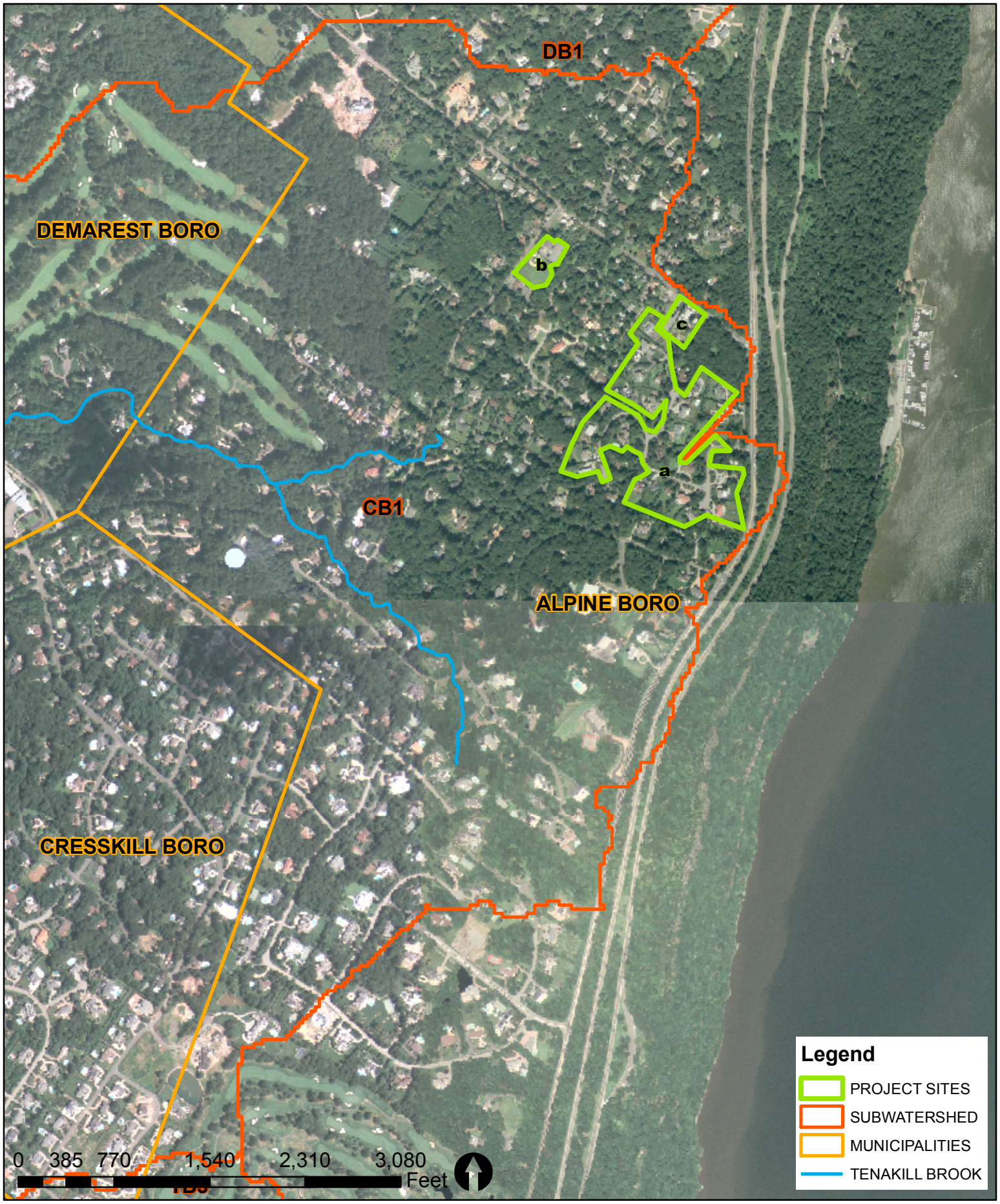
APPENDIX B: SITE SPECIFIC NONPOINT SOURCE MANAGEMENT MEASURES FOR MUNICIPALITIES IN THE TENAKILL BROOK WATERSHED

Alpine Borough, Bergen County, NJ

Figure B-1: Proposed project areas in Alpine Borough.



CB1 Borough of Alpine

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed CB1

Project Identifier		**Geographic Coordinates**	
CB1_Al	a	N40° 56' 48.6"	W073° 55' 32"
Site Description and BMP Implementation Opportunities: The site is Sotheby's parking lot located near 99 Rionda Court. When replacing existing asphalt, pervious pavement should be considered.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
CB1_Al	b	N40° 56' 54.7"	W073° 55' 43.6"
Site Description and BMP Implementation Opportunities: The site is Alpine Borough Hall, located near 2 School House Lane. The site has a large building which should be disconnected from adjacent impervious surfaces via rain barrels or rain gardens. Due to the public nature of this location, a rain barrel workshop would work well to demonstrate the importance of stormwater management and implementation of BMPs in improving watershed health.			

Site Photos:


Project Identifier		**Geographic Coordinates**	
CB1_Al	c	N40° 56' 40.8"	W073° 55' 38.3"

Site Description and BMP Implementation Opportunities: The site is located within a residential neighborhood nearest to 6 Glengoin Drive. Rooftops should be disconnected via rain barrels or rain gardens, depending on the availability of space. Also, homeowners should be offered educational workshops on the importance of stormwater management and implementation of BMPs, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

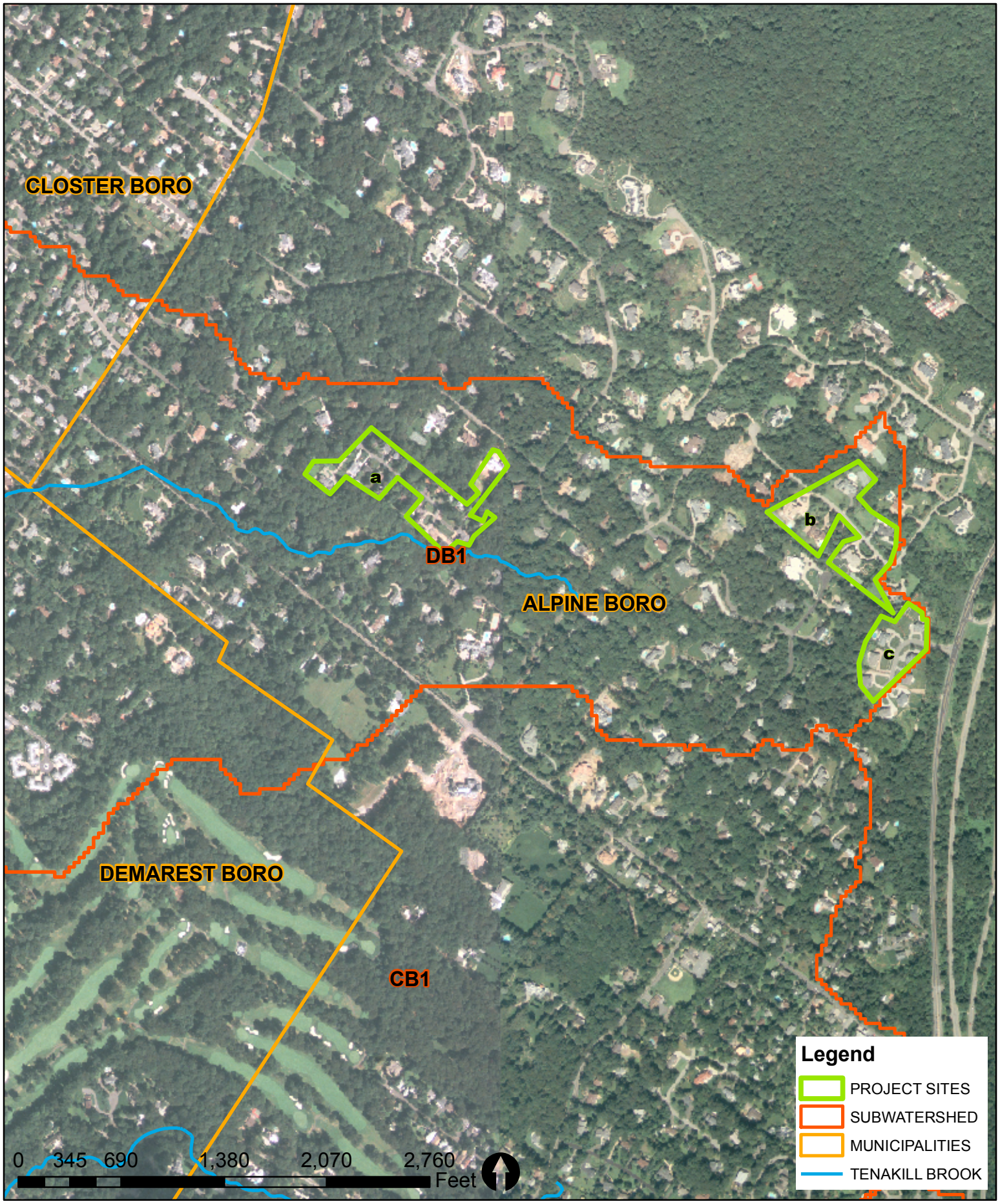
Site Photos:

Table B-1: Nonpoint source management measures proposed for Subwatershed CB1 in Alpine Borough, NJ.

Project ID	Site Description	Management Measure	Type of BMP	Estimated Cost
CB1_Al a	Parking Lot	Disconnection of Parking Lot	Pervious Pavement	$65,000
CB1_Al b	Municipal Building	Disconnection of Rooftop	Rain Barrels Rain Gardens	$1,120
CB1_Al c	Residential Area	Disconnection of Rooftop	Rain Barrels Rain Gardens	$4,400

Table B-2: Estimated load reductions (of total phosphorus [TP], total nitrogen [TN], and total suspended solids [TSS]) for nonpoint source management measures proposed for Subwatershed CB1 in Alpine Borough, NJ.

Project ID		Land Use	Area Acres	Calculated TP Load lbs/yr	Estimated TP Removal by BMP lbs/yr	Calculated TN Load lbs/yr	Estimated TN Removal by BMP lbs/yr	Calculated TSS Load lbs/yr	Estimated TSS Removal by BMP lbs/yr	Estimated Water Quantity Reduction Mgal/yr
CB1_Al	a	COMMERCIAL	2	4	4	44	40	400	360	2
CB1_Al	b	RECREATIONAL	2	2	2	20	18	240	216	2
CB1_Al	c	RESIDENTIAL (LOW DENSITY)	27	16	15	135	122	2,700	2,430	29
		Total	31	22	20	199	179	3,340	3,006	33
		Total Impervious Cover (Acres)	6							



DB1 Borough of Alpine

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed DB1

Project Identifier		**Geographic Coordinates**	
DB1_Al	a	N40° 57' 28.6"	W073° 56' 12.3"

Site Description and BMP Implementation Opportunities: The site is a residential roadway, Berkery Place. This site has no curbs or sidewalks. Vegetated swales should be implemented along the roadway to capture, treat, and infiltrate stormwater runoff, before it enters nearby waterways. Downspout disconnection should be done by residential rain barrels or rain gardens dependant on space availability and resident involvement. Homeowners should be offered an educational workshop addressing the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
DB1_Al	b	N40° 57' 22.4"	W073° 55' 25"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood of large homes nearest to Schaffer Road. BMP opportunities include downspout disconnection by residential involvement and their use of rain barrels or onsite rain gardens. Homeowners should be offered an educational workshop addressing the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
DB1_Al	c	N40° 57' 15.8"	W073° 55' 23.6”
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood of large homes nearest to Audrey Urban Court. BMP opportunities include downspout disconnection to be done with residential involvement and use of rain barrels or onsite rain gardens. Homeowners should be offered an educational workshop addressing the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

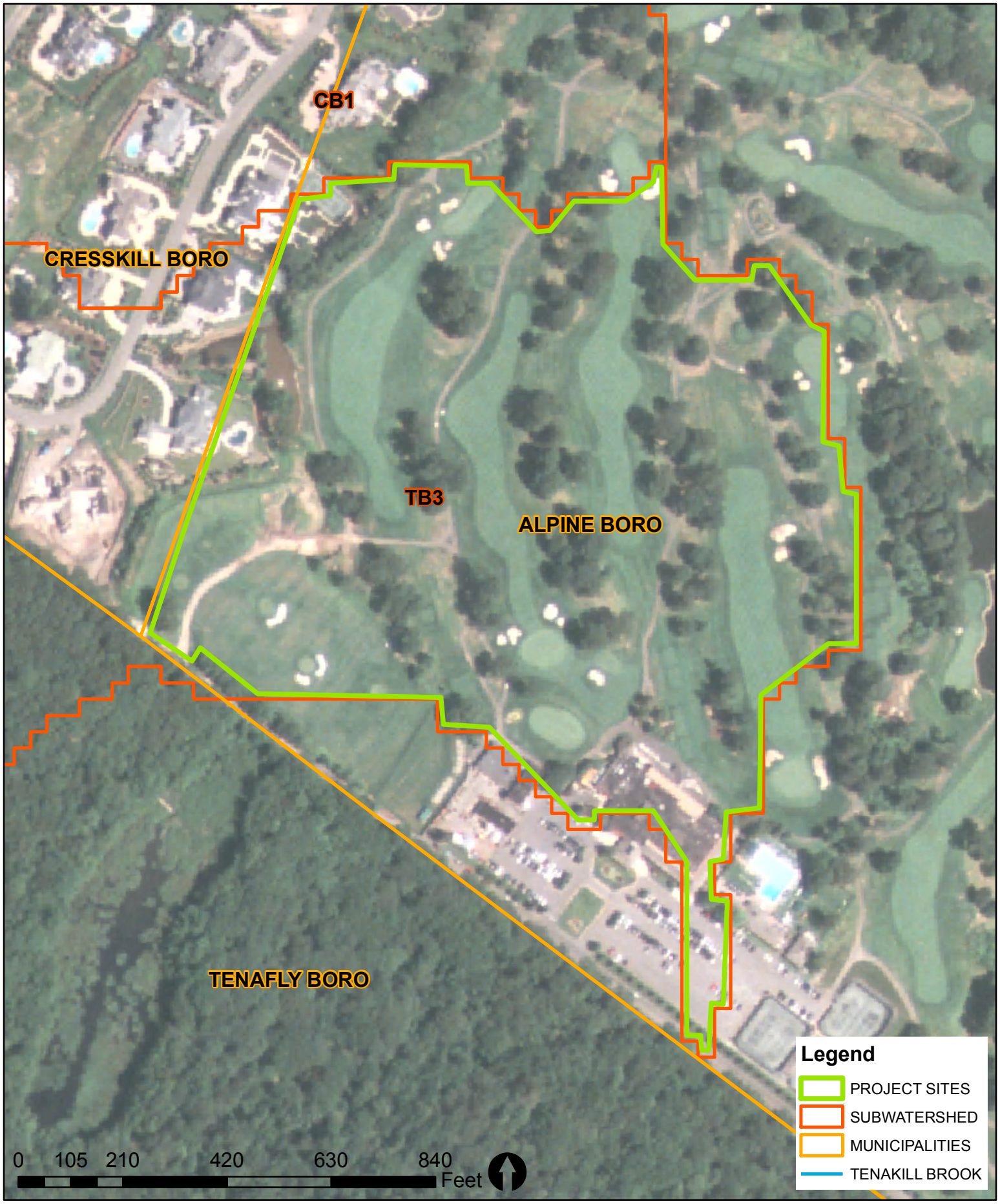
Site Photos:

Table B-3: Nonpoint source management measures proposed for Subwatershed DB1 in Alpine Borough, NJ.

Project ID	Site Description	Management Measure	Type of BMP	Estimated Cost
DB1_Al a	Residential Neighborhood	Disconnection of Rooftops	Vegetated Swales	$40,000
DB1_Al b	Residential Neighborhood	Disconnection of Rooftops	Rain Barrels/ Rain Gardens	$11,000
DB1_Al c	Residential Neighborhood	Disconnection of Rooftops	Rain Barrels/ Rain Gardens	$6,720

Table B-4: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed DB1 in Alpine Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
DB1_Al	a	RESIDENTIAL (MEDIUM DENSITY)	9	13	11	135	122	1,260	1,134	10
DB1_Al	b	RESIDENTIAL (LOW DENSITY)	8	5	4	40	36	800	720	9
DB1_Al	c	RESIDENTIAL (LOW DENSITY)	4	2	2	20	18	400	360	4
		Total	21	20	18	195	176	2,460	2,214	23
		Total Impervious Cover	4							



TB3 Borough of Alpine

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB3

Project Identifier		**Geographic Coordinates**	
TB3_Al	a	N40°55′27.6″	W073°56′15.3″
Site Description and BMP Implementation Opportunities: The site is Montammy Country Club on Montammy Drive. The site contains directly connected impervious surfaces. Rain gardens and/or rain barrels are proposed to disconnect rooftops from these surfaces. Rain gardens down gradient of parking lot via curb cuts should be used to disconnect portions of the parking lot. Educational signs should be used to illustrate the importance of stormwater management and benefits of BMP implementation on site.			

Site Photos:

Table B-5: Nonpoint source management measures proposed for Subwatershed TB3 in Alpine Borough, NJ.

Project ID	Site Description	Management Measure	Type of BMP	Estimated Cost
TB3_Al a	Commercial	Disconnection of Rooftop and Parking Lot	Rain Gardens/ Rain Barrels	$2,160

Table B-6: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB3 in Alpine Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB3_Al	a	OTHER URBAN (RECREATIONAL)	31	31	28	310	279	3,720	3,348	33
		Total	31	31	28	310	279	3,720	3,348	33
		Total Impervious Cover	2							

Closter Borough, Bergen County, NJ

Figure B-2: Proposed project areas in Closter Borough.

