

Brewster River Cambridge, Vermont

The Brewster River in Cambridge, Vermont has been found to be stressed by stormwater water as measured by the biological community of the river. There are more than 75 discharges to the stream from the developed lands of Jeffersonville and Smuggler's Notch Ski Area. The largest discharge to the river is drainage 68 Cambridge which drain a large section of the Smugglers Notch Ski Area. A second very large area is 4 Jeffersonville which drains downtown Jeffersonville.

The recommended course of action is to install a stormwater treatment structure on many of these discharges that controls the water quality volume, and in the upper watershed the Channel Protection Volume. Maps showing the location of these discharges and other possible retrofit locations on private land is provided. Smugglers Notch Ski Area will have to provide additional treatment of discharges that will be equal to 50% of the water quality volume from 54 impervious acres.

Addressing the large discharges of stormwater to the river will reduce contamination, and stream channel erosion, and will help prevent the river from becoming declared stormwater impaired on the state of Vermont's 303d list of impaired waters. It will also reduce phosphorus currently being discharged to the Lamoille River, Malletts Bay and Lake Champlain.

Macroinvertebrate Site Summary

Location: Brewster River	Location ID: 501856
Town: Cambridge	Bio Site ID: 462100000006
Description: Located behind ball fields at Elementary School in Cambridge.	WBID: VT07-13
Stream Type: Medium High Gradient	

Date	Density	Richness	EPT Richness	PMA-O	B.I.	Oligo.	EPT/EPT + Chiro	PPCS-F	Community Assessment
9/9/2002	3704	45.0	20.0	46.7	4.11	0.32	0.34	0.54	G-Fair
10/17/2007	2904	36.0	21.0	44.3	3.94	0.00	0.26	0.38	G-Fair
9/27/2018	297	41.0	27.0	65.8	3.39	7.07	0.99	0.59	Good
Full Support	≥ 300	≥ 30	≥ 18	≥ 45	≤ 5	≤ 12	≥ 0.45	≥ 0.4	
Indeterminate	≥ 250	≥ 28	≥ 16	≥ 40	≤ 5.15	≤ 14.5	≥ 0.43	≥ 0.35	
Non-Support	< 250	< 28	< 16	< 40	> 5.15	> 14.5	< 0.43	< 0.35	

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



Monitoring Site Summary - River/Stream

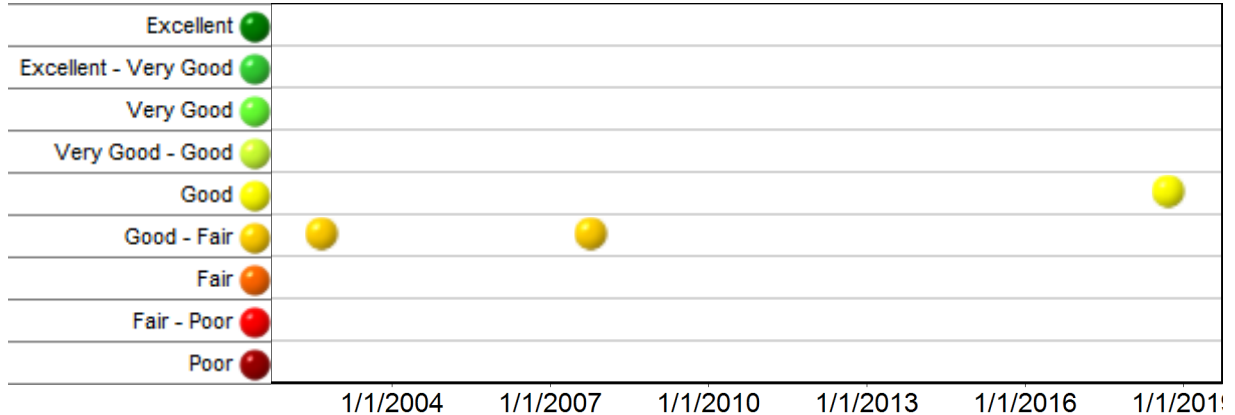
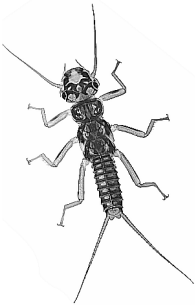
Brewster River

River Mile: 0.6

Located behind ball fields at Elementary School in Cambridge.
Cambridge, VT (44.64357, -72.82532)

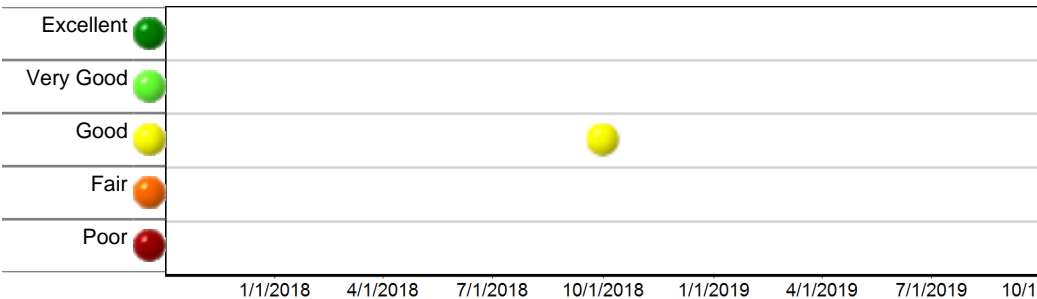
Macroinvertebrate Assessment

Macroinvertebrate population Assessments are a measure of the biological integrity of the macroinvertebrate community and an indicator of the health of the aquatic biota. (For More Details)



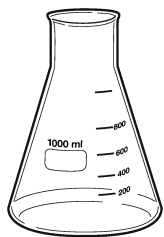
Fish Assessment

Fish populations provide a measurement of the general health of the aquatic biota. Since fish occupy the top of the food web their population integrates the conditions of lower community types. (For More Details)



Water Quality Measurements

Chemical and physical parameters provide a "snapshot" of current conditions and are used to detect changes in water quality and to make determinations about a waterbody and its watershed. (For More Details)



Characteristic	Description	Trend	Max	Mean	Min
Chloride (mg/L)	At elevated values mostly from deicing		10.2	7.4	6.0
Conductivity (umho/cm)			228.0	116.9	56.1
Nitrogen (mg/L)	Nutrient that may fuel algae blooms		0.3	0.3	0.2
pH	Acidity		8.3	7.8	7.2
Phosphorus (ug/L)	Nutrient that may fuel algae blooms		14.5	10.1	5.1
Turbidity (NTU)	Measure of suspended sediment		2.5	1.5	0.4

