	10	QFARM	3B	84 Ironia Rd
116	9.04	QFARM	3B	40 Calais Rd
116	13	QFARM	3B	1 Samantha Ln
116	15.01	QFARM	3B	3 Barer Ln
116	15.02	QFARM	3B	1 Barer Ln
116	15.03	QFARM	3B	2 Barer Ln
116	17	QFARM	3B	20 Calais Rd
116	18	QFARM	3B	3 Amalia Ct
116	20	QFARM	3B	6 Amalia Ct
116	22	QFARM	3B	18 Calais Rd
116	43	QFARM	3B	225 Mountainside Rd
116	46	QFARM	3B	235 Mountainside Rd
116	46.01	QFARM	3B	Mountainside Rd
116	64	QFARM	3B	79 Ironia Rd
116	65	QFARM	3B	81 Ironia Rd
116	67	QFARM	3B	87 Ironia Rd

117	13	QFARM	3B	2 Lone Spruce Trl
117	49.01	QFARM	3B	5 Calais Rd
117	49.02	QFARM	3B	7 Calais Rd
117	55	QFARM	3B	17 Calais Rd
120	21	QFARM	3B	9 Old Brookside Rd
123	21	QFARM	3B	47 Mount Pleasant Rd
123	25.01	QFARM	3B	5 Tufts Ln
125	23	QFARM	3B	7 Schoolhouse Ln
125	26	QFARM	3B	53 Schoolhouse Ln
127	77	QFARM	3B	30 Mount Pleasant Rd
127	105.02	QFARM	3B	7 Queens Ct
127	105.03	QFARM	3B	8 Queens Ct
127	105.04	QFARM	3B	10 Queens Ct
127	122	QFARM	3B	14 Old Orchard Rd
127	126	QFARM	3B	6 Old Orchard Rd
127	148.01	QFARM	3B	32 Old Orchard Rd
127	163	QFARM	3B	59 Tingley Rd
127	164	QFARM	3B	41a Tingley Rd
127	172	QFARM	3B	62 Tingley Rd
127	182	QFARM	3B	34 East Main St
127	187	QFARM	3B	32 East Main St
139	13	QFARM	3B	21 East Main St
139	14	QFARM	3B	23 East Main St
139	80	QFARM	3B	172 Mendham Rd East
141	53	QFARM	3B	19 Tingley Rd
141	54	QFARM	3B	23 Tingley Rd
142	28	QFARM	3B	189 Mendham Rd East
142	58	QFARM	3B	5 Indian Hollow Rd
142	58.01	QFARM	3B	Indian Hollow Rd
142	58.02	QFARM	3B	Indian Hollow Rd
142	67	QFARM	3B	26 Corey Ln
142	73	QFARM	3B	18 Corey Ln
144	29.01	QFARM	3B	25 Corey Ln
144	42	QFARM	3B	14 Kennaday Rd
144	43	QFARM	3B	12a Kennaday Rd
144	46	QFARM	3B	8 Kennaday Rd
144	47	QFARM		Kennaday Rd
146	9	QFARM	3B	43 Tempe Wick Rd
146	14	QFARM	3B	57 Tempe Wick Rd
146	19	QFARM	3B	41 Corey Ln
147	11	QFARM	3B	36 Corey Ln
147	21	QFARM	3B	11 Leddell Rd
147	22	QFARM	15C	13 Leddell Rd
147	23	QFARM	15C	1 Cobblefield Dr

147	24	QFARM	15C	3 Cobblefield Dr
147	42.01	QFARM	3B	1 Exmoor Dr
147	42.02	QFARM	3B	54 Hardscrabble Rd
147	42.03	QFARM	3B	1 Applejack Ln
147	42.04	QFARM	3B	3 Exmoor Dr
147	42.05	QFARM	3B	5 Exmoor Dr
147	42.06	QFARM	3B	7 Exmoor Dr
147	42.07	QFARM	3B	9 Exmoor Dr
147	42.08	QFARM	3B	11 Exmoor Dr
147	42.09	QFARM	3B	13 Exmoor Dr
147	42.1	QFARM	3B	10 Exmoor Dr
147	42.11	QFARM	3B	8 Exmoor Dr
147	42.12	QFARM	3B	6 Exmoor Dr
147	42.13	QFARM	3B	4 Exmoor Dr
147	42.14	QFARM	3B	2 Exmoor Dr
147	42.15	QFARM	1	Hardscrabble Rd
147	42.16	QFARM	3B	3 Sutton Pl
147	42.17	QFARM	3B	Exmoor Dr
*3601	7	QFARM	3B	54 School House Ln

*Only a portion of the Q-Farm is within the Mendham Township boundary

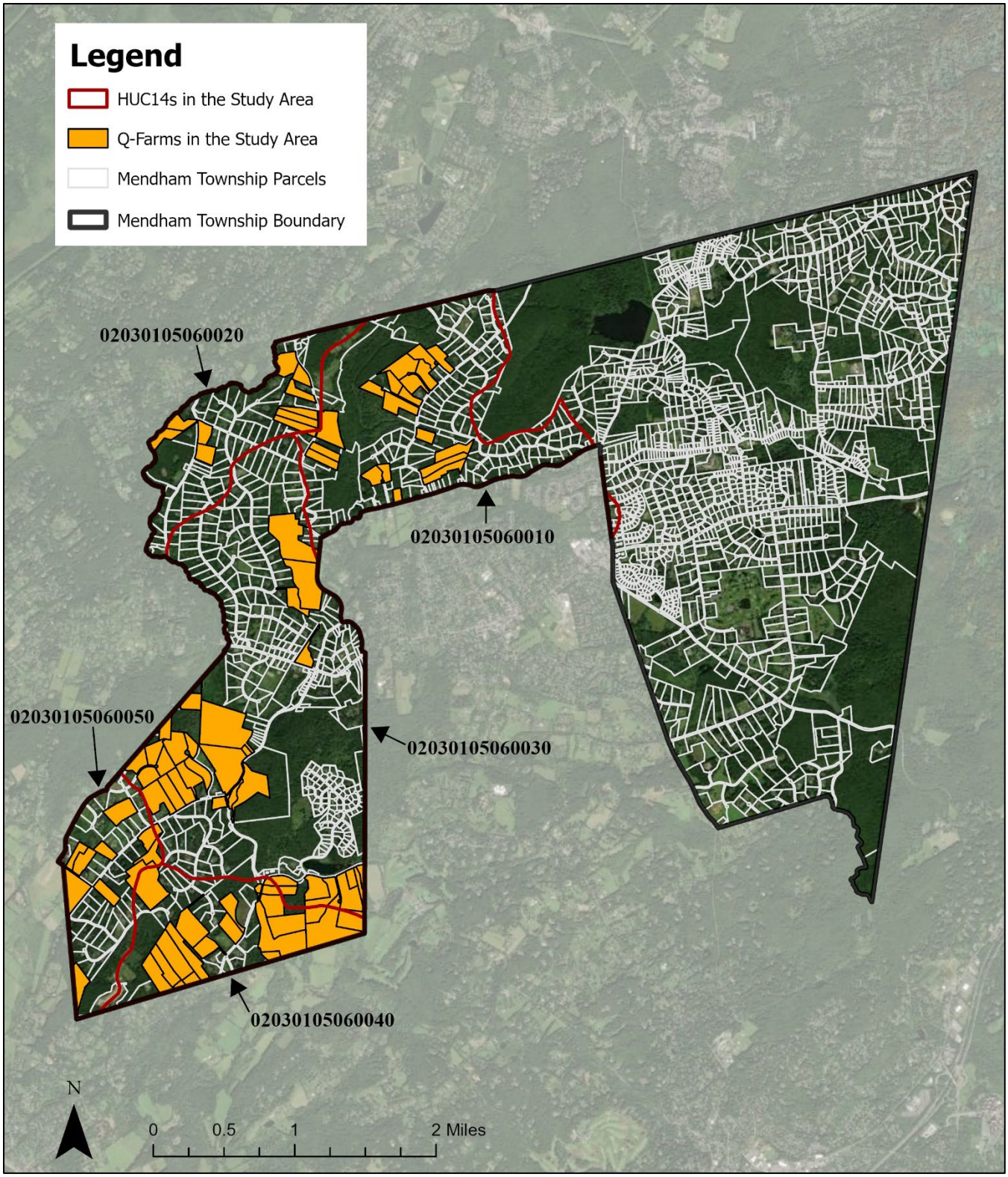


Figure 7: Q-Farm Parcels in the Study Area of Mendham Township

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

Block	Lot	Q-Code	Prop Class	Location
27	6.02	QFARM	3B	38 Old Mill Rd
100	15	QFARM	3B	Roxiticus Rd
100	19	QFARM	3B	99 Mosle Rd
100	20	QFARM	3B	103 Mosle Rd
100	21	QFARM	3B	107 Mosle Rd
100	22	QFARM	3B	109 Mosle Rd
100	23	QFARM	3B	105 Mosle Rd
100	24	QFARM	3B	113 Mosle Rd
100	26.01	QFARM	3B	123 Mosle Rd
100	27.06	QFARM	3B	127 Mosle Rd
100	27.07	QFARM	3B	3 Timber Ridge Rd
100	29	QFARM		Mosle Rd
100	31	QFARM	3B	Mosle Rd
100	32	QFARM	3B	139 Mosle Rd
100	37	QFARM	3B	34 Roxiticus Rd
100	52	QFARM	3B	11 Wright Ln
100	63	QFARM	3B	78 Roxiticus Rd
100	64	QFARM	3B	76a Roxiticus Rd
100	71	QFARM	3B	94 Roxiticus Rd
103	1	QFARM		Brookrace Dr
103	2	QFARM	3B	140 Mosle Rd
103	3	QFARM	3B	138 Mosle Rd
103	4	QFARM	3B	320 Pleasant Valley Rd
103	5	QFARM	3B	316 Pleasant Valley Rd
103	6	QFARM	3B	314 Pleasant Valley Rd
103	7	QFARM	3B	304 Pleasant Valley Rd
103	8	QFARM	3B	304 Pleasant Valley Rd
103	9	QFARM	3B	306 Pleasant Valley Rd
103	10	QFARM	3B	302 Pleasant Valley Rd
103	11	QFARM	3B	136 Mosle Rd
103	12	QFARM	3B	134 Mosle Rd
103	13	QFARM	3B	61 Stevens Ln
104	27.01	QFARM	3B	44 Roxiticus Rd
104	27.02	QFARM	3B	2 Union Schoolhouse Rd
104	27.05	QFARM	3B	50 Roxiticus Rd
105	1	QFARM	3B	Roxiticus Rd
106	4	QFARM	3B	71 East Fox Chase Rd
106	5	QFARM	3B	65 East Fox Chase Rd
106	8.03	QFARM	3B	2 Winston Farm Ln
106	8.12	QFARM	3B	87 Roxiticus Rd
107	44	QFARM	3B	2 Mount Paul Rd