DB1 Borough of Closter

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed DB1

Project Identifier		**Geographic Coordinates**	
DB1_Cl	a	N40°57′32.7″	W073°56′45.7″
Site Description and BMP Implementation Opportunities: The site is a residential block on Maplewood Road of about 18 homes. Homes are large with directly connected downspouts. BMPs such as rain barrels or rain gardens should be used to disconnect impervious cover from homes. Homeowners should be offered an educational workshop addressing the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
DB1_Cl	b	N40°57′37.5″	W073°56′35.8″
Site Description and BMP Implementation Opportunities: The site is a residential block on Blackledge Court. Homes are large with directly connected downspouts and no sidewalks. Roadside vegetated swales and disconnection should be implemented at this site. Disconnection should be done via rain barrels or rain gardens. Homeowners should be offered an educational workshop addressing the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

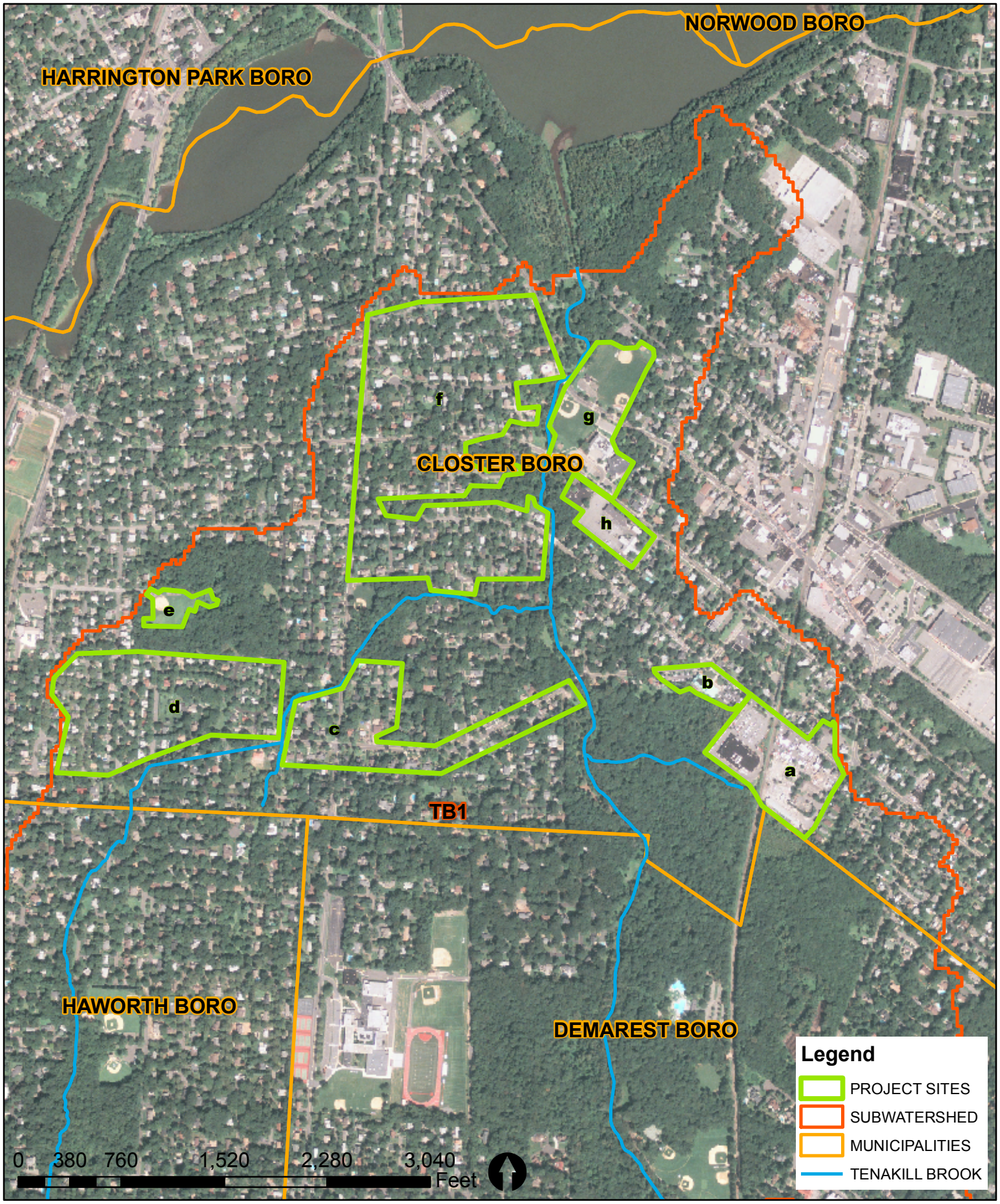
Site Photos:


Table B-7: Nonpoint source management measures proposed for Subwatershed DB1 in Closter Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
DB1_Cl	a	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$7,920
DB1_Cl	b	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels/ Vegetated Swales	$9,760

Table B-8: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed DB1 in Closter Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
DB1_CL	a	RESIDENTIAL (MEDIUM DENSITY)	14	20	18	210	189	1,960	1,764	15
DB1_Cl	b	RESIDENTIAL (LOW DENSITY)	4	2.4	2	20	18	400	360	4
		Total	18	22	20	230	207	2,360	2,124	19
		Total Impervious Cover	5							



TB1 Borough of Closter

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB1

Project Identifier		**Geographic Coordinates**	
TB1_Cl	a	N40°58′9.2″	W073°57′45.0″
Site Description and BMP Implementation Opportunities: The site is a commercial food store located near Station Court. Opportunities for BMP implementation include replacing existing asphalt of parking spaces with pervious pavement. Rain gardens are proposed near the adjacent railroad area via curb cuts from the large parking lot. The food store has a large roof and could be retrofitted with a green roof, providing energy savings for the building, as well as slowing and filtering stormwater runoff.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_Cl	b	N40°58′11.8″	W073°57′48.2″
Site Description and BMP Implementation Opportunities: The site is Emmaus Mission Church located at 394 Demarest Avenue. A detention basin is currently onsite collecting stormwater from the adjacent lot. The proposed project would naturalize the detention basin with native plantings. A vegetated basin promotes filtration and infiltration to groundwater.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_Cl	c	N40°58′8.0″	W073°58′8.5″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood located on Everett Street off of Durie Avenue. The neighborhood consists of homes that have directly connected impervious surfaces. Homes should be disconnected by implementation of residential rain gardens and/or rain barrels. Homeowners should be offered educational workshops on the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB1_Cl	d	N40°58′14″	W073°58′38.6″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood located on Lockwood Lane off of Durie Avenue. The neighborhood consists of about 12 homes which have directly connected impervious surfaces. Homes should be disconnected by implementation of residential rain gardens and/or rain barrels. Additionally, green streets should be installed to minimize stormwater runoff and promote groundwater recharge. Homeowners should be offered educational workshops on the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB1_Cl	e	N40°58′20.1″	W073°58′46.9″

Site Description and BMP Implementation Opportunities: The site is a community park, Schauble Park, located off Forest Street. The site consists of a large parking lot (about 6,500 square feet). Existing asphalt should be replaced with pervious pavement to allow stormwater to infiltrate into the ground. Nearby homeowners should be offered educational workshops on the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

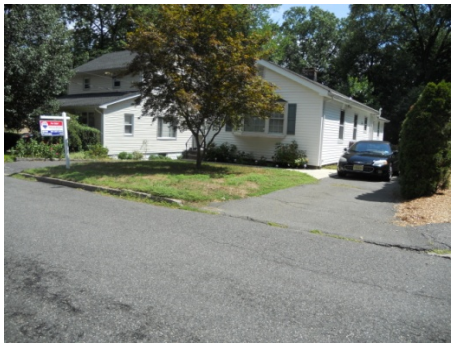
Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_Cl	f	N40°58′27.3″	W073°58′14.8″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood located on Division Street off of Knickerbocker Road. The neighborhood consists of some directly connected homes which should be disconnected via rain barrels and/or rain gardens. Homeowners should be offered educational workshops on the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB1_Cl	g	N40°58′28.6″	W073°57′59.9″

Site Description and BMP Implementation Opportunities: The site is Tenakill Middle School located at 285 High Street. The school building should be disconnected via rain garden near entrance to the school. Educational workshops on the importance and benefits of stormwater management and BMP implementation should be presented to students and teachers of school, such as *Stormwater Management in Your School Yard*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_Cl	h	N40°58′50″	W073°57′43.7″

Site Description and BMP Implementation Opportunities: The site is The Reformed Church of Closter, located at 127 West Court. There are only limited opportunities for BMP implementation. The parking lot asphalt is in poor condition and could be replaced with pervious pavement.

Site Photos:


Table B-9: Nonpoint source management measures proposed for Subwatershed TB1 in Closter Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
TB1_Cl	a	Commercial	Disconnection of Parking Lot	Rain Gardens/ Pervious Pavement/ Green Roof	$322,400
TB1_Cl	b	Church	Disconnection of Parking Lot	Naturalize Existing Detention Basin	$8,000
TB1_Cl	c	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$4,400
TB1_Cl	d	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels/ Green Street	$533,280
TB1_Cl	e	Recreational	Disconnection of Parking Lot	Pervious Pavement	$65,000
TB1_Cl	f	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$5,280
TB1_Cl	g	School	Disconnection of Rooftop	Rain Garden	$1,600
TB1_Cl	h	Church	Disconnection of Parking Lot	Pervious Pavement	$80,000

Table B-10: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB1 in Closter Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB1_Cl	a	COMMERCIAL (MIXED URBAN)	13	13	12	ts130	117	1,559	1,403	14
TB1_Cl	b	CHURCH (COMMERCIAL/SERVICES)	3	6	5	62	56	561	505	3
TB1_Cl	c	RESIDENTIAL (MEDIUM DENSITY)	19	26	23	279	251	2,607	2,346	20
TB1_Cl	d	RESIDENTIAL (MIXED URBAN)	27	27	24	269	242	3,224	2,902	29
TB1_Cl	e	RECREATIONAL (OTHER URBAN)	2	2	2	21	19	249	224	2
TB1_Cl	f	RESIDENTIAL (MEDIUM DENSITY)	58	81	73	867	780	8,092	7,283	62
TB1_Cl	g	SCHOOL (MIXED URBAN)	12	12	11	117	106	1,408	1,267	13
TB1_Cl	h	CHURCH (COMMERCIAL/SERVICES)	4	9	8	98	88	894	804	5
		Total	137	176	158	1,843	1,659	18,594	16,735	148
		Total Impervious Cover	47							

Cresskill Borough, Bergen County, NJ

Figure B-3: Proposed project areas in Cresskill Borough.

CB1 Borough of Cresskill

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed CB1

Project Identifier		**Geographic Coordinates**	
CB1_Cr	a	N40° 55' 57.35"	W73° 56' 45.42"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood with a pond nearest to Huyler Landing Road and South Pond Road, with a limited buffer. Most homes have directly connected impervious surfaces. Disconnection should be an effective BMP and should be done via rain barrels or rain gardens, depending on residential involvement and space availability. Homeowners should be offered an educational workshop demonstrating the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

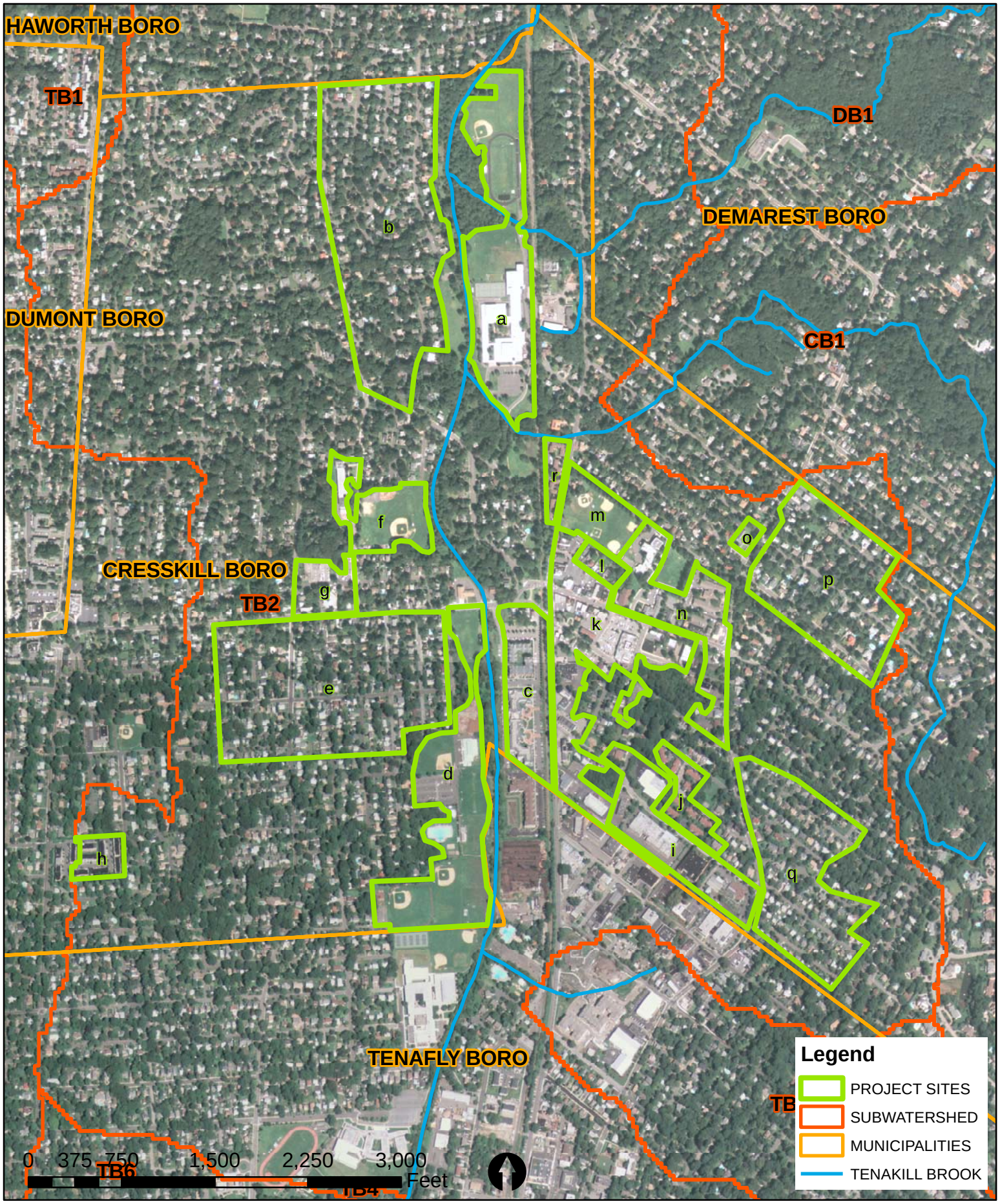
Site Photos:

Table B-11: Nonpoint source management measures proposed for Subwatershed CB1 in Cresskill Borough, NJ.

Project ID		**Site Description**	**Management Measure**	**Type of BMP**	**Estimated Cost**
CB1_Cr	a	Residential	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$33,000

Table B-12: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed CB1 in Cresskill Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
CB1_Cr	a	RESIDENTIAL (LOW DENSITY)	132	79	71	660	594	13,200	11,880	142
		Total	132	79	71	660	594	13,200	11,880	142
		Total Impervious Cover	29							



TB2 Borough of Cresskill

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB2

Project Identifier		**Geographic Coordinates**	
TB2_Cr	a	N40° 56'41.75"	W73° 57'51.04"

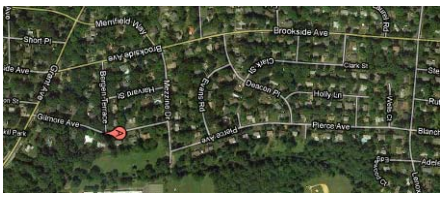
Site Description and BMP Implementation Opportunities: The site is Cresskill Middle and High School, located on 1 Lincoln Drive. The front parking lot should be retrofitted with pervious pavement. The storm drains in the parking lot discharge directly to the creek. The drain at the entrance of the middle school should be surrounded with a rain garden, using the existing drain as an overflow. Another rain garden should be implemented near the tennis court. The buffer near the creek should be enhanced. The performance of the basin in the back, near the tennis court, should be retrofitted to enhance its pollutant removal capabilities. The schools should be offered education workshops on the importance of stormwater management, such as *Stormwater Management in Your School Yard*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	b	N40°57'0.7416"	W073°58'1.8906"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood of about 14 streets and about 130 homes on ¼ acres lots. About 78% of the homes have directly connected impervious surfaces. Rooftops should be disconnected by rain gardens and/or rain barrels. On Mezzine Drive, the dead end should be retrofitted with pervious pavers. Homeowners should be offered an educational workshop demonstrating the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_Cr	c	N040°56'17.08"	W073°57'46.422"

Site Description and BMP Implementation Opportunities: The site consists of condominiums and a senior living center. The stream behind the development has a high quality buffer. BMP recommendations for this site include disconnection of all downspouts by installing rain barrels and/or rain gardens. The parking lot is in average condition, with some potholes; when it is replaced, pervious pavement should be considered. Behind the senior living center, some flooding is occurring; a rain garden would help capture some of the stormwater. Residents of the community should be offered an educational workshop demonstrating the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_Cr	d	N040°56'19.1682"	W073°57'54.63"

Site Description and BMP Implementation Opportunities: The site is a recreational area, located off of 3rd Street that consists of a recreation center and a municipal pool. BMP opportunities include disconnection of downspouts on the Cresskill Club building and the Cresskill Municipal Pool facility. A rain garden site can be installed on the corner of Evergreen Avenue and 5th Street where erosion is occurring.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_Cr	e	N040°56'23.0238"	W073°58'16.0602"
Site Description and BMP Implementation Opportunities: The site is a residential area, centered on Magnolia Avenue. The majority of the downspouts in this residential area are directly connected. BMP implementation includes disconnection of these downspouts via rain gardens and rain barrels.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	f	N040°56'51.4242"	W073°58'5.3904"
Site Description and BMP Implementation Opportunities: The site is the Edward H. Bryan School, located off of Brookside Avenue. The school is currently under construction, however opportunities for BMPs exist. There is a possible rain garden site in front of the school via downspout disconnection that would have to be routed underneath the sidewalk. The parking lot across the street from the school should be retrofitted with pervious pavement. Educational opportunities also exist (i.e., offer the *Stormwater Management in Your School Yard* curriculum to the school's students).			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	g	N040°56'51.9606"	W073°58'9.462"
Site Description and BMP Implementation Opportunities: The site is the Saint Therese School, located off of Merrifield Way. The large parking lot behind the school has a culvert that currently empties onto it. Adding permeable pavement near the culvert could help capture some of the stormwater that is emptying into the parking lot. Educational opportunities also exist (i.e., offer *Stormwater Management in your Schoolyard* curriculum to the school's students).			

