

Skagit Stream Team Annual Water Quality Report

Citizen Monitoring Summary for the Samish Bay, Padilla Bay, Clyde Creek, Gages Slough, Trumpeter Basin, Kulshan Creek, Nookachamps Creek and Fisher Creek Watersheds



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2014-2015 Skagit Stream Team Annual Water Quality Report

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I. Introduction

This report summarizes the results of the 2014-2015 Skagit Stream Team Program, the sixteenth consecutive year of data collection by volunteers. From October 2014 through August 2015, seventy-eight dedicated citizen volunteers monitored the water quality of freshwater streams that drain into Skagit County's Samish Bay, Padilla Bay, the Skagit River and Burrows Bay. In addition to regularly sampled watersheds, the nine members of the Samish Storm Team sampled twenty sites in the Friday Creek watershed during eighteen rain events.

This report is meant to provide useful and reliable background WQ data. It is not intended to provide a legal documentation of water quality violations. All data and methods are available to the public.

Background

The Skagit Stream Team Program was established in 1998 to educate and involve local citizens in the protection and stewardship of local streams. Sponsors include Skagit Conservation District (SCD) in partnership with the Padilla Bay National Estuarine Research Reserve (PBNERR), City of Mount Vernon, City of Burlington, City of Anacortes, and Skagit County. Funding was provided by the Washington State Conservation Commission, the Washington State Department of Ecology's Centennial Clean Water Fund Program, and partnering jurisdictions. Local citizens volunteered approximately 1250 hours during the 2014-2015 sampling season.

Skagit Stream Team Objectives

- To inspire community stewardship of water resources by educating local citizens about land use and non-point sources of pollution and involving them in the process of water quality data gathering;
- To develop and implement a routine sampling program that can be used to assess water quality trends, characterize the existing water quality of priority freshwater drainages, and determine how water quality conditions compare to State Standards;
- To document improvements in water quality as a result of the implementation of Best Management Practices on farmlands and the repair and/or replacement of failing septic systems;
- To teach community volunteers the sampling and analytical techniques used by environmental professionals, how to manage the data collected and create a database, and the importance of establishing a long-term water quality monitoring program.

Volunteers measured fecal coliform (FC) bacteria, dissolved oxygen (DO), water temperature, turbidity, and total depth. Some of the questions the study hoped to address were:

- How do water quality conditions compare to State Standards in our priority watersheds?
- Could water quality conditions support aquatic life such as salmon?

II. Methods

Efforts were made to insure high quality data from this volunteer-based study. Quality Assurance/Quality Control (QA/QC) plans and laboratory plans were submitted to and approved by the WA Department of Ecology. These plans have since been updated and revised. Volunteers were given ten hours of training before sampling in the field, and were accompanied by a trainer for their first sampling. All analysis and collection methods are detailed in the QA/QC plan, and are available on request.

The Samish watershed had two upper and two lower teams, and was coached by Jennifer Hinderman, SCD. The Padilla Bay watershed had two teams each on No Name Slough, Joe Leary Slough, and in the village of Bay View, coached by Susan Wood, PBNERR. Nookachamps Creek had two upper and two lower teams coached by Cindy Pierce, SCD. Fisher Creek, Kulshan Creek, and Trumpeter Basin each had two teams coached by Kristi Carpenter, SCD. Gages Slough had two teams coached by Cindy Pierce. Clyde Creek was monitored by two teams coached by Susan Wood.

At each site, samples were usually taken every two weeks. Temperature, dissolved oxygen (DO), and salinity (when applicable) were measured on-site with an electronic YSI Data Probe. Field measurements and samples were taken just below the surface, in the deepest part of the stream that could be reached. Depth was measured for some sites using staff gages. Samples were tested for Fecal coliform either at the Padilla Bay volunteer lab (Padilla, Samish, Nookachamps, Fisher Creek samples), taken to Edge Analytical Laboratory (Gages Slough), taken to the Mount Vernon Wastewater Treatment Plant (Trumpeter Basin, Kulshan Creek) or the Anacortes Waste Water Treatment Plant (Clyde Creek) for analysis. Turbidity was measured either in Padilla Bay's lab or in the field. Volunteers also recorded water appearance and color. Quality procedures are outlined in more detail in Appendix C.

Quality control checks by staff were conducted periodically in the lab and in the field to assure that volunteers were using proper and consistent protocols.

The data was recorded on field sheets (See Appendix D) and transferred to a Microsoft Excel spreadsheet by a volunteer. Padilla Bay and Conservation District staff verified all data entries, making edits as appropriate. Any anomalies were recorded in the metadata.

In accordance with state standards, annual fecal coliform (FC) results were calculated using the geometric mean. "Too Numerous To Count" (TNTC) results were assigned a value of 1600 CFU/100 ml. Volunteers in Padilla Bay's lab ran two FC lab tests for each sample, generating a high and low reading, from which an average was calculated. Averages were calculated for dissolved oxygen, temperature and turbidity levels.

III. Samish Storm Team

In 2014-2015, Storm Team volunteers began monitoring the Friday Creek watershed. Friday Creek is the largest tributary of the Samish River. Assessing water quality during high flows is important since storms can flush large volumes of pollutants into streams.

Monitoring many sites throughout the drainage during storm events when high fecal coliform numbers are expected may detect priority areas for clean up. Special thanks to our Storm Team volunteers for their ongoing commitment – in the worst of weather.

Complete data are found in Appendix B.

IV. Sites

Samish River Watershed

Figure 1. Map of Samish Sites



Table 1. Samish Sampling Locations

US1	Friday Creek @ Pomona Grange Park	N48°33'55.02 W122°20'49.49
US2	Swede Creek @ Grip Rd	N48°33'17.75 W122°17'16.23
US3	Thomas Creek @ F&S Grade Rd	N48°31'42.93 W122°16'44.69
US4	Willard Creek @ 8274 F & S Grade Rd	N48°31'13.65 W122°15'58.07
LS1	Hwy 99 Bridge over Samish River	N48°31'32.58 W122°20'24.78
LS2	Samish River @ Jolly Road	N48°32'25.47 W122°20'36.36

LS3	Chuckanut Bridge over Samish River	N48°31'0.69 W122°22'43.29
LS4	Mouth of the Samish River (boat dock)	N48°19'11 W122°19'47

Fisher Creek

Figure 2. Map of Fisher Creek Sites

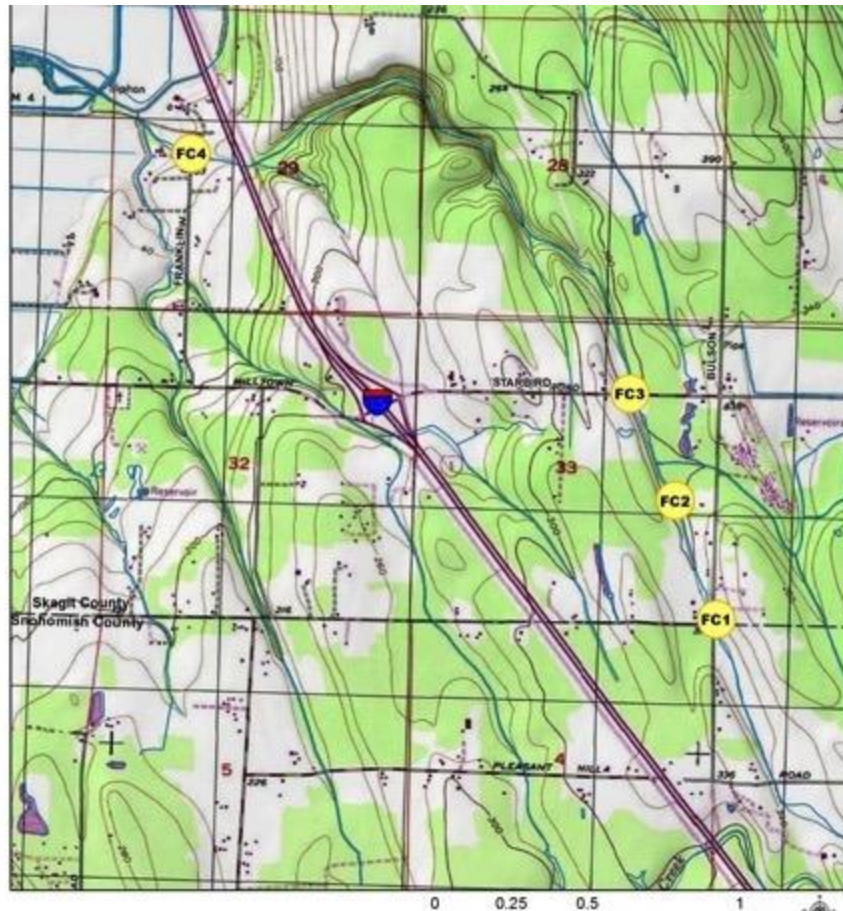


Table 2. Fisher Creek Sampling Locations

FC1	Bulson Road at Skagit.Snohomish County Line	N48°17'53. W122°17'31
FC2	Private Property Access at 23616 Bulson Road	N48°18'121 W122°17'41
FC3	Fisher Creek Crossing at Starbird Hill Road	N48°18'30. W122°17'53
FC4	Fisher Creek at Franklin Road Bridge	N48°19'11 W122°19'47

Nookachamps Creek

Figure 3. Map of Nookachamps Creek Sites



Table 3. Nookachamps Creek Sampling Locations

UN1	Lake McMurray Estates	N48°19'37 W122°13'10
UN2	Big Lake Outflow	N48°23'57 W122°14'24
UN3	Otter Pond Road	N48°24'10 W122°13'44
UN4	Knapp Road	N48°25'43 W122°15'32
LN1	SR 538 and N Waugh Road	N48°26'10.14 W122°17'29.88
LN2	SR 9 and Babcock	N48°26'45.56 W122°15'8.65
LN3	Swan Road	N48°27'13.79 W122°16'17.84
LN4	Francis Road	N48°28'5.47 W122°17'38.72

No Name Slough

Figure 4. Map of No Name Slough Sites



Table 4. No Name Slough Sampling Locations

NN1	Marihugh Road Culvert	N48°17'53. W122°17'31
NN2	Bay View Road Ravine	N48°18'121 W122°17'41
NN3	Egber's Field Bridge	N48°18'30. W122°17'53
NN4	Field Culvert, Bay View-Edison Road	N48°19'11 W122°19'47

Bay View Drainage

Figure 5. Map of Bay View Sites

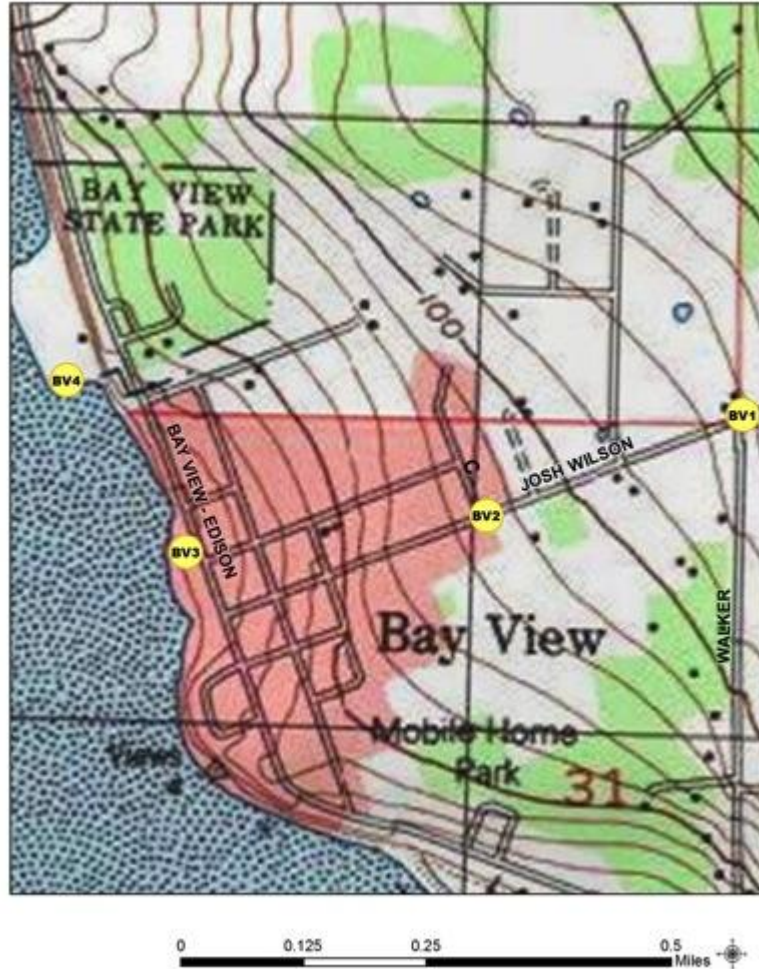


Table 5. Bay View Sampling Locations

BV1	Wilson Road and Walker Road	N48°29'11.94 W122°27'58.92
BV2	Wilson Road and C Street	N48°29'6.3 W122°28'19.26
BV3	Culvert at Boat Launch	N48°29'4.02 W122°28'43.2
BV4	N Beach at Bay View State Park	N48°29'13.02 W122°28'53.04

Joe Leary Slough

Figure 6. Map of Joe Leary Slough Sites



Table 6. Joe Leary Slough Sampling Locations

JL1	Dahlstedt Road	N48°30'53.35 W122°19'2.46
JL2	Hwy 99	N48°29'35.37 W122°20'6.61
JL3	Wilson Rd and Avon-Allen Rd.	N48°29'11.33 W122°22'41.96
JL4	Tide Gate	N48°31'4.90 W122°28'27.87

Trumpeter Basin

Figure 7. Map of Trumpeter Basin Sites

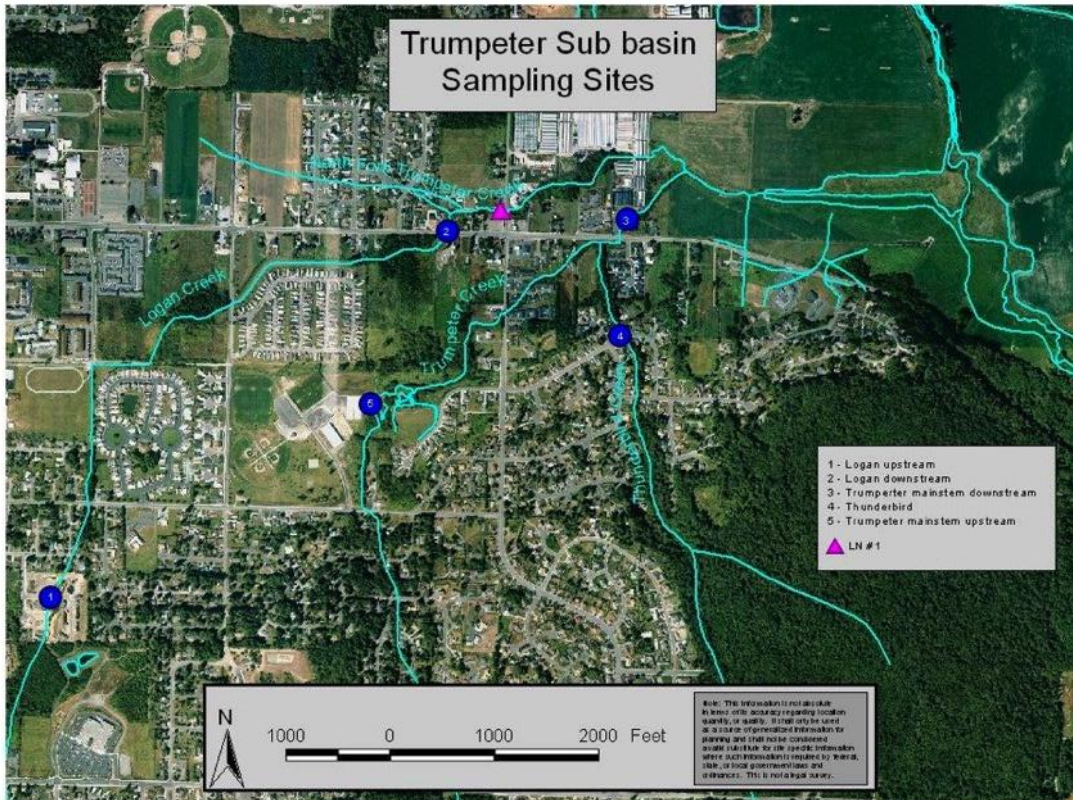


Table 7. Trumpeter Basin Sampling Locations

TB1	Stonebridge Adult Community, Logan Creek Bridge	N48°25'33 W122°18'32
TB2	College Way west of Martin .Vaugh Road, Logan Creek	N48°26'09 W122°17'12
TB3	Summersun Nursery Footbridge, Trumpeter.Thunderbird	N48°26'07 W122°17'17
TB4	Culvert on Kiowa, Thunderbird	48°25'53 W122°17'12
TB5	Bakerview Park Footbridge, Trumpeter	N48°25'51 W122°17'48

Kulshan Creek

Figure 8. Map of Kulshan Creek Sites



Table 8. Kulshan Creek Sampling Locations

KC1	North end of S 14 th .Kulshan Trail	N48°25'59 W122°19'27
KC2	Parker Way	N48°25'59 W122°19'17
KC3	S side Roosevelt.1 blk W of Parker Way	N48°26'11 W122°19'25
KC4	E of Riverside - N of RR crossing	N48°25'54 W122°20'04
KC5	Freeway Drive at Lions Park	N48°25'43 W122°20'28

Clyde Creek
Figure 9. Map of Clyde Creek Sites



Table 9. Clyde Creek Sampling Locations

CC1	Jasper Way	N48° 29'43.4 W122°39'34.3
CC2	Clyde Way	N48°29'29.3 W122°39'40.9
CC3	Queen Ann Way	N48°29'21.1 W122°39'48.8
CC4	Marine Drive	N48°29'10.9 W122°39'54.5

Gages Slough

Figure 10. Map of Gages Slough Sites

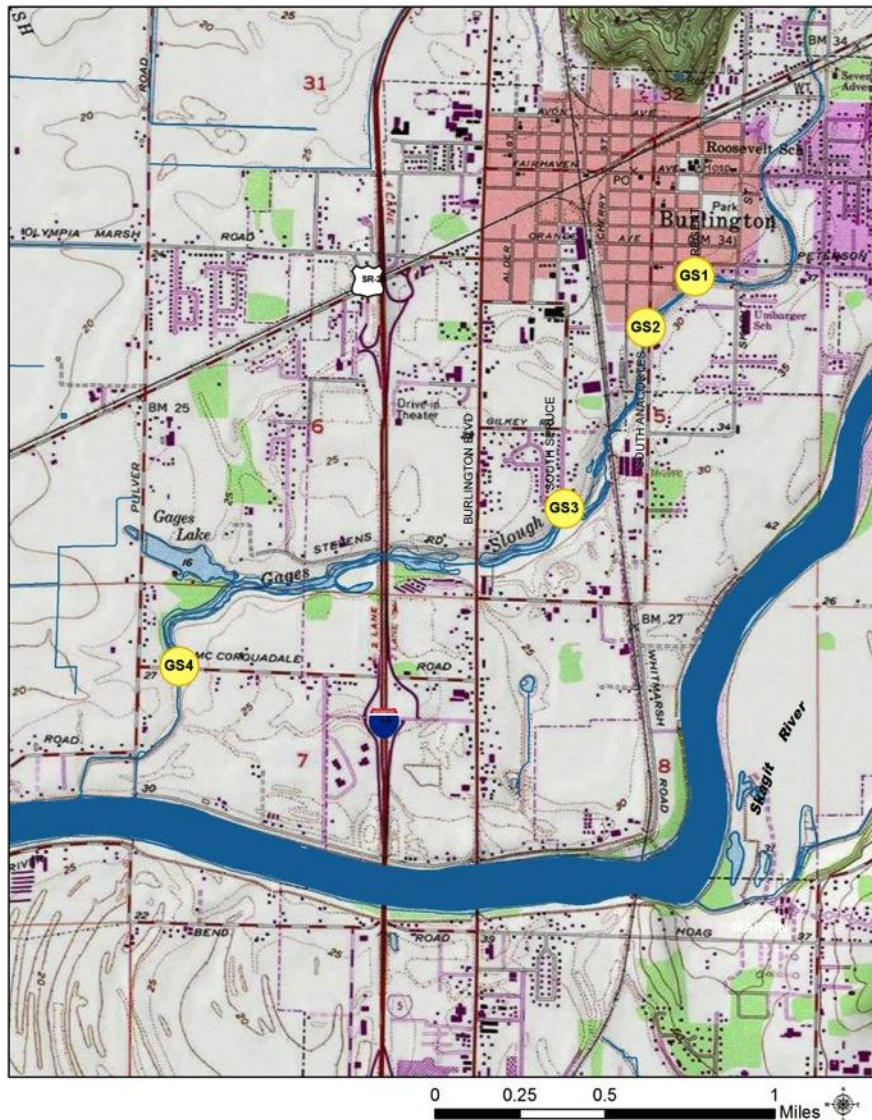


Table 10. Gages Slough Sampling Locations

GS1	Regent and East Rio Vista Streets	N48°28'16 W122°19'19
GS2	South Anacortes Street	N48°28'08 W122°19'30
GS3	South Spruce Street	N48°27'40 W122°19'48
GS4A	McCorquedale Road	N48°27'33 W122°20'9

V. Results

This section presents the data collected during the 2014-2015 season. It provides a preliminary overview for each parameter followed by details for each watershed and a comparison of annual site averages for the past five sampling seasons. Complete data for all watersheds are provided in Appendix A.

Dissolved Oxygen Standards

Dissolved oxygen (DO) measurements determine how much oxygen is available in the water for fish and other organisms. The state water quality standards for dissolved oxygen are based on aquatic life uses. Streams in this program fall under two categories based on aquatic life use. For the lowland watercourses, Joe Leary Slough, No Name Slough, Bay View, Gages Slough, Brickyard Creek and all Samish sites except Swede Creek (Upper Samish 2) the minimum standard is 8.0 mg/l for salmon spawning and rearing. For Fisher Creek, Nookachamps Creek, Trumpeter Basin, Kulshan Creek, Clyde Creek and Upper Samish Site 2, the standard is 9.5 mg/l required for core summer salmonid habitat. (Higher dissolved oxygen levels are better.)

Annual averages are presented for the purpose of comparison between sites and between years, but this data cannot determine whether the water body meets the standard. The standard is based on the lowest single-day measurement, not on the annual average. It is important to note that most of the teams do not monitor during the warmer summer months when DO would likely drop with warmer air and water temperatures.

Temperature Standards

Temperature is a water quality concern in part because warm water holds less dissolved oxygen than cool water. Many northwest fish species require cool temperatures and high oxygen levels at various stages in their life cycle. Warm water temperatures can cause stress to animals that lowers resistance to disease and infections. Many factors affect water temperature. These include large fluctuations in air temperature, changes in the shape of stream channel and lake margins, reductions in overhanging vegetation, turbidity, and reductions in water flow.

State standards for temperature are based on the 7-day average of the daily maximum temperatures (7-DADMax). For Fisher Creek, Nookachamps Creek, Trumpeter Basin, Kulshan Creek, Clyde Creek and Upper Samish Site 2, that maximum is 16°C. All other sites must be less than 17.5°C to meet standards. (Lower temperatures are better.)

The average temperatures presented below are used for comparison, but this data cannot determine whether the water body meets the standard. Most sites were not monitored during the critical summer warm periods and none were monitored daily in order to obtain a 7-DADMax.

Turbidity Standards

Turbidity is a measurement of water clarity. Turbidity data in this report are not referenced to a state standard because that standard is relative to naturally occurring background levels and varies for each stream. For streams with background levels less than 50 NTU (all of the Stream Team sites), turbidity should not exceed 5 NTU above the background level. Short-term occurrences of high turbidity are not as harmful to aquatic animals as extended periods of moderately elevated turbidity.

Fecal Coliform Standards

Fecal coliform live in the digestive system of warm blooded animals, including birds, livestock, and humans. They are not directly harmful to humans or aquatic life, but their presence indicates the possible presence of disease-causing microbes. To meet state standards, streams must meet two criteria. Part I: The geometric mean of fecal coliform bacteria levels cannot exceed 100 colony-forming units (CFU).100 ml. A minimum of five samples in the database is needed to calculate the geometric mean. Part II: No more than 10% of the samples can exceed 200 CFU.100 ml.

State regulations for fecal coliform use the geometric mean, which reduces the weight of occasional extreme results or results that don't fall within a reasonable range of the overall sample database This is helpful when analyzing bacteria concentrations, because levels may vary anywhere from 10 to 10,000 fold over a given period.

Upper Samish Results

Figures 11 through 18 below present results from Upper Samish sampling.

For dissolved oxygen, Sites 1 and 3, maintained levels above the state standard. As in past years, Site 4, the Willard Creek site had the lowest levels, with 6 occurrences below the state standard of 8.0 mg/l. Site 2, Swede Creek is considered core summer salmonid habitat, and should maintain DO levels above 9.5 mg/l. It dropped below 9.5mg/l on October 10.

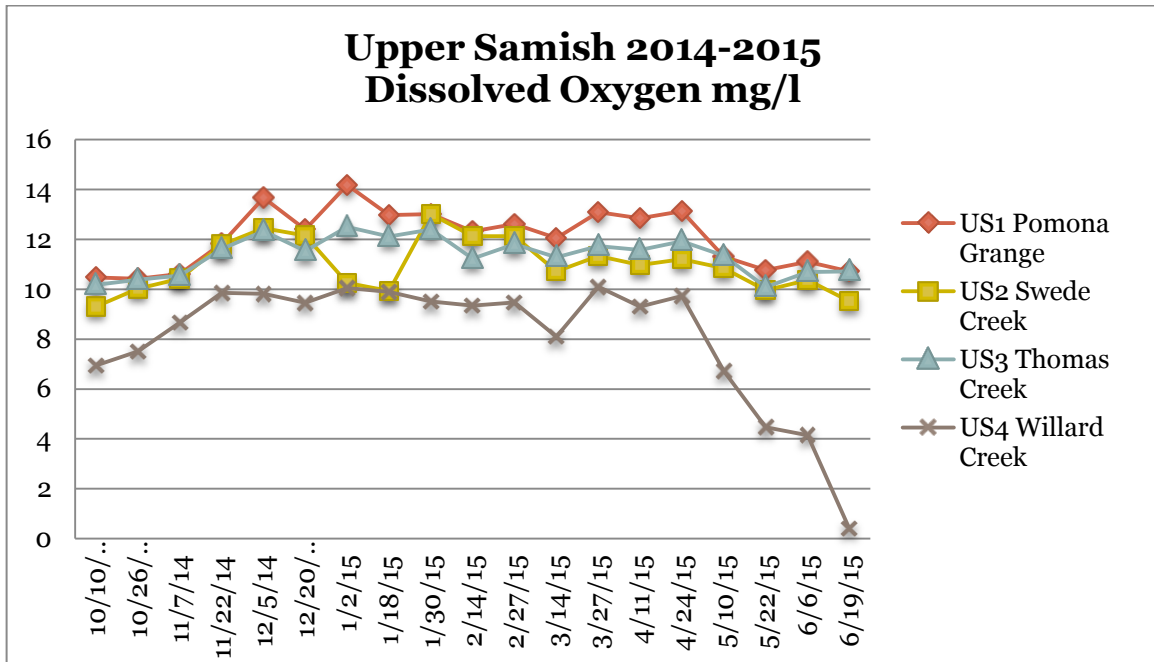


Figure 11. Upper Samish DO: 2014-2015

Figure 12 below shows a comparison of Upper Samish sites over the past 6 years.

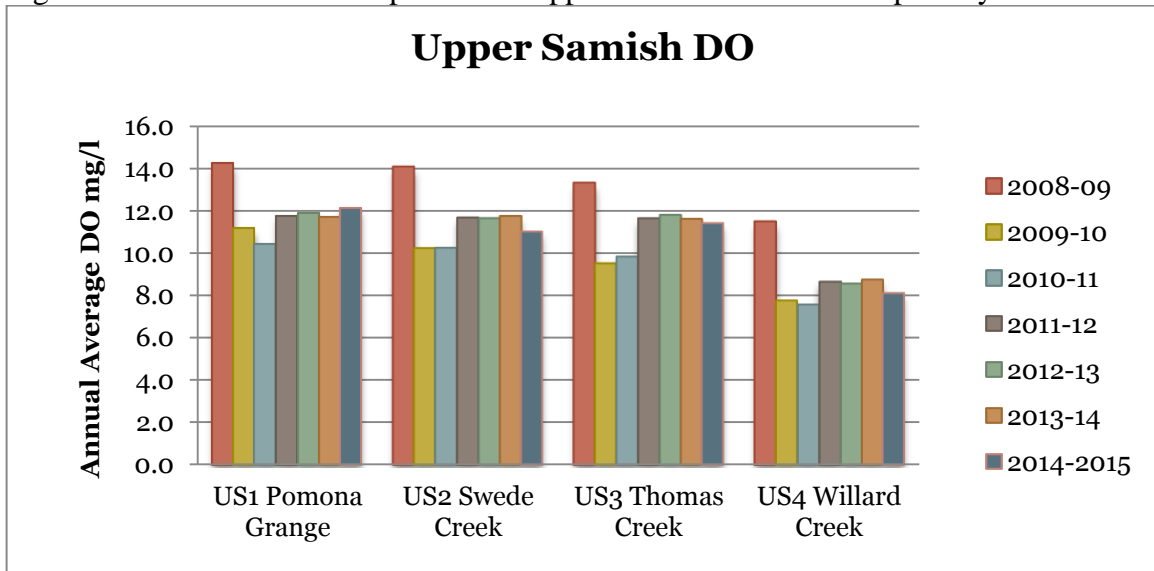


Figure 12. Upper Samish DO: Seven-year comparison

Though all temperature readings during the sampling season fell within state standard temperatures, sampling stopped before the warm season. Temperatures were similar for all Upper Samish sites.

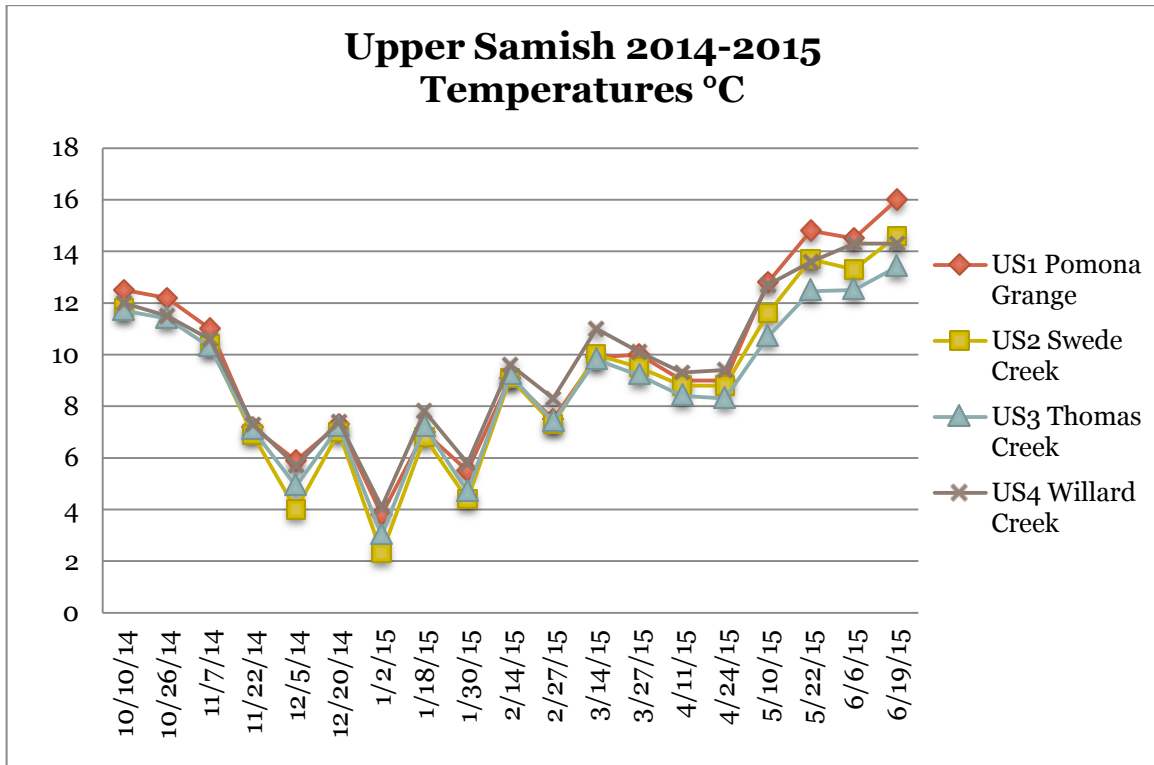


Figure 13. Upper Samish Temperature: 2014-2015

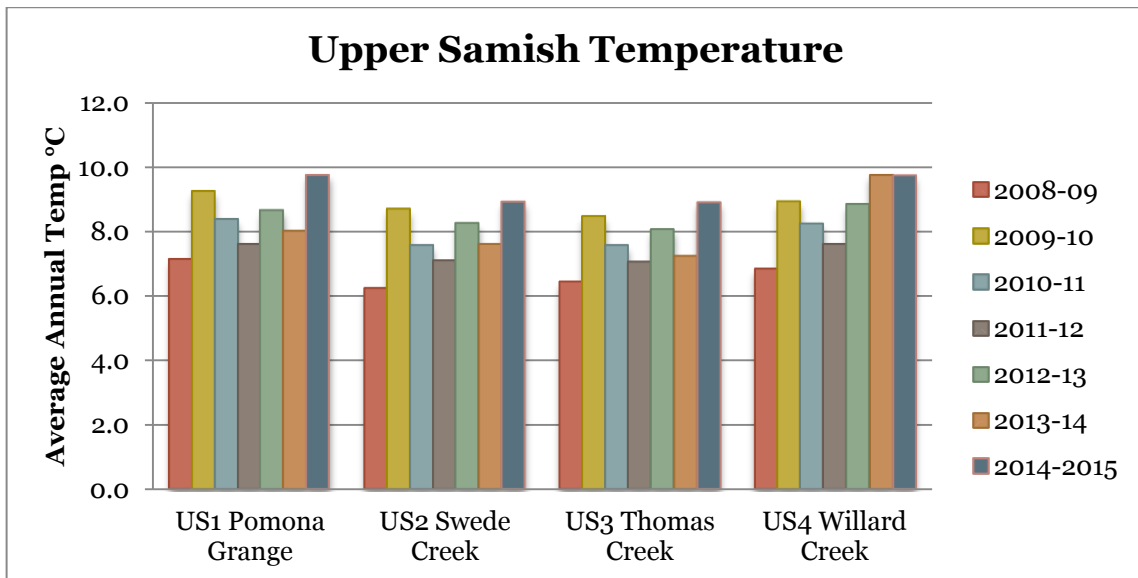


Figure 14. Upper Samish Temperature: Seven-year comparison

Turbidity levels in the Upper Samish (Figure 15) were generally highest at Site 3, Thomas Creek, and lowest at Site 1, Pomona Grange. Willard Creek saw 2 incidences of very turbid water.

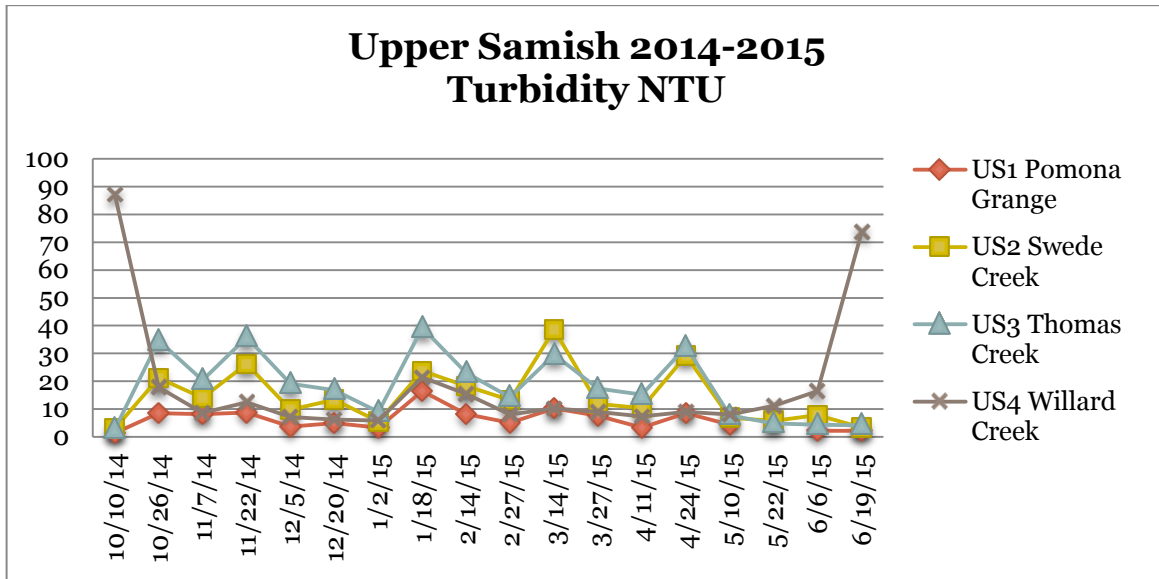


Figure 15. Upper Samish Turbidity: 2014-2015

Site 4, Willard Creek, has shown the most variability from year to year. Site 3, Thomas Creek has remained consistently high.

