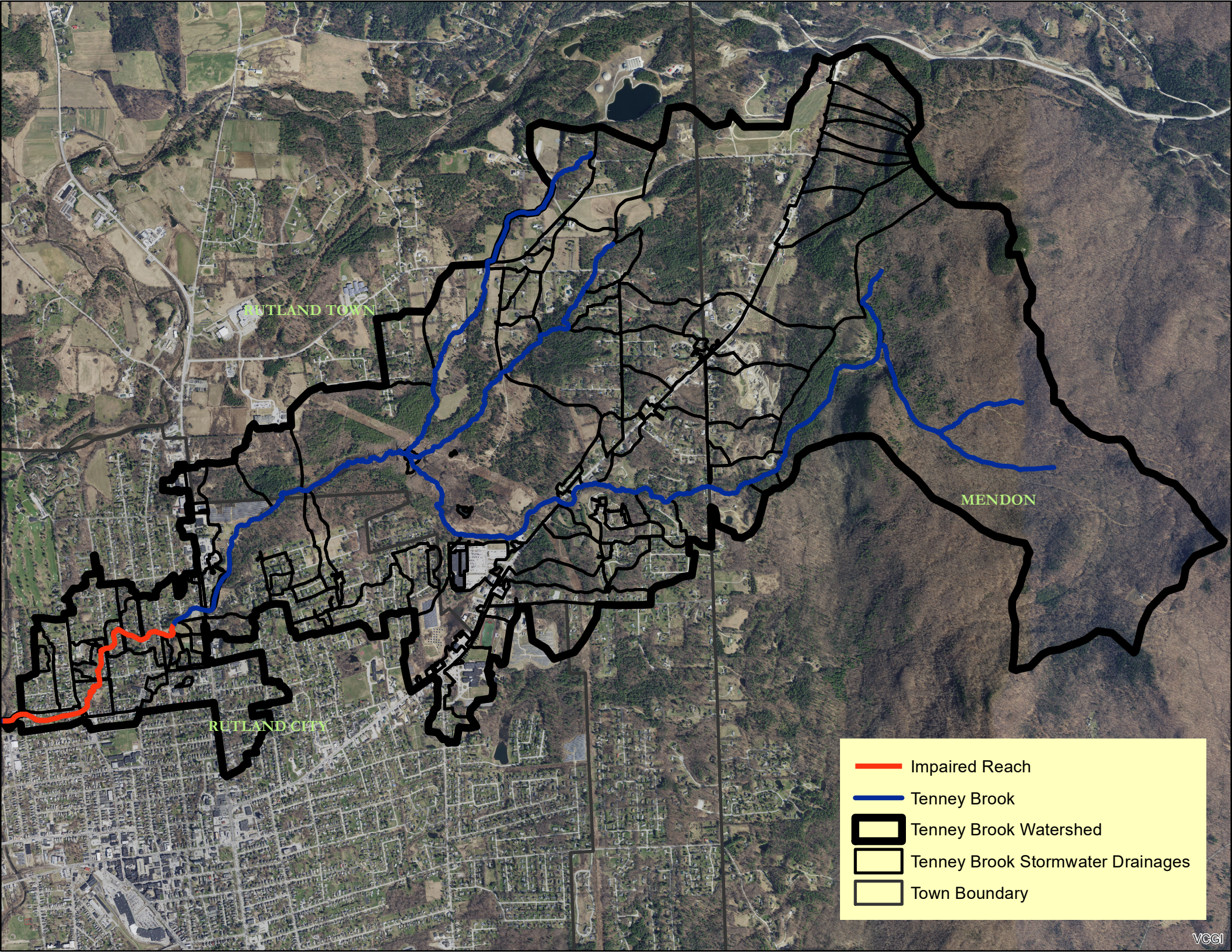
Tenney Brook, Rutland-Mendon, Vermont

Tenney Brook in Rutland City, Rutland Town and Mendon, Vermont has been found to be impaired by sediment and stormwater water runoff as measured by the biological community of the brook. There are more than 115 stormwater discharges to the stream from the developed lands of all 3 towns. The largest discharge to the river is drainage 236 in Rutland City which drain a large section of North-central Rutland City and discharges to the brook on Grove Street. A second very large area is 210 Rutland Town and 242 Rutland City which drains much of US Route 7.

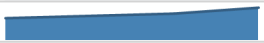
The recommended course of action is to install a stormwater treatment structure on many of these discharges that will control the water quality volume, and in the upper watershed (above US Route 7) the Channel Protection Volume. Maps showing the location of these discharges and possible retrofit locations on private or public land is provided. Under VTDEC General Permit 3-9050 four large property owners including the Rutland City Public Schools, the Meadows at East Mountain and Casella will have to provide additional treatment for their discharges that will be equal to 50% of the water quality volume from about 47 impervious acres.

Addressing the large discharges of stormwater to the brook will reduce contamination, and stream channel erosion, and will help prevent it from becoming declared stormwater impaired on the state of Vermont's 303d list of impaired waters which will lead to a TMDL plan requirement and regulated controls. It will also reduce phosphorus currently being discharged to the East Creek, Otter Creek and Lake Champlain.


RUTLAND TOWN
MENDON
RUTLAND CITY
Impaired Reach
Tenney Brook
Tenney Brook Watershed
Tenney Brook Stormwater Drainages
Town Boundary
VCGI

Fish Site Report

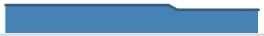
Location:	Tenney Brook	**Bio Site ID:**	553801000001	**Latitude:**	43.61558	**River Mile:**	0.1
Town:	Rutland City	**Location ID:**	502295	**Longitude:**	-72.98807	**Drainage (km²):**	14.306
Description:	Located at Baxter Street Bridge.	**WBID:**	VT03-14	**Elevation (ft):**	560		

		9/29/10	9/26/14	9/28/16
Event ID		2010-49	2014-48	2016-54
Sampling Method		ES	ES	ES
Richness #		4	4	4
Intolerant Species #		1	0	0
Benthic Insectivores #		1	1	1
Cr Chub-Wht Sucker %		4.8	27.8	12.2
Generalist Feeders %		5	28	12
Insectivores %		59	71	87
Top Carnivores %		36	1	1
Cold Water Species %		36	1	1
Density per 100m²		26.4	51.6	29.5
Brook Trout Density		0.3		
Brook Trout Age Class			no brook trout	no brook trout
Mixed Water IBI		37	29	28
Cold Water IBI				9
Assessment		**Very Good**	**Fair**	**Fair**

Species	**% Composition**	**#/100m²**	**#/100m²**	**#/100m²**
Blacknose Dace		6.7	24.6	15.8
Brook Trout		0.3		
Brown Trout		9.2	0.6	0.4
Creek Chub		1.3	13.2	2.5
Longnose Dace		8.9	12.0	9.7
White Sucker			1.2	1.1

Fish Site Report

Location:	Tenney Brook	**Bio Site ID:**	553801000010	**Latitude:**	43.62046	**River Mile:**	1.0
Town:	Rutland City	**Location ID:**	502296	**Longitude:**	-72.97690	**Drainage (km²):**	12.652
Description:	Located below Route 7, just below paved parking lot at upper end of park.	**WBID:**	VT03-14	**Elevation (ft):**	585		

		10/4/88	10/3/01	10/16/06	10/3/07	9/29/10	9/26/14	9/28/16
Event ID		1988-39	2001-14	2006-47	2007-41	2010-47	2014-49	2016-55
Sampling Method		ES	ES	ES	ES	ES	ES	ES
Richness #		6	6	6	5	5	5	5
Intolerant Species #		2	1	1	0	0	0	0
Benthic Insectivores #		2	1	1	1	1	1	1
Cr Chub-Wht Sucker %		9.6	21.1	21.6	34	21	32.2	18
Generalist Feeders %		10	23	22	38	21	38	25
Insectivores %		84	66	76	60	77	61	74
Top Carnivores %		7	11	2	2	2	1	1
Cold Water Species %		26	11	2	2	2	1	1
Density per 100m²		94.9	54.9	83.9	116.7	171.6	125	196.6
Brook Trout Density		1.2	0.2	0.3				
Brook Trout Age Class								no brook trout
Mixed Water IBI		41	35	32	26	27	27	27
Cold Water IBI			11	11	9			
Assessment		**Very Good**	**Good**	**Fair**	**Poor**	**Good**	**Fair**	**Fair**
Species	**% Composition**	**#/100m²**	**#/100m²**	**#/100m²**	**#/100m²**	**#/100m²**	**#/100m²**	**#/100m²**
Blacknose Dace		51.4	25.3	45.9	45.5	97.4	64.4	106.3
Brook Trout		1.2	0.2	0.3				
Brown Trout		5.0	5.9	1.5	2.5	2.9	1.1	2.0
Creek Chub		2.6	9.7	15.8	33.7	23.5	31.4	20.3
Fathead Minnow			1.2	0.5	4.9		7.5	13.5
Golden Shiner						0.4		
Longnose Dace		9.4	10.7	17.6	24.1	34.9	11.7	39.4
Slimy Sculpin		18.8						
White Sucker		6.5	1.9	2.3	6.0	12.5	8.9	15.1

Macroinvertebrate Site Summary

Location:	Tenney Brook	**Location ID:**	502295
Town:	Rutland City	**Bio Site ID:**	553801000001
Description:	Located at Baxter Street Bridge.	**WBID:**	VT03-14
Stream Type:	Small High Gradient		

Date	Density	Richness	EPT Richness	PMA-O	B.I.	Oligo.	EPT/EPT + Chiro	PPCS-F	Community Assessment
9/29/2010	2420	43.0	20.0	62.5	4.10	0.17	0.94	0.24	G-Fair
9/26/2014	7772	57.0	23.0	58.9	4.89	0.05	0.94	0.29	Fair
9/28/2016	2116	33.0	13.0	59.4	4.60	0.00	0.94	0.18	Poor
Full Support	≥ 300	≥ 27	≥ 16	≥ 45	≤ 4.5	≤ 12	≥ 0.45	≥ 0.4	
Indeterminate	≥ 250	≥ 26	≥ 15	≥ 40	≤ 4.65	≤ 14.5	≥ 0.43	≥ 0.35	
Non-Support	< 250	< 26	< 15	< 40	> 4.65	> 14.5	< 0.43	< 0.35	

*Scoring Guidelines for Stream Type SHG and WQ Class B(2).