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_Cr	h	N040°55'52.122"	W073°59'34.5114"
Site Description and BMP Implementation Opportunities: This is a residential site located in Bergenfield, NJ. The majority of the homes have directly connected downspouts. Disconnection should be done with rain barrels or rain gardens. Homeowners should be offered an educational workshop demonstrating the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

Site Photos:


Project Identifier		**Geographic Coordinates**	
TB2_Cr	i	N040°56'14.841"	W073°57'35.715"
Site Description and BMP Implementation Opportunities: This is a commercial site centered on Broadway Street. There is a brand new commercial complex with a new parking lot; a cistern would capture stormwater from the roof of the building. Also, there is construction taking place across the road with a silt fence that is in bad condition.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	j	N046°56'13.7796"	W073°57'28.515"
Site Description and BMP Implementation Opportunities: This is a residential area of townhouses, Rio Vista Commons, complete with a park. Downspouts should be disconnected via rain gardens or rain barrels. The basketball court at the residential park could be replaced with pervious pavement.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	k	N040°56'29.2632"	W073°57'44.6646"
Site Description and BMP Implementation Opportunities: This is a commercial site, with businesses such as King's supermarket and Manfredonia Law Office. There is a possible rain garden location on the corner of Piermont Road and East Madison Avenue at Manfredonia Law Office. The public nature of the site would make it an ideal rain garden plot.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	l	N040°56'32.1828"	W073°57'38.9484"
Site Description and BMP Implementation Opportunities: The site is Cresskill Library. The parking lot, with many potholes, could be replaced with permeable asphalt. Furthermore, there are plenty of possible rain garden locations. The rain garden would collect, treat, and infiltrate the stormwater from the rooftop of the building. Due to the public nature of the site, educational opportunities exist to demonstrate the importance of stormwater management via BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	m	N040°56'33.9324"	W073°57'35.2404"

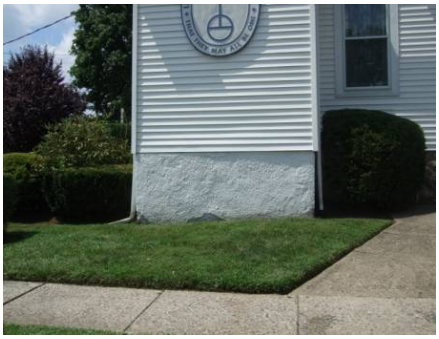
Site Description and BMP Implementation Opportunities: The site is the Merritt Memorial School located off of Margie Avenue. There is a possible rain garden site behind the school near a field. Educational workshops should be offered to the students and teachers discussing the importance of stormwater management and benefits of BMP implementation, such as the *Stormwater Management in Your School Yard* curriculum.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	n	N040°56'30.9264"	W073°57'37.3284"

Site Description and BMP Implementation Opportunities: The site is the United Church of Christ, the Cresskill Congregational Church. The parking lot is in poor condition and should be replaced with pervious pavement. Another BMP opportunity is for a rain garden in the back of the church.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_Cr	o	N040°56'39.1842"	W073°57'26.784"

Site Description and BMP Implementation Opportunities: This is a residential site, which includes streets such as Morningside Avenue, South Street, and Weil Place. Homes are directly connected. Disconnecting the downspouts via rain barrels and/or rain gardens is proposed. Educational workshops should be offered to homeowners discussing the importance of stormwater management and the benefits of BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Cr	p	N040°56'36.0312"	W073°57'2.7972"

Site Description and BMP Implementation Opportunities: This is a residential site, which includes streets such as Spruce Place, Ross Avenue, and Holland Avenue. The majority of the homes are directly connected. Disconnecting the downspouts via rain barrels and/or rain gardens is suggested. Educational workshops should be offered to homeowners discussing the importance of stormwater management and the benefits of BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		**Geographic Coordinates**	
TB2_Cr	q	N040°56'12.2238"	W073°57'13.4568"

Site Description and BMP Implementation Opportunities: This is a residential site, which centers on Oak Street. A sloped down driveway on Oak Street offers opportunity for pervious pavement. The majority of homes are directly connected and should be disconnected via rain barrels and/or rain gardens. Oak Street offers an opportunity for a residential green street. Educational workshops should be offered to homeowners discussing the importance of stormwater management and the benefits of BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:


Project Identifier		**Geographic Coordinates**	
TB2_Cr	r	N040°56'41.9856"	W073°57'43.9704"

Site Description and BMP Implementation Opportunities: This is a residential site, called the Brentwood Manors, with a series of townhouses. There is a possible rain garden site in the center of the courtyard that would collect runoff from the rooftops of the buildings. Another opportunity for a BMP exists between two residential townhouses; by extending the landscaping, a mirroring rain garden could be implemented around an existing park bench. Educational workshops for residents discussing the importance of stormwater management and the benefits of BMP implementation should be offered, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Table B-13: Nonpoint source management measures proposed for Subwatershed TB2 in Cresskill Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
TB2_Cr	a	School	Disconnection of Parking Lot	Pervious Pavement/Rain Gardens	$149,200
TB2_Cr	b	Residential Neighborhood	Disconnection of Rooftops & Roadways	Rain Gardens/ Rain Barrels/ Vegetated Swales	$46,000
TB2_Cr	c	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels/ Pervious Pavement	$102,200
TB2_Cr	d	Recreational Area	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$1,360
TB2_Cr	e	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$13,200
TB2_Cr	f	School	Disconnection of Rooftops & Roadways	Rain Gardens/ Rain Barrels/ Pervious Pavement	$81,000
TB2_Cr	g	School	Disconnection of Parking Lot	Pervious Pavement	$75,000
TB2_Cr	h	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$26,400
TB2_Cr	i	Commercial	Disconnection of Parking Lot	Cistern	$2,000
TB2_Cr	j	Residential Neighborhood	Disconnection of Rooftops & Roadways	Rain Gardens/ Rain Barrels/ Pervious Pavement	$10,000 – $81,000
TB2_Cr	k	Commercial	Disconnection of Rooftops	Rain Gardens	$1,000
TB2_Cr	l	Library	Disconnection of Rooftops & Parking Lot	Rain Gardens/ Pervious Pavement	$41,600
TB2_Cr	m	School	Disconnection of Rooftops	Rain Gardens	$1,800
TB2_Cr	n	Church	Disconnection of Parking Lot	Pervious Pavement/ Rain Gardens	$70,000
TB2_Cr	o	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$13,200
TB2_Cr	p	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$11,000
TB2_Cr	q	Residential Neighborhood	Disconnection of Rooftops & Roadways	Rain Gardens/ Rain Barrels/ Pervious Pavement/ Green Street	$682,800
TB2_Cr	r	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens	$2,400

Table B-14: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB2 in Cresskill Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB2_Cr	a	SCHOOL (COMMERCIAL)	26	54	49	565	509	5,137	4,624	28
TB2_Cr	b	RESIDENTIAL (MEDIUM DENSITY)	48	67	61	721	649	6,729	6,056	52
TB2_Cr	c	RESIDENTIAL (HIGH DENSITY)	11	16	14	168	152	1,571	1,414	12
TB2_Cr	d	RECREATIONAL (MIXED URBAN)	25	25	22	248	223	2,975	2,678	27
TB2_Cr	e	RESIDENTIAL (MEDIUM DENSITY)	46	65	58	691	622	6,452	5,807	50
TB2_Cr	f	SCHOOL (COMMERCIAL)	9	18	17	193	173	1,751	1,576	9
TB2_Cr	g	SCHOOL (COMMERCIAL)	5	10	9	106	95	962	866	5
TB2_Cr	h	RESIDENTIAL (HIGH DENSITY)	3	4	4	44	39	409	368	3
TB2_Cr	i	COMMERCIAL	13	27	25	287	258	2,609	2,348	14
TB2_Cr	j	RESIDENTIAL (HIGH DENSITY)	5	6	6	69	62	640	576	5
TB2_Cr	k	COMMERCIAL	24	51	46	536	482	4,869	4,382	26
TB2_Cr	l	COMMERCIAL	2	4	4	41	37	371	334	2
TB2_Cr	m	SCHOOL (OTHER URBAN)	7	7	6	65	59	781	703	7
TB2_Cr	n	CHURCH (COMMERCIAL)	14	30	27	312	281	2,836	2,552	15
TB2_Cr	o	RESIDENTIAL (MEDIUM DENSITY)	1	1	1	14	12	129	116	1
TB2_Cr	p	RESIDENTIAL (MEDIUM DENSITY)	26	36	33	387	349	3,615	3,254	28
TB2_Cr	q	RESIDENTIAL (MEDIUM DENSITY)	26	36	33	388	349	3,620	3,258	28
TB2_Cr	r	RESIDENTIAL (HIGH DENSITY)	2	3	3	31	28	290	261	2
		Total	292	460	414	4,865	4,378	45,747	41,172	314
		Total Impervious Cover	59							

Demarest Borough, Bergen County, NJ

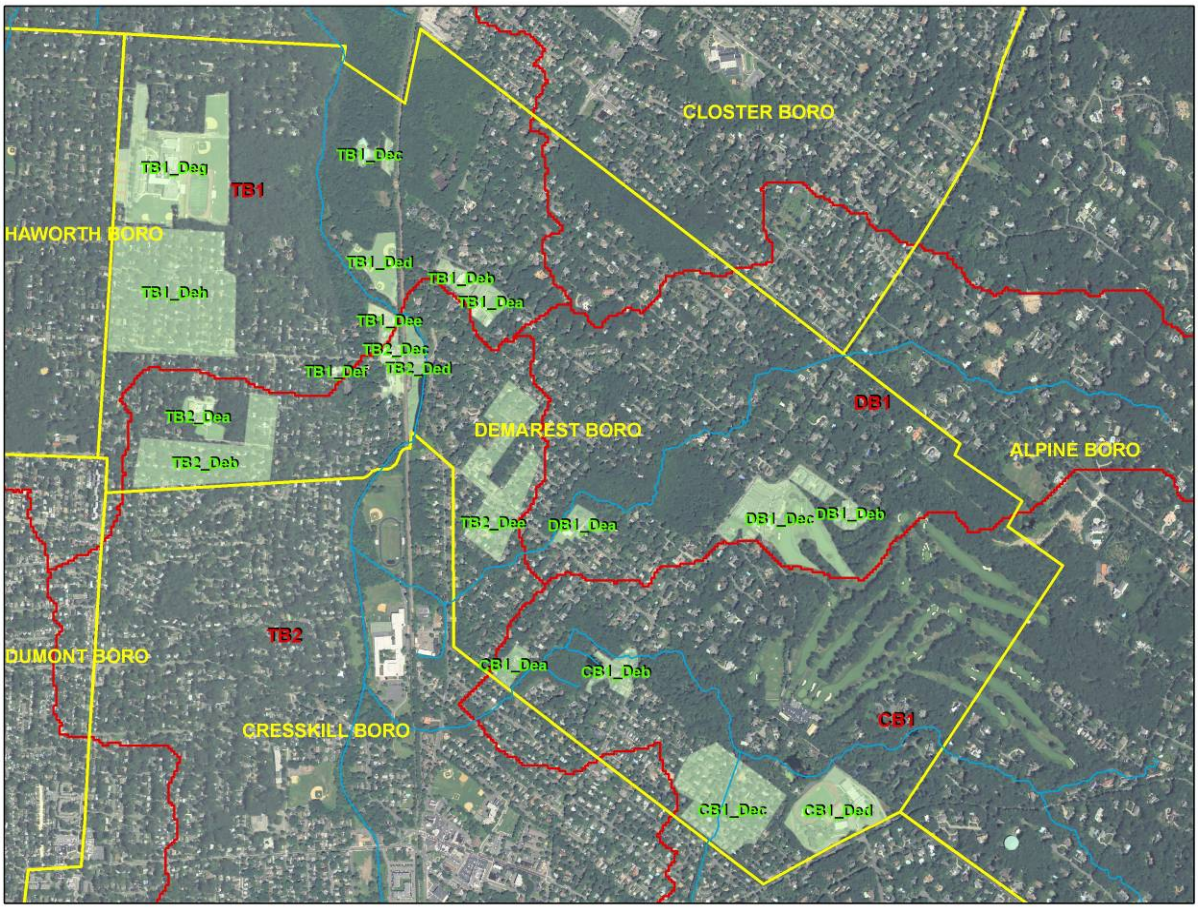


Figure B-4: Proposed project areas in Demarest Borough.

CB1 Borough of Demarest

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed CB1

Project Identifier		**Geographic Coordinates**	
CB1_De	a	N40° 56' 48.6"	W073° 57' 32.5"

Site Description and BMP Implementation Opportunities: This site is located within a residential area. The brook is accessible from a location near Sunset Road. Residential lawns contain little to no buffers. The street is adjacent to the brook and little buffer exists. Pervious pavement at end of street could be implemented to limit water flow into the stream along with buffer enhancement. Currently a concrete bank exists along the waterway to prevent erosion; this could be replaced with vegetation depending on the storm flow rates. Native vegetation and landscaping along the banks could be installed to prevent runoff and erosion. Also, homeowners should be offered educational workshops on the importance of stormwater management and implementation of BMPs along with streamside living workshops, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
CB1_De	b	N40° 56' 51.6"	W073° 57' 17.2"

Site Description and BMP Implementation Opportunities: The site has a pond located at the end of Lauren Pond Court. The pond has algae on the surface and at the shoreline. Downspout disconnection should be completed with rain barrels or rain gardens. Rain gardens should be installed on residential lawns to receive runoff from the street where applicable. A vegetated buffer near the water's edge should be planted to filter out pollutants in runoff. Also, homeowners should be offered workshops on the effects of fertilizers and other materials and the importance of stormwater management and implementation of BMPs, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
CB1_De	c	N40° 56' 35.8"	W073° 56' 51.8"

Site Description and BMP Implementation Opportunities: The site is the intersection of Glenwood and Cypress Roads. The lake is located north of Glenwood Avenue. Rain gardens should be installed on resident's property to capture runoff both from street and rooftops. Roadside swales also could be implemented where streets are without sidewalks, to capture road runoff, preventing sediments, fertilizers and other pollutants from reaching the lake. Also, homeowners should be offered educational workshops on the importance of stormwater management and implementation of BMPs, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
CB1_De	d	N40° 56' 37.4"	W073° 56' 47.8"

Site Description and BMP Implementation Opportunities: The site is the Academy of the Holy Angels School parking lot. The lot is adjacent to a lake (only 15 feet away) where little buffer currently exists. A rain garden off of the parking lot should be installed to collect runoff and infiltrate stormwater. Educational workshops should be presented to students on the importance of stormwater management and implementation of BMPs, such as *Stormwater Management in Your School Yard*.

Site Photos:

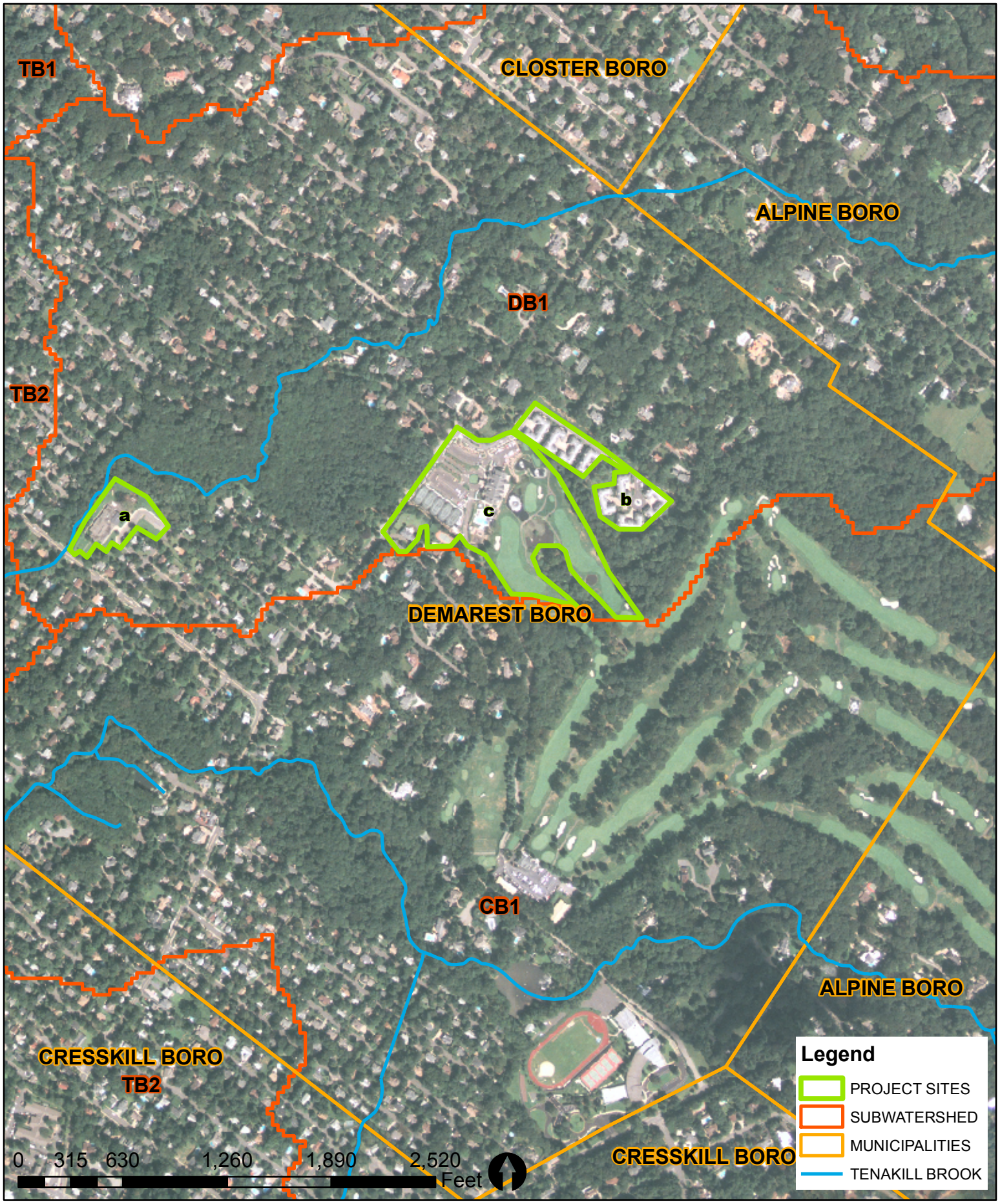


Table B-15: Nonpoint source management measures proposed for Subwatershed CB1 in Demarest Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
CB1_De	a	Residential Neighborhood	Disconnection of Roadway	Pervious Pavement/ Vegetated Buffer	$17,000
CB1_De	b	Residential Neighborhood	Disconnection of Rooftops	Rain Barrels/ Rain Gardens/ Vegetated Buffer	$50,400
CB1_De	c	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Roadside Swales	$25,000
CB1_De	d	School	Disconnection of Parking Lot	Rain Garden	$3,400

Table B-16: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed CB1 in Demarest Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
CB1_De	a	RESIDENTIAL (LOW DENSITY)	2	1	1	10	9	200	180	2
CB1_De	b	RESIDENTIAL (LOW DENSITY)	4	2	2	20	18	400	360	4
CB1_De	c	RESIDENTIAL (MEDIUM DENSITY)	22	31	28	330	297	3,080	2,772	24
CB1_De	d	RECREATIONAL (SCHOOL)	15	23	20	234	211	2,360	2,124	16
		Total	43	57	51	594	535	6,040	5,436	46
		Total Impervious Cover	14							



DB1 Borough of Demarest

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed DB1

Project Identifier		**Geographic Coordinates**	
DB1_De	a	N40°57′06.3″	W073°57′17.4″

Site Description and BMP Implementation Opportunities: The site is County Road Elementary School, located at 69 Lake Road. The current standard asphalt parking lot and basketball courts could be retrofitted with pervious asphalt. A rain garden in front of the school between the entrance and the court should be installed to collect runoff from courts and rooftop. Students and teachers should be offered an educational workshop such as *Stormwater Management in your Schoolyard to* address the importance and benefits of stormwater management and BMP implementation.

