

Westford Stream Monitoring 2017 Results



Westford Stream Team:

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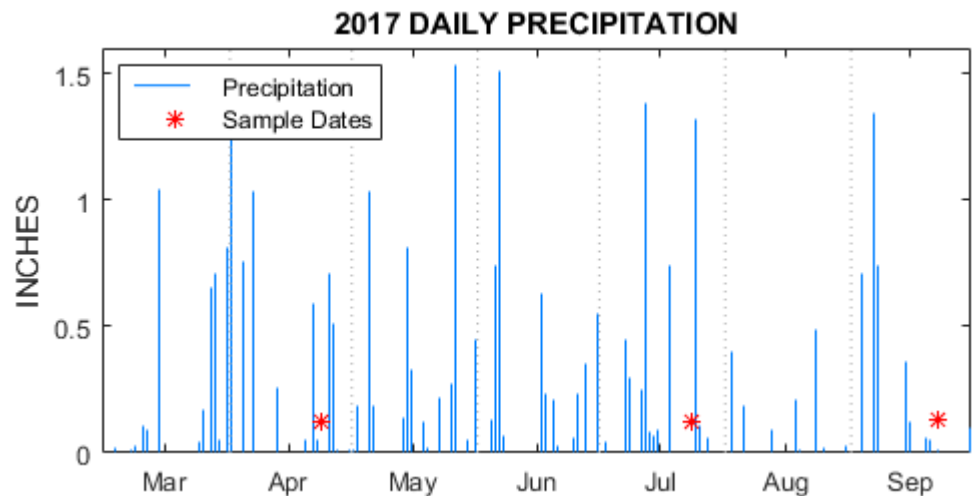
Don Galya

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Summary

- Regular stream monitoring
 - 4/23/17, 7/23/17, 9/22/17
 - No collection in November
 - End of drought!!
 - Streams with high nitrates or conductivity similar to past years
 - More streams with low pH, low oxygen
- Special study
 - 4/23/17
 - Reed Brook



Sampling Overview

- Sampled 12 streams, 14 sites
 - Stony Brook watershed (8)
 - Nashoba Brook watershed (6)
- River observation forms
- YSI meters for dissolved oxygen, temperature, pH, conductivity
- Bottle samples analyzed by Nashoba Analytical Laboratory for nitrates, ortho-phosphorous, total phosphorous (P)
- Coordinated with OARS
- Weather data provided by Larry Mack