Macroinvertebrate Site Summary

Location: Tenney Brook
Town: Rutland City
Description: Located below Route 7, just below paved parking lot at upper end of park.
Stream Type: Small High Gradient

Location ID: 502296
Bio Site ID: 553801000010
WBID: VT03-14

Date	Density	Richness	EPT Richness	PMA-O	B.I.	Oligo.	EPT/EPT + Chiro	PPCS-F	Community Assessment
10/4/1988	1864	54.5	22.0	62.9	4.86	24.20	0.60	0.37	Fair
10/3/2001	1546	28.0	13.0	57.2	5.00	0.66	0.96	0.36	Fair
10/11/2006	3228	38.0	17.0	55.3	5.27	0.00	0.93	0.22	Fair
10/3/2007	2688	45.0	21.0	68.9	4.97	0.00	0.86	0.27	Fair
9/29/2010	5748	55.0	28.0	73.3	4.60	0.00	0.72	0.41	Good
9/26/2014	3460	46.0	20.0	64.9	5.32	0.00	0.68	0.31	Fair
9/28/2016	3376	50.0	19.0	61.5	5.52	0.00	0.86	0.40	Fair
9/28/2016	3076	43.0	15.0	64.1	5.51	0.00	0.83	0.22	
Full Support	≥ 300	≥ 27	≥ 16	≥ 45	≤ 4.5	≤ 12	≥ 0.45	≥ 0.4	
Indeterminate	≥ 250	≥ 26	≥ 15	≥ 40	≤ 4.65	≤ 14.5	≥ 0.43	≥ 0.35	
Non-Support	< 250	< 26	< 15	< 40	> 4.65	> 14.5	< 0.43	< 0.35	

*Scoring Guidelines for Stream Type SHG and WQ Class B(2).

Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Mapped Impervious Area (MIA)	Percent Effective Impervious Area	Sediment Load with Current Reductions (lbs.)	Priority Action Sediment Reduction Credit	Sediment Load with Priority Action (lbs.)	Current BMP Phosphorus or Nitrogen Reduction Credit	Phosphorus Load with Priority Action (lbs.)	Water Quality Volume (Acre-Feet)	Channel Protection (Acre-Feet)	Estimated Basin Construction Cost	Estimated Other BMP Construction Cost	Cost of Sediment Removal Per Pound (based on annual sediment load)	Cost of Phosphorus or Nitrogen Removal Per Pound (based on annual nutrient load)	Assistance Program	# LID-Roof Raingardens to Treat Water Quality Volume
102 Rutland Town			OF/GS/CB/WP	3168-9010.A	24.44	17.6	7.36	3764	0%	3764	40%	10.46	0.21	0.47					CWIP, SRF, LCBP	106
103 Rutland Town			OF/GS/CB		12.29	16.3	6.56	1777	0%	1777	0%	4.93	0.10	0.22					CWIP, SRF, LCBP	50
105 Rutland Town	4	Compliance with 9050 permit	OF/GS/WP	3168-9010.A, 3168-9010.2	9.96	30.3	13.17	2002	30%	1401	10%	4.45	0.13	0.33					CWIP, SRF, LCBP	63
106 Rutland Town	4	Compliance with 9050 permit	CB	3168-9015	3.03	52.1	45.95	1678	30%	1175	10%	3.73	0.11	0.17					CWIP, SRF, LCBP	53
107 Rutland Town	4	Compliance with 9050 permit	CB/EDP	3168-9015	0.67	67.5	45.59	81	0%	81	40%	0.68	0.02	0.05					CWIP, SRF, LCBP	11
108 Rutland Town	4	Compliance with 9050 permit	CB/GS	3168-9010.2	0.47	56.9	32.40	43	0%	43	40%	0.36	0.01	0.03					CWIP, SRF, LCBP	6
109 Rutland Town	4	Compliance with 9050 permit	GS/OF	3168-9010.A,	9.90	20.2	14.70	2153	30%	1507	10%	4.78	0.14	0.22					CWIP, SRF, LCBP	68
110 Rutland Town			GS/OF		33.11	14.1	5.31	4291	0%	4291	0%	11.92	0.24	0.51					CWIP, SRF, LCBP	121
111 Rutland Town	4	Compliance with 9050 permit	GS/OF	3168-9010.A,	1.34	32.2	25.84	453	30%	317	10%	1.01	0.03	0.05					CWIP, SRF, LCBP	14
112 Rutland Town			GS/OF	4737-INDS.A1	28.90	18.7	8.09	4705	0%	4705	0%	13.07	0.27	0.59					CWIP, SRF, LCBP	133
114 Rutland Town			CB		0.88	92.4	91.38	1022	0%	1022	0%	2.84	0.06	0.09					CWIP, SRF, LCBP	29
115 Rutland Town			OF		21.88	18.7	8.07	3556	0%	3556	0%	9.88	0.20	0.45					CWIP, SRF, LCBP	101
116 Rutland Town			CB		2.29	90.6	90.60	2630	0%	2630	0%	7.31	0.15	0.23					CWIP, SRF, LCBP	74
117 Rutland Town	4	Compliance with 9050 permit	CB	3902-9050	3.20	92.8	92.81	3384	30%	2369	5%	7.44	0.21	0.33					CWIP, SRF, LCBP	106
118 Rutland Town	4	Compliance with 9050 permit	CB	3902-9050	1.55	94.3	94.33	1659	30%	1161	5%	3.65	0.10	0.16					CWIP, SRF, LCBP	52
119 Rutland Town	4	Compliance with 9050 permit	CB/WP	3902-9050	14.85	83.8	70.19	6709	0%	6709	25%	26.56	0.76	1.37					CWIP, SRF, LCBP	380
120 Rutland Town			GS/OF		66.26	17.5	7.35	10202	0%	10202	0%	28.34	0.58	1.28					CWIP, SRF, LCBP	289
121 Rutland Town			CB/GS		17.62	7.7	4.67	2149	0%	2149	0%	5.97	0.12	0.15					CWIP, SRF, LCBP	61
122 Rutland Town			OF		7.89	13.5	4.98	991	0%	991	0%	2.75	0.06	0.12					CWIP, SRF, LCBP	28
123 Rutland Town	4	Compliance with 9050 permit	GS	3168-9015, 3168-9010.2	19.43	10.6	1.12	310	0%	310	40%	2.58	0.09	0.23					CWIP, SRF, LCBP	44
124 Rutland Town			OF		18.54	7.1	1.88	1645	0%	1645	0%	4.57	0.09	0.14					CWIP, SRF, LCBP	47
125 Rutland Town			GS/OF		59.49	13.6	5.02	7502	0%	7502	0%	20.84	0.42	0.89					CWIP, SRF, LCBP	212
126 Rutland Town			CB/GS		3.38	23.4	11.30	679	0%	679	0%	1.89	0.04	0.09					CWIP, SRF, LCBP	19
127 Rutland Town			CB/GS		20.82	9.8	3.09	2147	0%	2147	0%	5.97	0.12	0.23					CWIP, SRF, LCBP	61
128 Rutland Town	4	Compliance with 9050 permit	GS/OF		42.53	39.7	25.05	13977	30%	9784	5%	30.74	0.88	1.86					CWIP, SRF, LCBP	439
129 Rutland Town			GS		13.61	19.7	8.76	2324	0%	2324	0%	6.46	0.13	0.30					CWIP, SRF, LCBP	66
130 Rutland Town	4	Compliance with 9050 permit	GS		5.18	46.3	31.53	2294	40%	1376	0%	4.46	0.13	0.26					CWIP, SRF, LCBP	65
131 Rutland Town	4	Compliance with 9050 permit	GS/OF		39.20	16.1	6.45	5615	40%	3369	0%	10.92	0.32	0.69					CWIP, SRF, LCBP	159
132 Rutland Town			OF/WP	3404-9010, 7820-9015	18.86	19.3	3.71	1667	0%	1667	10%	5.21	0.12	0.40					CWIP, SRF, LCBP	59
133 Rutland Town			CB/GS	3404-9010	1.05	49.8	30.70	409	0%	409	5%	1.20	0.03	0.06					CWIP, SRF, LCBP	13

Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Mapped Impervious Area (MIA)	Percent Effective Impervious Area	Sediment Load with Current Reductions (lbs.)	Priority Action Sediment Reduction Credit	Sediment Load with Priority Action (lbs.)	Current BMP Phosphorus or Nitrogen Reduction Credit	Phosphorus Load with Priority Action (lbs.)	Water Quality Volume (Acre-Feet)	Channel Protection (Acre-Feet)	Estimated Basin Construction Cost	Estimated Other BMP Construction Cost	Cost of Sediment Removal Per Pound (based on annual sediment load)	Cost of Phosphorus or Nitrogen Removal Per Pound (based on annual nutrient load)	Assistance Program	# LID-Roof Raingardens to Treat Water Quality Volume	
134 Rutland Town			CB/GS	3404-9010	0.65	52.6	33.74	275	0%	275	5%	0.81	0.02	0.04					CWIP, SRF, LCBP	9	
135 Rutland Town			GS		21.15	6.0	1.47	1773	0%	1773	0%	4.93	0.10	0.14					CWIP, SRF, LCBP	50	
136 Rutland Town			GS		30.08	19.3	8.48	5036	0%	5036	0%	13.99	0.28	0.64					CWIP, SRF, LCBP	142	
137 Rutland Town			GS		14.44	14.5	5.54	1912	0%	1912	0%	5.31	0.11	0.23					CWIP, SRF, LCBP	54	
138 Rutland Town			CB/OF		1.79	46.4	31.60	793	0%	793	0%	2.20	0.04	0.09					CWIP, SRF, LCBP	22	
139 Rutland Town	1	Gravel wetland at 852 Rte 4	GW/CB/GS		6.02	33.1	26.62	2311	80%	462	0%	2.57	0.13	0.22	$86,009		$47	$22,329	CWIP, SRF, LCBP	65	
140 Rutland Town			GS/CB		9.32	24.2	18.31	2653	0%	2653	0%	7.37	0.15	0.25					CWIP, SRF, LCBP	75	
141 Rutland Town			OF/CB		2.12	41.3	26.50	812	0%	812	0%	2.26	0.05	0.10					CWIP, SRF, LCBP	23	
142 Rutland Town			GS		1.52	30.9	17.15	412	0%	412	0%	1.14	0.02	0.05					CWIP, SRF, LCBP	12	
143 Rutland Town			GS/CB		1.00	34.8	28.32	405	0%	405	0%	1.13	0.02	0.04					CWIP, SRF, LCBP	11	
144 Rutland Town			GS		6.33	8.6	2.53	610	0%	610	0%	1.69	0.03	0.06					CWIP, SRF, LCBP	17	
145 Rutland Town			OF/GS		63.58	6.8	1.77	5558	0%	5558	0%	15.44	0.31	0.48					CWIP, SRF, LCBP	157	
146 Rutland Town			CB		0.45	87.3	87.29	497	0%	497	0%	1.38	0.03	0.04					CWIP, SRF, LCBP	14	
147 Rutland Town			OF		10.34	9.2	2.81	1032	0%	1032	0%	2.87	0.06	0.11					CWIP, SRF, LCBP	29	
148 Rutland Town			OF/GS		10.09	11.8	4.03	1153	0%	1153	0%	3.20	0.07	0.13					CWIP, SRF, LCBP	33	
149 Rutland Town			OF		7.69	8.5	2.48	737	0%	737	0%	2.05	0.04	0.07					CWIP, SRF, LCBP	21	
150 Rutland Town			OF		42.61	9.3	2.83	4265	0%	4265	0%	11.85	0.24	0.44					CWIP, SRF, LCBP	121	
151 Rutland Town			GS		15.34	8.8	2.63	1498	0%	1498	0%	4.16	0.08	0.15					CWIP, SRF, LCBP	42	
152 Rutland Town			OF/CB		11.07	8.1	2.30	1038	0%	1038	0%	2.88	0.06	0.10					CWIP, SRF, LCBP	29	
153 Rutland Town			GS/OF		13.87	8.1	2.29	1299	0%	1299	0%	3.61	0.07	0.12					CWIP, SRF, LCBP	37	
154 Rutland Town			GS/OF/CB		5.73	16.3	6.61	831	0%	831	0%	2.31	0.05	0.10					CWIP, SRF, LCBP	24	
155 Rutland Town			GS/OF		6.75	20.1	8.98	1171	0%	1171	0%	3.25	0.07	0.15					CWIP, SRF, LCBP	33	
156 Rutland Town			GS/OF/CB		4.18	24.8	12.36	893	0%	893	0%	2.48	0.05	0.11					CWIP, SRF, LCBP	25	
157 Rutland Town			OF		30.92	6.3	1.56	2626	0%	2626	0%	7.29	0.15	0.21					CWIP, SRF, LCBP	74	
158 Rutland Town	1	Extended detetention pond at Birch Knoll & Post Rd Intersection	GW/GS/OF		44.28	9.0	2.71	4367	80%	873	0%	7.28	0.25	0.44	$75,341		$22	$15,527	CWIP, SRF, LCBP	124	
179 Rutland Town			OF		33.87	4.7	1.00	2651	0%	2651	0%	7.36	0.15	0.17					CWIP, SRF, LCBP	75	
180 Rutland Town			OF		33.11	6.6	1.68	2859	0%	2859	0%	7.94	0.16	0.24					CWIP, SRF, LCBP	81	
210 Rutland Town	1	Combine in Gravel Wetland or Infiltration Basin with 242 Rutland City	GW/CB	5302-9003	18.56	51.5	45.31	11264	80%	2253	0%	18.77	0.64	1.05	$419,174		$47	$33,493	CWIP, SRF, LCBP	319	
248 Rutland Town			GS		22.74	16.0	6.39	3240	0%	3240	0%	9.00	0.18	0.40					CWIP, SRF, LCBP	92	
252 Rutland Town			GS/CB	5973-9010.R	3.38	26.4	10.43	612	0%	612	5%	1.70	0.04	0.10					CWIP, SRF, LCBP	18	