Cambridge - Subwatershed Prioritization and Recommendations										
Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Mapped Impervious Area (MIA)	Sediment Load with Current Reductions (lbs.)	Sediment Load with Priority Action (lbs.)	Phosphorus Load with Current Reductions (lbs.)	Phosphorus Load with Priority Action (lbs.)
13 Cambridge	1	4 surface sand filters or raingardens with underdrains in parking medians	BRA/CB/WP	3795-9010	3.4	67.3	923	739	3.85	3.46
14 Cambridge			CB		0.3	70.5	227	227	0.63	0.63
15 Cambridge			CB/GS		1.8	42.4	869	869	2.41	2.41
16 Cambridge			OF/CB/GS		1.0	52.7	546	546	1.52	1.52
17 Cambridge			SB/GS/CB		3.3	30.9	813	813	2.38	2.38
18 Cambridge	1	Linear surface sand filter or rain garden in front of first CB	BRA/OF/CB/WP		0.9	73.7	614	368	1.92	1.53
19 Cambridge			CB		0.1	57.1	90	90	0.25	0.25
20 Cambridge	1	Add limestone to iron seep near Morse lift line	RR/GS/WP		13.8	16.3	2224	2224	6.95	6.95
21 Cambridge			OF		95.2	0.1	6315	6315	17.54	17.54
22 Cambridge			OF/GS		1.6	3.2	118	118	0.33	0.33
23 Cambridge			CB/GS/SB/WP	3117-9010	6.5	29.6	222	222	1.54	1.54
24 Cambridge	1	Add limestone to iron seep behind 165 West Hill. Plant stream buffer along west side of	CB/GS/SB/BRA/WP	3117-9010	41.1	17.6	849	764	4.72	4.25
25 Cambridge			GS/CB/WP		4.8	42.3	270	270	2.25	2.25
26 Cambridge			CB/GS/EDP/CD		5.4	47.2	361	361	3.01	3.01
27 Cambridge			CB		0.4	28.9	127	127	0.35	0.35
28 Cambridge			CB/EDP/CD		0.6	88.1	122	122	1.02	1.02
29 Cambridge			OF/BRA	6468-INDS	0.3	32.4	13	13	0.04	0.04
30 Cambridge	2	Bioretention/raingarden on east side of Tennis Courts	BRA/CB/GS/SB		2.1	57.2	978	489	3.30	1.15
31 Cambridge			IG/CB		0.2	98.4	54	54	0.38	0.38
32 Cambridge			CB/GS		2.2	53.5	1421	1421	3.95	3.95
33 Cambridge			GS/DW		1.4	51.4	131	131	0.36	0.36
34 Cambridge	2	Infiltration gallery or basin behind 389 Mt View Drive	IG/CB/GS/CD		1.3	49.5	677	203	1.98	0.50
35 Cambridge			DW		0.4	21.1	11	11	0.03	0.03
36 Cambridge			GS/CB/SB		0.7	21.3	21	21	0.17	0.17
37 Cambridge	1	Enlarge existing pond at 22 Wood Run Drive	MOD/GS/2EDP	3117-9015	2.8	22.5	71	64	0.59	0.47
38 Cambridge			CB/SB		0.4	64.4	46	46	0.39	0.39
39 Cambridge			GS/CB	3117-9015	10.4	3.7	147	147	1.23	1.23
40 Cambridge			GS/OF/EDP	3117-9015	5.1	18.4	329	329	1.22	1.22
41 Cambridge			GS/OF/EDP	3117-9015	6.1	13.8	108	108	0.90	0.90
42 Cambridge			GS/OF/2EDP	3117-9015	44.7	6.9	643	643	5.36	5.36
43 Cambridge			GS/OF/CB/EDP	3117-9015	11.7	6.6	167	167	1.39	1.39
45 Cambridge			CB/GS		13.6	3.1	993	993	2.76	2.76
46 Cambridge			GS/OF		9.0	19.5	1520	1520	4.22	4.22
47 Cambridge			CB/GS/3WP	3489-9015.1	41.8	9.1	637	637	5.30	5.30
48 Cambridge			OF/GS		17.1	5.8	1422	1422	3.95	3.95
49 Cambridge			OF/GS/CD	3489-9015.1	4.1	22.5	132	132	1.10	1.10
50 Cambridge			CB/GS/EDP	3489-9010	7.5	36.2	335	335	2.79	2.79
51 Cambridge			CB/GS/EDP	3489-9010	1.9	35.4	82	82	0.69	0.69
52 Cambridge			CB/GS/EDP	3489-9010	5.1	29.8	175	175	1.46	1.46
53 Cambridge			OF/GS	3489-9010	4.1	5.8	63	63	0.52	0.52
54 Cambridge			OF/WP		30.4	2.1	2127	2127	5.91	5.91
55 Cambridge			GS//OF		199.3	2.7	14253	14253	39.59	39.59

Cambridge - Subwatershed Prioritization and Recommendations

Watershed Number	Water Quality Volume (Acre-Feet)	Channel Protection (Acre-Feet)	Watershed Number	Estimated Basin Construction Cost	Estimated Other BMP Construction Cost	Cost of Sediment Removal Per Pound (based on annual sediment load)	Cost of Nitrogen or Phosphorus Removal Per Pound (based on annual nutrient load)	Assistance Program	# LID-Roof Raingardens to Treat Water Quality Volume	Raingarden Cost
13 Cambridge	0.13	FALSE	13 Cambridge		\$5,000	\$27	\$12,998	SRF	65	\$30,034
14 Cambridge	0.01	FALSE	14 Cambridge					SRF	6	\$2,950
15 Cambridge	0.05	FALSE	15 Cambridge					SRF	25	\$11,312
16 Cambridge	0.03	FALSE	16 Cambridge					SRF	15	\$7,106
17 Cambridge	0.05	FALSE	17 Cambridge					SRF	26	\$11,760
18 Cambridge	0.04	0.07	18 Cambridge		\$15,000	\$61	\$39,106	SRF	22	\$9,983
19 Cambridge	0.01	FALSE	19 Cambridge					SRF	3	\$1,174
20 Cambridge	0.16	FALSE	20 Cambridge		\$1,000	NA	NA	SRF	79	\$36,175
21 Cambridge	0.36	0.01	21 Cambridge					SRF	179	\$82,179
22 Cambridge	0.01	0.01	22 Cambridge					SRF	3	\$1,538
23 Cambridge	0.06	0.21	23 Cambridge					SRF	31	\$14,432
24 Cambridge	0.24	0.80	24 Cambridge		\$3,000	\$35	\$6,360	SRF	120	\$55,241
25 Cambridge	0.08	FALSE	25 Cambridge					SRF	38	\$17,536
26 Cambridge	0.10	FALSE	26 Cambridge					SRF	51	\$23,463
27 Cambridge	0.01	FALSE	27 Cambridge					SRF	4	\$1,647
28 Cambridge	0.03	FALSE	28 Cambridge					SRF	17	\$7,955
29 Cambridge	0.00	FALSE	29 Cambridge					SRF	2	\$864
30 Cambridge	0.08	FALSE	30 Cambridge	\$72,276		\$148	\$33,723	SRF	40	\$18,172
31 Cambridge	0.02	FALSE	31 Cambridge					SRF	8	\$3,517
32 Cambridge	0.08	FALSE	32 Cambridge					SRF	40	\$18,492
33 Cambridge	0.04	FALSE	33 Cambridge					SRF	18	\$8,493
34 Cambridge	0.04	FALSE	34 Cambridge	\$38,925		\$82	\$26,150	SRF	21	\$9,787
35 Cambridge	0.00	FALSE	35 Cambridge					SRF	2	\$721
36 Cambridge	0.01	FALSE	36 Cambridge					SRF	3	\$1,339
37 Cambridge	0.02	FALSE	37 Cambridge		\$10,000	\$1,412	\$84,733	SRF	10	\$4,607
38 Cambridge	0.01	0.03	38 Cambridge					SRF	7	\$3,012
39 Cambridge	0.04	FALSE	39 Cambridge					SRF	21	\$9,571
40 Cambridge	0.03	FALSE	40 Cambridge					SRF	15	\$7,125
41 Cambridge	0.03	FALSE	41 Cambridge					SRF	15	\$7,019
42 Cambridge	0.18	FALSE	42 Cambridge					SRF	91	\$41,848
43 Cambridge	0.05	FALSE	43 Cambridge					SRF	24	\$10,875
45 Cambridge	0.06	FALSE	45 Cambridge					SRF	28	\$12,926
46 Cambridge	0.09	FALSE	46 Cambridge					SRF	43	\$19,783
47 Cambridge	0.18	FALSE	47 Cambridge					SRF	90	\$41,418
48 Cambridge	0.08	FALSE	48 Cambridge					SRF	40	\$18,503
49 Cambridge	0.04	0.10	49 Cambridge					SRF	19	\$8,581
50 Cambridge	0.09	FALSE	50 Cambridge					SRF	47	\$21,797
51 Cambridge	0.02	0.07	51 Cambridge					SRF	12	\$5,355
52 Cambridge	0.05	0.17	52 Cambridge					SRF	25	\$11,412
53 Cambridge	0.02	0.03	53 Cambridge					SRF	9	\$4,070
54 Cambridge	0.12	0.07	54 Cambridge					SRF	60	\$27,673
55 Cambridge	0.81	0.59	55 Cambridge					SRF	403	\$185,468

