



Southeastern Vermont Watershed Alliance

2017 WQMP End of Year Report

LaRosa Program 137-09

Prepared by Ryan O'Donnell
7-17-2018

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Introduction

Southeastern Vermont Watershed Alliance’s (SeVWA) water quality monitoring program (WQMP) was made possible in 2017 by the LaRosa Partnership Program, dedicated teams of local volunteers, and E. coli analysis services provided by the laboratory at the Connecticut River Conservancy (CRC, formerly Connecticut River Watershed Council) in Greenfield, MA. SeVWA’s membership contributions and dues, funds contributed by some towns in southeast Vermont, and funds provided by a few businesses and organizations helped to support this program. The 2017 monitoring season was organized and run by SeVWA’s WQMP Coordinator, Ryan O’Donnell, the WQMP Committee and Local Stream Teams. They were assisted by VT ANR intern Gabriel Chevalier.

In 2017, 40 volunteers monitored 34 sites that were sampled every two weeks on Wednesday mornings. All sites were scheduled to be sampled six times for E. coli, total nitrogen, total phosphorous, turbidity, and specific conductivity. Gabriel Chevalier assisted with processing the E. coli samples at the CRC lab. SeVWA also received an additional support grant from the LaRosa Partnership that funded additional E. coli sampling and continuous temperature monitoring on the Whetstone Brook. The report for that project which includes a 5 year summary of Whetstone Brook monitoring data is available on our website or upon request.

In 2010, Laurie Callahan was successful at procuring an incubator to be utilized by the CRC lab through the EPA Region 1 Equipment Loan grant program. This incubator, in addition to CRC’s two incubators, ensures that CRC will have adequate capacity for incubating SeVWA’s samples along with any other samples CRC processes.

Table 1 - 2017 Site Roster

Site ID	Site Name	City/Village	Latitude	Longitude
West_38.5A	West River, 1/2 way between Londonderry & South Londonderry, Rte 100 just below Rte100 bridge	Londonderry	43.21038	72.82441
West_36	West River, Rowes Rd.	South Londonderry	43.185	-72.8026
West_13	West River, Brookline bridge, Hill Rd.	Brookline	42.9959	-72.6371
West_6.4	West River, Dummerston covered bridge swimming hole	Dummerston	42.9368	-72.6132
West_1.42	West River, Swimming hole behind Brattleboro Professional Center	Brattleboro	42.87967	-72.5738
West_08	West River, Milk House Meadows	Brattleboro	42.8694	-72.5605
Flood_1.7	Flood Brook, End of Brophy Lane NEW IN 2017	Londonderry	43.22878	-72.84237
NBranchBrk_4.5	North Branch Ball Mountain Brook, Pikes Falls swimming hole	Jamaica	43.0976	-72.8515
Rock_38	Rock River, Indian Love Call swimming hole, just above West R. confluence & Rte30 bridge	Newfane	42.94678	-72.6467
Whetstone_3.7	Whetstone Brook, Vermont Land Trust Farm parcel	Brattleboro	42.85753	-72.6013
Whetstone_3.3	Whetstone Brook, Glen St below Dettman Dr	Brattleboro	42.85566	-72.59855
Whetstone_2.4	Whetstone Brook, Brattleboro Farmers Market, Western Ave.	Brattleboro	42.84894	-72.5871
Whetstone_1.3	Whetstone Brook, off of Williams St	Brattleboro	42.84906	-72.57343
Whetstone_3	Whetstone Brook, behind Youth Theater	Brattleboro	42.8491	-72.5608
Whetstone_2	Whetstone Brook, Behind the former Brattleboro Coop	Brattleboro	42.8507	-72.5594
Eputney_0.4	East Putney Brook, River Rd S culvert swimming hole NEW IN 2017	Putney	42.98583	-72.46855
Sacketts_2.5	Sacketts Brook, Portal Bridge swim hole NEW IN 2017	Putney	42.98614	-72.52489
Sacketts_1.5	Sacketts Brook, above Main St dam NEW IN 2017	Putney	42.97551	-72.52154
Sacketts_1.2	Sacketts Brook, below Paper Mill NEW IN 2017	Putney	42.97584	-72.51886
Sacketts_1.0	Sacketts Brook, End of Mill St	Putney	42.97512	-72.5178
Williams_14.2	Williams River, Church St. (Above confl w Mid Br.)	Chester	43.2758	-72.5994
MBrWilliams_2.1	Middle Branch Williams River, Blue Hill Rd. crossing	Chester	43.26666	-72.6166
MbrWilliams_1.2	Middle Branch Williams, School St Walking Bridge NEW IN 2017	Chester	43.26275	-72.59933
MBrWilliams_02	Middle Branch Williams River, Just above Williams R. confluence	Chester	43.2599	-72.5798
Williams_10.7	Williams River, Rainbow Rock swimming hole	Chester	43.25903	-72.5785
Williams_10.3	Williams River, Below Chester WWTF	Chester	43.25537	-72.5741
Williams_8.6	Williams River, At railroad bridge below Missing Link Rd. & just below Halls Brook	Chester	43.24018	-72.5561
Williams_7.0	Williams River, Bartonsville bridge	Rockingham	43.224	-72.5369
Saxtons_5.6	Saxtons River, Stickney's field swimming hole	Saxtons River	43.13507	-72.5147
Saxtons_5.15	Saxtons River, Just above Saxtons River village WWTF	Saxtons River	43.13661	-72.5064
Saxtons_4.7	Saxtons River, Off of Oak St, Below Main St Bridge	Westminster	43.14059	-72.50097
Saxtons_3.6	Saxtons River, above Barber Park Rd Bridge NEW IN 2017	Westminster	43.1316	-72.4811
Saxtons_1.0	Saxtons River, Below Twin Falls	Westminster	43.11847	-72.451
Saxtons_19	Saxtons River, "Sandy beach", just south of Bellows Falls & just above Rte 5 bridge	Westminster	43.123	-72.4424

Figure 1 - Map of 2017 Sites

SeVWA 2017 Water Quality Monitoring



Quality Assurance & Determinations

Table 2 - Data Completeness

Parameter	Analyzed By	# Anticipated Samples (including QC)	# Valid Samples Collected & Analyzed (including QC)	% Complete
E. Coli	CRC	252	198	79%
Total Nitrogen	VAEL	242	232	96%
Total Phosphorous		242	232	96%
Turbidity		242	231	95%
Specific Conductivity	SeVWA	242	229	95%

Table 3 - Quality Control Completeness

	Parameter				
	E. Coli	TN	TP	Turb	Cond
Total Number of Samples	197	232	232	231	229
Total Number of Field Duplicates	15	18	18	18	17
% of Field Dups (Goal is ≥ 10%)	7%	8%	8%	8%	7%
Total Number of Field Blanks	15	17	17	17	17
% of Field Blanks (Goal is ≥ 10%)	7%	7%	7%	7%	7%

Table 4 - Relative Percent Difference (RPD)

Site ID	QC ID	Date	CRC	VAEL			SeVWA
			E. coli	TN	TP	Turb	Spec. Cond.
Williams_14.2	QCA1	6/21/2017	34%	0%	10%	4%	2%
Saxtons_5.6	QCA2	6/21/2017	5%	0%	44%	14%	1%
Whetstone_2.4	QCA3	6/21/2017	17%	6%	2%	N/A	1%
West_36	QCA4	7/5/2017	0%	12%	4%	26%	0%
Whetstone_2	QCA5	7/5/2017	33%	0%	4%	63%	1%
MBrWilliams_2.1	QCA6	7/5/2017	60%	0%	1%	53%	0%
Whetstone_2.4	QCA7	7/19/2017	29%	13%	9%	3%	0%
Saxtons_1.0	QCA8	7/19/2017	9%	17%	3%	18%	0%
EPutney_.04	QCA9	7/19/2017	5%	0%	9%	11%	1%
MBrWilliams_.02	QCA10	8/2/2017	11%	5%	10%	17%	1%
Saxtons_5.15	QCA11	8/2/2017	27%	0%	12%	0%	1%
Sacketts_1.5	QCA12	8/2/2017	N/A	15%	20%	2%	N/A
Williams_10.3	QCA13	8/16/2017	3%	3%	5%	13%	3%
Williams_7.0	QCA14	8/16/2017	0%	0%	9%	2%	2%
Saxtons_3.6	QCA15	8/16/2017	11%	4%	12%	17%	0%
West_6.4	QCA16	8/30/2017	1%	17%	20%	38%	5%
Whetstone_1.3	QCA17	8/30/2017	13%	3%	2%	54%	2%
Sacketts_1.2	QCA18	8/30/2017	11%	41%	26%	2%	1%
Mean RPD			13%	7%	11%	20%	1%
RPD Goal			≤50%	≤20%	≤30%	≤15%	ND
			≤125 %			≤50%	
			(< 25 mpn)			(< 2 NTU)	

$$\text{RPD formula used: } RPD_{\text{field duplicate pair}} = \frac{|sample_1 - sample_2|}{\text{Average}(sample_1, sample_2)}$$

In 2017, SeVWA collected samples to test for *E. coli*, total nitrogen (TN), total phosphorous (TP), turbidity, and specific conductivity; volunteers also recorded air and water temperature measurements at each site using an alcohol thermometer while collecting their samples. *E. coli* samples were analyzed by the CRC lab in Greenfield, MA; TN, TP, and turbidity samples were analyzed by the Vermont Environmental and Agricultural Laboratory (VAEL); and conductivity samples were analyzed by SeVWA using a meter.

Field Duplicates: Most field duplicates were within acceptable RPD goals except for 3 sets of duplicates (see Table 4 - Relative Percent Difference (RPD)). No results were rejected due to exceeding the RPD goal. One full suite of *E. coli* results was rejected due to a lab accident that resulted in low quality data. One set of samples was rejected due to the volunteer sampling from a different location when their site was dewatered due to dam dredging. See the discussion of QA anomalies below for more information. All RPD means for the 2017 season were within acceptable ranges.

Field Blanks: Most field blanks were at or below the detection limit for all parameters. Later in the season, some blanks tested slightly above the detection limit for some tests. It is believed the deionized (DI) water used for blanks became contaminated as we had to split 2 L bottles into unsterile 1 L bottles for volunteers. We will sterilize any bottles that DI water needs to be distributed into in future seasons.

***E. coli*:** All *E. coli* samples were delivered to the CRC lab within the 6 hours of sample collection and were set up for testing within the allotted 8-hour time frame. Although not all samples were below 4°C upon delivery, all samples showed evidence of cooling during transport. The CRC lab met all other QA criteria for *E. coli* testing. One suite of *E. coli* samples was rejected due to a lab accident resulting in low quality data. All *E. coli* field duplicates were below the RPD goal of 50% for samples ≥ 25 MPN or 125% for < 25 MPN. See the discussion of QA anomalies below for more information.

Total Nitrogen: One TN result was rejected. See the discussion of QA anomalies below for more information.

Total Phosphorous: One TP result was rejected. See QA anomaly discussion below for more information.

Turbidity: In January 2015, e-mail discussions between SeVWA and Jim Kellogg resulted in SeVWA deciding to accept turbidity RPD values of up to 50% for initial values below 2 NTU in addition to the accepted RPD goal of up to 15%. After still inconsistent RPD results for several years, SeVWA did its own turbidity analysis in 2015 with more success with consistent duplicate results. In 2016 and 2017, SeVWA decided to send its turbidity samples to VAEL. All turbidity field duplicates met the newer RPD goals except for 3 which were accepted due to approaching the detection limit of the test. See QA anomaly discussion below for more information.

Specific Conductivity: SeVWA continued conductivity analysis in 2017. Conductivity results were recorded on a log sheet for each analysis run and those log sheets are retained with field data sheets from the same sampling day. Several bottles used for conductivity analysis broke over the season. No conductivity results were rejected. SeVWA does not have information regarding RPD criteria for conductivity but all RPDs were $\leq 5\%$.

Temperature: All thermometers used for air and water temperatures were calibrated with a NIST thermometer at the CRC laboratory before the 2017 monitoring season began.

Sampling sites' data completeness was at 95-96% for all parameters except for *E. coli* which was at 78% (see Table 2 - Data Completeness). The low completeness for *E. coli* is due to the rejection of a full day's worth of samples and fewer extra *E. coli* samples collected than anticipated as part of the Whetstone Brook project.

All parameters failed to meet the QC goal of 10% for field duplicates (see Table 3 - Quality Control Completeness). The field duplicate schedule was developed rounding down to 3 per sampling event at the request of the LaRosa program; the highest possible QC percentage using this schedule is 8%; all parameters were at 7% or 8%.

All parameters failed to meet the QC goal of 10% for field blanks (see Table 3 - Quality Control Completeness). The field blank schedule was developed rounding down to 3 per sampling event at the request of the LaRosa program; the highest possible QC percentage using this schedule is 8%; all parameters were at 7% or 8%.

QA Anomalies not resulting in data rejection:

- 7/5/17, Whetstone_.2 & QCA5, Turbidity – RPD exceeds goal of 50%, results approaching the detection limit
- 7/5/17, MBrWilliams_2.1 & QCA6, Turbidity – RPD exceeds goal of 50%, results approaching the detection limit
- 8/30/17, Sacketts_1.2 & Sacketts_1.0, all parameters – dam dredging upstream caused anomalous results
- 8/30/17, Whetstone_1.3 & QCA17, Turbidity – RPD exceeds goal of 50%, results approaching the detection limit

QA Anomalies resulting in data rejection:

- 7/5/17, All sites, *E. coli* – Lab accident resulting in low quality data and all results rejected
- 8/30/17, Sacketts_1.5, All parameters – Dam dredging dewatered site; volunteer collected from nearby tributary; results rejected

Preliminary Synopsis of Results

This overview is intended as a preliminary synopsis of results generated by the project. Full results can be found in the Appendix of this report.

West River Watershed

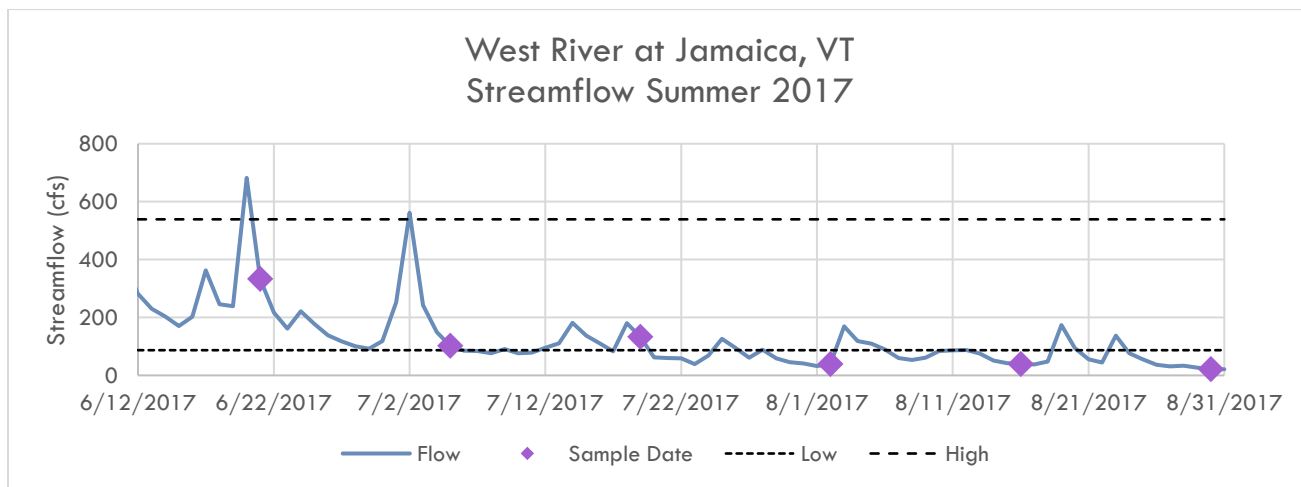
SeVWA monitored six sites on the West River and one site each on three tributaries to the West River: the Flood Brook, the North Branch Ball Mountain Brook, and the Rock River. All sites are classified as cold water Class B. Pikes Falls on the North Branch Brook is classified as an Outstanding Water Resource. Sites were tested for *E. coli*, total nitrogen, total phosphorus, turbidity, and specific conductivity.