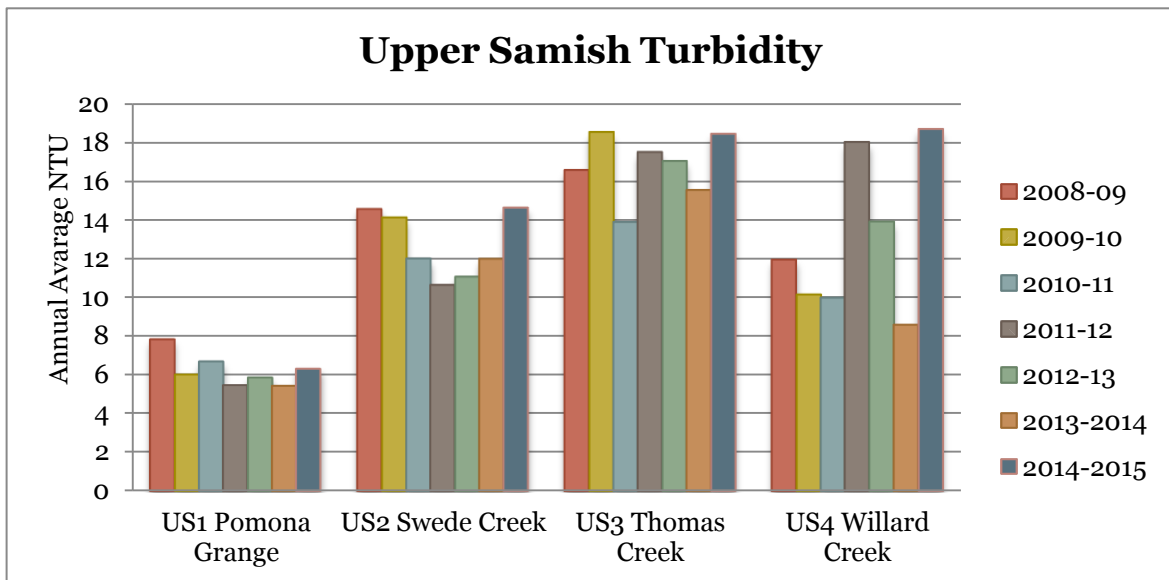


Figure 16. Upper Samish Turbidity: Seven-year comparison

. (Figure 17 below)

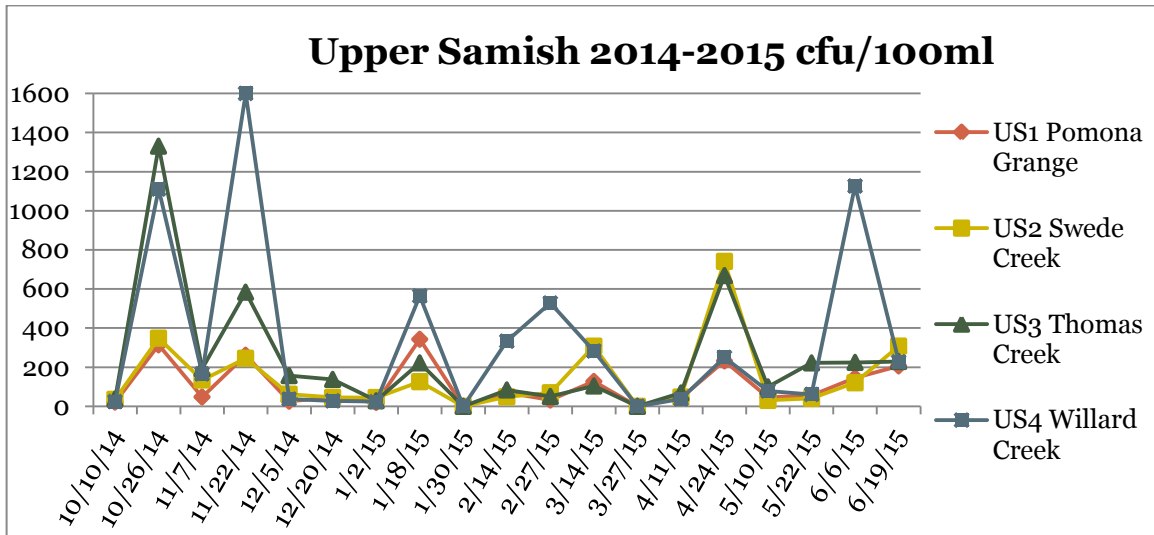


Figure 17. Upper Samish Fecal Coliform: 2014-2015

Fecal coliform levels in the Upper Samish watershed continue to be a problem, with levels at all sites higher this season than in the past four years. Site 1 met the state standard of 100CFU/100ml. All sites had over 10% of the samples over 200 CFU/100ml, and did not meet Part II of the state standard.

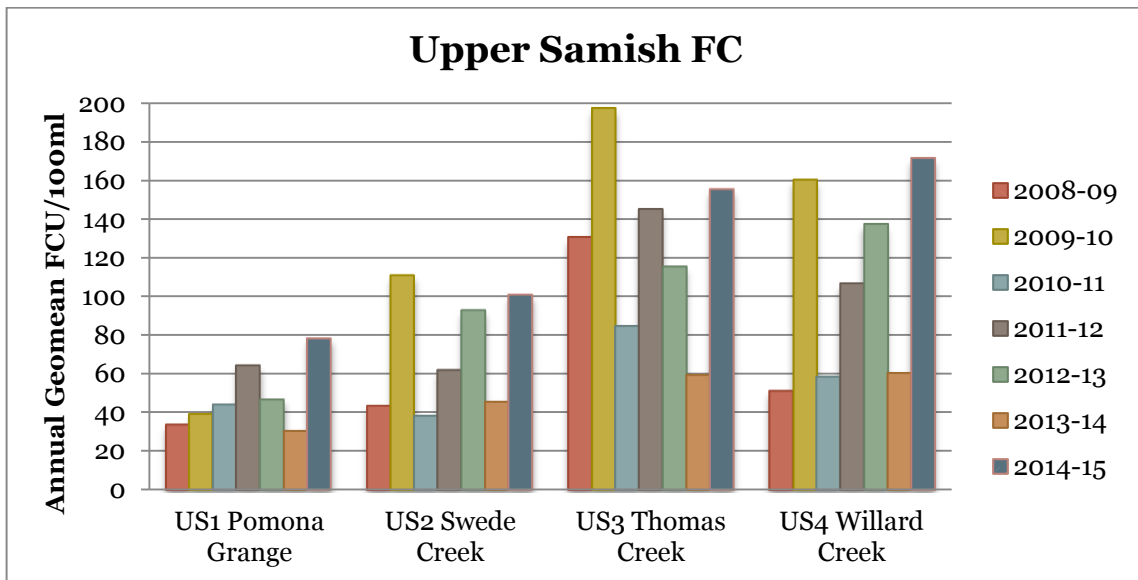


Figure 18. Upper Samish Fecal Coliform: Seven-year comparison

Lower Samish Results

Figures 19 through 26 below present results from Lower Samish sampling.

Dissolved oxygen levels were about the same for all sites, with Sites 1 and 2 slightly higher. They stayed above the standard level of 8mg/l at all sites throughout the sampling season. Lower Samish sites were not sampled during the warmest summer months when dissolved oxygen is likely to be lowest.

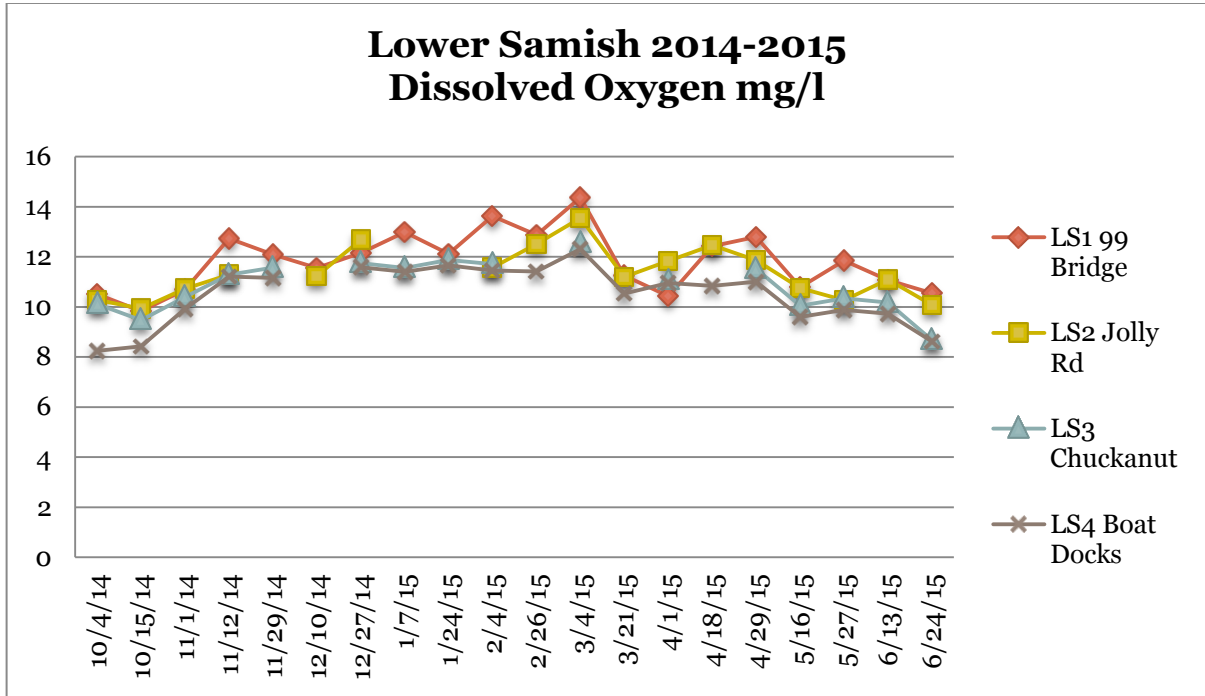


Figure 19. Lower Samish DO: 2014-2015

Average dissolved oxygen levels (Figure 20), have been consistent for four-six years, with most sites in the 10-12mg/l range. The standard is based on the lowest single day, not on an annual average.

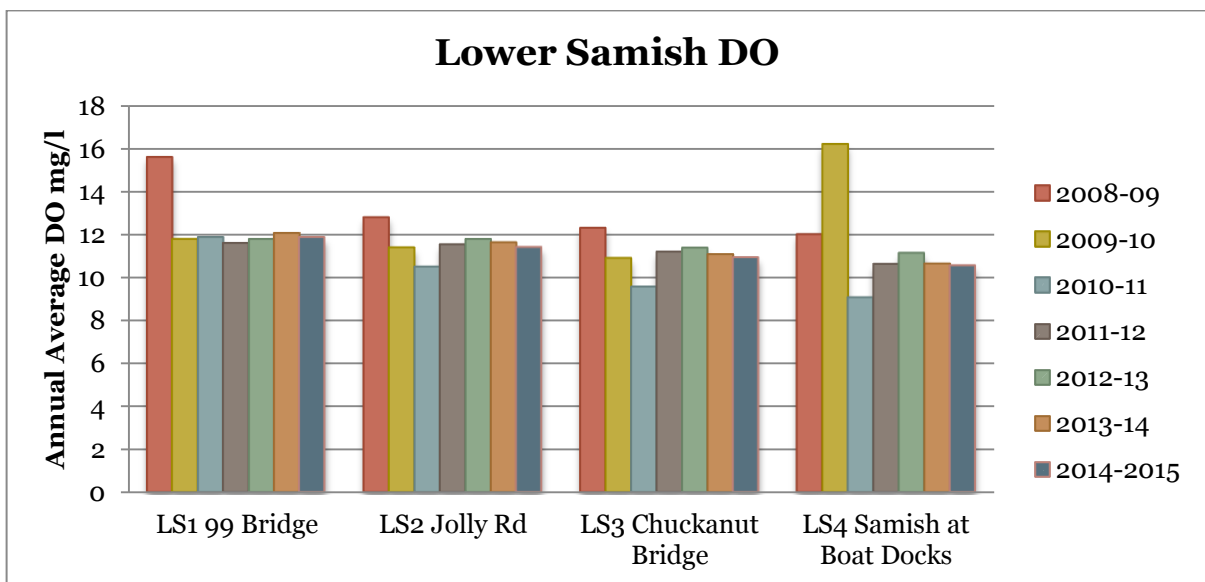


Figure 20. Lower Samish DO: Seven-year comparison

Temperature at Site 4, Boat Docks rose above the state standard in June. Though all other temperature measurements fell within state standard temperatures, sampling stopped before the warm season.

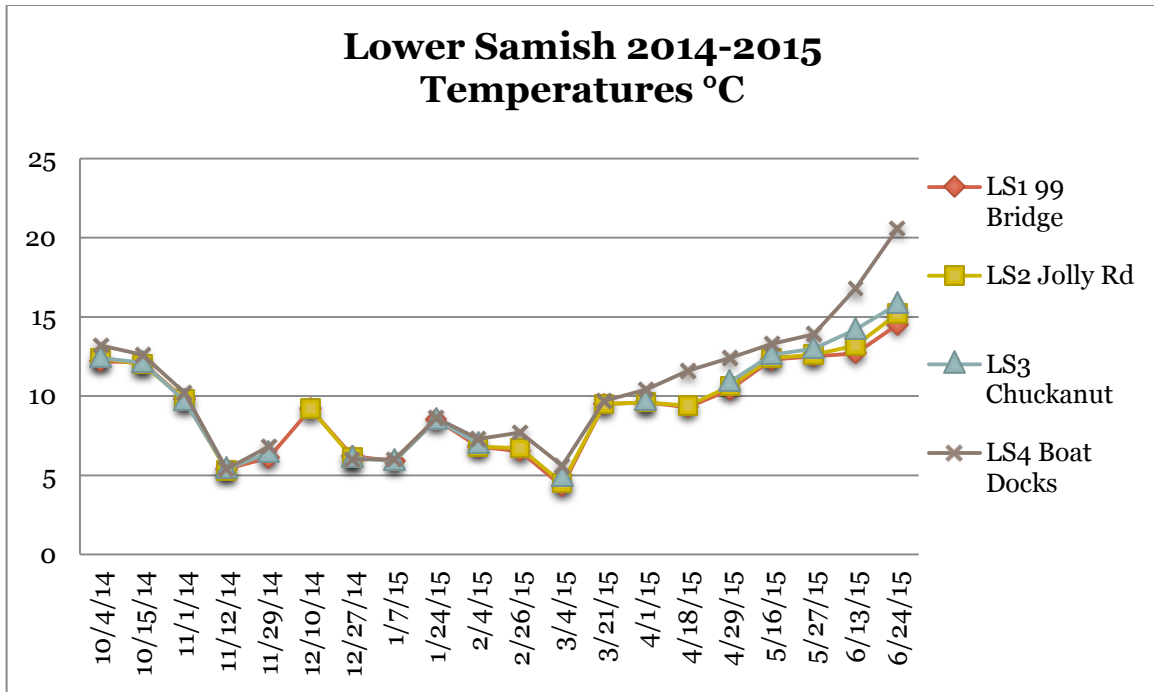


Figure 21. Lower Samish Temperature: 2014-2015

Compared to the previous five years, average annual temperatures were higher for all sites.

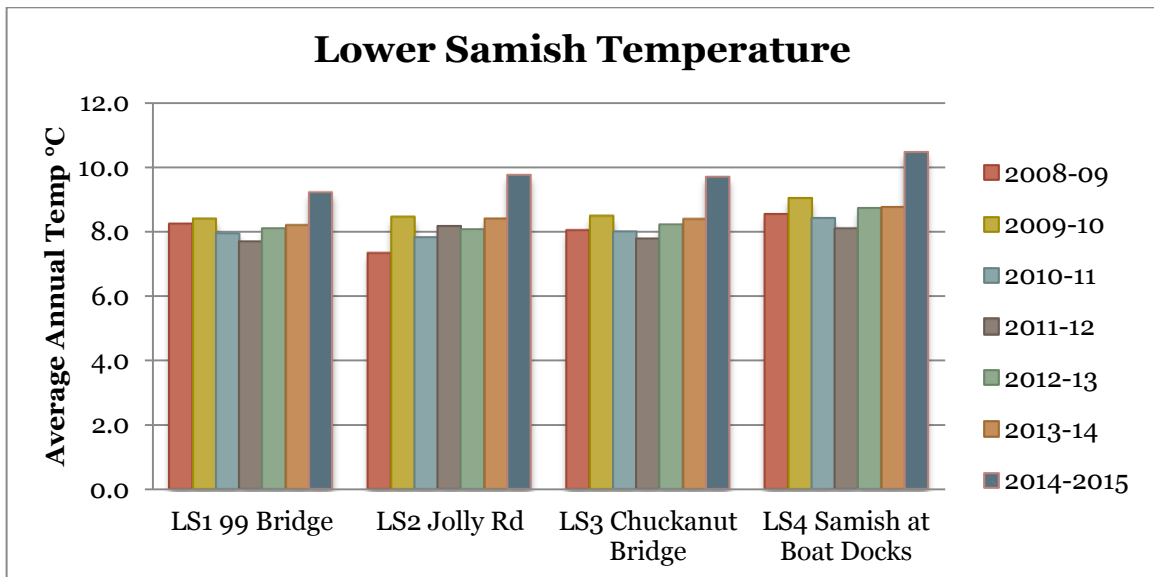


Figure 22. Lower Samish Temperature: Seven-year comparison

Turbidity levels in the Lower Samish were similar at all sites. Readings were generally low with spikes in November and January, corresponding to rain events.

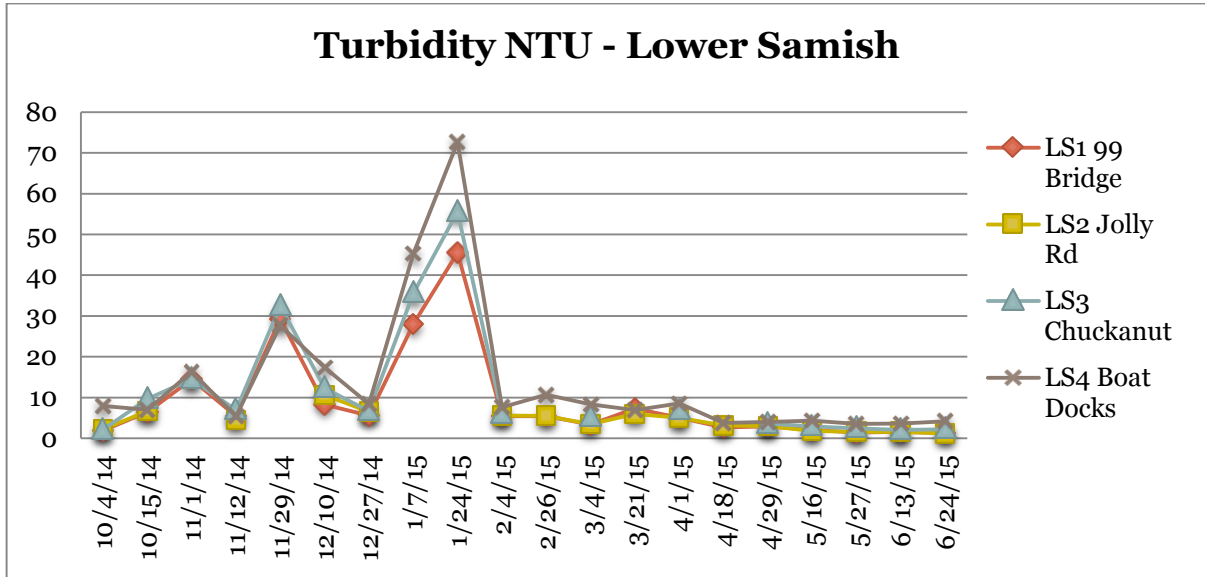


Figure 23. Lower Samish Turbidity: 2014-2015

Average Turbidity levels for Lower Samish sites 1, 3, and 4 were higher in 2014-15 than in the previous 3 years. Site 2 was the lowest in seven years.

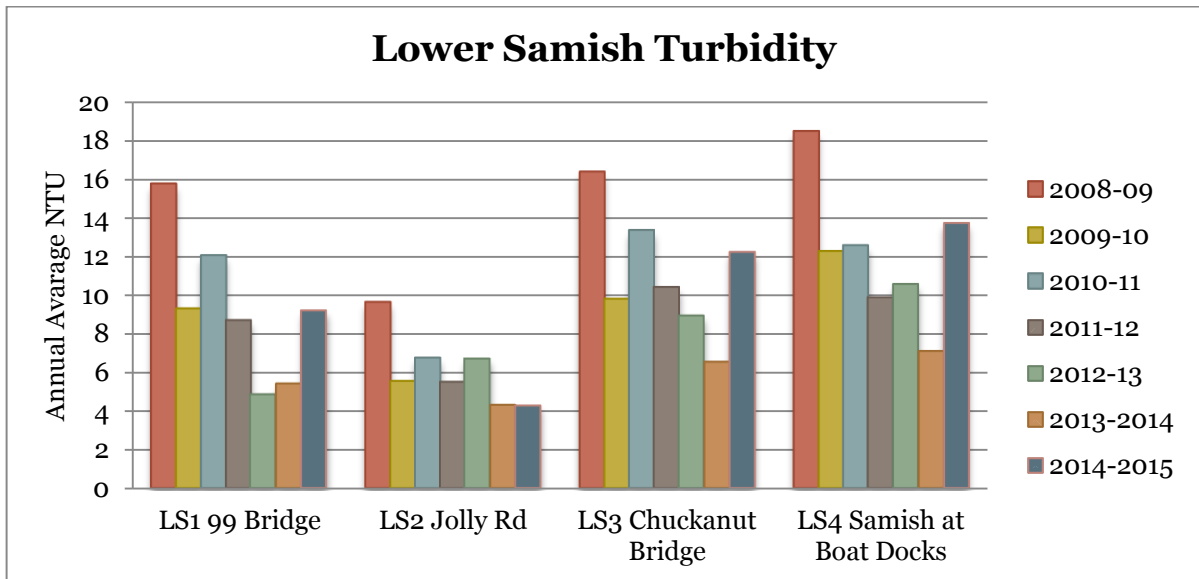


Figure 24. Lower Samish Turbidity: Seven-year comparison

Fecal Coliform levels for the Lower Samish were generally low with high counts on October 15 and January 24. Peaks in fecal coliform levels correlate with high turbidity levels in January, but not on October 15.

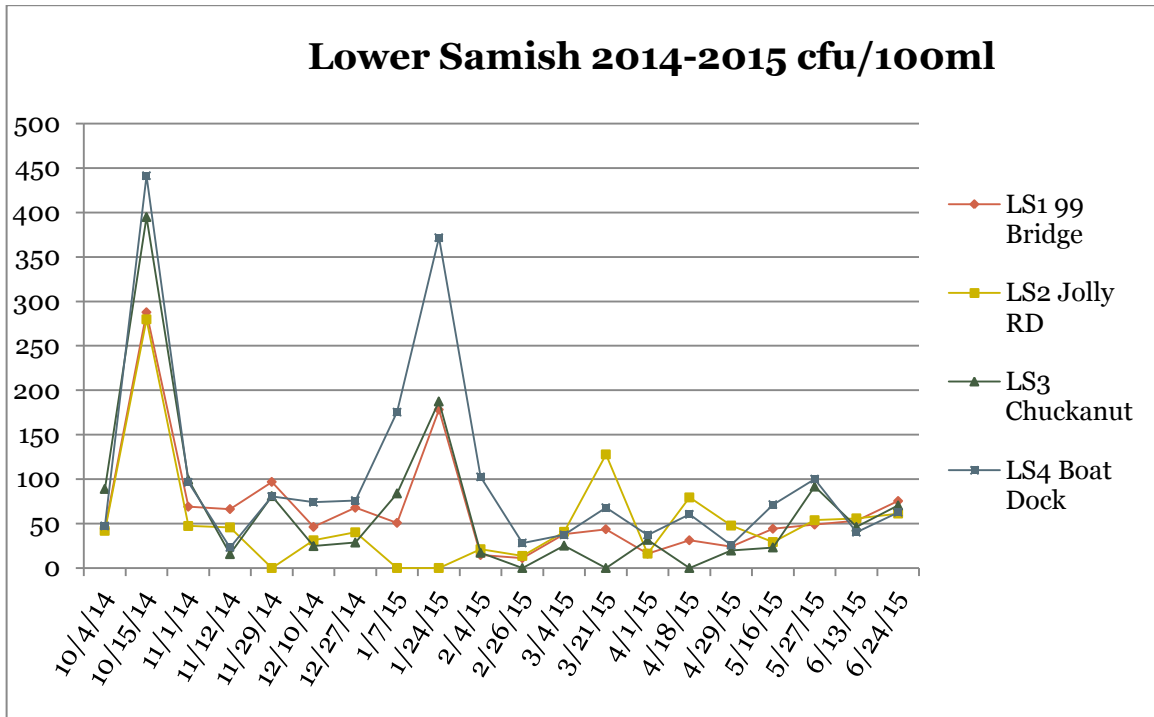


Figure 25. Lower Samish Fecal Coliform: 2014-2015

Geometric mean averages for fecal coliform (Figure 26) for all four sites were below 100 CFU.100 ml. All four sites met both Part I and Part II of the state standards for fecal coliform. Fewer than 10% of the samples were over 200 CFU.100 ml.

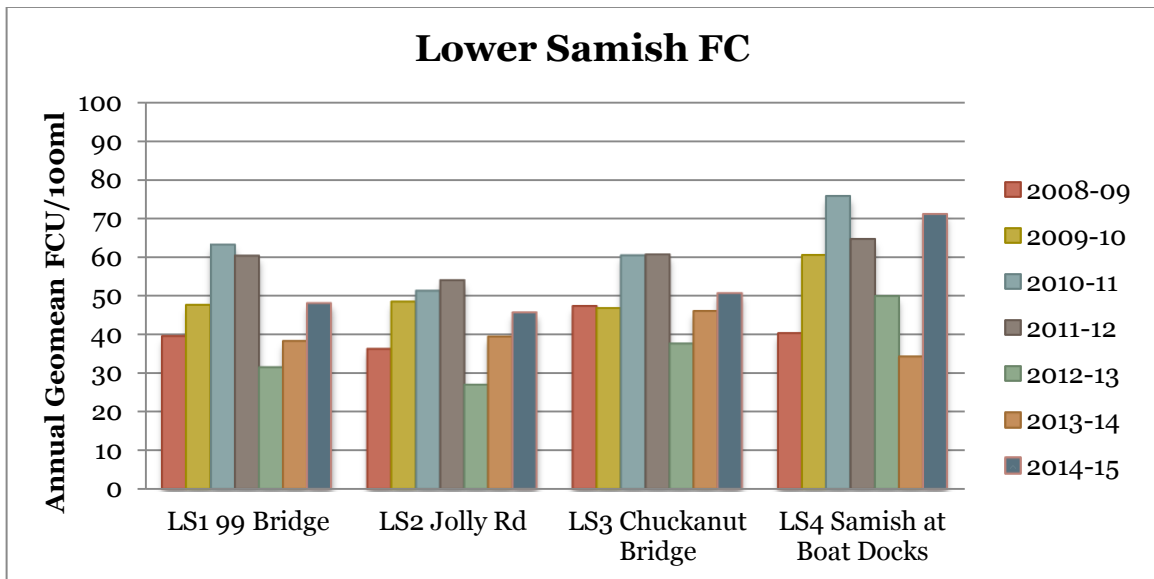


Figure 26. Lower Samish Fecal Coliform: Seven-year comparison

Fisher Creek Results

Figures 27 through 34 below present results from Fisher Creek sampling.

For dissolved oxygen (Figure 27 below), Sites 1-3 measurements were below the standard of 9.5mg/l during October and June. Site 4 remained above the standard, though sampling stopped before the warm summer season when levels are usually lowest.

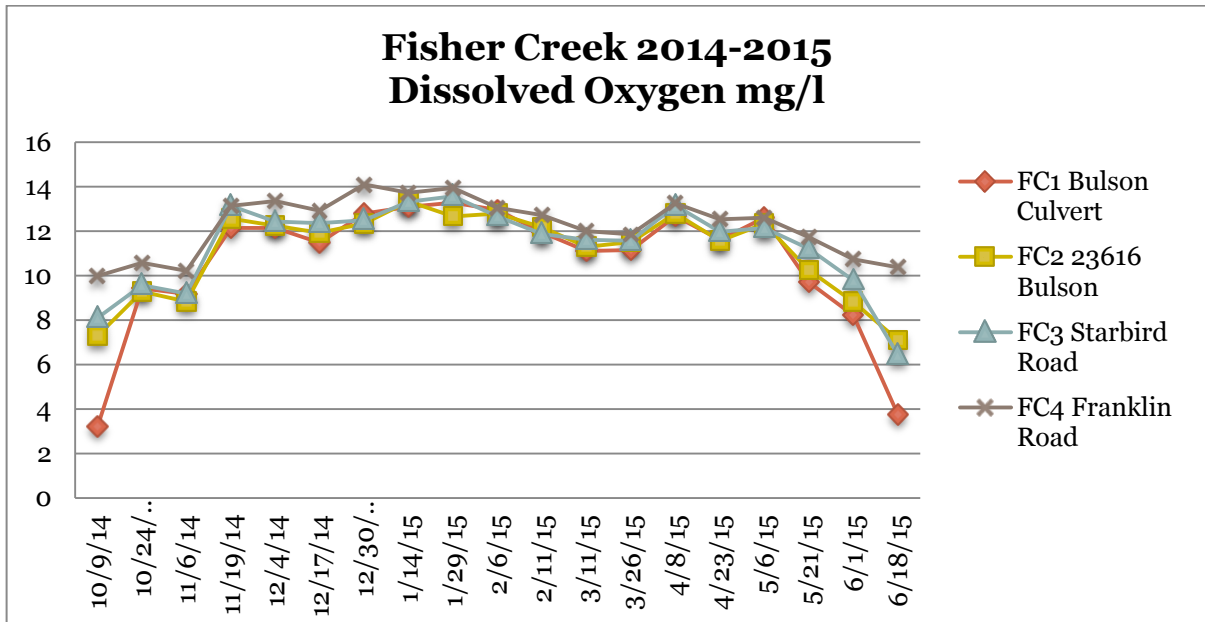


Figure 27. Fisher Creek DO: 2014-2015

Though the annual averages for all sites were above 9.5 mg/l, the standard is based on the lowest single day.

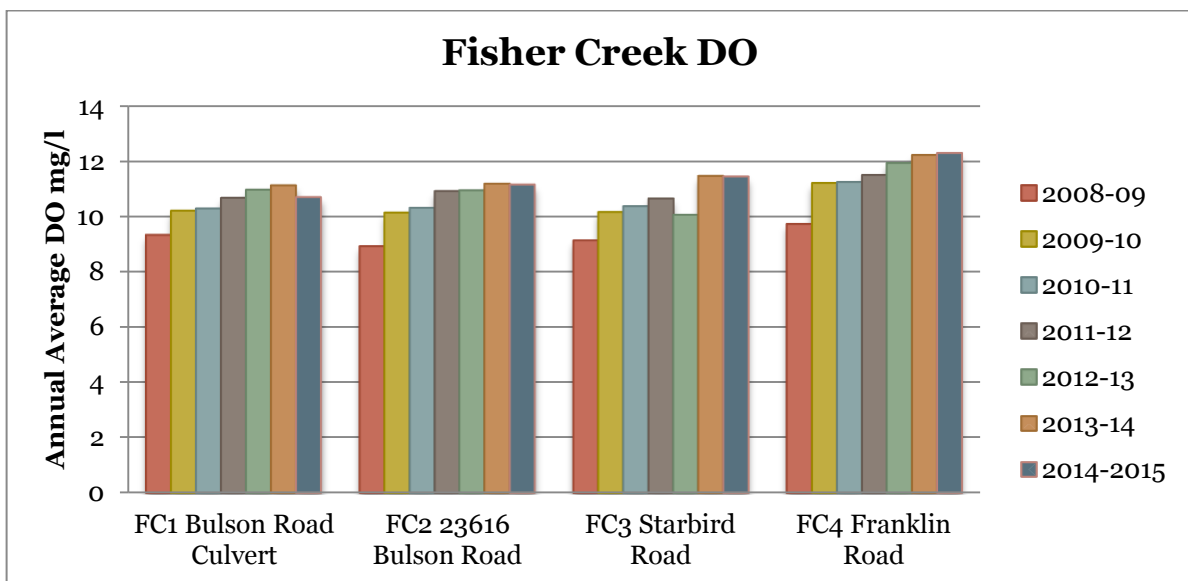


Figure 28. Fisher Creek DO: Seven-year comparison

Temperatures for Fisher Creek (Figure 29 below) were similar for all sites, dropping in the winter and rising in the spring. Though all temperature readings during the sampling season fell within state standard temperatures, sampling stopped before the warm season.

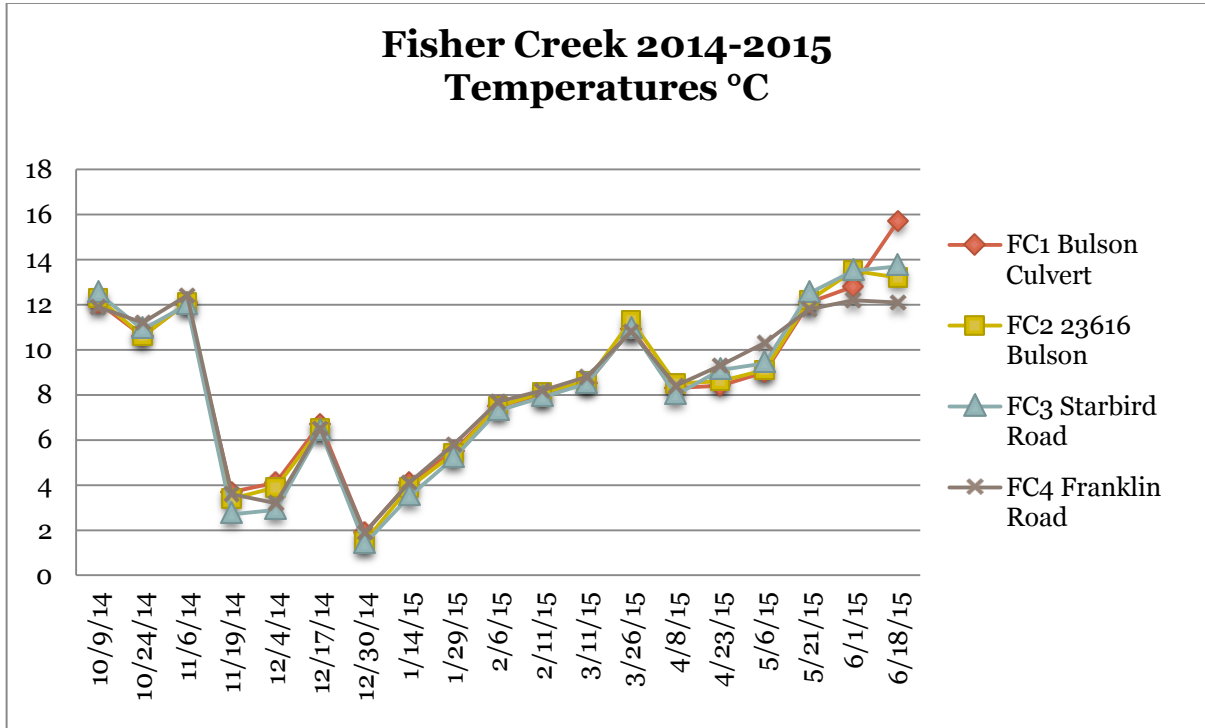


Figure 29. Fisher Creek Temperature: 2014-2015

Fisher Creek average temperatures in 2013-2014 were slightly warmer than previous years, with little variation between sites.