Site Photos:

Project Identifier		**Geographic Coordinates**	
DB1_De	b	N40°57′08.3″	W073°56′40.4″

Site Description and BMP Implementation Opportunities: The site is Bellaire Townhouses, a residential housing complex, located at 386 Hardenburgh Avenue. Most of the housing unit's roofs are directly connected. The rooftops should be disconnected with rain gardens and/or rain barrels. The center court currently has pavers and shrubs that could be replaced with a rain garden. Homeowners should be offered an educational workshop addressing the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
DB1_De	c	N40°57′10.4″	W073°56′7.3″

Site Description and BMP Implementation Opportunities: The site is Alpine Country Club located at 72 Anderson Avenue. The site consists mainly of a large parking area, about 25,000 square feet. Islands exist with storm drains, which could be retrofitted with Filterra™ planter boxes or standard rain gardens. Rain gardens may also be effective with curb cuts along edges of the parking lot. The most direct BMP for limiting stormwater runoff issues would be to replace a portion of the lot with pervious pavement.

Site Photos:

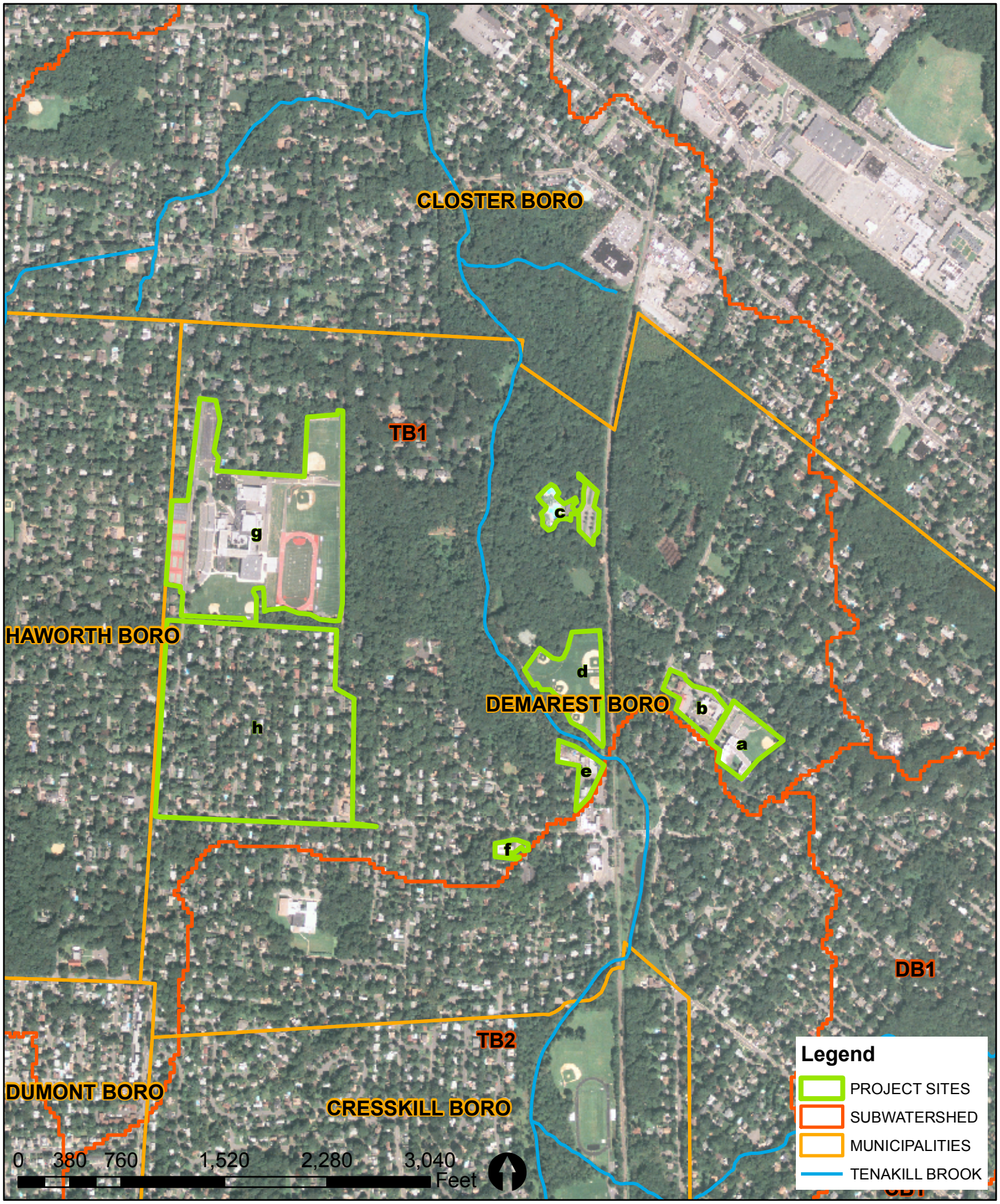


Table B-17: Nonpoint source management measures proposed for Subwatershed DB1 in Demarest Borough, NJ.

Project ID		**Site Description**	**Management Measure**	**Type of BMP**	**Estimated Cost**
DB1_De	a	School	Disconnection of Rooftop & Parking Lot	Pervious Pavement/ Rain Garden	$54,500
DB1_De	b	Residential Neighborhood	Disconnection of Rooftops & Roadway	Rain Garden	$7,680
DB1_De	c	Residential Neighborhood	Disconnection of Parking Lot	Pervious Pavement/ Rain Garden	$121,900

Table B-18: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed DB1 in Demarest Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
DB1_De	a	COMMERCIAL/SERVICES	3	6	6	66	59	600	540	3
DB1_De	b	RESIDENTIAL (HIGH DENSITY)	5	7	6	75	68	700	630	5
DB1_De	c	RECREATIONAL	18	18	16	180	162	2,160	1,944	19
		Total	26	31	28	321	289	3,460	3,114	28
		Total Impervious Cover	9							



TB1 Borough of Demarest

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB1

Project Identifier		**Geographic Coordinates**	
TB1_De	a	N40°57′34.4″	W073°57′34.8″
Site Description and BMP Implementation Opportunities: The site is Demarest Middle School, located at 27 Orchard Road. Opportunities for BMP implementation include pervious pavement on the basketball court and parking spots and the implementation of Filterra™ planter boxes for a storm drain near the basketball court. These BMPs would allow groundwater recharge, and the Filterra™ box would filter water before it enters the storm line. Educational workshops demonstrating the importance of stormwater management and BMP implementation should be offered to the school, such as the *Stormwater Management in Your School Yard* curriculum.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_De	b	N40°57′33.7″	W073°57′38.6″
Site Description and BMP Implementation Opportunities: The site is St. Joseph's Roman Catholic Church located at 571 Piermont Road. A large rain garden could be installed in the courtyard. The rain garden will collect, treat, and infiltrate stormwater runoff created from the roof's impervious surface.			

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_De	c	N40°57′48.6″	W073°57′50.6″

Site Description and BMP Implementation Opportunities: The site is Demarest Swim Club located at 98 Old County Court. The current parking lot is gravel with grassed islands. Existing conditions offer stormwater little chance to infiltrate due to the level of compaction of gravel areas where puddles are still present days after rainfall. The parking lot should be retrofitted with pervious pavement and rain gardens should be installed in the islands of the parking lot.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_De	d	N40°57′34.4″	W073°57′48.9″

Site Description and BMP Implementation Opportunities: The site is a recreational park, Wakelee Field, located at 273 County Road. The site consists of multiple athletic fields and an associated building. The rooftop area of the building is approximately 2,000 square feet. A rain garden should be implemented to collect, treat, and infiltrate a portion of rooftop runoff. An informative sign near the garden would be beneficial to guests of the park.

Site Photos:

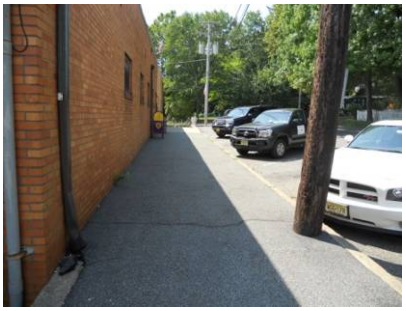


Project Identifier		**Geographic Coordinates**	
TB1_De	e	N40°57′25.9″	W073°57′50.9″

Site Description and BMP Implementation Opportunities: This is a commercial site, a post office on Wakelee Drive off Hardenburgh Avenue. Site consists of a large amount of impervious cover and directly connected downspouts. Downspouts should be disconnected with rain barrels with proper overflow technology. The existing parking spaces of the lot and the adjacent sidewalk should be retrofitted with pervious pavement.

Site Photos:





Project Identifier		**Geographic Coordinates**	
TB1_De	f	N40°57′24.8″	W073°57′56.0″

Site Description and BMP Implementation Opportunities: The site is a Demarest Cooperative Nursery School/Methodist Church located at 113 Hardenburgh Avenue. The site has numerous opportunities for BMP implementation including downspout disconnection via rain barrels. Rain gardens installed in the courtyard of the site provide educational opportunities for the public in addition to capturing, treating, and infiltrating stormwater runoff created by the rooftop.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB1_De	g	N40°57′29.7″	W073°58′26.8″
Site Description and BMP Implementation Opportunities: The site is the Northern Valley Regional High School located at 180 Knickerbocker Road. A rain garden should be implemented in front of the building in a grassed area, overflowing to the existing storm drain.			

Site Photos:


Project Identifier		**Geographic Coordinates**	
TB1_De	h	N40°57′29.7″	W073°58′20.8″
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood consisting nearest to Prescott Street and Madison Avenue. Homes should be disconnected with rain barrels and/or rain gardens. Educational workshops should be offered to homeowners to illustrate the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

Site Photos:


Table B-19: Nonpoint source management measures proposed for Subwatershed TB1 in Demarest Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
TB1_De	a	School	Disconnection of Parking Lot	Pervious Pavement/ Filterra™ Plant Boxes	$108,000
TB1_De	b	Church	Disconnection of Rooftop	Rain Garden	$2,000
TB1_De	c	Commercial	Disconnection of Parking Lot	Pervious Pavement	$151,600
TB1_De	d	Recreational	Disconnection of Rooftop	Rain Garden	$900
TB1_De	e	Commercial	Disconnection of Rooftop	Pervious Pavement/ Rain Barrels	$27,120
TB1_De	f	Church/School	Disconnection of Rooftop	Rain Barrels Rain Gardens	$1,320
TB1_De	g	School	Disconnection of Rooftop	Rain Garden	$1,000
TB1_De	h	Residential Neighborhood	Disconnection of Rooftops	Rain Barrels Rain Gardens	$11,000

Table B-20: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB1 in Demarest Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB1_De	a	RECREATIONAL (SCHOOL)	4	4	4	40	36	480	432	4
TB1_De	b	COMMERCIAL/SERVICES	3	6	6	66	59	600	540	3
TB1_De	c	RECREATIONAL	2	2	2	20	18	240	216	2
TB1_De	d	RECREATIONAL	6	6	5	60	54	720	648	6
TB1_De	e	COMMERCIAL/SERVICES	2	4	4	44	40	400	360	2
TB1_De	f	COMMERCIAL/SERVICES	1	2	2	22	20	200	180	1
TB1_De	g	COMMERCIAL/SERVICES	34	46	42	474	427	4,920	4,428	37
TB1_De	h	RESIDENTIAL (MEDIUM DENSITY)	46	64	58	690	621	6,440	5,796	50
		Total	98	135	122	1,416	1,274	14,000	12,600	106
		Total Impervious Cover	36							

TB2 Borough of Demarest

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB2

Project Identifier		**Geographic Coordinates**	
TB2_De	a	N40°57′21.8″	W073°58′19.4″

Site Description and BMP Implementation Opportunities: The site is the Luther Lee Elementary School located at 24 Prescott Street. The site has a large building that is directly connected. A sloped grassed area on the right side of the building offers an opportunity for terracing rain gardens with overflows into one another. Disconnecting the building with rain gardens and/or rain barrels should also be considered. Educational workshops should be offered to students and teachers discussing the importance of stormwater management and benefits of BMP implementation, such as *Stormwater Management in Your School Yard*.

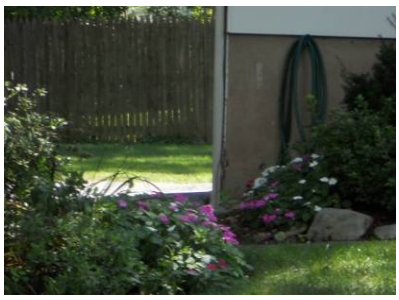
Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_De	b	N40°57′16.9″	W073°58′16.1″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood nearest to 47 Lenox Avenue. Disconnecting downspouts with rain barrels and/or rain gardens is suggested. Pervious pavement should also be considered. This location is currently a student drop off/pick up area. Educational workshops should be offered to homeowners discussing the importance of stormwater management and BMPs, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:


Project Identifier		**Geographic Coordinates**	
TB2_De	c	N40°57′22.7″	W073°57′48.2″

Site Description and BMP Implementation Opportunities: The site is located at 32 Park Street in front of the volunteer fire house. The current condition of the street is good, but a large area of impervious surfaces is present. The proposed BMP is the implementation of a green street. This should be comprised of pervious pavement and rain gardens. An informative sign should be installed to display to the community the importance of stormwater management and BMP implementation.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_De	d	N40°57′23.6″	W073°57′48.3″

Site Description and BMP Implementation Opportunities: The site is Demarest Pond located off County Road. The site consists of a grassed area, parking area, and a large pond. The pond is in fair condition and has a buffer only along some areas around the pond. The buffer should be increased along more areas of the pond's shoreline to prevent runoff pollutants from entering the pond. The buffer will also prevent easy access for geese and droppings from entering the water. The nearby parking area should be retrofitted with pervious pavement; the area is approximately 10,000 square feet.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_De	e	N40°57′21.7″	W073°57′28.9″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood nearest to 15 Central Avenue. The neighborhood has no curbs; roadside vegetated swales would be an effective BMP. In addition to disconnecting roadways, the rooftops of the homes should be disconnected as well via rain barrels and rain gardens. Homeowners should be offered educational workshops demonstrating the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Table B-21: Nonpoint source management measures proposed for Subwatershed TB2 in Demarest Borough, NJ.

Project ID		**Site Description**	**Management Measure**	**Type of BMP**	**Estimated Cost**
TB2_De	a	School	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$3,320
TB2_De	b	Residential Neighborhood	Disconnection of Rooftops and Roadway	Pervious Pavement/ Rain Gardens/ Rain Barrels	$10,000
TB2_De	c	Commercial	Disconnection of Roadway	Green Street	$382,800
TB2_De	d	Recreational	Disconnection of Parking Lot	Vegetated Buffer/ Pervious Pavement	$96,800
TB2_De	e	Residential Neighborhood	Disconnection of Rooftops and Roadways	Vegetated Swales/ Rain Gardens/ Rain Barrels	$9,600

Table B-22: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB2 in Demarest Borough, NJ.