TABLE 5- WEST RIVER WATERSHED FLOW OBSERVATIONS

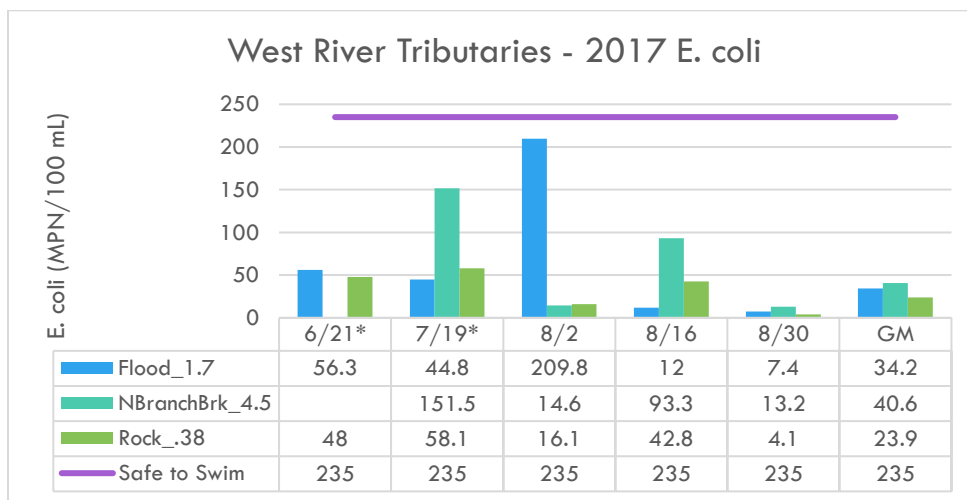
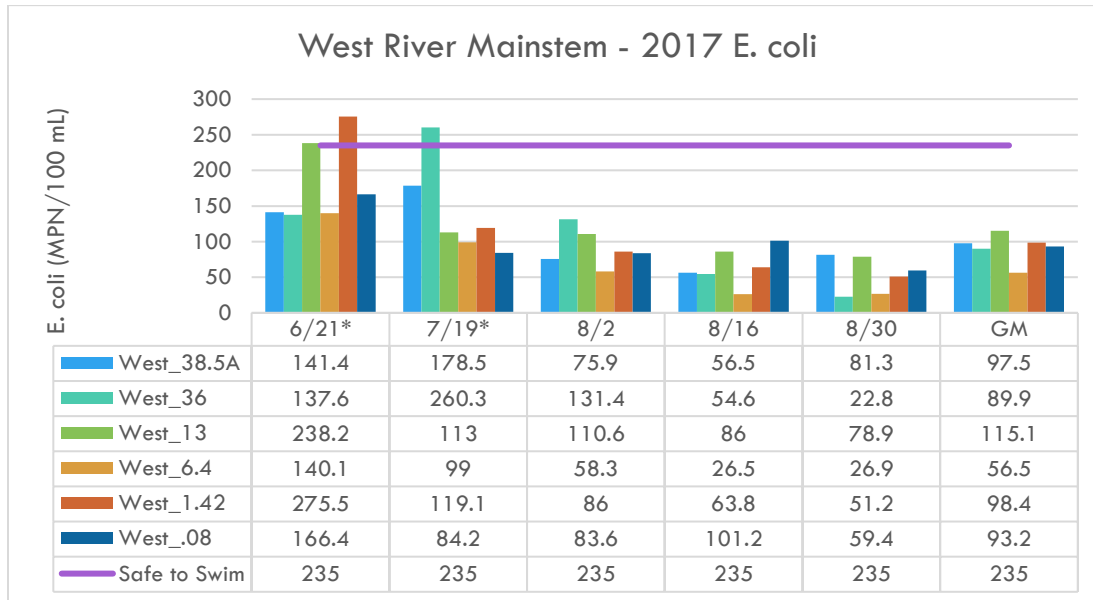
Site	6/21		7/5		7/19		8/2		8/16		8/30	
	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type
West_38.5A	Mod	Fresh	Mod	Base	Mod	Base	Low	Base	Low	Base	Low	Base
West_36	Mod	Fresh	Mod	Base	Mod	Base	Low	Base	Low	Base	Low	Base
West_13	Mod	Fresh	Mod	Base	Mod	Base	Low	Base	Mod	Base	Low	Base
West_6.4	High	Fresh	NT	NT	Mod	Base	Mod	Base	Mod	Base	Low	Base
West_1.42	High	Fresh	Mod	Base	Mod	Base	Mod	Base	Mod	Base	Low	Base
West_.08	Mod	Base	Mod	Base	Mod	Base	Mod	Base	Mod	Base	Mod	Reg
Flood_1.7	Mod	Base	Mod	Base	Mod	Base	Low	Base	Low	Base	Low	Base
NBranchBrk_4.5	Mod	Fresh	Mod	Base	Mod	Base	Low	Base	Low	Base	Low	Base
Rock_.38	High	Fresh	NR	NR	Mod	Fresh	Low	Base	Mod	Base	Low	Base

Volunteers are required to note the level and type of flow observed at each site at the time of sampling, presented above. These observations are inherently subjective, based on individual observations at specific sites. The West River has a USGS gage located in Jamaica, which is in the middle of the portion we monitor and upstream of the flood control dam in Townshend. The lowest reaches of the West River are sometimes subjected to backwater coming up the Connecticut River from the Vernon Dam. According to observations at the USGS gage, the first three sample dates occurred during moderate flows and the last three during low flows.

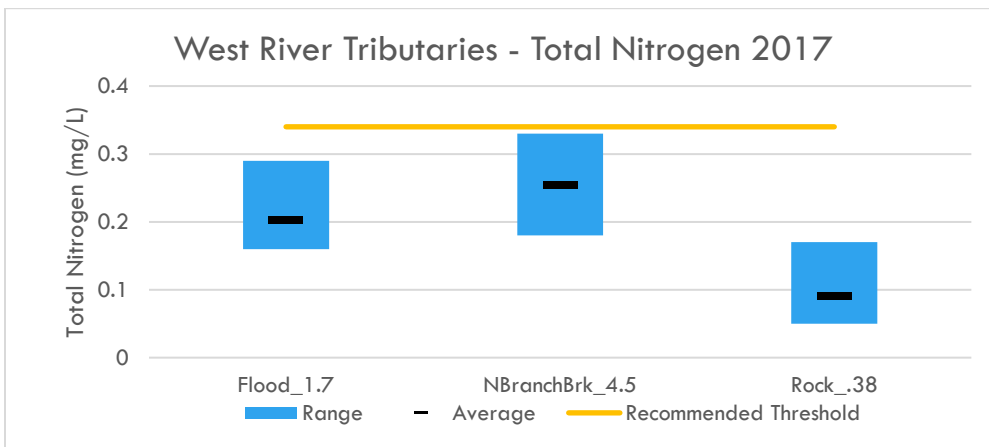
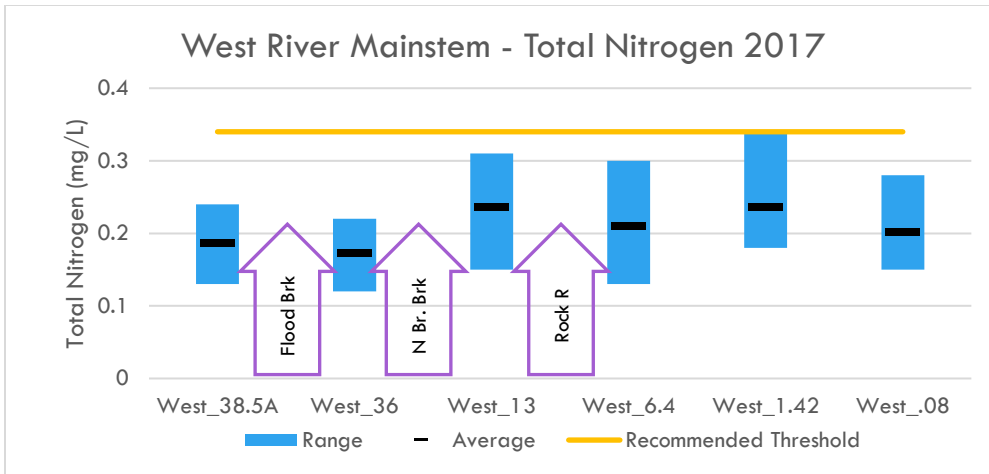
FIGURE 2 - WEST RIVER STREAMFLOW SUMMER 2017



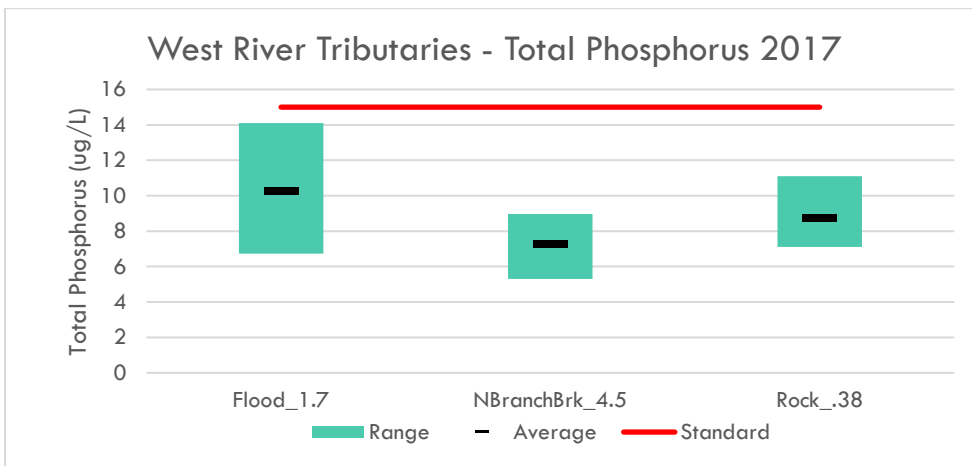
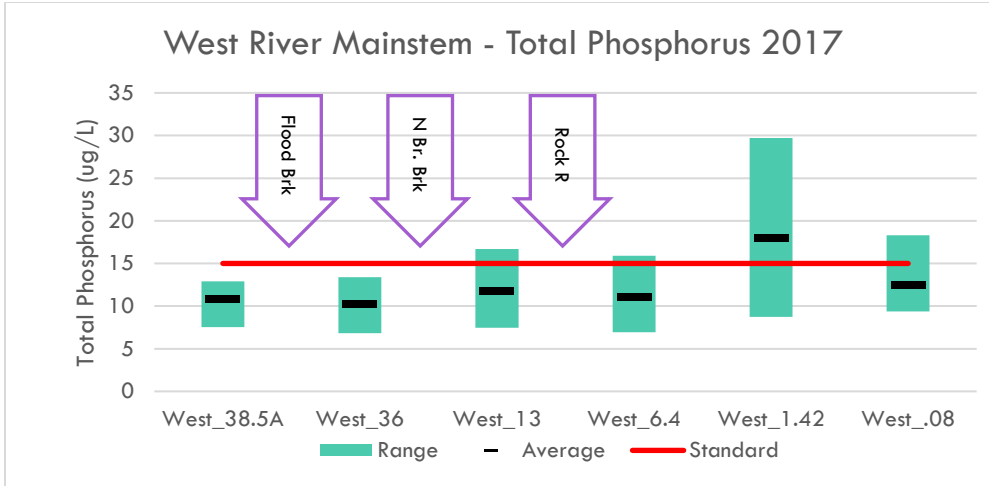
The results for each parameter tested are presented in the graphs below.



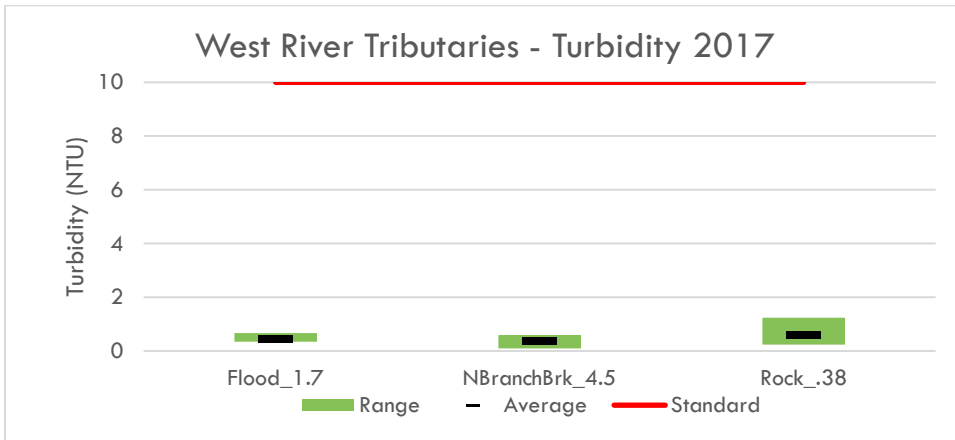
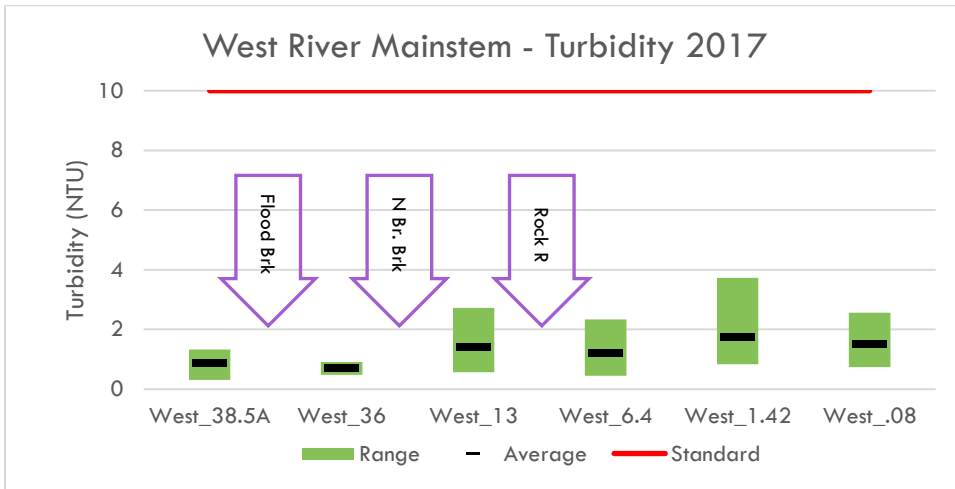
All 7/5 *E. coli* results were rejected due to a lab accident. Most results on the mainstem and all results on the tributaries were below the recommended safe to swim level. June 21st and July 19th were considered wet weather sampling dates and had the only results that exceeded safe to swim levels. All sites had acceptable geometric means below the Vermont standard of 126 *E. coli*/100 mL. West_38.5A (Halfway between Londonderry and South Londonderry) and West_36 (Rowes Rd) are in a statewide bacteria TMDL project area.



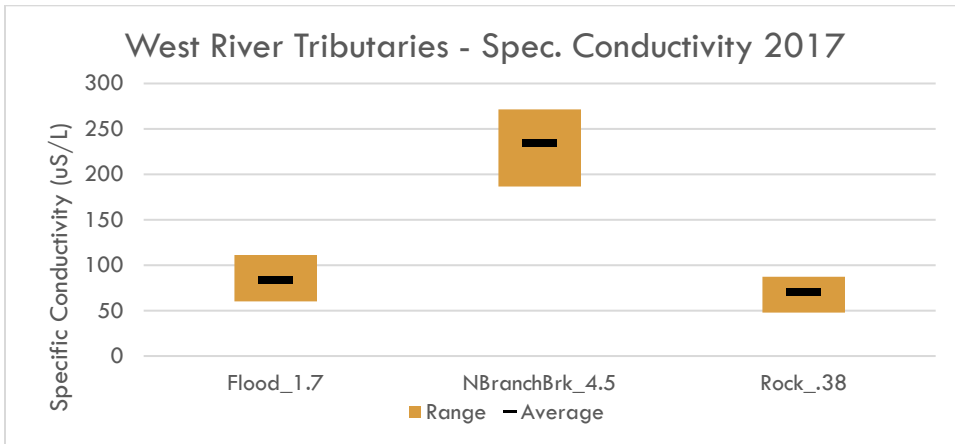
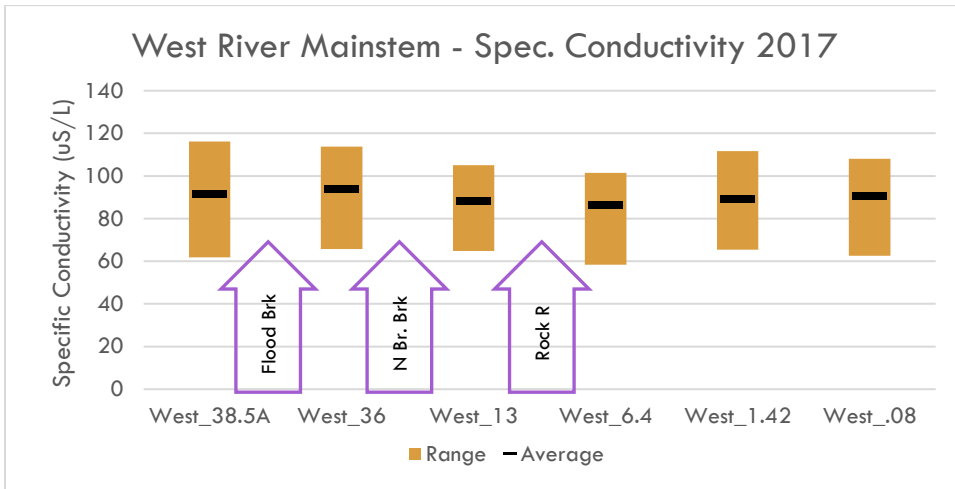
The averages for all sites on the mainstem and tributaries were below the Vermont standard of 5.0 mg-N/L as well as the EPA's current suggested standard of 0.34 mg-N/L. West_1.42 (West River Park) had the highest nitrogen, phosphorus and turbidity readings of the watershed.