Sampling Sites

Total: 14 sites

Stony watershed: 8

Nashoba watershed: 6

Key to Site IDs

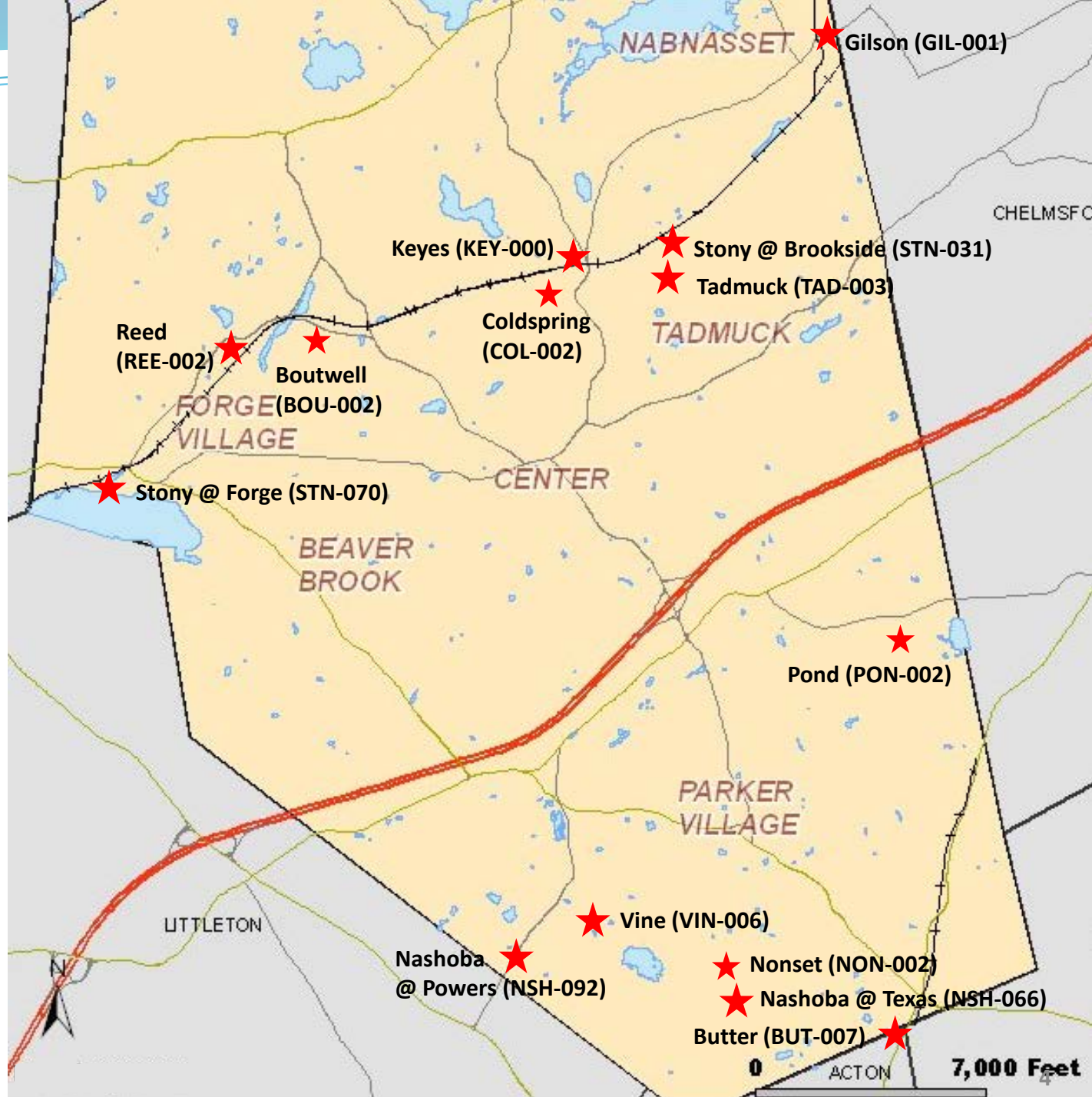
Brook (Reed)



REE-002



Distance (0.2 mile) to
the river it flows into
(Reed flows into
Stony Brook)



2017 Results

4/23/2017	NSH-092	VIN-006	NON-002	NSH-066	BUT-007	PON-002	STN-070	REE-002	KEY-000	TAD-003	STN-031	GIL-001	BOU-002	COL-002
Temperature (C)	7.1	7.3	6.4	7.5	6.9	7.6	11.8	6.3	9.4	6.8	9.4	10.0	6.8	7.3
Sp. Conductance (uS/cm)	1047	888	327	734	405	1219	605	327	241	919	549	400	545	568
Dissolved Oxygen (mg/L)	9.68	10.00	8.62	9.26	10.47	7.87	10.08	10.23	8.24	11.19	10.17	9.36	8.97	11.12
pH	6.56	6.51	6.24	6.48	6.14	6.36	6.57	6.45	6.46	6.68	7.02	7.07	5.96	6.69
Nitrate (mg/L)	0.22	0.07	0.38	0.16	0.52	0.45	0.14	0.86	ND	0.26	0.22	0.55	0.12	1.50
Ortho P (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total P (mg/L)	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	ND	ND	ND