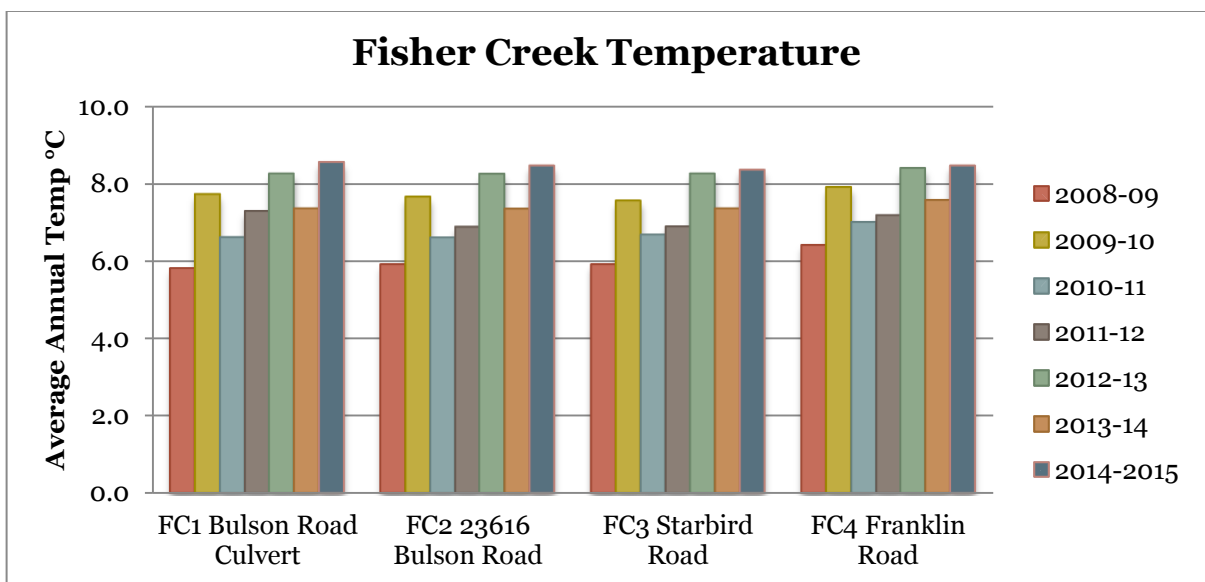


Figure 30. Fisher Creek Temperature: Seven-year comparison

Site 3, Starbird Road had the lowest turbidity levels. Sites 1, 2 and 4 had occasional spikes in turbidity, with generally low readings.

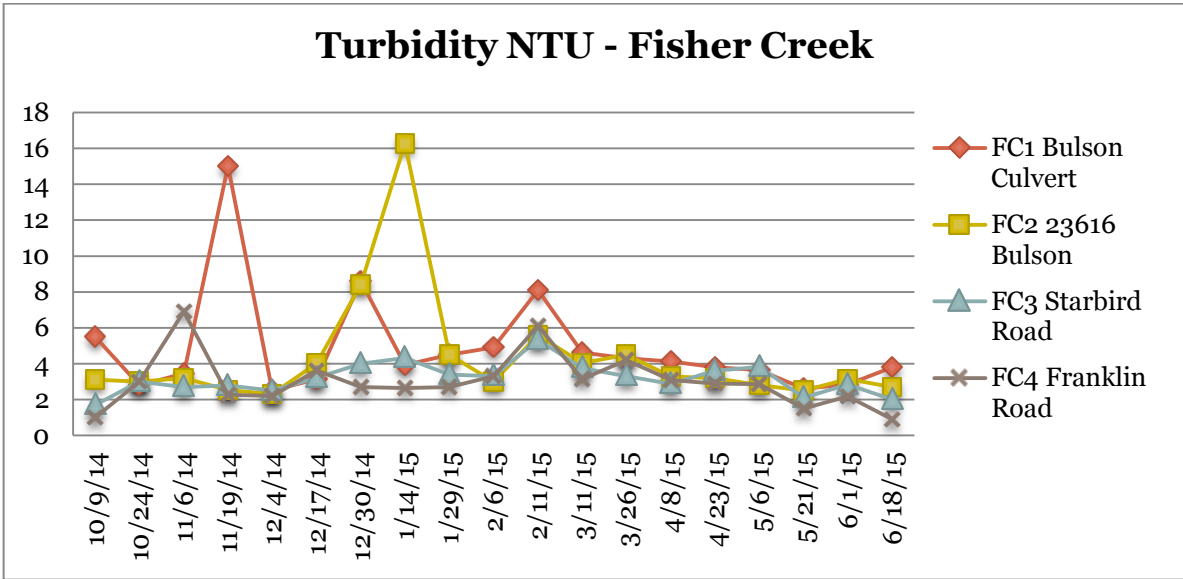


Figure 31. Fisher Creek Turbidity: 2014-2015

Turbidity at all Fisher Creek sites (Figure 32 below) was the similar to previous years, with relatively low average levels.

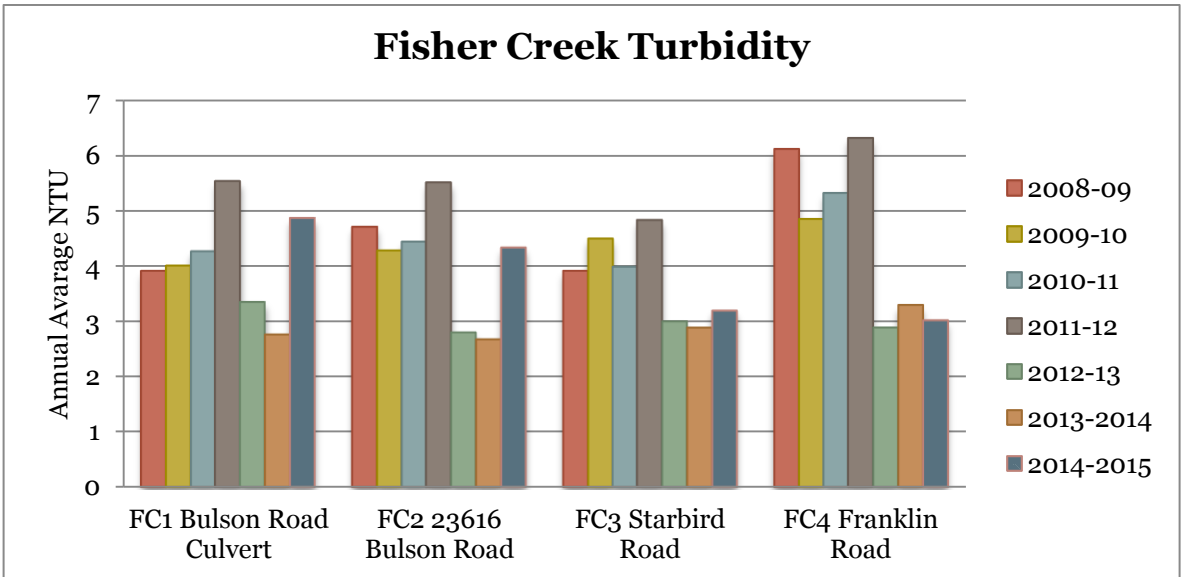


Figure 32. Fisher Creek Turbidity: Seven-year comparison

Fisher Creek fecal coliform numbers at Site 3 were low during most of the season and met both parts of the state standard. The other three sites met Part I of the standard: geomean below 100cfu/100ml, but not Part II of the state standard: <10% of samples above 200 CFU/100ml.

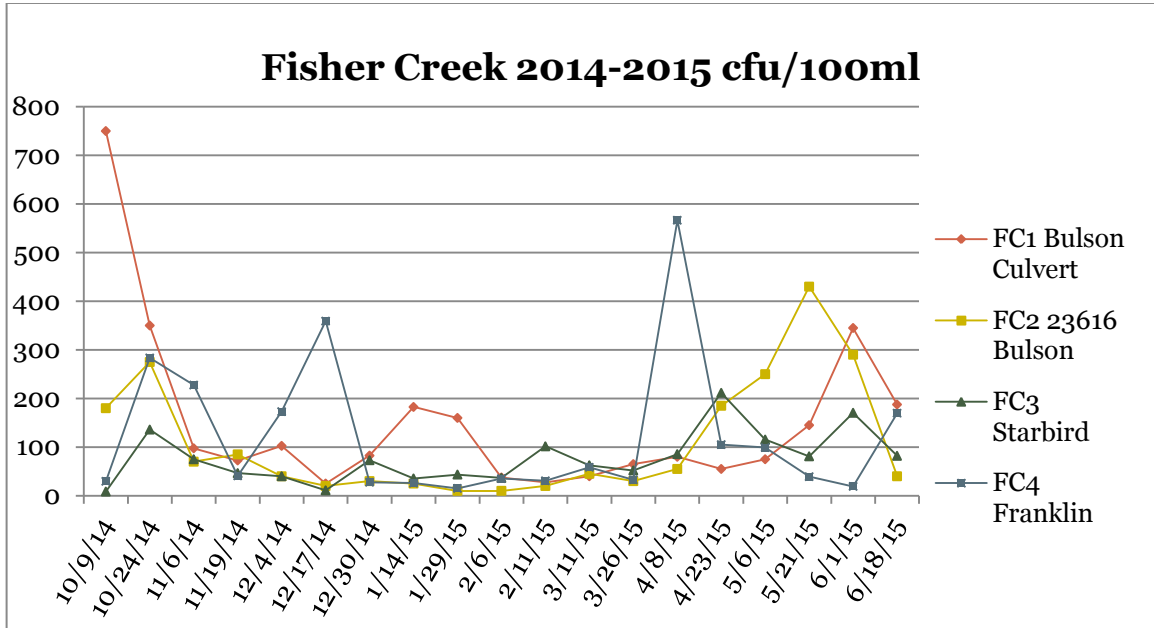


Figure 33. Fisher Creek Fecal Coliform: 2014-2015

Figure 34 below shows geometric means for fecal coliform over seven years.

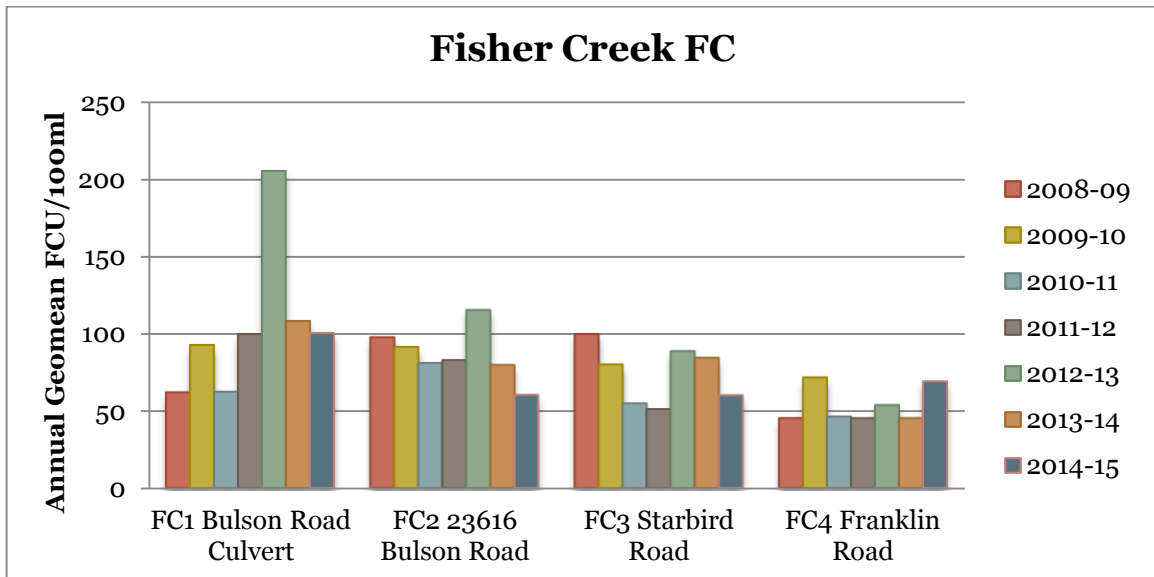


Figure 34. Fisher Creek Fecal Coliform: Seven-year comparison

Upper Nookachamps Results

Figures 35 through 42 below present results from Upper Nookachamps Creek sampling.

All four sites had DO levels below 9.5 mg/l in October. Sites 1, 2, and 4 dropped below the standard again in May and June. Site 1 was below 9.5° most of the season, and was usually the lowest of the four sites.

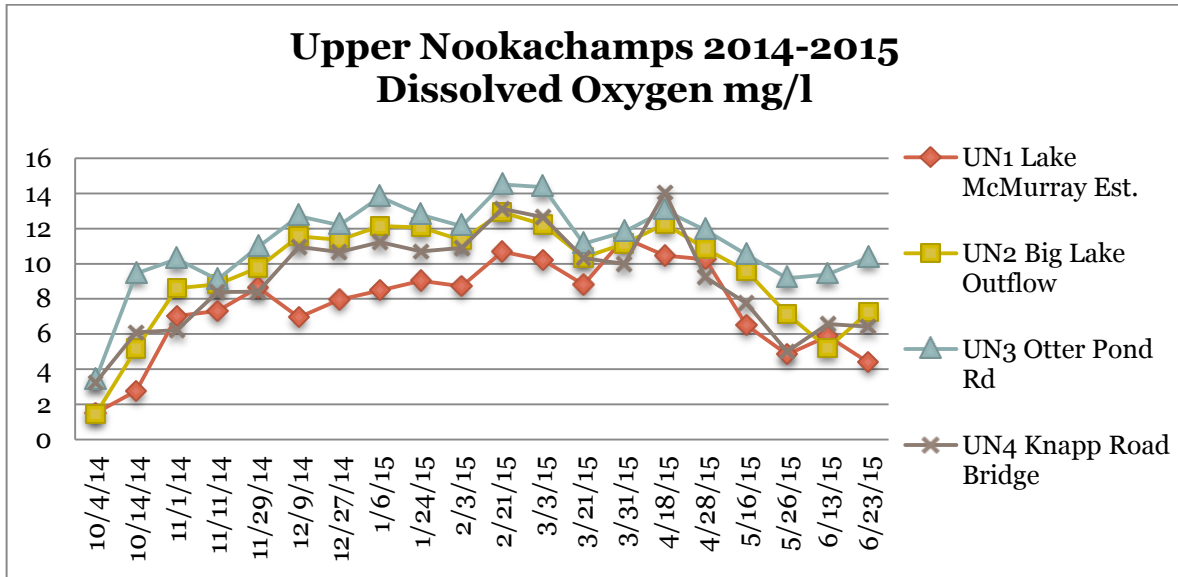


Figure 35. Upper Nookachamps DO: 2014-2015

DO levels at all sites were similar to the past three years. Annual averages were lowest for site 1 and highest for site 3. State standards are based on the single lowest measurement, not on annual averages. No samples were taken during the warmest season.

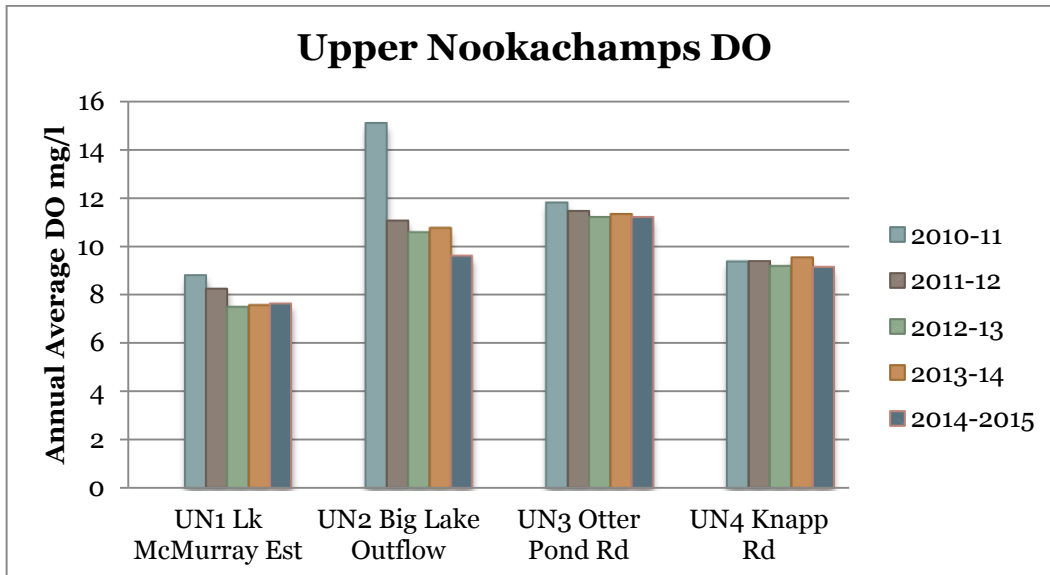


Figure 36. Upper Nookachamps DO: Five-year comparison

Temperatures for Sites 1 and 3 for the Upper Nookachamps were warmer than the standard of 16° in June. Sites 2 and 4 had temperatures less than 16°C during the October-June sampling season, though volunteers did not sample during the warmest months.

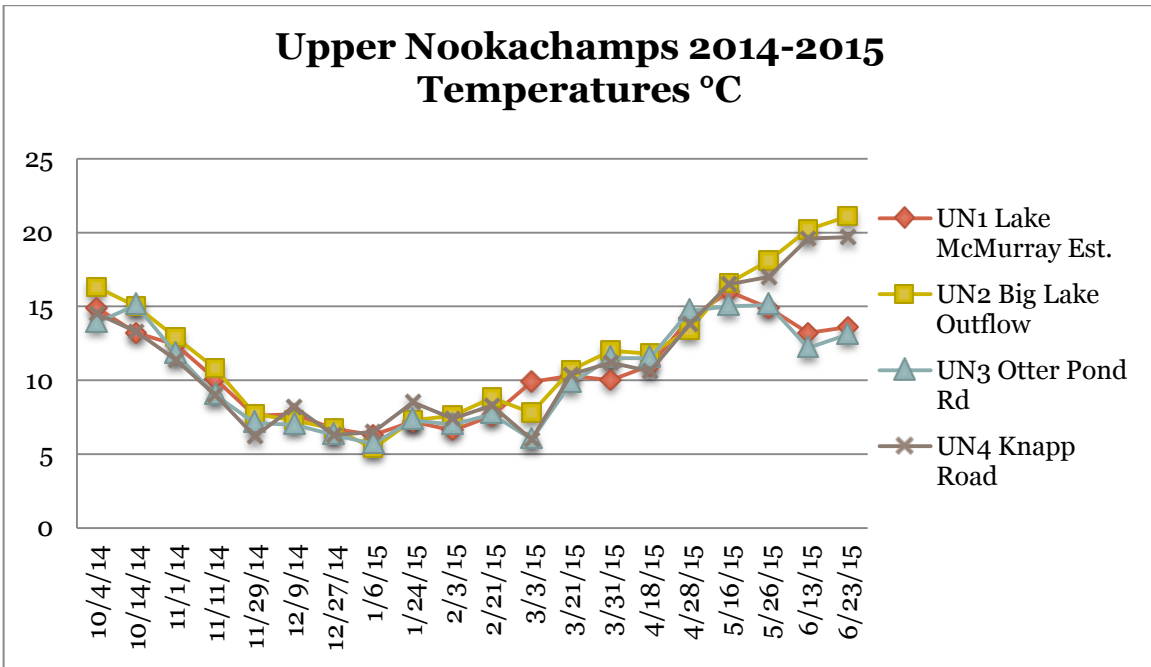


Figure 37. Upper Nookachamps Temperature: 2014-2015

Average temperatures for Upper Nookachamps sites show an upward trend over the past five years. State standards are not based on average annual temperature.

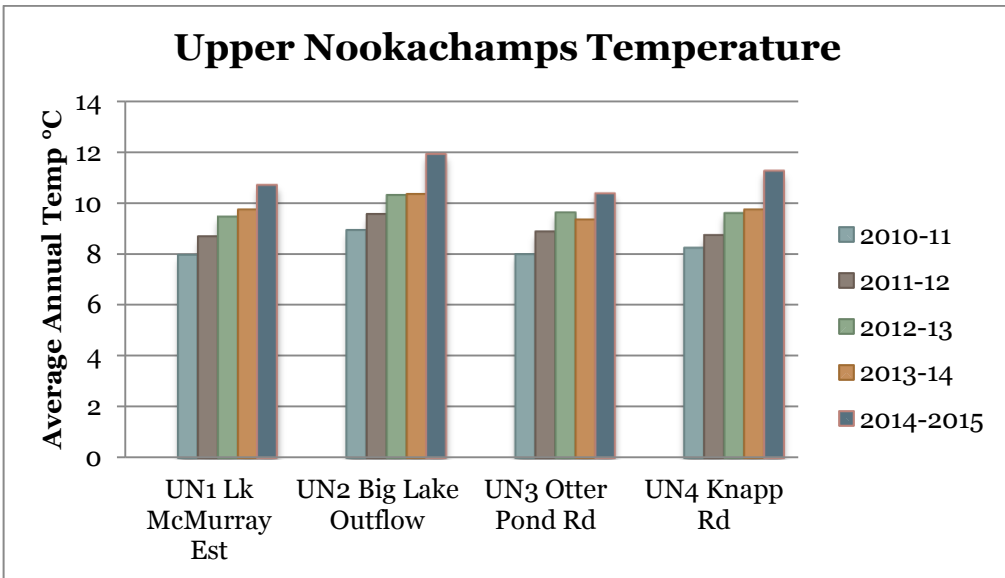


Figure 38. Upper Nookachamps Temperature: Five-year comparison

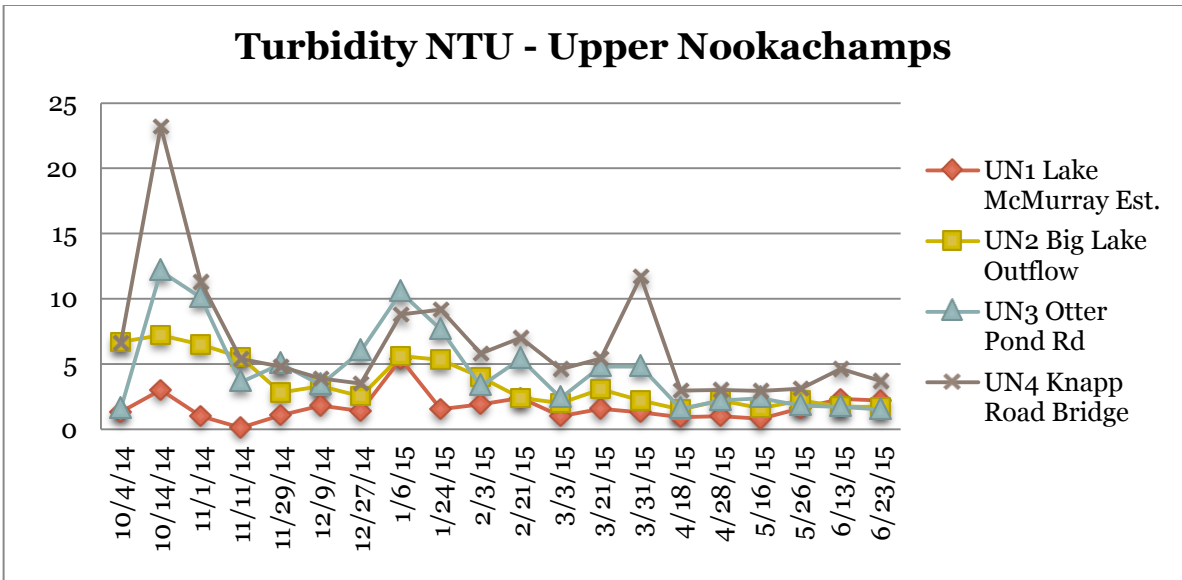


Figure 39. Upper Nookachamps Turbidity: 2014-2015

As in the previous years, turbidity was lowest upstream and highest downstream.

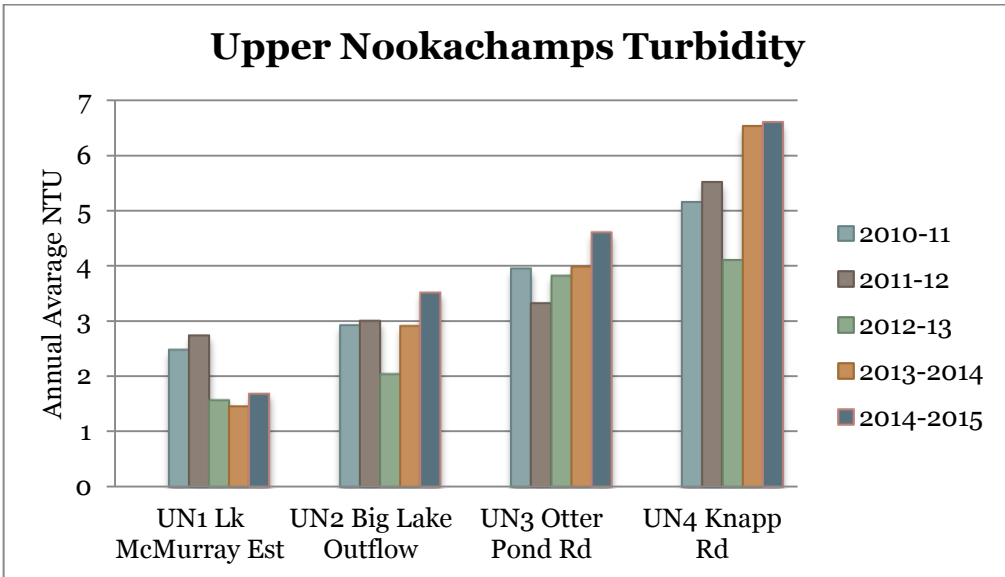


Figure 40. Upper Nookachamps Turbidity: Five-year comparison

Fecal coliform levels (Figure 37 below) stayed relatively low through the season for Sites 1-3. Site 4 was more variable, with several very high counts.

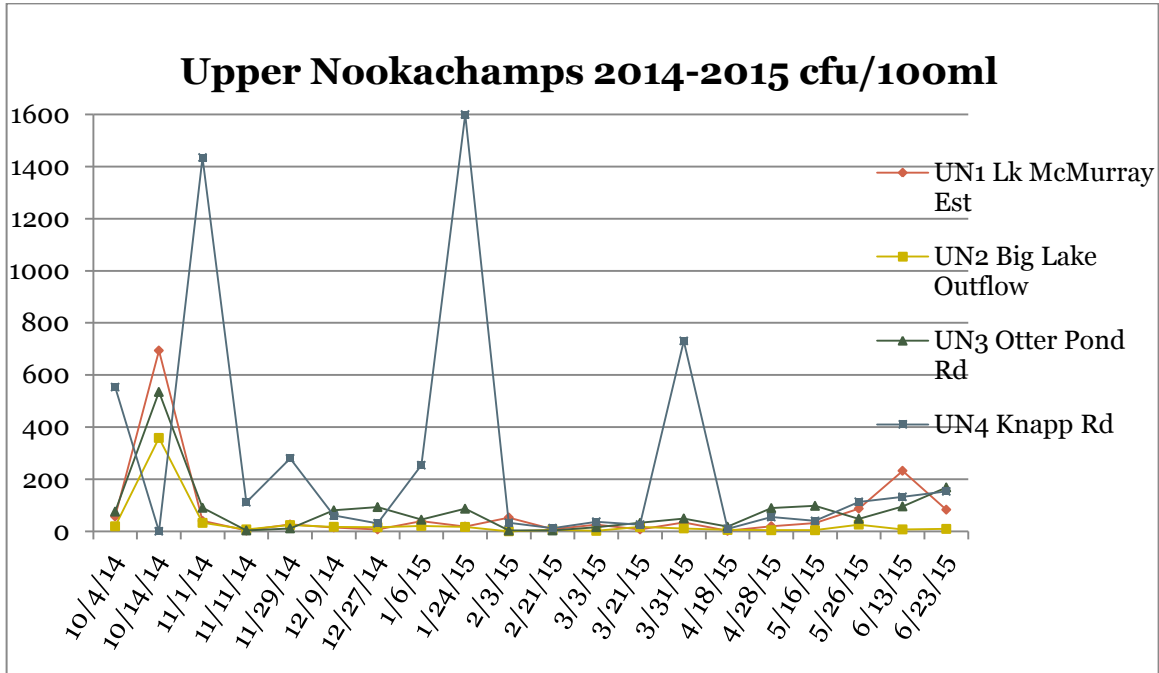


Figure 41. Upper Nookachamps Fecal Coliform: 2014-2015

Annual geometric means for fecal coliform Sites 1-3 (Figure 42 below) met both parts of the state standard (100 CFU/100ml and <10% of samples below 200 CFU/100ml). Site 4 met neither part.

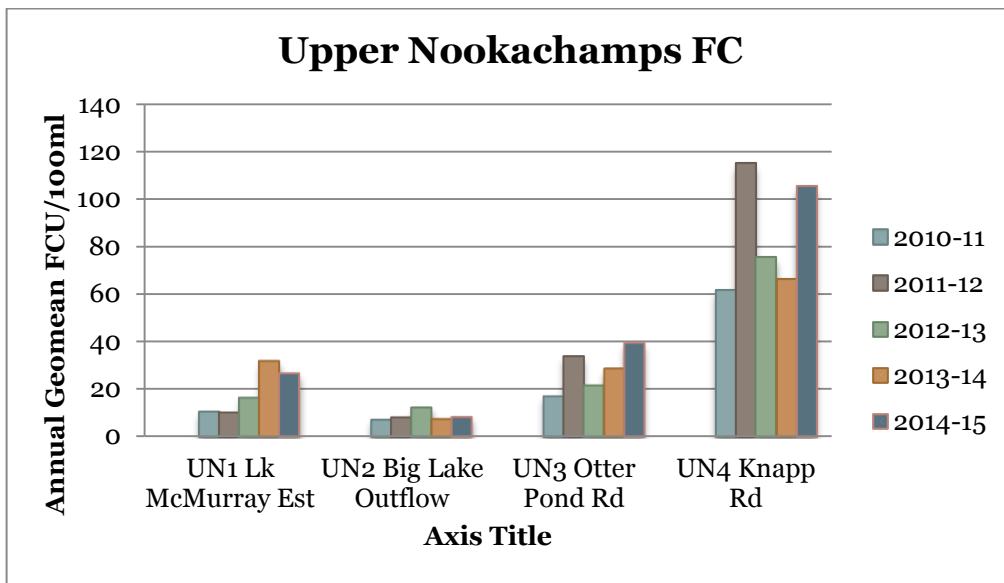


Figure 42. Upper Nookachamps Fecal Coliform: Five-year comparison

Lower Nookachamps Results

Figures 43 through 50 below present results from Lower Nookachamps Creek sampling. This is the sixth year of sampling on the Lower Nookachamps.

All Lower Nookachamps sites had similar dissolved oxygen levels. All sites dropped below the state standard of 9.5°C during the year.

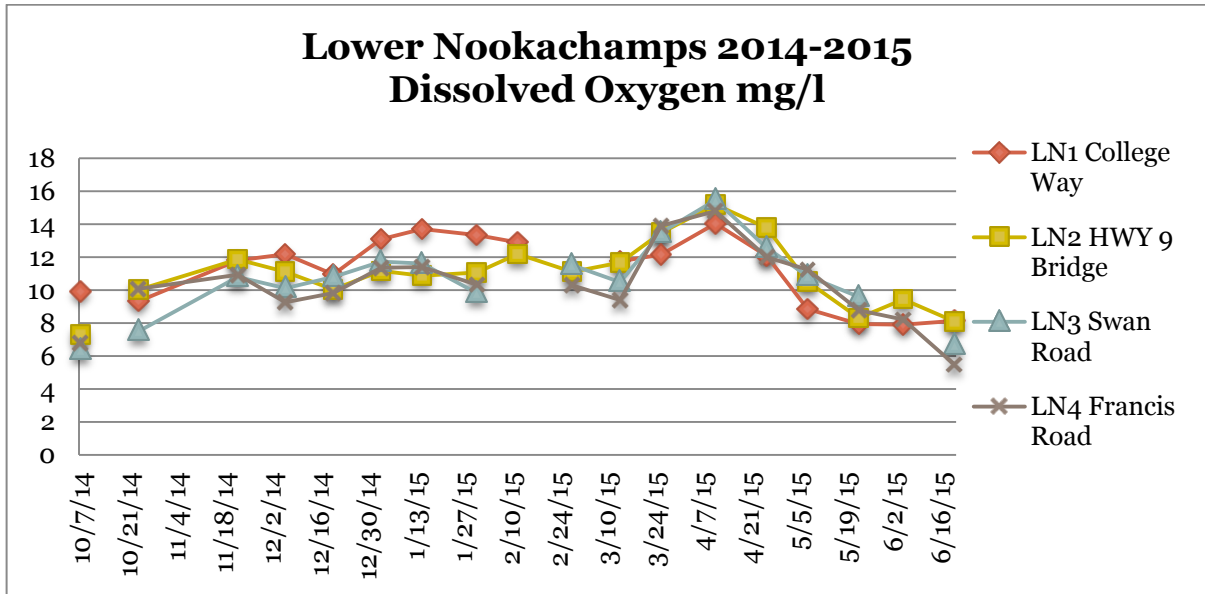


Figure 43. Lower Nookachamps DO: 2014-2015

Dissolved oxygen levels were similar to past years for all sites. Averages are shown below for comparing sites and years, and are not relevant to state standards.

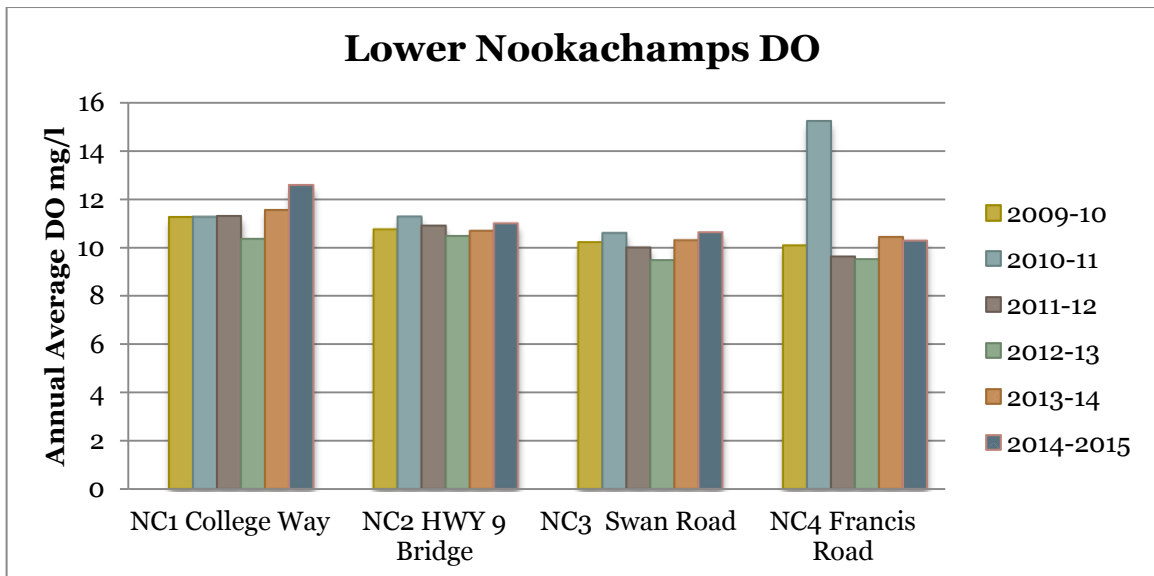


Figure 44. Lower Nookachamps DO: Six-year comparison

Temperatures for sites 3 and 4 went above the state standard of 16°C in June. Sites 1 and 2 stayed cooler than the 16°C maximum. No samples were taken during the warmest summer months.