The averages for all sites except for one on the lower mainstem were below the Vermont standard for cold water streams of 15 $\mu\text{g-P/L}$. Some individual results from other sites on the lower exceeded the standard as well. West_1.42 (West River Park) had the highest nitrogen, phosphorus and turbidity readings of the watershed.



Turbidity averages are well under the Vermont standard of 10 NTU for annual values. Samples never even approached this level throughout the season. West_1.42 (West River Park) had the highest nitrogen, phosphorus and turbidity readings of the watershed.



There is no standard for conductivity in Vermont and no site stands out as particularly concerning. NBranchBrk_4.5 (Pikes Falls) has consistently had the highest conductivity results of any site that SeVWA monitors and this has been attributed to local geology.

Whetstone Brook

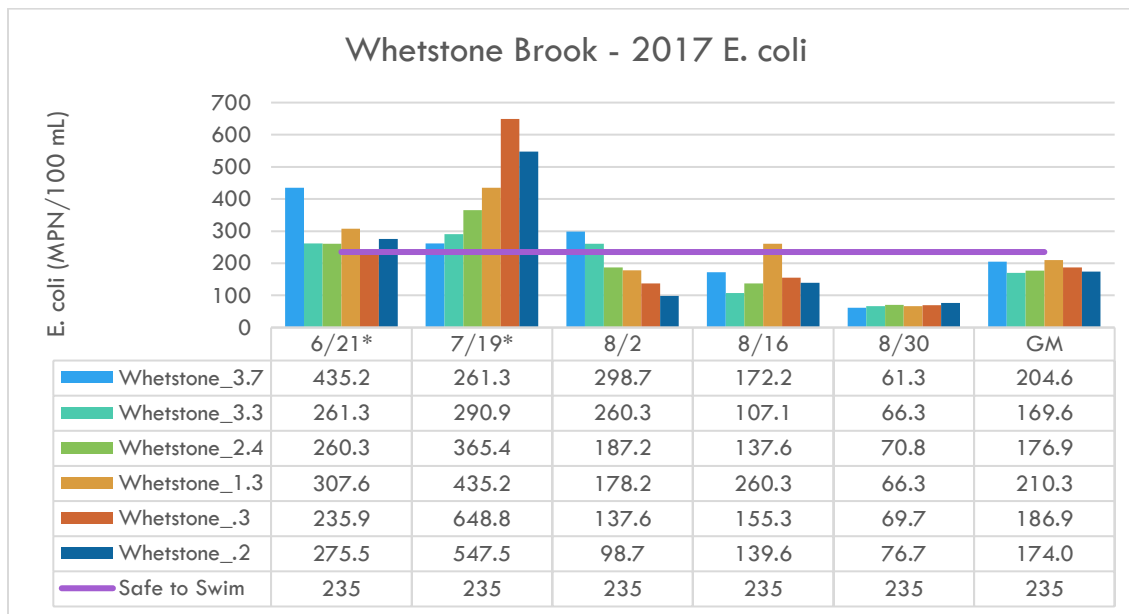
SeVWA monitored six sites on the Whetstone Brook. All sites are classified as cold water Class B. Sites were tested for *E. coli*, total nitrogen, total phosphorus, turbidity, and specific conductivity. There were some additional samples collected and continuous temperature monitoring conducted as part of a project funded through an additional support grant from LaRosa. Those results can be found in the project report which will be available on our website or by request.

TABLE 6 - WHETSTONE BROOK STREAMFLOW OBSERVATIONS

Site	6/21		7/5		7/19		8/2		8/16		8/30	
	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type
Whetstone_3.7	High	Fresh	Mod	Base	Mod	Fresh	Low	Base	Low	Base	Mod	Base
Whetstone_3.3	High	Fresh	Mod	Base	Mod	Fresh	Low	Base	Low	Base	Mod	Base
Whetstone_2.4	High	Fresh	NR	NR	Mod	Base	Low	Base	Low	Base	Low	Base
Whetstone_1.3	High	Fresh	NR	NR	High	Fresh	Low	Base	Mod	Base	Low	Base
Whetstone_.3	Mod	Fresh	High	Fresh	Mod	Fresh	Mod	Base	High	Base	Mod	Base
Whetstone_.2	Mod	Fresh	High	Fresh	Mod	Fresh	Mod	Base	High	Base	Mod	Base

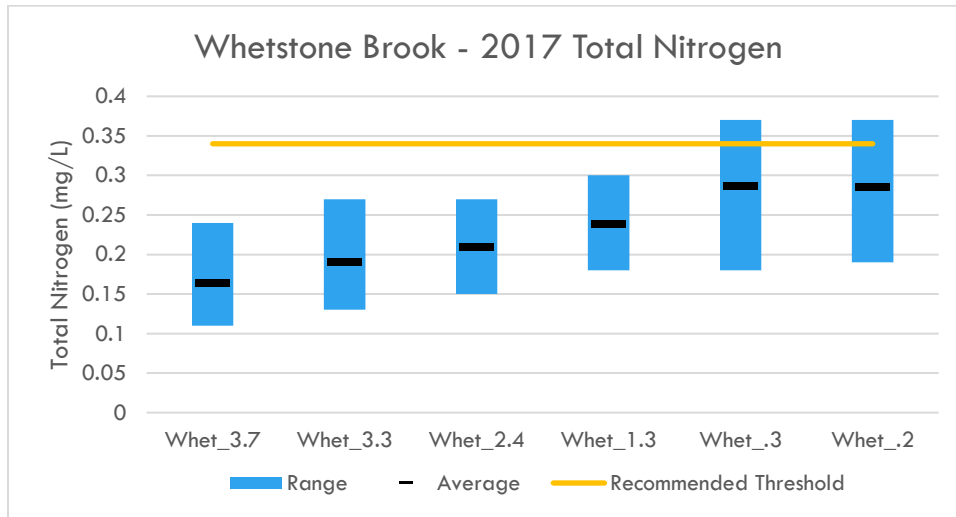
Volunteers are required to note the level and type of flow observed at each site at the time of sampling, presented above. These observations are inherently subjective, based on individual observations at specific sites. The Whetstone River does not have a USGS gage to corroborate these observations and there is no clear surrogate gage in a similar watershed nearby. According to observations at the other USGS gages in SeVWA’s monitoring area, the first three sample dates occurred during moderate flows and the last three during low flows. However, the neighboring Green River watershed did not have any low flows during the summer of 2017, so it is possible that the Whetstone had similar conditions.

The results for all parameters tested are presented in the graphs below.

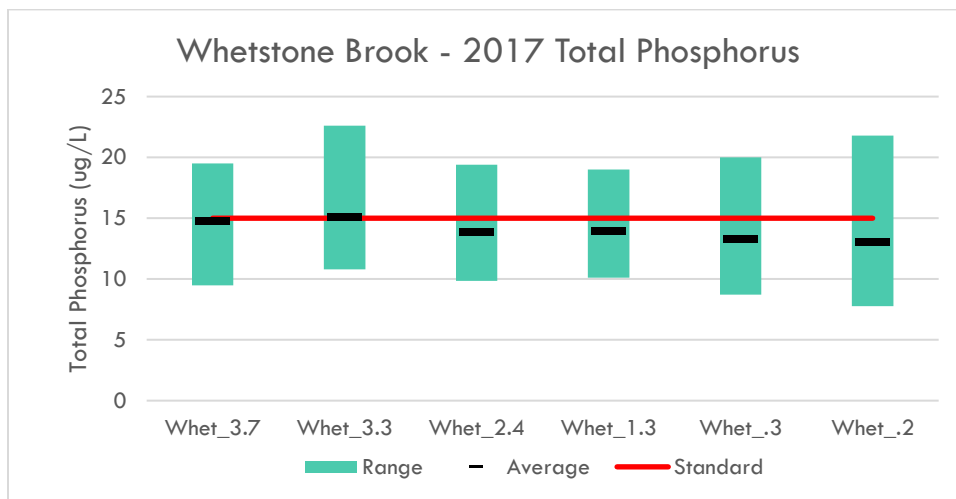


(*E. coli* discussion is on the following page.)

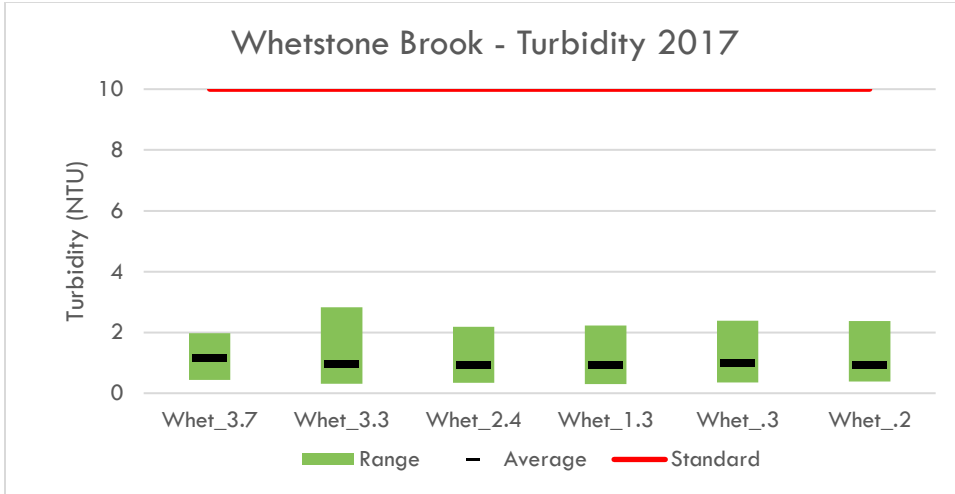
All 7/5 *E. coli* results were rejected due to a lab accident. About half of the results were above the recommended safe to swim level of 235 of *E. coli*/100 mL. June 21st and July 19th were considered wet weather sampling dates and all sites exceeded safe to swim levels on those two days. All sites had geometric means that exceeded the Vermont standard of 126 *E. coli*/100 mL. The Whetstone Brook is in a statewide bacteria TMDL project area.



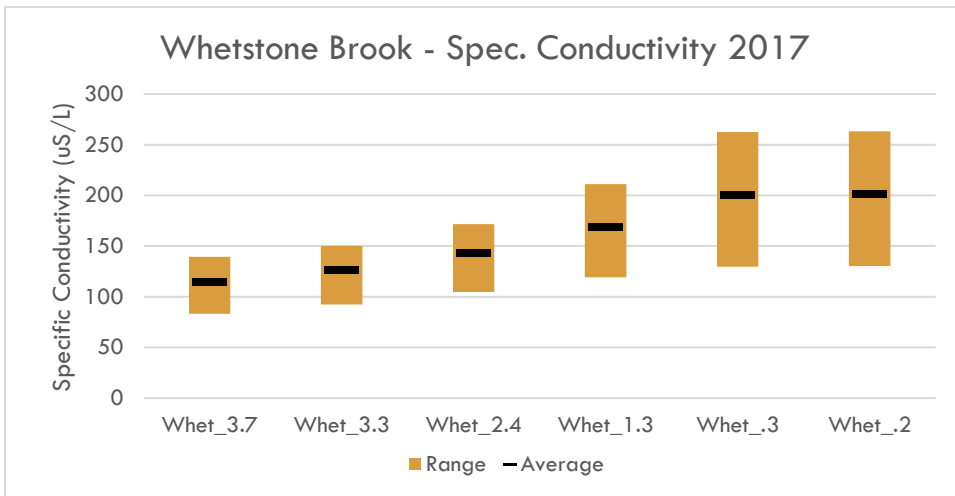
The averages for all Whetstone Brook sites were below the Vermont standard of 5.0 mg-N/L as well as the EPA's current suggested standard of 0.34 mg-N/L. Nitrogen concentrations seem to accumulate moving from upstream to downstream.



The averages for all sites except for one were below the Vermont standard for cold water streams of 15 µg-P/L. Some individual results from all sites exceeded the standard as well. Whetstone_3.3 (Glen St below Dettman Dr) had the highest total phosphorus results and the highest turbidity results, which are likely correlated; it is located in an area that is both residential and agricultural.



Turbidity averages are well under the Vermont standard of 10 NTU for annual values. Samples never even approached this level throughout the season. Whetstone_3.3 (Glen St below Dettman Dr) had the highest total phosphorus results and the highest turbidity results, which are likely correlated; it is located in an area that is both residential and agricultural.



There is no standard for conductivity in Vermont and no site stands out as particularly concerning. Conductivity increases moving from upstream to downstream which also correlates with moving into more development and urbanization of the watershed.

Williams River

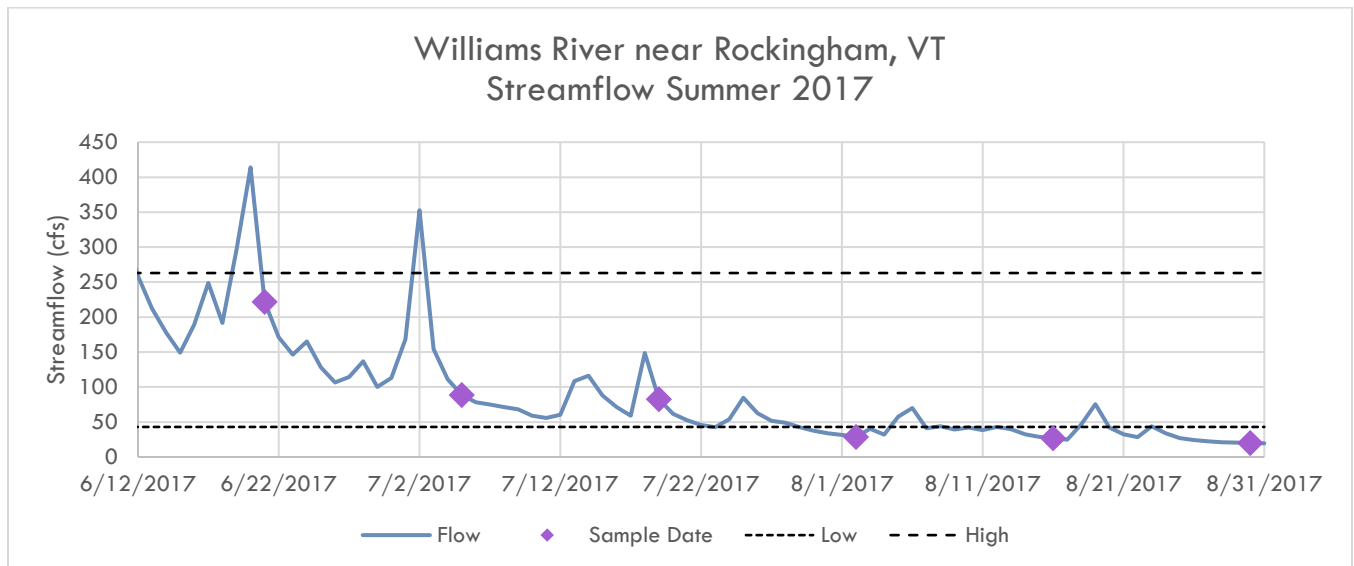
SeVWA monitored five sites on the Williams River and three on the Middle Branch Williams River. The Middle Branch Williams River enters the mainstem Williams between Williams_14.2 and Williams_10.7. All sites are classified as cold-water class B. Sites were tested for *E. coli*, total nitrogen, total phosphorus, turbidity, and specific conductivity.