Cambridge - Subwatershed Prioritization and Recommendations

Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Mapped Impervious Area (MIA)	Sediment Load with Current Reductions (lbs.)	Sediment Load with Priority Action (lbs.)	Phosphorus Load with Current Reductions (lbs.)	Phosphorus Load with Priority Action (lbs.)
56 Cambridge			GS/OF/WP		71.1	5.8	5886	5886	16.35	16.35
57 Cambridge			OF/GS		23.3	2.0	1624	1624	4.51	4.51
58 Cambridge			OF/GS		14.7	4.0	1119	1119	3.11	3.11
59 Cambridge			OF/GS		5.0	3.3	364	364	1.01	1.01
60 Cambridge			OF/GS		16.8	2.5	1190	1190	3.31	3.31
61 Cambridge			OF/GS		3.0	32.4	867	867	2.41	2.41
62 Cambridge	2	Micropool Extended Detention basin below Rte 108 and above upper parking lot.	EDP/CB/GS/OF		17.5	14.1	2274	455	6.32	3.79
63 Cambridge			OF/GS		8.6	5.7	708	708	1.97	1.97
64 Cambridge	1	Repair erosion on NW side of Rte 108. Put stream in short section of pipe to reduce exposure to erosion on E side of Rte 108. Infiltration gallery near Sterling Chairlift.	RR/IG/SD/OF/GS		18.7	5.4	1518	1214	4.22	3.37
65 Cambridge			GS/EDP		2.6	59.4	251	251	2.09	2.09
66 Cambridge			GS/EDP		2.3	64.4	258	258	2.15	2.15
67 Cambridge			GS/OF		1.7	23.3	337	337	0.94	0.94
68 Cambridge	1	Infiltration basin below baselodge rear parking area	IB/OF/GS		796.6	0.2	52905	47614	146.96	132.26
69 Cambridge	1	Infiltration gallery with underdrain in front of base lodge	IG/CB/GS		1.8	41.6	850	425	2.36	1.77
71 Cambridge			OF/GS		0.9	13.3	108	108	0.30	0.30
72 Cambridge			OF/GS		7.5	9.3	748	748	2.08	2.08
73 Cambridge			OF/GS		8.9	8.8	865	865	2.40	2.40
74 Cambridge			OF/GS		2.0	47.1	919	919	2.55	2.55
75 Cambridge			OF/GS		61.6	0.5	4108	4108	11.41	11.41
76 Cambridge	1	Repair erosion on Desjardins Rd	RR/OF/GS		42.4	2.6	3023	2419	8.40	6.72
77 Cambridge	2	Add Bioretention /Raingarden for Rte 108 runoff in front of 4402 Rte 108	BRA/OF/GS/CD/SB		32.0	13.0	1567	1254	6.53	5.22
78 Cambridge	1	Add Extended detention basin north of 47 North Hill Dr	EDP/OF/GS		10.6	11.8	1220	244	3.39	2.03
79 Cambridge			GS/OF		67.6	2.5	4798	4798	13.33	13.33
80 Cambridge			GS/OF		55.0	2.1	3854	3854	10.70	10.70
81 Cambridge			GS/OF		24.2	4.0	1841	1841	5.11	5.11

Cambridge - Subwatershed Prioritization and Recommendations										
Watershed Number	Water Quality Volume (Acre-Feet)	Channel Protection (Acre-Feet)	Watershed Number	Estimated Basin Construction Cost	Estimated Other BMP Construction Cost	Cost of Sediment Removal Per Pound (based on annual sediment load)	Cost of Nitrogen or Phosphorus Removal Per Pound (based on annual nutrient load)	Assistance Program	# LID-Roof Raingardens to Treat Water Quality Volume	Raingarden Cost
56 Cambridge	0.33	0.45	56 Cambridge					SRF	167	\$76,599
57 Cambridge	0.09	0.05	57 Cambridge					SRF	46	\$21,130
58 Cambridge	0.06	FALSE	58 Cambridge					SRF	32	\$14,557
59 Cambridge	0.02	0.02	59 Cambridge					SRF	10	\$4,734
60 Cambridge	0.07	0.05	60 Cambridge					SRF	34	\$15,490
61 Cambridge	0.05	0.11	61 Cambridge					SRF	25	\$11,282
62 Cambridge	0.13	0.27	62 Cambridge	\$39,227		\$22	\$15,527	SRF	64	\$29,589
63 Cambridge	0.04	0.05	63 Cambridge					SRF	20	\$9,219
64 Cambridge	0.09	0.11	64 Cambridge		\$10,000	\$33	\$11,860	SRF	43	\$19,750
65 Cambridge	0.07	0.17	65 Cambridge					SRF	35	\$16,327
66 Cambridge	0.07	0.16	66 Cambridge					SRF	36	\$16,756
67 Cambridge	0.02	0.04	67 Cambridge					SRF	10	\$4,388
68 Cambridge	2.99	0.20	68 Cambridge		\$10,000	\$2	\$680	SRF	1497	\$688,445
69 Cambridge	0.05	0.08	69 Cambridge	\$44,002		\$104	\$74,528	SRF	24	\$11,063
71 Cambridge	0.01	0.01	71 Cambridge					SRF	3	\$1,410
72 Cambridge	0.04	0.08	72 Cambridge					SRF	21	\$9,738
73 Cambridge	0.05	0.09	73 Cambridge					SRF	24	\$11,262
74 Cambridge	0.05	0.11	74 Cambridge					SRF	26	\$11,955
75 Cambridge	0.23	0.03	75 Cambridge					SRF	116	\$53,457
76 Cambridge	0.17	0.12	76 Cambridge		\$5,000	\$8	\$2,977	SRF	86	\$39,343
77 Cambridge	0.22	FALSE	77 Cambridge		\$5,000	\$16	\$3,829	SRF	111	\$50,978
78 Cambridge	0.07	FALSE	78 Cambridge	\$21,056		\$22	\$15,527	SRF	35	\$15,882
79 Cambridge	0.27	FALSE	79 Cambridge					SRF	136	\$62,432
80 Cambridge	0.22	FALSE	80 Cambridge					SRF	109	\$50,149
81 Cambridge	0.10	FALSE	81 Cambridge					SRF	52	\$23,960