Table 1

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB2_De	a	SCHOOL (OTHER URBAN)	4	4	3	38	34	457	411	4
TB2_De	b	RESIDENTIAL (MEDIUM DENSITY)	21	30	27	322	290	3,009	2,708	23
TB2_De	c	RESIDENTIAL (COMMERCIAL)	4	8	7	80	72	724	652	4
TB2_De	d	RECREATIONAL (OTHER URBAN)	3	3	3	34	31	411	370	4
TB2_De	e	RESIDENTIAL (MEDIUM DENSITY)	20	27	25	293	264	2,738	2,465	21
		Total	52	72	65	768	691	7,340	6,606	56
		Total Impervious Cover	18							

Dumont Borough, Bergen County, NJ

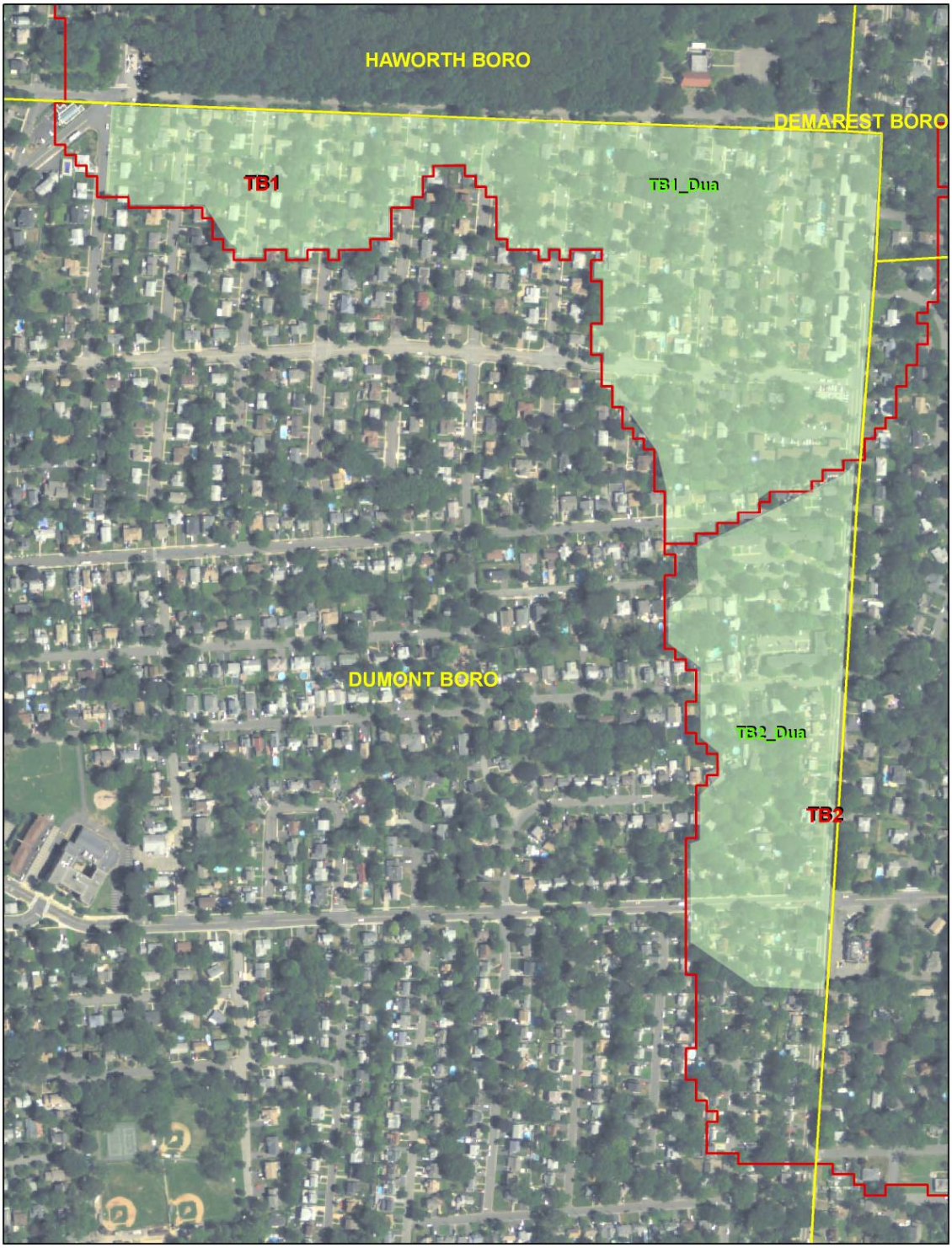
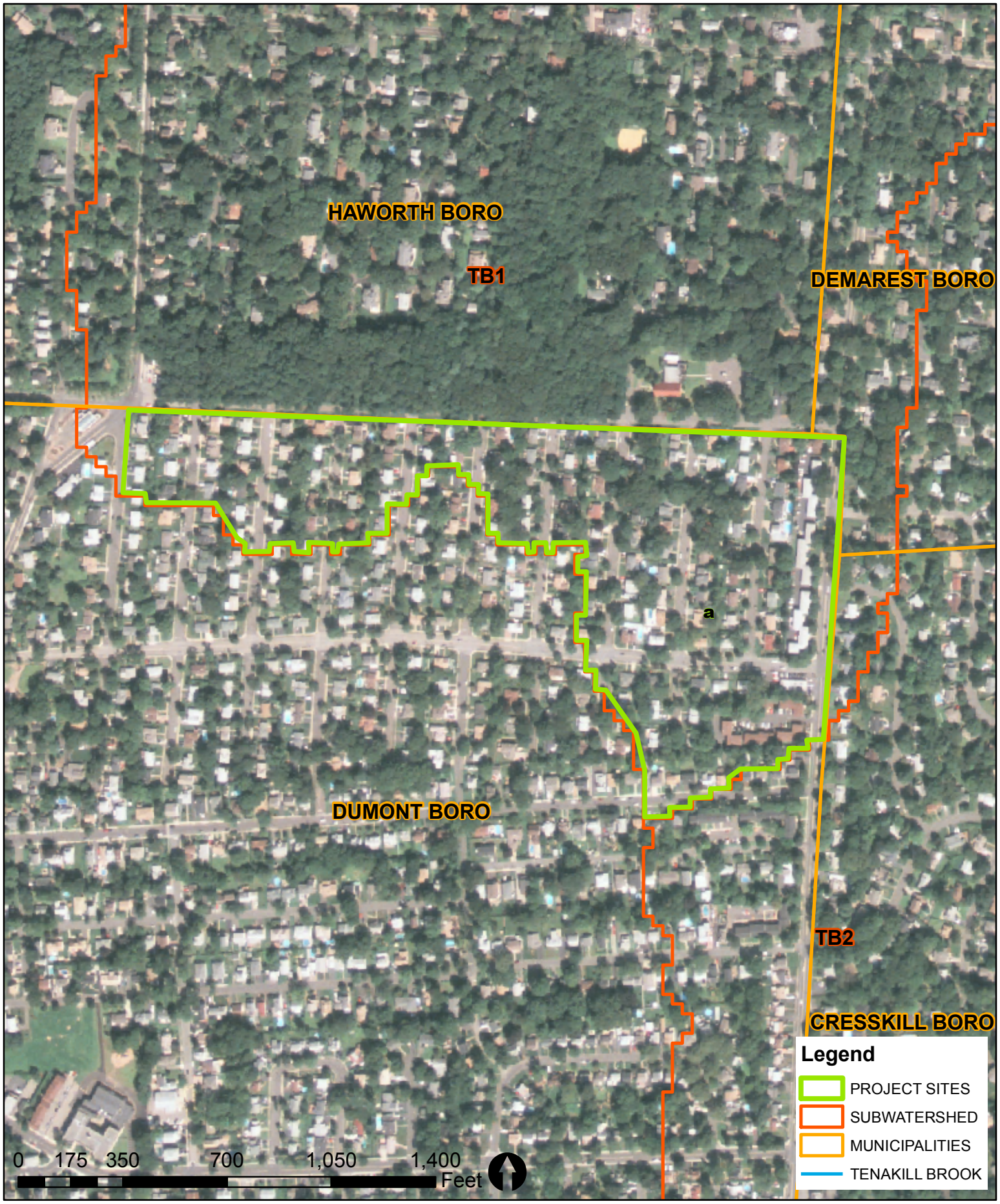


Figure B-5: Proposed project areas in Dumont Borough.



TB1 Borough of Dumont

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB1

Project Identifier		**Geographic Coordinates**	
TB1_Du	a	N40°57′12.9″	W073°58′44.8″
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood nearest to 79 Garfield Street. The site consists of homes that are directly connected. The main recommended BMP is downspout disconnection via rain barrels and/or rain gardens. Homeowners also should be offered educational workshops to demonstrate the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

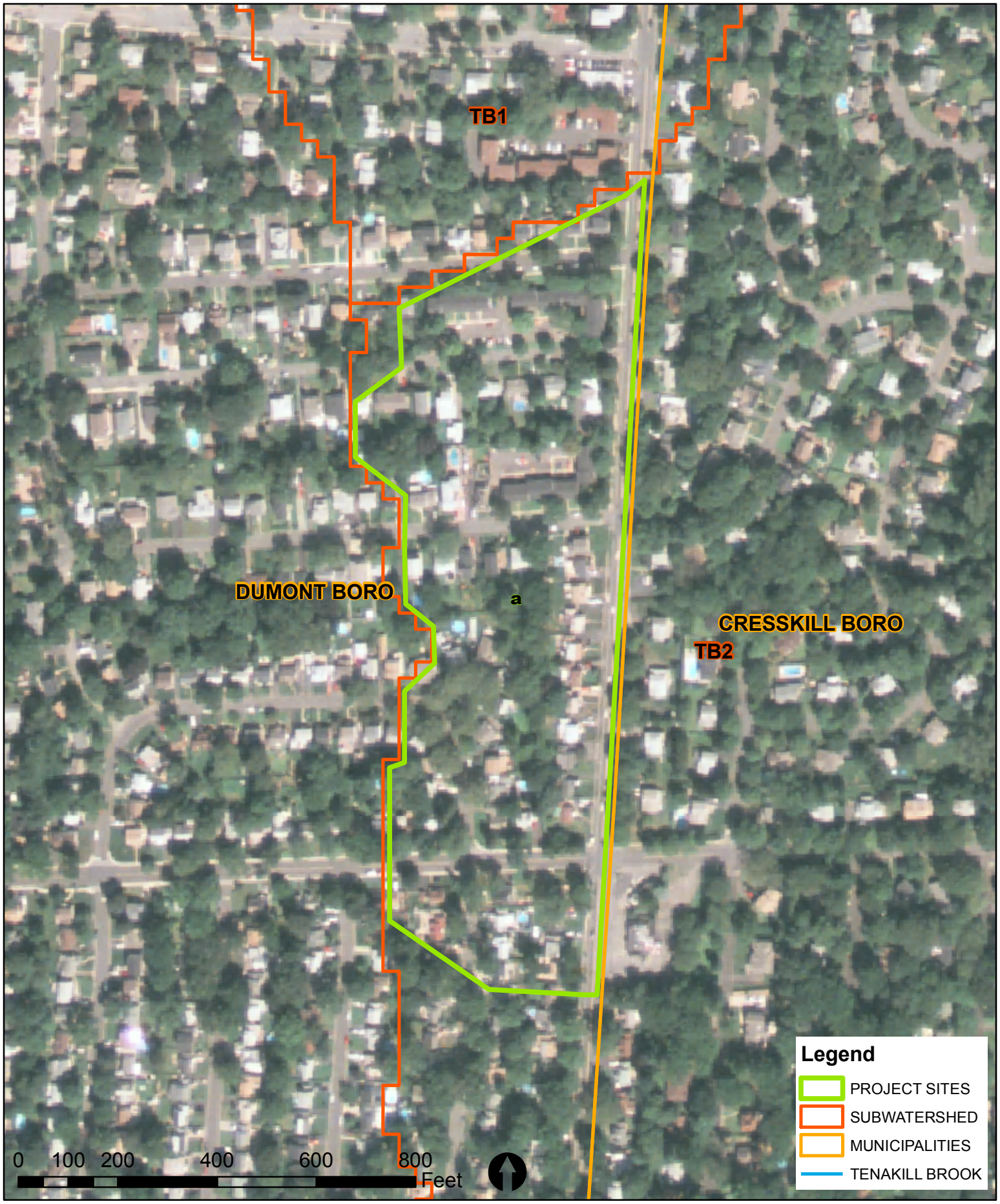
Site Photos:

Table B-23: Nonpoint source management measures proposed for Subwatershed TB1 in Dumont Borough, NJ.

Project ID		**Site Description**	**Management Measure**	**Type of BMP**	**Estimated Cost**
TB1_Du	a	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$7,920

Table B-24: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB1 in Dumont Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB1_Du	a	RESIDENTIAL (HIGH/MEDIUM DENSITY)	33	47	42	500	450	4,666	4,200	36
		Total	33	47	42	500	450	4,666	4,200	36
		Total Impervious Cover	13							



TB2 Borough of Dumont

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB2

Project Identifier		**Geographic Coordinates**	
TB2_Du	a	N40°56′54.2″	W073°58′38.3″
Site Description and BMP Implementation Opportunities: The site is a residential cul-de-sac with a parking area in the center on Revere Drive. The parking area is approximately 2,000 square feet. Homes are directly connected. Rooftops should be disconnected by rain gardens and/or rain barrels. The roads can be disconnected by roadside rain gardens since no curbs or sidewalks exist. Pervious pavement in the parking area could be implemented to reduce stormwater volumes. Homeowners should be offered educational workshops demonstrating the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

Site Photos:



Table B-25: Nonpoint source management measures proposed for Subwatershed TB2 in Dumont Borough, NJ.

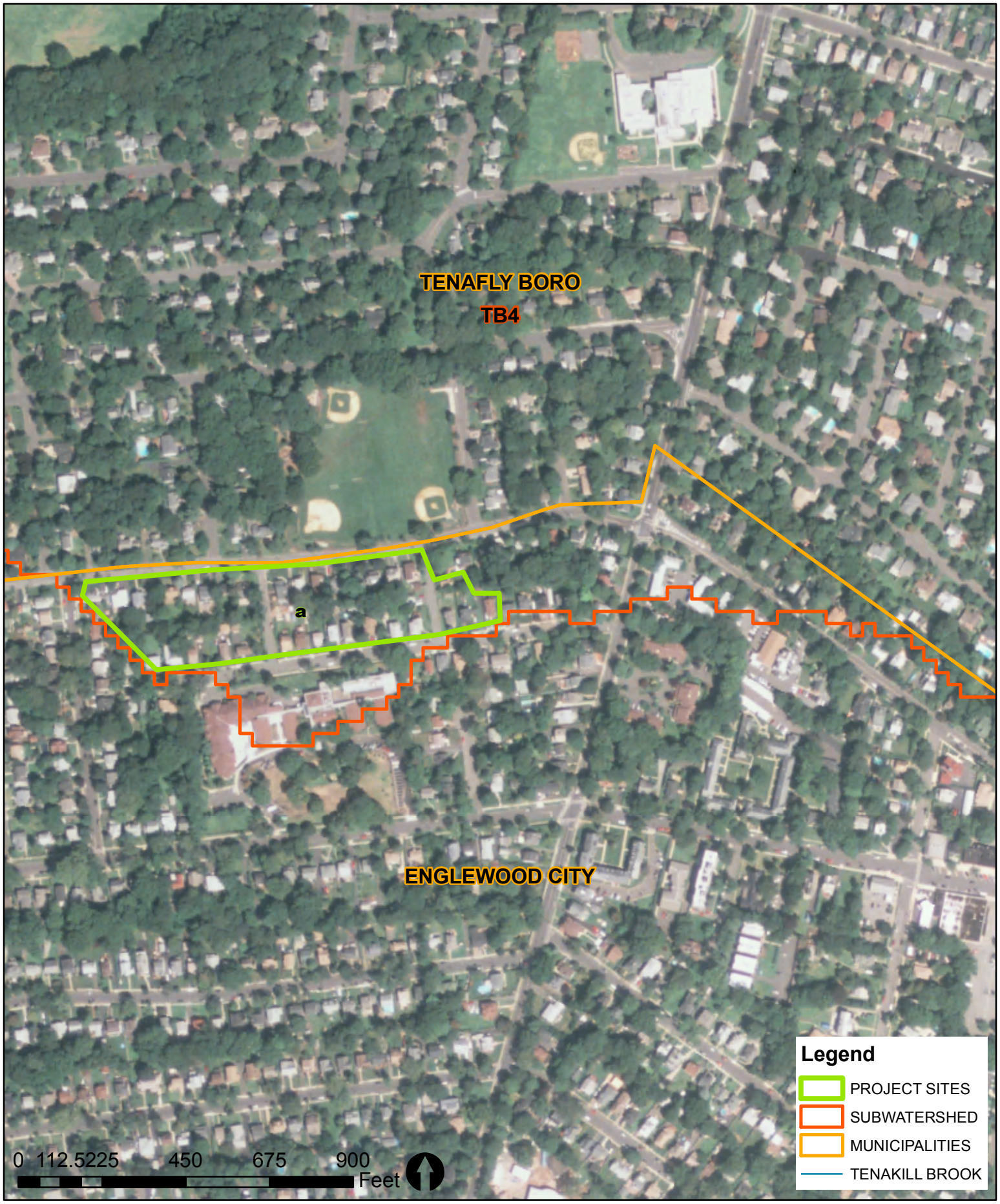
Project ID		**Site Description**	**Management Measure**	**Type of BMP**	**Estimated Cost**
TB2_Du	a	Residential Neighborhood	Disconnection of Rooftops & Roadway	Rain Gardens/ Rain Barrels/ Pervious Pavement	$22,640

Table B-26: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB2 in Dumont Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB2_Du	a	RESIDENTIAL (HIGH/MEDIUM DENSITY)	15	21	19	227	205	2,122	1,910	16
		Total	15	21	19	227	205	2,122	1,910	16
		Total Impervious Cover	6							

Englewood City, Bergen County, NJ

Figure B-6: Proposed project areas in Englewood City.



TB4 Englewood City

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB4

Project Identifier		**Geographic Coordinates**	
TB4_En	a	N40° 54′41.9"	W73° 58′35.3″
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood nearest to Pleasant Avenue. The proposed BMP for this site includes downspout disconnection to limit the flow of stormwater reaching the roadway. Disconnection should be completed with residential involvement with rain barrel and/or rain garden installation programs. Homeowners should also be offered educational workshops addressing the importance of storm water management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

Site Photos:



Table B-27: Nonpoint source management measures proposed for Subwatershed TB4 in Englewood City, NJ.