TABLE 7 - WILLIAMS RIVER WATERSHED FLOW OBSERVATIONS

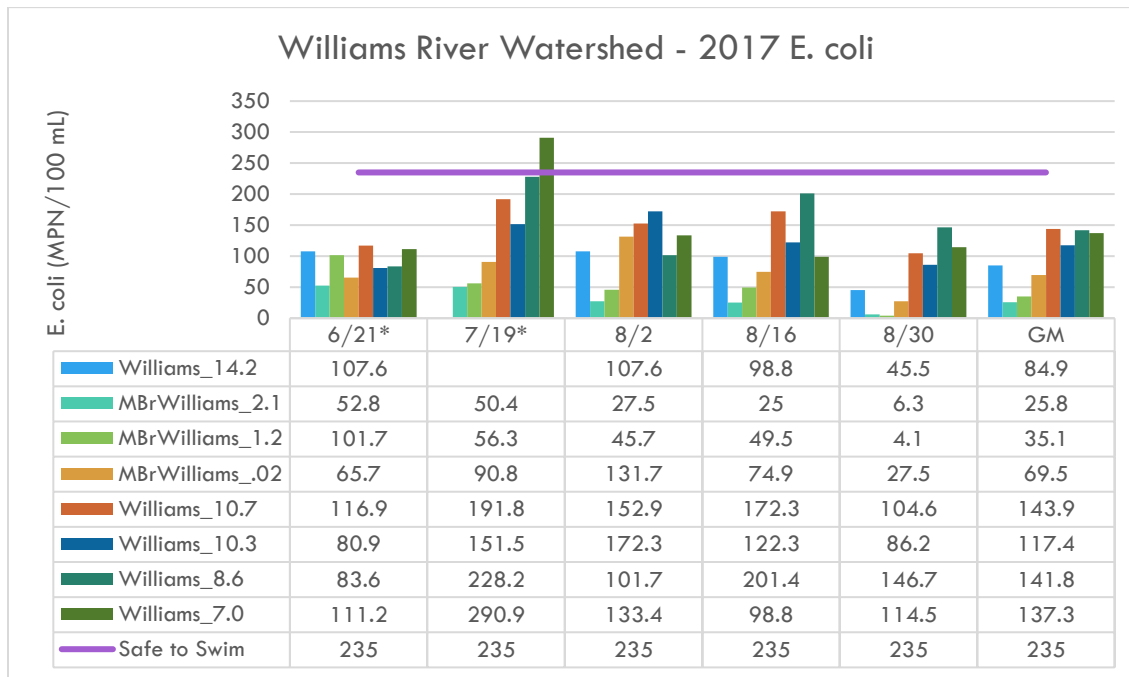
Site	6/21		7/5		7/19		8/2		8/16		8/30	
	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type
Williams_14.2	High	Fresh	Mod	Base	NT	NT	Low	Base	Low	Base	Low	Base
MBrWilliams_2.1	High	Base	Low	Base	Low	Base	Low	Base	Low	Base	Low	Base
MBrWilliams_1.2	Low	Fresh	Mod	Base	Mod	Fresh	Low	Base	Low	Base	Low	Base
MBrWilliams_.02	Mod	Base	Mod	Base	Mod	Base	Mod	Base	Low	Base	Low	Base
Williams_10.7	High	Fresh	Mod	Base	Mod	Fresh	Low	Base	Low	Base	Low	Base
Williams_10.3	High	Fresh	Mod	Base	Mod	Fresh	Low	Base	Low	Base	Low	Base
Williams_8.6	Mod	Base	Low	Base	Mod	Base	Low	Base	Mod	Base	Low	Base
Williams_7.0	Mod	Base	Mod	Base	Mod	Base	Low	Base	Low	Base	Low	Base

Volunteers are required to note the level and type of flow observed at each site at the time of sampling, presented above. These observations are inherently subjective, based on individual observations at specific sites. The Williams River has a USGS gage located in Rockingham, which is downstream of the portion we monitor. According to observations at the USGS gage, the first three sample dates occurred during moderate flows and the last three during low flows.

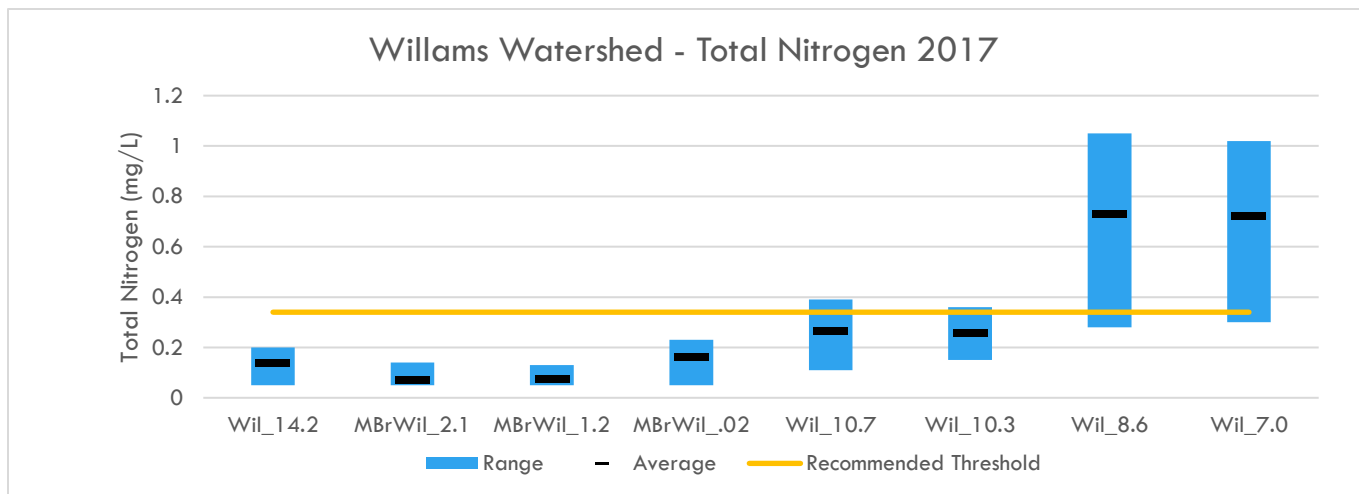
FIGURE 3 - WILLIAMS RIVER STREAMFLOW SUMMER 2017



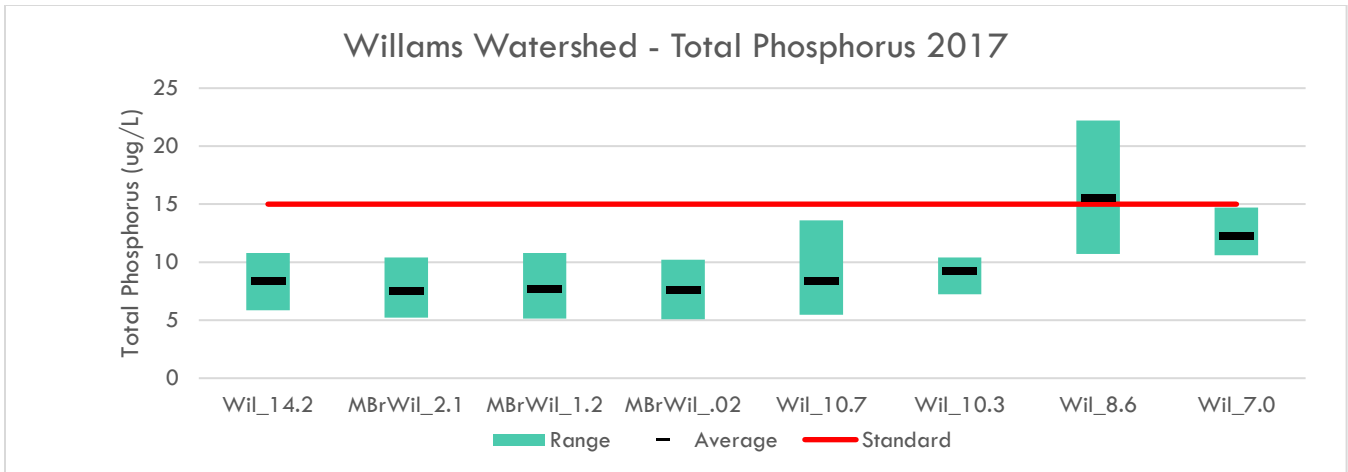
The results for each parameter are presented in the graphs below.



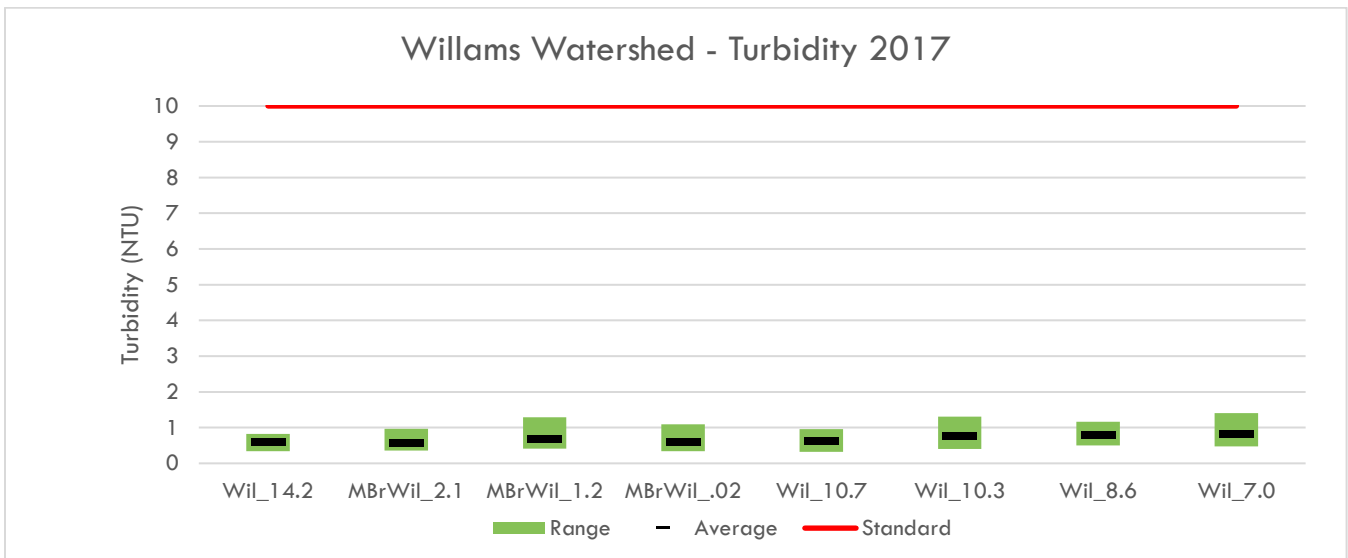
All 7/5 *E. coli* results were rejected due to a lab accident. Only one result tested above the recommended safe to swim level of 235 of *E. coli*/100 mL. June 21st and July 19th were considered wet weather sampling dates and that single high result occurred during the second of those days, as well as a couple results approaching that level. The two sites furthest downstream had geometric means that exceeded the Vermont standard of 126 *E. coli*/100 mL.



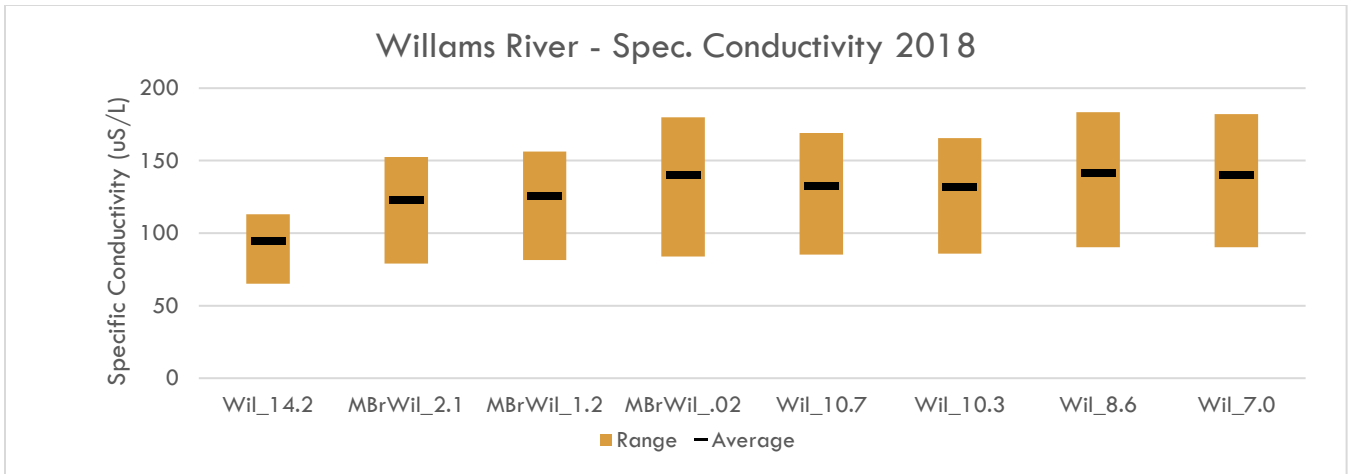
The averages for all Williams River watershed sites were well below the Vermont standard of 5.0 mg-N/L and most were below the EPA's current suggested standard of 0.34 mg-N/L. The nitrogen concentrations seem to increase greatly between Williams_10.3 (Below Chester WWTF) and Williams_8.6 (Missing Link Rd), as the river passes through some heavy agricultural land use.



The averages for all sites except for one were below the Vermont standard for cold water streams of 15 µg-P/L. Williams_8.6 (At RR bridge below Missing Link Rd & below Halls Brk) had the highest total phosphorus results; it is located in an area that is predominately agricultural.



Turbidity averages are well under the Vermont standard of 10 NTU for annual values. Samples never approached this level throughout the season.



There is no standard for conductivity in Vermont and no site stands out as particularly concerning. Conductivity increases moving from upstream to downstream which also correlates with moving into more development in the watershed.

Saxtons River

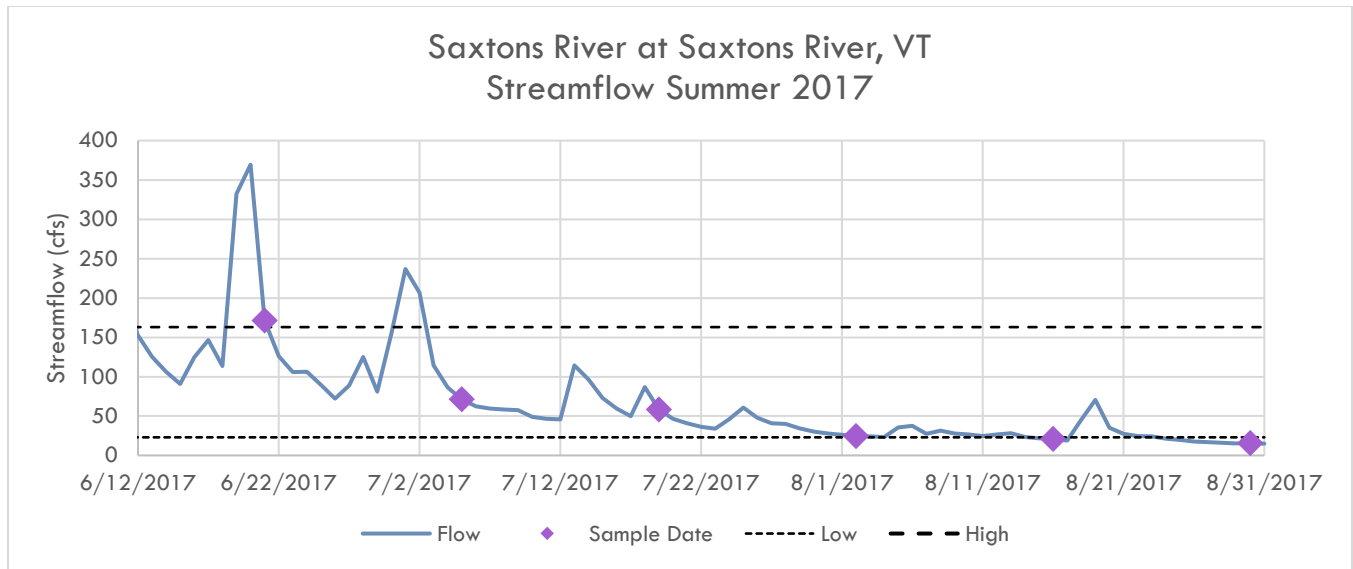
SeVWA monitored five sites on the Saxtons River. All sites are classified as cold-water class B. Sites were tested for *E. coli*, total nitrogen, total phosphorus, turbidity, and specific conductivity.