Watershed Number	Action List #	Proposed Action	Proposed or Existing Stormwater Treatment Practice	Permit Number	Watershed Area (Acres)	Percent Effective Impervious Area	Projected Sediment Load (lbs)	Current BMP Sediment Reduction Credit	Sediment Load with Current Reductions (lbs)	Priority Action Sediment Reduction Credit	Sediment Load with Priority Action (lbs)	Projected Phosphorus Load (lbs)	Current BMP Phosphorus Reduction Credit	Priority Action Phosphorus Reduction Credit	Phosphorus Load with Priority Action (lbs)
3 Jeffersonville	4		GS/OF		1.6	46.6	1,340	0%	1,340	0%	1,340	3.7	0%	0%	3.7
4 Jeffersonville	1,4	Combine with 2 Jeffersonville in infiltration gallery	IG/CB/GS/OF		21.8	29.8	12,250	0%	12,250	90%	1,225	34.0	0%	90%	3.4
5 Jeffersonville			OF		17.5	3.7	2,590	0%	2,590	0%	2,590	7.2	0%	0%	7.2
6 Jeffersonville			DW		0.4	58.1	381	95%	19	0%	19	1.1	80%	0%	0.2
7 Jeffersonville			CB/OFIG		3.3	55.5	3,188	90%	319	0%	319	8.9	90%	0%	0.9
19 Jeffersonville			OF		30.7	4.6	4,931	0%	4,931	0%	4,931	13.7	0%	0%	13.7

Watershed Number	Water Quality Volume (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 Removal Per Pound (based on annual phosphorus load)	Assistance Program	# LID-Roof Raingardens to equal WQv
3 Jeffersonville	0.06					CWIP,SRF,LCBP	28
4 Jeffersonville	0.52	\$519,000		\$3,044	\$16,955	CWIP,SRF,LCBP	260
5 Jeffersonville	0.11					CWIP,SRF,LCBP	55
6 Jeffersonville	0.02					CWIP,SRF,LCBP	8
7 Jeffersonville	0.14					CWIP,SRF,LCBP	68
19 Jeffersonville	0.21					CWIP,SRF,LCBP	105

Target Maps

*Showing Priority Action List
Drainage Areas*

And Potential Retrofit Locations

Subwatershed: 64, 68 & 69

Action List: 1

Subwatershed: 62

Action List: 2

Repair Erosion on the northwest side of Rte 108.

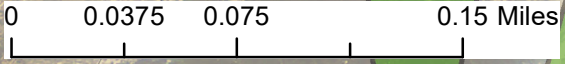
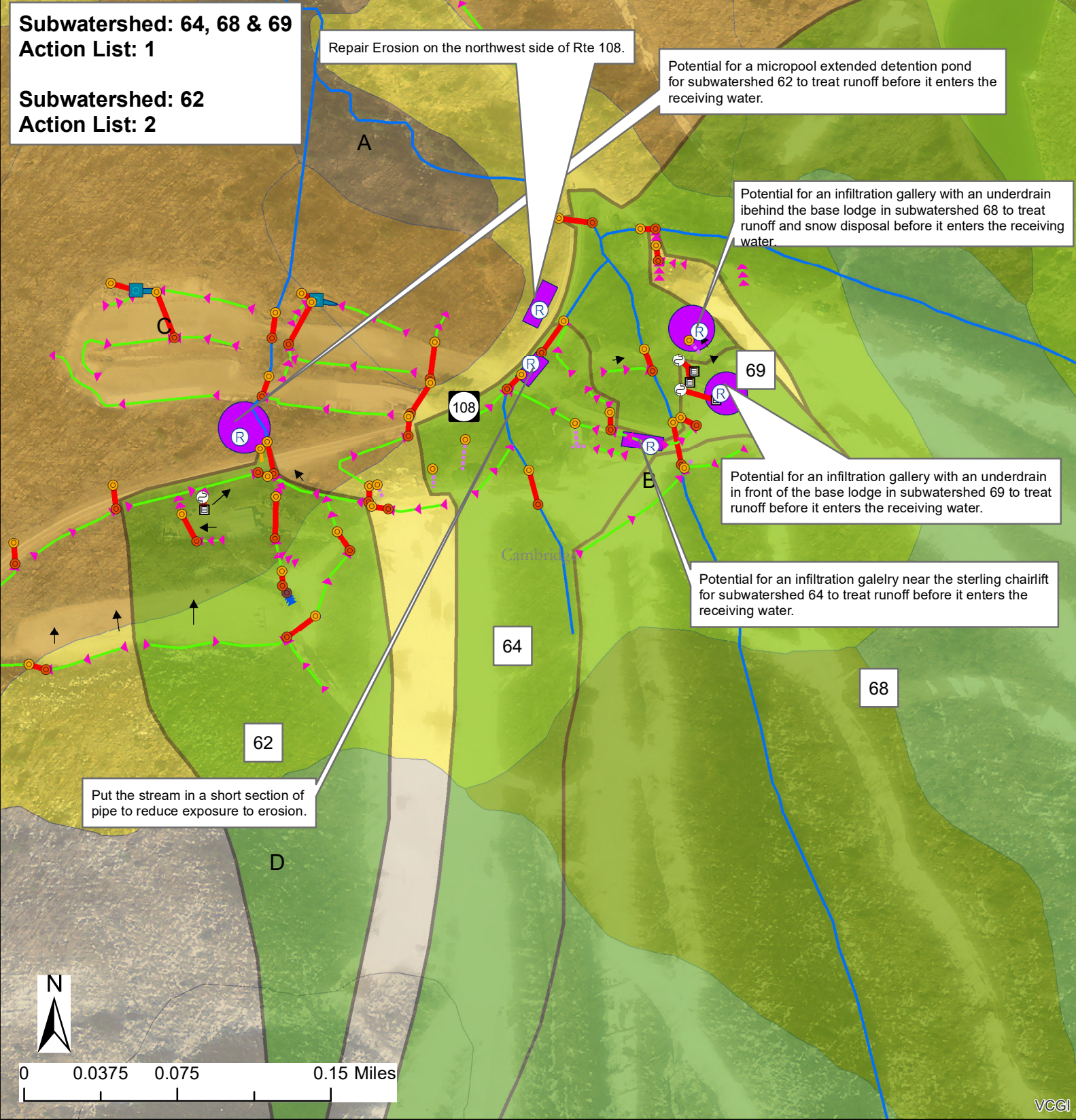
Potential for a micropool extended detention pond for subwatershed 62 to treat runoff before it enters the receiving water.