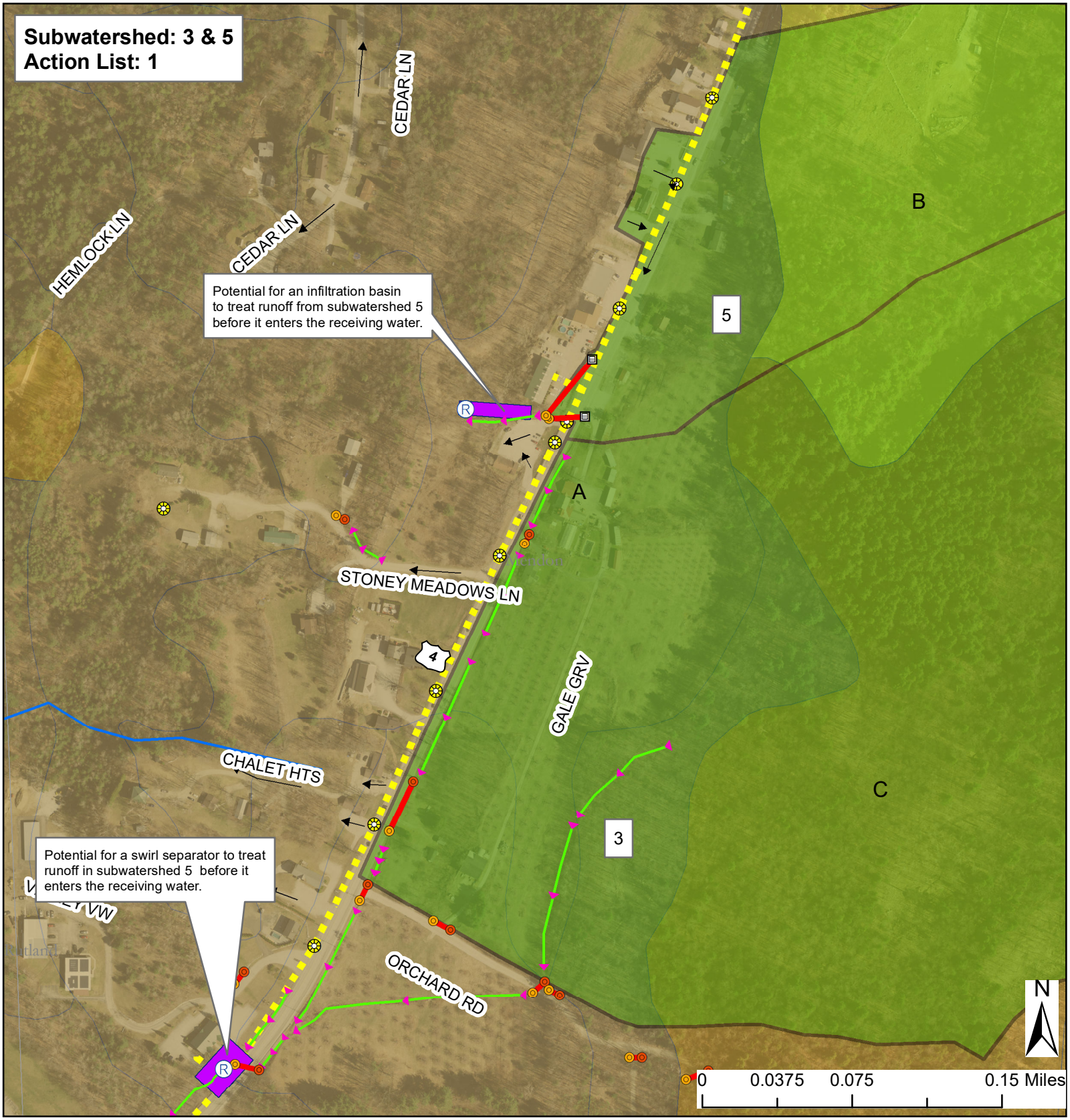
Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Mapped Impervious Area (MIA)	Percent Effective Impervious Area	Sediment Load with Current Reductions (lbs.)	Priority Action Sediment Reduction Credit	Sediment Load with Priority Action (lbs.)	Current BMP Phosphorus or Nitrogen Reduction Credit	Phosphorus Load with Priority Action (lbs.)	Water Quality Volume (Acre-Feet)	Channel Protection (Acre-Feet)	Estimated Basin Construction Cost	Estimated Other BMP Construction Cost	Cost of Sediment Removal Per Pound (based on annual sediment load)	Cost of Phosphorus or Nitrogen Removal Per Pound (based on annual nutrient load)	Assistance Program	# LID-Roof Raingardens to Treat Water Quality Volume
253 Rutland Town			OF		116.26	9.1	2.73	11490	0%	11490	0%	31.92	0.65	1.16					CWIP, SRF, LCBP	325
257 Rutland Town			CB/OF		63.59	8.8	2.63	6209	0%	6209	0%	17.25	0.35	0.62					CWIP, SRF, LCBP	176
460 Rutland Town			CB/EDP		1.25	19.7	3.87	85	0%	85	30%	0.27	0.01	0.03					CWIP, SRF, LCBP	4
113 Rutland City	1,4	Extended Detention Pond on North Side of Football Field	EDP/CB/OF		10.30	6.4	3.71	1138	80%	228	0%	1.58	0.06	0.07	$19,640		$22	$12,421	CWIP, SRF, LCBP	32
209 Rutland City			GS/CB/WP	3401-9010	3.14	54.5	29.68	264	0%	264	40%	2.20	0.07	0.19					CWIP, SRF, LCBP	37
211 Rutland City			CB		1.47	80.8	77.76	1458	0%	1458	0%	4.05	0.08	0.13					CWIP, SRF, LCBP	41
212 Rutland City			GS/OF		4.49	39.3	24.68	1620	0%	1620	0%	4.50	0.09	0.19					CWIP, SRF, LCBP	46
227 Rutland City	4	Compliance with 9050 permit	GS/CB/EDP	3217-9010.R	20.83	41.6	17.33	3412	0%	3412	20%	12.64	0.32	0.95					CWIP, SRF, LCBP	161
228 Rutland City			GS/CB		15.29	38.5	31.92	6836	0%	6836	0%	18.99	0.39	0.65					CWIP, SRF, LCBP	193
229 Rutland City			DW/CB		0.48	89.5	80.07	486	0%	486	80%	1.35	0.03	0.05					CWIP, SRF, LCBP	14
230 Rutland City			OF		0.06	93.8	93.80	76	0%	76	0%	0.21	0.00	0.01					CWIP, SRF, LCBP	2
231 Rutland City			DW		0.17	79.7	63.54	143	0%	143	80%	0.40	0.01	0.02					CWIP, SRF, LCBP	4
232 Rutland City			DW	3550-9010.R	0.42	85.6	73.30	397	0%	397	80%	1.10	0.02	0.04					CWIP, SRF, LCBP	11
236 Rutland City			CB		73.07	39.1	32.55	33220	0%	33220	0%	92.28	1.88	3.14					CWIP, SRF, LCBP	940
237 Rutland City			CB		23.51	37.6	31.10	10279	0%	10279	0%	28.55	0.58	0.97					CWIP, SRF, LCBP	291
238 Rutland City			CB		1.60	19.9	8.87	276	80%	55	0%	0.38	0.02	0.04					CWIP, SRF, LCBP	8
239 Rutland City	1	Combine with 239	CB		3.16	28.6	15.29	786	80%	157	0%	1.09	0.04	0.10					CWIP, SRF, LCBP	22
240 Rutland City	1	Combine with 240	CB		2.59	13.4	4.89	323	80%	65	0%	0.45	0.02	0.04	$849,500		$65	$81,214	CWIP, SRF, LCBP	9
241 Rutland City			GS		2.32	14.9	5.76	314	0%	314	0%	0.87	0.02	0.04					CWIP, SRF, LCBP	9
242 Rutland City	1	Combine with 210 Rutland Town at City Park	GW/CB		8.95	11.7	7.65	1411	80%	1411	0%	3.92	0.08	0.12					CWIP, SRF, LCBP	40
243 Rutland City			CB		5.18	22.9	10.99	1022	0%	1022	0%	2.84	0.06						CWIP, SRF, LCBP	29
244 Rutland City	1	Bioretention/ Extended Detention Basin at 140 Granger St	BR/EDP/CB/GS		4.63	25.5	12.86	1017	80%	203	0%	1.13	0.06		$21,279		$26	$12,556	CWIP, SRF, LCBP	29
245 Rutland City			CB		1.24	26.2	13.40	281	0%	281	0%	0.78	0.02						CWIP, SRF, LCBP	8
246 Rutland City			OF		1.20	32.0	18.08	337	0%	337	0%	0.94	0.02						CWIP, SRF, LCBP	10
247 Rutland City			CB		4.40	36.3	21.85	1438	0%	1438	0%	3.99	0.08						CWIP, SRF, LCBP	41
249 Rutland City			CB		0.19	33.7	19.52	56	0%	56	0%	0.15	0.00						CWIP, SRF, LCBP	2
250 Rutland City			CB/OF		25.26	23.8	11.59	5165	0%	5165	0%	14.35	0.29	0.66					CWIP, SRF, LCBP	146
251 Rutland City			GS/CB	5973-9010	15.63	17.3	5.09	1985	0%	1985	5%	5.51	0.11	0.30					CWIP, SRF, LCBP	56
413 Rutland City			CB		15.71	31.1	17.31	4286	0%	4286	0%	11.91	0.24	0.54					CWIP, SRF, LCBP	121
415 Rutland City			OF/CB		16.57	31.9	17.99	4654	0%	4654	0%	12.93	0.26	0.58					CWIP, SRF, LCBP	132

Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Mapped Impervious Area (MIA)	Percent Effective Impervious Area	Sediment Load with Current Reductions (lbs.)	Priority Action Sediment Reduction Credit	Sediment Load with Priority Action (lbs.)	Current BMP Phosphorus or Nitrogen Reduction Credit	Phosphorus Load with Priority Action (lbs.)	Water Quality Volume (Acre-Feet)	Channel Protection (Acre-Feet)	Estimated Basin Construction Cost	Estimated Other BMP Construction Cost	Cost of Sediment Removal Per Pound (based on annual sediment load)	Cost of Phosphorus or Nitrogen Removal Per Pound (based on annual nutrient load)	Assistance Program	# LID-Roof Raingardens to Treat Water Quality Volume
416 Rutland City			GS/CB		3.83	39.8	25.06	1399	0%	1399	0%	3.89	0.08	0.17					CWIP, SRF, LCBP	40
417 Rutland City			CB/WP		0.38	29.7	8.83	65	0%	65	0%	0.18	0.00	0.01					CWIP, SRF, LCBP	2
418 Rutland City			CB		1.33	44.7	29.93	562	0%	562	0%	1.56	0.03	0.07					CWIP, SRF, LCBP	16
419 Rutland City			CB		0.03	84.3	84.34	30	0%	30	0%	0.08	0.00	0.00					CWIP, SRF, LCBP	1
420 Rutland City			OF		20.84	23.1	11.07	4132	0%	4132	0%	11.48	0.23	0.53					CWIP, SRF, LCBP	117
421 Rutland City			CB		0.06	78.9	78.94	63	0%	63	0%	0.17	0.00	0.01					CWIP, SRF, LCBP	2
423 Rutland City			OF/CB		23.95	20.1	9.03	4169	0%	4169	0%	11.58	0.24						CWIP, SRF, LCBP	118
424 Rutland City			CB		0.08	69.4	69.36	74	0%	74	0%	0.21	0.00	0.01					CWIP, SRF, LCBP	2
425 Rutland City			OF		6.95	24.5	12.14	1467	0%	1467	0%	4.08	0.08	0.19					CWIP, SRF, LCBP	42
426 Rutland City			CB		0.18	83.9	83.94	187	0%	187	0%	0.52	0.01	0.02					CWIP, SRF, LCBP	5
427 Rutland City			OF		11.73	19.5	8.59	1979	0%	1979	0%	5.50	0.11	0.25					CWIP, SRF, LCBP	56
428 Rutland City			CB		1.69	40.2	33.70	793	0%	793	0%	2.20	0.04	0.07					CWIP, SRF, LCBP	22
429 Rutland City			OF		6.30	16.9	6.93	939	0%	939	0%	2.61	0.05	0.12					CWIP, SRF, LCBP	27
430 Rutland City			CB/GS		0.45	66.3	54.04	318	0%	318	0%	0.88	0.02	0.03					CWIP, SRF, LCBP	9
431 Rutland City			CB/VS		3.37	26.7	13.81	778	0%	778	10%	2.16	0.04	0.10					CWIP, SRF, LCBP	22
432 Rutland City			CB		0.60	84.6	84.63	642	0%	642	0%	1.78	0.04	0.06					CWIP, SRF, LCBP	18
433 Rutland City			OF		21.00	20.8	9.50	3773	80%	755	0%	4.19	0.21	0.48					CWIP, SRF, LCBP	107
434 Rutland City			OF		5.39	18.8	8.18	882	0%	882	0%	2.45	0.05	0.11					CWIP, SRF, LCBP	25
461 Rutland City			CB/DP		1.76	84.7	75.70	1705	0%	1705	0%	4.74	0.10	0.16					CWIP, SRF, LCBP	48
2 Mendon			OF		267.34	8.6	2.52	25751	0%	25751	0%	71.53	1.46	2.53					CWIP, SRF, LCBP	728
3 Mendon	1	Swirl separator on State land or ROW at 84 Rte 4 Mendon	VS/GS		104.58	2.0	0.28	7282	80%	1456	0%	18.21	0.41	0.23		$75,000	$13	$37,077	CWIP, SRF, LCBP	206
4 Mendon			OF/CB		30.20	8.4	2.46	2886	0%	2886	0%	8.02	0.16	0.28					CWIP, SRF, LCBP	82
5 Mendon	1	Infiltration basin on Town Land on Orchard Rd	IB/OF/CB/GS		24.34	13.0	4.70	2978	90%	298	0%	0.83	0.17	0.35	$154,132		$58	$20,702	CWIP, SRF, LCBP	84
6 Mendon			OF/CB		24.56	6.6	1.69	2122	0%	2122	0%	5.89	0.12	0.18					CWIP, SRF, LCBP	60
7 Mendon			OF/CB/GS		16.30	3.3	0.61	1199	0%	1199	0%	3.33	0.07	0.06					CWIP, SRF, LCBP	34
8 Mendon			OF		11.51	4.1	0.83	878	0%	878	0%	2.44	0.05	0.05					CWIP, SRF, LCBP	25
9 Mendon			OF		10.23	10.6	3.46	1100	0%	1100	0%	3.06	0.06	0.12					CWIP, SRF, LCBP	31
10 Mendon			OF/CB		8.33	5.0	1.11	662	0%	662	0%	1.84	0.04	0.05					CWIP, SRF, LCBP	19

Target Maps

Showing Priority Action List Drainage Areas

And Potential Retrofit Locations



Mendon, VT

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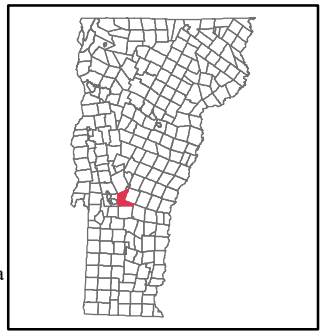

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NRCS - Soils

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SubwatershedID

- Priority Subwatershed
- Stormwater Treatment Area
- Potential Stormwater Treatment Area

Creator: Jim Pease, David Ainley
DEC - WID - Clean Water Initiative Program
Plotted Date: 9/20/2021
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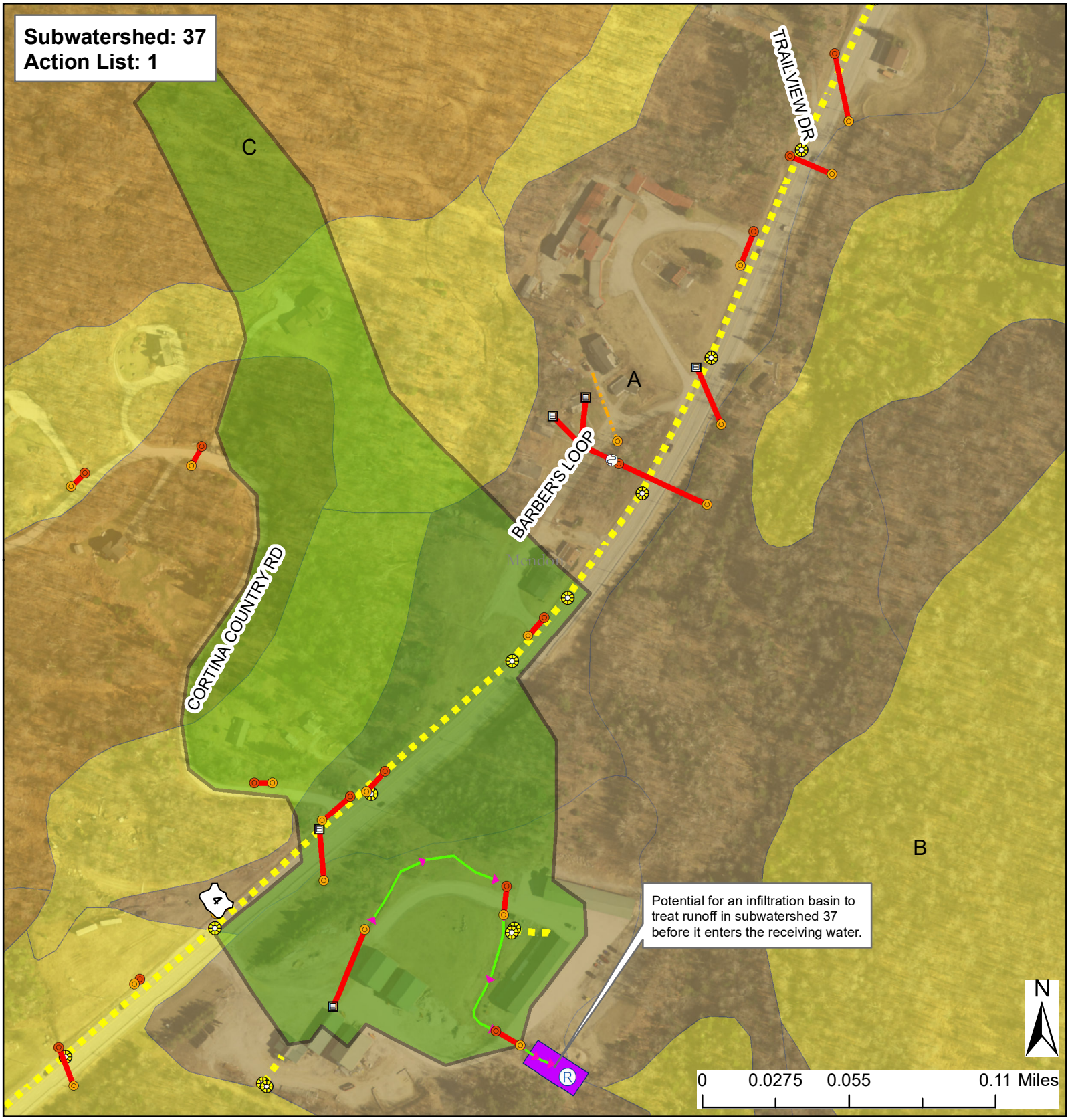