7/23/2017	NSH-092	VIN-006	NON-002	NSH-066	BUT-007	PON-002	STN-070	REE-002	KEY-000	TAD-003	STN-031	GIL-001	BOU-002	COL-002
Temperature (C)	19.3	20.1	19.1	20.5	19.2	21.0	26.2	14.5	22.4	20.6	23.3	21.9	21.0	18.3
Sp. Conductance (uS/cm)	1330	1132	254	910	400	1344	576	462	266	864	552	444	485	615
Dissolved Oxygen (mg/L)	6.52	7.13	3.37	4.28	4.36	2.35	6.73	6.36	4.66	7.32	6.86	5.23	1.66	8.46
pH	6.73	6.76	6.17	6.58	6.18	6.39	6.93	5.79	6.30	6.85	7.06	6.76	6.28	6.88
Nitrate (mg/L)	0.15	0.14	0.26	0.16	0.23	0.10	ND	0.82	ND	0.06	0.12	0.35	ND	1.80
Ortho P (mg/L)	ND	0.05	ND	0.02	0.02	0.02	ND	ND	ND	0.03	ND	ND	ND	ND
Total P (mg/L)	0.04	0.11	0.03	0.05	0.06	0.05	0.01	0.02	0.02	0.07	0.02	0.04	0.12	0.02

9/22/2017	NSH-092	VIN-006	NON-002	NSH-066	BUT-007	PON-002	STN-070	REE-002	KEY-000	TAD-003	STN-031	GIL-001	BOU-002	COL-002
Temperature (C)	16.3	16.7	16.5	17.2	16.1	18.0	20.3	13.9	17.6	17.1	17.5	18.0	17.5	16.1
Sp. Conductance (uS/cm)	1488	1079	146	1055	3	1525	573	526	339.4	925	532	476	470	588
Dissolved Oxygen (mg/L)	7.75	8.22	4.89	5.32	3.28	3.73	7.74	6.14	6.33	8.43	7.91	7.23	3.07	8.54
pH	6.99	7.19	6.57	6.74	6.44	6.65	7.52	6.16	6.77	7.16	7.30	7.06	6.52	7.17
Nitrate (mg/L)	0.11	ND	0.34	0.28	0.23	0.15	ND	1.00	0.10	0.06	0.23	0.53	ND	1.90
Ortho P (mg/L)	ND	0.04	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	0.02	ND
Total P (mg/L)	ND	0.09	ND	0.03	ND	0.02	0.02	0.02	ND	0.03	ND	0.02	0.07	0.01

Red highlight indicates

pH: below MA Class B standard (6.5)

DO: below MA fishery standard (5 mg/L)

Nitrate: > EPA 50th percentile (0.43 mg/L)

Total P: > EPA 50th percentile (0.05 mg/L)