Potential for an infiltration gallery with an underdrain behind the base lodge in subwatershed 68 to treat runoff and snow disposal before it enters the receiving water.

Potential for an infiltration gallery with an underdrain in front of the base lodge in subwatershed 69 to treat runoff before it enters the receiving water.

Potential for an infiltration gallery near the sterling chairlift for subwatershed 64 to treat runoff before it enters the receiving water.

Put the stream in a short section of pipe to reduce exposure to erosion.

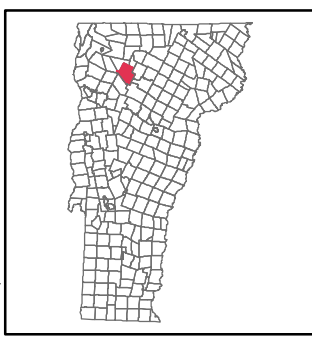


Cambridge, VT

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.

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.



<p>Stormwater points</p> <ul style="list-style-type: none"> 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 Pond outlet structure Treatment feature (see notes) Retrofit Unknown Point Information Point 	<p>Stormwater line</p> <ul style="list-style-type: none"> 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 	<p>NRCS - Soils</p> <ul style="list-style-type: none"> A B C D 	<p>SubwatershedID</p> <ul style="list-style-type: none"> Priority Subwatershed Stormwater Treatment Area Potential Stormwater Treatment Area
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Creator: Jim Pease, David Ainley
 DEC - WSMD - Clean Water Initiative Program
 Plotted Date: 4/10/2018
 Data Sources: VTRANS Roads data, VT Hydrography data set, DEC Stormwater database, NRCS soils survey
 Imagery Source: VCGI Best Available



Subwatershed: 76
Action List: 1

DESJARDINS RD

108

76

Repair erosion on Desjardins Rd.



0 0.0325 0.065 0.13 Miles

Cambridge, 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
- Pond outlet 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

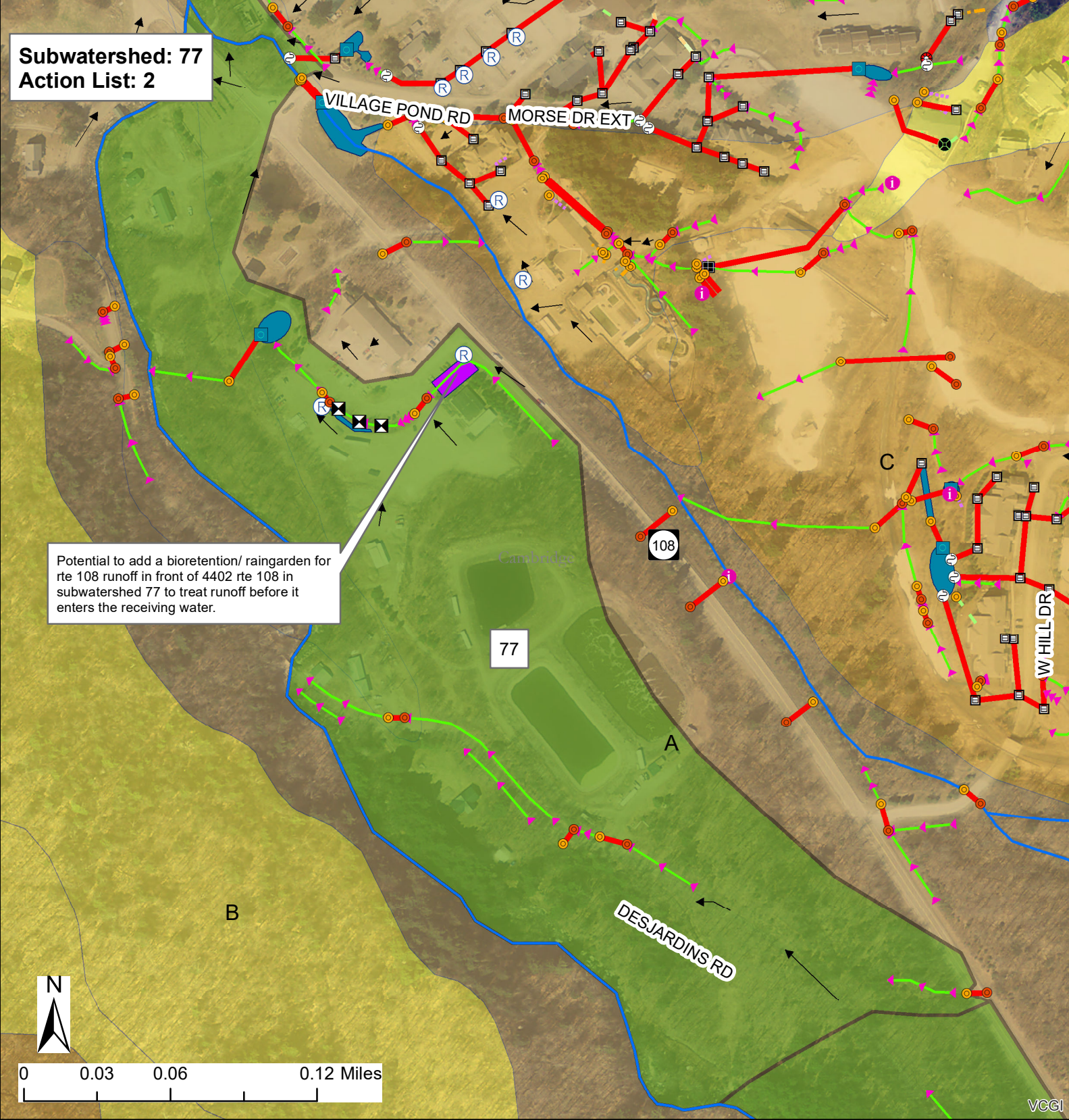
- Priority Subwatershed
- Stormwater Treatment Area
- Potential Stormwater Treatment Area

Creator: Jim Pease, David Ainley
 DEC - WSMD - Clean Water Initiative Program
 Plotted Date: 4/10/2018
 Data Sources: VTRANS Roads data, VT Hydrography data set, DEC Stormwater database, NRCS soils survey
 Imagery Source: VCGI Best Available



Subwatershed: 77
Action List: 2

Potential to add a bioretention/ raingarden for rte 108 runoff in front of 4402 rte 108 in subwatershed 77 to treat runoff before it enters the receiving water.