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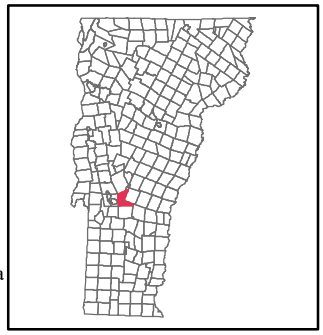

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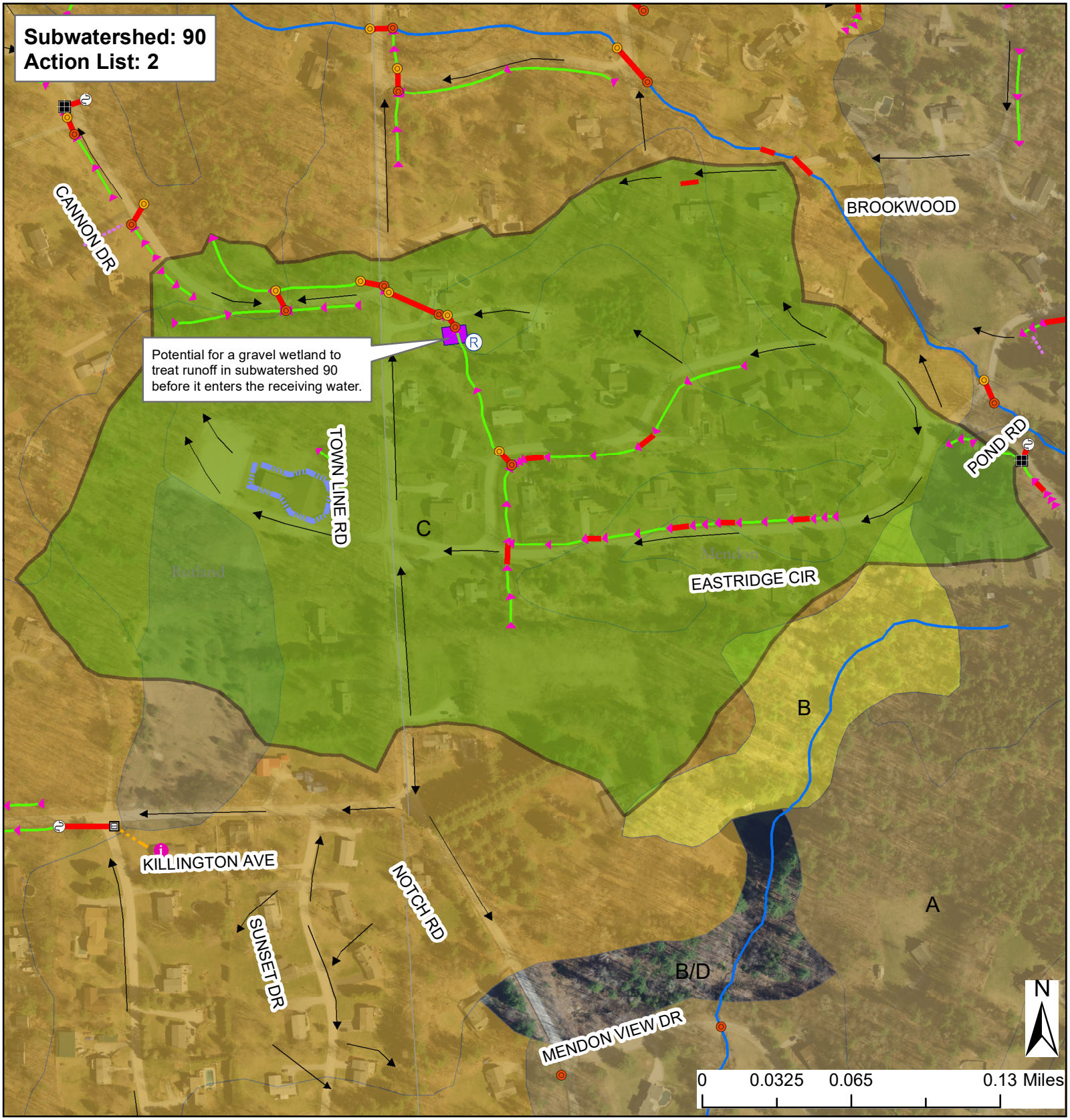

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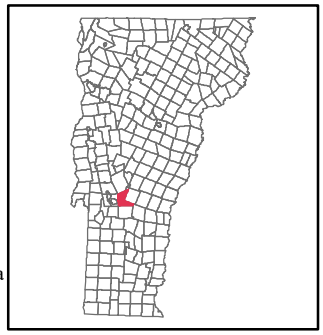

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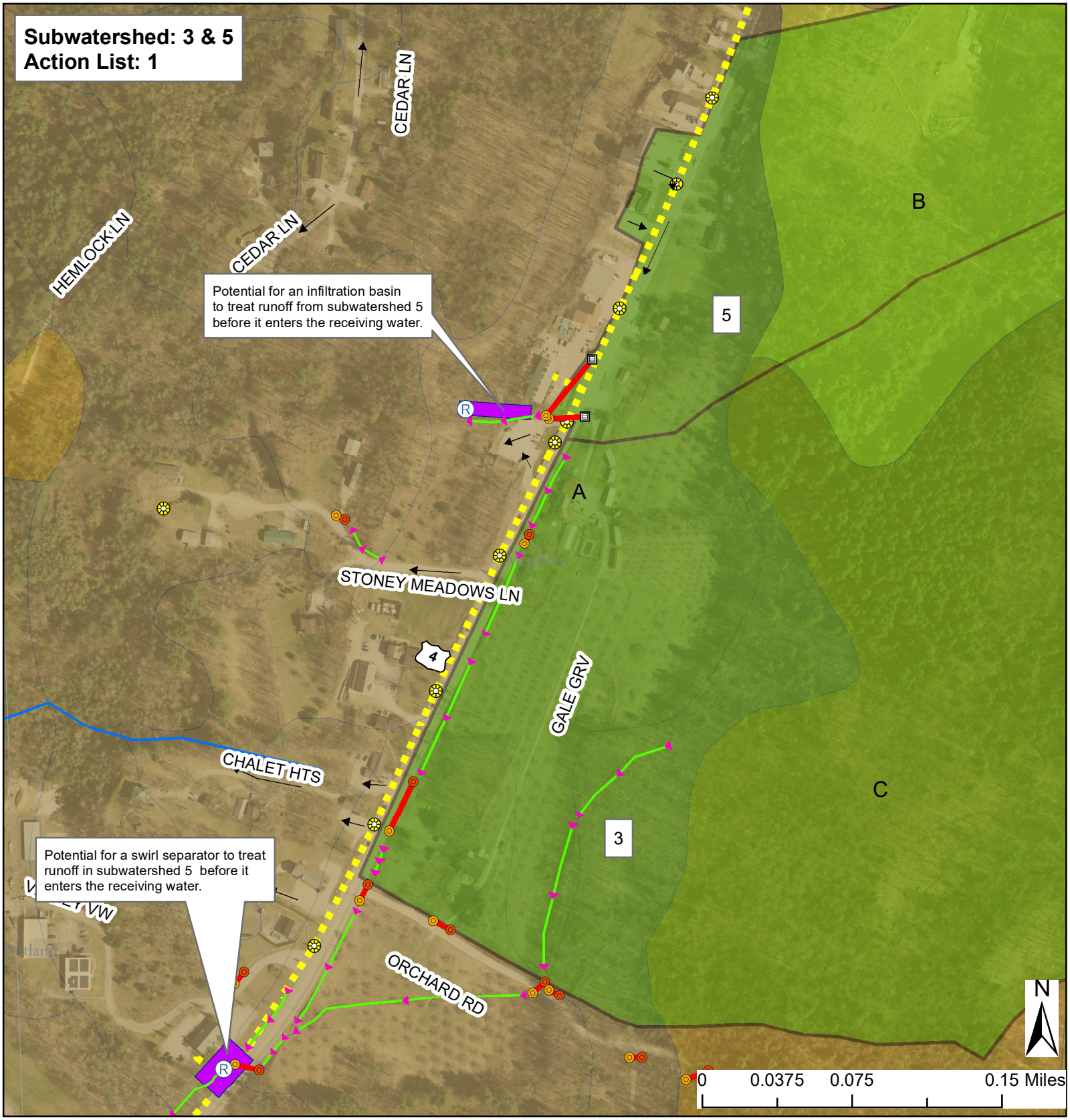

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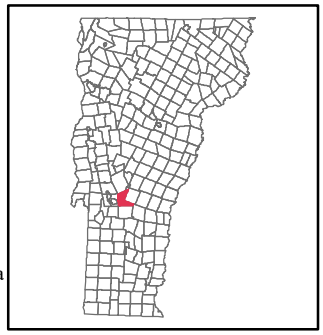