TABLE 8 - SAXTONS RIVER FLOW OBSERVATIONS

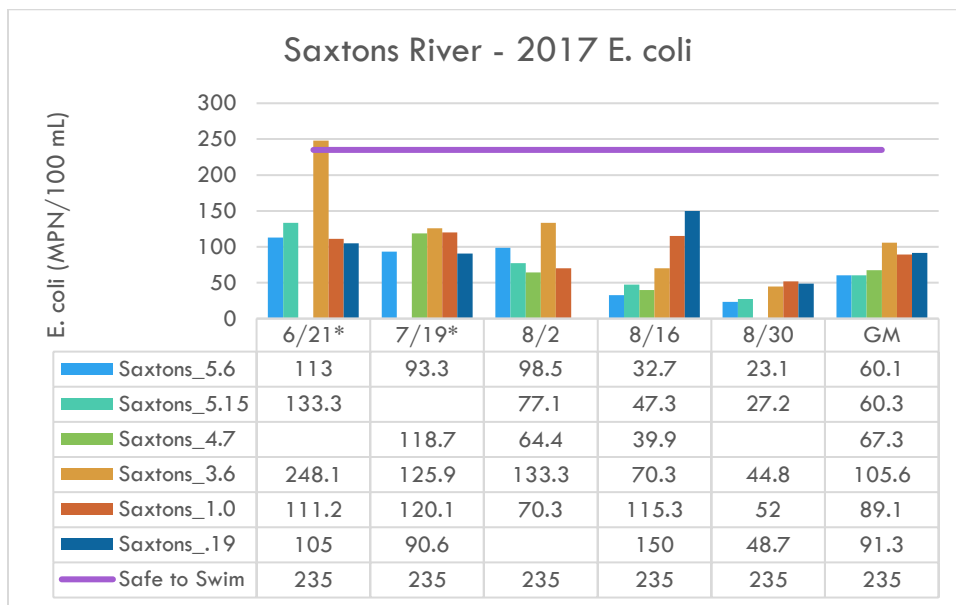
Site	6/21		7/5		7/19		8/2		8/16		8/30	
	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type
Saxtons_5.15	Mod	Base	Mod	Base	NT	NT	Mod	Base	Low	Base	Low	Base
Saxtons_4.7	NT	NT	Mod	Fresh	Mod	Base	Low	Base	Low	Base	NT	NT
Saxtons_3.6	Mod	Base	Mod	Base	Mod	Fresh	Low	Base	Low	Base	Low	Base
Saxtons_1.0	Mod	Fresh	Mod	Base	Mod	Fresh	Low	Base	Low	Base	Low	Base
Saxtons_.19	High	Fresh	Mod	Base	Mod	Fresh	NT	NT	Low	Base	Low	Base

Volunteers are required to note the level and type of flow observed at each site at the time of sampling, presented above. These observations are inherently subjective, based on individual observations at specific sites. The Saxtons River has a USGS gage located in Saxtons River, which is closest to Saxtons_3.6. According to observations at the USGS gage, the first three sample dates occurred during moderate flows and the last three during low flows.

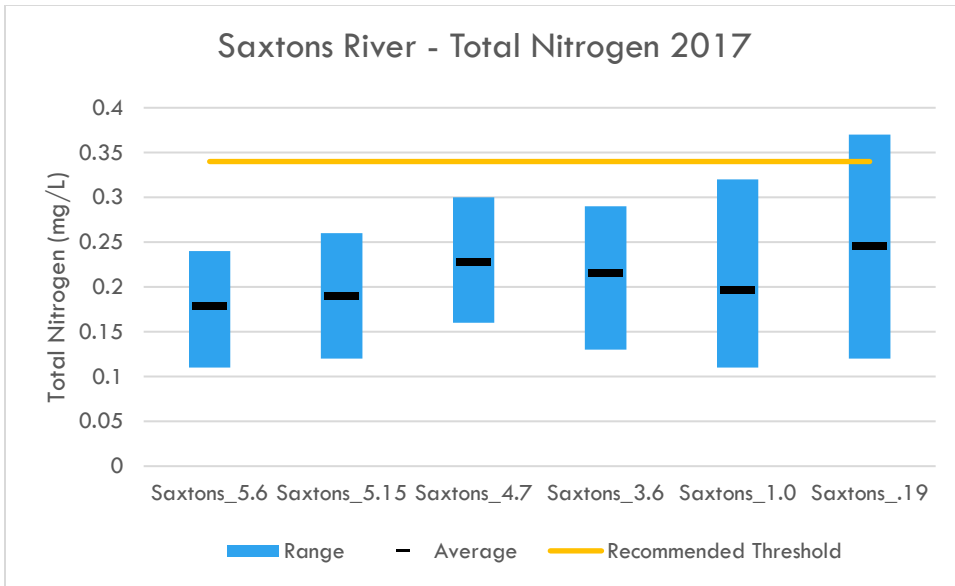
FIGURE 4 - SAXTONS RIVER STREAMFLOW SUMMER 2017



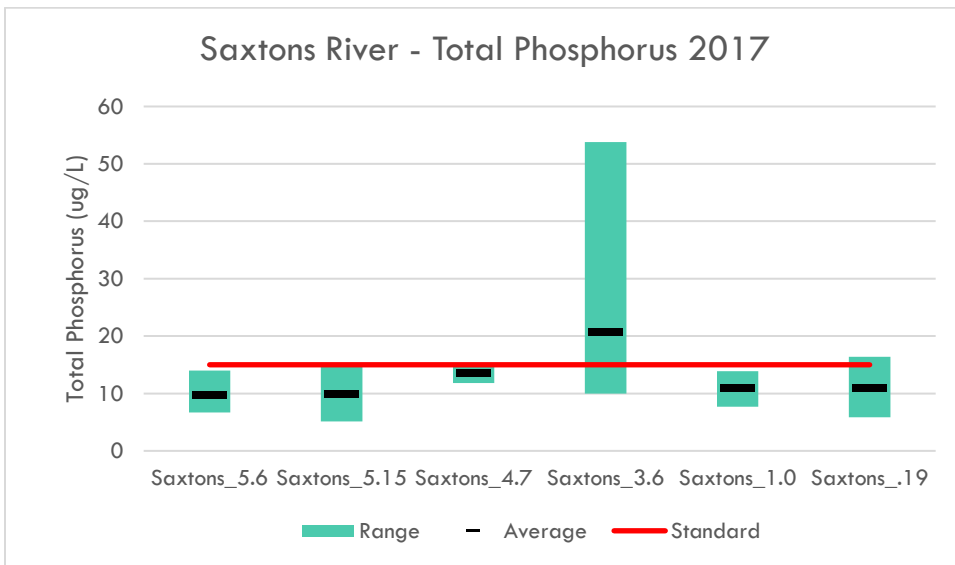
The results for each parameter are presented in the graphs below.



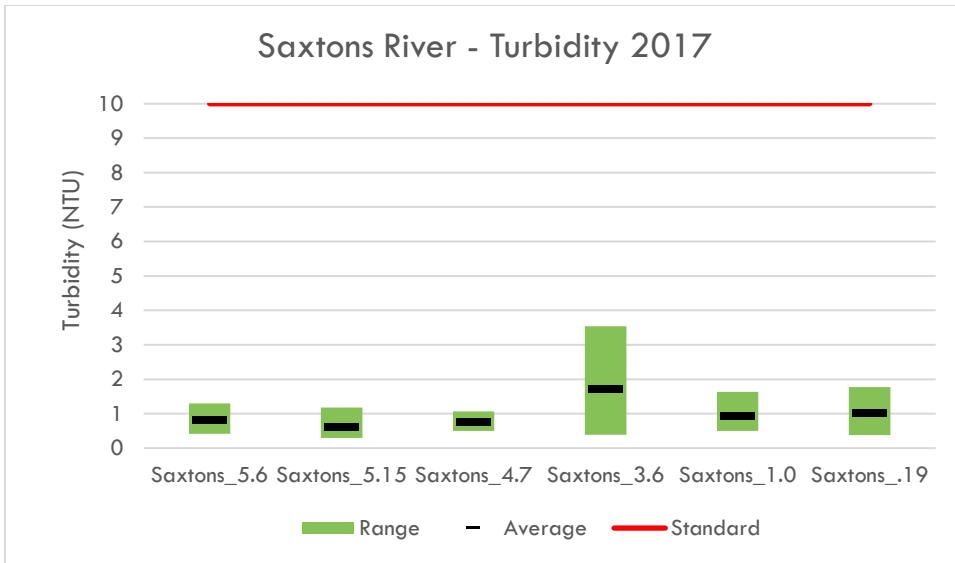
All 7/5 *E. coli* results were rejected due to a lab accident. Only one result tested above the recommended safe to swim level of 235 of *E. coli*/100 mL. June 21st and July 19th were considered wet weather sampling dates and that single high result occurred during the first of those days. No sites had geometric means that exceeded the Vermont standard of 126 *E. coli*/100 mL. SeVWA has been concerned about a source of *E. coli* between Saxtons_4.7 and Saxtons_1.0, but the results from 2017 were lower below Saxtons_4.7 than in the past few years.



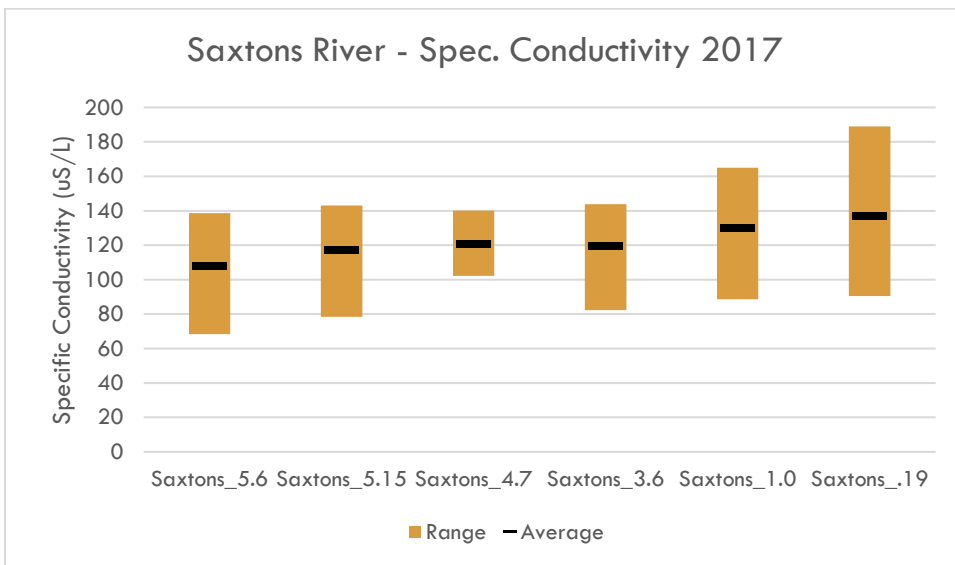
The averages for all Saxtons River sites were well below the Vermont standard of 5.0 mg-N/L and below the EPA's current suggested standard of 0.34 mg-N/L. The nitrogen concentrations generally increase from upstream to downstream.



The averages for all sites except for one were below the Vermont standard for cold water streams of 15 µg-P/L. Saxtons_3.6 (Above Barber Park Rd bridge) had the highest total phosphorus results; the source for such elevated levels of phosphorus is unclear. Saxtons_3.6 also had the highest turbidity results, which is likely correlated with the high phosphorus.



Turbidity averages are well under the Vermont standard of 10 NTU for annual values. Samples never even approached this level throughout the season. Saxtons_3.6 had the highest total phosphorus results and the highest turbidity results, which are likely correlated; the source for such high results is unclear.



There is no standard for conductivity in Vermont and no site stands out as particularly concerning. Conductivity increases moving from upstream to downstream which also correlates with moving into more development and urbanization of the watershed.

East Putney Brook & Sacketts Brook

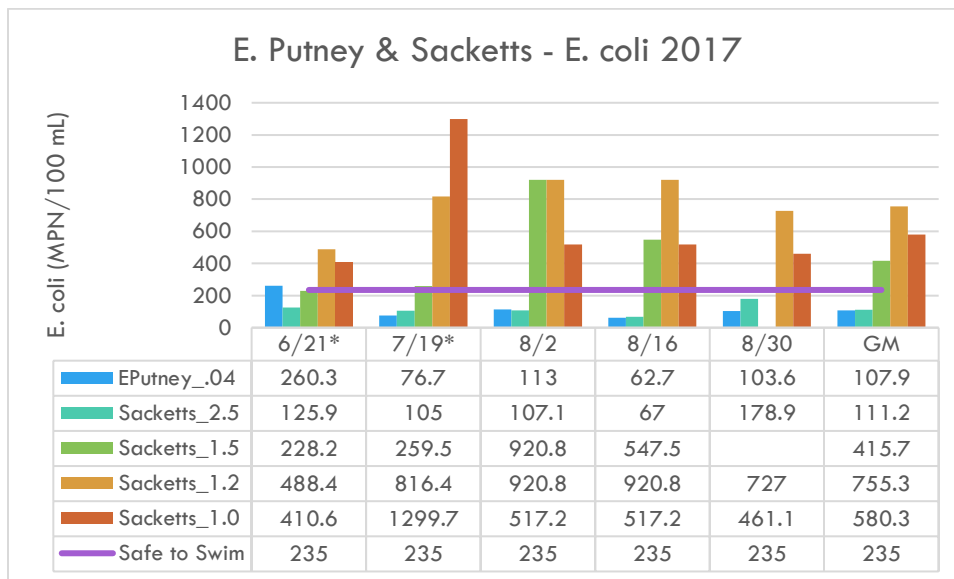
SeVWA monitored one site on the East Putney Brook and four sites on the Sacketts Brook. All sites are classified as cold-water class B. Sites were tested for *E. coli*, total nitrogen, total phosphorus, turbidity, and specific conductivity.

TABLE 9 - E. PUTNEY BROOK & SACKETTS BROOK FLOW OBSERVATIONS

Site	6/21		7/5		7/19		8/2		8/16		8/30	
	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type	Level	Type
EPutney_.04	High	Fresh	Mod	Base	Mod	Base	Mod	Base	Mod	Base	Mod	Base
Sacketts_2.5	Mod	Fresh	Mod	Base	Mod	Base	Mod	Base	Mod	Base	Low	Base
Sacketts_1.5	High	Fresh	Mod	Base	Mod	Base	Mod	Base	Low	Base	NT	NT
Sacketts_1.2	High	Fresh	Mod	Base	Mod	Base	Low	Base	Low	Base	Mod	Base
Sacketts_1.0	High	Fresh	NR	NR	Mod	Base	Mod	Base	Mod	Base	Low	Base

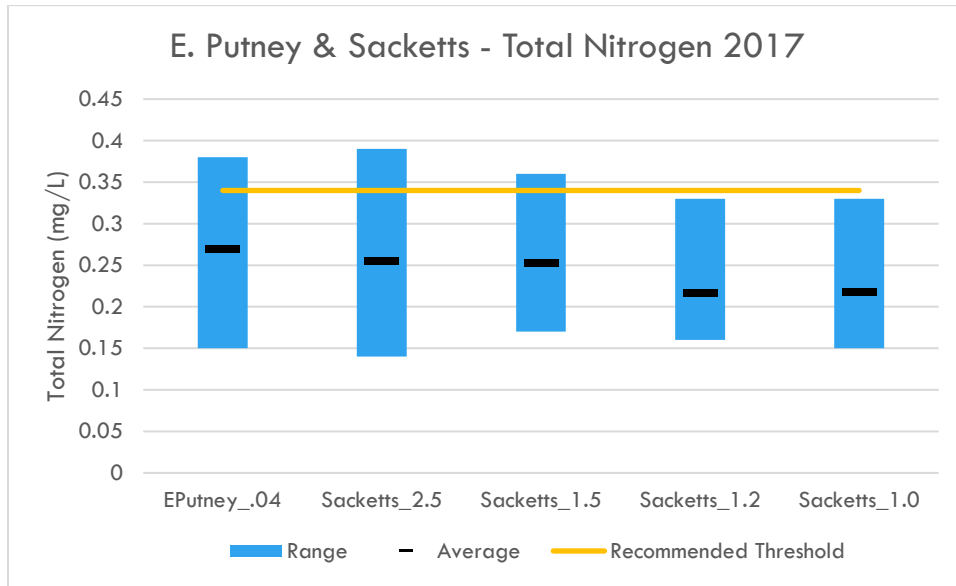
Volunteers are required to note the level and type of flow observed at each site at the time of sampling, presented above. These observations are inherently subjective, based on individual observations at specific sites. Neither the East Putney Brook nor the Sacketts Brook have a USGS gage to corroborate these observations and there is no clear surrogate gage in a similar watershed nearby. According to observations at the other USGS gages in SeVWA's monitoring area, the first three sample dates occurred during moderate flows and the last three during low flows. Both brooks are much smaller than nearby rivers so may be flashier and experience different flows.

The results for all parameters tested are presented in the graphs below.