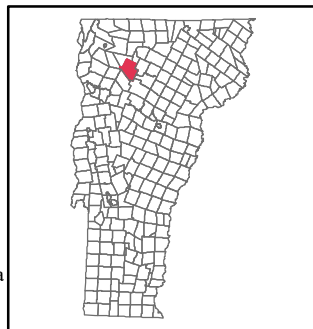


Cambridge, VT

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.

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.



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
- Pond outlet 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

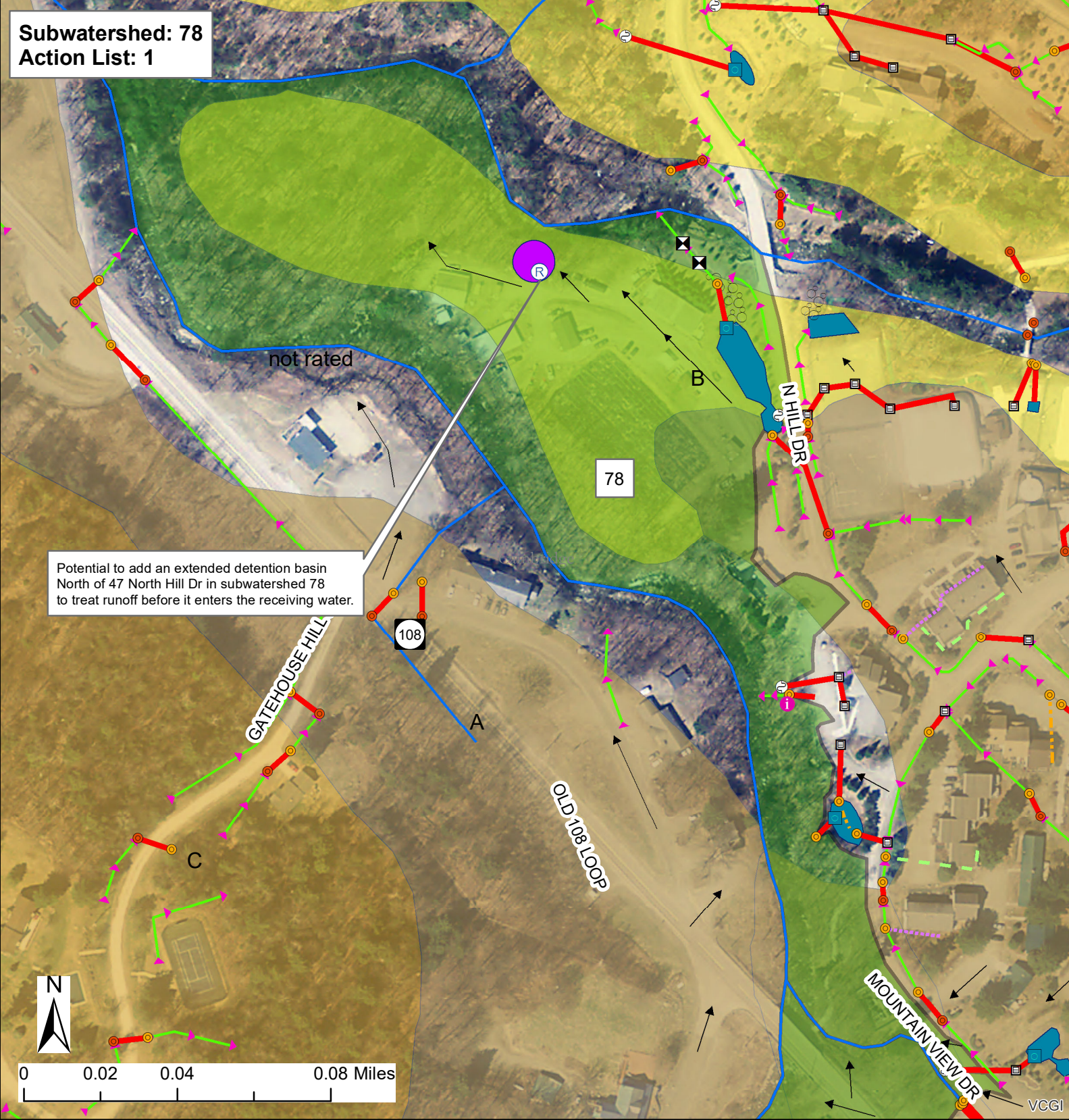
- A
- B
- C
- D

SubwatershedID

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

Creator: Jim Pease, David Ainley
 DEC - WSMD - Clean Water Initiative Program
 Plotted Date: 4/10/2018
 Data Sources: VTRANS Roads data, VT Hydrography data set, DEC Stormwater database, NRCS soils survey
 Imagery Source: VCGI Best Available

Subwatershed: 78
Action List: 1



Potential to add an extended detention basin North of 47 North Hill Dr in subwatershed 78 to treat runoff before it enters the receiving water.

Cambridge, 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.

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.



<p>Stormwater points</p> <ul style="list-style-type: none"> 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 Pond outlet structure Treatment feature (see notes) Retrofit Unknown Point Information Point 	<p>Stormwater line</p> <ul style="list-style-type: none"> 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 	<p>NRCS - Soils</p> <ul style="list-style-type: none"> A B C D 	<p>SubwatershedID</p> <ul style="list-style-type: none"> Priority Subwatershed Stormwater Treatment Area Potential Stormwater Treatment Area
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Creator: Jim Pease, David Ainley
 DEC - WSMD - Clean Water Initiative Program
 Plotted Date: 4/10/2018
 Data Sources: VTRANS Roads data, VT Hydrography data set, DEC Stormwater database, NRCS soils survey
 Imagery Source: VCGI Best Available