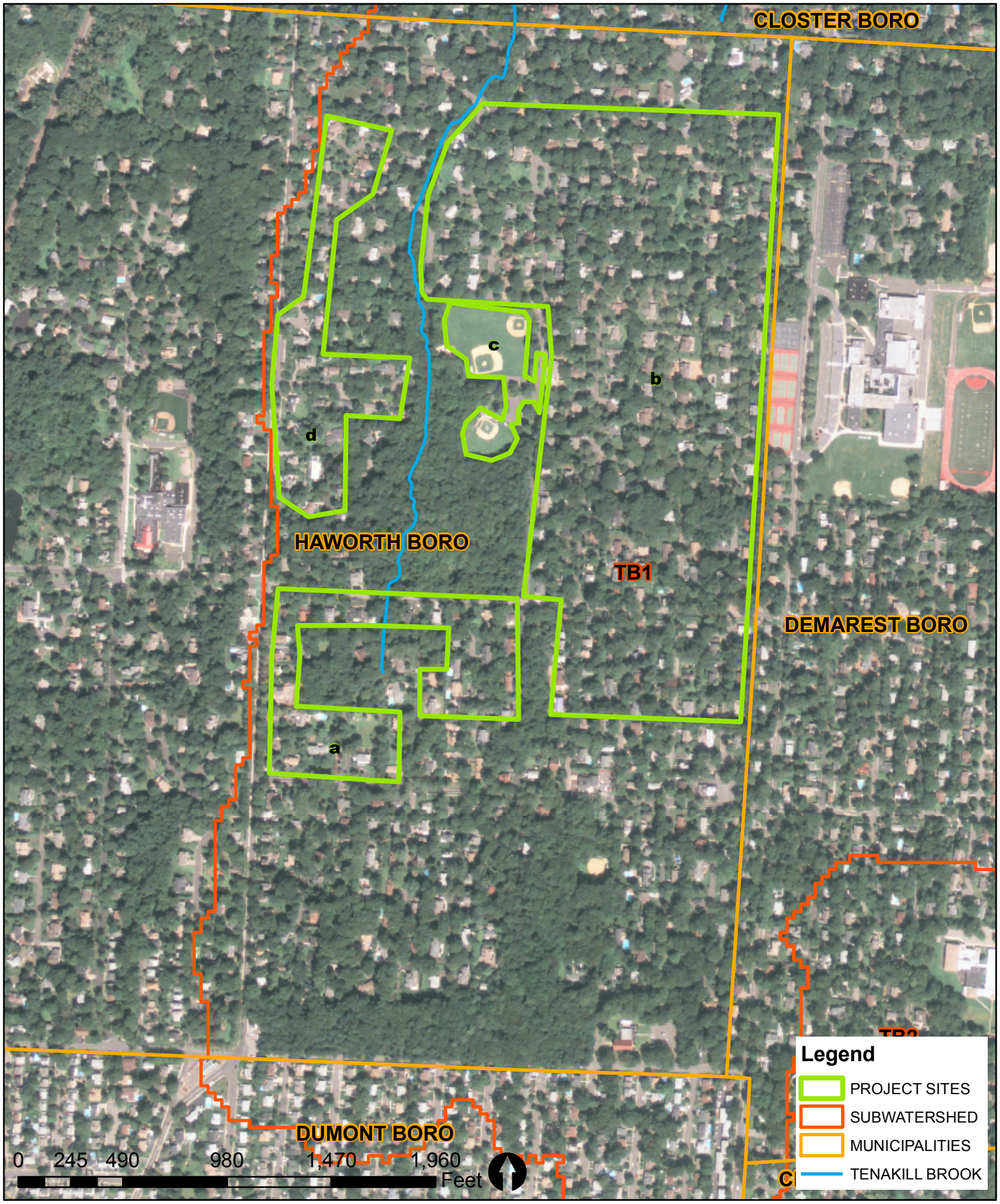
Project ID		**Site Description**	**Management Measure**	**Type of BMP**	**Estimated Cost**
TB4_En	a	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$7,480

Table B-28: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB4 in Englewood City, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB4_En	a	RESIDENTIAL (MEDIUM DENSITY)	5	7	7	79	71	735	662	6
		Total	5	7	7	79	71	735	662	6
		Total Impervious Cover	2							

Haworth Borough, Bergen County, NJ

Figure B-7: Proposed project areas in Haworth Borough.



TB1 Borough of Haworth

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

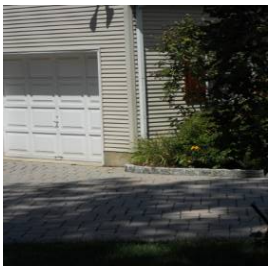
RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB1

Project Identifier		**Geographic Coordinates**	
TB1_Ha	a	N40°57′32.9″	W073°58′48.8″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood near Pleasant Avenue. The neighborhood has no sidewalks,and most homes are directly connected. BMPs for this site should include roadside rain gardens and disconnection of residential impervious surfaces. This should be completed by residential rain gardens and/or rain barrels collecting rooftop runoff. Additionally, educational workshops should be offered to homeowners discussing the importance of stormwater management and benefits of BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

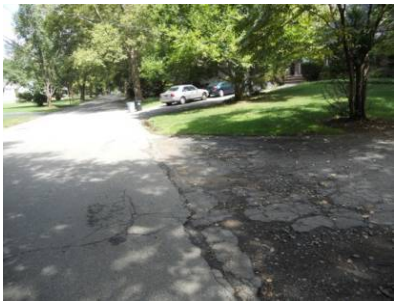




Project Identifier		**Geographic Coordinates**	
TB1_Ha	b	N40°57′44.3″	W073°58′32.2″

Site Description and BMP Implementation Opportunities: The site is located within a residential neighborhood nearest to an alley on Franklin Street. The current condition of the alley and sidewalk is very poor. The alleyway should be replaced with pervious pavement to promote infiltration and limit stormwater runoff to nearby water ways. Educational workshops should be offered to homeowners discussing the importance of stormwater management and benefits of BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

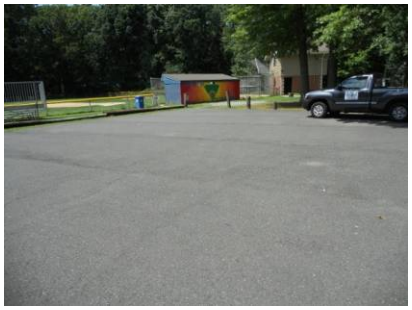




Project Identifier		**Geographic Coordinates**	
TB1_Ha	c	N40°57′51.5″	W073°58′50″

Site Description and BMP Implementation Opportunities: The site is Haworth Centennial Park located at 156 Delaware Street. The site consists of a parking lot of approximately 14,000 square feet. This lot could be retrofitted with pervious pavement and/or installation of rain gardens downgradient of the lot to collect, treat and infiltrate stormwater runoff. Informative signage should be installed to inform the community of actions and benefits of BMP implementation and hazards of stormwater runoff.

Site Photos:


Project Identifier		**Geographic Coordinates**	
TB1_Ha	d	N40°57′47.3″	W073°58′54.5″

Site Description and BMP Implementation Opportunities: The site is the residential neighborhood nearest to Surbeck Place, off of Schraalenburgh Road. The neighborhood contains homes that are directly connected and roadways with no sidewalks. Feasible and effective BMPs for this site include roadside rain gardens collecting runoff from the street. Disconnection of rooftops on residents' property is also a BMP that should be implemented by rain barrels and/or rain gardens. Educational workshops should be offered to homeowners on the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Table B-29: Nonpoint source management measures proposed for Subwatershed TB1 in Haworth Borough, NJ.

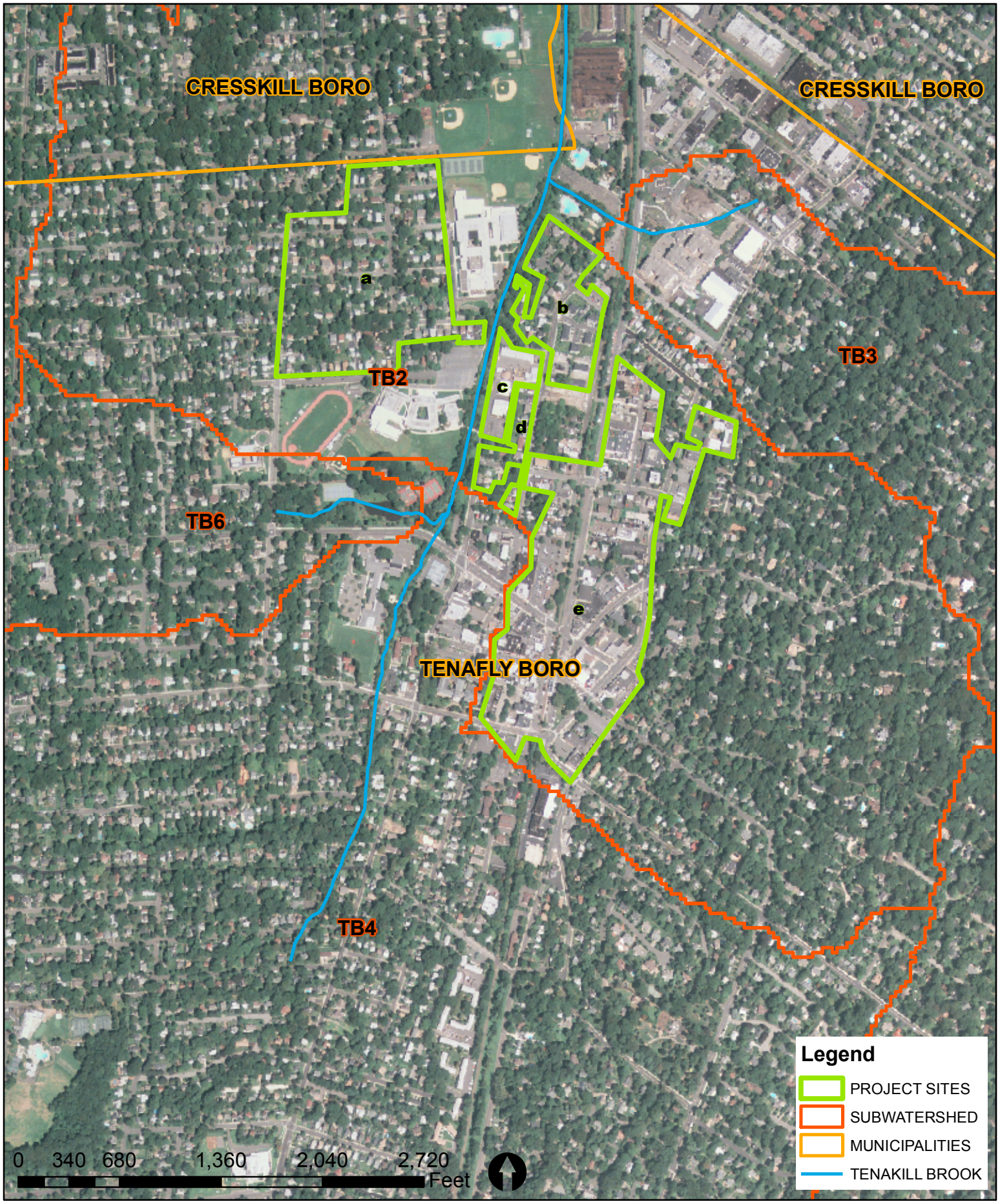
Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
TB1_Ha	a	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$5,720
TB1_Ha	b	Residential Neighborhood	Disconnection of Roadway	Pervious Pavement	$35,000
TB1_Ha	c	Recreational	Disconnection of Parking Lot	Rain Gardens/ Pervious Pavement	$141,000
TB1_Ha	d	Residential Neighborhood	Disconnection of Rooftops & Roadways	Rain Gardens/ Rain Barrels	$5,160

Table B-30: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB4 in Haworth Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB1_Ha	a	RESIDENTIAL (MIXED URBAN)	14	14	13	140	126	1,680	1,512	15
TB1_Ha	b	RESIDENTIAL (MEDIUM DENSITY)	78	109	98	1,170	1,053	10,920	9,828	84
TB1_Ha	c	RECREATIONAL (OTHER URBAN)	4	4	4	40	36	480	432	4
TB1_Ha	d	RESIDENTIAL (MEDIUM DENSITY)	12	17	15	180	162	1,680	1,512	13
		Total	108	144	130	1,530	1,377	14,760	13,284	116
		Total Impervious Cover	30							

Tenafly Borough, Bergen County, NJ

Figure B-8: Proposed project areas in Tenafly Borough.



TB2 Borough of Tenafly

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

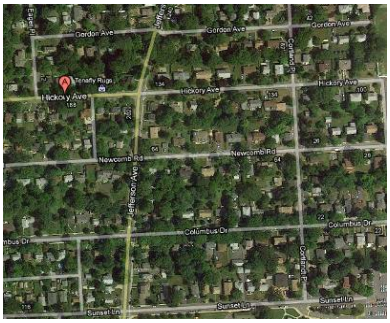
RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB2

Project Identifier		**Geographic Coordinates**	
TB2_Te	a	N40° 55' 58.1916"	W073° 58' 8.4966"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood of about five streets and 100 homes on ¼ acres lots. About ¾ of the homes are directly connected. Rooftops should be disconnected by rain gardens and/or rain barrels. Roadside vegetated swales may be installed where no curbs or sidewalks exist. Homeowners should be offered an educational workshop demonstrating the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:



Project Identifier		**Geographic Coordinates**	
TB2_Te	b	N 40° 55' 55.7688"	W073° 57' 52.6212"

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood of about 10 acres, including an auto shop on West Manhattan Street. BMP opportunities at the auto shop include disconnection of downspouts and implementation of pervious pavement in locations such as parking spots. Homeowners should be offered an educational workshop demonstrating the importance and benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Te	c	N 40° 55' 47.9172"	W073° 57' 55.749"

Site Description and BMP Implementation Opportunities: The site is the Tenafly Public Works (TPW) building. The TPW building is located near Grove and Cedar Streets. The site is about 4 acres of buildings and parking lots, almost all impervious cover. A BMP implementation should be pervious pavement in parking spots. Due to the public nature of the site, a workshop demonstrating the benefits of stormwater management and BMP implementation should be offered with a focus on pervious pavement.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Te	d	N0 40° 55' 42.0384"	W073° 57' 57.2358"

Site Description and BMP Implementation Opportunities: The site is a residential block consisting of Tenafly Road, Central Avenue, and Grove and Chestnut Streets. The site has about 25 houses on ¼ acre lots with many of the homes directly connected. Disconnection of the homes should be completed by using rain barrels and/or rain gardens. Homeowners should be offered educational workshops demonstrating the benefits of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB2_Te	e	N40° 55' 37.50"	W73° 57' 48.91"

Site Description and BMP Implementation Opportunities: The site is a commercial, downtown area located off Piermont Road, from West Mahan Street south to West Clinton Ave. Near the south end of the site, at intersection of West and East Clinton Avenue is Our Lady of Mount Carmel Church. At the church, BMP implementation suggestions include downspout disconnection and use of rain barrels. Near the downtown portion of the site, pervious pavement should be considered at the walkway along the railroad tracks, parking areas along railroad, the Tenafly Music Academy, and the back lot of Tenafly Pet Supply and O2 Fitness club. Also, rain gardens could be installed around the CVS parking lot.

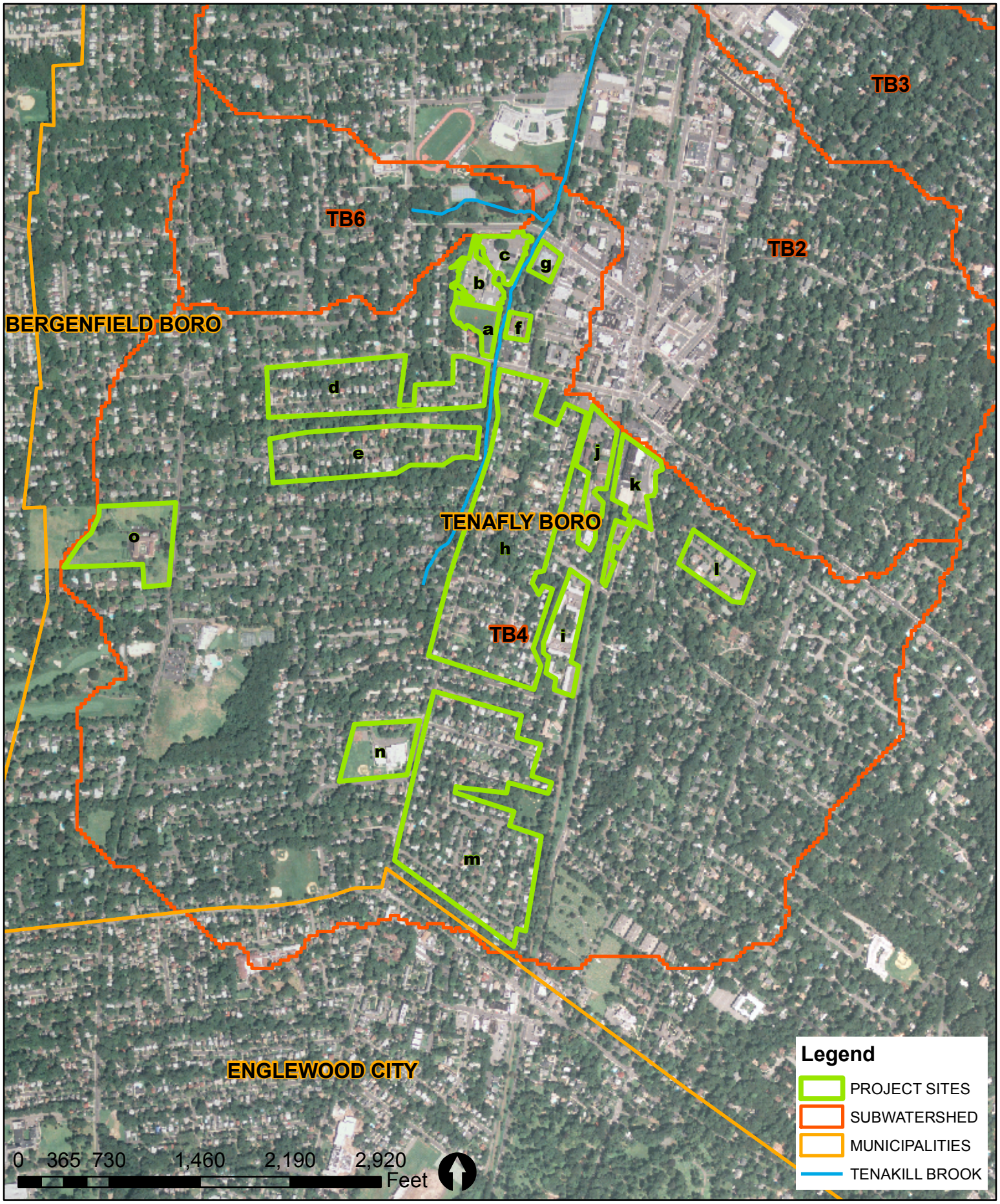
Site Photos:

Table B-31: Nonpoint source management measures proposed for Subwatershed TB2 in Tenafly Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
TB2_Te	a	Residential Neighborhood	Disconnection of Rooftops & Roadways	Vegetated Swales/ Rain Gardens/ Rain Barrels	$34,200
TB2_Te	b	Commercial	Disconnection of Parking Lot	Pervious Pavement	$60,000
TB2_Te	c	Commercial	Disconnection of Parking Lot	Pervious Pavement	$100,000
TB2_Te	d	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$7,480
TB2_Te	e	Commercial	Disconnection of Rooftops & Roadways	Rain Gardens/ Rain Barrels/ Pervious Pavement	$102,120

Table B-32: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB2 in Tenafly Borough, NJ.