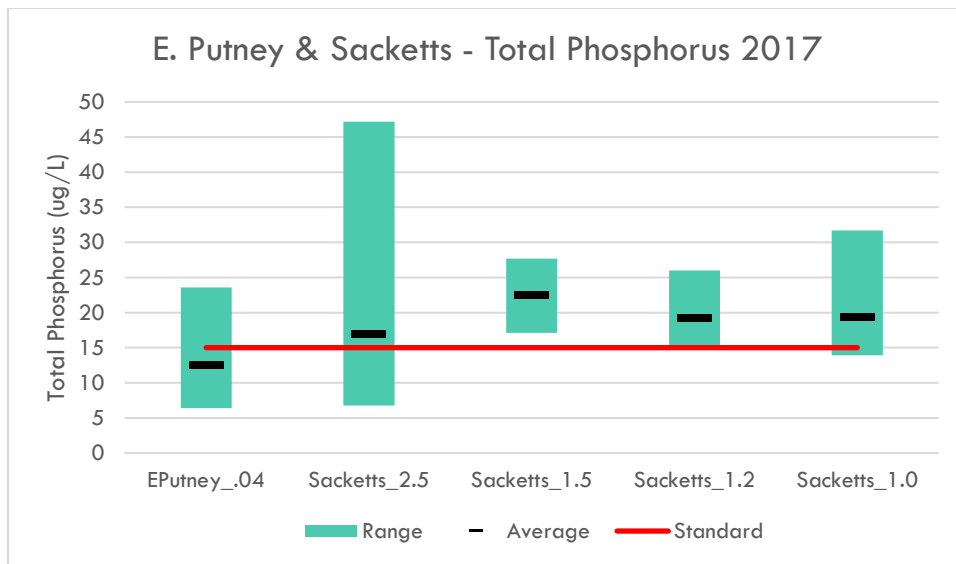


All 7/5 *E. coli* results were rejected due to a lab accident. Results from Sacketts_1.5 (Above Main St dam), Sacketts_1.2 (Below paper mill), and Sacketts_1.0 (End of Mill St) were consistently above the recommended safe to swim level of 235 of *E. coli*/100 mL. June 21st and July 19th were considered wet weather sampling dates. All sites had geometric means that exceeded the Vermont standard of 126 *E. coli*/100 mL. We recommend that the Sacketts Brook be added to the statewide bacteria TMDL project areas.

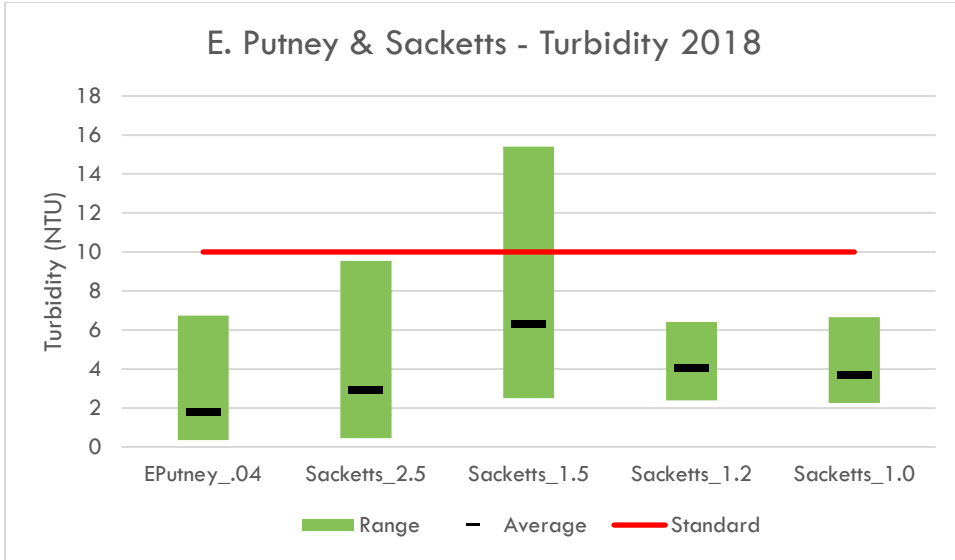
Results from 8/30 (during dam dredging) omitted from affected sites in below parameters.



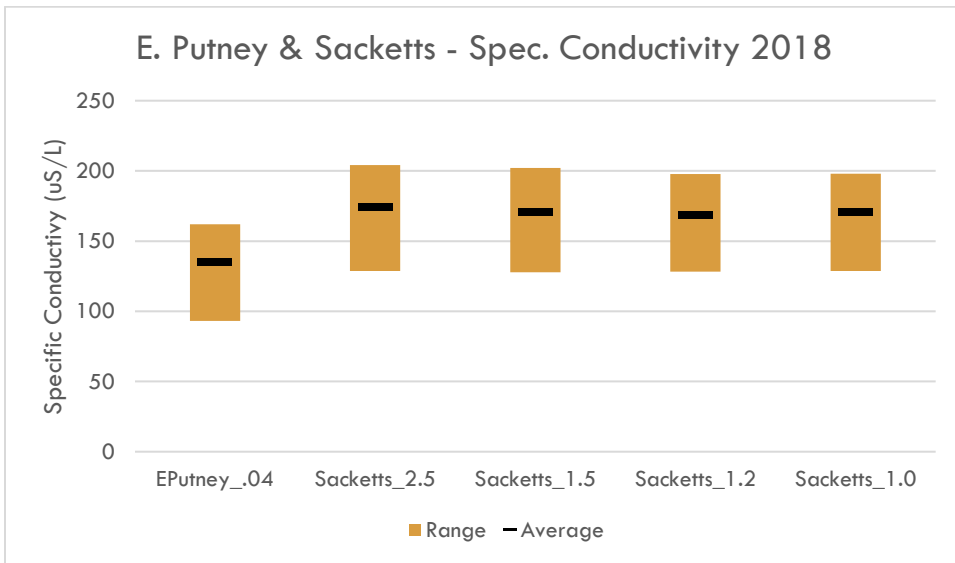
The averages and results for all E. Putney Brook and Sacketts Brook sites were well below the Vermont standard of 5.0 mg-N/L; all averages were below the EPA’s current suggested standard of 0.34 mg-N/L but some individual results exceeded the threshold. The nitrogen concentrations generally decrease moving downstream on the Sacketts Brook which would suggest the primary sources are upstream.



The average for the E. Putney Brook site were below but the averages for all sites on the Sacketts Brook were above the Vermont standard for cold water streams of 15 µg-P/L. Sacketts_2.5 (Portal Bridge Swimming Hole) had the highest total phosphorus results; the source for such elevated levels of phosphorus is unclear. Saxtons_3.6 also had the highest turbidity results, which is likely correlated with the high phosphorus.



Turbidity averages are all under the Vermont standard of 10 NTU for annual values. Individual samples at Sacketts_1.5 (Above Main St Dam) exceeded this level during the season. Total Phosphorus results do not appear to correlate with turbidity levels at these sites.



There is no standard for conductivity in Vermont and no site stands out as particularly concerning. Conductivity is higher on the Sacketts Brook than East Putney Brook. Conductivity decreases slightly from upstream to downstream.

Epilogue

2017 was a typical monitoring year for SeVWA with the usual hot spots popping up again compared to the drought in 2016. The following areas were of particular concern in 2017: the West River in the vicinity of mile 36 for E. coli and in the vicinity mile 1.4 for phosphorus, the Whetstone Brook below mile 4 for E. coli (especially miles 2-1) and nutrients (especially mile 3); the Williams River below mile 11 for E. coli and below mile 9 for nutrients; the Saxtons River at mile 3.6 for phosphorus; and the Sacketts Brook below mile 2 for E. coli and its full length for phosphorus.

Starting in 2012, SeVWA's E. coli results have been made available to the public through a variety of sources, including publishing on its website (<http://www.sevwa.org>), CTRiver.us, Facebook, iBrattleboro, iPutney, and postings by volunteers at public information kiosks and near monitoring locations.

Since 2010, VT DEC and the Connecticut River Watershed Council have entered a services exchange agreement that has provided a collaboration that enhances SeVWA's utilization of the CRC laboratory in Greenfield, MA, for its E. coli testing.

This report was produced to meet the requirements of the LaRosa Lab Services Partnership Program and is intended as a preliminary synopsis of results generated by the project. Additional analyses and reporting may be conducted as resources allow.

Appendix – Complete Monitoring Results

Date	Site	Time	CRWC			LaRosa				SeVWA					Sample or QA Notes:
			Sample #	Final E. Coli. (mpn/100ml)	Wet? (Y/N)	Sample #	TN (mg-N/l)	TP (µg P/L)	Turb. (NTU)	Spec. Cond. (µS/cm)	Air Temp. °C	Water Temp °C	Water Level	Flow Type	
6/21/2016	West_38.5A	7:35AM	10/1/2017	141.4	y	170456-01	0.13	12.7	1.02	61.9	15	17	moderate	freshset	
6/21/2016	West_36	7:57AM	10/2/2017	137.6	y	170456-02	0.12	13.4	0.91	65.8	15	16.5	moderate	freshset	
6/21/2016	West_13	7:55AM	10/3/2017	238.2	y	170456-03	0.15	16.7	2.57	64.8	15	17	moderate	freshset	
6/21/2016	West_6.4	7:30AM	10/4/2017	140.1	y	170456-04	0.13	15.9	1.74	58.4	19	17	high	freshset	
6/21/2016	West_1.42	6:10AM	10/5/2017	275.5	y	170456-05	0.19	29.7	3.73	65.4	12	16.5	high	freshset	
6/21/2016	West_08	8:16AM	10/6/2017	166.4	y	170456-06	0.16	18.3	2.56	62.6	19	18.5	moderate	base	
6/21/2016	Flood_1.7	7:18AM	10/7/2017	56.3	y	170456-07	0.16	14.1	0.56	60.3	15	16	moderate	base	
6/21/2016	NBranchBrk_4.5	7:13AM	NT	NT	NT	170456-08	0.18	8.88	0.51	186.6	14	14	moderate	freshset	
6/21/2016	Rock_38	7:00AM	10/8/2017	48	y	170456-09	< 0.1	11.1	1.24	47.8	16	15	high	freshset	
6/21/2016	Williams_14.2	7:10AM	10/12/2017	107.6	y	170456-10	< 0.1	10.8	0.55	65.1	15	17	high	freshset	water seems high ant felt much colder. is the thermometer working
6/21/2016	MBrWilliams_2.1	6:30AM	10/9/2017	52.8	y	170456-11	< 0.1	10.4	0.79	79.1	14	14	high	base	
6/21/2016	MBrWilliams_1.2	7:00AM	10/10/2017	101.7	y	170456-12	< 0.1	10.8	1.29	81.5	18	15	low	freshset	
6/21/2016	MBrWilliams_02	7:00AM	10/11/2017	65.7	y	170456-13	< 0.1	10.2	1.09	83.8	nt	nt	moderate	base	
6/21/2016	Williams_10.7	7:10AM	10/13/2017	116.9	y	170456-14	0.11	13.6	0.96	85.3	16	15	high	freshset	
6/21/2016	Williams_10.3	6:50AM	10/14/2017	80.9	y	170456-15	0.15	10.4	1.31	85.8	16	15	high	freshset	
6/21/2016	Williams_8.6	7:05AM	10/15/2017	83.6	y	170456-16	0.28	10.7	0.95	90.2	15	14	moderate	base	
6/21/2016	Williams_7.0	7:30AM	10/16/2017	111.2	y	170456-17	0.3	13.1	0.99	90.2	15	15	moderate	base	
6/21/2016	Saxtons_5.6	6:45AM	10/17/2017	113	y	170456-18	0.11	14	1.3	68.3	16	15	high	freshset	bag of trash hanging from nail on tree, some paper refuse in fire pit
6/21/2016	Saxtons_5.15	6:30AM	10/18/2017	133.3	y	170456-19	0.12	15.2	1.18	78.4	14	15	moderate	base	
6/21/2016	Saxtons_4.7	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
6/21/2016	Saxtons_3.6	7:40AM	10/19/2017	248.1	y	170456-21	0.13	53.8	3.29	82.4	16	16	moderate	base	discharged peaked at 900 cfs

Date	Site	Time	CRWC			LaRosa				SeVWA					Sample or QA Notes:
			Sample #	Final E. Coli. (mpn/100ml)	Wet? (Y/N)	Sample #	TN (mg-N/l)	TP (µg P/L)	Turb. (NTU)	Spec. Cond. (µS/cm)	Air Temp. °C	Water Temp °C	Water Level	Flow Type	
6/21/2016	Saxtons_1.0	7:55AM	10/20/2017	111.2	y	170456-22	0.11	13.9	1.33	88.7	16	nt	moderate	freshset	
6/21/2016	Saxtons_.19	8:15AM	10/21/2017	105	y	170456-23	0.12	16.4	1.77	90.5	16	16	high	freshset	
6/21/2016	EPutney_.04	7:35AM	10/22/2017	260.3	y	170456-24	0.15	23.6	6.74	93.1	16.5	14	high	freshset	
6/21/2016	Sacketts_2.5	8:10AM	10/23/2017	125.9	y	170456-25	0.14	47.2	9.55	128.7	16.5	13	moderate	freshset	water is murky- could see to the bottom but sediment in suspension, large beaver dam wiped out by storm 1/2 mile downstream
6/21/2016	Sacketts_1.5	7:36AM	10/24/2017	228.2	y	170456-26	0.17	27.7	5.96	127.9	17	14	high	freshset	
6/21/2016	Sacketts_1.2	7:46AM	10/25/2017	488.4	y	170456-27	0.16	26	6.41	128.3	14	14	high	freshset	
6/21/2016	Sacketts_1.0	8:15AM	10/26/2017	410.6	y	170456-28	0.15	31.7	6.66	128.7	16	14	high	freshset	
6/21/2016	Whetstone_3.7	5:25AM	10/27/2017	435.2	y	170456-29	0.12	17.1	1.97	83.2	15	15	high	freshset	
6/21/2016	Whetstone_3.3	5:35AM	10/28/2017	261.3	y	170456-30	0.13	22.6	2.83	92.5	15	15	high	freshset	
6/21/2016	Whetstone_2.4	9:49AM	10/29/2017	260.3	y	170456-31	0.17	17	2.18	104.6	23	15	high	freshset	
6/21/2016	Whetstone_1.3	8:15AM	10/30/2017	307.6	y	170456-32	0.2	19	2.23	119.1	21	15	high	freshset	
6/21/2016	Whetstone_.3	9:19AM	10/31/2017	235.9	y	170456-33	0.18	20	2.38	129.7	24	15	moderate	freshset	
6/21/2016	Whetstone_.2	9:27AM	10-32-17	275.5	y	170456-34	0.19	21.8	2.37	130.2	24	15	moderate	freshset	
6/21/2016	QCA1	7:10AM	10-34-17	151.5	y	170456-35	< 0.1	9.77	0.53	66.4					Williams_14.2 Duplicate
6/21/2016	QCA2	6:45AM	10-35-17	107.6	y	170456-36	0.11	22	1.5	69					Saxtons_5.6 Duplicate
6/21/2016	QCA3	9:55AM	10-36-17	307.6	y	170456-37	0.18	17.4		103.6					Whetstone_2.4 Duplicate
6/21/2016	QCB1	7:16AM	10-37-17	< 1	y	170456-38	< 0.1	< 5	< 0.2	3.2					Flood_1.7 Blank
6/21/2016	QCB2	7:18AM	10-38-17	< 1	y	170456-39	< 0.1	< 5	< 0.2	3					NBranchBrk_4.5 Blank
6/21/2016	QCB3	7:55AM	10-39-17	< 1	y	170456-40	< 0.1	< 5	< 0.2	3.5					West_13 Blank
7/5/2017	West_38.5A	7:28AM	14-01-17	1119.9	N	170457-01	0.19	12	0.76	86.4	15	14	moderate	base	E. coli rejected due to lab accident
7/5/2017	West_36	7:50AM	14-03-17	727	N	170457-02	0.16	11.9	0.65	88.3	14	13	moderate	base	E. coli rejected due to lab accident
7/5/2017	West_13	7:42AM	14-04-17	140.3	N	170457-03	0.21	12.5	1.15	75.4	14	18	moderate	base	heavy rain over weekend water levels are only now dropping
7/5/2017	West_6.4	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
7/5/2017	West_1.42	7:25AM	14-05-17	163.1	N	170457-05	0.21	11.9	0.99	79	13	17	moderate	base	E. coli rejected due to lab accident