Subwatersheds

2 Jeffersonville

3 Jeffersonville

5 Jeffersonville

6 Jeffersonville

4 Jeffersonville

7 Jeffersonville

19 Jeffersonville

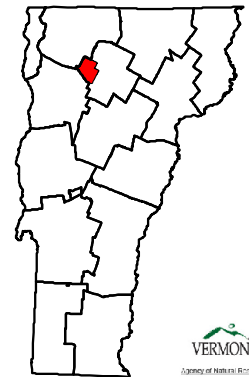
Text

Jeffersonville

Action List 1
Subwatershed: 4

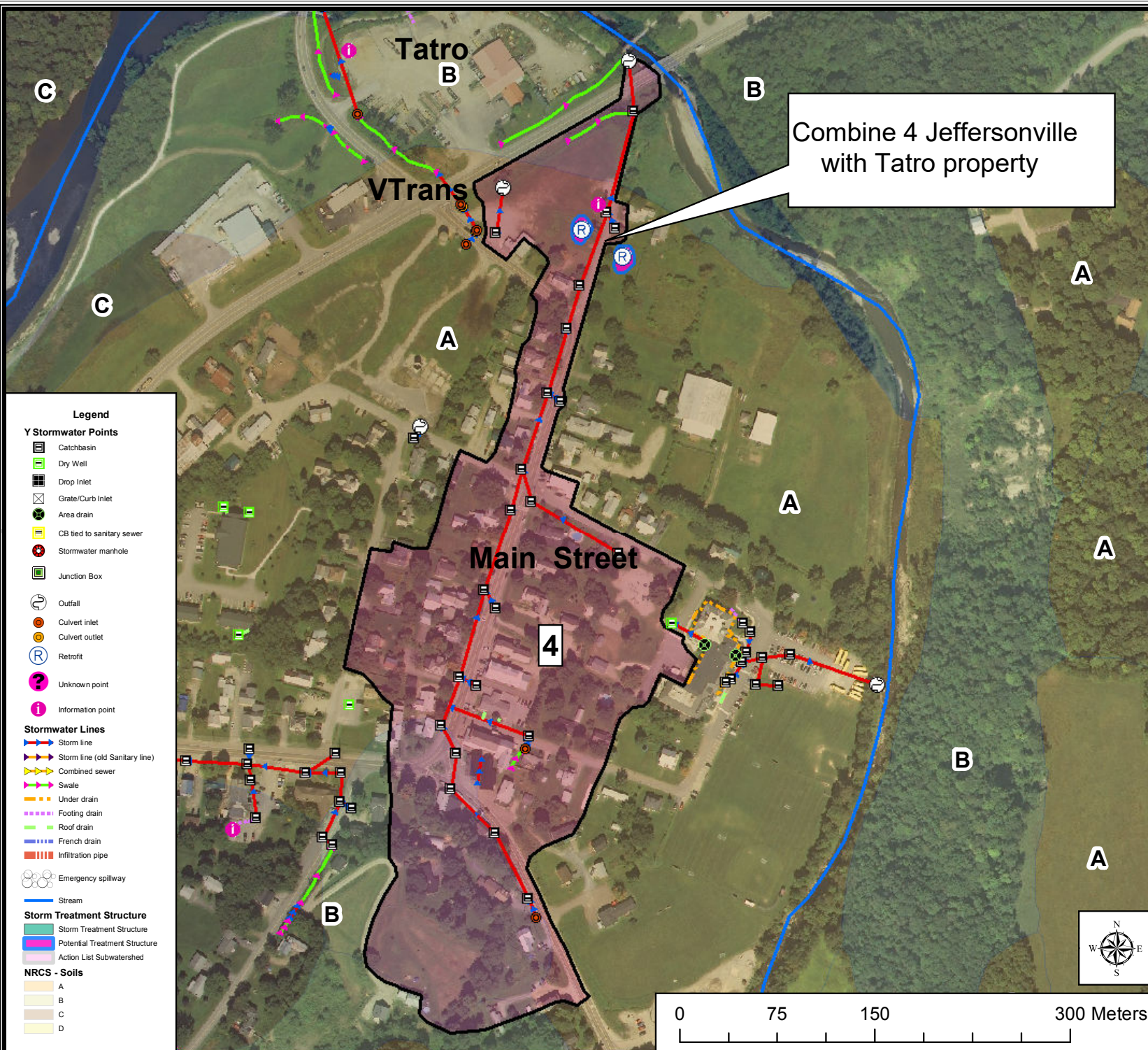
This map shows high priority subwatersheds which are ranked by connectedness, percent of impervious cover, field observations, and potential retrofit measures and locations.

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.



VTANR - DEC
 Creator: Jim Pease, Collin Smythe
 Date: 1/31/2012
 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: Canadian Border Orthos (2008)

Combine 4 Jeffersonville with Tatro property



Legend

Y Stormwater Points

- Catchbasin
- Dry Well
- Drop Inlet
- Grate/Curb Inlet
- Area drain
- CB tied to sanitary sewer
- Stormwater manhole
- Junction Box
- Outfall
- Culvert inlet
- Culvert outlet
- Retrofit
- Unknown point
- Information point

Stormwater Lines

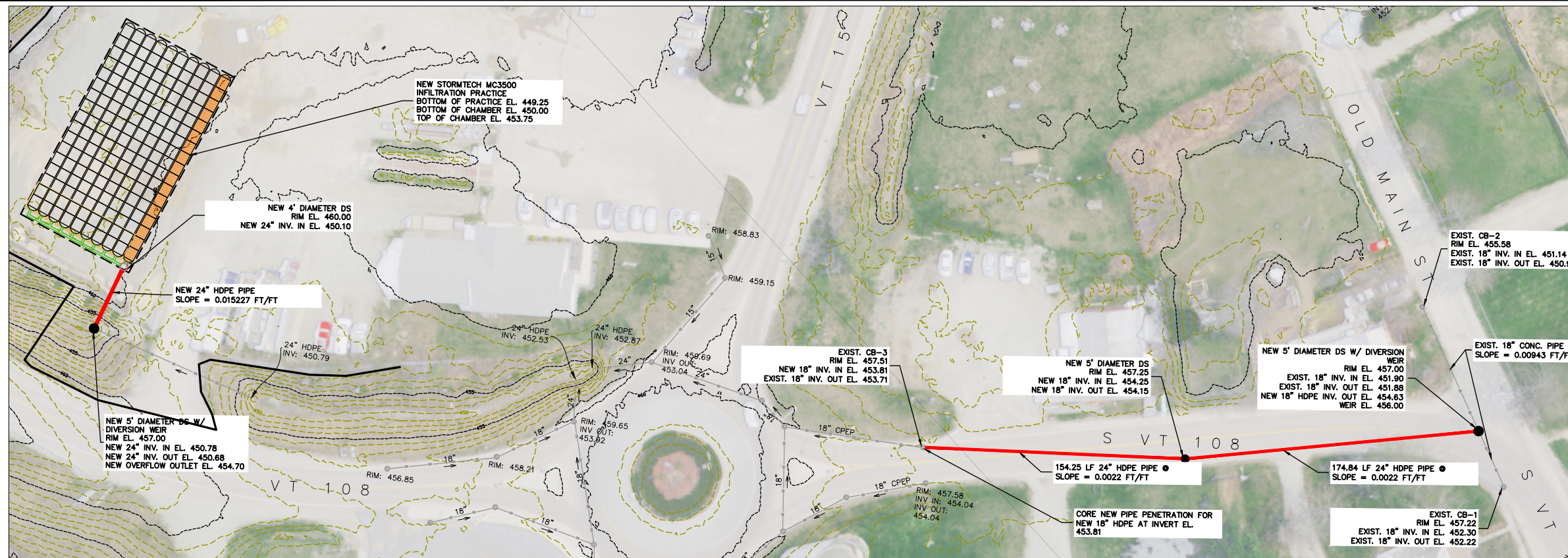
- Storm line
- Storm line (old Sanitary line)
- Combined sewer
- Swale
- Under drain
- Footing drain
- Roof drain
- French drain
- Infiltration pipe
- Emergency spillway
- Stream

Storm Treatment Structure

- Storm Treatment Structure
- Potential Treatment Structure
- Action List Subwatershed