Project ID		Land Use	AREA (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB2_Te	a	RESIDENTIAL (MEDIUM DENSITY)	31	44	39	470	423	4,385	3,946	34
TB2_Te	b	RESIDENTIAL (MEDIUM DENSITY)	10	14	12	147	132	1,373	1,236	11
TB2_Te	c	COMMERCIAL	3	6	6	66	59	600	540	3
TB2_Te	d	RESIDENTIAL (COMMERCIAL)	3	6	6	66	59	600	540	3
TB2_Te	e	RESIDENTIAL (COMMERCIAL)	49	103	92	1,075	967	9,771	8,793	53
		Total	96	173	155	1,824	1,641	16,728	15,055	103
		Total Impervious Cover	59							



TB4 Borough of Tenafly

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB4

Project Identifier		**Geographic Coordinates**	
TB4_Te	a	N40° 55′30.03"	W73° 58′8.92”
Site Description and BMP Implementation Opportunities: The site is Tenafly Montessori Academy, located at 426 Knickerbocker Road. The BMP for the site includes a rain garden in front of the building to disconnect the impervious cover and promote groundwater recharge. The existing driveway could be replaced with pervious pavement. Additionally, educational workshops addressing the importance of stormwater management should be offered, such as *Stormwater Management in Your School Yard*.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB4_Te	b	N40° 55′30.85"	W73° 58′12.32″
Site Description and BMP Implementation Opportunities: The site is a recreation area, Froggy Playground. Native vegetation should be added to the slope along the sidewalk to prevent erosion on the site, and in turn preventing sediment from entering waterways.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB4_Te	c	N40° 55′39.08"	W73° 58′10.54”
Site Description and BMP Implementation Opportunities: The site is at the Tenafly Municipal Court, Borough Hall, Library, and Youth Center. The Brook is located behind the library, and there is debris and oil in the Brook. The rooftop of Borough Hall could be disconnected with a rain garden near its entrance. Rain barrels could be installed at the Youth Center. Educational workshops should be offered addressing the importance of stormwater management and BMP implementation.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB4_Te	d	N40° 55′27.10"	W73° 58′10.3″
Site Description and BMP Implementation Opportunities: The site is a residential neighborhood consisting of 4 streets, including Prior Lane and Somerset Road, and about 70 homes on ¼ acre lots. About 69% of homes are directly connected. Rooftops should be disconnected by residential rain gardens and/or rain barrels. Homeowners should be offered educational workshops addressing the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.			

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB4_Te	e	N40° 55′21.97"	W73° 58′23.33″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood consisting of just one street, Norman Place, with about 50 homes on ¼ acre lots. About 69% of homes are directly connected. Rooftops should be disconnected with residential rain gardens and/or rain barrels. Homeowners should be offered educational workshops addressing the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB4_Te	f	N40° 55′28.11"	W73° 58′04.36″

Site Description and BMP Implementation Opportunities: The site is Tenafly House Senior Living Center, on West Clinton Avenue. It is suggested that the parking lot be replaced with pervious pavement. Curb cuts should be added to islands and edges of lots and rain gardens should be installed. Rain barrels should be installed for the apartment downspouts. Educational workshops should be offered to address the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		**Geographic Coordinates**	
TB4_Te	g	N40° 55′37.76"	W73° 58′00.29″

Site Description and BMP Implementation Opportunities: The site is Tenafly Municipal Parking Lot located nearest Riveredge and Tenafly Roads. BMPs for this site include installation of curb cuts and rain gardens down gradient of the lot and replacing existing asphalt on basketball court with pervious pavement. Informative signage should be installed on site to illustrate to the community the importance of stormwater management and BMP implementation.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB4_Te	h	N40° 55' 9.8646"	W73° 58′8.4174″

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood consisting of 6 streets, including Westevelt Road and Moller Street, and about 120 homes on ¼ acre lots. About 61% of homes are directly connected and should be disconnected by residential rain gardens and/or rain barrels. Homeowners should be offered educational workshops addressing the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

Project Identifier		Geographic Coordinates	
TB4_Te	i		

Site Description and BMP Implementation Opportunities: The site is an apartment complex, The Marlborough Apartment Complex. The site has connected downspouts and ponding in the parking lot. BMPs applicable to this site include disconnection via rain barrels and/or rain gardens and the installation of pervious pavement in parking lot areas. Residents should be offered educational workshops addressing the importance of stormwater management and BMP implementation, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		Geographic Coordinates	
TB4_Te	j	N40°55′15.23″	W073°57′57.50″

Site Description and BMP Implementation Opportunities: The site is a series of commercial properties, including General Plumbing Supply at 44 Franklin Street, Pretesting Company at 38 Franklin Street, and Tenafly Pediatrics at 32 Franklin Street. The plumbing supply's parking lot is in poor condition and should be retrofitted with pervious pavement, in addition to disconnecting downspouts from the building. At the Pretesting Company, a rain garden opportunity is located near the building. Use of rain barrels at Tenafly Pediatrics site is an optional BMP for stormwater management.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		**Geographic Coordinates**	
TB4_Te	k	N40°55′19.88″	W073°57′54.34″

Site Description and BMP Implementation Opportunities: The site is the Clinton Inn Hotel at 145 Dean Drive. The site contains a lot of impervious cover, mostly asphalt. The hotel could replace existing asphalt with pervious pavement.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		**Geographic Coordinates**	
TB4_Te	l		

Site Description and BMP Implementation Opportunities: The site is a residential block along East Clinton Avenue containing about 20 homes on ¼ acre lots. About 60% of homes are directly connected. Rooftops should be disconnected by residential rain gardens and/or rain barrels. Homeowners should be offered educational workshops addressing the importance of stormwater management BMPs, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		**Geographic Coordinates**	
TB4_Te	m		

Site Description and BMP Implementation Opportunities: The site is a residential neighborhood containing 6 streets, including Evergreen Place, Clover Street, and Cherry Street, with about 120 homes on ¼ acre lots. About 60% of homes are directly connected. Rooftops should be disconnected by residential rain gardens and/or rain barrels. Homeowners should be offered educational workshops addressing the importance of stormwater management BMPs, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		**Geographic Coordinates**	
TB4_Te	n	N40°54′56.76″	W073°58′16.62″

Site Description and BMP Implementation Opportunities: The site is the Walter Stillman School located at 75 Tenafly Road. The site is directly connected by internal downspouts. However, rain garden installation is a possibility. Students and teachers could be offered educational workshops addressing the importance of stormwater management BMPs, such as *Stormwater Management in Your School Yard*.

Site Photos:

SITE PHOTOS UNAVAILABLE

Project Identifier		**Geographic Coordinates**	
TB4_Te	o	N40°55′15.34″	W073°58′48.49″

Site Description and BMP Implementation Opportunities: The site is the Missionary Franciscan Sisters, at 253 Knickerbocker Road. The building has directly connected downspouts. The building rooftop should be disconnected via rain garden on site. Residents should be offered educational workshops addressing the importance of stormwater management BMPs, such as *Stormwater Management in Your Backyard* and/or *Streamside Living*.

Site Photos:

SITE PHOTOS UNAVAILABLE

Table B-33: Nonpoint source management measures proposed for Subwatershed TB4 in Tenafly Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
TB4_Te	a	School	Disconnection of Rooftop & Roadway	Rain Gardens/ Pervious Pavement	$81,000
TB4_Te	b	Recreational	Disconnection of Roadway	Vegetated Buffer	$1,500
TB4_Te	c	Commercial	Disconnection of Roadway	Rain Gardens/ Rain Barrels	$4,280
TB4_Te	d	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$22,000
TB4_Te	e	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$15,400
TB4_Te	f	Residential Neighborhood	Disconnection of Rooftops & Parking Lot	Rain Gardens/ Rain Barrels/ Pervious Pavement	$50,120
TB4_Te	g	Commercial	Disconnection of Parking Lot	Rain Gardens/ Pervious Pavement	$88,400
TB4_Te	h	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$31,680
TB4_Te	i	Residential Neighborhood	Disconnection of Parking Lot	Rain Gardens/ Rain Barrels/ Pervious Pavement	$102,000
TB4_Te	j	Commercial	Disconnection of Rooftop & Parking Lot	Rain Gardens/ Rain Barrels/ Pervious Pavement	$71,520
TB4_Te	k	Commercial	Disconnection of Parking Lot	Pervious Pavement	$95,000
TB4_Te	l	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$5,280
TB4_Te	m	Residential Neighborhood	Disconnection of Rooftops	Rain Gardens/ Rain Barrels	$31,680
TB4_Te	n	Commercial	Disconnection of Rooftop	Rain Gardens	$3,680
TB4_Te	o	Residential (Convent)	Disconnection of Rooftop	Rain Gardens	$2,300

Table B-34: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB4 in Tenafly Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB4_Te	a	SCHOOL (OTHER URBAN)	2	2	2	20	18	236	212	2
TB4_Te	b	COMMERCIAL	3	6	5	59	53	537	484	3
TB4_Te	c	COMMERCIAL	2	5	5	52	47	477	429	3
TB4_Te	d	RESIDENTIAL (MEDIUM DENSITY)	15	20	18	218	196	2,032	1,829	16
TB4_Te	e	RESIDENTIAL (MEDIUM DENSITY)	13	19	17	200	180	1,863	1,677	14
TB4_Te	f	RESIDENTIAL (HIGH DENSITY)	1	1	1	12	11	115	104	1
TB4_Te	g	COMMERCIAL	1	2	2	24	22	220	198	1
TB4_Te	h	RESIDENTIAL (MEDIUM DENSITY)	39	55	49	586	527	5,469	4,922	42
TB4_Te	i	RESIDENTIAL (HIGH DENSITY)	5	6	6	69	62	647	583	5
TB4_Te	j	COMMERCIAL	4	9	8	98	88	887	798	5
TB4_Te	k	COMMERCIAL	5	10	9	109	98	993	894	5
TB4_Te	l	RESIDENTIAL (MEDIUM DENSITY)	4	6	5	60	54	561	505	4
TB4_Te	m	RESIDENTIAL (MEDIUM DENSITY)	35	50	45	531	478	4,954	4,459	38
TB4_Te	n	COMMERCIAL	5	11	10	119	107	1,083	975	6
TB4_Te	o	CONVENT (OTHER URBAN)	9	9	8	88	79	1,052	946	9
		Total	143	211	190	2,245	2,021	21,128	19,015	155
		Total Impervious Cover	53							

TB6 Borough of Tenafly

Map of Proposed Areas of Disconnection
Tenakill Brook Watershed Restoration and Protection Plan

RUTGERS New Jersey Agricultural Experiment Station
Water Resources Program

Subwatershed TB6

Project Identifier		**Geographic Coordinates**	
TB6_Te	a		

Site Description and BMP Implementation Opportunities: The site is Roosevelt Commons and Mac Kay School. The location consists of a large lake that had a vegetated buffer planted in 2009 to increase water quality. Posted around the lake is "Water Quality & Habitat Enhancement Project. No Mow Zone." The Mac Kay School has opportunities for BMPs, including downspout disconnection, pervious pavement, and rain gardens at two locations, one around the catch basin and one in front of the school. Educational workshops on the importance of stormwater management BMPs should be presented to the school, such as *Stormwater Management in Your School Yard*.

Site Photos:

Project Identifier		**Geographic Coordinates**	
TB6_Te	b		

Site Description and BMP Implementation Opportunities: The site is The Montessori House School, located at the intersection of Riveredge and Kinckerbocker Roads. The large parking lot could be replaced with pervious pavement. Existing downspouts should be disconnected by using rain barrels and/or rain gardens. Educational workshops on the importance of stormwater management for the health of water bodies should be presented to the school, such as the *Stormwater Management in Your School Yard* curriculum.

Site Photos:

Table B-35: Nonpoint source management measures proposed for Subwatershed TB6 in Tenafly Borough, NJ.

Project ID		Site Description	Management Measure	Type of BMP	Estimated Cost
TB6_Te	a	School	Disconnection of Rooftops & Courtyard	Pervious Pavement/ Rain Gardens/ Rain Barrels	$42,700
TB6_Te	b	School	Disconnection of Rooftops & Parking Lot	Pervious Pavement/ Rain Gardens/ Rain Barrels	$81,000

Table B-36: Estimated load reductions (of TP, TN, and TSS) for nonpoint source management measures proposed for Subwatershed TB6 in Tenafly Borough, NJ.

Project ID		Land Use	Area (acres)	Calculated TP Load (lbs/yr)	Estimated TP Removal by BMP (lbs/yr)	Calculated TN Load (lbs/yr)	Estimated TN Removal by BMP (lbs/yr)	Calculated TSS Load (lbs/yr)	Estimated TSS Removal by BMP (lbs/yr)	Estimated Water Quantity Reduction (Mgal/yr)
TB6_Te	a	SCHOOL	7	7	6	70	63	838	754	8
TB6_Te	b	COMMERCIAL (SCHOOL)	1	2	2	24	22	220	198	1
		Total	8	9	8	94	85	1,058	952	9
		Total Impervious Cover	2							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CLOSTER BORO
DEMAREST BORO
ALPINE BORO
CRESSKILL BORO
TENAFLY BORO
DB1_Ala
DB1_Alb
DB1_Alc
DB1
CB1_Alb
CB1_Alc
CB1_Ala
CB1
TB3_Ala
TB3
TB2
Maple
Homans
Parsells
Cambridge
Blackledge
Arthur
Irene
Buckingham
Margo
Marie Major
Timberline
Grant
United States Highway 9W
Palisades Interstate
Litchfield
Bristol
Pine Hill
Pine
Everett
Forest
Poplar
Lake
Orchard
Hardenburgh
Duane
Brenner
Closter Dock
Warren
Mariane
Dogwood
Birch
Allison
Overlook
Forest
Cemetery
Old Dock
Anderson
Edward
Alpine
Highland
Glenwood
Holland
Ross
Oak
Hillside
Duck Pond
Deerhill
Miles
Church
Pike
Ellen's
Churchill
Wilson
Adams
Jackson
Graham
Hilltop
Robin
Kennedy
Lambs
Tamarack
Hemlock
Truman
Eisenhower
Rio Vista
Stone Tower
Tulip Tree
Hudson
Henry Hudson
Royden
Madison
McGrath
Hoover
East Hill
Brook
Brae
Dogwood
Glenwood
Stanton
Montammy
Leslie
Tekening
Highwood
Devriese
Deerfield
Woodhill
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Streets & Roads
Streams and Rivers
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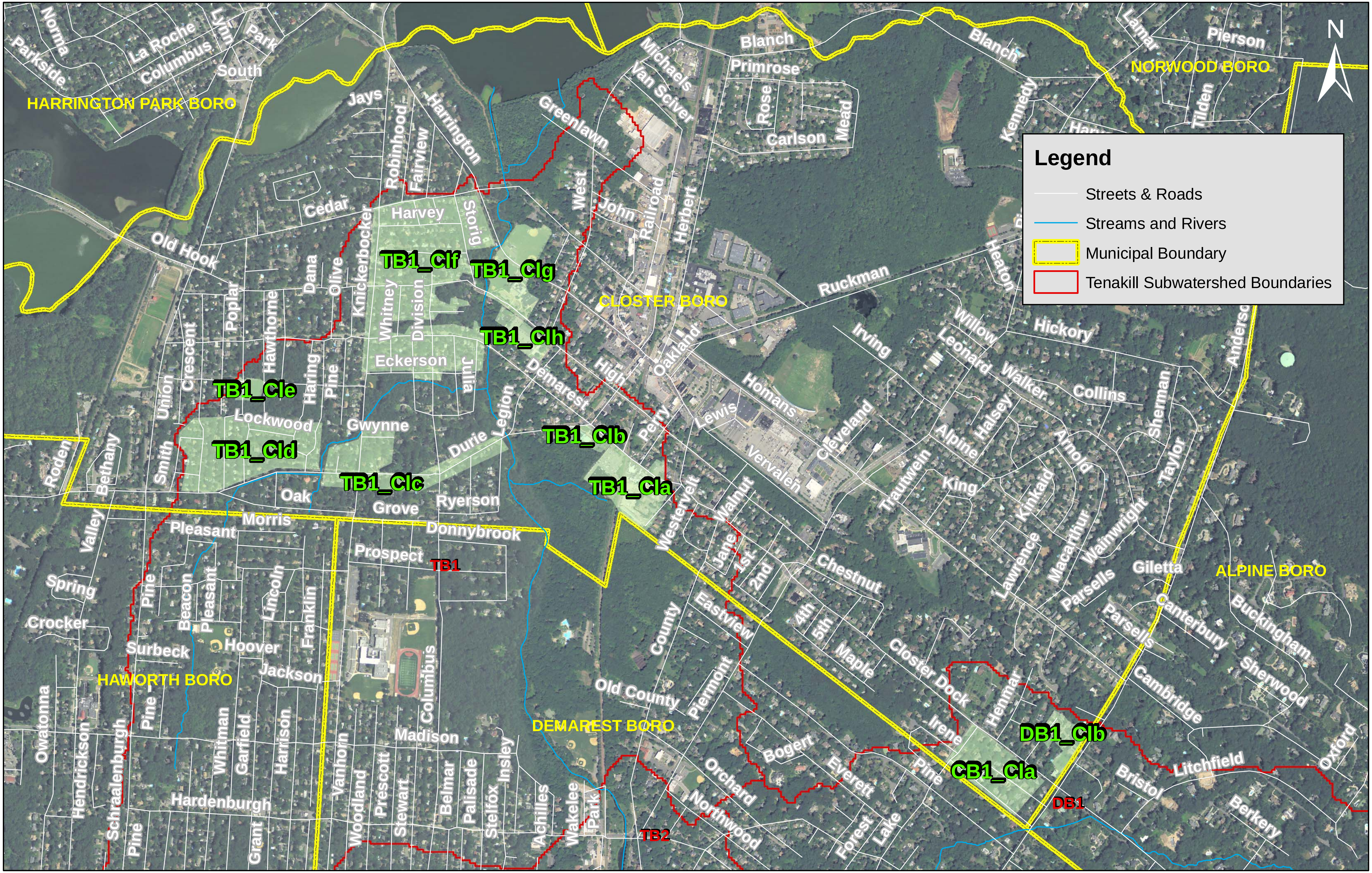