107	45	QFARM	3B	51 Roxiticus Rd
107	46	QFARM	3B	55-57 Roxiticus Rd
107	48.03	QFARM	3B	5 Pine Hollow Ln
107	48.04	QFARM	3B	6 Pine Hollow Ln
107	48.06	QFARM	3B	4 Pine Hollow Ln
107	50	QFARM	3B	67 Roxiticus Rd
107	51	QFARM	3B	69 Roxiticus Rd
107	52	QFARM	3B	71 Roxiticus Rd
107	53	QFARM	3B	73 Roxiticus Rd
107	58	QFARM	3B	1 Bittersweet Ln
107	59	QFARM	3B	3 Bittersweet Ln
107	60	QFARM	3B	4 Bittersweet Ln
107	61	QFARM	3B	2 Bittersweet Ln
107	66	QFARM	3B	23 Mt Paul Rd
107	69	QFARM	3B	5 Mount Paul Rd
109	22	QFARM	3B	36 Ironia Rd
109	23	QFARM	3B	32 Ironia Rd
109	34	QFARM	3B	327 Mendham Rd West
109	53	QFARM	3B	9 North Gate Rd
112	1	QFARM	3B	18 Burnett Rd
112	13	QFARM	3B	72 Old Mill Rd
113	2	QFARM	3B	81 Old Mill Rd
113	2.01	QFARM	3B	79 Old Mill Rd
114	3	QFARM	3B	102 Ironia Rd
114	4	QFARM	3B	100 Ironia Rd
114	6	QFARM	3B	96 Ironia Rd
114	8	QFARM	3B	92 Ironia Rd
114	9	QFARM	3B	88 Ironia Rd
114	10	QFARM	3B	84 Ironia Rd
116	9.04	QFARM	3B	40 Calais Rd
116	13	QFARM	3B	1 Samantha Ln
116	15.01	QFARM	3B	3 Barer Ln
116	15.02	QFARM	3B	1 Barer Ln
116	15.03	QFARM	3B	2 Barer Ln
116	17	QFARM	3B	20 Calais Rd
116	18	QFARM	3B	3 Amalia Ct
116	20	QFARM	3B	6 Amalia Ct
116	22	QFARM	3B	18 Calais Rd
116	43	QFARM	3B	225 Mountainside Rd
116	46	QFARM	3B	235 Mountainside Rd
116	46.01	QFARM	3B	Mountainside Rd
116	64	QFARM	3B	79 Ironia Rd
116	65	QFARM	3B	81 Ironia Rd
116	67	QFARM	3B	87 Ironia Rd

117	13	QFARM	3B	2 Lone Spruce Trl
117	49.01	QFARM	3B	5 Calais Rd
117	49.02	QFARM	3B	7 Calais Rd
117	55	QFARM	3B	17 Calais Rd

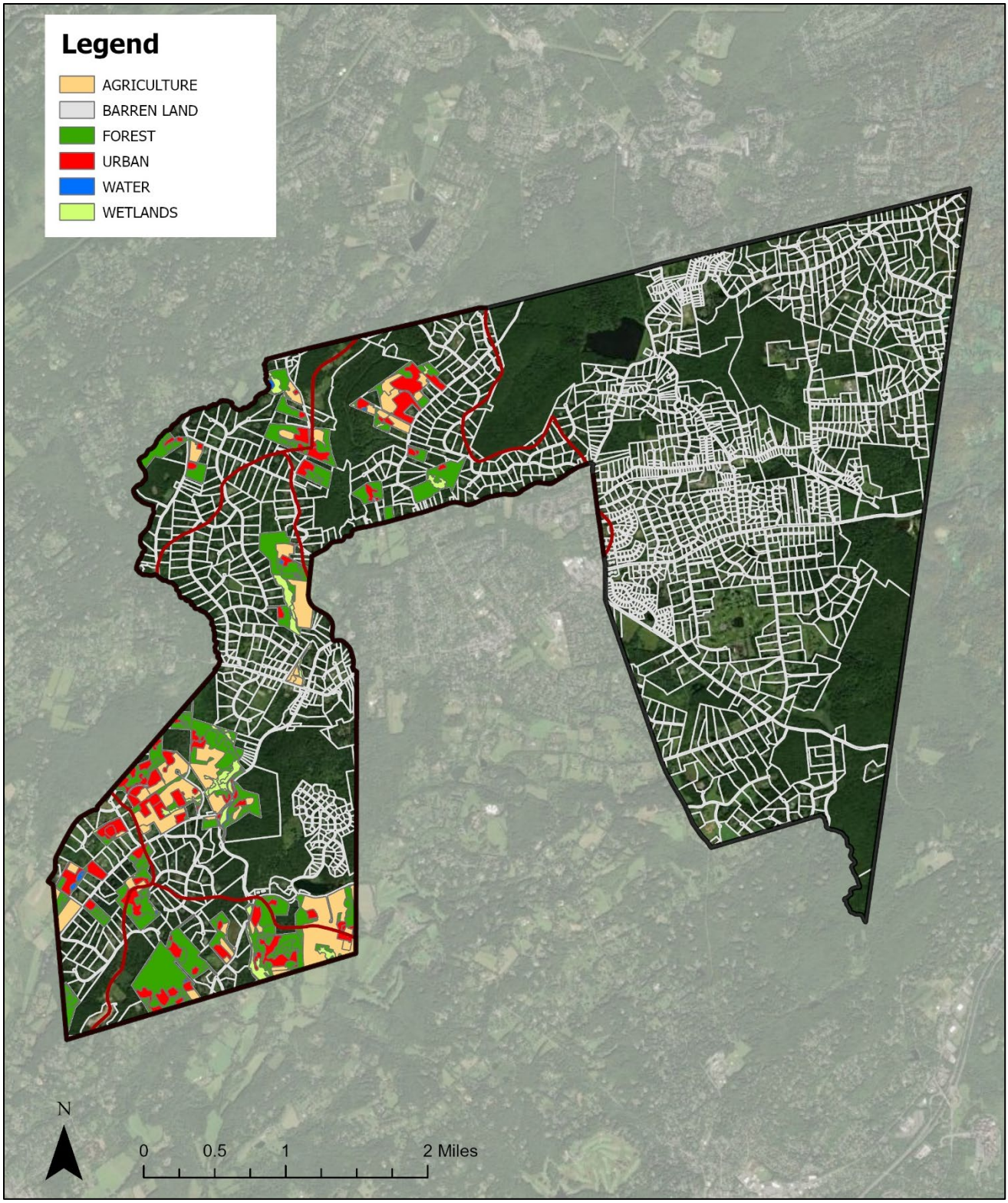


Figure 8: Land Use on Q-Farm Parcels in the Study Area of Mendham Township

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

Land Use	Area (acres)
Agriculture	311.4
Barren Land	0.0
Forest	558.2
Urban	253.7
Water	12.9
Wetlands	67.4
Total:	**1,203.7**

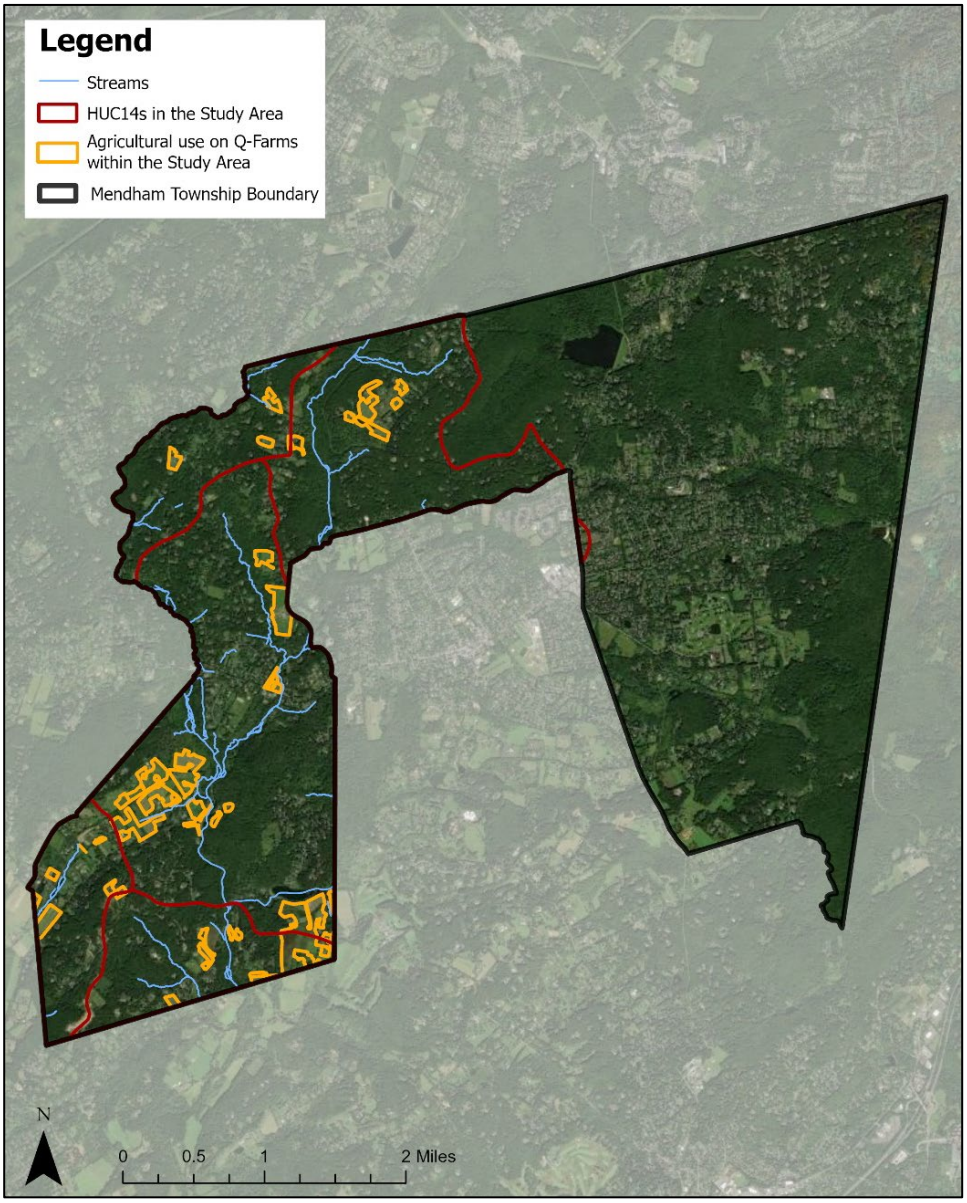


Figure 9: Aerial View of Agricultural Use on Q-Farm Parcels within the Study Area of Mendham Township

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

North Branch Raritan River Study Area								
Block	**Lot**	**Q-Farm Code**	**Cover Crop**	**Enhanced Stream Buffer**	**Impervious Cover Mgt.**	**Rainwater Harvesting**	**Livestock Exclusion**	**Manure Mgt.**
104	27.01	QFARM			X	X		
107	44	QFARM	X					
107	46	QFARM						X
109	22	QFARM	X			X		
109	23	QFARM			X	X		X
109	34	QFARM	X		X	X		