Date	Site	Time	CRWC			LaRosa				SeVWA					Sample or QA Notes:
			Sample #	Final E. Coli. (mpn/100ml)	Wet? (Y/N)	Sample #	TN (mg-N/l)	TP (µg P/L)	Turb. (NTU)	Spec. Cond. (µS/cm)	Air Temp. °C	Water Temp °C	Water Level	Flow Type	
7/5/2017	West_.08	7:01AM	14-06-17	141.4	N	170457-06	0.2	13.1	1.71		15	20	moderate	base	E. coli rejected due to lab accident
7/5/2017	Flood_1.7	7:10AM	14-07-17	62.6	N	170457-07	0.18	12.1	0.34	71.7	14	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	NBranchBrk_4.5	7:15AM	14-08-17	158.5	N	170457-08	0.22	8.97	0.45		14	11	moderate	base	E. coli rejected due to lab accident
7/5/2017	Rock_.38	6:51AM	NT	NT	NT	170457-09	< 0.1	7.85	0.36	63.1	missing sheet	missing sheet	missing sheet	missing sheet	E. coli rejected due to lab accident
7/5/2017	Williams_14.2	7:10AM	14-13-17	980.4	N	170457-10	0.16	8.12	0.63	84.2	13	14	moderate	base	water seems to be flowing faster but not higher; E. coli rejected due to lab accident
7/5/2017	MBrWilliams_2.1	6:52AM	14-10-17	304.4	N	170457-11	< 0.1	8.09	0.36	105.8	11	14	low	base	E. coli rejected due to lab accident
7/5/2017	MBrWilliams_1.2	7:00AM	14-11-17	151	N	170457-12	< 0.1	8.51	0.55	108.2	13	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	MBrWilliams_.02	7:00AM	14-12-17	197.6	N	170457-13	0.14	8.34	0.47	120.5	12	14.5	moderate	base	E. coli rejected due to lab accident
7/5/2017	Williams_10.7	7:00AM	14-14-17	1553.1	N	170457-14	0.23	8.25	0.55	116.1	11.5	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	Williams_10.3	7:00AM	14-15-17	980.4	N	170457-15	0.22	9.52	0.48	116.7	13	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	Williams_8.6	7:12AM	14-16-17	1046.2	N	170457-16	0.59	10.7	0.5	125.1	11	15	low	base	E. coli rejected due to lab accident
7/5/2017	Williams_7.0	7:30AM	14-17-17	980.4	N	170457-17	0.58	11.6	0.72	121.9	13	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	Saxtons_5.6	6:56AM	14-18-17	866.4	N	170457-18	0.14	10.7	1.02	93.9	12	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	Saxtons_5.15	6:10AM	14-19-17	549.3	N	170457-19	0.14	10.8	0.68	98.9	14	13	moderate	base	E. coli rejected due to lab accident
7/5/2017	Saxtons_4.7	8:27AM	14-20-17	770.1	N	170457-20	0.19	14.9	0.74	104.3	18	15	moderate	freshset	E. coli rejected due to lab accident
7/5/2017	Saxtons_3.6	7:20AM	14-21-17	2419.6	N	170457-21	0.17	23.9	3.54	107.6	13	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	Saxtons_1.0	7:37AM	14-22-17	686.7	N	170457-22	0.15	11.1	0.91	112.6	13	15.5	moderate	base	start of a rock dam downstream of sampling site; E. coli rejected due to lab accident
7/5/2017	Saxtons_.19	7:58AM	14-23-17	579.4	N	170457-23	0.19	10.6	0.63	118.5	13	16	moderate	base	E. coli rejected due to lab accident
7/5/2017	EPutney_.04	7:15AM	14-24-17	172.3	N	170457-24	0.2	12.2	0.98	118	13.5	14	moderate	base	E. coli rejected due to lab accident
7/5/2017	Sacketts_2.5	7:55AM	14-25-17	1299.7	N	170457-25	0.18	13.4	1.6	157.6	13	12.5	moderate	base	still litter(twigs leaves etc) under bridge. water one foot lower than last time; E. coli rejected due to lab accident
7/5/2017	Sacketts_1.5	7:51AM	14-26-17	1553.1	N	170457-26	0.18	17.1	2.51	158.5	14.5	13	moderate	base	E. coli rejected due to lab accident
7/5/2017	Sacketts_1.2	8:12AM	14-27-17	> 2419.6	N	170457-27	0.17	16.5	2.39	160.4	13	13	moderate	base	E. coli rejected due to lab accident

Date	Site	Time	CRWC			LaRosa				SeVWA					Sample or QA Notes:
			Sample #	Final E. Coli. (mpn/100ml)	Wet? (Y/N)	Sample #	TN (mg-N/l)	TP (µg P/L)	Turb. (NTU)	Spec. Cond. (µS/cm)	Air Temp. °C	Water Temp °C	Water Level	Flow Type	
7/5/2017	Sacketts_1.0	8:12AM	14-28-17	2419.6	N	170457-28	0.18	16.4	2.25	161.6	missing sheet	missing sheet	missing sheet	missing sheet	E. coli rejected due to lab accident
7/5/2017	Whetstone_3.7	5:00AM	14-29-17	195.1	N	170457-29	0.11	9.82	1.27	110.4	12	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	Whetstone_3.3	5:10AM	14-30-17	297.8	N	170457-30	0.14	12.9	0.48	121	12	15	moderate	base	E. coli rejected due to lab accident
7/5/2017	Whetstone_2.4	8:53AM	14-31-17	517.2	N	170457-31	0.15	11.1	0.43	133.8	missing sheet	missing sheet	missing sheet	missing sheet	E. coli rejected due to lab accident
7/5/2017	Whetstone_1.3	8:30AM	14-32-17	980.4	N	170457-32	0.18	10.9	0.54	161.1	missing sheet	missing sheet	missing sheet	missing sheet	E. coli rejected due to lab accident
7/5/2017	Whetstone_3	5:32AM	14-33-17	408.3	N	170457-33	0.22	9.01	0.42	185.5	15	15	moderate/high	base/freshset	E. coli rejected due to lab accident
7/5/2017	Whetstone_2	5:19AM	14-34-17	> 2419.6	N	170457-34	0.21	9.9	0.44	186.2	15	15	moderate/high	base/freshset	E. coli rejected due to lab accident
7/5/2017	QCA4	7:55AM	14-35-17	727	N	170457-35	0.18	11.4	0.84	88.1					West_36 Duplicate; E. coli rejected due to lab accident
7/5/2017	QCA5	5:34AM	14-36-17	1732.9	N	170457-36	0.21	10.3	0.84	183.8					Whetstone_2 Duplicate; E. coli rejected due to lab accident
7/5/2017	QCA6	6:57AM	14-37-17	163.8	N	170457-37	< 0.1	7.98	0.62	105.4					MBrWilliams_2.1 Duplicate; E. coli rejected due to lab accident
7/5/2017	QCB4	NT	NT	NT	NT	NT	NT	NT	NT	NT					West_6.4 Blank
7/5/2017	QCB5	7:28AM	14-38-17	< 1.0	N	170457-39	< 0.1	< 5	< 0.2	6.4					West_1.42 Blank; E. coli rejected due to lab accident
7/5/2017	QCB6	7:00AM	14-39-17	< 1.0	N	170457-40	< 0.1	< 5	< 0.2	5.8					MBrWilliams_1.2 Blank; E. coli rejected due to lab accident
7/19/2017	West_38.5A	7:40AM	18-01-17	178.50	Y	170892-01	0.16	12.9	1.33	74.5	17	17.5	moderate	base	
7/19/2017	West_36	7:50AM	18-02-17	260.30	Y	170892-02	0.21	12	0.83	73.6	18	19.5	moderate	base	
7/19/2017	West_13	7:45AM	18-03-17	113.00	Y	170892-05	0.17	13.4	2.72	77.9	18	21	moderate	base	
7/19/2017	West_6.4	7:15AM	18-04-17	99.00	Y	170892-06	0.15	12.4	2.34	75.8	19	21	moderate	base	
7/19/2017	West_1.42	6:45AM	18-05-17	119.10	Y	170892-07	0.18	13.1	2.39	81.6	19	21	moderate	base	river bank was recently mowed, sample delayed in dropping off due to road closing
7/19/2017	West_08	8:33AM	18-06-17	84.20	Y	170892-08	0.15	12.9	2.21	80	20.5	22	moderate	base	
7/19/2017	Flood_1.7	7:20AM	18-07-17	44.80	Y	170892-03	0.19	10.7	0.36	81.6	17	17.5	moderate	base	
7/19/2017	NBranchBrk_4.5	6:45AM	18-08-17	151.50	Y	170892-04	0.23	6.62	0.6	271.4	15	17	moderate	base	
7/19/2017	Rock_38	6:55AM	18-09-17	58.10	Y	170892-09	< 0.1	8.19	0.64	68.2	17	17	moderate	freshset	

Date	Site	Time	CRWC			LaRosa				SeVWA					Sample or QA Notes:
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7/19/2017	Williams_14.2	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
7/19/2017	MBrWilliams_2.1	7:15AM	18-10-17	50.40	Y	170892-11	< 0.1	7.24	0.97	116	21	18	low	base	
7/19/2017	MBrWilliams_1.2	6:55AM	18-11-17	56.30	Y	170892-12	< 0.1	8.5	0.89	115.9	16	19	moderate	freshset	a full grown tree has fallen into th eriver about ttwn meters below sampling, may have slightly changed flow
7/19/2017	MBrWilliams_.02	7:00AM	18-12-17	90.80	Y	170892-13	0.13	8.29	0.71	122.5	17	18	moderate	base	
7/19/2017	Williams_10.7	7:00AM	18-13-17	191.80	Y	170892-14	0.18	8.9	0.94	108.3	16	17.5	moderate	freshset	
7/19/2017	Williams_10.3	6:40AM	18-14-17	151.50	Y	170892-15	0.17	10.1	1.21	103.9	17.5	18	moderate	freshset	
7/19/2017	Williams_8.6	7:15AM	18-15-17	228.20	Y	170892-16	0.48	12.1	1.16	109.3	17	17	moderate	base	
7/19/2017	Williams_7.0	7:25AM	18-16-17	290.90	Y	170892-17	0.5	14.7	1.41	107.2	16	18	moderate	base	
7/19/2017	Saxtons_5.6	6:51AM	18-17-17	93.30	Y	170892-18	0.16	9.7	1.13	92.6	16	18	moderate	base	
7/19/2017	Saxtons_5.15	NT	NT		NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
7/19/2017	Saxtons_4.7	7:35AM	18-18-17	118.70	Y	170892-20	0.16	13.2	1.07	102.2	19	17.5	moderate	base	
7/19/2017	Saxtons_3.6	7:10AM	18-19-17	125.90	Y	170892-21	0.16	12.7	1.25	102.2	17	19	moderate	freshset	
7/19/2017	Saxtons_1.0	7:25AM	18-20-17	120.10	Y	170892-22	0.16	13.4	1.63	108.1	17	19	moderate	freshset	
7/19/2017	Saxtons_.19	7:50AM	18-21-17	90.60	Y	170892-23	0.2	12	1.73	113.9	17	19	moderate	freshset	
7/19/2017	EPutney_.04	7:30AM	18-22-17	76.70	Y	170892-24	0.2	12.8	1.87	129.3	17.5	16.5	moderate	base	
7/19/2017	Sacketts_2.5	8:20AM	18-24-17	105.00	Y	170892-25	0.2	13.2	1.5	164.4	19	15	moderate	base	
7/19/2017	Sacketts_1.5	8:15AM	18-25-17	259.50	Y	170892-26	0.2	22.7	15.4	166.2	18	15.5	moderate	base	
7/19/2017	Sacketts_1.2	8:40AM	18-26-17	816.40	Y	170892-27	0.19	18.9	3.72	163.3	17	16	moderate	base	
7/19/2017	Sacketts_1.0	8:20AM	18-27-17	1299.70	Y	170892-28	0.2	16.4	3.17	167.6	12.5	13.5	moderate	base	
7/19/2017	Whetstone_3.7	5:35AM	18-28-17	261.30	Y	170892-29	0.15	14.7	1.66	97.1	17	17	moderate	freshset	
7/19/2017	Whetstone_3.3	5:46AM	18-29-17	290.90	Y	170892-30	0.15	13.4	1.18	105	18	18	moderate	freshset	
7/19/2017	Whetstone_2.4	8:35AM	18-30-17	365.40	Y	170892-31	0.17	11.4	0.99	120.7	21	19	moderate	base	Outfall collected, warm waterm no odor.
7/19/2017	Whetstone_1.3	8:30AM	18-32-17	435.20	Y	170892-32	0.19	14.3	1.64	137.6	20	17	high	freshset	
7/19/2017	Whetstone_.3	6:00AM	18-33-17	648.80	Y	170892-33	0.22	14.8	1.39	152.7	19	18	moderate	freshset	
7/19/2017	Whetstone_.2	5:45AM	18-34-17	547.50	Y	170892-34	0.22	15.3	1.39	154.4	18	17	moderate	freshset	

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7/19/2017	QCA7	8:38AM	18-35-17	272.30	Y	170892-35	0.15	12.5	1.02	121.3					Whetstone_2.4 Duplicate
7/19/2017	QCA8	7:30AM	18-36-17	131.40	Y	170892-36	0.19	13	1.36	108.1					Saxtons_1.0 Duplicate
7/19/2017	QCA9	7:45AM	18-37-17	72.80	Y	170892-37	0.2	11.7	2.08	128					Eputney_0.4 Duplicate
7/19/2017	QCB7	7:03AM	18-38-17	< 1	Y	170892-38	< 0.1	< 5	< 0.2	5					Rock_.38 Blank
7/19/2017	QCB8	8:03AM	18-39-17	< 1	Y	170892-39	< 0.1	< 5	< 0.2	3.5					West_.08 Blank
7/19/2017	QCB9	7:55AM	18-40-17	< 1	Y	170892-40	< 0.1	< 5	< 0.2	0.9					Saxtons_.19 Blank
8/2/2017	West_38.5A	8:55AM	22-01-17	75.9	N	170994-01	0.2	8.46	0.69	115.9	22	18	low	base	
8/2/2017	West_36	9:15AM	22-02-17	131.4	N	170994-02	0.2	6.83	0.48	113.8	22	18	low	base	
8/2/2017	West_13	8:00AM	22-03-17	110.6	N	170994-05	0.29	7.46	0.6	104.6	15	22	low	base	
8/2/2017	West_6.4	7:30AM	22-04-17	58.3	N	170994-06	0.21	7.28	0.53	101.5	18	20	moderate	base	
8/2/2017	West_1.42	6:35AM	22-05-17	86	N	170994-07	0.2	17.7	1.39	102.7	16	23	moderate	base	
8/2/2017	West_.08	8:04AM	22-06-17	83.6	N	170994-08	0.21	9.44	0.8	107.2	19	25	moderate	base	
8/2/2017	Flood_1.7	8:45AM	22-07-17	209.8	N	170994-03	0.23	7.82	0.36	82.1	21.5	17.5	low	base	
8/2/2017	NBranchBrk_4.5	7:03AM	22-08-17	14.6	N	170994-04	0.26	6.34	0.28	252.1	12	15	low	base	river is very low and green
8/2/2017	Rock_.38	7:20AM	22-09-17	16.1	N	170994-09	0.13	7.11	0.5	87.1	15	18	low	base	
8/2/2017	Williams_14.2	7:00AM	22-13-17	107.6	N	170994-10	0.13	7.13	0.61	108.1	13	16	low	base	silvery sheen seen on parts of the river that are not moving
8/2/2017	MBrWilliams_2.1	6:50AM	22-10-17	27.5	N	170994-11	< 0.1	6.23	0.45	141.2	13	16	low	base	
8/2/2017	MBrWilliams_1.2	7:00AM	22-11-17	45.7	N	170994-12	< 0.1	5.54	0.41	145	15	18	low	base	
8/2/2017	MBrWilliams_.02	6:58AM	22-12-17	131.7	N	170994-13	0.19	5.85	0.56	170.5	15	16	moderate	base	
8/2/2017	Williams_10.7	6:55AM	22-14-17	152.9	N	170994-14	0.32	6.31	0.45	159.3	13	17.5	low	base	
8/2/2017	Williams_10.3	6:40AM	22-15-17	172.3	N	170994-15	0.34	8.02	0.65	159.1	14	17.5	low	base	
8/2/2017	Williams_8.6	7:30AM	22-16-17	101.7	N	170994-16	1.03	19.6	0.6	174.6	15	17	low	base	
8/2/2017	Williams_7.0	7:18AM	22-17-17	133.4	N	170994-17	1.01	10.9	0.81	169.2	14	17	low	base	
8/2/2017	Saxtons_5.6	6:28AM	22-18-17	98.5	N	170994-18	0.21	7.65	0.42	126.3	15	16	moderate	base	
8/2/2017	Saxtons_5.15	6:48AM	22-19-17	77.1	N	170994-19	0.21	7.66	0.49	130.4	15	16	moderate	base	
8/2/2017	Saxtons_4.7	7:47AM	22-20-17	64.4	N	170994-20	0.26	11.8	0.5	137.1	17	18.25	low	base	