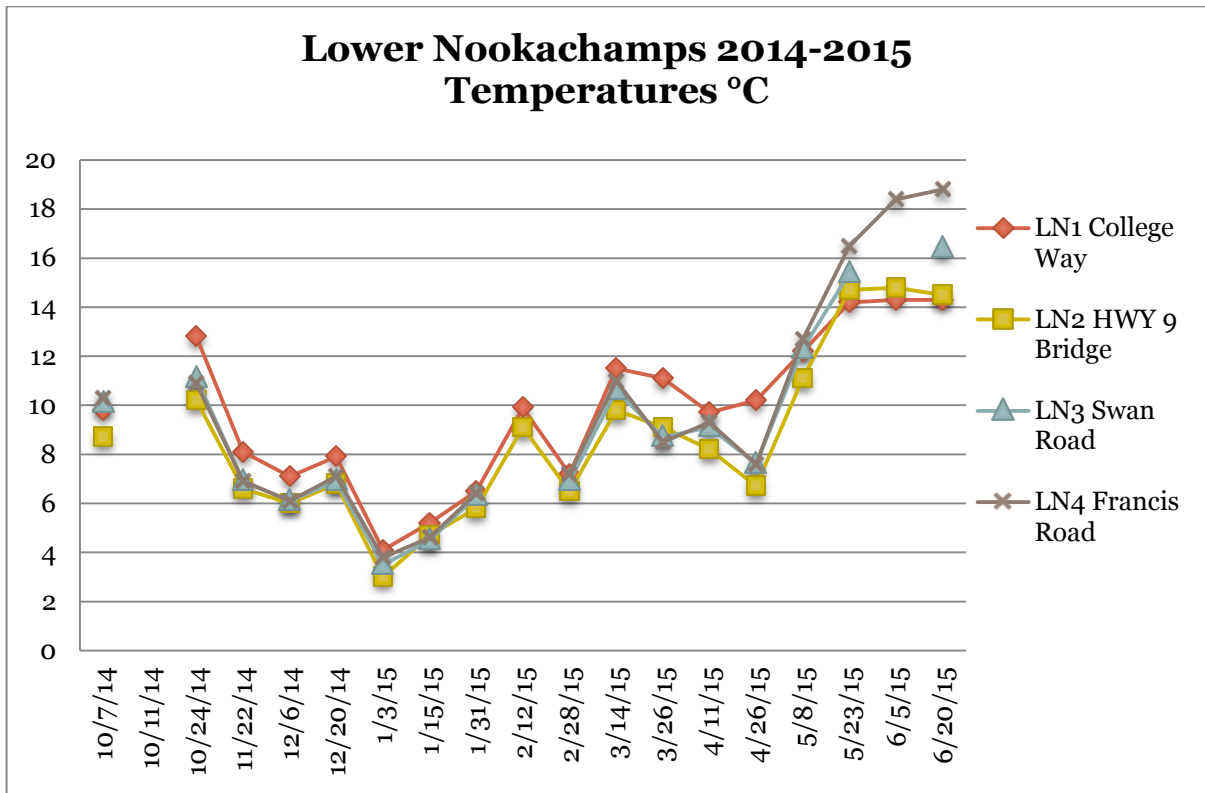


Figure 45. Lower Nookachamps Temperature: 2014-2015

Annual average temperatures for Lower Nookachamps (Figure 46 below) were higher than the first five years of sampling. State standards are not based on the annual average

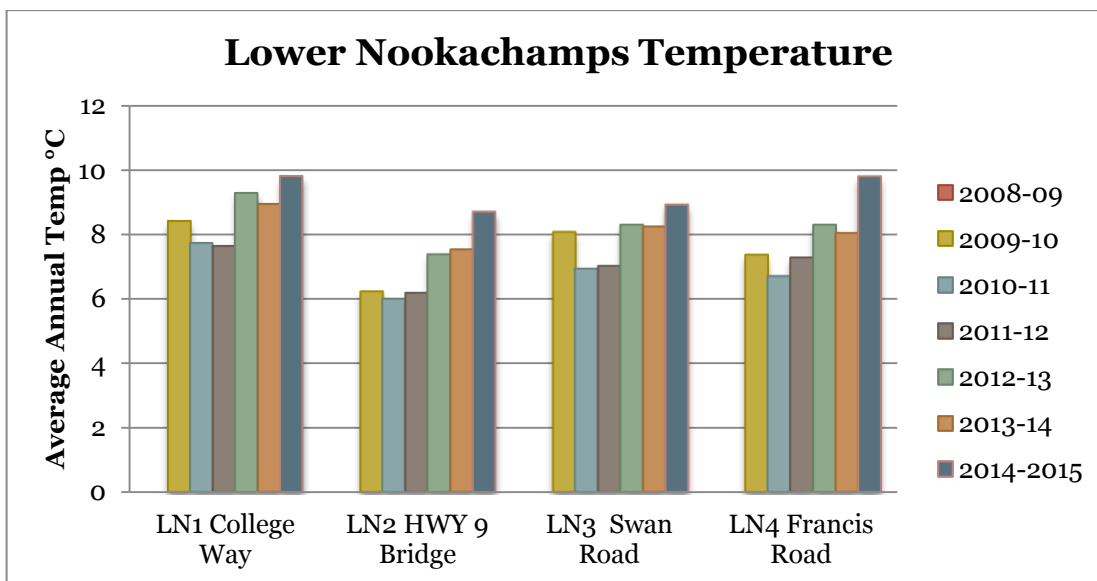


Figure 46. Lower Nookachamps Temperature: Six-year comparison

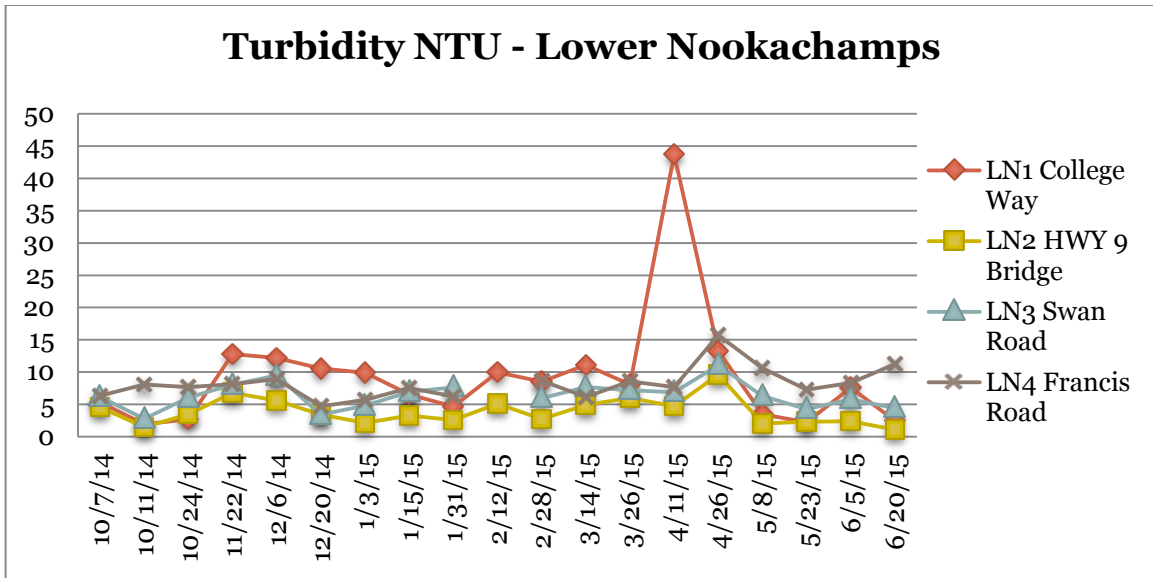


Figure 47. Lower Nookachamps Turbidity: 2014-2015

Turbidity levels in 2013-2014 were generally low, with one anomaly April 11. Averages at Sites 1 and 4 were the highest in six years.

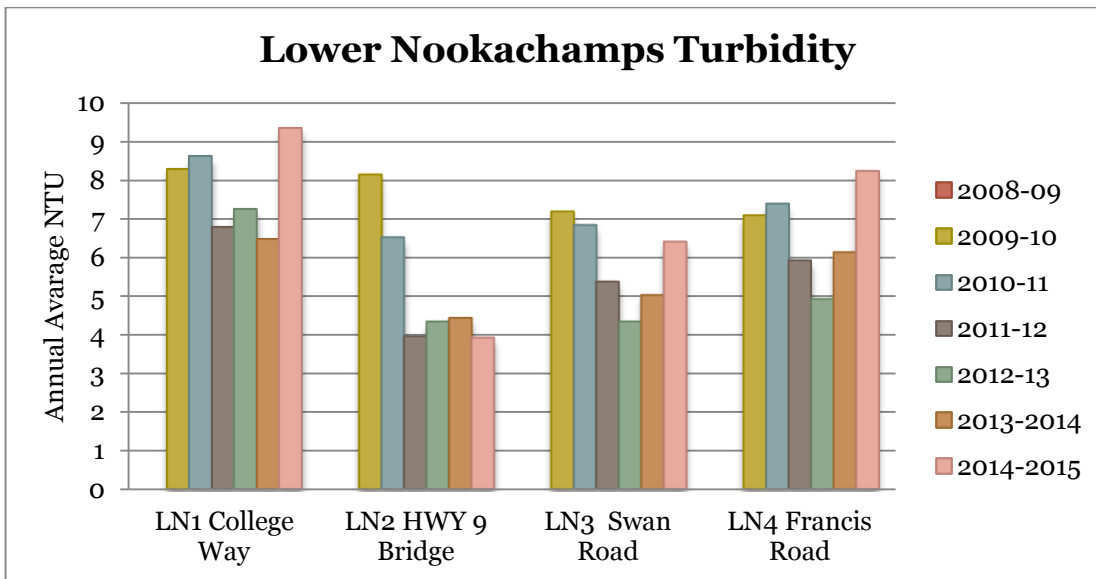


Figure 48. Lower Nookachamps Turbidity: Six-year comparison

Fecal coliform levels were highly variable at Site 1, College Way.

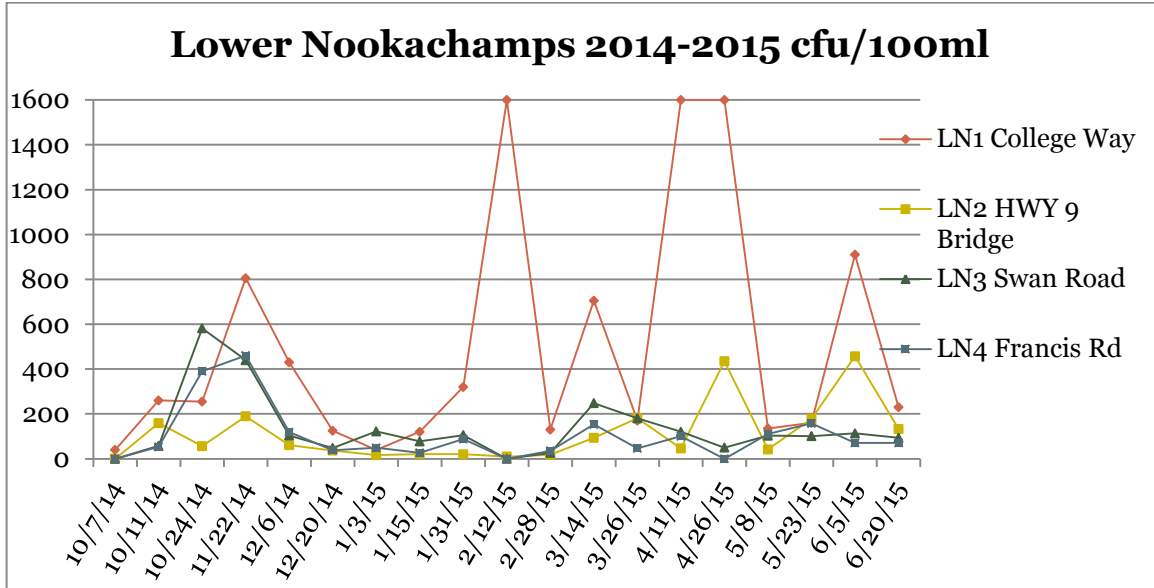


Figure 49. Lower Nookachamps Fecal Coliform: 2014-2015

Site 1 continues to have very high levels of fecal coliform bacteria, and did not meet either part of the state standard. Though Sites 2 and 4 met the first part of the standard (<100 CFU/100ml), none of the sites met the <10% over 200 CFU/100ml standard.

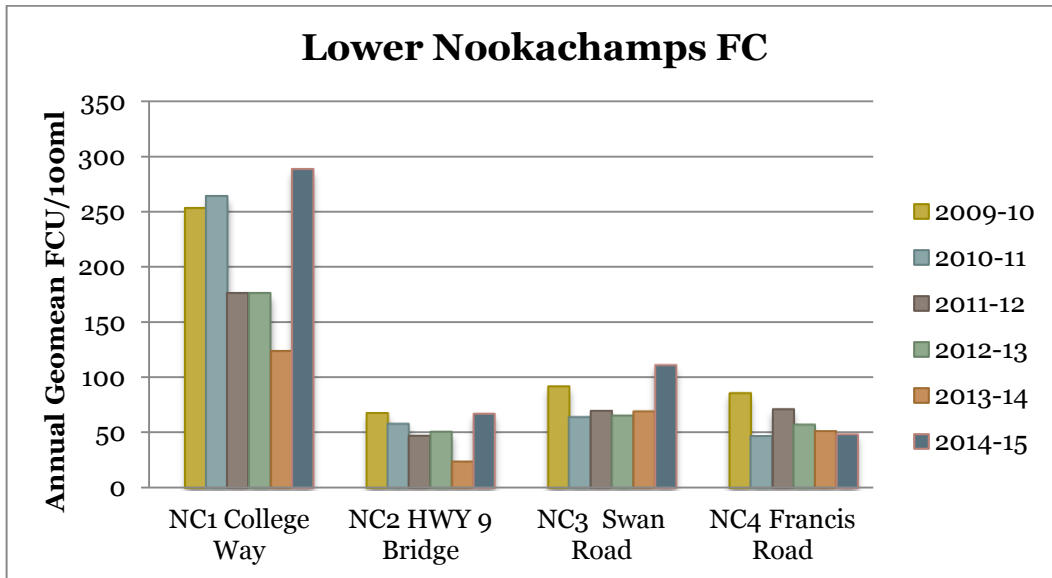


Figure 50. Lower Nookachamps Fecal Coliform: Five-year comparison

No Name Slough Results

Figures 51 through 58 below present results from No Name Slough sampling.

Dissolved oxygen levels fell below the state standard of 8mg/l for all sites at some point during the sampling season. The upper stream dries up in early summer.

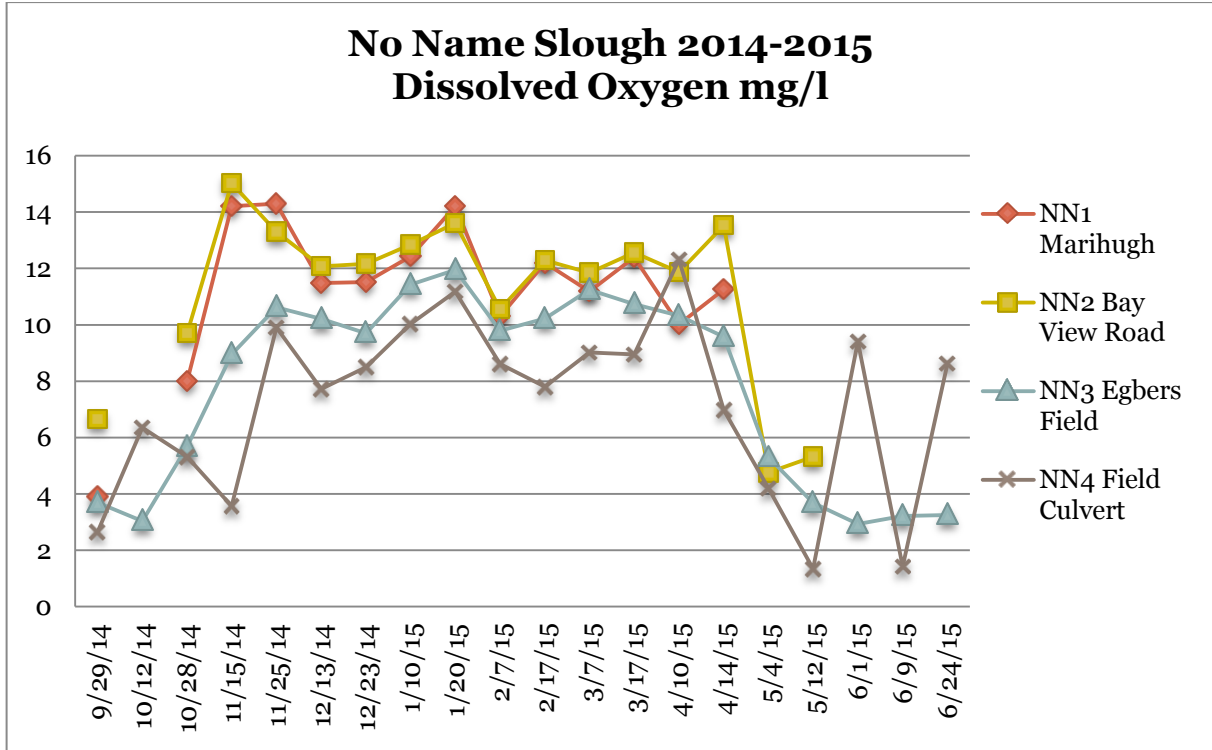


Figure 51. No Name Slough DO: 2014-2015

Average DO dropped to the lowest levels in 7 years for Sites 3 and 4. State standards are not based on the annual average.

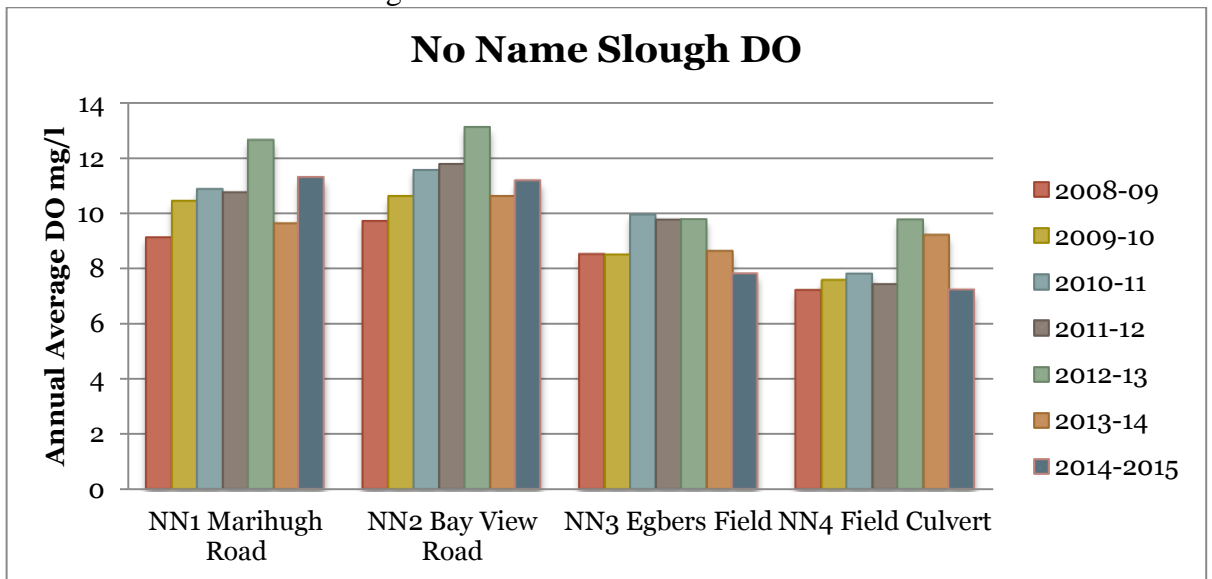


Figure 52. No Name Slough DO: Seven-year comparison

Temperatures at No Name Sites 1-3 were within the optimum range of 17.5°C throughout the sampling period. Site 4 was above this temperature in June. No samples were taken during the warmest summer season when temperatures were most likely to be warmer than the state standard.

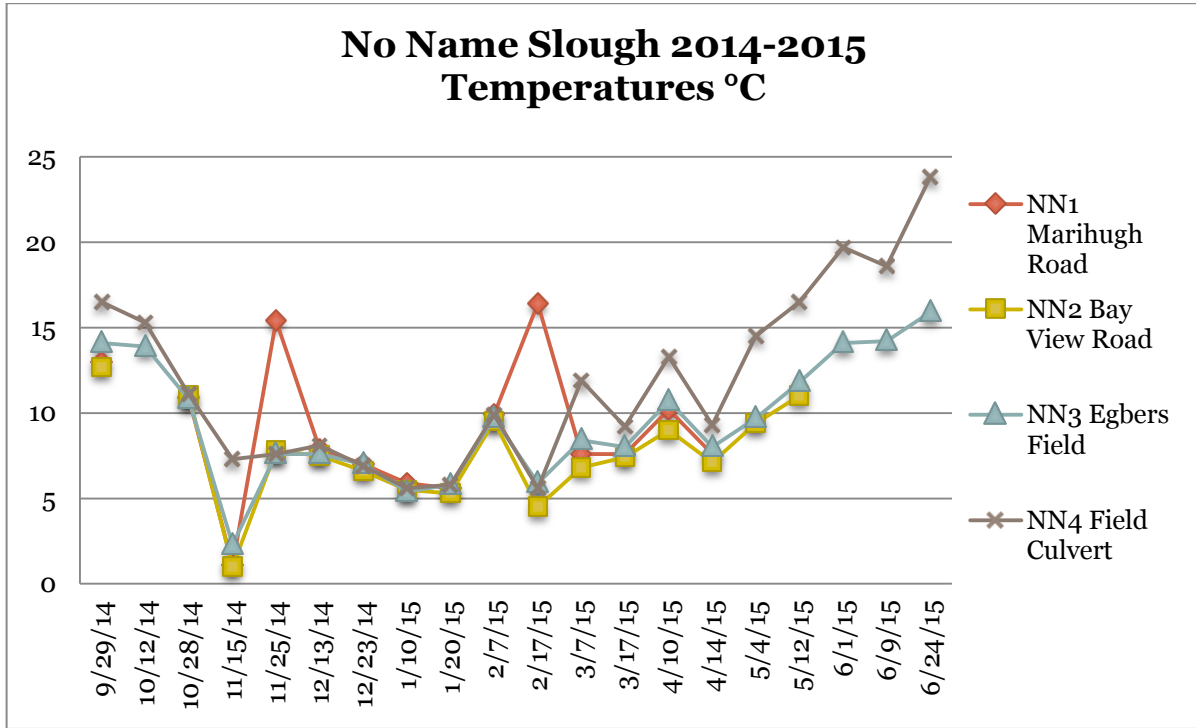


Figure 53. No Name Slough Temperature: 2014-2015

Average annual temperatures for Sites 3 and 4 continued to show a warming trend. State standards are not based on the annual average.

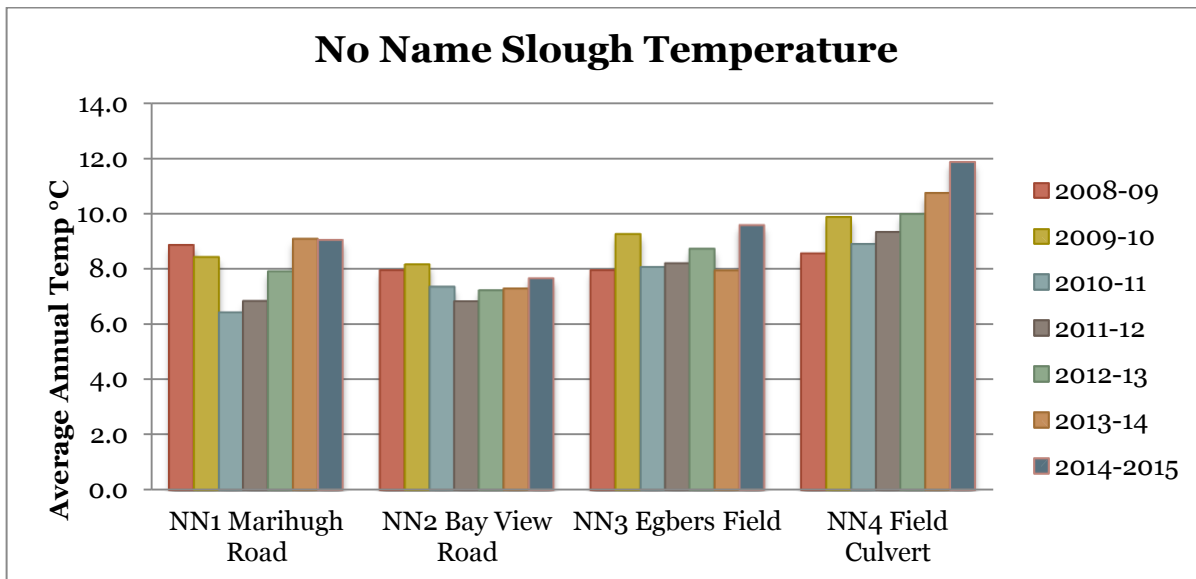


Figure 54. No Name Slough Temperature: Seven-year comparison

All No Name sites (Figure 55 below) showed high variability in turbidity during 2014-2015.

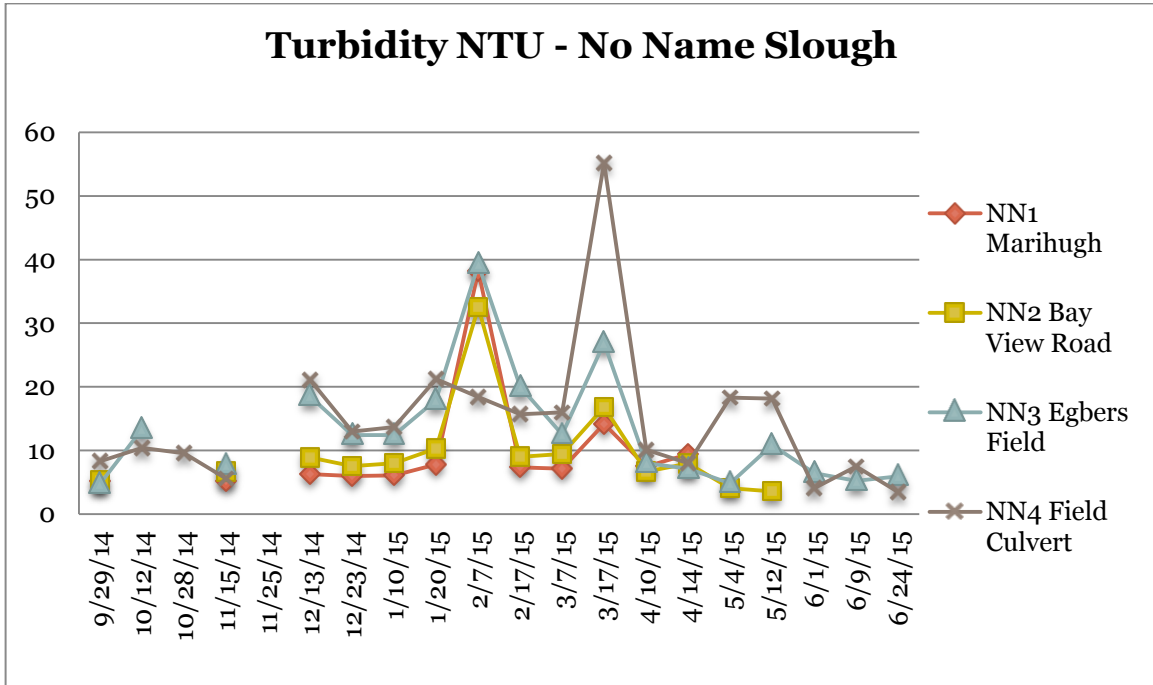


Figure 55. No Name Slough Turbidity: 2014-2015

Figure 56 below shows average turbidity levels that are comparable to past years, with Site 4 higher than the others.

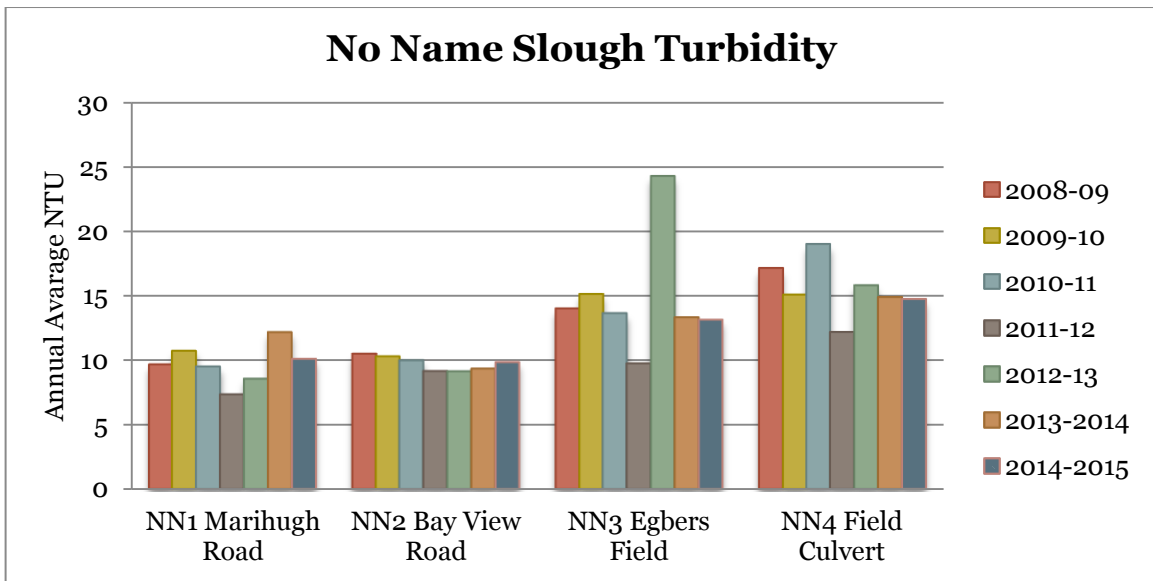


Figure 56. No Name Slough Turbidity: Seven-year comparison

All No Name Slough sites had instances of very high fecal coliform levels in 2014-2015. None of the sites met the <10% over 200 CFU/100ml standard.

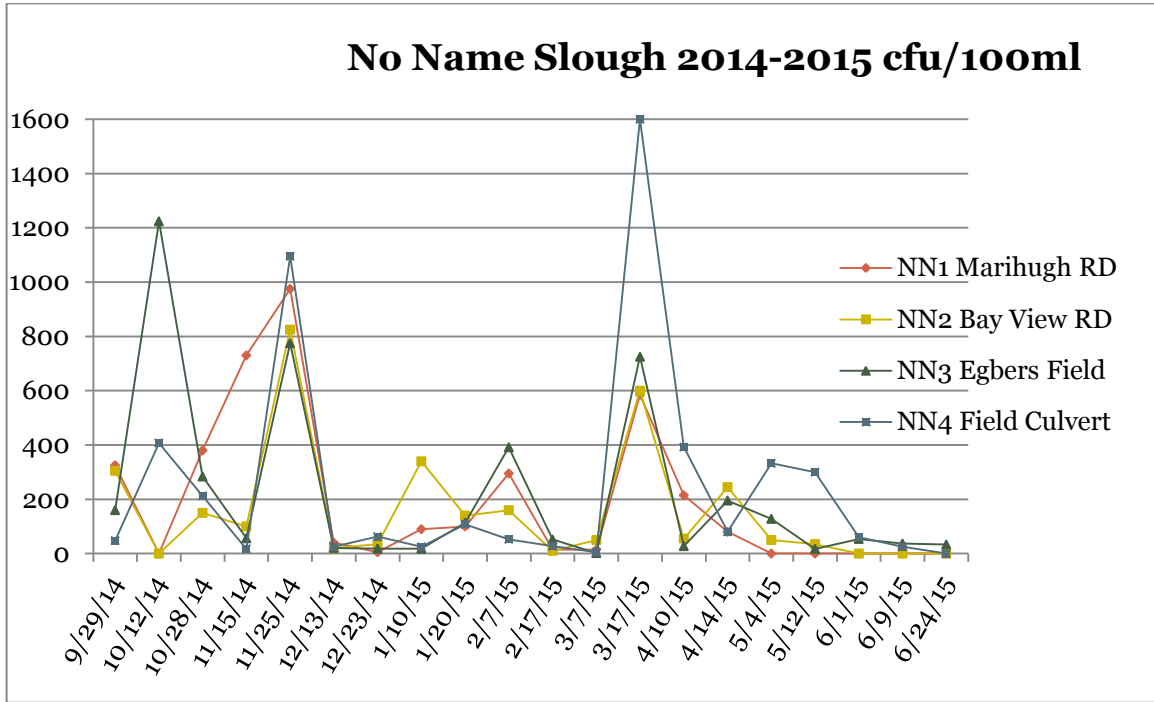


Figure 57. No Name Slough Fecal Coliform: 2014-2015

Average fecal coliform numbers (below) showed improvement this year for Site 1, with Sites 3 and 4 once again meeting the first part of the state standard of 100CFU/100 ml. The annual geomean for Site 2 was 102 CFU/100ml – almost meeting the standard!

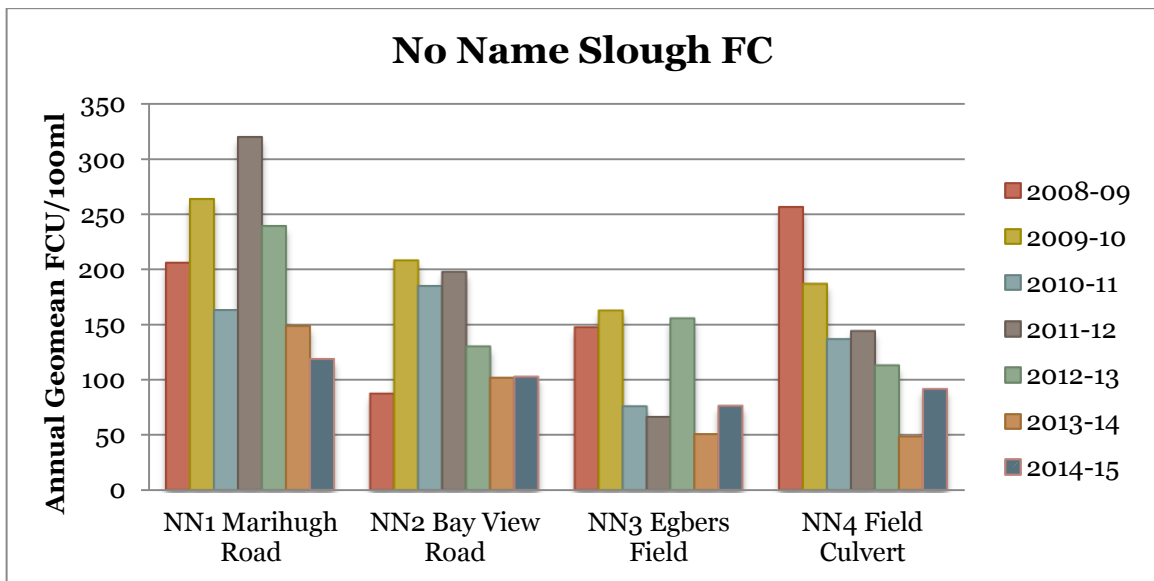


Figure 58. No Name Slough Fecal Coliform: Seven-year comparison

Bay View Drainage Results

Figures 59 through 66 below present results from Bay View Drainage sampling.

All Bay View sites had lower than 8mg/l dissolved oxygen results during the 2014-2015 season. This is a series of roadside ditches that dry up between rainy periods.

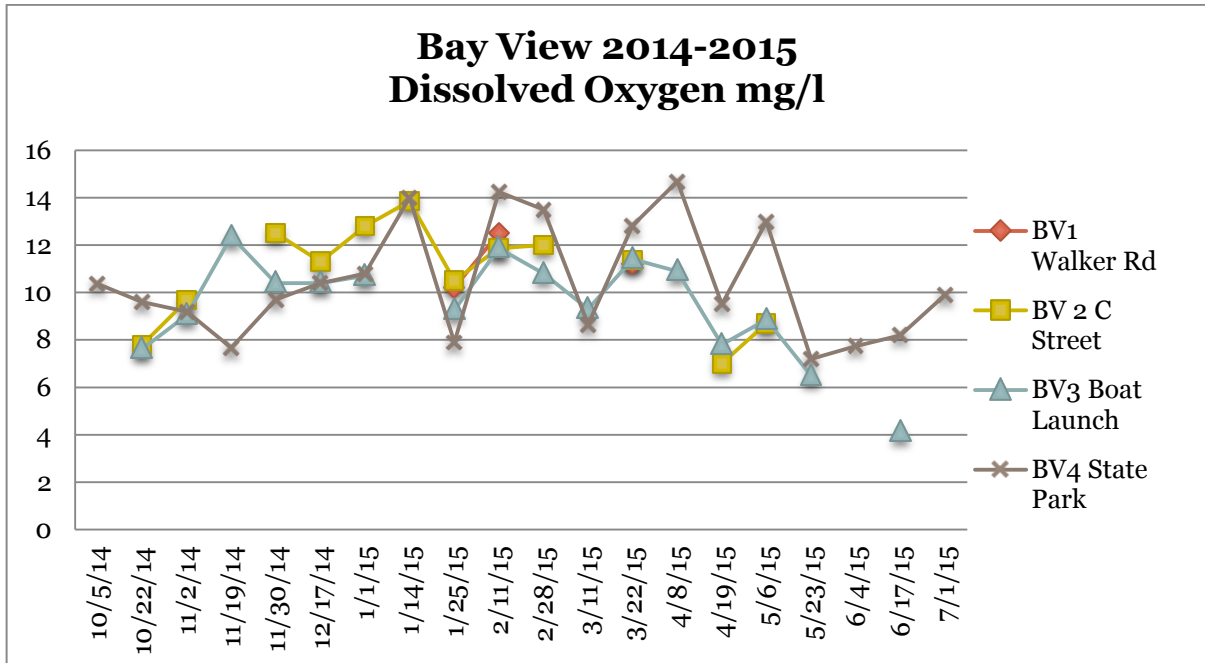


Figure 59. Bay View Drainage DO: 2014-2015

Average dissolved oxygen was similar to last year for all sites. State standards are not based on averages.