NRCS - Soils

- A
- B
- C
- D



LEGEND:

EXISTING

SYMBOL DESCRIPTION

—SD—SD— STORM DRAIN LINE

⊙ DRAINAGE STRUCTURE/CATCH BASIN

- - - - - EXISTING GRADE CONTOUR

PROPOSED

● DRAINAGE STRUCTURE (DS)

— — — — — STORM DRAIN PIPE

APPROXIMATE MAP NORTH

SCALE: 1" = 75'

0 37.5 75 150

HOYLE, TANNER PROJECT NO.	129200	FILE NAME	29200-FIG1-TATRO
DESIGNED BY	KDW	CHECKED BY	KDW
DRAWN BY	MMI	DATE	APRIL 2021
AS SHOWN	AS SHOWN	DATE	APRIL 2021

SITE PLAN

SCALE: 1" = 75'

Overall Total Area Managed (acres)	Overall Impervious Area Managed (acres)	3-Acre Site Total Impervious Area (acres)	3-Acre Site Impervious Area Managed (acres)	*Phosphorus Load (kg/yr)	*Project Phosphorus Removal Efficiency (%)	*Project Phosphorus Reduction (kg/yr)
27.04	13.39	4.04	2.03	18.35	80%	14.64

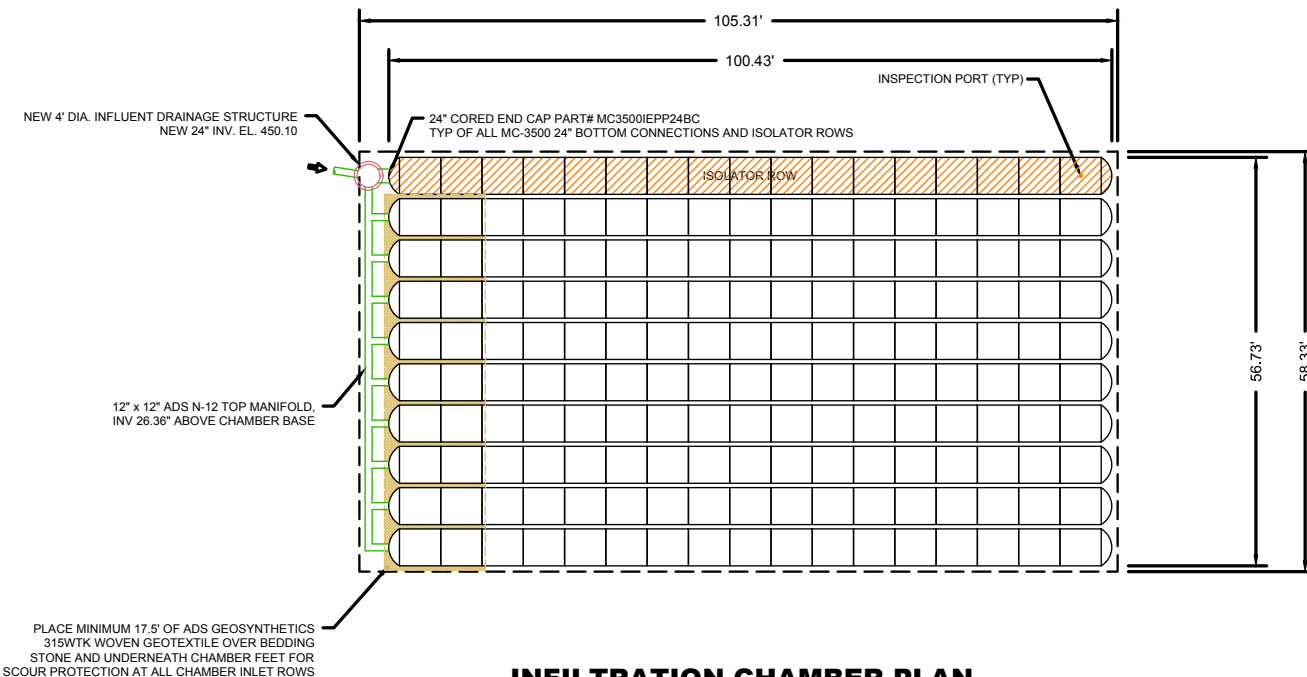
*This conceptual design features Infiltration Chambers installed at G.W. Tatro Construction, Inc. to treat stormwater runoff from the VT Route 15 traffic circle, Old Main, Depot, School, Maple, and Mill Streets, Carlton Avenue, Williamson Court, and the G.W. Tatro site. G.W. Tatro is a "3-acre site" and is required to obtain permit coverage under General Permit 3-9050.

*The project treats runoff from the 1" storm event from 50% of G.W. Tatro's impervious surface and meets the redevelopment standard for the site under 3-9050.

*The design includes a diversion structure along Main Street to divert runoff from the 0.5" storm event to the infiltration chambers while allowing runoff from larger storm events to pass through and discharge to the Lamoille River.

*A total implemented cost estimate of \$519,000 was developed by Hoyle, Tanner & Associates, Inc.

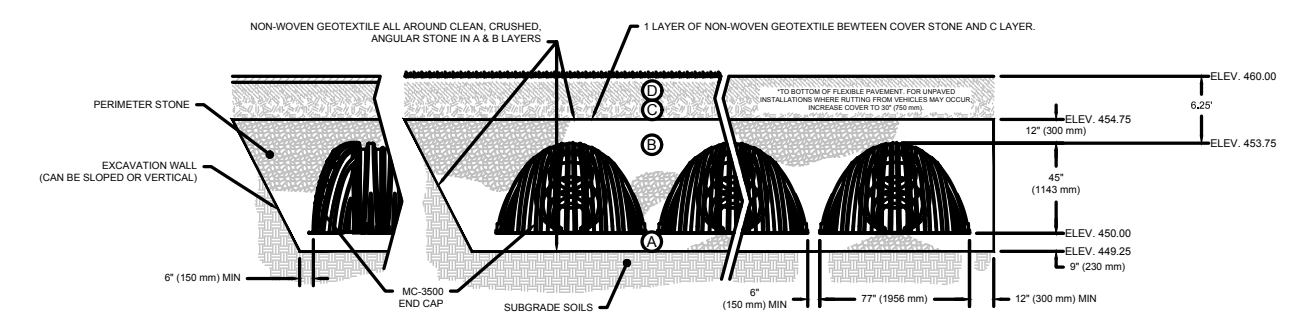
*from the Agency of Natural Resources Stormwater Treatment Practice Calculator



INFILTRATION CHAMBER PLAN

FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.



INFILTRATION CHAMBER - SECTION

STATE OF VERMONT
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Hoyle, Tanner & Associates, Inc.
125 College Street-4th Floor, Burlington, VT 05401
Tel (802) 860-1331 Fax (802) 860-6499 Web: www.hoyletanner.com

DESIGNED BY: KDW
DATE: APRIL 2021
SCALE: AS SHOWN

G.W. TATRO
INFILTRATION SITE PLAN

FIGURE NO.
1

SHEET 1 OF 1