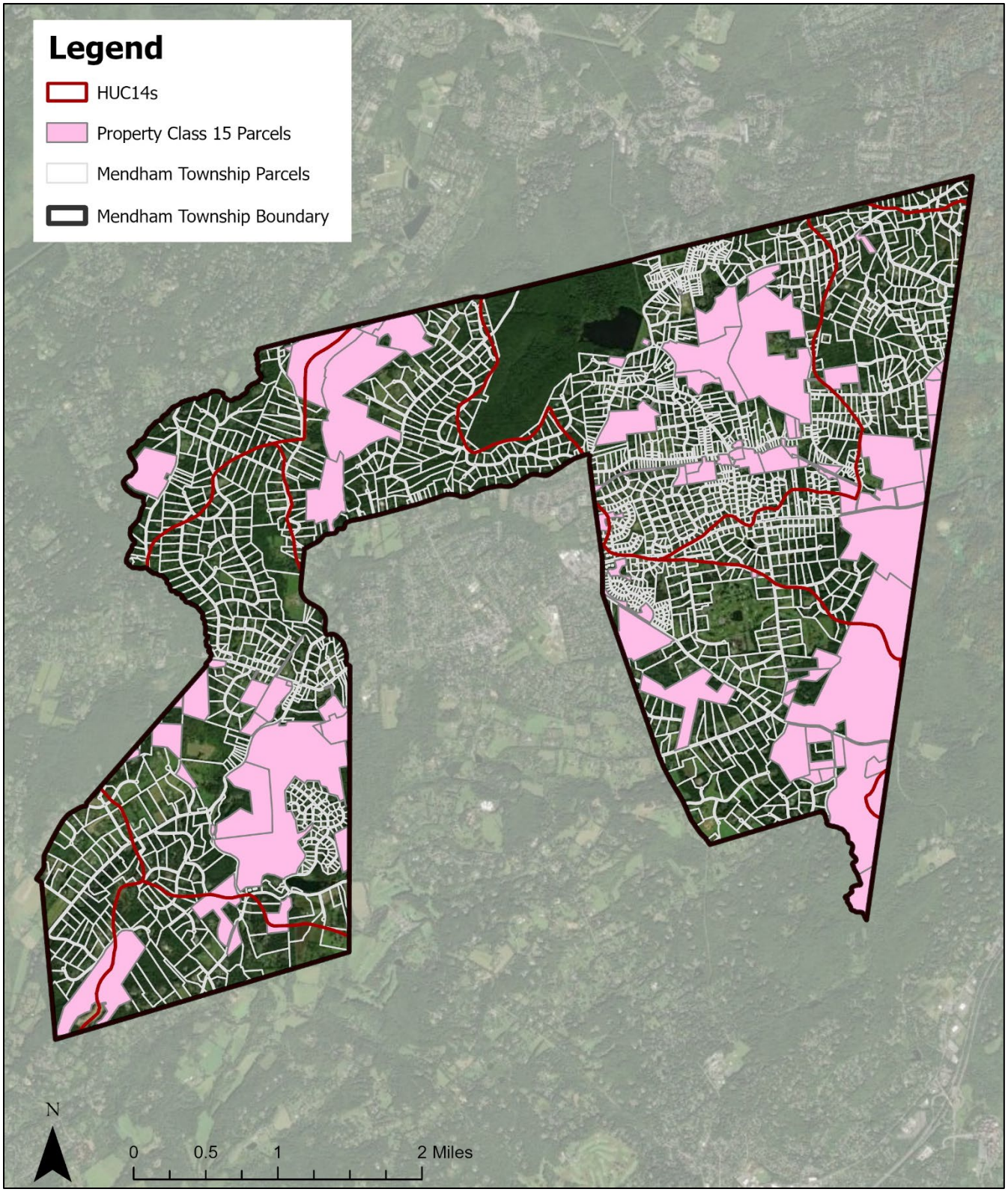


Figure 10: Property Class 15 Parcels in Mendham Township

Table 9: Property Class 15 Parcels in Mendham Township

Block	Lot	Prop Class	Location	Facility Type
127	152	15A	16 Washington Valley Rd	Middle School
137	48	15A	16 West Main St	Elementary School
127	44	15B	5 Franklin Dr	Allegro School
100	17.02	15C	9 Carriage Hill Dr	Vacant Land
107	1	15C	336 Mendham Rd West	Historic Site
107	10	15C	338 Mendham Rd West	Conservation
107	19	15C	Mendham Rd West	Park, Ball Field
107	23	15C	320 Mendham Rd West	Firehouse
107	33	15C	322 Mendham Rd West	Park/Firehouse
107	35	15C	Mendham Rd West	Park
107	64	15C	Roxiticus Rd	Park
107	67	15C	Mount Paul Rd	Conservation
108	1	15C	313 Mendham Rd West	Historic Sites
109	27	15C	Ironia Rd	Vacant Land
109	35	15C	317 Mendham Rd West	Park
112	48	15C	Oak Knoll Rd	Burial Ground
113	4	15C	Old Mill Rd	Park
116	2	15C	Ironia Rd	Park
116	6	15C	97 Ironia Rd	Dedicated Open Space
116	7.01	15C	14 Calais Rd	Park
116	8.05	15C	Calais Rd	Recreational Park
116	9.01	15C	Combs Hollow Rd	Park Land
116	52	15C	Mountainside Rd	Park
118	9	15C	Woodland Rd	Wtr Treatment Plant
118	10.01	15C	Cold Hill Rd	Vacant Land
127	19	15C	Stony Hill Rd	Green Acres
127	20	15C	Woodland Rd	Park
127	71	15C	Woodland Rd	Park
127	73	15C	40 Mount Pleasant Rd	Maintenance Bldg.
127	171	15C	Tingley Rd	Recreational Park
127	179	15C	East Main St	Park
130	7.02	15C	Cold Hill Rd	Park
131	23	15C	Knollwood Trl	Park
131.01	1.01	15C	1 Cold Hill Rd	Vacant Land
137	17.01	15C	2 West Main St	House
137	47	15C	Knollwood Trl	Park
137	49	15C	18 West Main St	Pond
137	50	15C	Knollwood Trl	Park
139	15	15C	East Main St	Park
139	20	15C	Tingley Rd	Park
139	21	15C	East Main St	Park
139	30	15C	Tingley Rd	Patriots Path
139	41	15C	Tingley Rd	Park
139	42	15C	Mendham Rd East	Park
139	50	15C	Glengary Dr	Park
139	51	15C	Glengary Dr	Park

139	52	15C	Glengary Dr	Park
141	34	15C	41 Washington Valley Rd	Vacant Land
141	35	15C	45 Washington Valley Rd	Vacant Land
141	37	15C	39 Washington Valley Rd	Vacant Land
141	38	15C	Mendham Rd East	Vacant Land
141	39	15C	Mendham Rd East	Park
141	40	15C	Mendham Rd East	Park
141	41	15C	Mendham Rd East	Park
142	29	15C	Mendham Rd East	Park
142	63	15C	Tempe Wick Rd	Park
142	66	15C	Corey Ln	Park
142	68	15C	Corey Ln	Park
142	70	15C	Corey Ln	Park
145.02	26	15C	Tempe Wick Rd	Sewage Treatment
145.04	41	15C	6 Devonshire Ln	Sewage Treatment
146	4	15C	Tempe Wick Rd	Township of Mendham
146	11	15C	Tempe Wick Rd	Green Acres
147	16	15C	Tempe Wick Rd	Vacant Land
147	17	15C	Tempe Wick Rd	Vacant Land
147	22	15C	13 Leddell Rd	Park
147	23	15C	1 Cobblefield Dr	Park
147	24	15C	3 Cobblefield Dr	Park
149	3	15C	Leddell Rd	Vacant Land
149	8	15C	Off Leddell Rd	Parkland
104	22	15D	Mendham Rd West	Convent
128	3	15D	6 East Main St	Church
100	29.01	15F	131 Mosle Rd	Vacant Land
100	35	15F	Roxiticus Rd	Vacant Land
102	1	15F	Mosle Rd	Vacant Land
103	4.01	15F	Pleasant Valley Rd	Vacant Land
104	22.01	15F	Mendham Rd West	Vacant Land
104	23	15F	Pleasant Valley Rd	Recreational Park
104	26	15F	Union Schoolhouse Rd	Recreational Park
104	27.03	15F	40 Roxiticus Rd	Vacant Land
104	27.04	15F	10 Union Schoolhouse Rd	Vacant Land
107	48.02	15F	3 Pine Hollow Ln	Game Preserve
107	70	15F	Mendham Rd West	Vacant Land
127	83	15F	20 Mount Pleasant Rd	Disabled Veteran
127	178	15F	East Main St	Game Preserve
139	1	15F	1 East Main St	Private Club
139	3	15F	1 East Main St	Park
139	9	15F	East Main St	Club House
144	19	15F	15 Yardley Rd	Disabled Veteran
148	4	15F	Leddell Rd	Green Acres
149	6	15F	Tempe Wick Rd	Green Acres
149	7	15F	Tempe Wick Rd	Green Acres

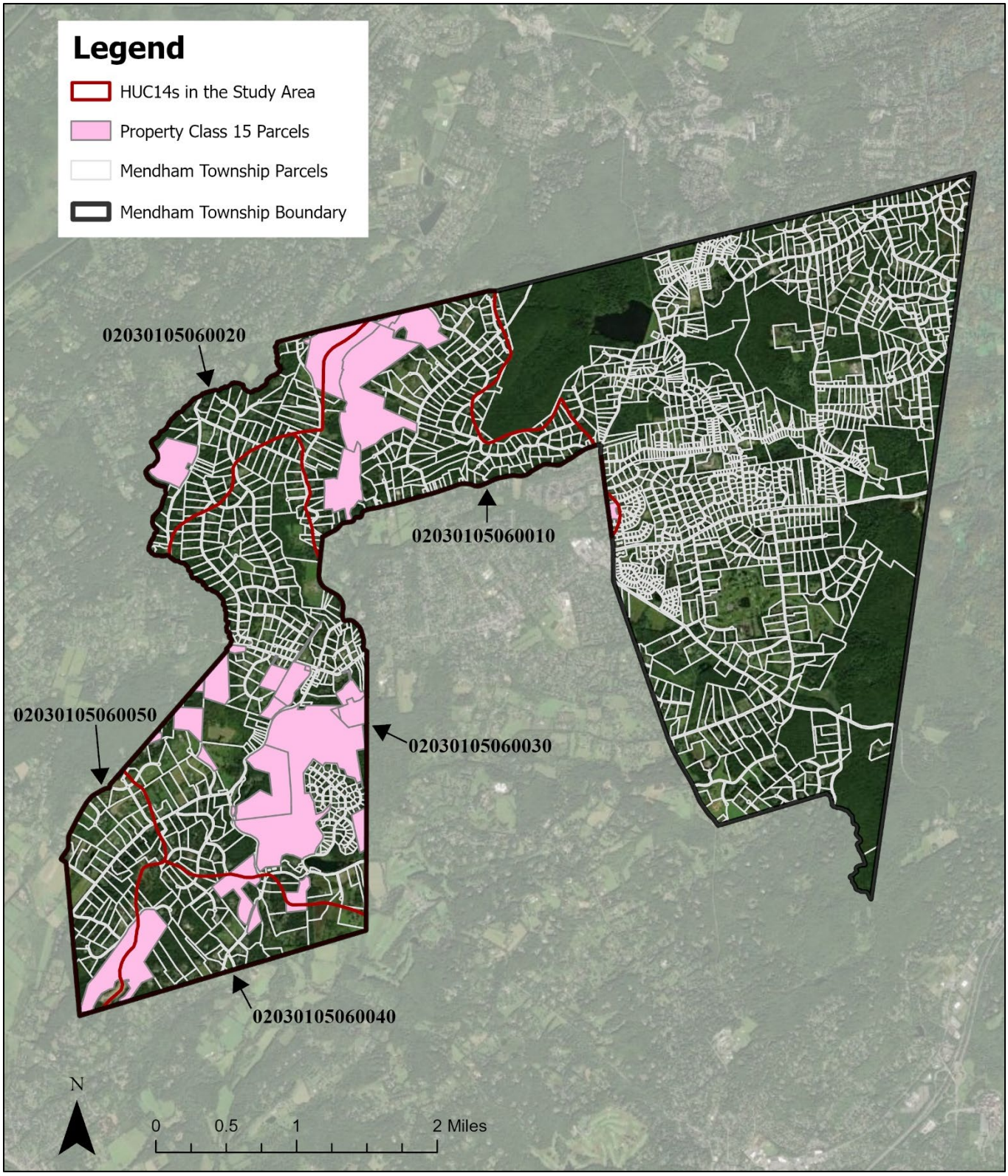


Figure 11: Property Class 15 parcels in the Study Area of Mendham Township

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

Block	Lot	Prop Class	Location	Facility Type
100	17.02	15C	9 Carriage Hill Dr	Vacant Land
107	1	15C	336 Mendham Rd West	Historic Site
107	10	15C	338 Mendham Rd West	Conservation
107	19	15C	Mendham Rd West	Park, Ball Field
***107**	**23**	**15C**	**320 Mendham Rd West**	**Firehouse**
***107**	**33**	**15C**	**322 Mendham Rd West**	**Park/Firehouse**
107	35	15C	Mendham Rd West	Park
107	64	15C	Roxiticus Rd	Park
107	67	15C	Mount Paul Rd	Conservation
108	1	15C	313 Mendham Rd West	Historic Sites
109	27	15C	Ironia Rd	Vacant Land
109	35	15C	317 Mendham Rd West	Park
112	48	15C	Oak Knoll Rd	Burial Ground
113	4	15C	Old Mill Rd	Park
116	2	15C	Ironia Rd	Park
***116**	**6**	**15C**	**97 Ironia Rd**	**Dedicated Open Space**
116	7.01	15C	14 Calais Rd	Park
116	8.05	15C	Calais Rd	Recreational Park
116	9.01	15C	Combs Hollow Rd	Park Land
116	52	15C	Mountainside Rd	Park
131.01	1.01	15C	1 Cold Hill Rd	Vacant Land
***104**	**22**	**15D**	**Mendham Rd West**	**Convent**
100	29.01	15F	131 Mosle Rd	Vacant Land
100	35	15F	Roxiticus Rd	Vacant Land
102	1	15F	Mosle Rd	Vacant Land
103	4.01	15F	Pleasant Valley Rd	Vacant Land
104	22.01	15F	Mendham Rd West	Vacant Land
104	23	15F	Pleasant Valley Rd	Recreational Park
104	26	15F	Union Schoolhouse Rd	Recreational Park
104	27.03	15F	40 Roxiticus Rd	Vacant Land
104	27.04	15F	10 Union Schoolhouse Rd	Vacant Land
107	48.02	15F	3 Pine Hollow Ln	Game Preserve
107	70	15F	Mendham Rd West	Vacant Land