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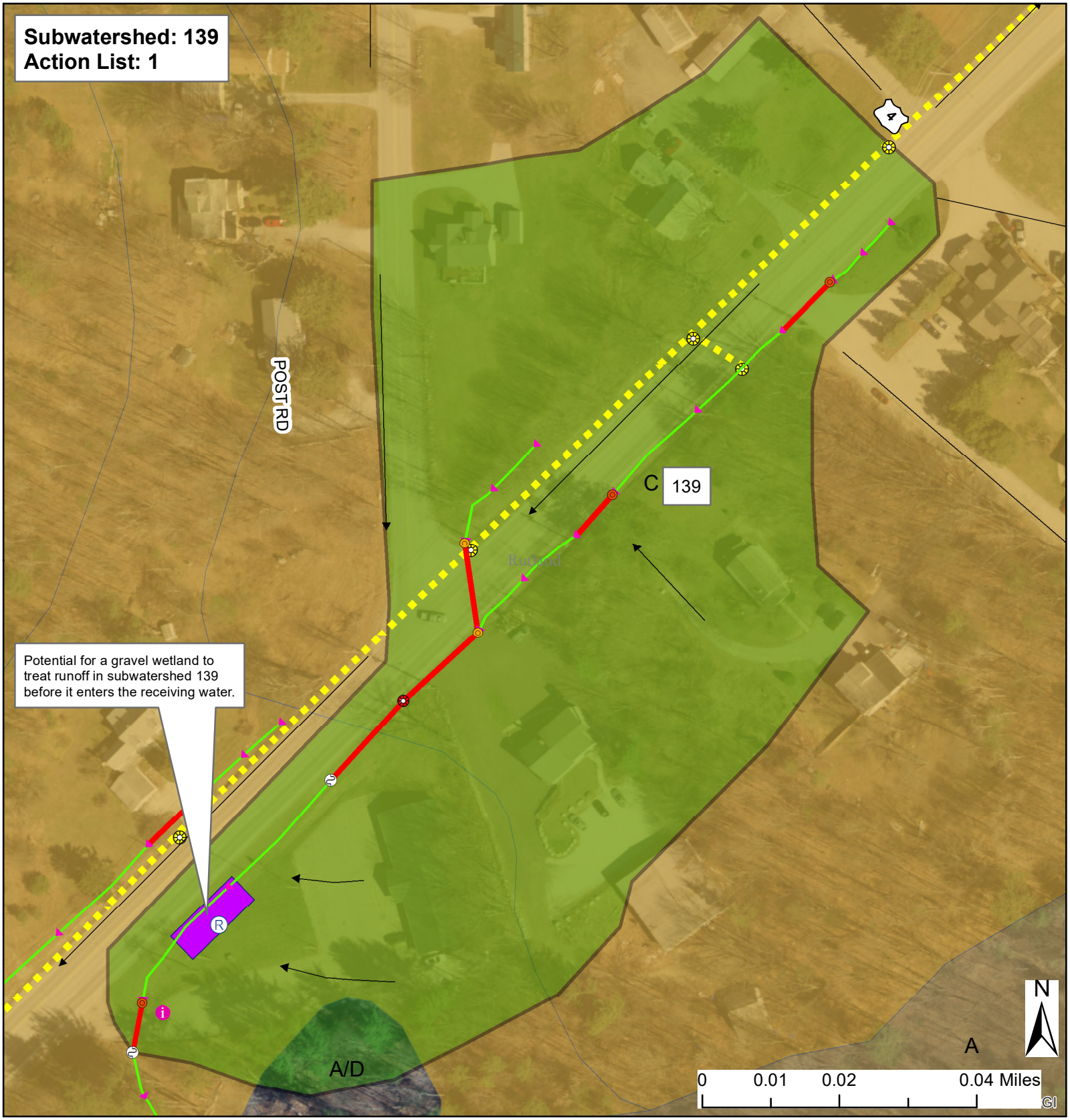

Rutland Town, VT

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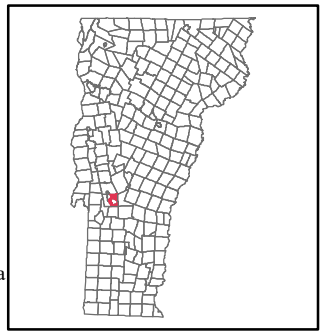

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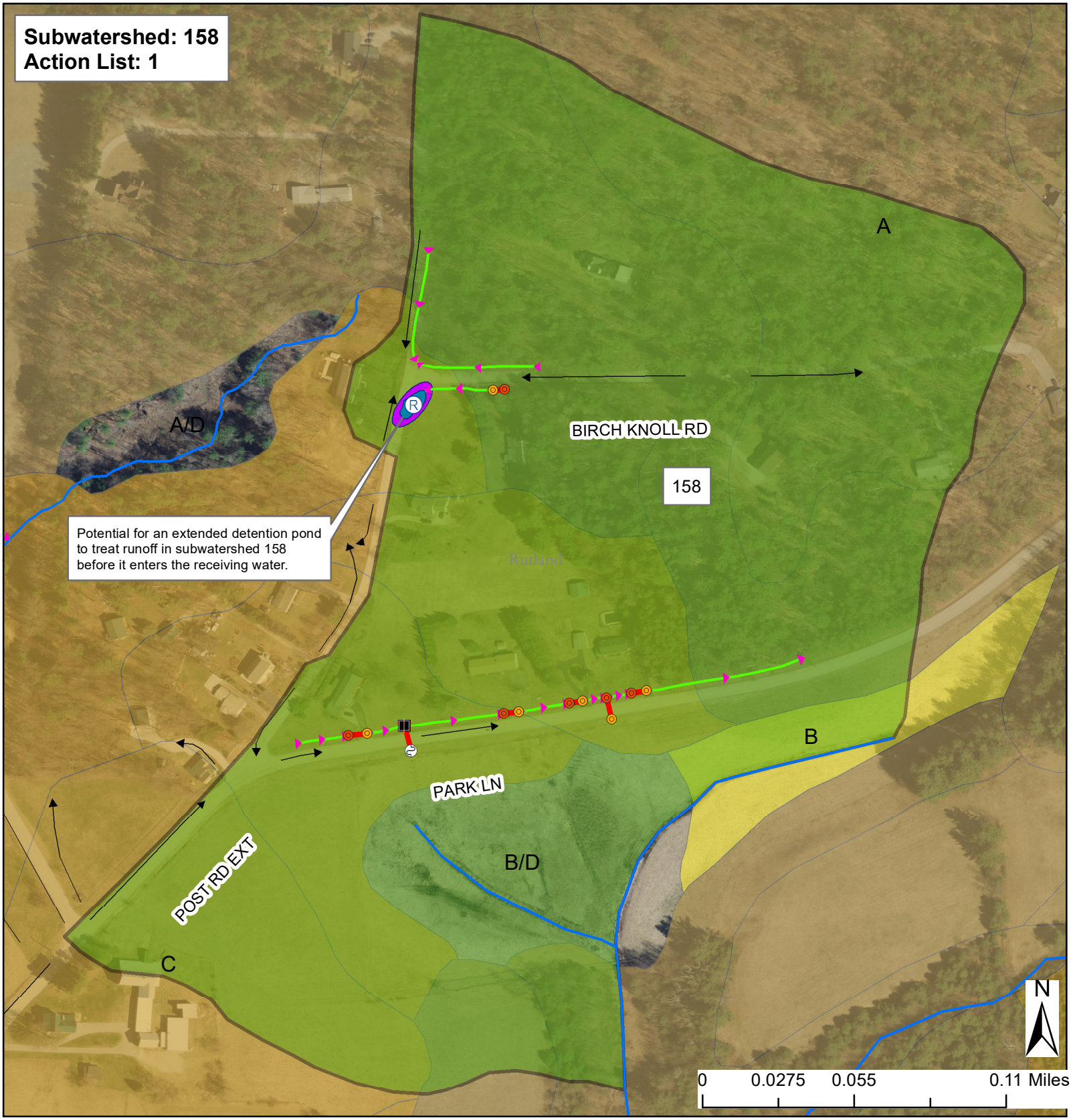

Rutland Town, VT

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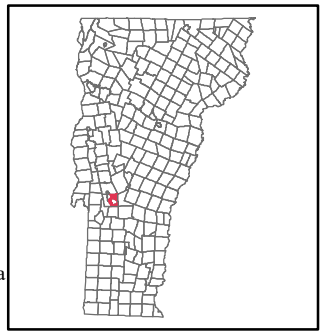

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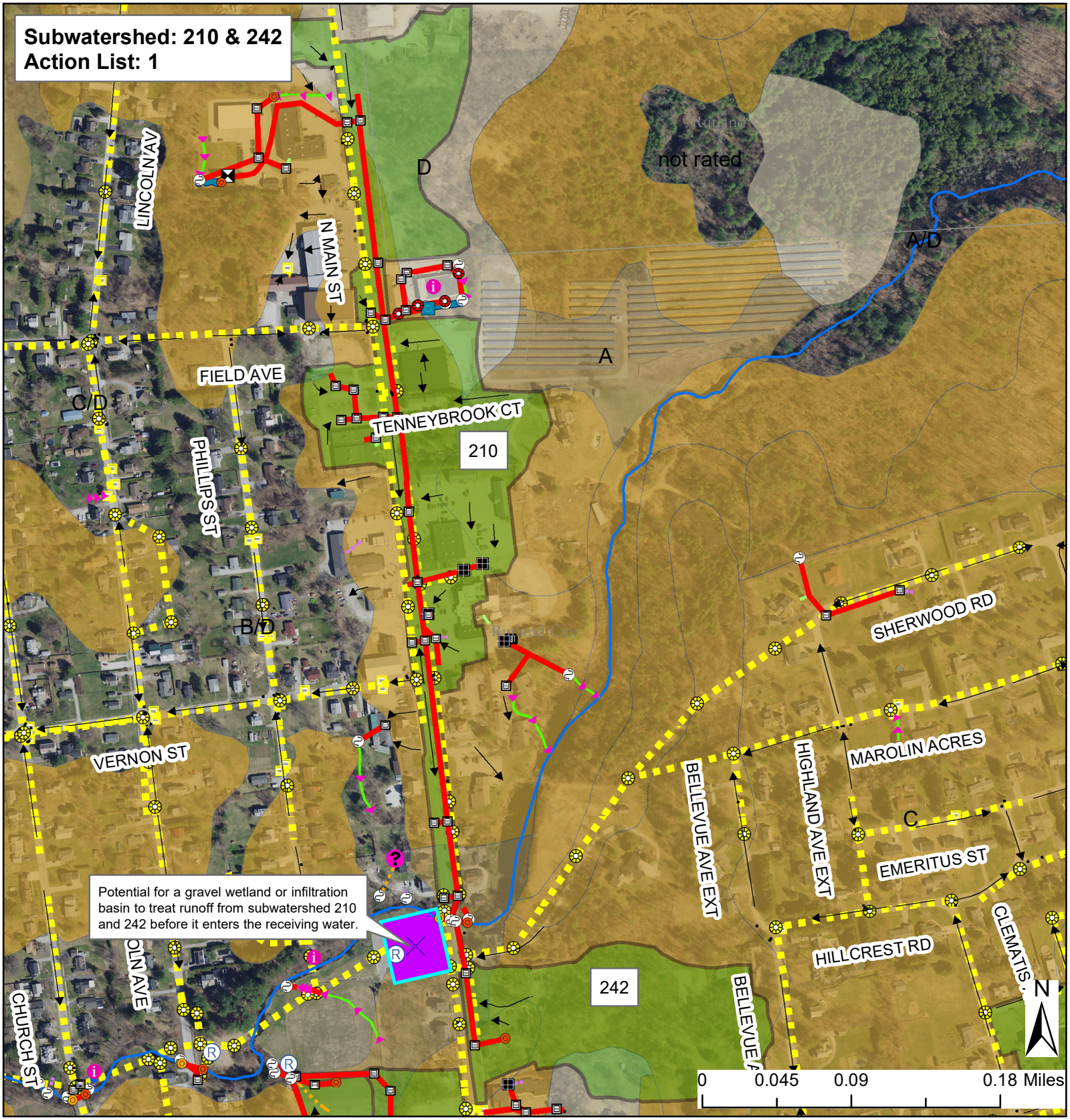