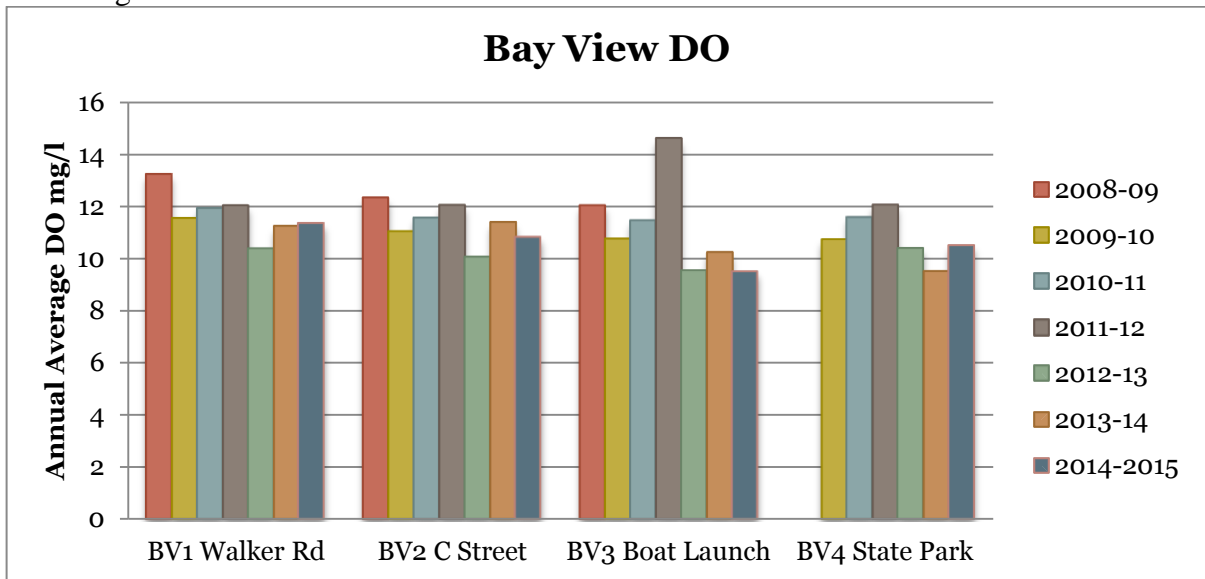


Figure 60. Bay View Drainage DO: Seven-year comparison

Temperatures in 2014-2015 rose above the optimum level of 17.5°C at Site 4. Site 4 is a marine site, where natural weather and low tide conditions often cause very warm water temperatures.

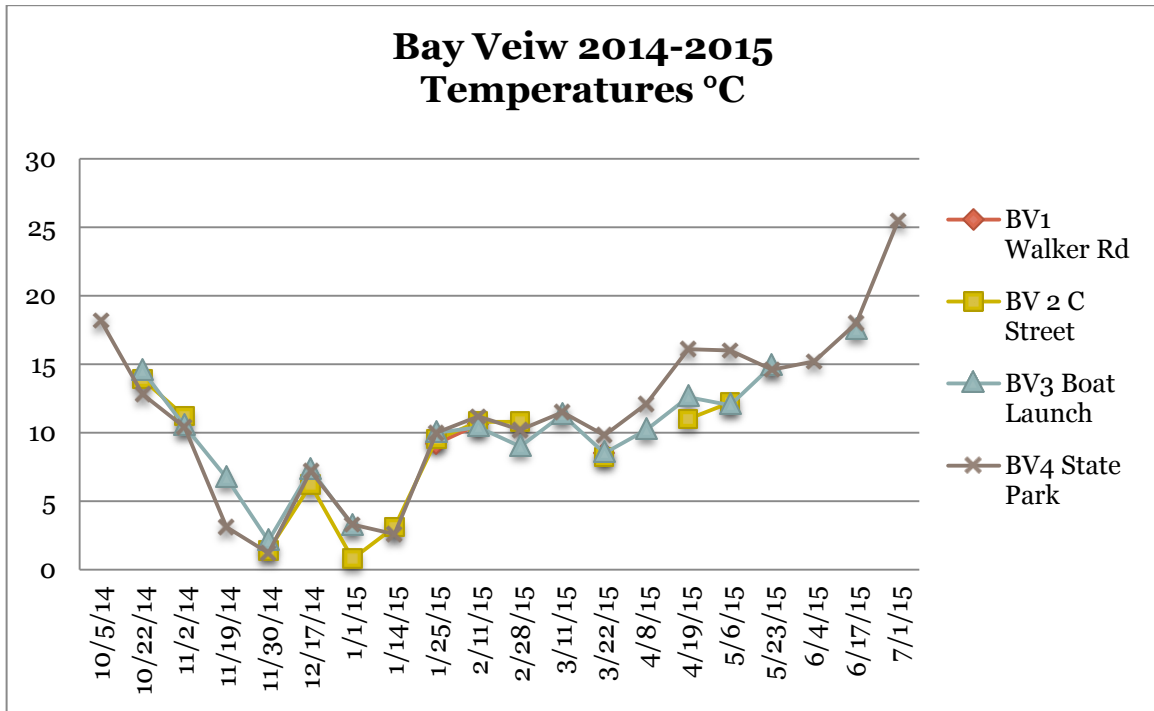


Figure 61. Bay View Drainage Temperature: 2014-2015

Average annual temperatures were higher than last year for all sites. State standards are not based on the annual average.

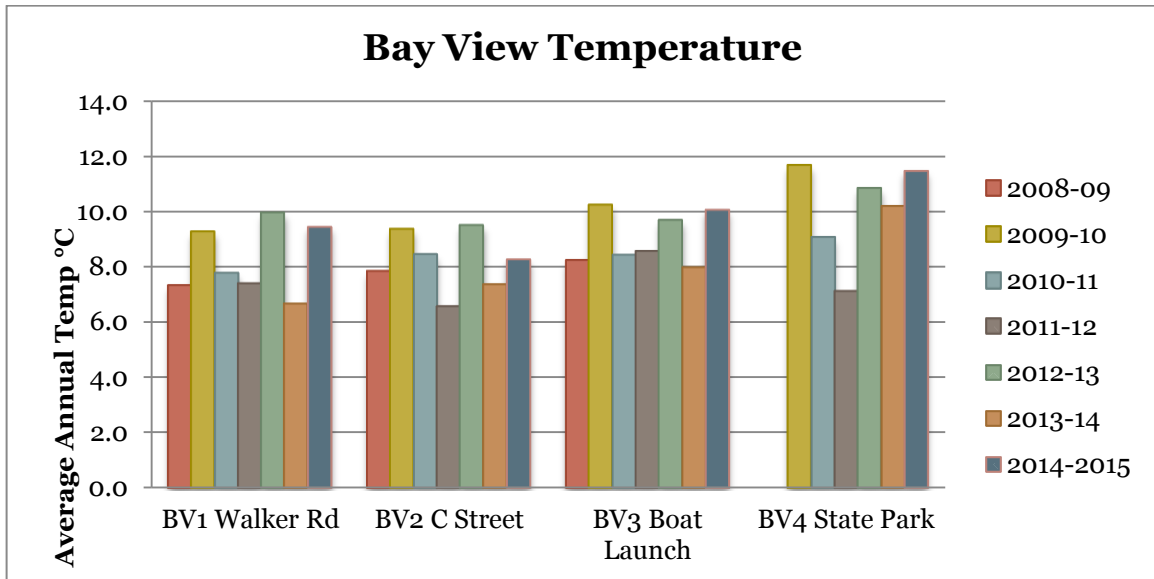


Figure 62. Bay View Drainage Temperature: Seven-year comparison

Weather affects turbidity at Site 4 in the bay, when wind and waves stir up the mud and detritus. This is a normal, natural estuarine condition that does not indicate poor water quality.

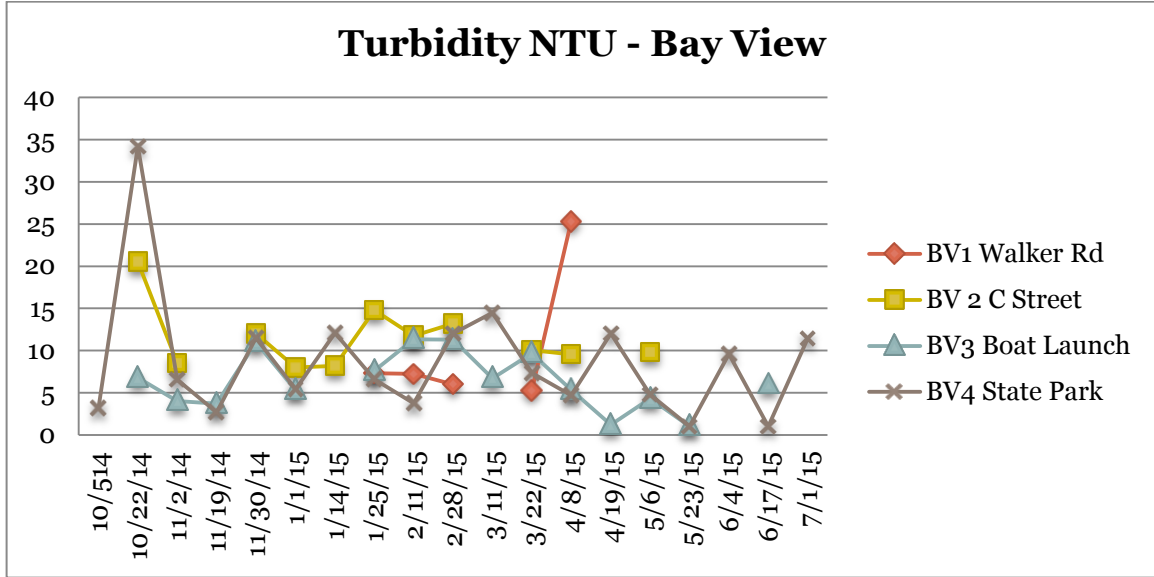


Figure 63. Bay View Turbidity: 2014-2015

Average turbidity levels (Figure 64 below) were fairly low and more consistent between sites compared to higher variability in past years.

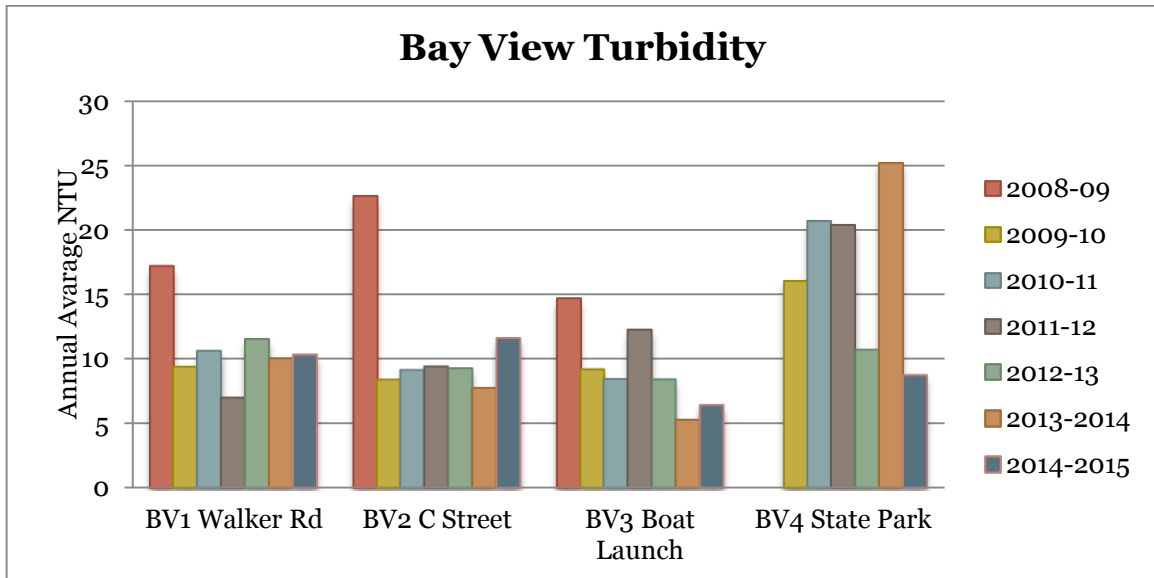


Figure 64. Bay View Drainage Turbidity: Seven-year comparison

Fecal coliform numbers were very low for much of the season, with only a few counts above 200CFU/100ml, and two very high counts on October 22. Sites 1, 2, and 4 met Part II of the state standard of <10% above 200CFU/100ml.

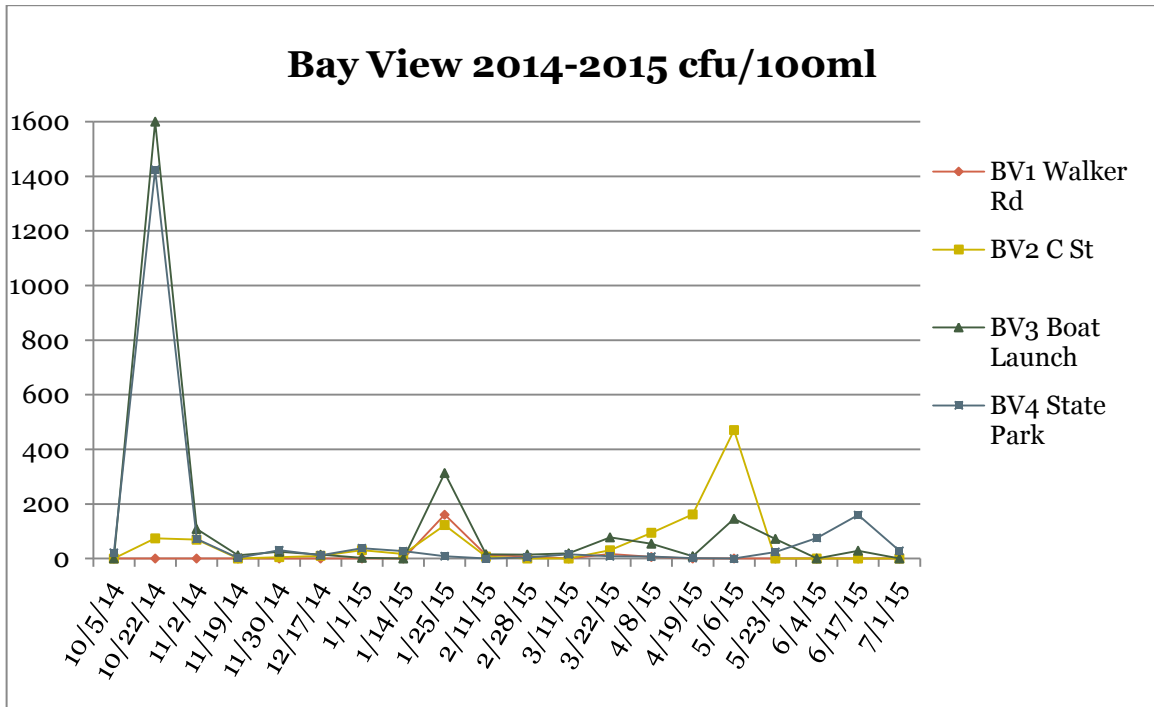


Figure 65. Bay View Drainage Fecal Coliform: 2014-2015

Annual geometric means for Bay View fecal coliform (Figure 66 below) were very low. All sites met Part I of the state standard (100CFU/100ml).

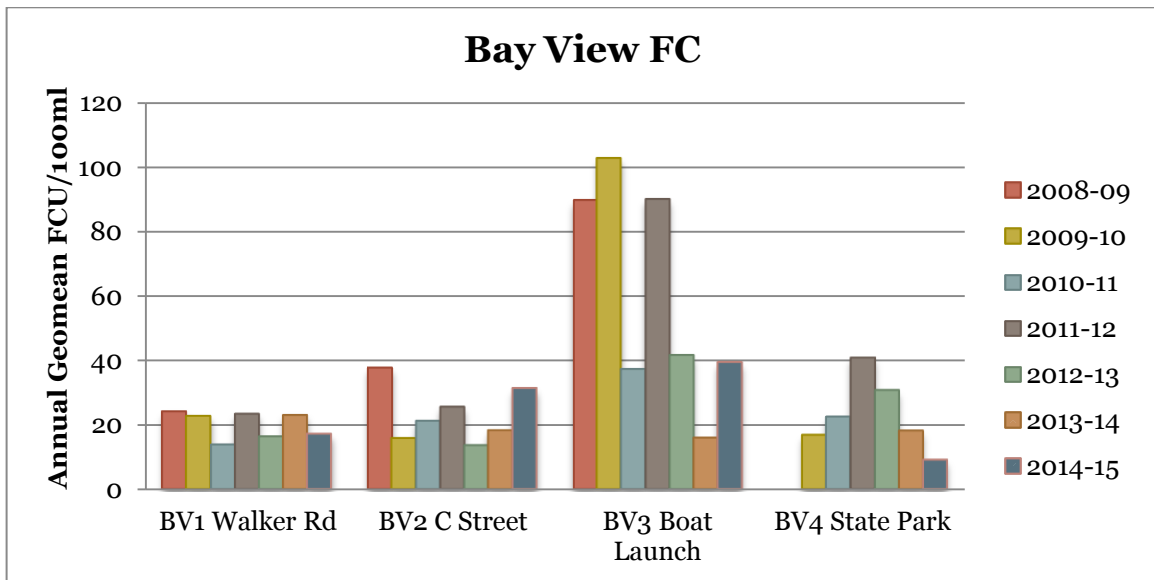


Figure 66. Bay View Drainage Fecal Coliform: Seven-year comparison

Joe Leary Slough Results

Figures 67 through 74 below present results from Joe Leary Slough sampling.

Once again, dissolved oxygen levels were consistently below standards for all sites, even during the cold winter months.

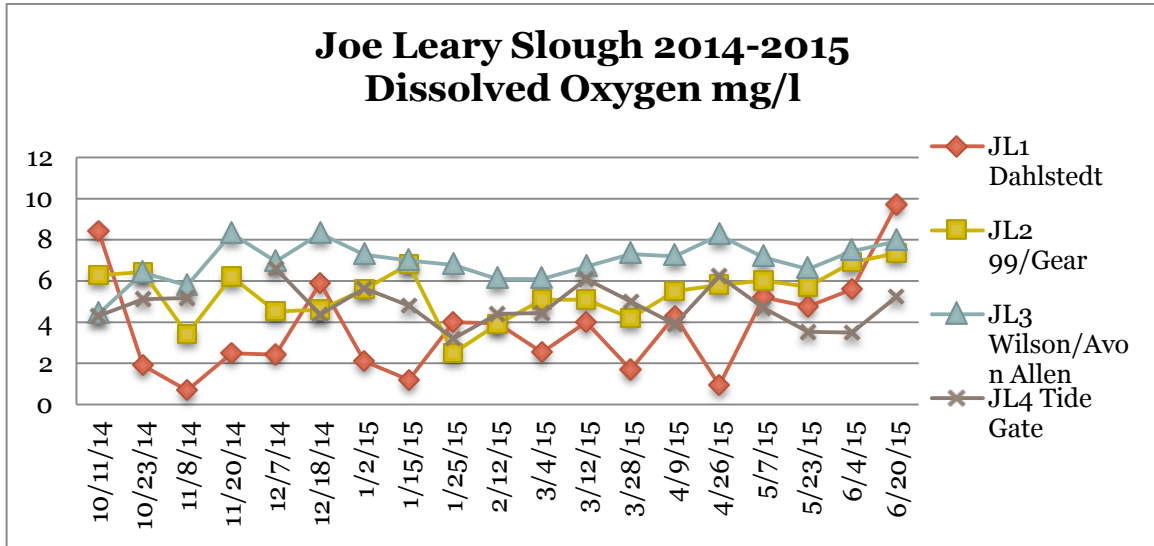


Figure 67. Joe Leary Slough DO: 2014-2015

Dissolved oxygen levels for three Joe Leary sites were lower than the past five years: very low, with averages below the state standard of 8mg/l. Standards are not based on average levels.

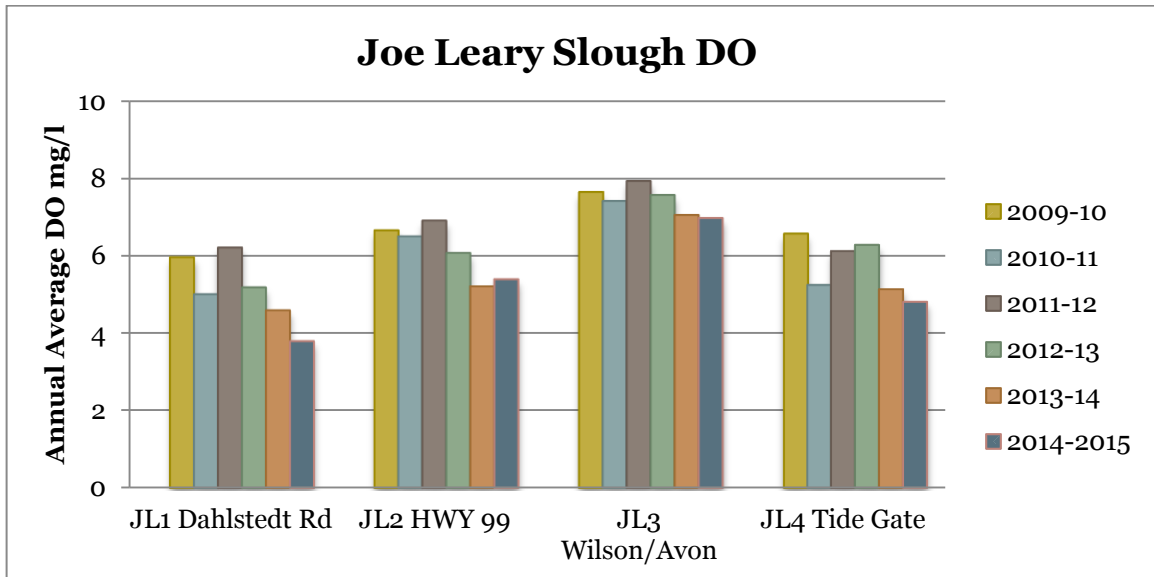


Figure 68. Joe Leary Slough DO: Six-year comparison

Temperatures for Sites 1 and 4 were above the maximum level of 17.5°C in June. All other samples were below 17.5 °C. No samples were taken during the warmest summer season when temperatures may have risen above the standard.

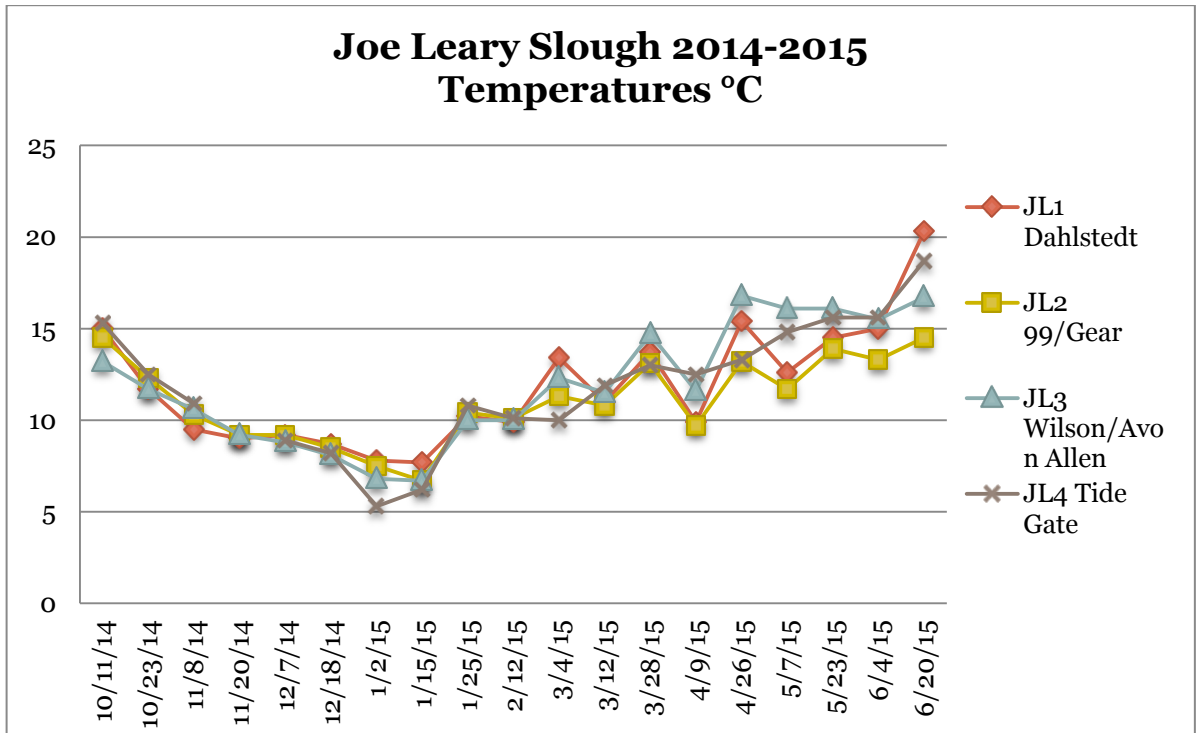


Figure 69. Joe Leary Slough Temperature: 2014-2015

Compared to past years, average annual temperatures (Figure 70 below) for all sites were higher than all past years. Standards are not based on average temperature.

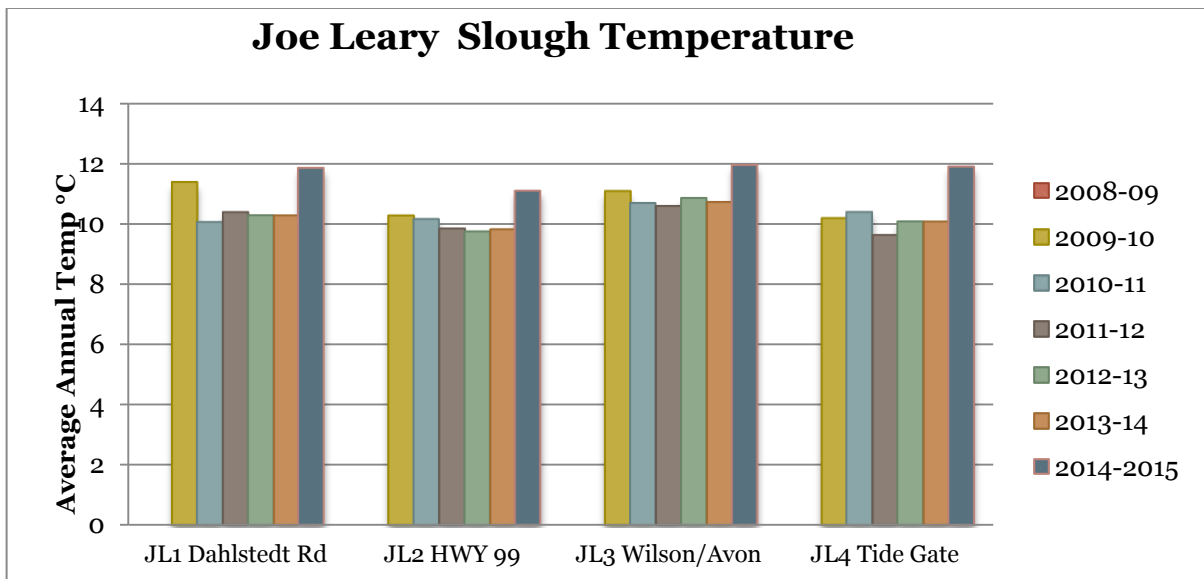


Figure 70. Joe Leary Slough Temperature: Six-year comparison

Joe Leary Slough holds the distinction of having the highest turbidity of all the stream team sites. Site 3, Wilson and Avon Allen Roads continues to be higher than other sites.

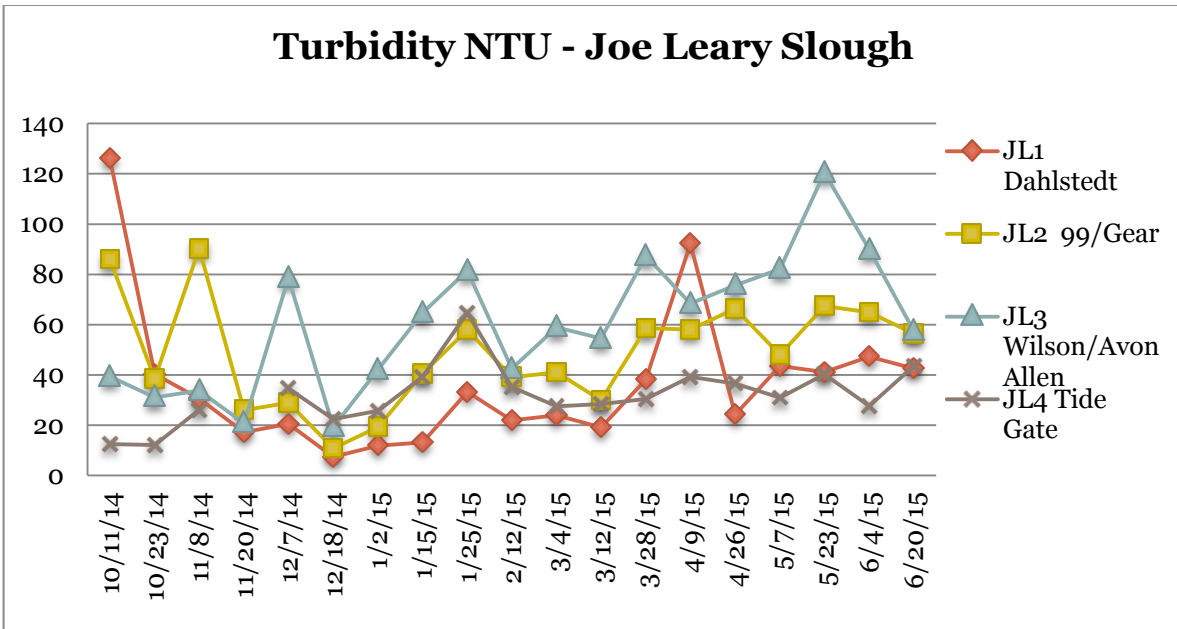


Figure 71. Joe Leary Slough Turbidity: 2014-2015

Average turbidity (Figure 72 below) in Joe Leary Slough was the highest in six years at Sites 1-3.

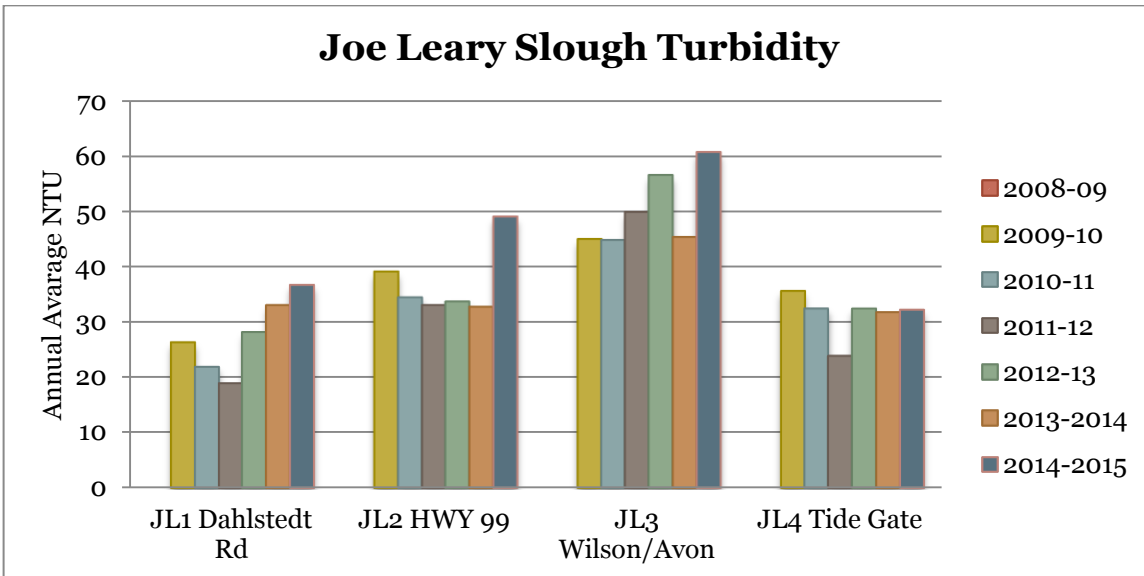


Figure 72. Joe Leary Slough Turbidity: Six-year comparison

In 2014-2015, none of the Joe Leary Slough sites met Part II of the state standard for fecal coliform: more than 10% of the samples were higher than 200CFU/100ml.

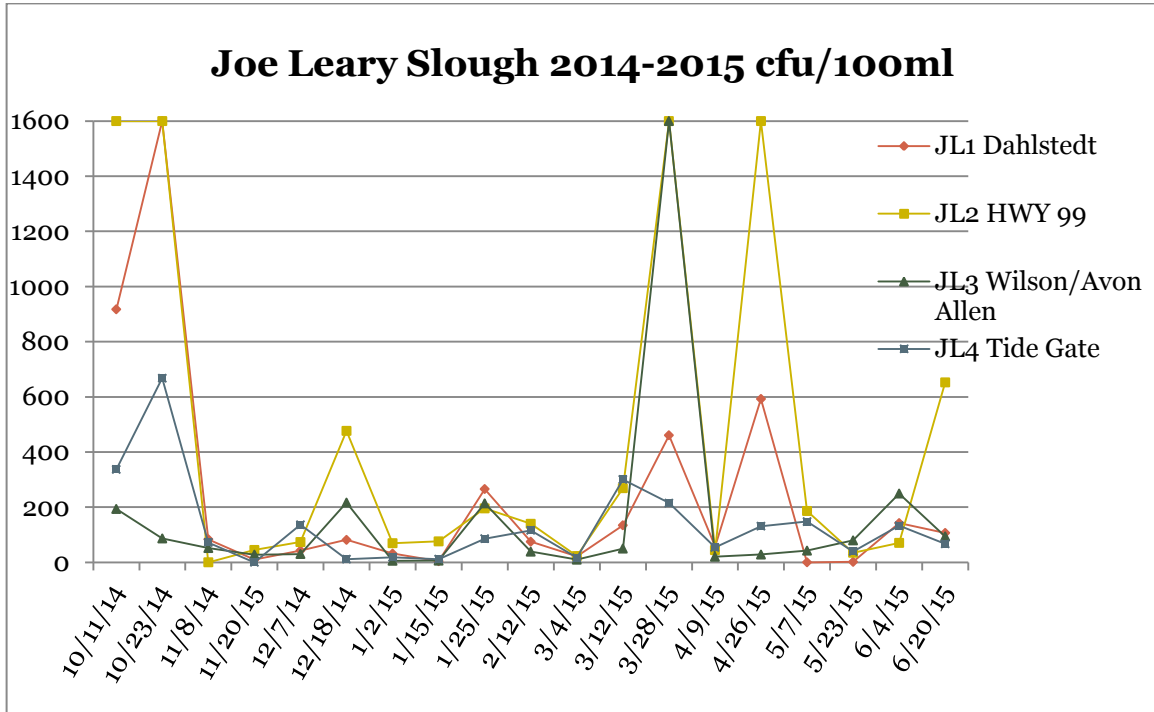


Figure 73. Joe Leary Slough Fecal Coliform: 2014-2015

Sites 1, 3, and 4 met Part I of the standard of geometric mean <100 CFU100ml. Site 3 met both requirements. Levels in 2014-2015 were higher than last year for Sites 1, 2, and 3. (Figure 74 below)

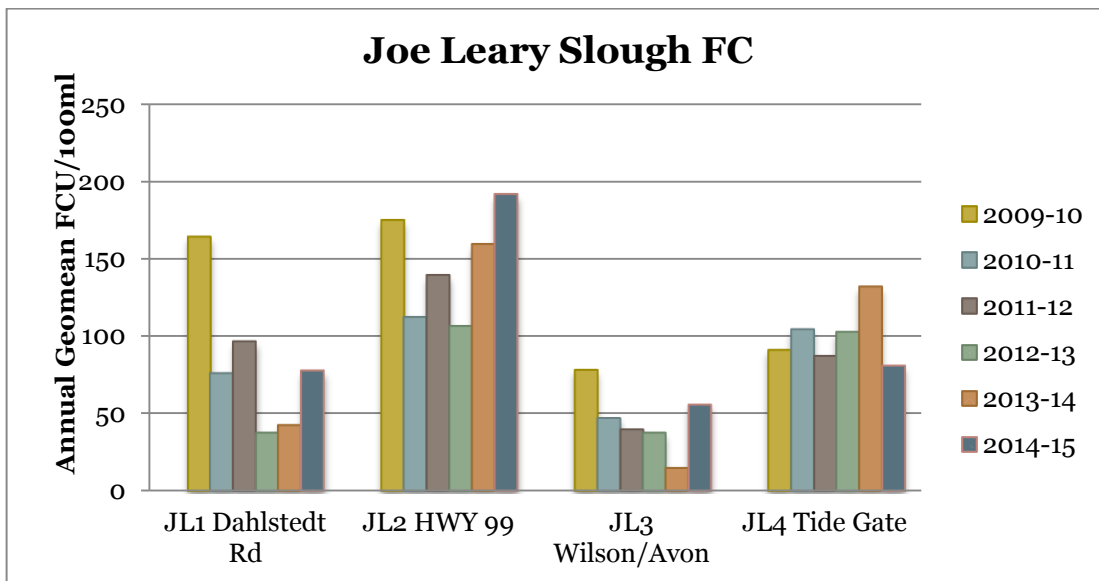


Figure 74. Joe Leary Slough Fecal Coliform: Six-year comparison

Trumpeter Basin Results

Figures 75 through 82 below present results from Trumpeter Basin sampling.

Dissolved oxygen levels dropped below the standard of 9.5mg/l at Sites 1, 2, 3 and 5.