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

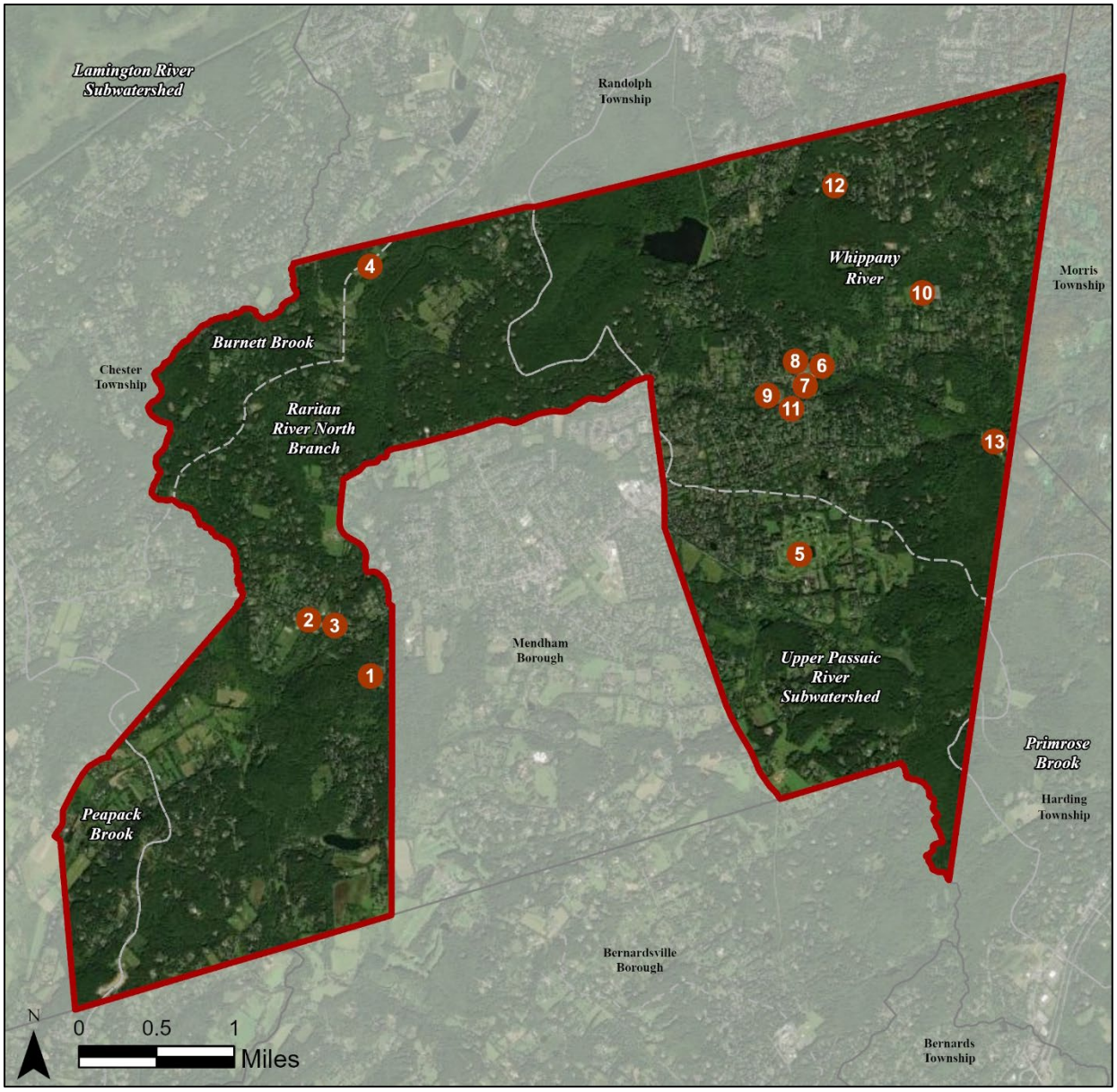


Figure 12: Sites with Green Infrastructure Opportunities in Mendham Township

COMMUNITY OF ST. JOHN BAPTIST

RAP ID: 1

Subwatershed: Raritan River North Branch

HUC14 ID: 02030105060030

Site Area: 901,688 sq. ft.

Address: 82 West Main Street
Mendham Township, NJ 07945

Block and Lot: Block 104, Lot 22

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the building rooftops and pavement. For some of the gardens, this may require downspout redirections and downspout disconnections. A preliminary soil assessment suggests that the soils have suitable drainage characteristics for green infrastructure. 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 50"
10	90,971	4.4	45.9	417.7	0.071	2.84

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	8,535	0.253	38	17,800	0.67	2,130	$21,300

GREEN INFRASTRUCTURE RECOMMENDATIONS

Community of St. John Baptist

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

0 50' 100'

RALSTON ENGINE COMPANY NO. 1

RAP ID: 2

Subwatershed: Raritan River North Branch

Site Area: 1,050,733 sq. ft.

Address: 322 Mendham Road West
Mendham, NJ 07945

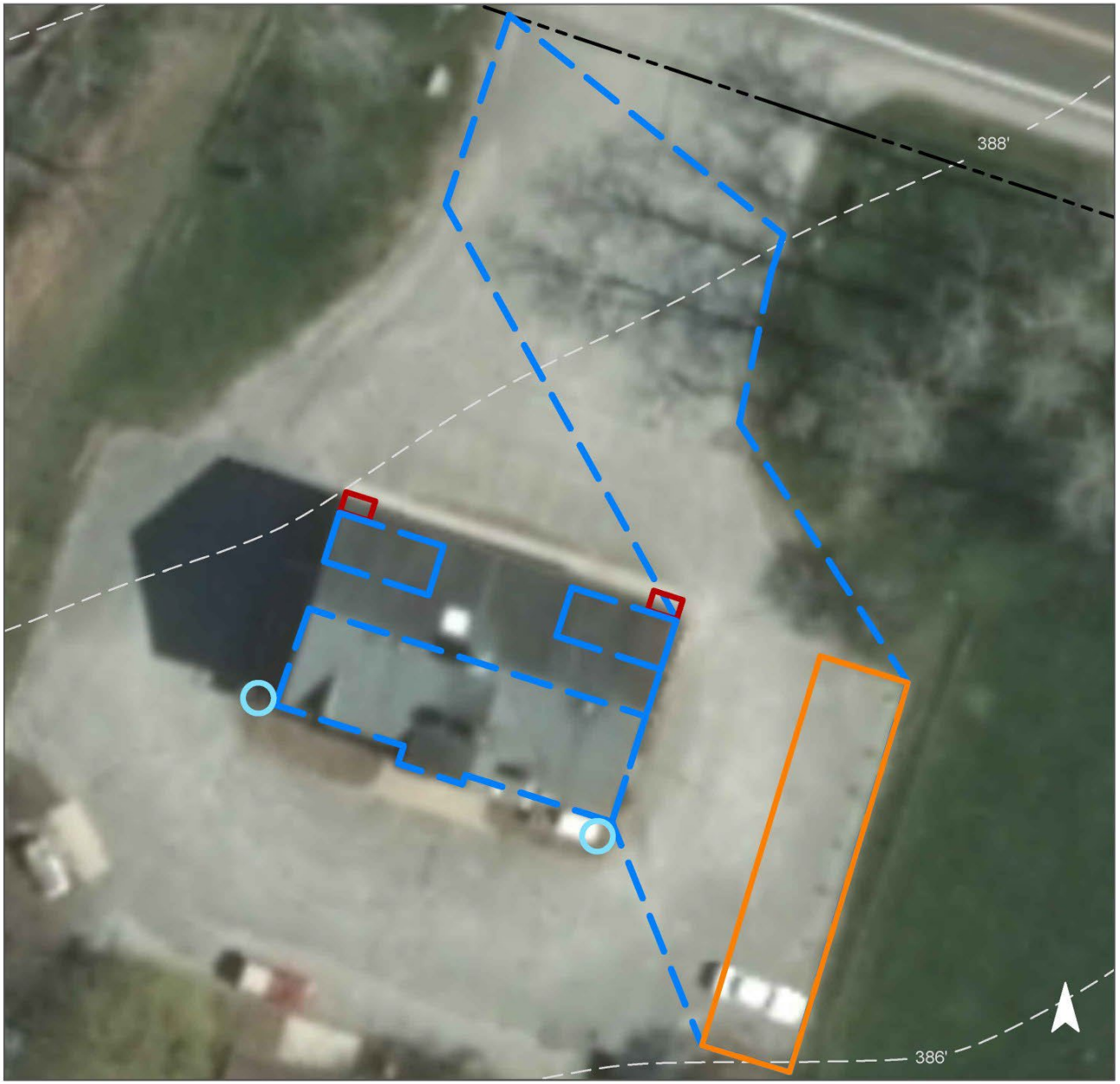
Block and Lot: Block 107, Lot 33

A cistern can be installed along the building to allow stormwater runoff from the roof to be reused for activities such as washing fire engines. To capture runoff from the parking lot, a section of parking spaces can be converted to porous pavement. Downspout planter boxes can be placed on the front of the building to help capture stormwater runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
6	61,226	3.0	30.9	281.1	0.048	1.68

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	0.210	35	15,420	0.58	1,440	$36,000
Planter boxes	n/a	2	n/a	n/a	2 (boxes)	$2,000
Rainwater harvesting	0.039	7	1,170	0.04	1,170 (gal)	$2,340

GREEN INFRASTRUCTURE RECOMMENDATIONS



Ralston Engine Company No. 1

- pervious pavement
- planter box
- rainwater harvesting
- drainage area
- property line
- 2015 Aerial: NJOIT, OGIS

0 15' 30'

RALSTON FIELD

RAP ID: 3

Subwatershed: Raritan River North Branch

Site Area: 35,929 sq. ft.