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8/2/2017	Saxtons_3.6	6:17AM	22-21-17	133.3	N	170994-21	0.26	10	0.72	138.6	14	18	low	base	
8/2/2017	Saxtons_1.0	6:32AM	22-22-17	70.3	N	170994-22	0.24	9.07	0.5	150.2	14	19	low	base	
8/2/2017	Saxtons_.19	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
8/2/2017	EPutney_.04	8:00AM	22-23-17	113	N	170994-24	0.31	6.41	0.43	150.1	17	16	moderate	base	
8/2/2017	Sacketts_2.5	8:20AM	22-24-17	107.1	N	170994-25	0.25	6.78	0.45	192.1	14.5	14	moderate	base	
8/2/2017	Sacketts_1.5	8:12AM	22-25-17	920.8	N	170994-26	0.36	22.2	3.97	199.4	18	16	moderate	base	
8/2/2017	Sacketts_1.2	8:01AM	22-26-17	920.8	N	170994-27	0.23	14.8	3.76	193.9	16	16	low	base	
8/2/2017	Sacketts_1.0	8:15AM	22-27-17	517.2	N	170994-28	0.23	13.9	3.06	196.4	16.5	16.5	moderate	base	
8/2/2017	Whetstone_3.7	5:20AM	22-28-17	298.7	N	170994-29	0.18	18.2	0.44	139.5	15	15	low	base	
8/2/2017	Whetstone_3.3	5:30AM	22-29-17	260.3	N	170994-30	0.23	12.2	0.31	150.1	15	15	low	base	
8/2/2017	Whetstone_2.4	8:50AM	22-30-17	187.2	N	170994-31	0.23	9.85	0.34	171.6	18	16	low	base	
8/2/2017	Whetstone_1.3	7:40AM	22-31-17	178.2	N	170994-32	0.28	10.1	0.35	211.2	18	17	low	base	water level lower
8/2/2017	Whetstone_.3	6:15AM	22-32-17	137.6	N	170994-33	0.36	8.71	0.35	262.4	17	17	moderate	base	
8/2/2017	Whetstone_.2	6:07AM	22-33-17	98.7	N	170994-34	0.36	7.95	0.48	263.2	17	18	moderate	base	
8/2/2017	QCA10	7:01AM	22-34-17	117.8	N	170994-35	0.2	5.28	0.47	169.4					MBrWilliams_.02 Duplicate
8/2/2017	QCA11	6:52AM	22-35-17	101.2	N	170994-36	0.21	8.68	0.49	132.1					Saxtons_5.15 Duplicate
8/2/2017	QCA12	NT	NT	NT	NT	170994-37	0.31	27.2	3.88						Sacketts_1.5 Duplicate
8/2/2017	QCB10	5:25AM	22-36-17	< 1	N	170994-38	< 0.1	< 5	< 0.2	2.8					Whetstone_3.7 Blank
8/2/2017	QCB11	6:55AM	22-37-17	< 1	N	170994-39	< 0.1	10.1	< 0.2	2.9					Williams_10.7 Blank
8/2/2017	QCB12	7:55AM	22-38-17	< 1	N	170994-40	< 0.1	< 5	< 0.2	2.2					Saxtons_4.7 Blank
8/16/2017	West_38.5A	7:45AM	26-01-17	56.5	N	171131-01	0.24	11.3	1.21	116.1	16	18.5	low	base	
8/16/2017	West_36	8:00AM	26-02-17	54.6	N	171131-02	0.22	9.8	0.8	110.5	17.5	18.5	low	base	
8/16/2017	West_13	7:45AM	26-03-17	86	N	171131-05	0.31	11.8	0.8	100.4	17	20	moderate	base	
8/16/2017	West_6.4	7:30AM	26-04-17	26.5	N	171131-06	0.3	12.6	0.94	96.8	19	20	moderate	base	
8/16/2017	West_1.42	6:45AM	26-05-17	63.8	N	171131-07	0.3	26.5	0.84	94.9	18	20	moderate	base	
8/16/2017	West_.08	7:53AM	26-06-17	101.2	N	171131-08	0.28	11.7	1.05	94.8	20	22	moderate	base	
8/16/2017	Flood_1.7	7:30AM	26-07-17	12	N	171131-03	0.29	10.1	0.34	98.1	20	16.5	low	base	

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8/16/2017	NBranchBrk_4.5	6:45AM	26-09-17	93.3	N	171131-04	0.33	7.59	0.32	253.6	15	17	low	base	
8/16/2017	Rock_38	6:50AM	26-10-17	42.8	N	171131-09	0.17	10.9	0.61	74.3	20	20	moderate	base	
8/16/2017	Williams_14.2	7:25AM	26-14-17	98.8	N	171131-10	0.2	9.76	0.82	103.9	15	14	low	base	lots of green algae in and around the river
8/16/2017	MBrWilliams_2.1	7:05AM	26-11-17	25	N	171131-11	0.14	7.94	0.54	144.8	16	17	low	base	
8/16/2017	MBrWilliams_1.2	7:00AM	26-12-17	49.5	N	171131-12	0.13	7.4	0.52	145.1	17	18	low	base	
8/16/2017	MBrWilliams_.02	7:28AM	26-13-17	74.9	N	171131-13	0.23	7.78	0.5	164.3	16	18	low	base	
8/16/2017	Williams_10.7	7:00AM	26-15-17	172.3	N	171131-14	0.37	7.47	0.6	156.6	18	18	low	base	
8/16/2017	Williams_10.3	6:40AM	26-16-17	122.3	N	171131-15	0.36	10.3	0.51	157.9	18	18	low	base	
8/16/2017	Williams_8.6	6:55AM	26-17-17	201.4	N	171131-16	0.96	17.8	1.05	167.8	17	18	moderate	base	
8/16/2017	Williams_7.0	7:25AM	26-18-17	98.8	N	171131-17	0.93	12.6	0.53	169.3	17.5	18	low	base	
8/16/2017	Saxtons_5.6	6:42AM	26-19-17	32.7	N	171131-18	0.24	9.78	0.59	129.1	18	19	moderate	base	
8/16/2017	Saxtons_5.15	6:54AM	26-20-17	47.3	N	171131-19	0.26	10.6	0.38	135.2	17	18	low	base	
8/16/2017	Saxtons_4.7	7:47AM	26-21-17	39.9	N	171131-20	0.3	14	0.69	140.2	19	18.5	low	base	
8/16/2017	Saxtons_3.6	7:10AM	26-22-17	70.3	N	171131-21	0.28	13.8	1.16	143.8	18	19	low	base	
8/16/2017	Saxtons_1.0	7:30AM	26-23-17	115.3	N	171131-22	0.32	10.9	0.67	155.8	18	19	low	base	
8/16/2017	Saxtons_.19	7:55AM	26-24-17	150	N	171131-23	0.37	10.3	0.54	172.5	19	20	low	base	water extra clear
8/16/2017	EPutney_.04	7:33AM	26-25-17	62.7	N	171131-24	0.38	11.6	0.35	159.2	18	16	moderate	base	low
8/16/2017	Sacketts_2.5	8:25AM	26-26-17	67	N	171131-25	0.39	11.9	1.01	197.2	20	15	moderate	base	
8/16/2017	Sacketts_1.5	7:53AM	26-27-17	547.5	N	171131-26	0.35	22.4	3.62	202.1	18	18	low	base	
8/16/2017	Sacketts_1.2	8:13AM	26-28-17	920.8	N	171131-27	0.33	19.9	3.83	197.7	18	17	low	base	
8/16/2017	Sacketts_1.0	8:07AM	26-29-17	517.2	N	171131-28	0.33	18	3.27	198.1	18	17.5	moderate	base	
8/16/2017	Whetstone_3.7	8:07AM	26-30-17	172.2	N	171131-29	0.24	19.5	0.86	124	NT	NT	low	base	some odor, suds, pump and hose in water
8/16/2017	Whetstone_3.3	8:22AM	26-31-17	107.1	N	171131-30	0.27	18.8	0.61	141.2	19	15	low	base	
8/16/2017	Whetstone_2.4	8:30AM	26-32-17	137.6	N	171131-31	0.27	19.4	0.55	157.3	19	16	low	base	
8/16/2017	Whetstone_1.3	8:30AM	26-34-17	260.3	N	171131-32	0.28	17.9	0.56	183.7	20	17	moderate	base	
8/16/2017	Whetstone_.3	6:18AM	26-35-17	155.3	N	171131-33	0.37	17.4	0.81	220.2	20	18	high	base	

Date	Site	Time	CRWC			LaRosa				SeVWA					Sample or QA Notes:
			Sample #	Final E. Coli. (mpn/100ml)	Wet? (Y/N)	Sample #	TN (mg-N/l)	TP (µg P/L)	Turb. (NTU)	Spec. Cond. (µS/cm)	Air Temp. °C	Water Temp °C	Water Level	Flow Type	
8/16/2017	Whetstone_2	6:08AM	26-36-17	139.6	N	171131-34	0.37	15.4	0.52	223.9	20	18	high	base	
8/16/2017	QCA13	6:40AM	26-37-17	118.7	N	171131-35	0.37	9.76	0.58	153.6	18	16	moderate	base	Williams_10.3 Duplicate
8/16/2017	QCA14	7:30AM	26-38-17	98.5	N	171131-36	0.93	11.5	0.52	165.6	17.5	18	low	base	Williams_7.0 Duplicate
8/16/2017	QCA15	7:15AM	26-39-17	63.1	N	171131-37	0.27	12.2	0.98	143.2	18	19	low	base	Saxtons_3.6 Duplicate
8/16/2017	QCB13	8:15AM	26-40-17	< 1	N	171131-38	< 0.1	< 5	< 0.2	3.4	19	15	low	base	Whetstone_3.3 Blank
8/16/2017	QCB14	6:55AM	26-41-17	< 1	N	171131-39	< 0.1	< 5	< 0.2	3.2	20	20	moderate	base	Williams_8.6 Duplicate
8/16/2017	QCB15	8:30AM	26-42-17	< 1	N	171131-40	< 0.1	< 5	0.21	2.9	20	15	moderate	base	Sacketts_2.5 Duplicate
8/30/2017	West_38.5A	7:40AM	30-06-17	81.3	N	171219-01	0.2	7.55	0.31	95	11.5	12	low	base	
8/30/2017	West_36	7:54AM	30-02-17	22.8	N	171219-02	0.13	7.42	0.52	113	13	14	low	base	
8/30/2017	West_13	8:00AM	30-03-17	78.9	N	171219-05	0.29	8.66	0.57	105.1	13	16	low	base	
8/30/2017	West_6.4	7:30AM	30-04-17	26.9	N	171219-06	0.26	6.94	0.45	99	13	13	low	base	
8/30/2017	West_1.42	6:10AM	30-45-17	51.2	N	171219-07	0.34	8.73	1.24	111.6	13	15	low	base	
8/30/2017	West_.08	7:55AM	30-05-17	59.4	N	171219-08	0.21	9.36	0.74	108.1	15	18	moderate	regulated	flowing downstream to upstream
8/30/2017	Flood_1.7	7:24AM	30-01-17	7.4	N	171219-03	0.17	6.73	0.67	111.3	11.5	14	low	base	
8/30/2017	NBranchBrk_4.5	7:25AM	30-07-17	13.2	N	171219-04	0.31	5.3	< 0.2	209.2	10	12	low	base	
8/30/2017	Rock_.38	7:15AM	30-46-17	4.1	N	171219-09	0.1	7.2	0.24	83.8	13	13	low	base	
8/30/2017	Williams_14.2	7:00AM	30-11-17	45.5	N	171219-10	0.16	5.85	0.34	113	12	14	low	base	
8/30/2017	MBrWilliams_2.1	6:55AM	30-08-17	6.3	N	171219-11	0.1	5.22	0.4	152.5	12	14	low	base	
8/30/2017	MBrWilliams_1.2	7:10AM	30-09-17	4.1	N	171219-12	0.12	5.13	0.47	156.2	13	16	low	base	
8/30/2017	MBrWilliams_.02	7:00AM	30-10-17	27.5	N	171219-13	0.23	5.08	0.34	180	12	13	low	base	
8/30/2017	Williams_10.7	7:00AM	30-12-17	104.6	N	171219-14	0.39	5.48	0.32	169.1	12	14	low	base	
8/30/2017	Williams_10.3	6:50AM	30-13-17	86.2	N	171219-15	0.32	7.24	0.4	165.5	12	14	low	base	
8/30/2017	Williams_8.6	7:10AM	30-14-17	146.7	N	171219-16	1.05	22.2	0.56	183.4	12	14	low	base	
8/30/2017	Williams_7.0	7:35AM	30-15-17	114.5	N	171219-17	1.02	10.6	0.47	182.2	12	14	low	base	
8/30/2017	Saxtons_5.6	7:06AM	30-16-17	23.1	N	171219-18	0.21	6.67	0.51	138.6	12	13	low	base	
8/30/2017	Saxtons_5.15	6:30AM	30-17-17	27.2	N	171219-19	0.22	5.15	0.3	143.1	14	13	low	base	
8/30/2017	Saxtons_4.7	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	

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8/30/2017	Saxtons_3.6	7:23AM	30-18-17	44.8	N	171219-21	0.29	10.2	0.39	143.8	13	15	low	base	
8/30/2017	Saxtons_1.0	6:05AM	30-19-17	52	N	171219-22	0.2	7.67	0.57	165	13	15	low	base	
8/30/2017	Saxtons_.19	7:30AM	30-20-17	48.7	N	171219-23	0.35	5.87	0.38	188.9	13	15	low	base	
8/30/2017	EPutney_.04	7:10AM	30-21-17	103.6	N	171219-24	0.38	8.28	0.4	161.9	13	13.5	moderate	base	
8/30/2017	Sacketts_2.5	8:00AM	30-22-17	178.9	N	171219-25	0.37	9.3	3.59	204.1	15	13	low	base	
8/30/2017	Sacketts_1.5	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	Sample taken from a different location on a different trib due to dam dredging
8/30/2017	Sacketts_1.2	7:55AM	30-24-17	727	N	171219-27	1.03	284	165.6	231.1	12.5	14	moderate	base	silt from dam cleaning created muddy water; couldn't see the bottom
8/30/2017	Sacketts_1.0	8:15AM	30-25-17	461.1	N	171219-28	0.92	137.4	86.4	230	17	14	low	base	affected by dam cleaning
8/30/2017	Whetstone_3.7	6:10AM	30-26-17	61.3	N	171219-29	0.18	9.49	0.82	131.7	13	15	moderate	base	
8/30/2017	Whetstone_3.3	6:00AM	30-27-17	66.3	N	171219-30	0.22	10.8	0.38	149.9	13	15	moderate	base	
8/30/2017	Whetstone_2.4	8:48AM	30-28-17	70.8	N	171219-31	0.27	14.2	1.04	169.7	16	13	low	base	
8/30/2017	Whetstone_1.3	8:20AM	30-29-17	66.3	N	171219-32	0.3	11.5	0.3	197.3	15	14	low	base	
8/30/2017	Whetstone_.3	6:33AM	30-31-17	69.7	N	171219-33	0.37	10	0.64	248.9	14	14	moderate	base	
8/30/2017	Whetstone_.2	6:20AM	30-32-17	76.7	N	171219-34	0.36	7.78	0.39	247.9	14	14	moderate	base	
8/30/2017	QCA16	7:30AM	30-33-17	26.6	N	171219-35	0.22	8.48	0.66	103.6					West_6.4 Duplicate
8/30/2017	QCA17	8:25AM	30-34-17	75.4	N	171219-36	0.29	11.7	0.52	193.8					Whetstone_1.3 Duplicate
8/30/2017	QCA18	8:03AM	30-35-17	648.8	N	171219-37	0.68	370	162	228.7					Sacketts_.12 Duplicate
8/30/2017	QCB16	6:30AM	30-36-17	< 1	N	171219-38	< 0.1	< 5	< 0.2	5.3					Whetstone_.3 Blank
8/30/2017	QCB17	7:00AM	30-37-17	< 1	N	171219-39	< 0.1	8.96	0.41	5.1					MBrWilliams_.02 Blank
8/30/2017	QCB18	8:17AM	30-38-17	< 1	N	171219-40	< 0.1	< 5	< 0.2	4.6					Sacketts_1.0 Blank