Blue highlight indicates very

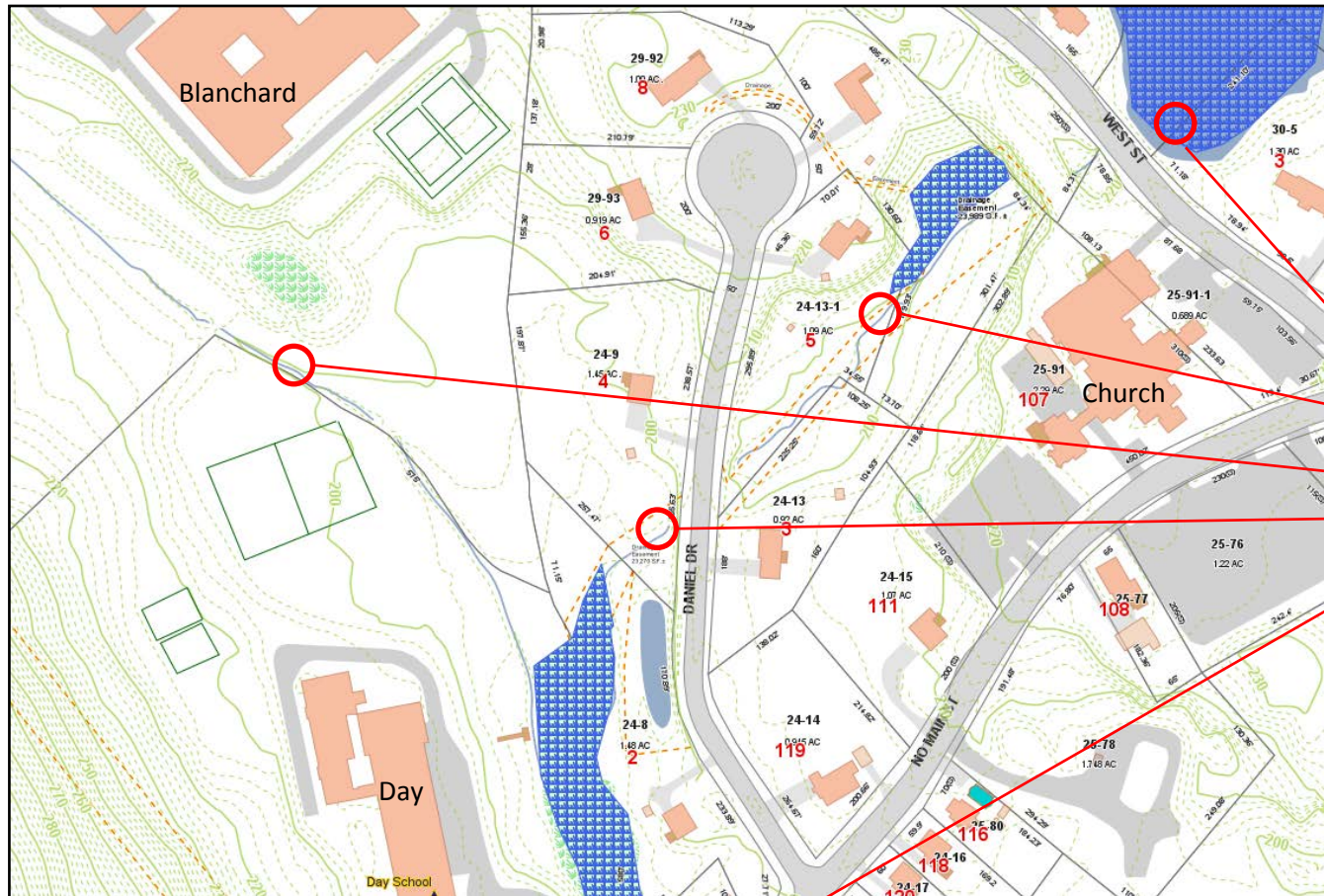
high conductance

Source is unknown (natural or pollution?)

Recommendations for 2018:

- Meter sampling at upstream sites for pH and conductance
- N, P in Vine Brook: repeat 2013 (new: Cornerstone Square, possible 40B on Powers Rd)
- N in Reed, Coldspring under varying conditions

Special Study: Reed Brook



		Nitrate	Total P
REE-WEST	06/12/16	ND	0.03
REE-CRCH	06/12/16	0.16	0.02
REE-BRG	06/12/16	0.54	0.06
REE-DAN	06/12/16	0.51	ND
REE-002	06/12/16	1.1	0.02
REE-WEST	4/23/17	0.06	ND
REE-CRCH	4/23/17	0.07	ND
REE-BRG	4/23/17	0.36	ND
REE-DAN	4/23/17	1.60	ND
REE-002	4/23/17	0.86	0.01

Recommendation for 2018:

- Re-align Daniel Drive sites for finer granularity based on USGS stream analysis tool
- Re-sample in June/July

The Team



Diane Duane



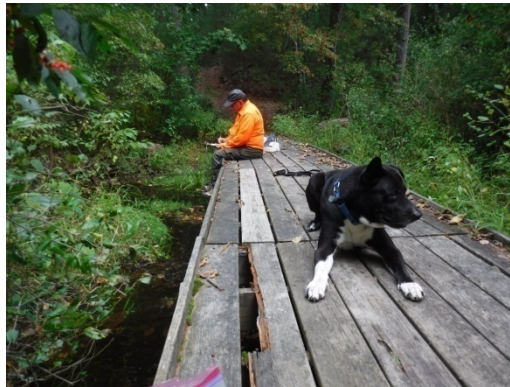
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