Rutland Town and City, VT

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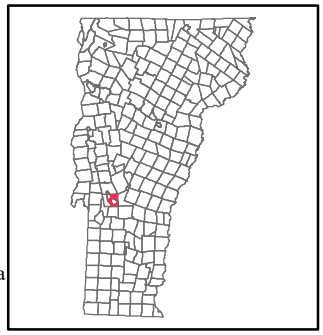

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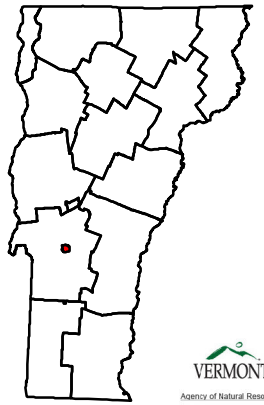
Rutland City

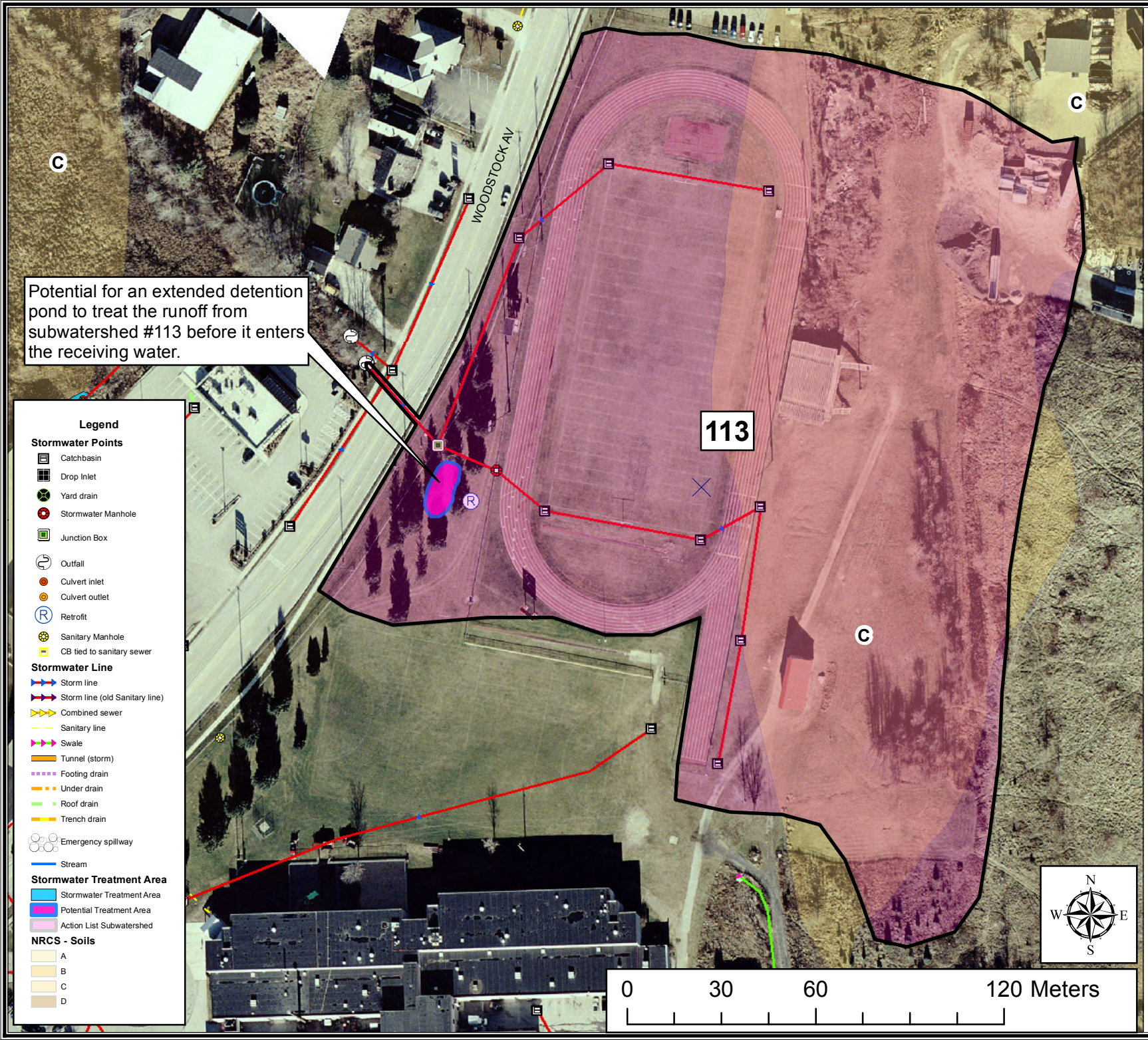
Action List 1
Subwatershed: 113

This map shows high priority subwatersheds which are ranked by connectedness, percent of impervious cover, field observations, and potential retrofit measures and locations.

The data shown on this map is only as accurate as the available sources and field observations allowed and should be used as a basic planning level tool only.



VERMONT
Agency of Natural Resources



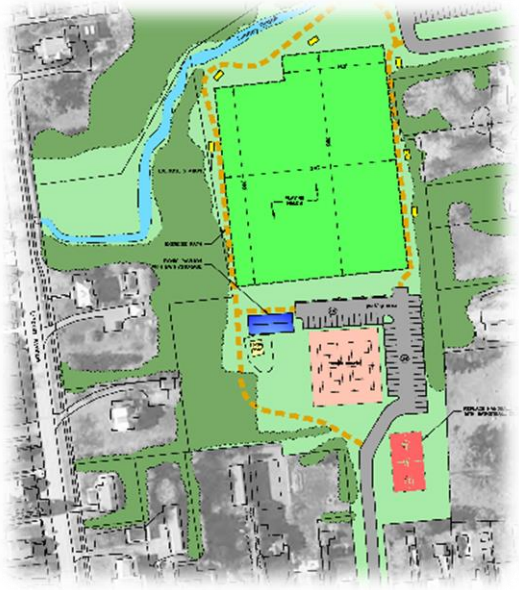
VTANR - DEC - WSMD
Creator: Jim Pease, Collin Smythe
Date: 6/26/2012
Data Sources: Field data, Town and stormwater permit plans, existing GIS data, GPS data, municipal member knowledge, VTRANS roads data, VT Hydrography dataset, NRCS soils map
Imagery Source: Rutland City .15m orthos (2001)

Subwatershed: 230, 240
Action list: 1

Project: East Creek - Tenney Brook Stormwater Master Plan

Site ID Code: RPO	**Site Rank: 2 of 9**

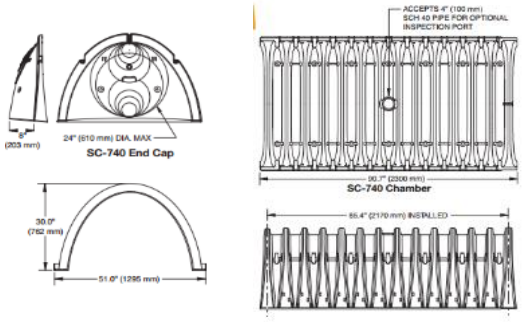
Name: ROTARY PARK OUTFALL - SUBTERRANEAN STORMWATER CHAMBERS



The City of Rutland is re-vamping Rotary Park. Underground storage chambers could manage stormwater here.

The proposed system would treat an approximately 30.51 acre piped drainage area, 8.55 acres of which is impervious. There are two primary drainage area associated with this potential retrofit - a smaller 8 acre drainage that is currently a separate stormwater system and a larger 23 acre proposed future separate stormwater system. The proposed retrofit would be a series of underground storage chambers designed to infiltrate runoff.The chambers, depending on chambers chosen, would have an approximate footprint of either 75'X190 or 75'X395' (different footprints reflect differnt chamber heights and thus storage volumes. This practice would treat 100% of the water quality (0.9" storm) volume as well as fully mitigating the channel protection (CPv) volume to protect Tenney Brook's channel downstream of this practice. Treatment efficiencies associated with this practice would reach 89% for total solids and 92% for total phosphorous.

BMP - Conceptual Design Details



Site Information

Site Landuse 1:	**Parking**
Site Landuse 2:	**Recreational Area**
Soils:	**Deerfield loamy sand, 0-4% slopes, Hydrologic Soil Group B**
Other Site Information:	

Water Quality - Pollutant Reduction

Total Solids (lbs.)	**13,092.00 lbs.**
Total Phosporous (lbs.)	**10.46 lbs.**

Water Quantity - Peak Discharge Reduction

Storm Event:	**Pre-BMP**	**Post-BMP**
Water Quality Storm (0.9")	**5.95 cfs**	**0.00 cfs**
1 Year Storm (2.1")	**11.00 cfs**	**0.00cfs**
Acres Impervious Treated:	**8.55 acres**	