Address: 326 Mendham Road West
Mendham, NJ 07945

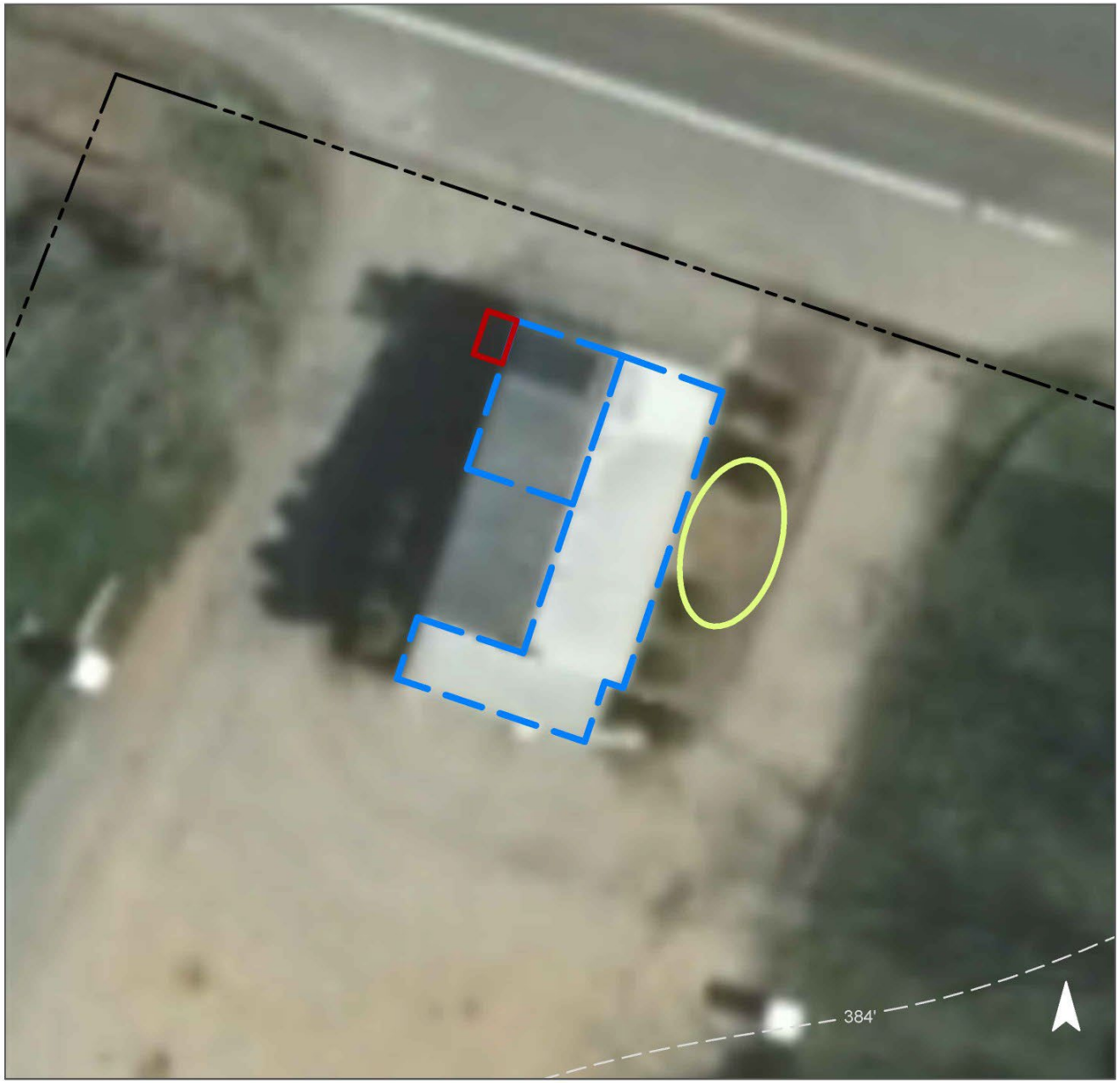
Block and Lot: Block 107, Lot 23

A rain garden can be installed on the east side of the building to capture, treat, and infiltrate rooftop runoff. Along the western side of the building a downspout planter box can be installed to help capture stormwater runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
19	6,884	0.3	3.5	31.6	0.005	0.19

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.021	3	1,510	0.06	200	$1,000
Planter box	n/a	1	n/a	n/a	1 (box)	$1,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Ralston Field

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

0 10' 20'

RANDOLPH REGIONAL ANIMAL SHELTER

RAP ID: 4

Subwatershed: Raritan River North Branch

Site Area: 3,813,302 sq. ft.

Address: 97 Iroina Road
Mendham, NJ 07945

Block and Lot: Block 116, Lot 6

A rain garden can be installed adjacent to the main building to capture, treat, and infiltrate rooftop runoff. The gated pavement area can be replaced with pervious pavement to capture and infiltrate stormwater from the nearby buildings and the 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"
5	208,114	10.0	105.1	955.5	0.162	5.71

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	0.022	4	1,620	0.06	215	$1,075
Pervious pavement	0.422	71	30,940	1.16	2,890	$72,250

GREEN INFRASTRUCTURE RECOMMENDATIONS

Randolph Regional Animal Shelter

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

0 30' 60'

MENDHAM GOLF & TENNIS CLUB

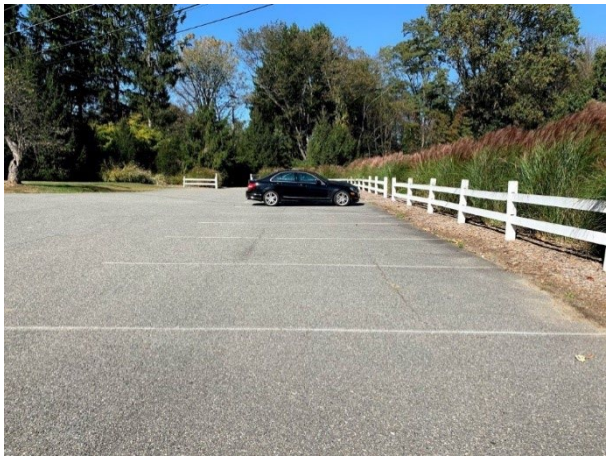
RAP ID: 5

Subwatershed: Passaic River Upper

Site Area: 5,269,808 sq. ft.

Address: 2 Golf Lane
Mendham, NJ 07945

Block and Lot: Block 137, Lot 48

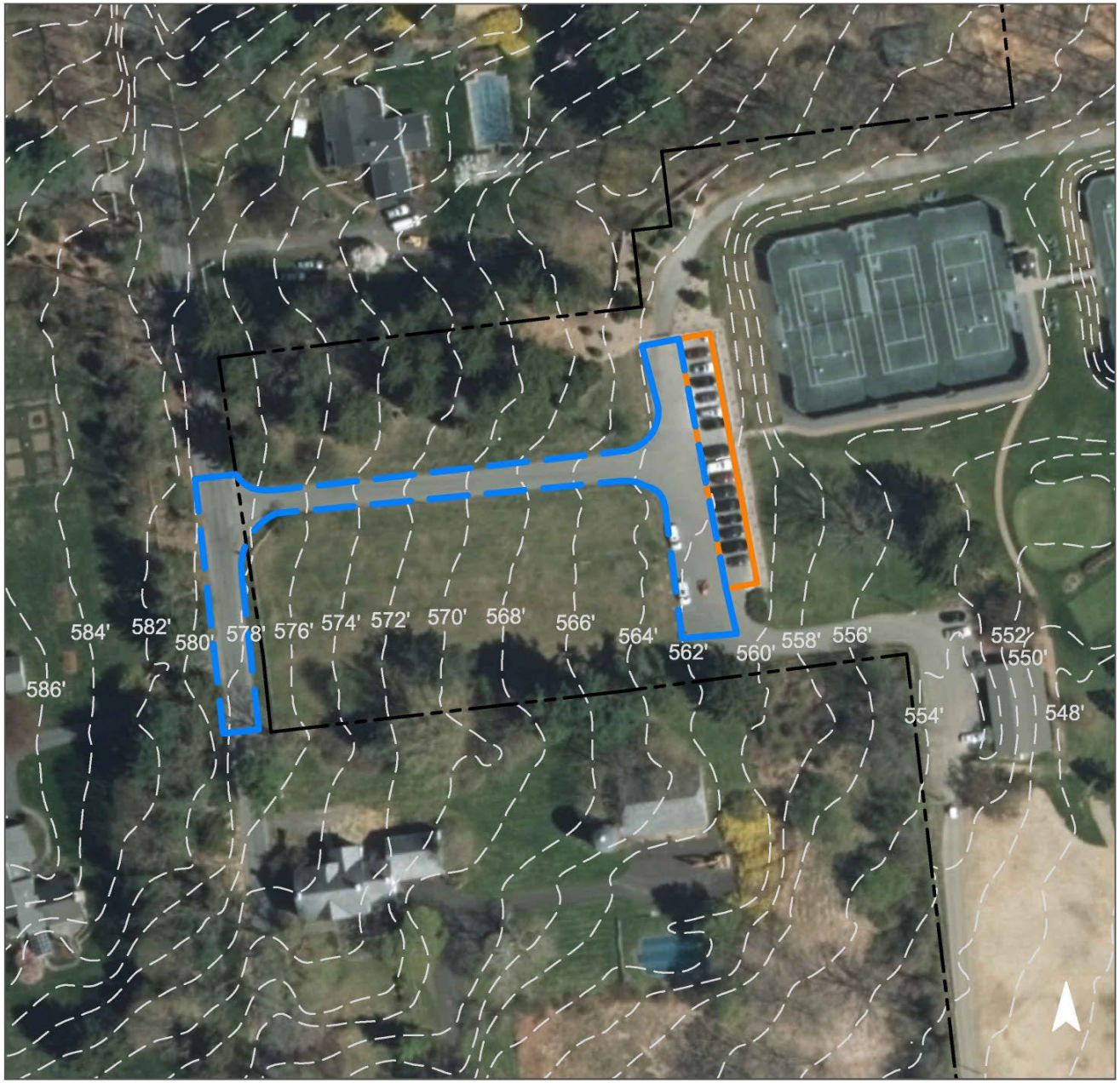


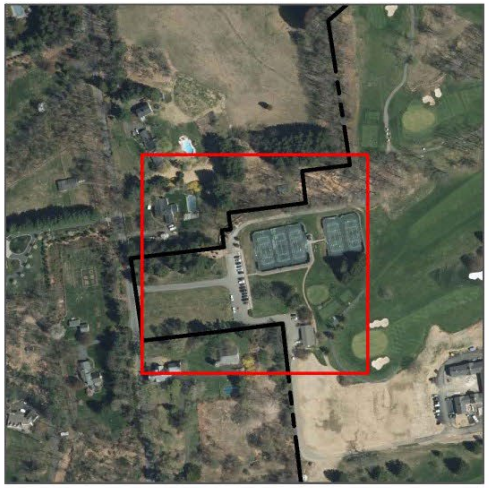
Pervious pavement can be installed in the west parking lot of the tennis courts to treat the runoff from the driveway and parking lot. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

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"
7	389,983	18.8	197.0	1,790.6	0.304	10.70

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Pervious pavement	0.389	65	28,570	1.07	3,750	$93,750

GREEN INFRASTRUCTURE RECOMMENDATIONS





Mendham Golf & Tennis Club

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

0 50' 100'

BROOKSIDE COMMUNITY CHURCH

RAP ID: 6

Subwatershed: Whippany River

Site Area: 50,228 sq. ft.