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Streams and Rivers
Municipal Boundary
Tenakill Subwatershed Boundaries
HARRINGTON PARK BORO
NORWOOD BORO
CLOSTER BORO
ALPINE BORO
HAWORTH BORO
DEMAREST BORO
TB1_Cla
TB1_Clb
TB1_Clc
TB1_Cld
TB1_Cle
TB1_Clf
TB1_Clg
TB1_Clh
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Parkside
La Roche
Columbus
Lynn
Park
South
Jays
Robinhood
Fairview
Harrington
Greenlawn
Michaels
Van Sciver
Blanch
Primrose
Rose
Carlson
Mead
Lamar
Pierson
Kennedy
Tilden
Cedar
Harvey
Storig
West
John
Railroad
Herbert
Old Hook
Dana
Olive
Knickerbocker
Whitney
Division
Poplar
Hawthorne
Crescent
Haring
Pine
Eckerson
Julia
Demarest
High
Oakland
Ruckman
Heaton
Irving
Willow
Leonard
Hickory
Walker
Collins
Anderson
Union
Lockwood
Gwynne
Legion
Durie
Perry
Lewis
Homans
Cleveland
Halsey
Alpine
Arnold
Sherman
Taylor
Roden
Bethany
Smith
Oak
Grove
Ryerson
Westervelt
Walnut
Vervalen
Trautwein
King
Kinkaid
Macarthur
Wainwright
Valley
Pleasant
Morris
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Lawrence
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Henmar
Owatonna
Hendrickson
Schraalenburgh
Whitman
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Palisade
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Achilles
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Bristol
Litchfield
Berkery
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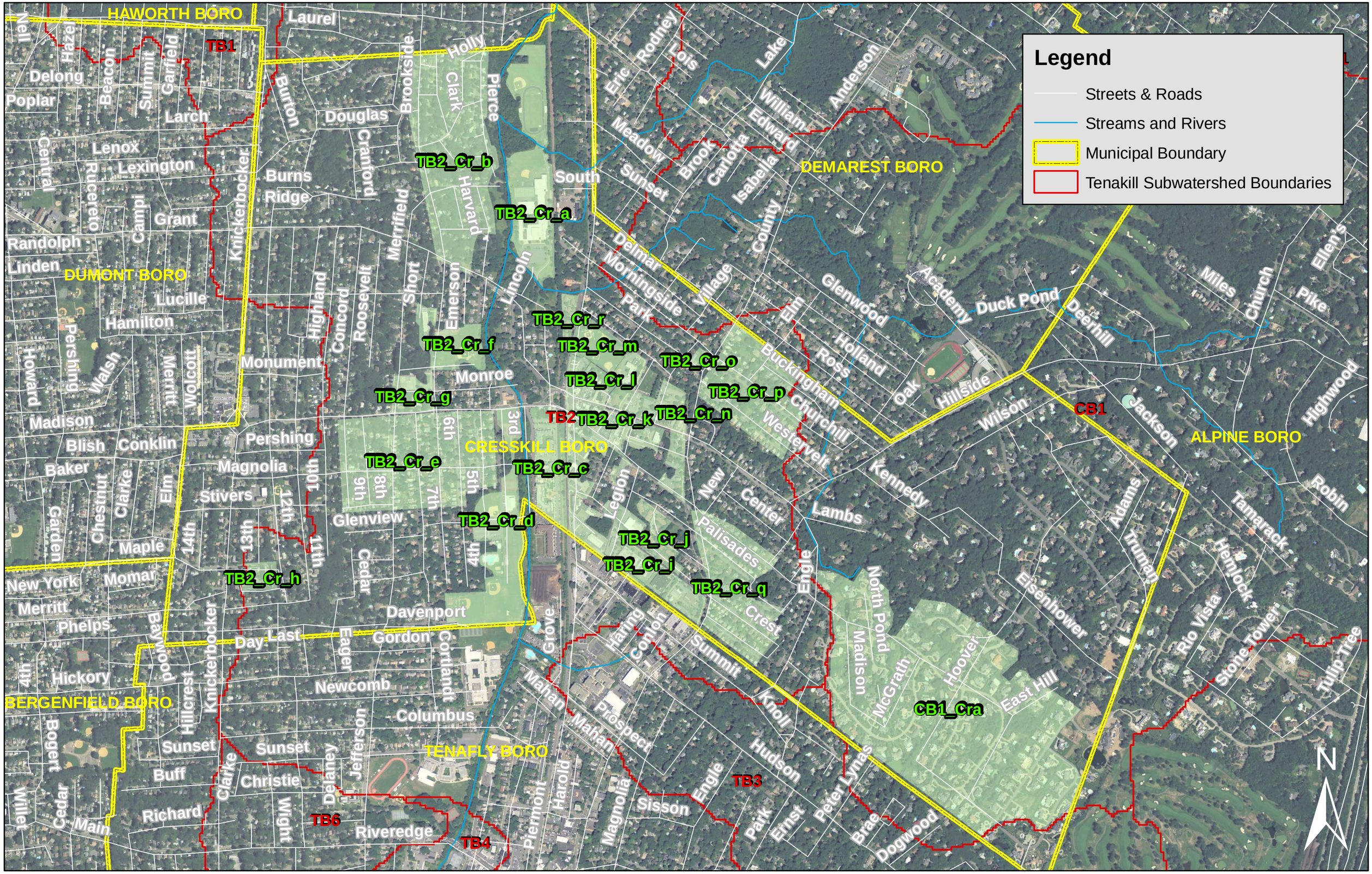
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DUMONT BORO
DEMAREST BORO
CRESSKILL BORO
ALPINE BORO
BERGENFIELD BORO
TENAFLY BORO
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TB2_Cr_b
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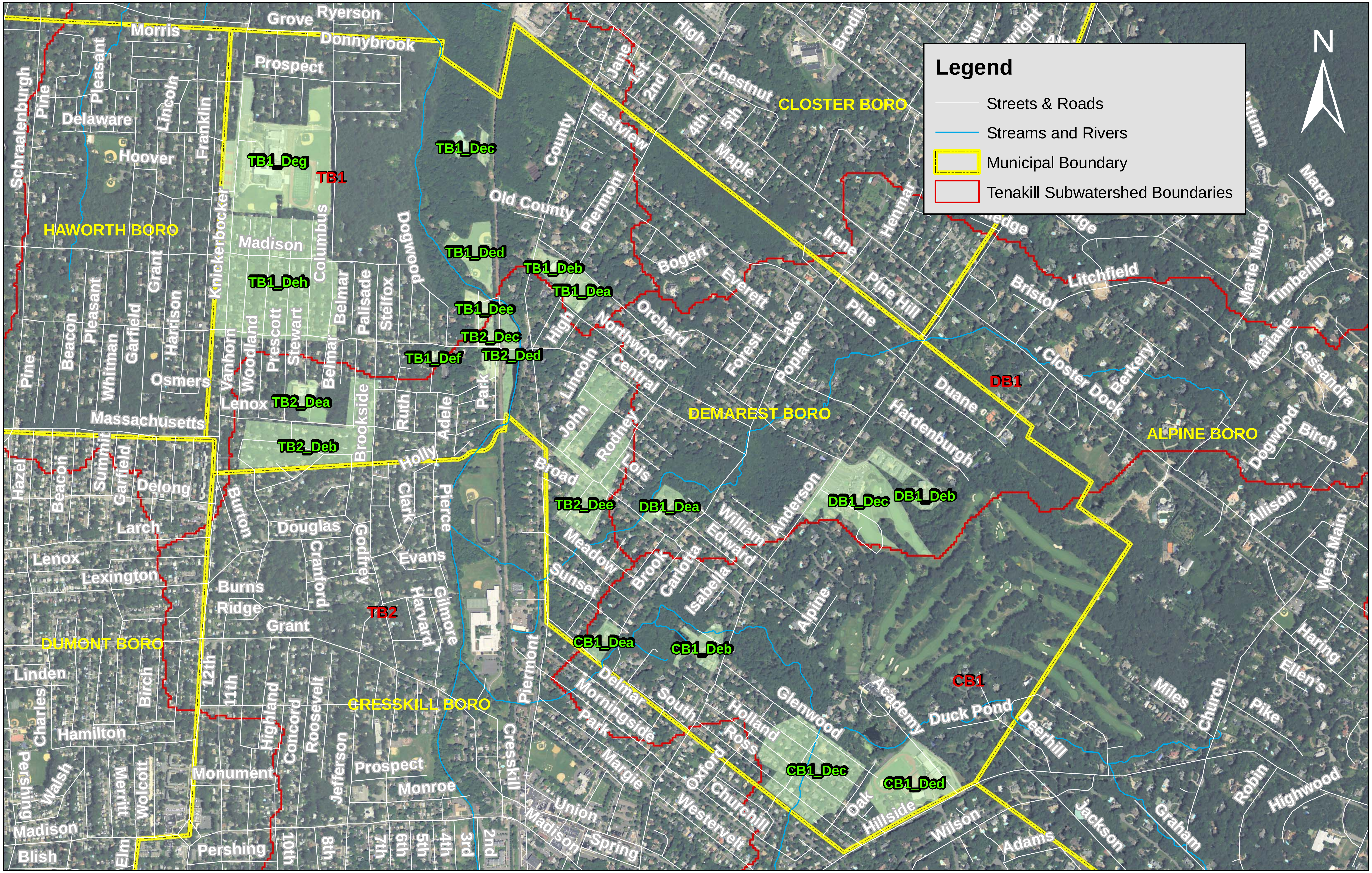
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Prospect
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Delaware
Lincoln
Franklin
Hoover
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Columbus
Knickerbocker
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Piermont
Bogert
Everett
Orchard
Irene
Pine Hill
Litchfield
Bristol
Closter Dock
Berkeley
Duane
Hardenburgh
Marie Major
Timberline
Mariane
Cassandra
Margo
Birch
Allison
West Main
Belmar
Palisade
Stellfox
Beacon
Whitman
Garfield
Grant
Harrison
Osmers
Vanhorn
Woodland
Prescott
Stewart
Brookside
Ruth
Adele
Park
High
Northwood
Central
Lincoln
John
Rodney
Lois
Forest
Lake
Poplar
Massachusetts
Lenox
Holly
Hazel
Summit
Delong
Larch
Burton
Douglas
Clark
Pierce
Godfrey
Cranford
Evans
Broad
Meadow
Sunset
Brook
Carlotta
Isabella
Edward
William
Anderson
Lexington
Burns
Ridge
Grant
Harvard
Gilmore
Alpine
Linden
Charles
12th
11th
Birch
Highland
Concord
Roosevelt
Hamilton
Monument
Jefferson
Prospect
Monroe
Cresskill
Piermont
Delmar
Morningside
South
Holland
Glenwood
Academy
Duck Pond
Deerhill
Miles
Church
Pike
Haring
Ellen's
Pershing
Walsh
Merritt
Wolcott
Madison
Blish
Elm
Pershing
10th
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5th
4th
3rd
2nd
Union
Spring
Margie
Oxford
Churchill
Westervelt
Ross
Oak
Hillside
Wilson
Adams
Jackson
Graham
Robin
Highwood
Jane
1st
2nd
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5th
Henmar

N

HAWORTH BORO

TB1

DEMAREST BORO

TB1_Dua

TB2_Dua

TB2

DUMONT BORO

CRESSKILL BORO

Summit
Schraalenburgh
Pine
Chestnut
Beacon
Pleasant
Whitman
Garfield
Grant
Osmers
Franklin
Massachusetts
Washington
Pearl
Harding
Beacon
Pleasant
Garfield
Juniper
Harrison
Franklin
Burton
Delong
Poplar
Hazel
Summit
Larch
Laurel
Lenox
Central
Beechwood
Lexington
Rucereto
Church
Campi
Grant
Revere
Burns
Cresskill
Randolph
Linden
Overlook
Margaret
Windsor
Birch
Romano
Knickerbocker
12th
Lexington
Lucille
Hamilton
Davies
Merritt
Wolcott

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Legend
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Streams and Rivers
Municipal Boundary
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ENGLEWOOD CITY
TB4
TB4_Ena
Windsor
Windsor
Leonard
Tenakill
Oak
Standish
Wilkins
Hodskin
Cherry
Clover
Evergreen
Walnut
Willow
Sherwood
Oak
Elm
Dean
Vermilye
Pleasant
Tenafly
Ivy
Serpentine
Mountainview
Valleyview
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Cambridge
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Stockton
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Curry
Valley
Concord
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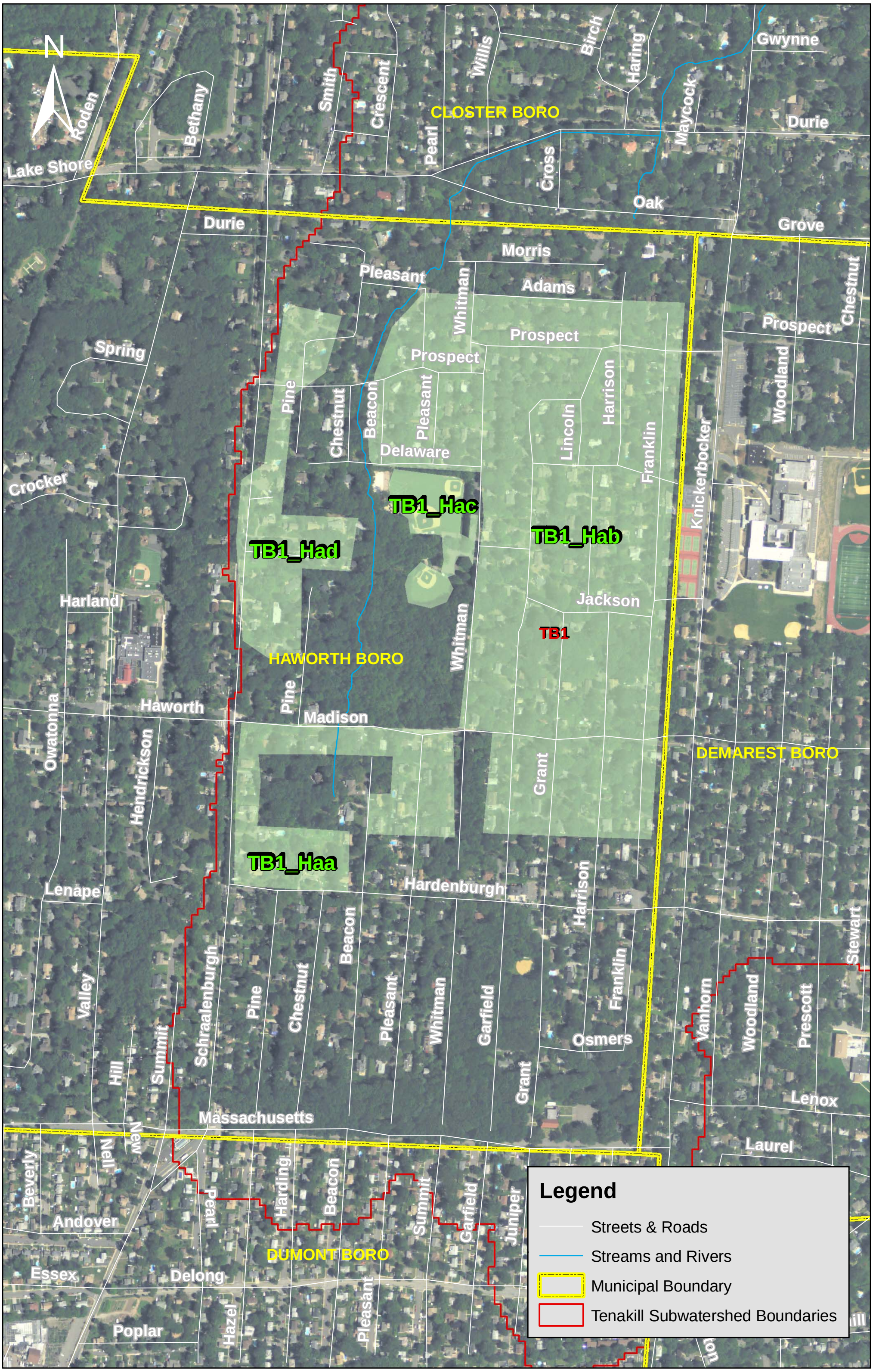
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DEMAREST BORO
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Willis
Birch
Haring
Maycock
Gwynne
Durie
Lake Shore
Pearl
Cross
Oak
Grove
Morris
Pleasant
Whitman
Adams
Chestnut
Prospect
Spring
Pine
Beacon
Delaware
Lincoln
Franklin
Knickerbocker
Woodland
Crocker
Harland
Jackson
Grant
Owatonna
Haworth
Madison
Hendrickson
Harrison
Hardenburgh
Lenape
Valley
Hill
Summit
Schraalenburgh
Garfield
Osmers
Vanhorn
Prescott
Lenox
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Massachusetts
New
Neil
Beverly
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CRESSKILL BORO
BERGENFIELD BORO
TENAFLY BORO
BERGENFIELD BORO
Merritt
Willis
Phelps
Spruce
Day
Hazelton
Eager
7th
Davenport
Gordon
Cortlandt
Grove
Jersey
Atwood
Summit
Madison
Haring
Hudson
Hickory
Mahan
Prospect
County
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TB2_Tea
TB2
TB2_Teb
Newcomb
Hillcrest
Esmond
Jefferson
Columbus
Cedar
Marconi
Sunset
Sunset
TB2_Tec
Buff
Clarke
Christie
Delaney
Piermont
Harold
Magnolia
Knickerbocker
TB2_Ted
TB6_Tea
Garden
Richard
Wight
Virginia
Central
Railroad
TB6
Riveredge
TB6_Teb
TB4_Tec
TB4_Teg
Highwood
Jewett
Browning
Lyle
Mellon
Lylewood
Woodmere
Foster
TB4_Teb
TB2_Tee
Bradford
TB4_Tea
TB4_Tef
Washington
Jay
Laurel
Clinton
Doran
TB4_Ted
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Somerset
New
Prior
Tenafly
Floral
Hillside
Norman
TB4_Tee
George
TB4_Tej
Morris
Greentree
TB4_Tek
Westervelt
Linden
Lawrence
TB4_Teo
Burlington
Franklin
Huyler
TB4_Teh
Sussex
Sussex
TB4_Tel
Moller
Marcotte
Joyce
Erledon
Louise
TB4
TB4_Tei
Benjamin
Demott
Dean
Serpentine
Coleman
Hamilton
Creston
Palmer
Harsen
Inness
Coppel
Crabtree
Country Club
TB4_Ten
Lindley
Leonard
Howard Park
Windsor
Windsor
Sherwood
Oak
Tenakill
Engle
Oak
Oak
Park
Willow
TB4_Tem
Standish
Wilkins
Hopkins
Walnut
Downey
Thatcher
Pleasant
Ivy
Serpentine
Primrose
Pine
Elm
Downey
Bliss
Mission
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