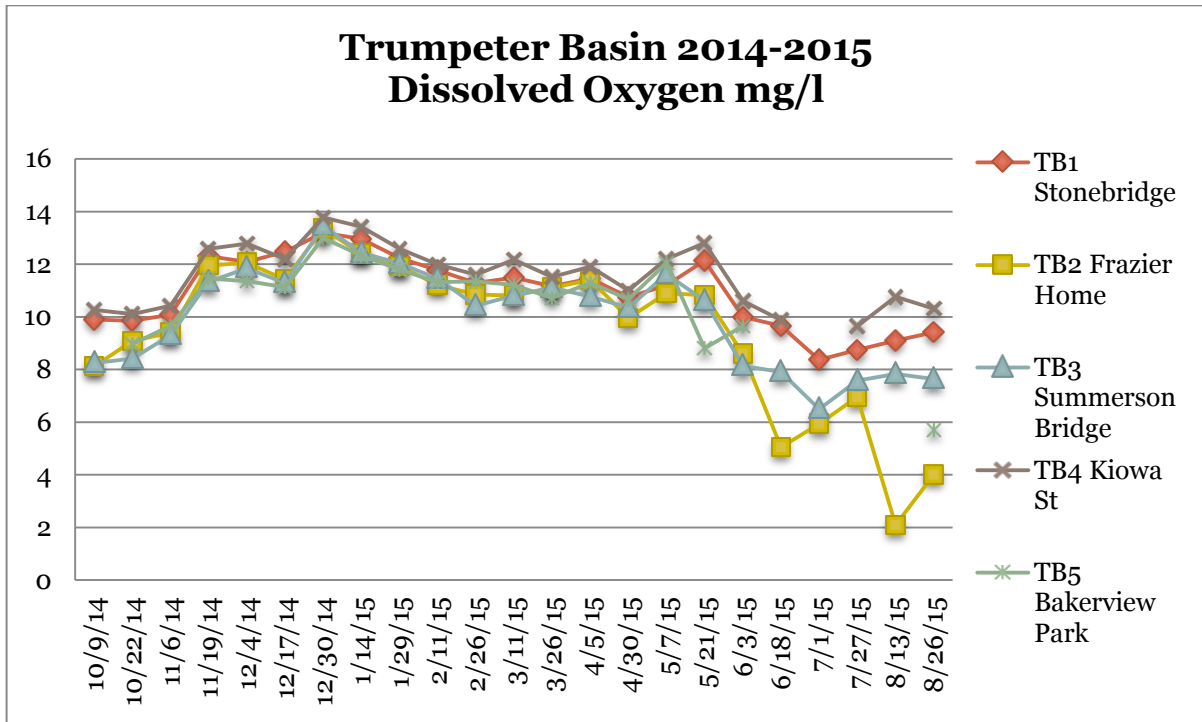


Figure 75. Trumpeter Basin DO: 2014-2015

Average annual dissolved oxygen levels (Figure 76 below) were the highest in seven years for Sites 1 and 4. State standards are not based on annual averages.

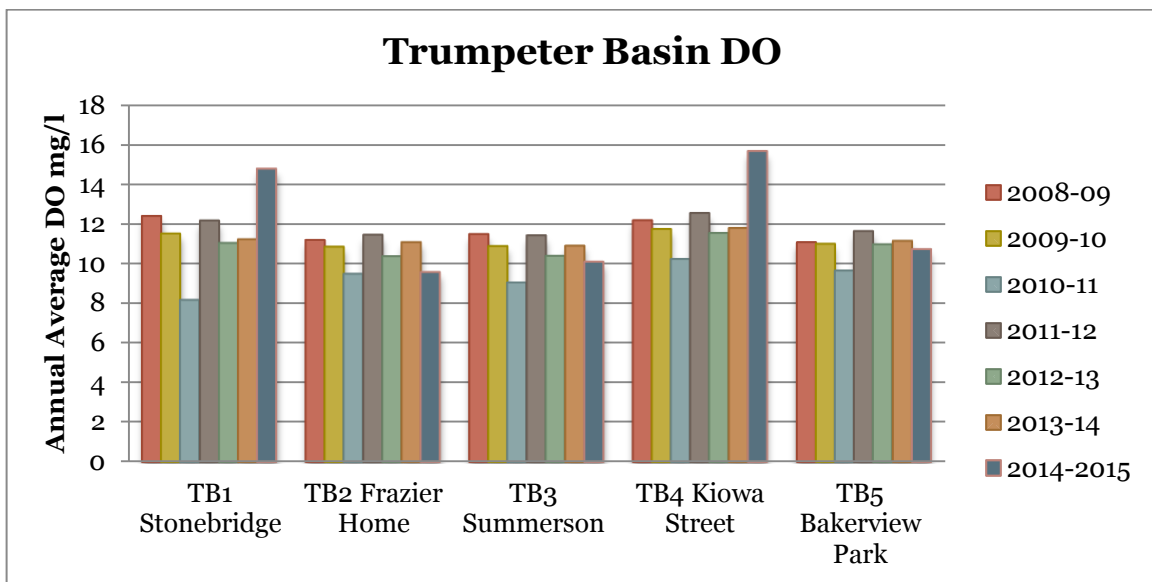


Figure 76. Trumpeter Basin DO: Seven-year comparison

Temperatures for Sites 1-4 went above the standard of 16°C in August.

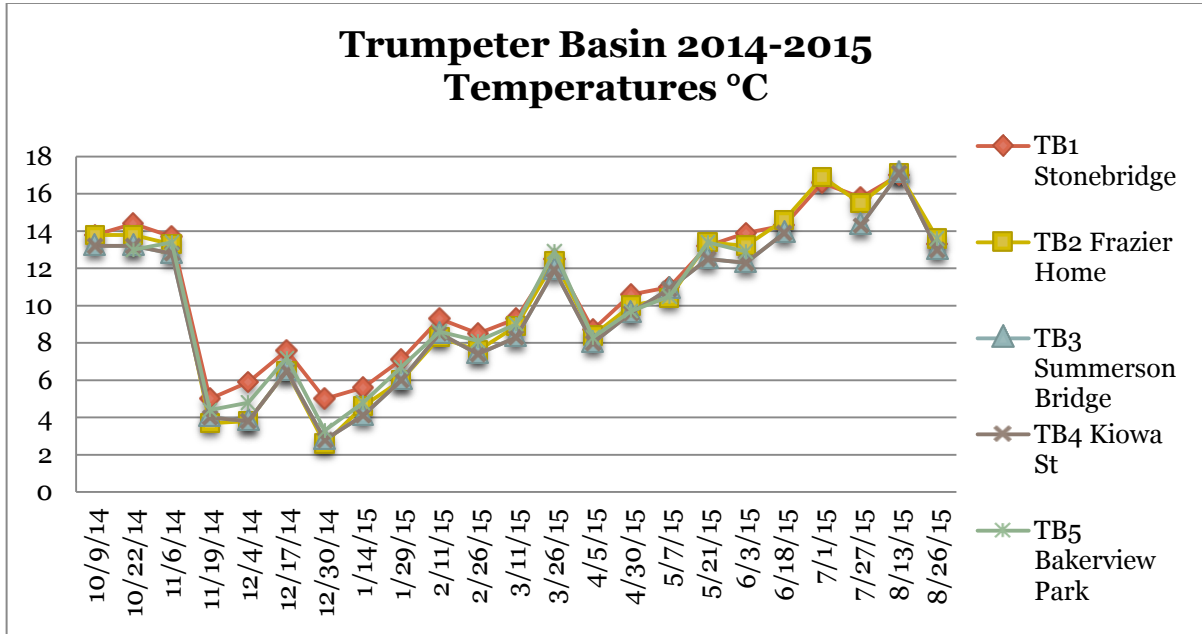


Figure 77. Trumpeter Basin Temperature: 2014-2015

Trumpeter Basin average annual temperatures (Figure 78 below) in 2014-2015 were higher than past years. State standards are not based on the annual averages.

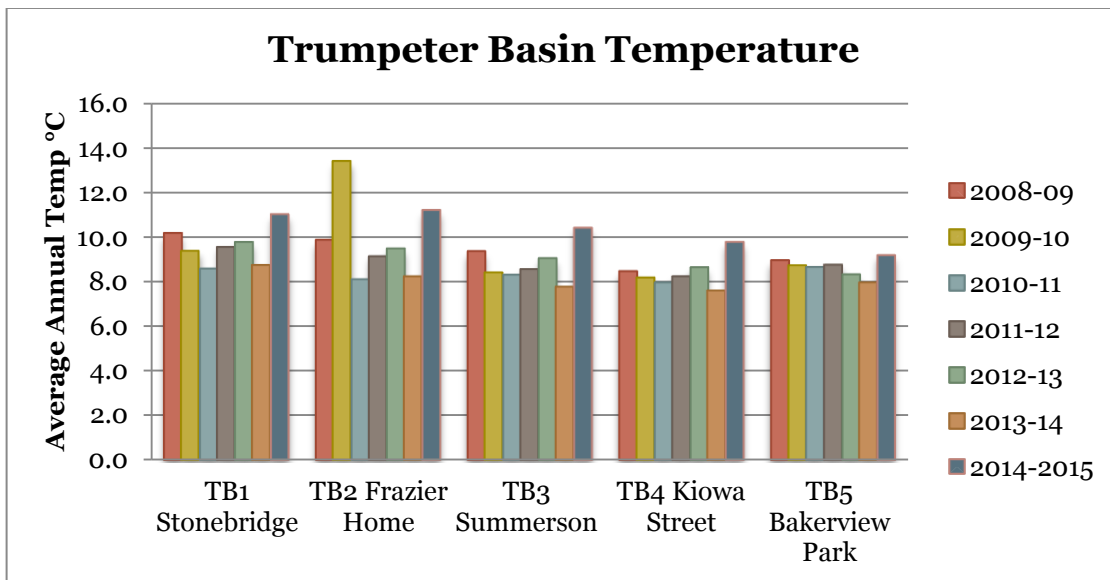


Figure 78. Trumpeter Basin Temperature: Seven-year comparison

Turbidity levels for Trumpeter Basin spiked in November at all sites. Site 2 was usually the most turbid site.

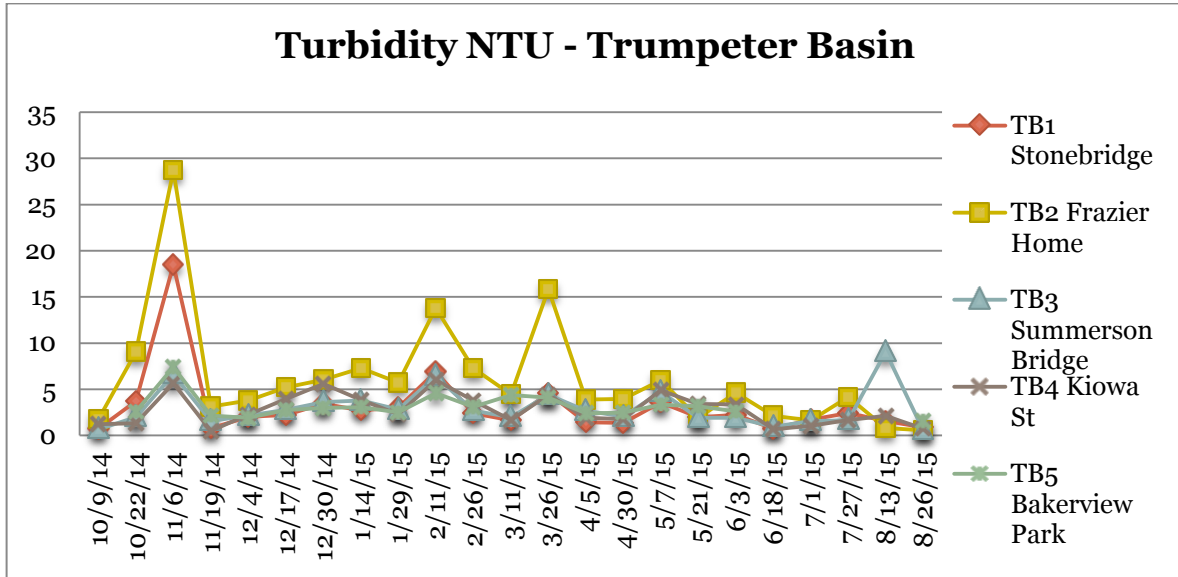


Figure 79. Trumpeter Basin Turbidity: 2014-2015

Average turbidity levels in Trumpeter Basin (Figure 80 below) were highest again at site 2, but levels were down from past years.

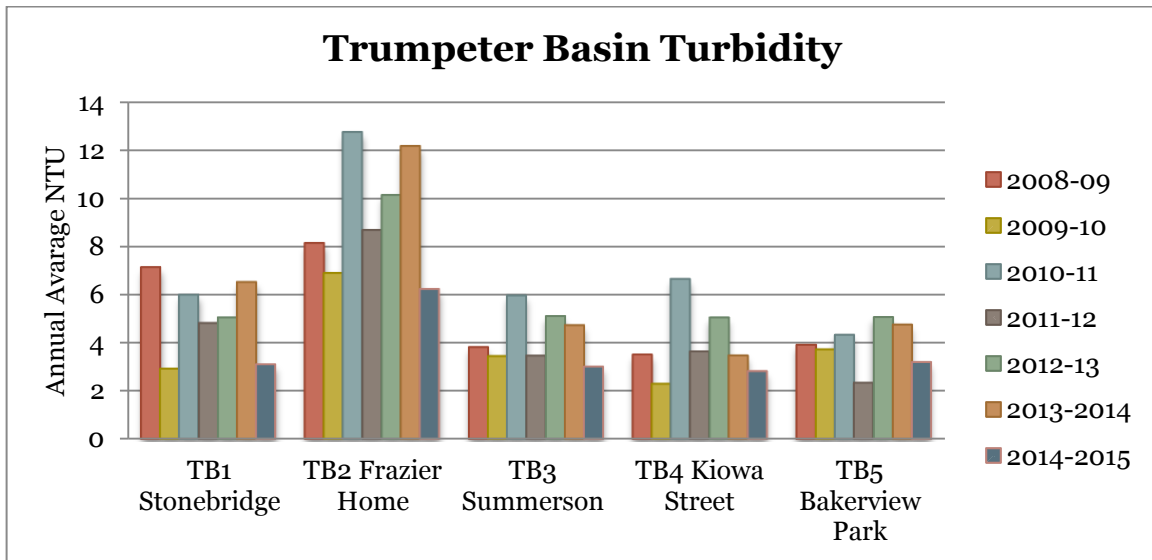


Figure 80. Trumpeter Basin Turbidity: Seven-year comparison

All sites had high spikes of fecal coliform throughout the season. None of the sites passed the standard of <10% of counts under 200 CFU/100ml.

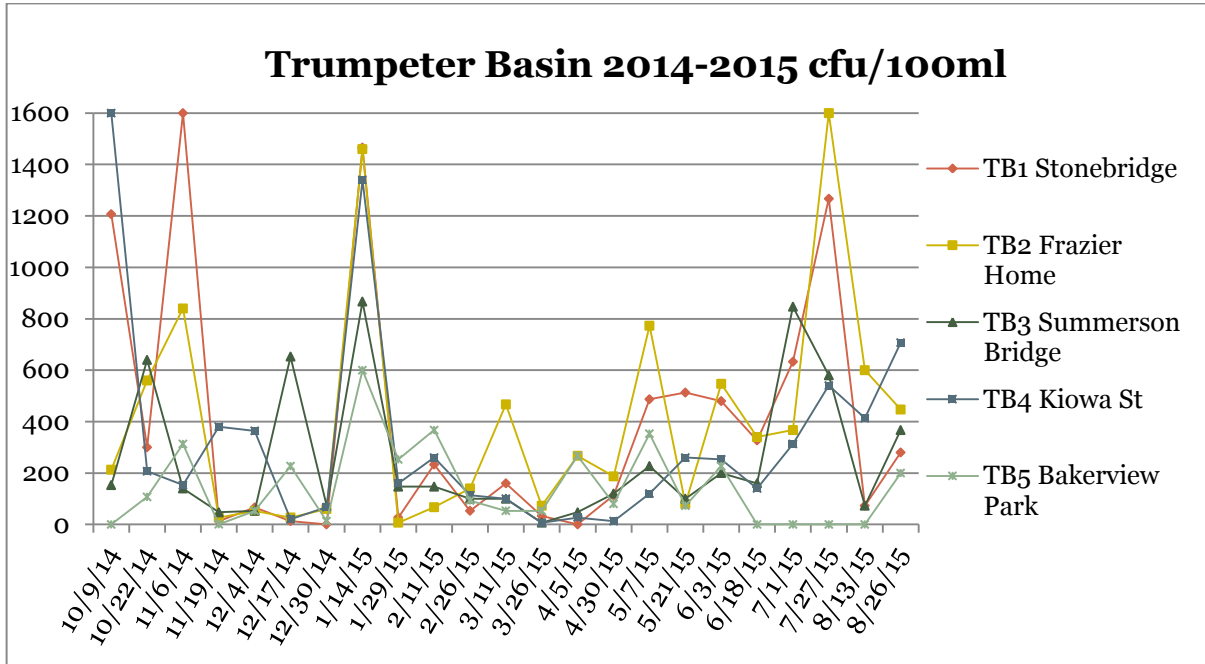


Figure 81. Trumpeter Basin Fecal Coliform: 2014-2015

Looking at the annual average, (Figure 82 below) Sites 2- 5 had higher fecal coliform levels than last year. Site 4 was more than double previous years. Only Site 1 met Part I of the state standard: geometric mean <100CFU/100ml.

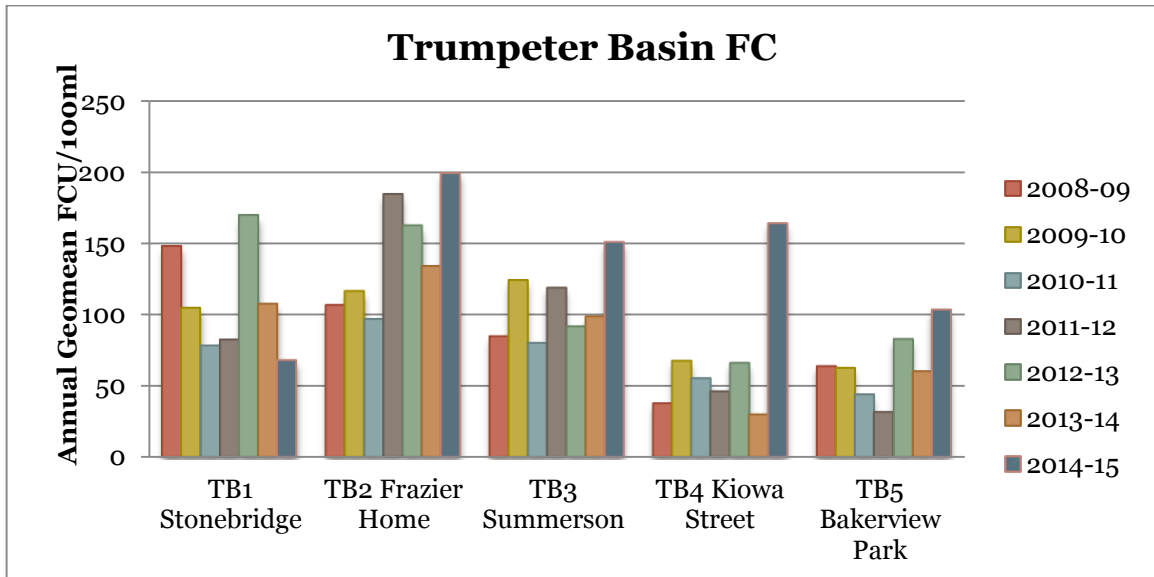


Figure 82. Trumpeter Basin Fecal Coliform: Seven-year comparison

Kulshan Creek Results

Figures 83 through 90 below present results from Kulshan Creek sampling.

Dissolved oxygen in all Kulshan Creek sites went below the state standard of 9.5 mg/l during this sampling season. As in past years, Site 3 was rarely above the standard.

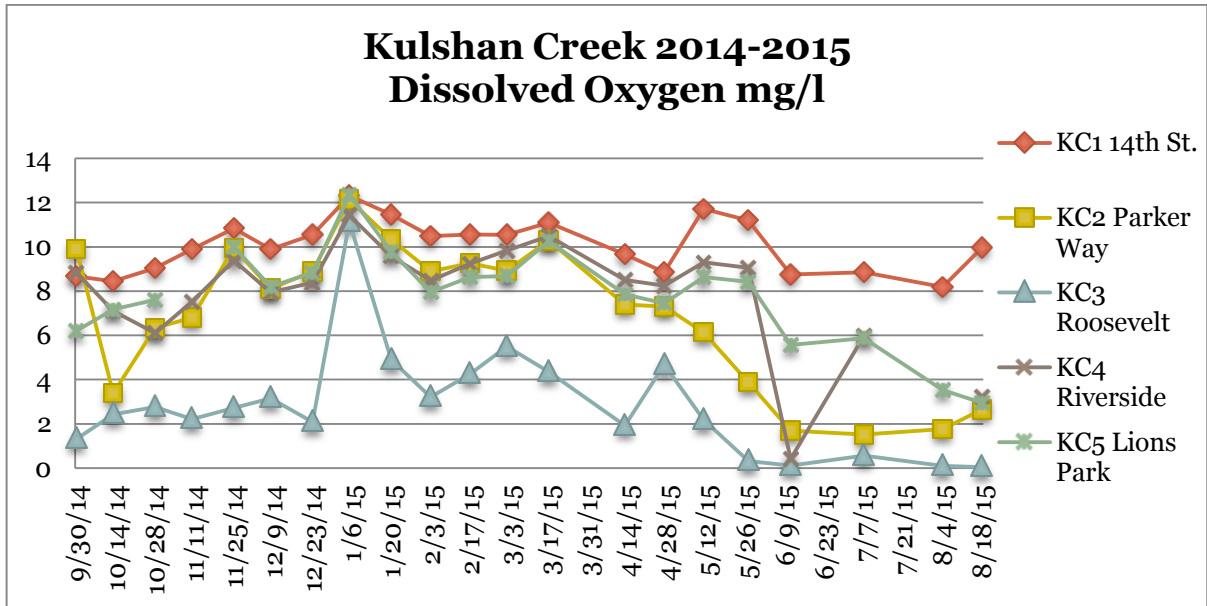


Figure 83. Kulshan Creek DO: 2014-2015

Average dissolved oxygen levels (Figure 84) for all sites were lower than the past three years for Sites 2-5. Standards are not based on annual average measurements.

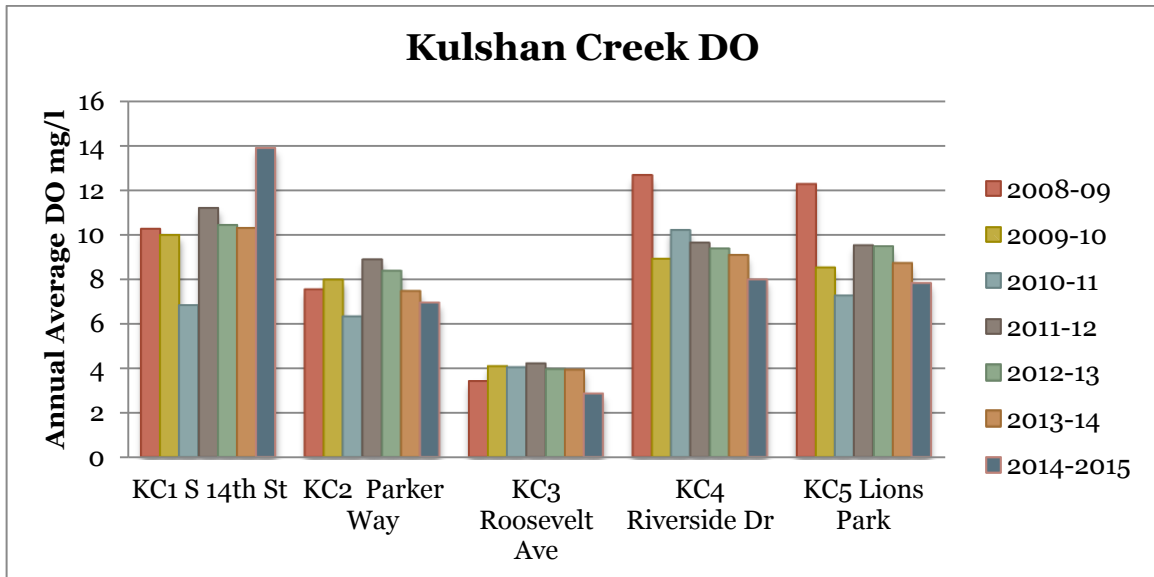


Figure 84. Kulshan Creek DO: Seven-year comparison

Sites 2-5 were warmer than 16°C in July and August. Kulshan Creek was not monitored during September when temperatures may have risen above 16°.

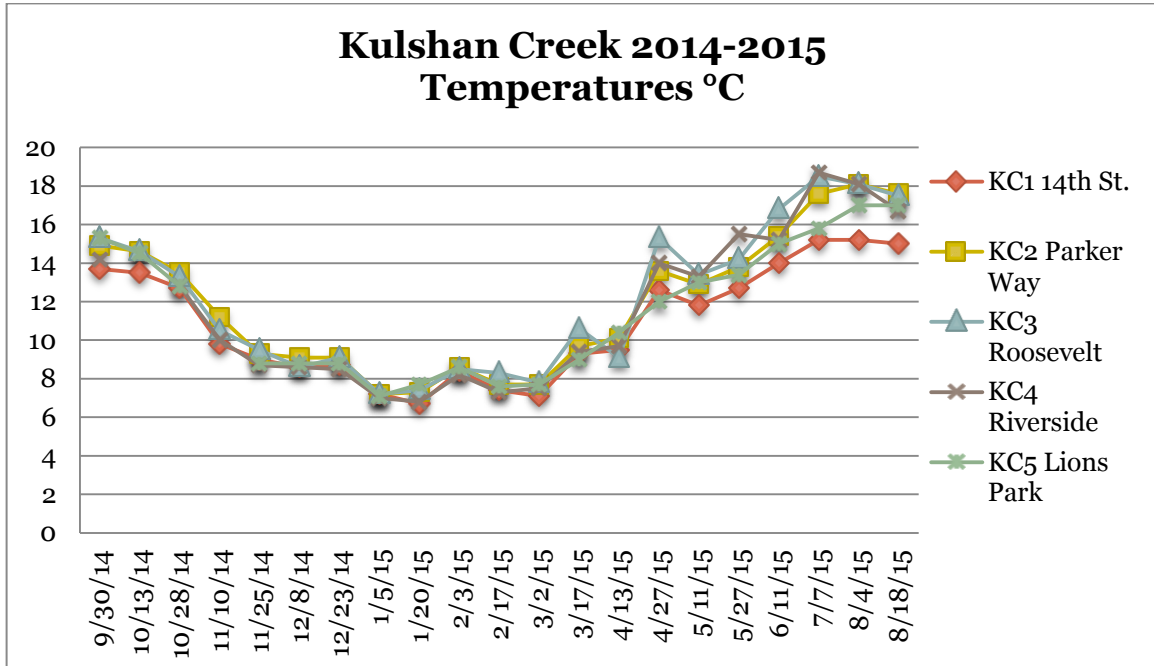


Figure 85. Kulshan Creek Temperature: 2014-2015

All Kulshan Creek sites had average temperatures higher than the previous six years. Standards are not based on average temperature.

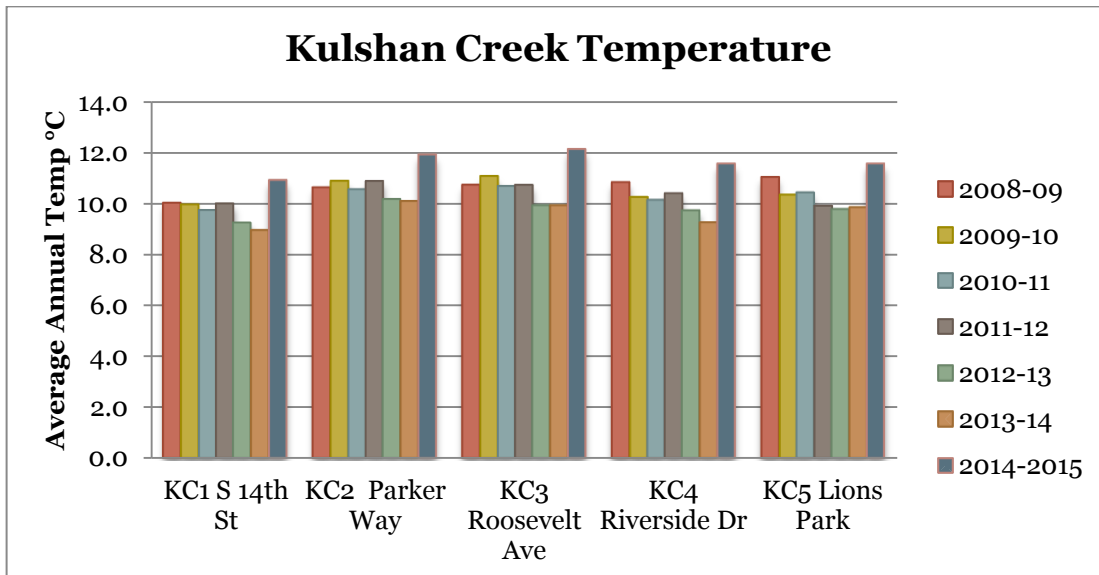


Figure 86. Kulshan Creek Temperature: Seven-year comparison

Turbidity for Kulshan Creek was generally lower than most streams, with a few spikes corresponding to rain events.

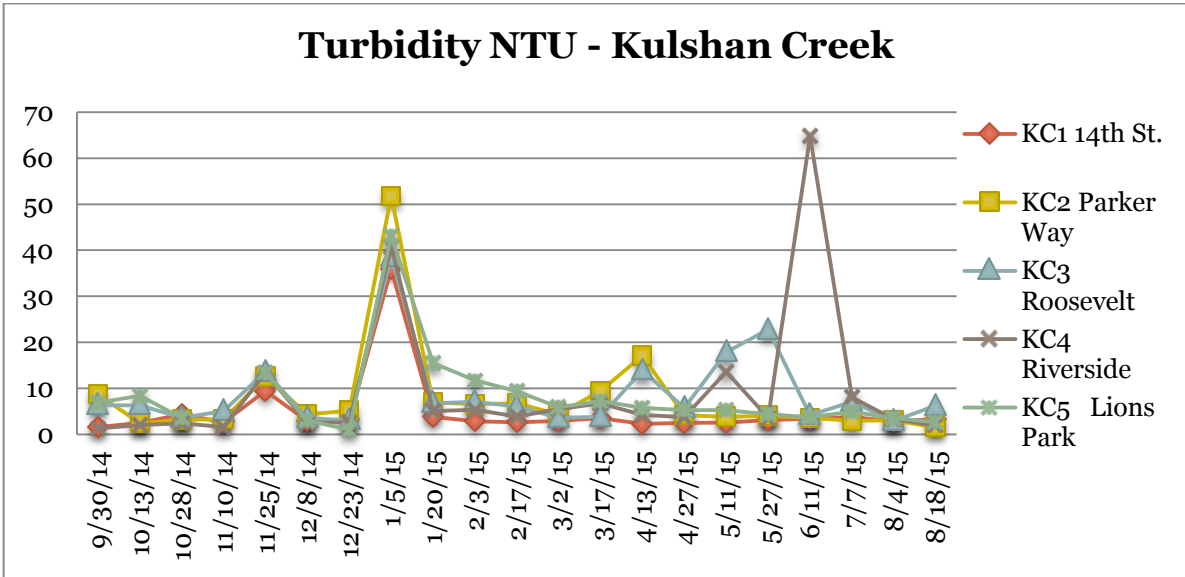


Figure 87. Kulshan Creek Turbidity: 2014-2015

Average turbidity in Kulshan Creek (Figure 88 below) was mixed, with lower turbidity for Sites 1, 3, and 5 and slightly higher levels for Sites 2 and 4.

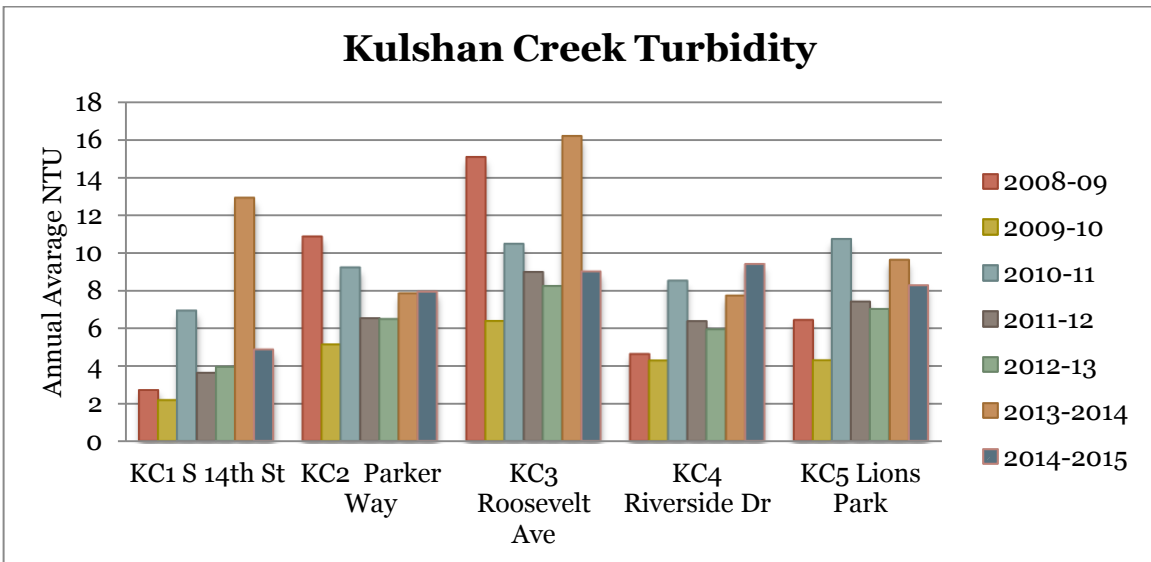


Figure 88. Kulshan Creek Turbidity: Seven-year comparison

As in previous years, fecal coliform counts in Kulshan Creek were highly variable throughout the year. None of the sites had fewer than 10% of the samples over 200 CFU/100ml. Site 1 had >50% of the counts above 200 CFU/100ml.

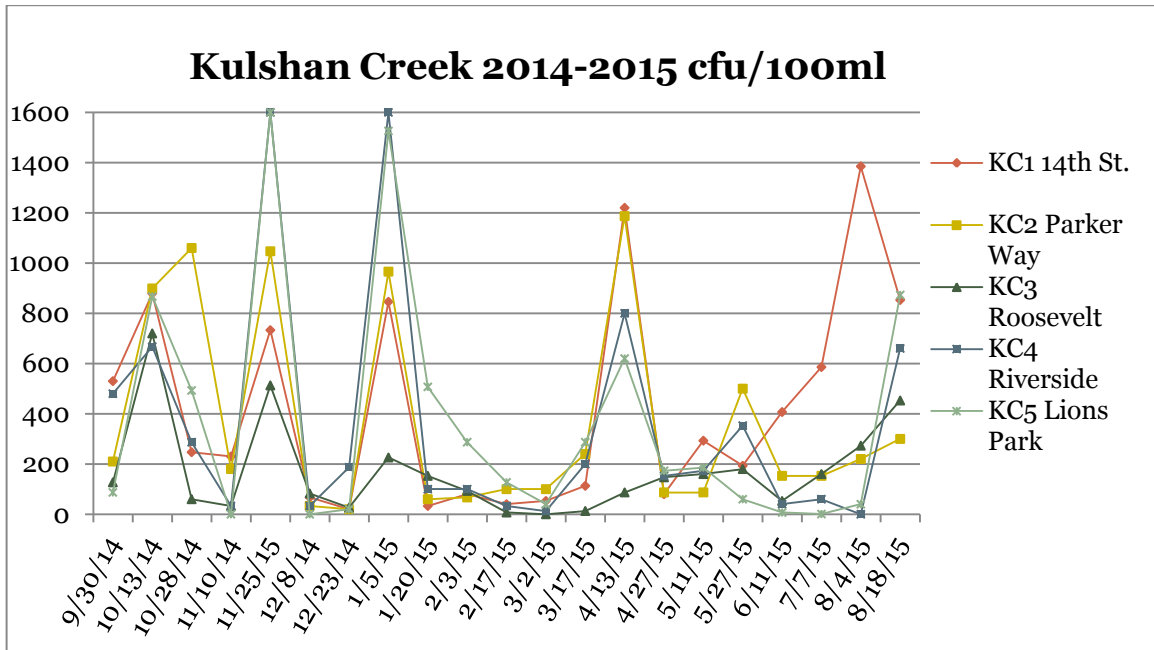


Figure 89. Kulshan Creek Fecal Coliform: 2014-2015

Sites 1, 2, and 5 had annual geometric means over the standard of 100 CFU/100ml. Geomeans at all sites were higher than last year.