Address: 8 East Main Street
Morristown, NJ 07960

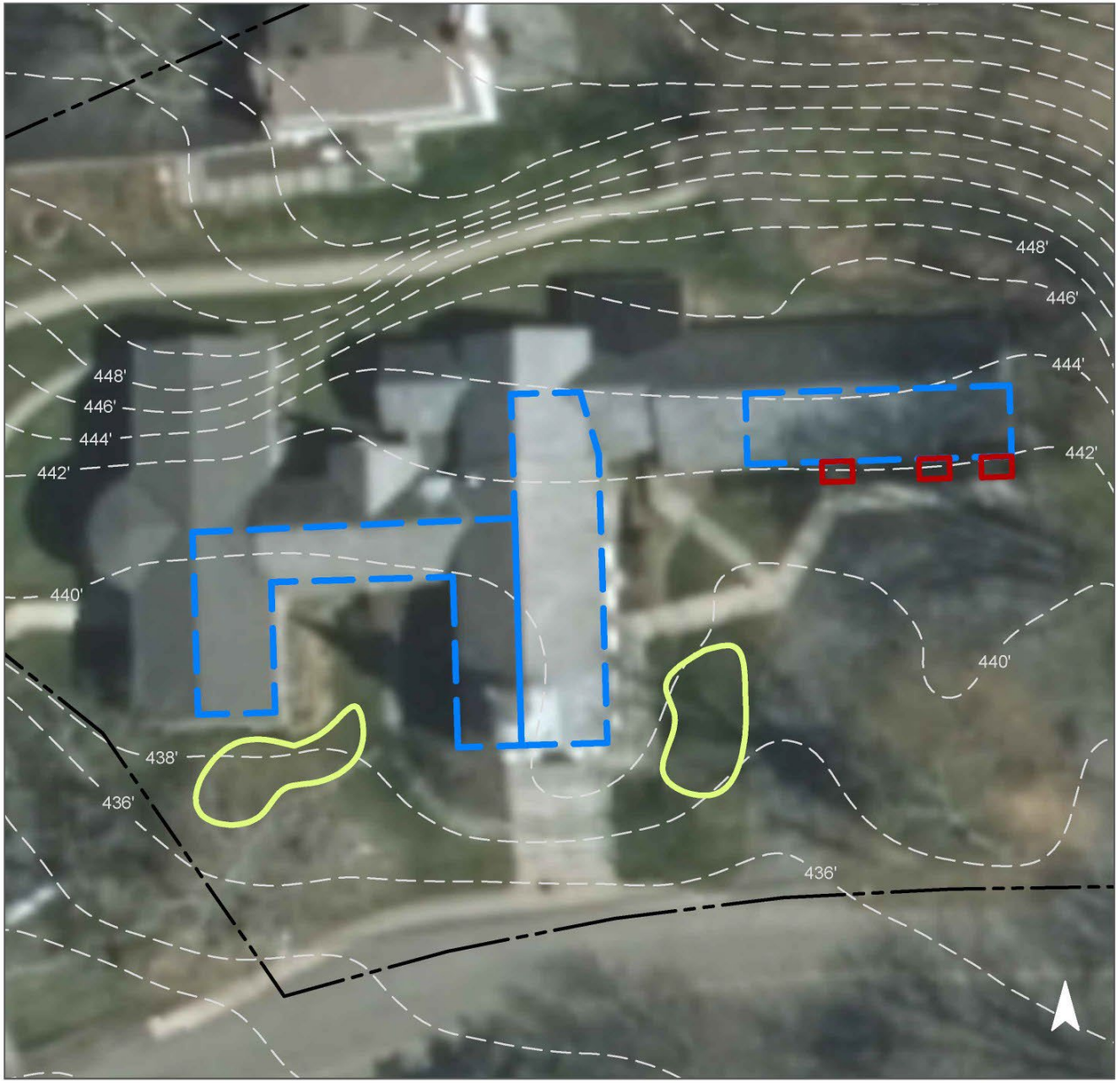
Block and Lot: Block 128, Lot 4

Bioretention systems can be installed on the southeast and southwest side of the building to capture, treat, and infiltrate rooftop runoff. To help with stormwater capture, downspout planter boxes can be placed along the southwestern part 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"
26	13,292	0.6	6.7	61.0	0.010	0.36

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	0.068	11	5,020	0.19	655	$3,275
Planter boxes	n/a	2	n/a	n/a	3 (boxes)	$3,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Brookside Community Church

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

0 15' 30'

BROOKSIDE COMMUNITY CLUB

RAP ID: 7

Subwatershed: Whippany River

HUC14 ID: 02030103020010

Site Area: 181,143 sq. ft.

Address: 1 East Main Street
Brookside, NJ 07926

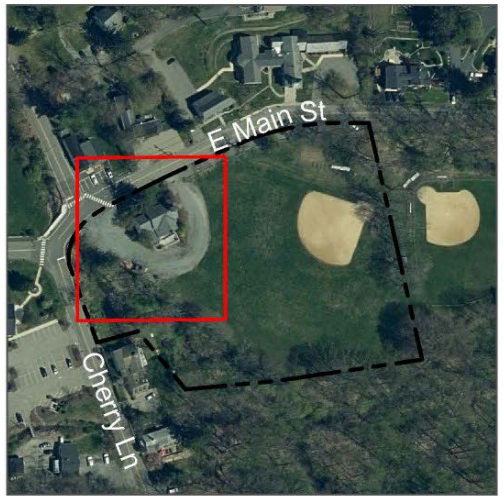
Block and Lot: Block 139, Lot 1

A rain garden can be installed to the north of the building to capture, treat, and infiltrate stormwater runoff from the rooftop. This will require downspout disconnection and redirection. Another rain garden can be installed to the south of the parking lot to capture, treat, and infiltrate stormwater runoff from the driveway and the lot. A cistern can be installed to the west of the building to divert and detain stormwater runoff from the rooftop for later non-potable reuse such as watering the plants around 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 50"
15	27,730	1.3	14.0	127.3	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	4,125	0.122	17	8,600	0.32	1,030	$10,300
Rainwater harvesting	320	0.009	2	300	0.01	300 (gal)	$900

GREEN INFRASTRUCTURE RECOMMENDATIONS



Brookside Community Club

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

0 20' 40'

BROOKSIDE POST OFFICE

RAP ID: 8

Subwatershed: Whippany River

Site Area: 10,693 sq. ft.

Address: 2 East Main Street
Morristown, NJ 07960

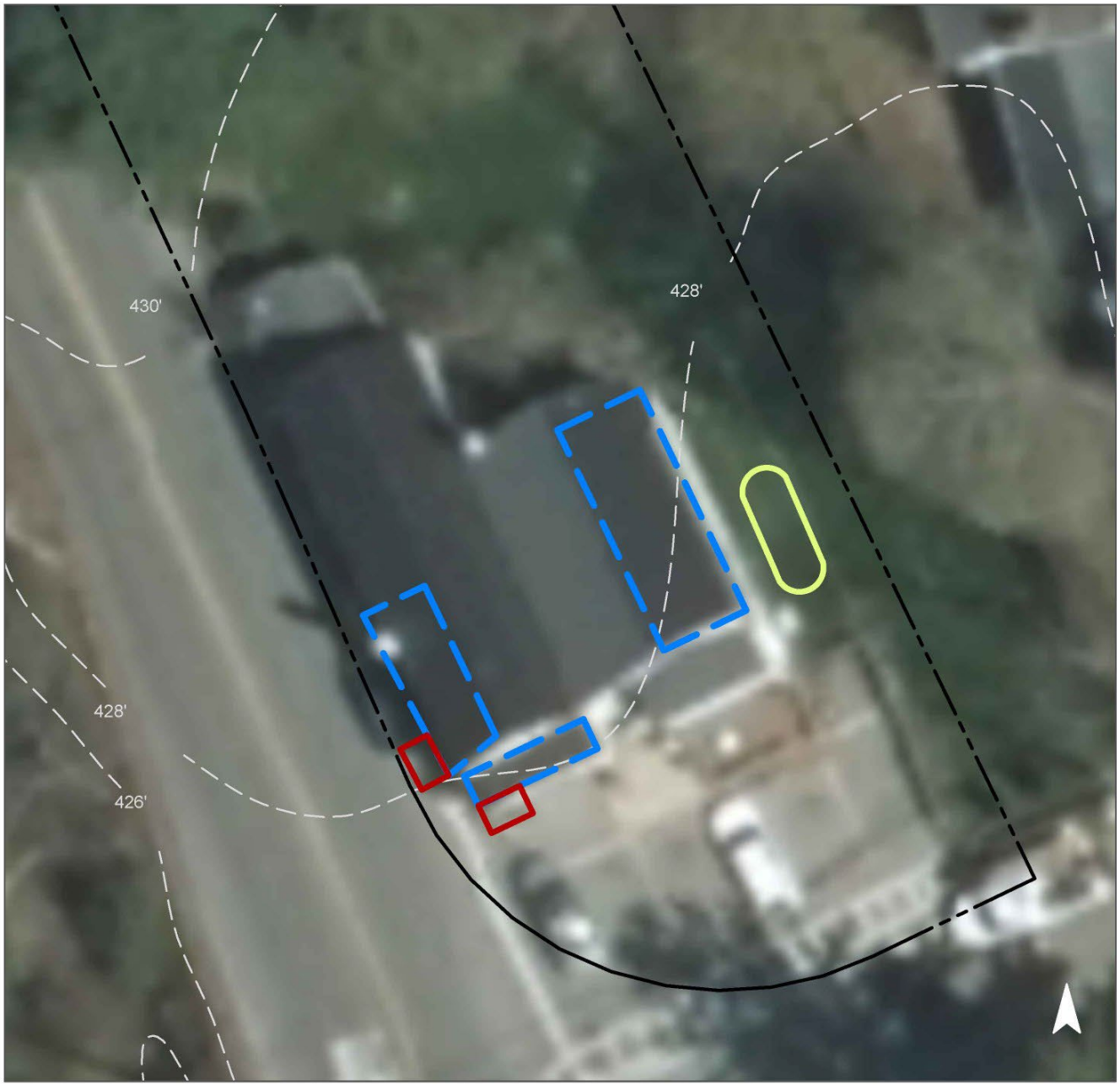
Block and Lot: Block 128, Lot 1

Downspout planter boxes can be installed along the southwest corner of the building to allow roof runoff to be reused and to spread awareness about green infrastructure programs. Along the eastern side of the building a bioretention system can be installed to help capture, treat, and infiltrate stormwater runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
26	2,829	0.1	1.4	13.0	0.002	0.08

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	0.010	2	730	0.03	95	$475
Planter boxes	n/a	1	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Brookside Post Office

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

0 10' 20'

MENDHAM TOWNSHIP ELEMENTARY SCHOOL

RAP ID: 9

Subwatershed: Whippany River

HUC14 ID: 02030103020010

Site Area: 635,036 sq. ft.

Address: 18 West Main Street
Brookside, NJ 07926

Block and Lot: Block 137, Lot 48

Multiple rain gardens can be installed in the grass areas around the property to capture, treat, and infiltrate stormwater runoff from the rooftops. This may require downspout disconnections, downspout redirections, curb cuts, and a trench drain. The existing parking spaces to west and to the northeast of the building can be converted into pervious pavement to capture and infiltrate the stormwater runoff from the asphalt. 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 50"
37	235,333	11.3	118.9	1,080.5	0.183	7.33

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	14,845	0.440	65	30,970	1.16	4,225	$42,250
Pervious pavement	21,310	0.631	93	44,450	1.67	5,265	$131,625

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mendham Township Elementary School

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

0 100' 200'

MENDHAM TOWNSHIP MIDDLE SCHOOL

RAP ID: 10

Subwatershed: Whippany River

Site Area: 927,597 sq. ft.

Address: 16 Washington Valley Road
Morristown, NJ 07960

Block and Lot: Block 127, Lot 152

Bioretention systems can be installed on the east side of the building to capture, treat, and infiltrate rooftop runoff. To help with stormwater runoff from the parking lot, the low northeastern section of parking spaces can be converted to pervious pavement to help capture and infiltrate the runoff. A preliminary soil assessment suggests that more soil testing would be required before determining the soil's suitability for green infrastructure.

Impervious Cover		Existing Loads from Impervious Cover (lbs/yr)			Runoff Volume from Impervious Cover (Mgal)	
%	sq. ft.	TP	TN	TSS	For the 1.25" Water Quality Storm	For an Annual Rainfall of 44"
22	204,394	9.9	103.2	938.4	0.159	5.61

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	0.148	25	10,880	0.41	1,420	$7,100
Pervious pavement	0.686	115	50,320	1.89	4,700	$117,500

GREEN INFRASTRUCTURE RECOMMENDATIONS

Mendham Township Middle School

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

0 30' 60'

MENDHAM TOWNSHIP POLICE DEPARTMENT, FIRST AID SQUAD, & ENGINE COMPANY

RAP ID: 11

Subwatershed: Whippany River

HUC14 ID: 02030103020010

Site Area: 166,317 sq. ft.