Cost Estimate

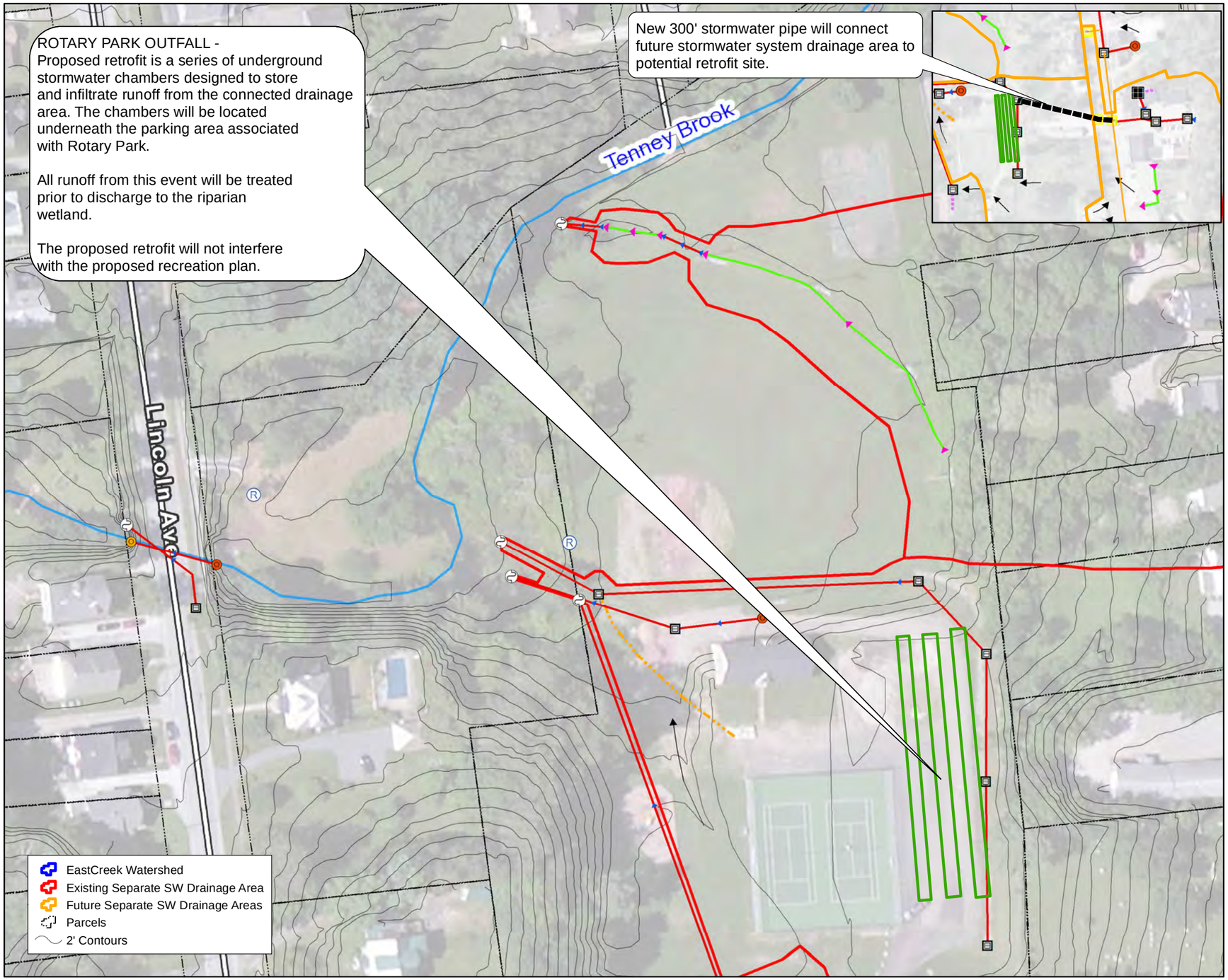
$849,500.00

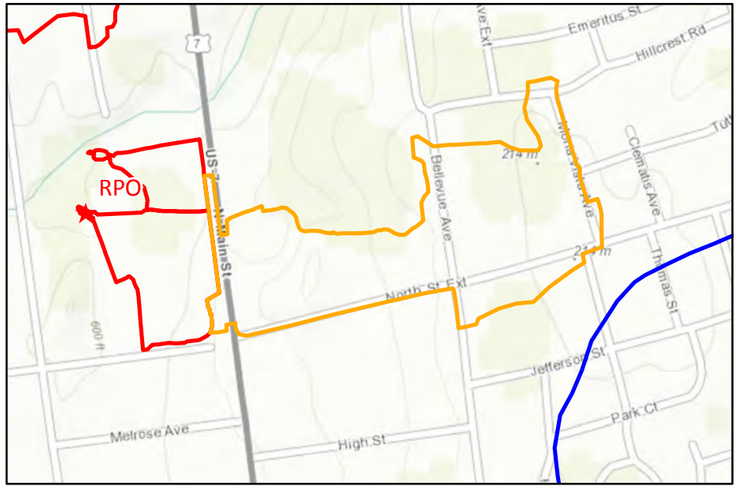
ROTARY PARK OUTFALL -
Proposed retrofit is a series of underground stormwater chambers designed to store and infiltrate runoff from the connected drainage area. The chambers will be located underneath the parking area associated with Rotary Park.

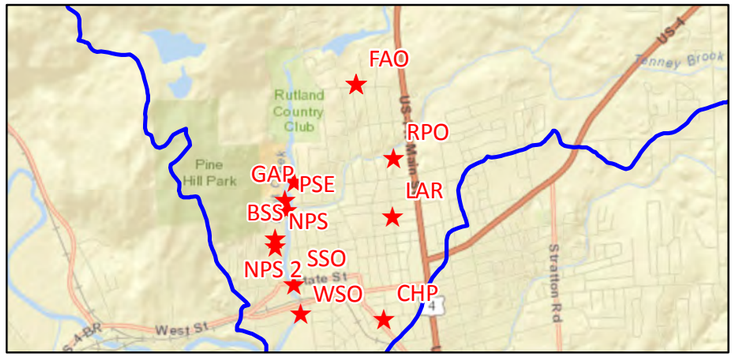
All runoff from this event will be treated prior to discharge to the riparian wetland.

The proposed retrofit will not interfere with the proposed recreation plan.

New 300' stormwater pipe will connect future stormwater system drainage area to potential retrofit site.







NOTES:

The proposed retrofit will treat both the WQv and CPv storm events while not infringing on current and proposed park activity. Stormwater runoff will be treated prior to discharge at the riparian wetland. Additionally there is the opportunity here to treat a large additional drainage area up for future stormwater separation with the addition of new 90 meter pipe. As currently sized, it will reduce the total suspended solids delivery to Tenney Brook by 13,092 lbs. and the total phosphorous delivery by 10.46 lbs. by treating 9.38 acre-feet of water annually.

Cost:

The project will cost approximately $849,500.00.

WATERSHED CONSULTING ASSOCIATES, LLC
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www.watershedca.com

0 40 80 160 240 320 Feet

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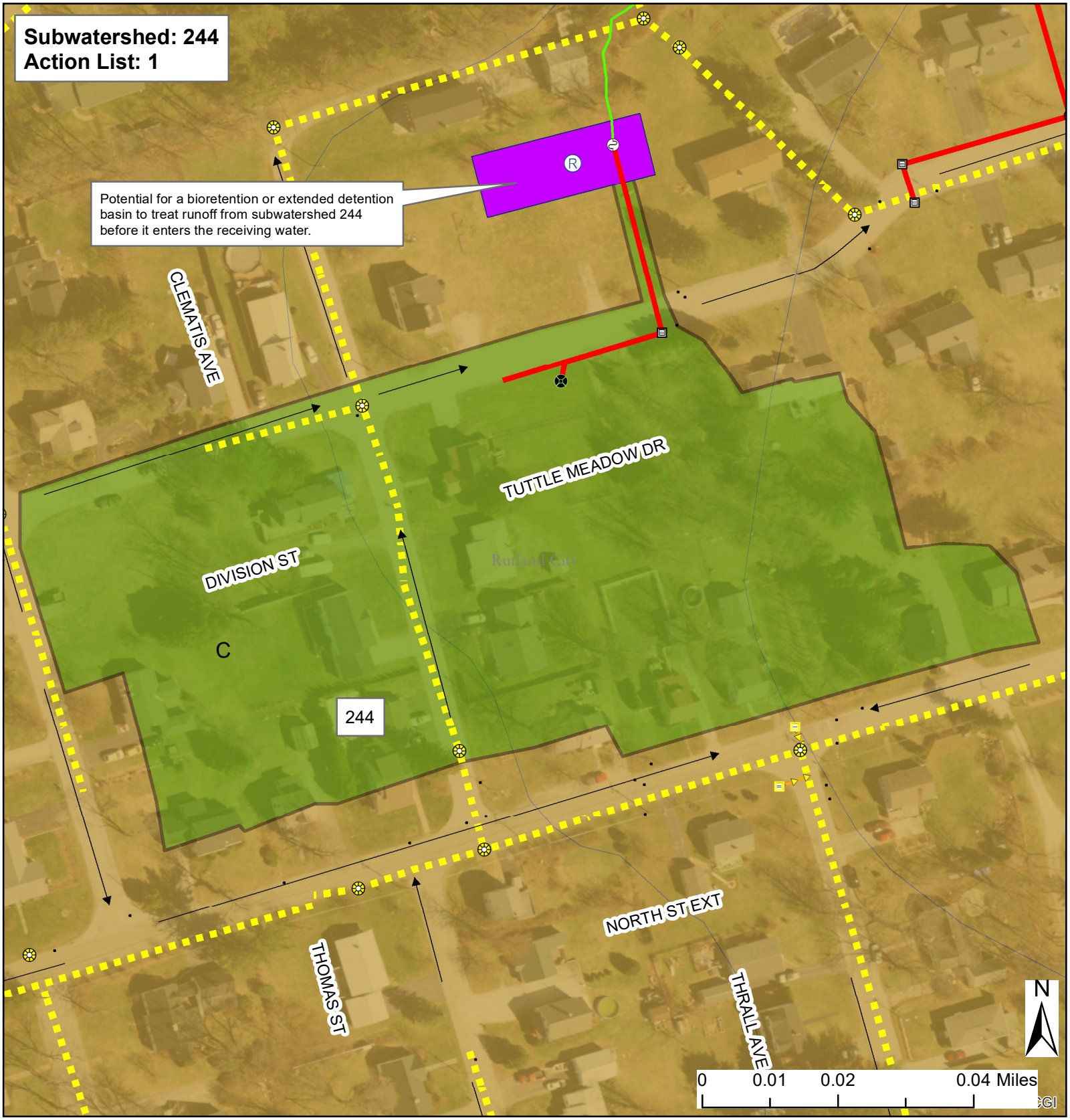
EAST CREEK STORMWATER MASTER PLAN		
RUTLAND, VERMONT		
ROTARY PARK OUTFALL		
Date: 12/12/2014	DRAWN BY:DA	SCALE:NOTED



Rutland City, VT

DEC Stormwater Infrastructure Mapping Project

This map shows high priority subwatersheds which are ranked by connectedness, percent of impervious cover, field observations, and potential retrofit measures and locations.

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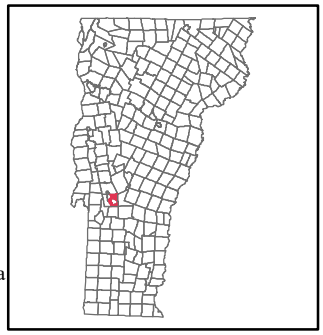

Stormwater points
- Pipe Cross (not connected)
- Catchbasin
- Dry Well
- Drop Inlet
- Grate/Curb Inlet
- Yard drain
- CB tied to sanitary sewer
- Junction Box
- Stormwater Manhole
- Outfall
- Culvert inlet
- Culvert outlet
- Control Structure
- Treatment feature (see notes)
- Retrofit
- Unknown Point
- Information Point

Stormwater line
- Storm line
- Storm line (old Sanitary line)
- Tunnel (storm)
- Combined sewer
- Sanitary line
- Swale
- Footing drain
- Under drain
- Roof drain
- Infiltration pipe
- French drain
- Trench drain
- Emergency spillway
- Stream
- Overland flow

NRCS - Soils
- A
- B
- C
- D

SubwatershedID
- Priority Subwatershed
- Stormwater Treatment Area
- Potential Stormwater Treatment Area

Creator: Jim Pease, David Ainley
DEC - WID - Clean Water Initiative Program
Plotted Date: 9/20/2021
Data Sources: VTRANS Roads data, VT Hydrography data set, DEC Stormwater database, NRCS soils survery
Imagery Source: VCGI Best Available Imagery

VERMONT