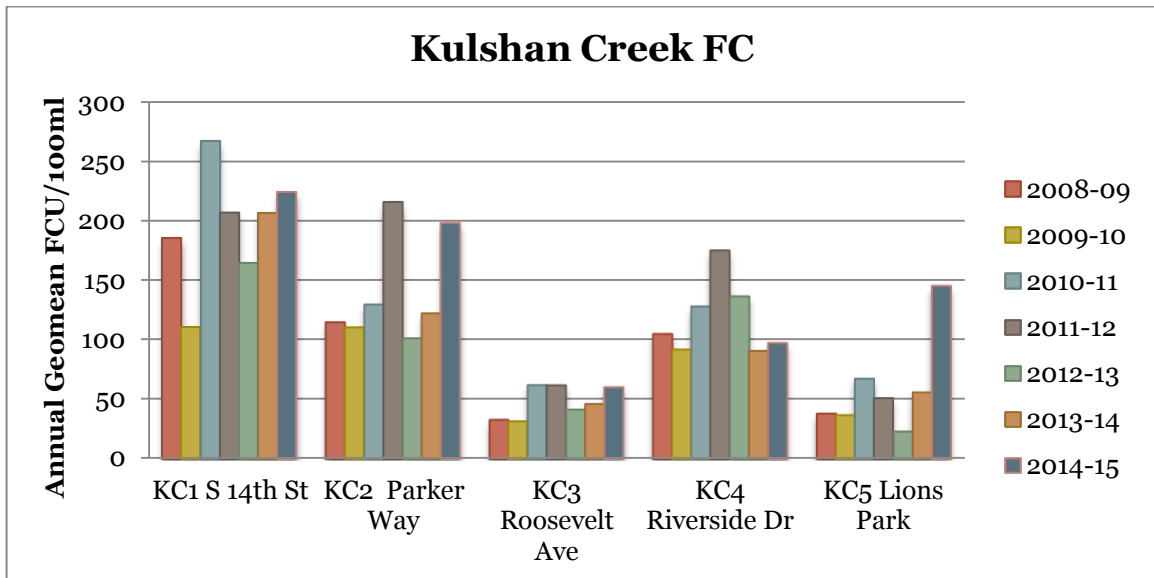


Figure 90. Kulshan Creek Fecal Coliform: Seven-year comparison

Clyde Creek Results

Figures 91 through 98 below present results from Clyde Creek sampling. This was the fourth year of sampling.

Dissolved oxygen for Sites 1, 2 and 3 dropped below 9.5mg/l at some point during the year. Site 4 was above the standard throughout the sampling season, but was not monitored during the warmest months.

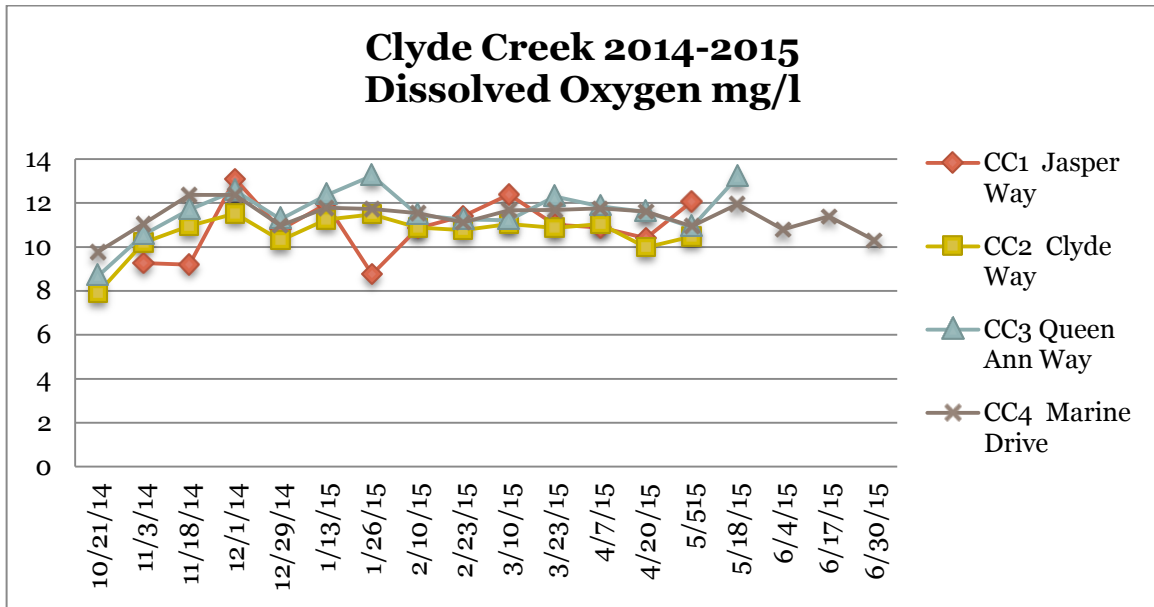


Figure 91. Clyde Creek DO: 2014-2015

Average dissolved oxygen levels were similar to past years. State standards for DO are not based on the annual average.

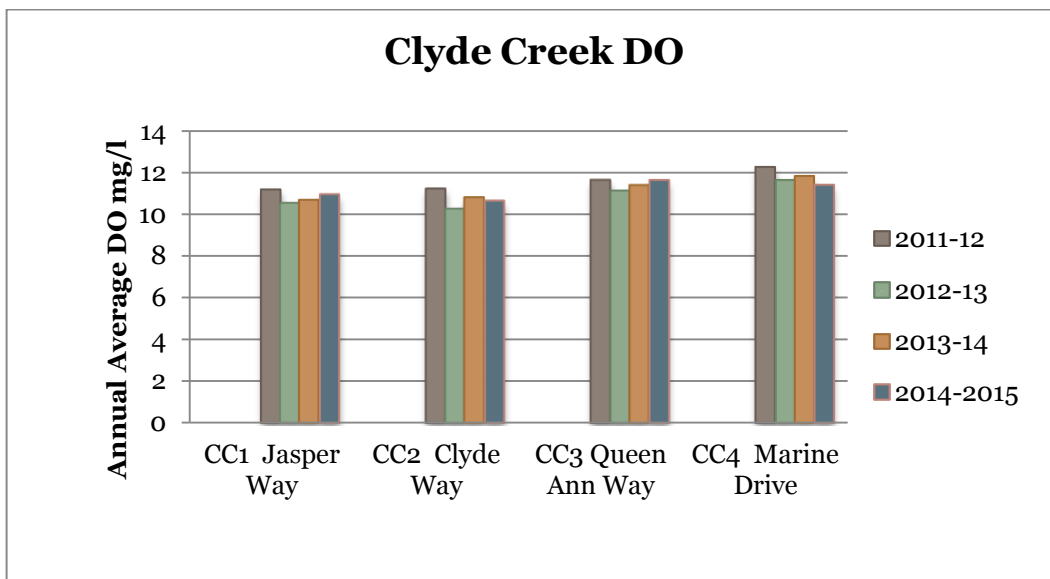


Figure 92. Clyde Creek DO: Four-year comparison

Temperatures for all Clyde Creek samples were below the maximum level of 16°C. Clyde Creek was not sampled in summer months because water dries up completely.

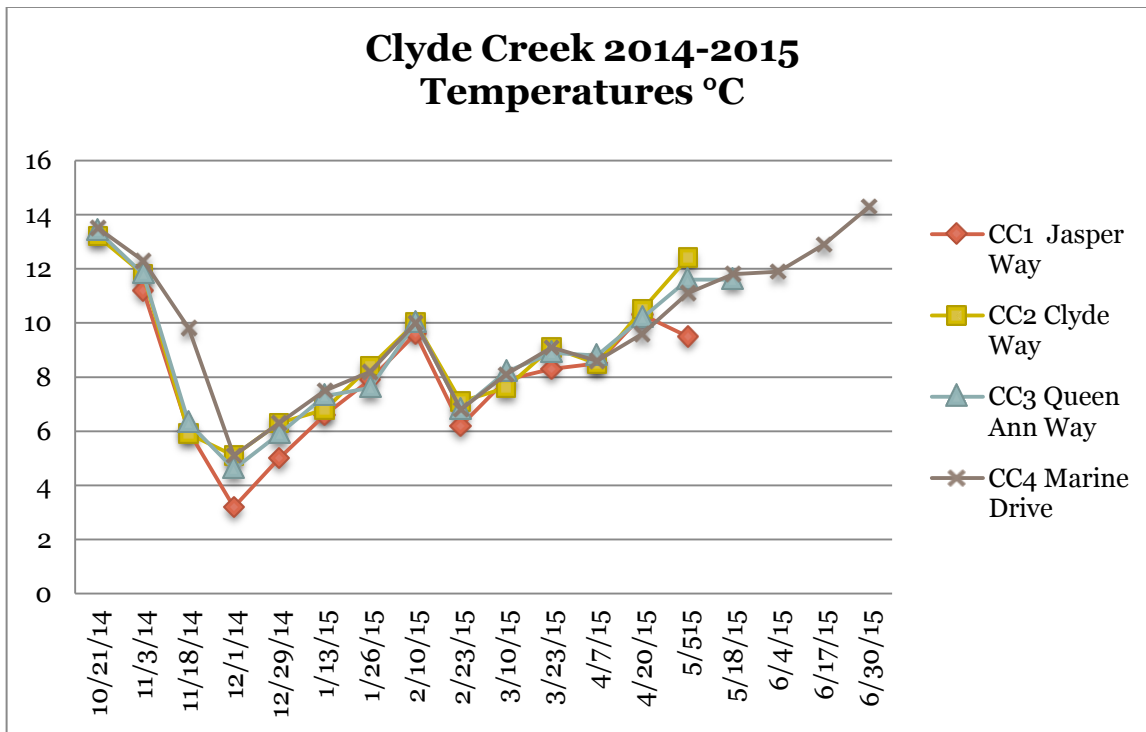


Figure 93. Clyde Creek Temperature: 2014-2015

Average annual temperatures (Figure 94 below) were about the same as last year. State standards are not based on the annual averages.

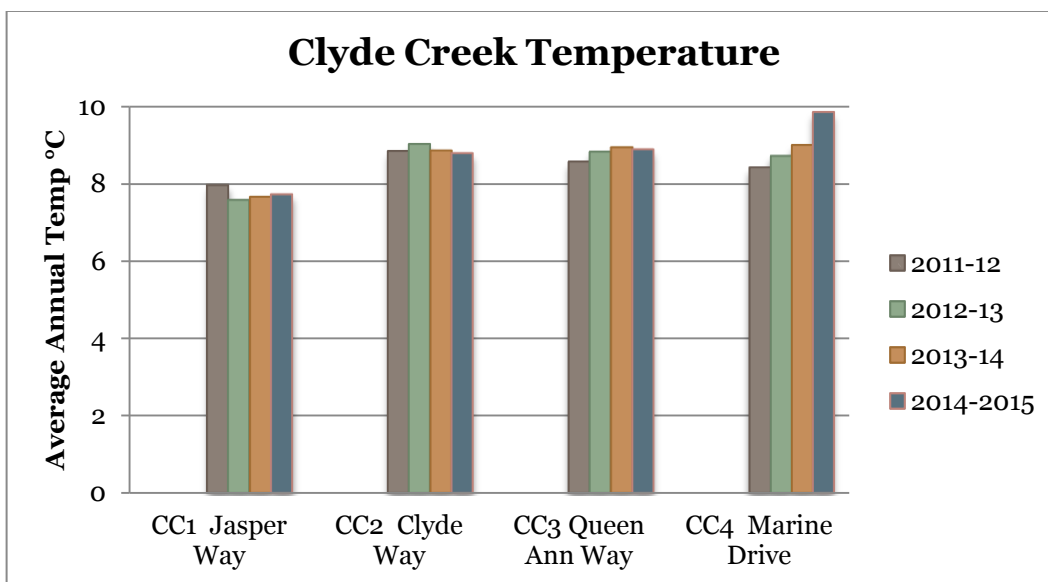


Figure 94. Clyde Creek Temperature: Four-year comparison

Turbidity levels for Clyde Creek were highly variable, with the lowest numbers at Site 3.

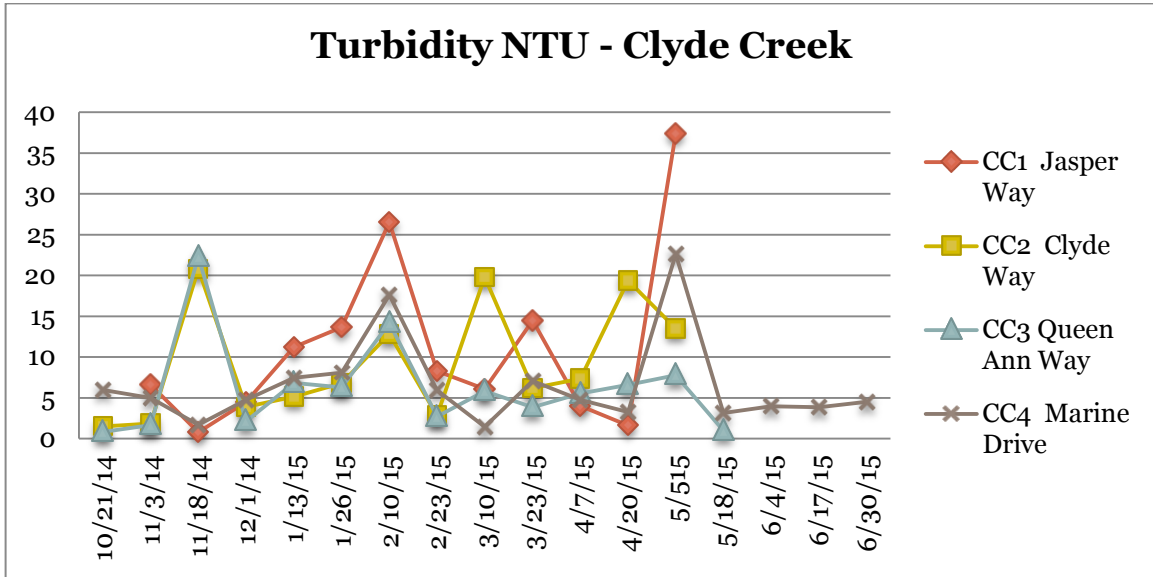


Figure 95. Clyde Creek Turbidity: 2014-2015

Clyde Creek Sites 2 and 3 (Figure 96 below) showed a marked increase in turbidity this year.

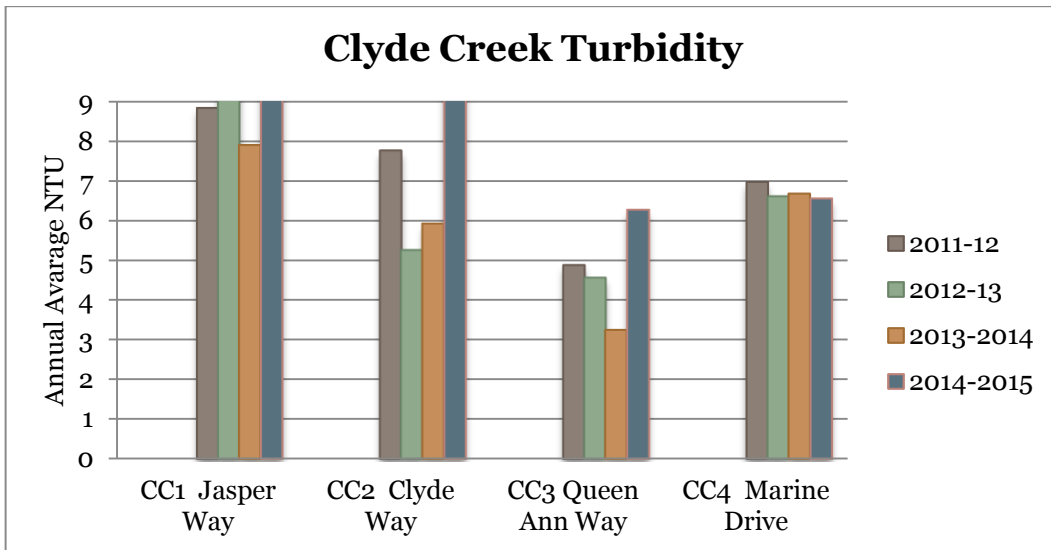


Figure 96. Clyde Creek Turbidity: Four -year comparison

Though fecal coliform counts in Clyde Creek have generally been low compared to other streams, this year had a few instances of very high counts. Only Site 3 met Part II of the standard, with fewer than 10% of the counts higher than 200CFU/100ml.

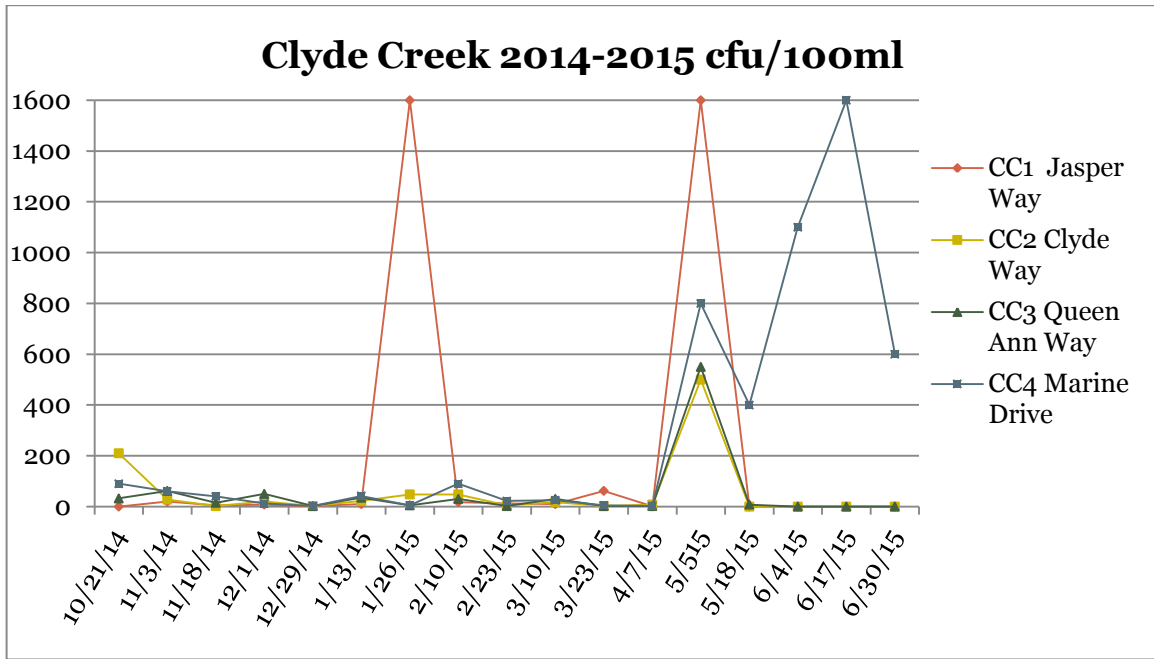


Figure 97. Clyde Creek Fecal Coliform: 2014-2015

Geometric means (Figure 98 below) for all Clyde Creek sites were lower than the 100 CFU/100ml standard, but Site 4 was much higher than three previous years.

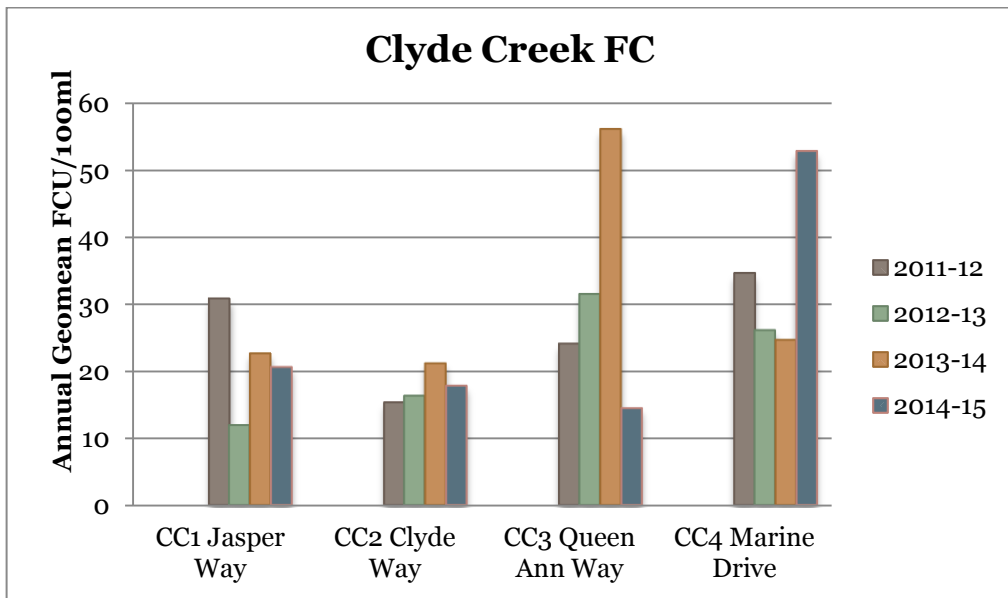


Figure 98. Clyde Creek Fecal Coliform: Four-year comparison

Gages Slough Results

Figures 99 through 106 below present results from Gages Slough sampling. Site GS4 was moved in 2011-12 because of changes to public access, and was renamed GS4A. This stream is monitored every four weeks.

Dissolved oxygen at all Gages Slough sites was below the standard throughout the year, including December and January when cold water temperatures usually increase DO.

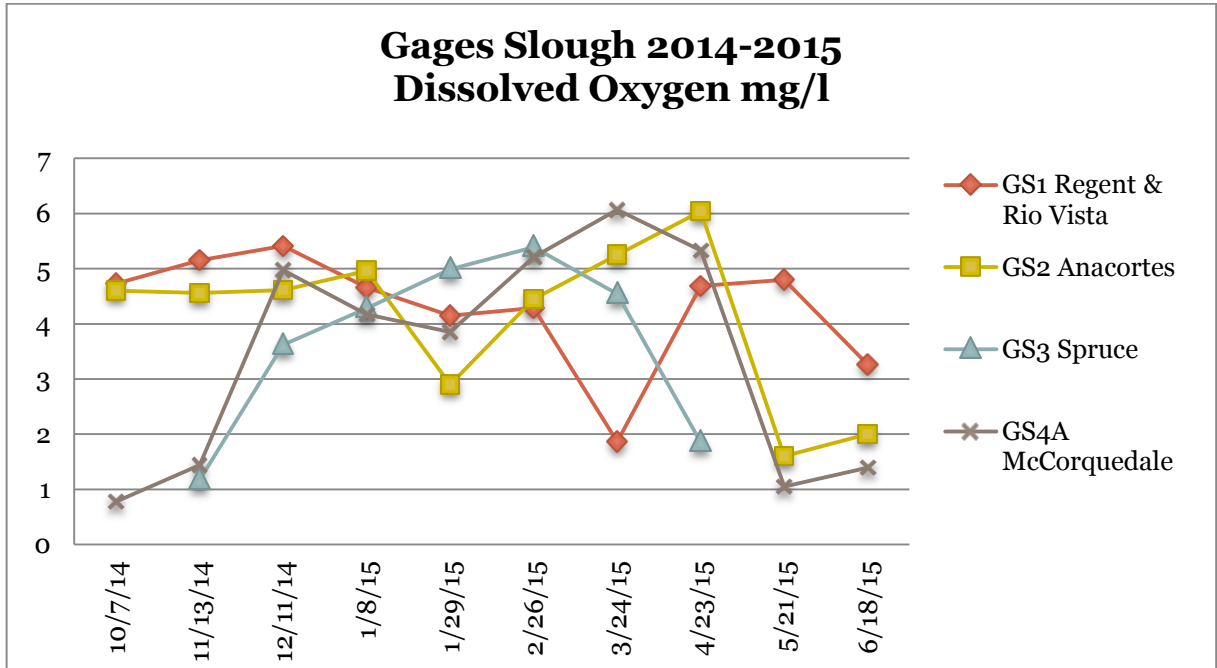


Figure 99. Gages Slough DO: 2014-2015

Average dissolved oxygen levels at all sites were lower in 2014-2015 than all past years.

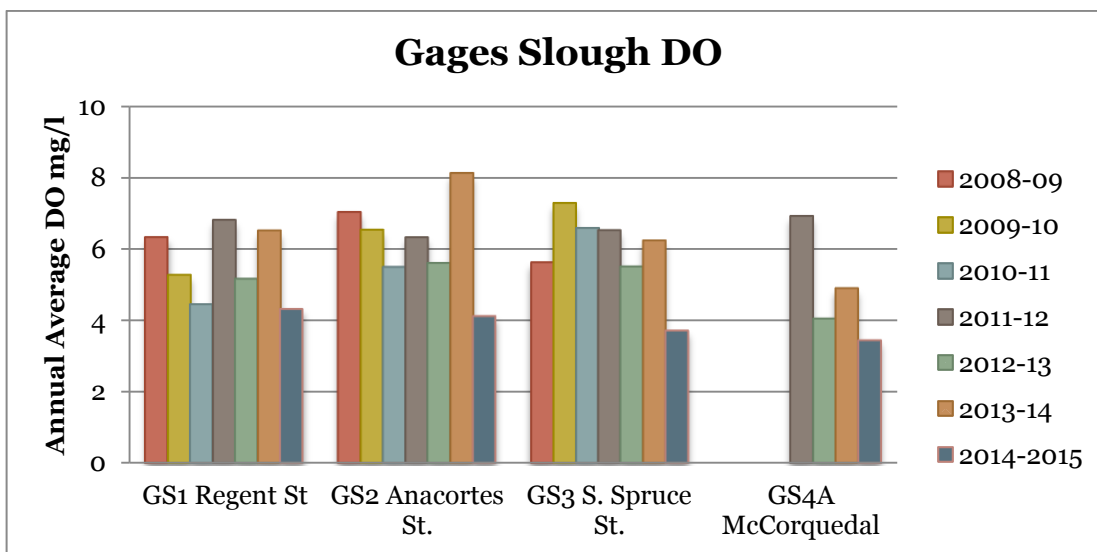


Figure 100. Gages Slough DO: Seven-year comparison

Gages Slough Site 4 was warmer than 17.5°C on May 21. Sites were not sampled in the warmest months.

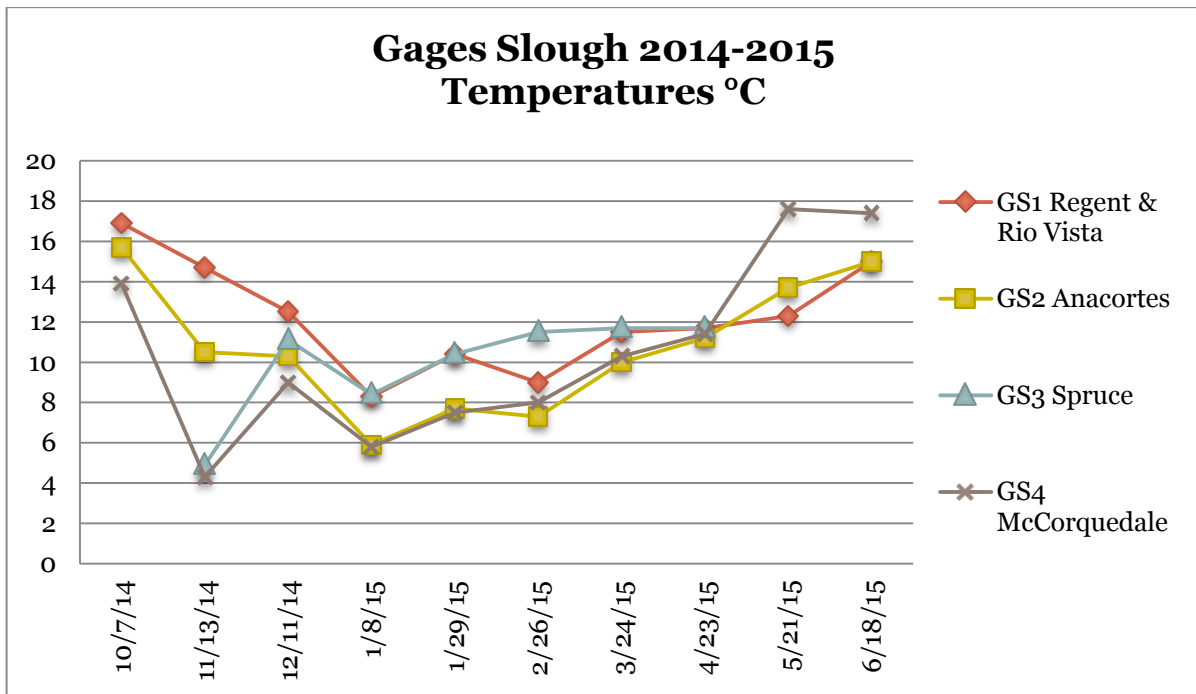


Figure 101. Gages Slough Temperature: 2014-2015

Average temperatures in Gages Slough were similar to past years. The state standard is not based on average temperature.

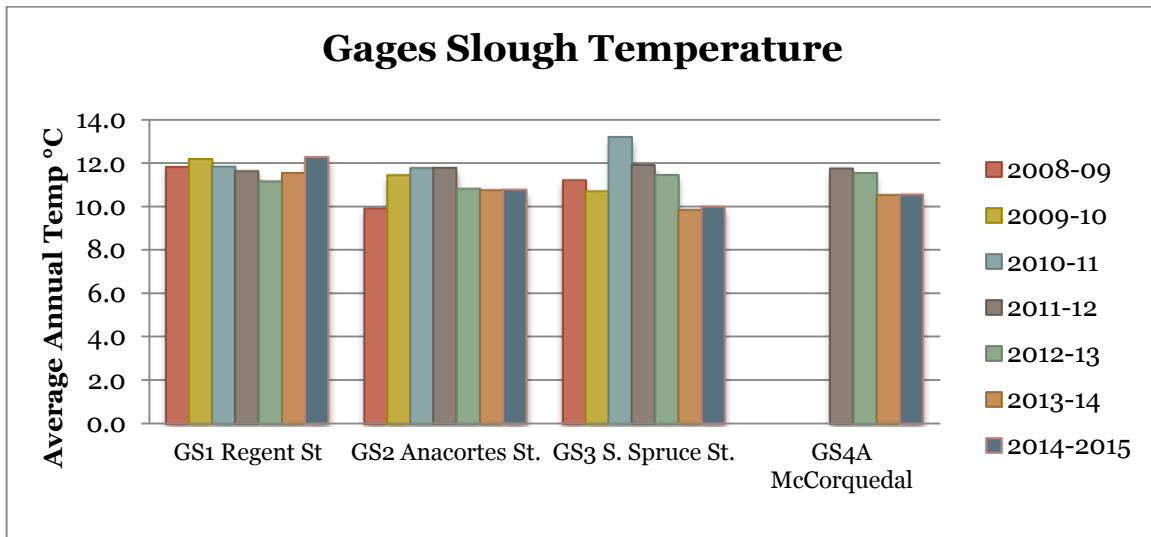


Figure 102. Gages Slough Temperature: Seven-year comparison

Site 2 had the highest turbidity levels on six dates. Site 1 remained low throughout the season.

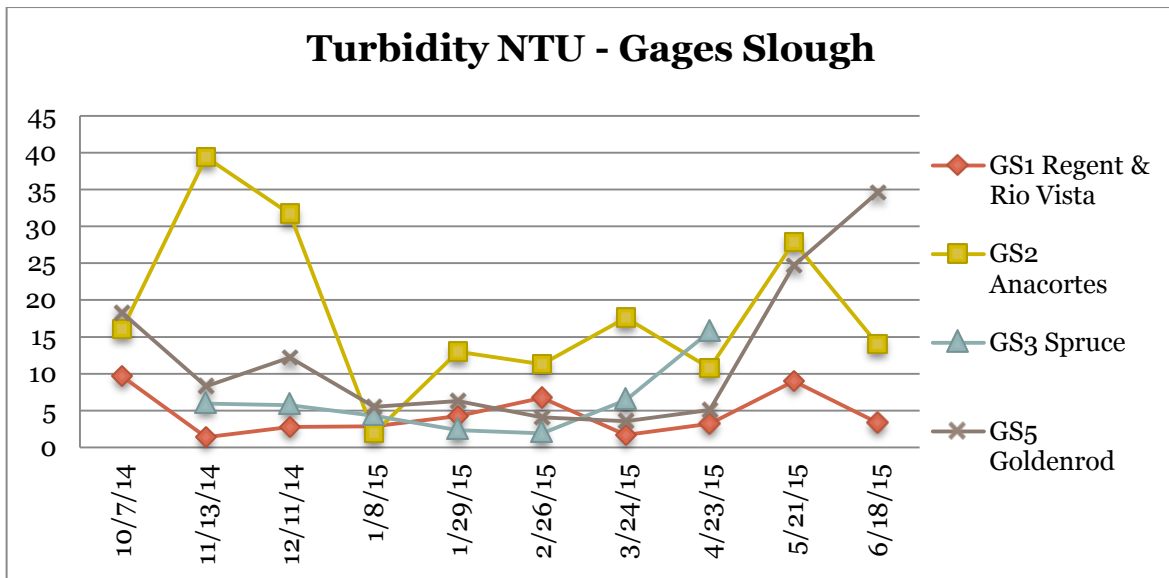


Figure 103. Gages Slough Turbidity: 2014-2015

Average turbidity levels in Gages Slough are consistently lowest at Site 1.

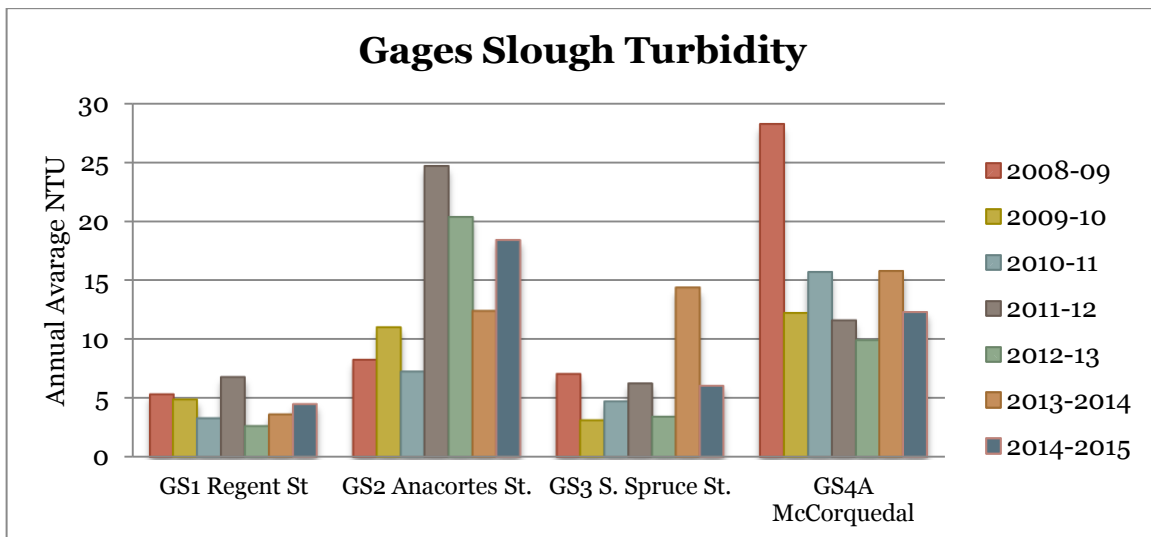


Figure 104. Gages Slough Turbidity: Seven-year comparison

We did not see the extremely high fecal coliform count that we've seen in past years. However counts were often higher than the state standard. Sites 2-4 met Part II of the state standard with fewer than 10% of the samples >200CFU.100 ml.

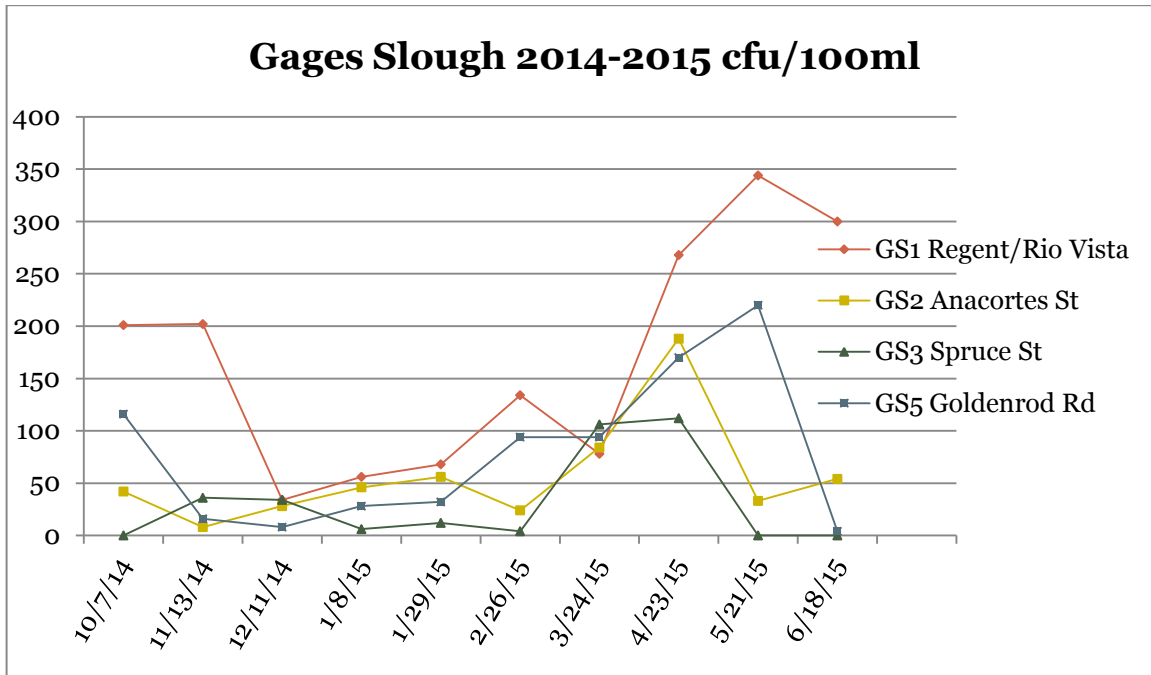


Figure 105. Gages Slough Fecal Coliform: 2014-2015

Site 1 did not meet Part I of the standard with annual geometric mean less than 100CFU. 100ml. Sites 2-4 met both parts of the standard.