Address: 1-3 Cherry Lane
Brookside, NJ 07926

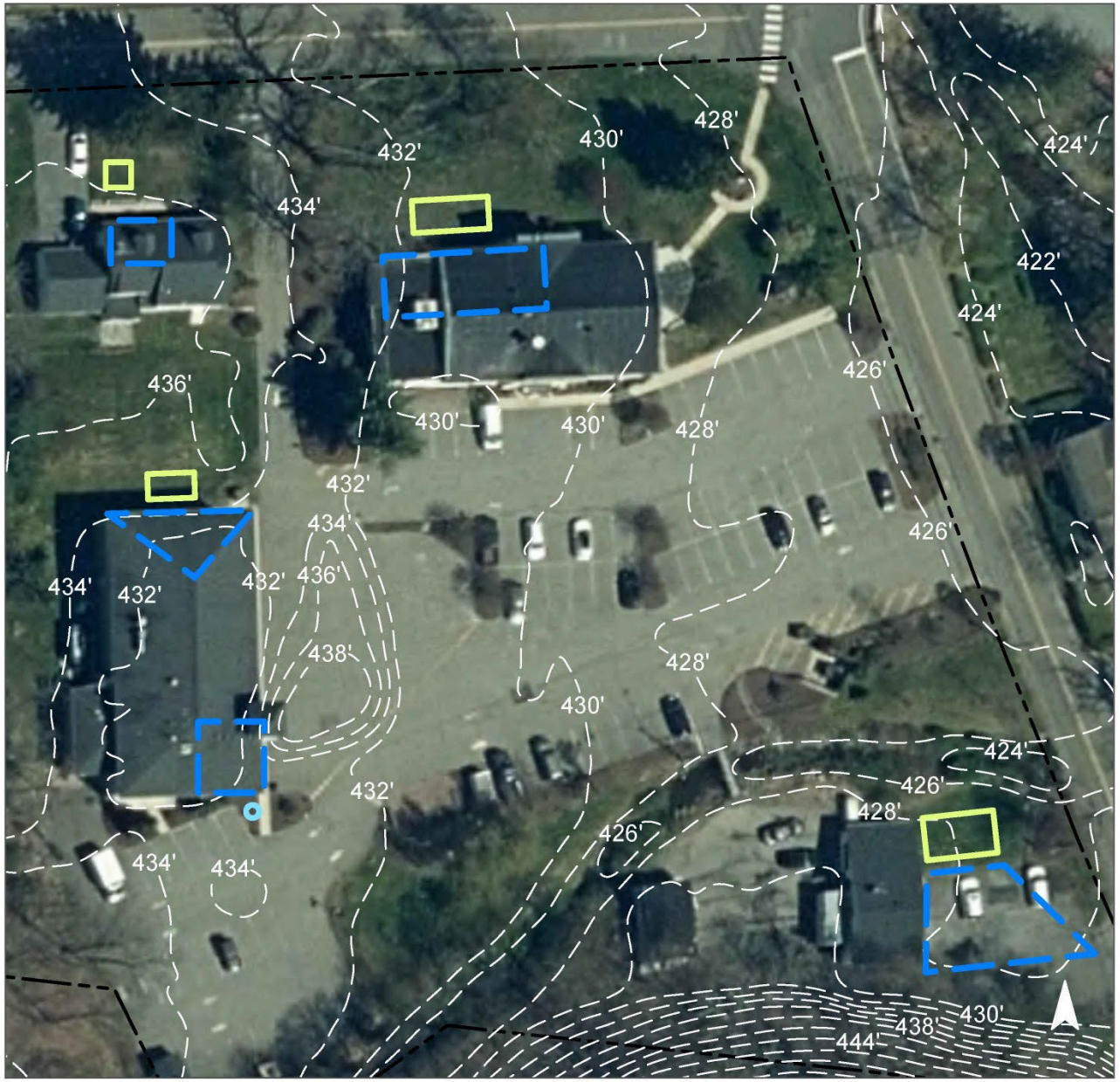
Block and Lot: Block 137, Lot 17.01

Rain gardens can be installed in multiple grass areas around the property to capture, treat, and infiltrate stormwater runoff from the building rooftops. This may require downspout disconnections and downspout redirections. A rain garden can be installed near the police department building to capture, treat, and infiltrate stormwater runoff from the parking lot. A cistern can be installed to the southeast of the engine company 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 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 50"
54	89,128	4.3	45.0	409.2	0.069	2.78

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	4,555	0.135	19	9,500	0.36	1,135	$11,350
Rainwater harvesting	730	0.022	4	600	0.02	600 (gal)	$1,800

GREEN INFRASTRUCTURE RECOMMENDATIONS



Mendham Township Police Department, First Aid Squad, & Engine Company

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

0 30' 60'

MT. PLEASANT RECREATION AREA

RAP ID: 12

Subwatershed: Whippany River

HUC14 ID: 02030103020010

Site Area: 695,386 sq. ft.

Address: 40 Mount Pleasant Road
Randolph, NJ 07869

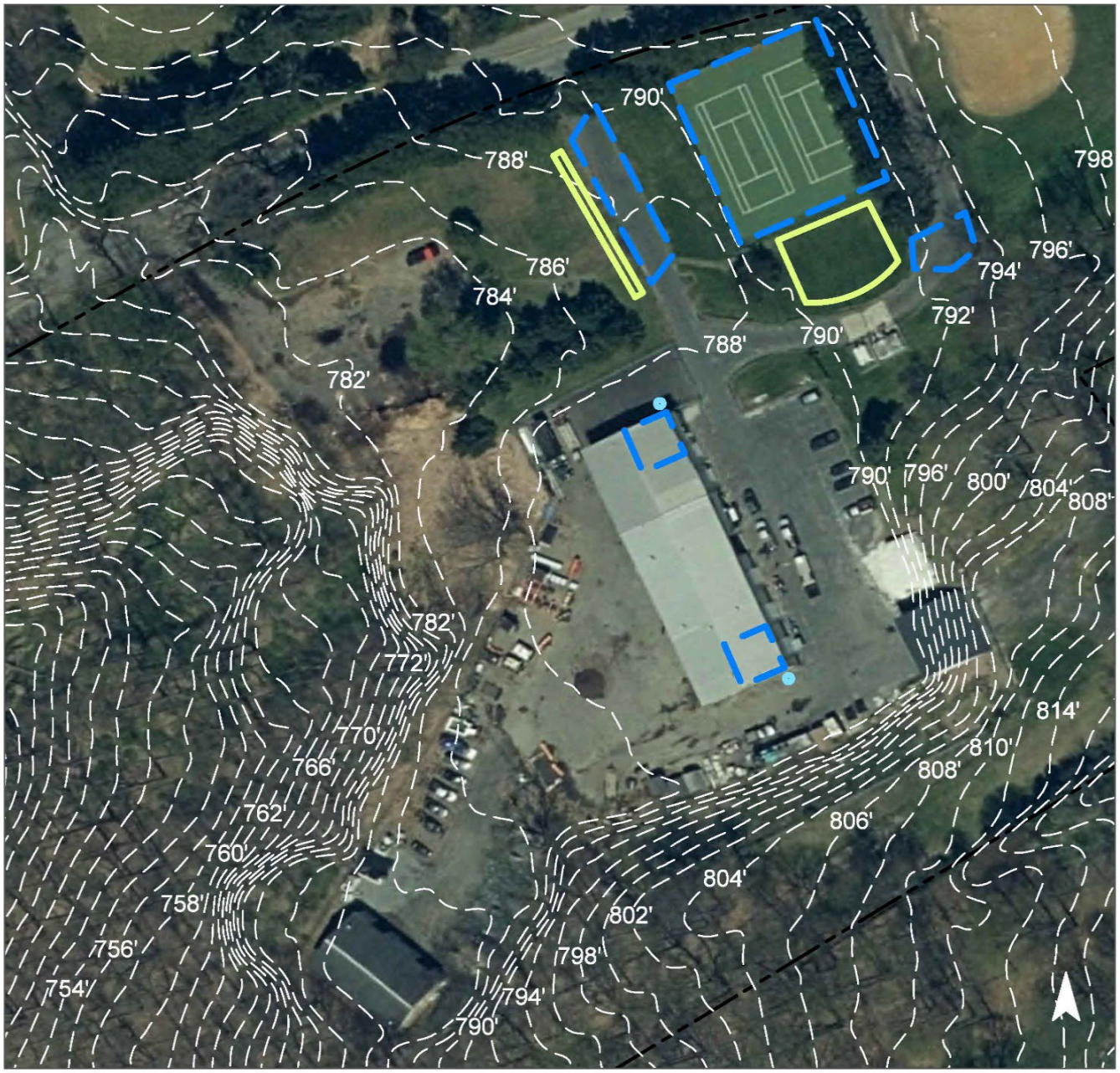
Block and Lot: Block 127, Lot 73

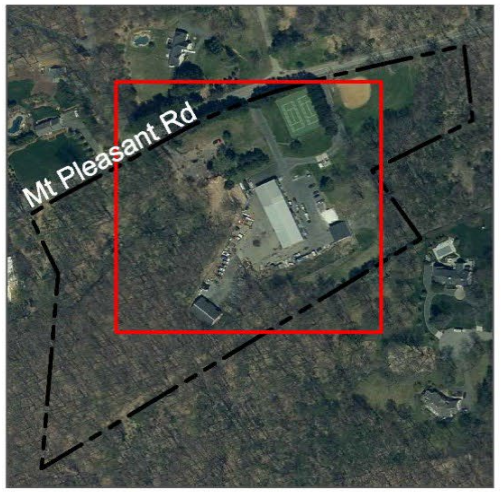
A rain garden can be installed to the west of the entry to capture, treat, and infiltrate stormwater runoff from the asphalt. Another rain garden can be installed to the south of the tennis courts to capture, treat, and infiltrate stormwater runoff from the court and asphalt driveway. This may require trench drains. Cisterns can be installed to the north and south of the 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 50"
19	133,175	6.4	67.3	611.5	0.104	4.15

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	16,775	0.497	74	34,990	1.31	4,195	$41,950
Rainwater harvesting	1,800	0.053	8	1,400	0.05	1,400 (gal)	$4,200

GREEN INFRASTRUCTURE RECOMMENDATIONS





Mt. Pleasant Recreation Area

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

0 50' 100'

PARQUE

RAP ID: 13

Subwatershed: Whippany River

Site Area: 6,182,106 sq. ft.

Address: 197 Mendham Road East
Mendham, NJ 07945

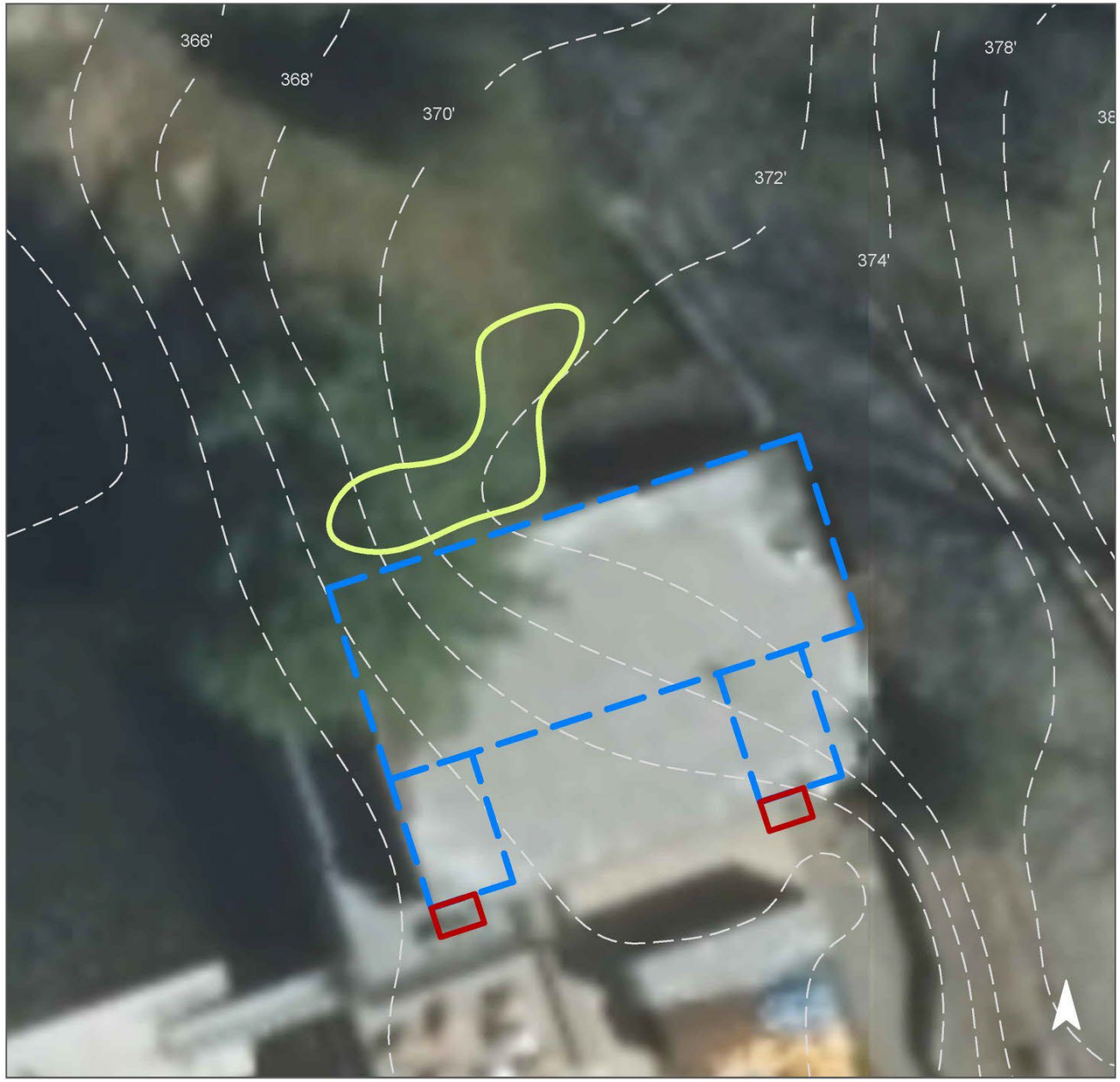
Block and Lot: Block 142, Lot 29

Bioretention systems can be installed in the back of the building to capture, treat, and infiltrate rooftop runoff. Downspout planter boxes can be constructed at the entrance of the building to allow roof runoff to be reused and to spread awareness about green infrastructure programs. 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"
4	238,942	11.5	120.7	1,097.1	0.186	6.55

Recommended Green Infrastructure Practices	Recharge Potential (Mgal/yr)	TSS Removal Potential (lbs/yr)	Maximum Volume Reduction Potential (gal/storm)	Peak Discharge Reduction Potential (cu. ft./second)	Estimated Size (sq. ft.)	Estimated Cost
Bioretention system	0.045	7	3,280	0.12	430	$2,150
Planter boxes	n/a	1	n/a	n/a	2 (boxes)	$2,000

GREEN INFRASTRUCTURE RECOMMENDATIONS



Parque

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

0 10' 20'

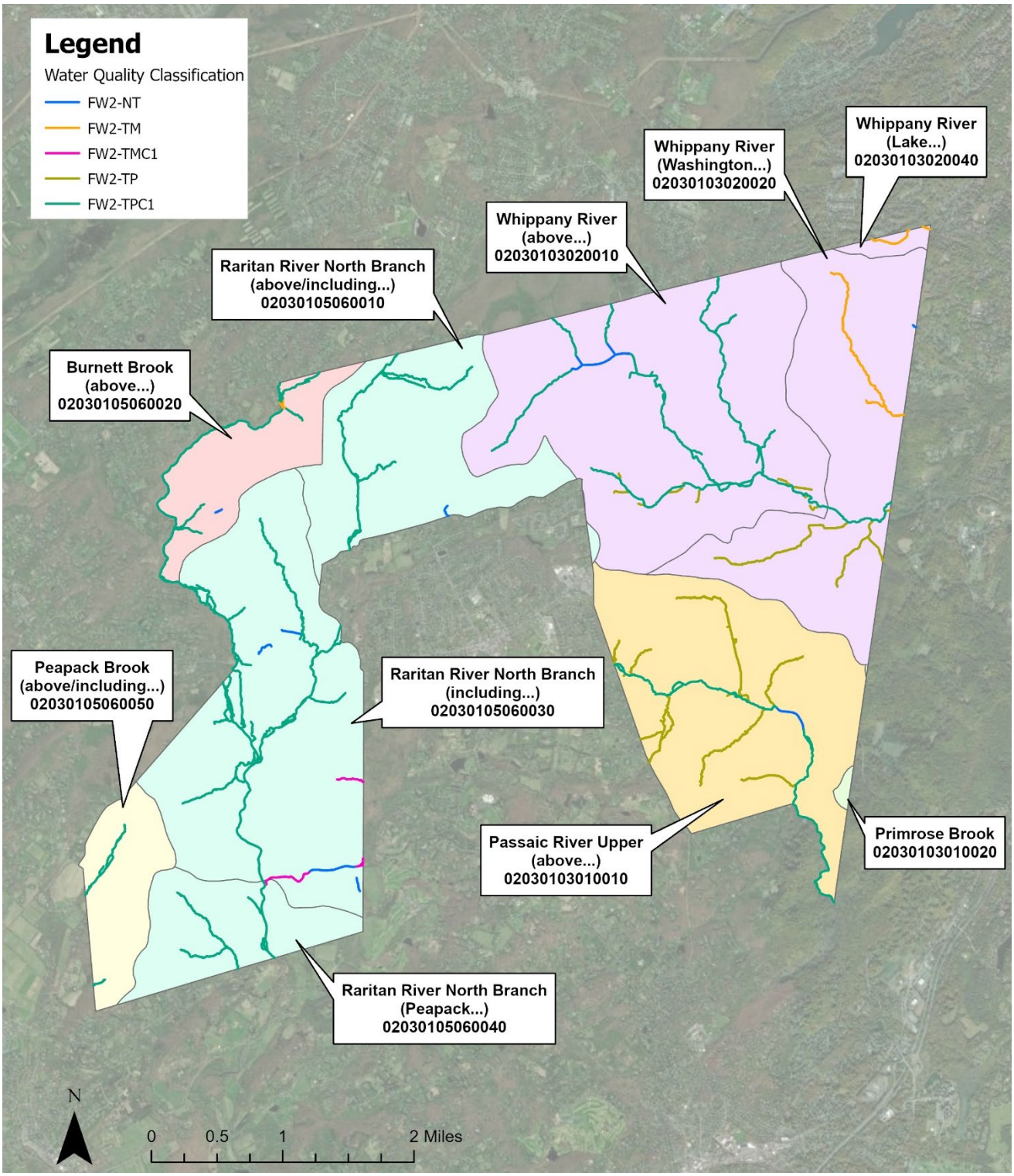


Figure 13. Water Quality Classification of Surface Waters in Mendham Township

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

Surface Water Quality Classification	Surface Water Quality Code	Miles	Percent of Municipal Streams
Freshwater 2, non-trout	FW2-NT	2.0	4.1%
Freshwater 2, trout production, Category One	FW2-TPC1	34.7	72.0%
Freshwater 2, trout maintenance	FW2-TM	2.3	4.8%
Freshwater 2, trout production	FW2-TP	8.4	17.5%
Freshwater 2, trout maintenance, Category One	FW2-TMC1	0.8	1.7%

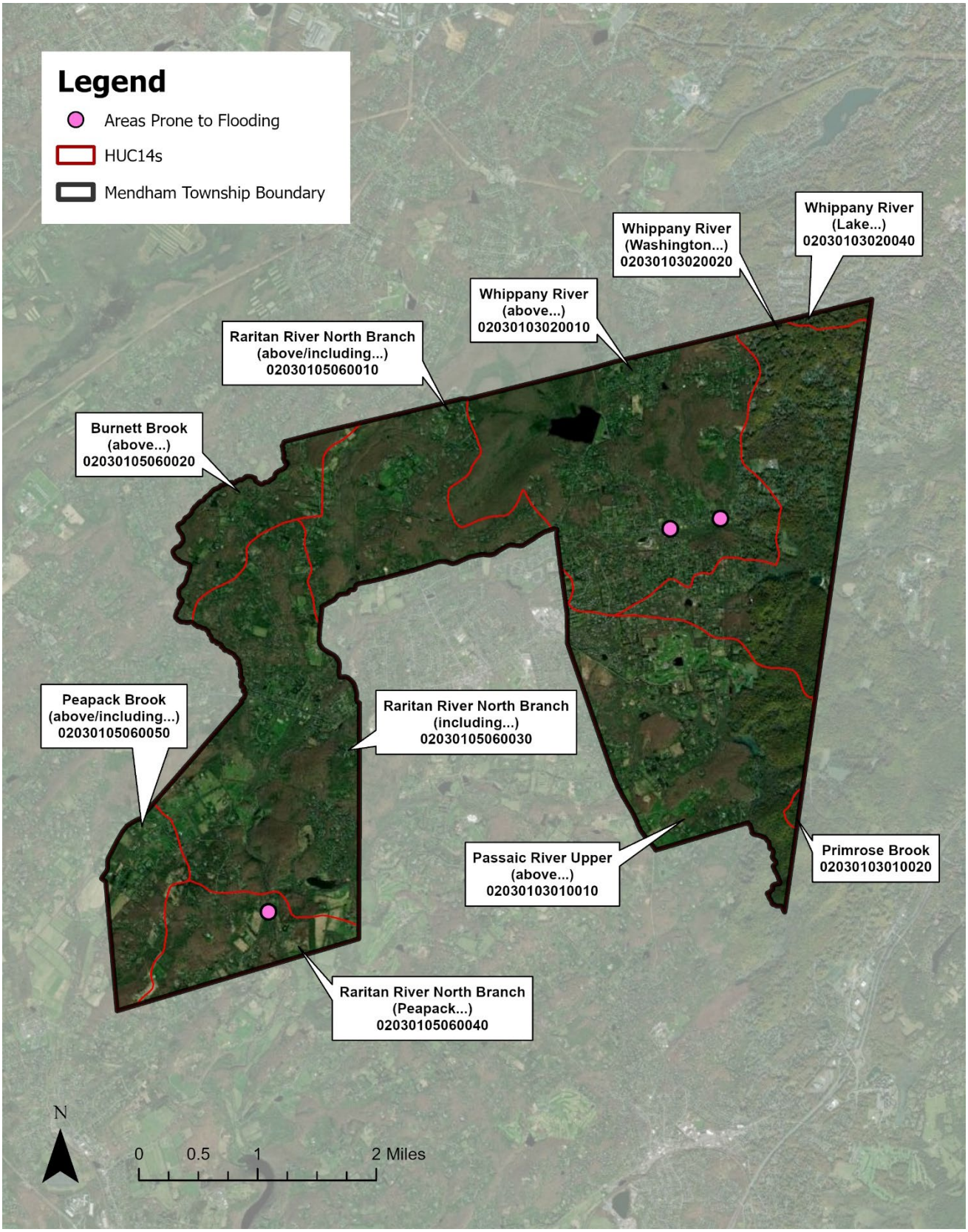


Figure 14. Areas Prone to Flooding in Mendham Township