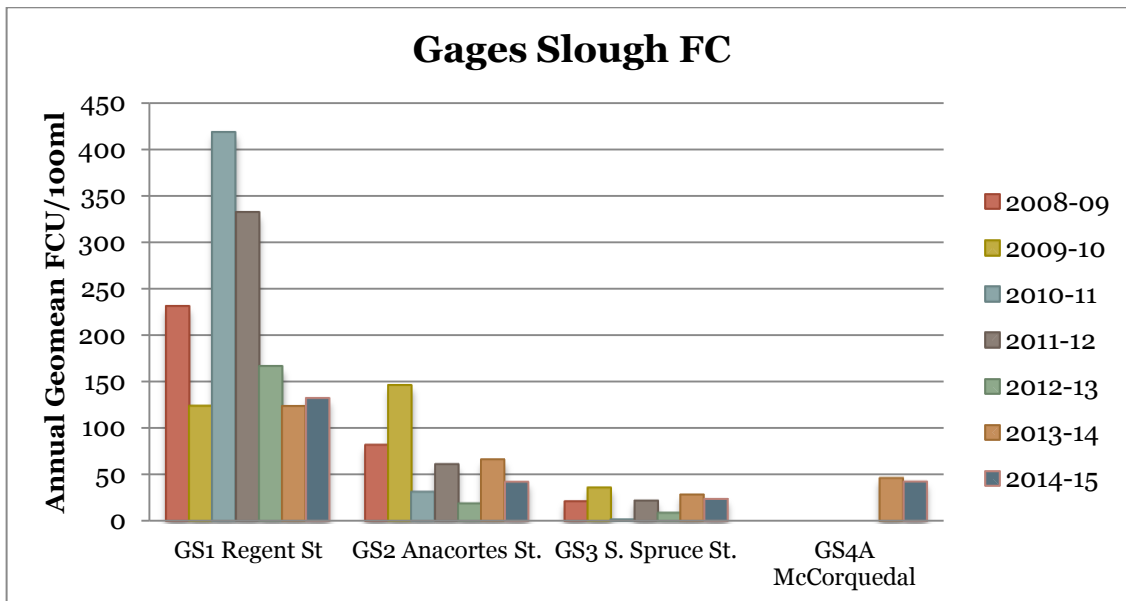


Figure 106. Gages Slough Fecal Coliform: Seven-year comparison

Storm Team Results

In 2014-2015, Storm Team volunteers began sampling sites in the Friday Creek watershed. This tributary of the Samish River provides about half of the volume of the river at its confluence. In February, after 13 storm sampling events, we adjusted sampling locations, eliminating a few that had very low levels of fecal coliform and expanding sampling around site FR9 where levels were very high. Twelve sites were sampled in the fall, and 16 sites were sampled in the winter and spring. Volunteers sampled during 9 rain events. Storm team data should be viewed differently from the rest of the stream team data. It does not represent typical conditions. Even a healthy stream that meets state water quality standards can have occasional high fecal coliform levels during rain events. Standards are based on an average of multiple samples taken over time and in a variety of conditions, and require a minimum of 10 samples. These results should not be used to determine whether the streams meet state standards. Sites in red in Table 11 below were added mid-season. Sites in Blue were only sampled in the fall.

Site ID	Location	Lat	Long
FR1	Friday Creek at Lake Samish outfall	48.645	-122.372
FR2	Bear Creek at Lake Samish Rd	48.640	-122.372
FR3	Friday Creek at Lake Samish Road (Alger)	48.619	-122.348
FR4	Silver Creek at Alger Hall	48.618	-122.341
FR5	Unnamed tributary on Alger-Cain Lake Road W of Corbell LN	48.620	-122.338
FR6	Silver Creek at Cain Lake outfall	48.638	-122.330
FR16	Friday Creek at 2nd crossing north of Donovan Park	48.597	-122.328
FR7	Friday Creek north of Parsons Creek Road	48.596	-122.328
FR8	Butler Creek at Friday Creek Road	48.595	-122.328
BUT99	Butler Creek at Hwy 99	48.595	-122.324
WILDESPCR	Wildes Creek at Parsons Creek Road	48.592	-122.318
BUTBCR	Butler Creek at Butler Creek Rd	48.604	-122.320
WILDES99	Wildes Creek at Hwy 99	48.588	-122.323
FR15	Friday Creek at Friday Creek Rd north of Wildes Cr	48.587	-122.330
FR9	Wildes Creek at Friday Creek Road	48.577	-122.338
FR14	Friday Creek above Wildes Creek	48.576	-122.338
FR13	Friday Creek at first Friday Creek Rd Crossing	48.574	-122.338
FR10	Friday Creek At Pomona Grange Park	48.564	-122.331
FR11	Friday Creek at Prairie Road	48.559	-122.328
FR12	Friday Creek on North Green Road at KOA	48.552	-122.332

Table 11. Storm Team Site Names and Location

Figures 107 – 109 below show actual fecal coliform counts for all 20 sites sampled. Each graph shows 6-7 sites, and dates are the same on all three graphs. October 14, 2014 and May 5, 2015 had high FC levels at nearly all sites. Rainfall on those dates was much higher than on other dates, with 1.8” falling 24 hours before sampling on Oct. 14, 2014, and 1.3” falling before sampling on May 5, 2015. This is 2-3 times the amount on other dates. All other sites were sporadically high, often higher than the upper test limit of 1600 CFU/100ml.

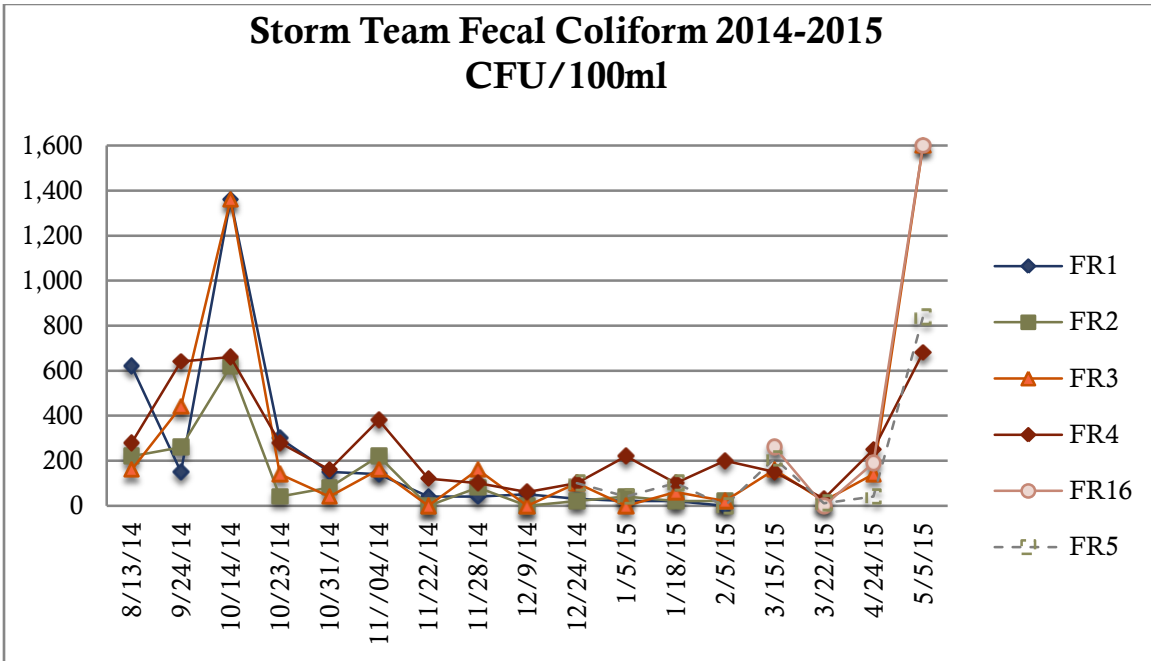


Figure 107. Storm Team: Friday Creek Fecal Coliform Sites FR1-FR5

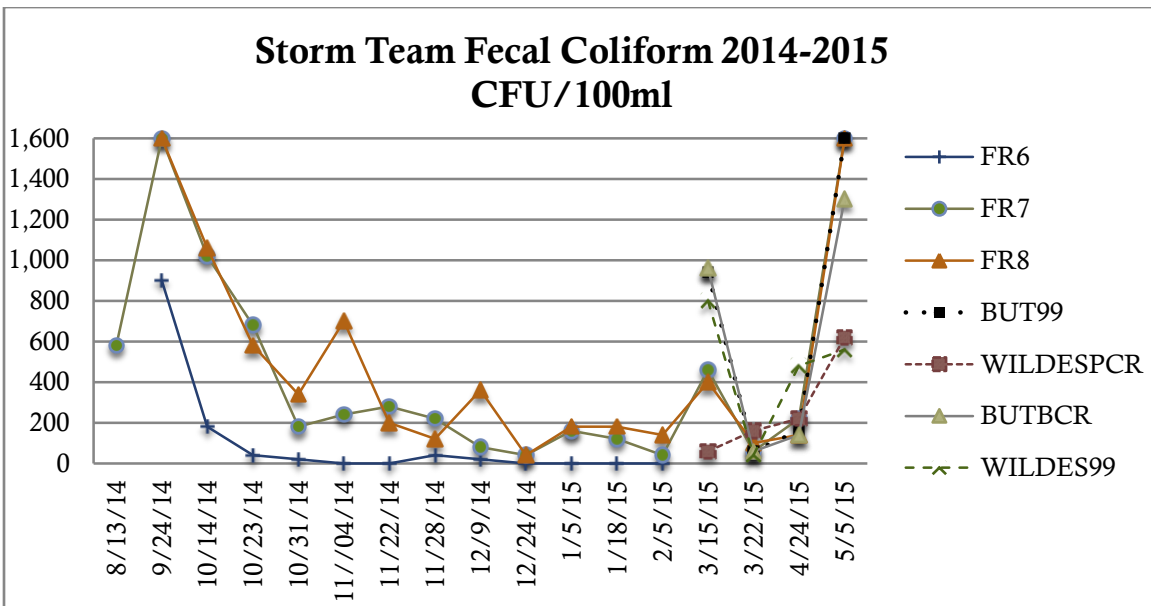


Figure 108. Storm Team: Friday Creek Fecal Coliform Sites FR6 - Wildes99

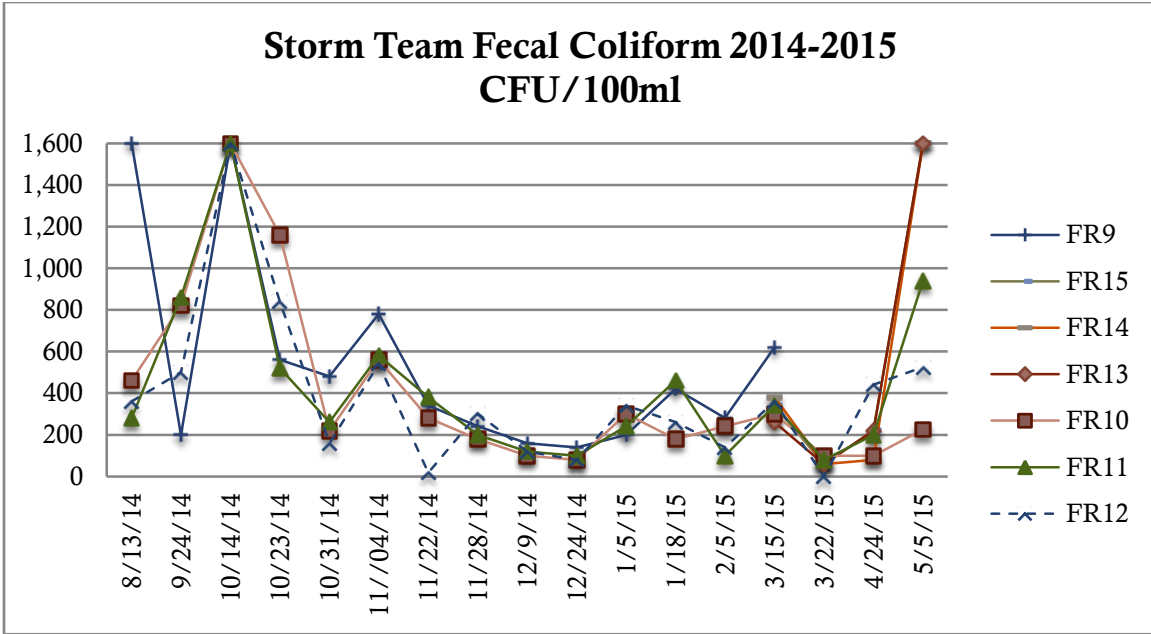


Figure 109. Storm Team: Friday Creek Fecal Coliform Sites FR9 – FR12

Site FR9 had the highest levels of fecal coliform early in the season. Sites BUT99, WILDESPCR, BUTBCR, and WILDES99 (tributaries that enter Friday Creek above FR9) were added mid-season. These measurements were taken only during high flow storm events.

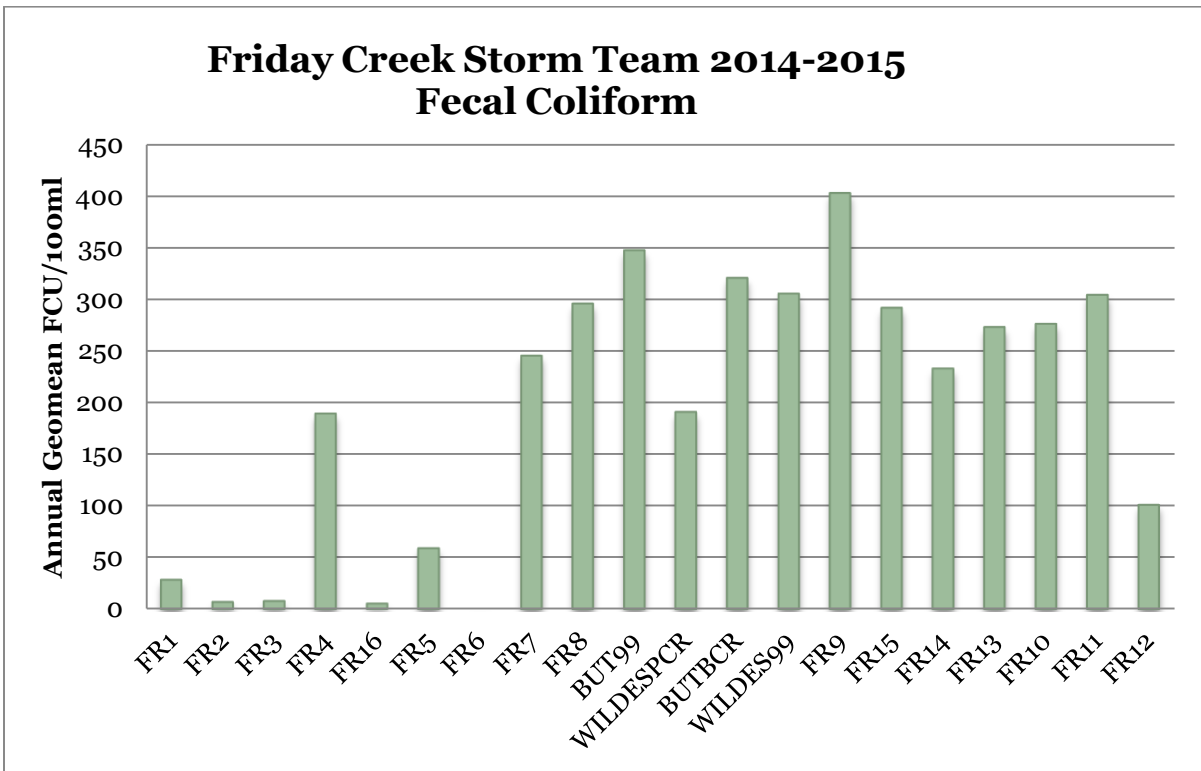


Figure 110. Storm Team: All Sites, Fecal Coliform Geometric Means

I. Summary

Figures 111-114 below show annual averages for each parameter at all sites. While it is interesting to compare watersheds, it is important to note that each water body has unique characteristics that naturally influence water quality. Variation is normal, and what might be considered “healthy” for water backed up behind a tide gate might not be healthy for a small wooded stream in the Upper Nookachamps.

For dissolved oxygen, (Figure 111) a number of sites have annual averages below 8mg/l. Considering regulations do not allow even one occurrence of levels below the standard, it is clear that these sites are in need of attention. Upper Samish 4, Upper Nookachamps 1, No Name 4, all Joe Leary sites, Kulshan Creek 2 and 3 and all Gages Slough sites have low DO levels.

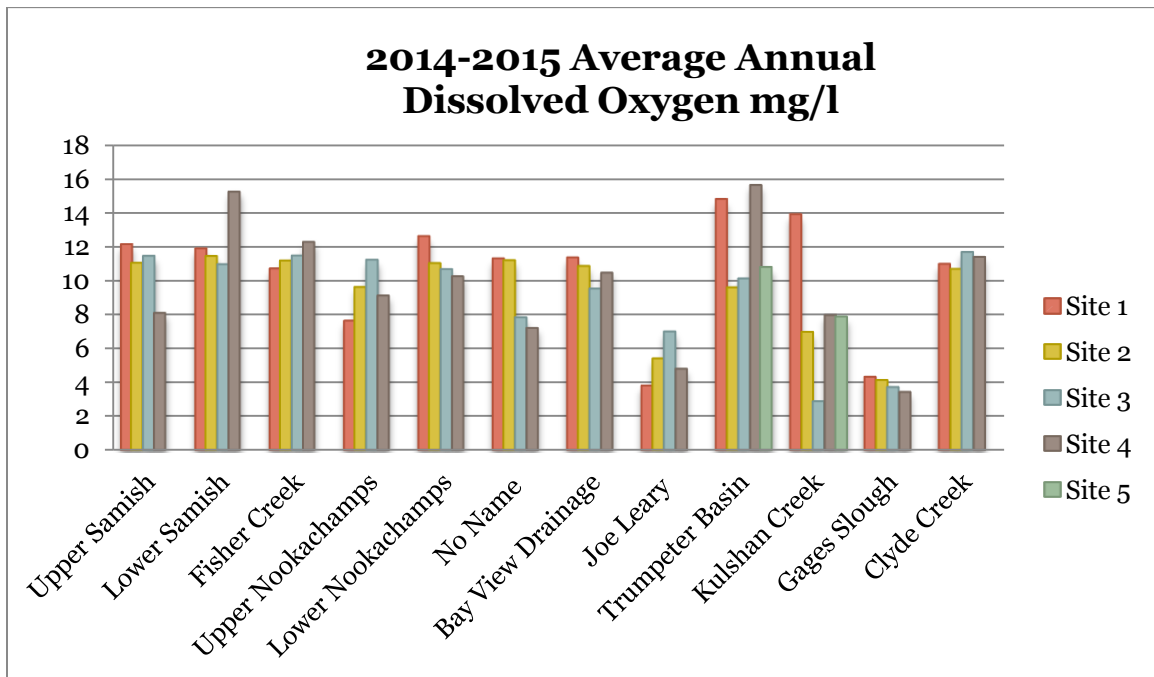


Figure 111. Annual Average Dissolved Oxygen: All sites

In Figure 112 (next page), average temperatures for most sites fall between 8 and 10°C. Many sites were warmer in 2014-2015 with 22 sites above 10°C, compared to 8 sites above 10°C last year. State standards are not based on average temperatures.

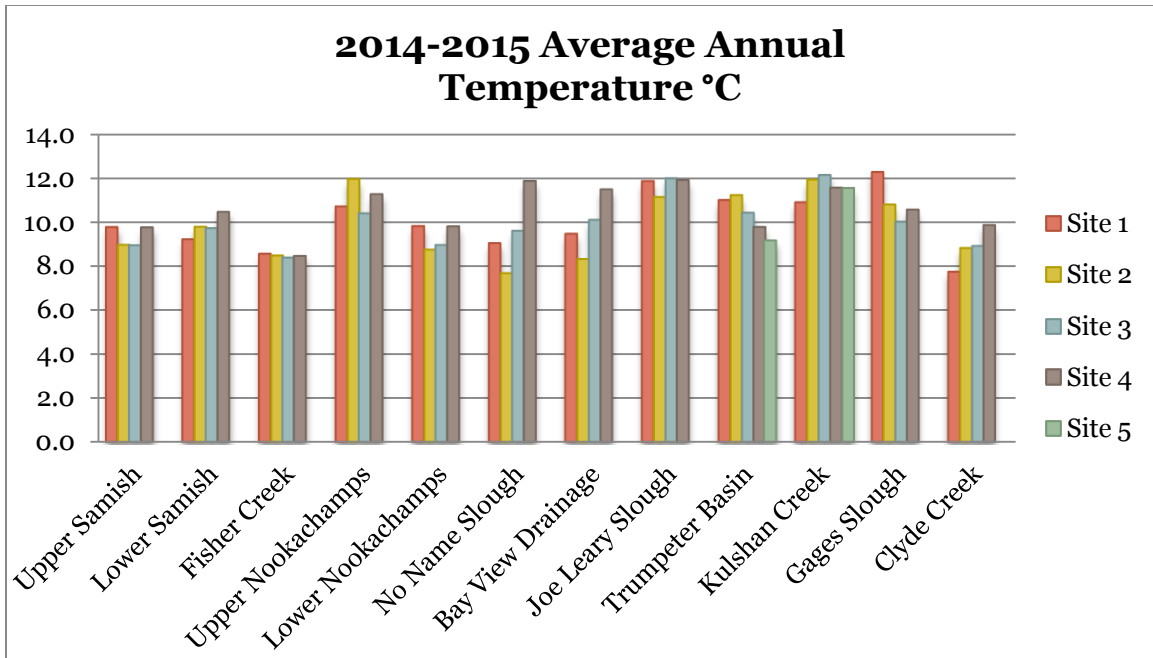


Figure 112. Annual Average Temperature: All sites

Turbidity is the parameter with the greatest naturally occurring variability. Comparing all streams, Joe Leary Slough stands out. All Joe Leary sites are 2-3 times higher than most other sites. Along much of Joe Leary’s course, it drains cultivated cropland and is periodically dredged to improve drainage.

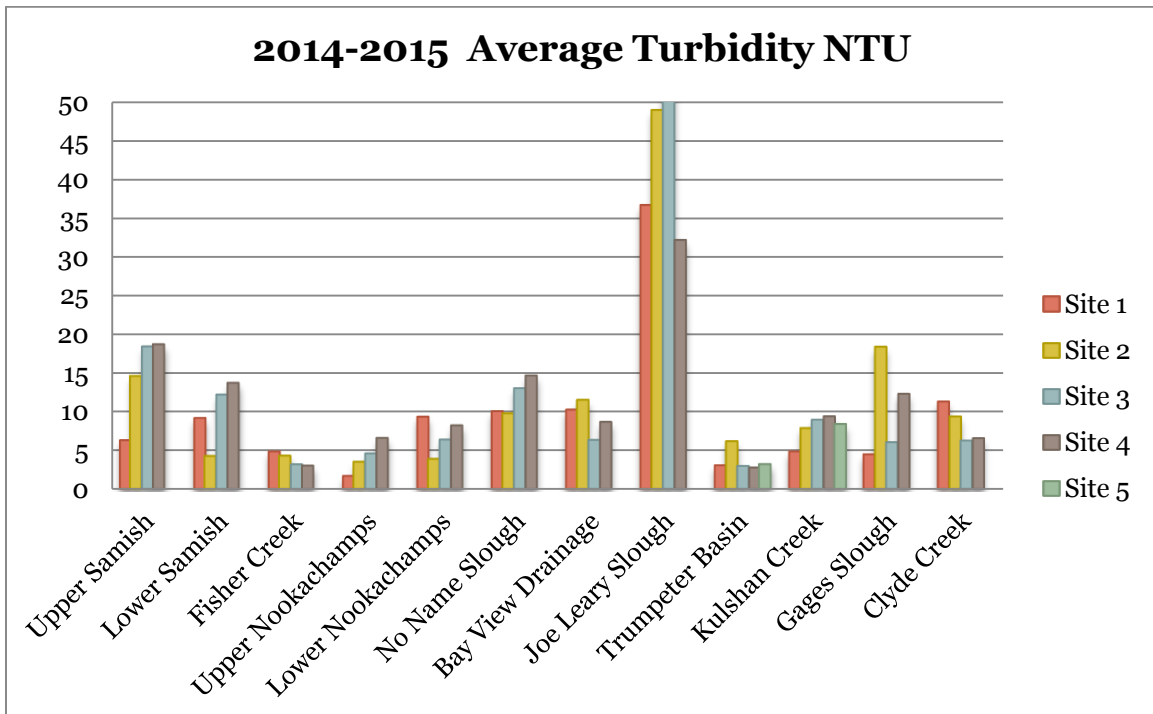


Figure 113. Annual Average Turbidity: All sites

Fecal coliform shown in Figure 114 on the following page is the parameter of greatest interest to regulators, health officials, and shellfish growers and harvesters. Last year, fourteen out of 50 sites did not meet the first part of the state standard. This year, 11 out of 50 sites did not meet Part I of the standard. No Name Slough improved this year, but continues to have fecal coliform issues, joined by Kulshan Creek, Joe Leary Slough, Trumpeter Basin, and Lower Nookachamps.

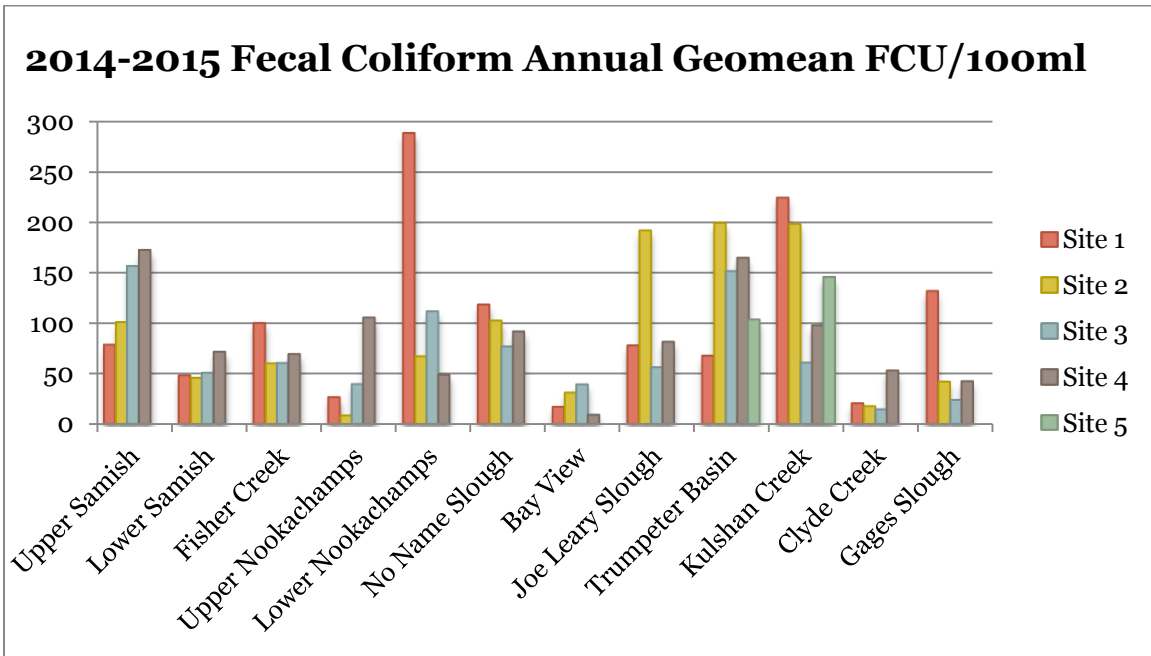


Figure 114. Fecal Coliform Annual Geomean: All sites

Table 12 below shows each site and whether it met Part 1 (geomean <100CFU/100ml) and Part 2 (<10% of samples under 200CFU/100ml) of the state standard for fecal coliform. Bold text denotes sites that met both parts of the standard. In 2012-2013, eighteen out of 50 sites met both standards. In 2013-2014, thirteen sites met both standards. This year, 2014-2015, fifteen sites met both standards.

Table 12. Fecal Coliform Results Compared to State Standards

	Site 1		Site 2		Site 3		Site 4		Site 5	
	Part 1	Part 2	Part 1	Part 2	Part 1	Part 2	Part 1	Part 2	Part 1	Part 2
Upper Samish	yes	no	no	no	no	no	no	no		
Lower Samish	yes	yes	yes	yes	yes	yes	yes	yes		
Fisher Creek	yes	no	yes	no	yes	yes	yes	no		
Upper Nookachamps	yes	yes	yes	yes	yes	yes	no	no		
Lower Nookachamps	no	no	yes	no	no	no	yes	no		
No Name Slough	no	no	no	no	yes	no	yes	no		
Bay View	yes	yes	yes	yes	yes	no	yes	yes		
Joe Leary Slough	yes	no	no	no	yes	no	yes	no		
Trumpeter Basin	yes	no	no	no	no	no	no	no	no	no
Kulshan Creek	no	no	no	no	yes	no	yes	no	no	no
Clyde Creek	yes	no	no	no	yes	yes	yes	no		
Gages Slough	no	no	yes	yes	yes	yes	yes	yes		

VI. Conclusion

The 2014-2015 Stream Team volunteers built upon the success of previous years, and provided a sixteenth year of WQ data for Skagit County's priority watersheds. This year saw the continued monitoring of all sites from the previous year, and fearless Storm Team sampling of the Friday Creek watershed during heavy rain events.

Seventy-eight adult volunteers were exposed to a firsthand view of the impact that non-point source pollution has on local water quality. Along the way they experienced sampling techniques used by environmental professionals, learned the importance of establishing a long-term, routine sampling program, formed lasting friendships and enriched their own lives through volunteering.

Thanks to over 1250 volunteer hours, this program has provided valuable data to citizens and agencies, assessing current conditions so water quality improvements can be made and documented in the future. This is key data for the long-term protection of our water resources. We hope that our data is useful in identifying trends, improvements, and problem areas for the attention of the appropriate agencies and local citizens.

Appendix A - Data

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
No Name Slough						
NN1 Marihugh Road	Average/Geomean	9.0	10.02	93.06	11.24	118
-	9/29/14	13.0	5.13	39	3.9	325
-	10/12/14	-	-	-	-	-
-	10/28/14	10.9	-	72.6	8	380
-	11/15/14	1.1	5.2	98.1	14.21	730
-	11/25/14	15.4	-	116.3	14.3	975
-	12/13/14	7.9	6.3	96.7	11.48	40
-	12/23/14	7.0	5.97	94.5	11.52	5
-	1/10/15	5.9	6.1	98.1	12.42	90
-	1/20/15	5.6	7.79	112.5	14.21	100
-	2/7/15	9.9	38.2	90.8	10.3	295
-	2/17/15	16.4	7.34	96.5	12.2	15
-	3/7/15	7.6	7.14	102.7	11.19	15
-	3/17/15	7.6	14.2	103.2	12.39	585
-	4/10/15	10.2	7.5	87.4	10.02	215
-	4/14/15	7.6	9.39	94.4	11.26	80
-	5/4/15	-	-	-	-	-
-	5/12/15	-	-	-	-	-
-	6/1/15	-	-	-	-	-
-	6/9/15	-	-	-	-	-
-	6/24/15	-	-	-	-	-
NN2 Bay View Road	Average/Geomean	7.6	9.76	92.29	11.13	102
-	9/29/14	12.7	5.25	65.5	6.65	305
-	10/12/14	-	-	-	-	-
-	10/28/14	11.0	-	87.2	9.7	150
-	11/15/14	1.0	6.7	106.1	15.02	100
-	11/25/14	7.8	-	111	13.3	825
-	12/13/14	7.5	8.9	99	12.07	20
-	12/23/14	6.6	7.55	98.7	12.16	35
-	1/10/15	5.5	8	101.2	12.84	340
-	1/20/15	5.3	10.29	107.3	13.6	140
-	2/7/15	9.5	32.5	91.8	10.55	160
-	2/17/15	4.5	8.98	95.6	12.29	10
-	3/7/15	6.8	9.45	109.5	11.85	50
-	3/17/15	7.4	16.77	104	12.56	600
-	4/10/15	9.0	6.7	103.6	11.87	55
Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)

NN2 Bay View Road	4/14/15	7.1	7.96	106.4	13.52	245
-	5/4/15	9.4	4.05	41.5	4.76	50
-	5/12/15	11.0	3.55	48.2	5.32	35
-	6/1/15	-	-	-	-	-
-	6/9/15	-	-	-	-	-
-	6/24/15	-	-	-	-	-

NN3 Egbers Field	Average/Geomean	9.5	13.02	66.91	7.78	76
-	9/29/14	14.1	4.77	35.9	3.7	160
-	10/12/14	13.9	13.3	28.9	3.04	1224
-	10/28/14	10.8	-	51.8	5.68	284
-	11/15/14	2.3	7.8	69.5	8.95	57
-	11/25/14	7.6	-	89.4	10.62	775
-	12/13/14	7.6	18.5	85.1	10.21	21
-	12/23/14	7.0	12.44	81	9.7	19
-	1/10/15	5.4	12.4	90.3	11.43	18
-	1/20/15	5.8	17.96	95.8	11.95	114
-	2/7/15	9.7	39.3	86.7	9.79	392
-	2/17/15	5.9	20	82.3	10.22	52
-	3/7/15	8.4	12.5	102	11.24	2
-	3/17/15	8.0	26.9	88.5	10.73	725
-	4/10/15	10.7	8	93.2	10.32	28
-	4/14/15	8.0	7.14	83.3	9.57	196
-	5/4/15	9.7	4.82	46.7	5.29	128
-	5/12/15	11.8	10.86	34.5	3.68	18
-	6/1/15	14.1	6.45	28.3	2.93	54
-	6/9/15	14.2	5.25	31.5	3.22	37
-	6/24/15	15.9	5.94	33.5	3.25	33

NN4 Field Culvert	Average/Geomean	11.8	14.62	67.43	7.19	95
-	9/29/14	16.5	8.3	26	2.65	48
-	10/12/14	15.3	10.4	74.7	6.35	408
-	10/28/14	11.1	9.55	16	5.32	213
-	11/15/14	7.3	5.6	34.2	3.57	18
-	11/25/14	7.6	-	80	9.9	1095
-	12/13/14	8.1	21.1	60.1	7.73	25
-	12/23/14	6.9	12.98	69	8.5	63
-	1/10/15	5.6	13.7	79.3	10.03	25
-	1/20/15	5.8	21.2	87	11.17	108
-	2/7/15	9.9	18.4	76.5	8.61	53
-	2/17/15	5.6	15.7	67.5	7.8	28

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
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NN4 Field Culvert	3/7/15	11.9	16.01	91.8	9.02	5
-	3/17/15	9.2	55.2	79	8.95	3135
-	4/10/15	13.3	10.1	125.6	12.31	393
-	4/14/15	9.3	8.01	69	6.98	80
-	5/4/15	14.5	18.3	42	4.19	333
-	5/12/15	16.5	18.15	16.1	1.35	300
-	6/1/15	19.7	4.05	118.2	9.4	60
-	6/9/15	18.6	7.5	14.6	1.42	25
-	6/24/15	23.8	3.46	122	8.62	-

Upper Samish

US1 PomonaGrange	Average/Geomean	9.7	6.30	106.03	12.08	78
-	10/10/14	12.5	1.4	98.3	10.47	22
-	10/26/14	12.2	8.58	97	10.42	314
-	11/7/14	11.0	8.21	96	10.61	48
-	11/22/14	7.2	8.8	98.2	11.83	261
-	12/5/14	5.9	3.73	111.2	13.67	26
-	12/20/14	7.3	4.9	103.22	12.4	46
-	1/2/15	3.8	3.3	107.7	14.18	20
-	1/18/15	7.0	16.42	107.1	12.97	343
-	1/30/15	5.5	-	104.4	13.02	-
-	2/14/15	9.1	8.19	107.4	12.32	71
-	2/27/15	7.5	5.08	106	12.62	32
-	3/14/15	9.9	10.2	106.6	12.05	127
-	3/27/15	10.0	7.63	116	13.09	-
-	4/11/15	9.0	3.4	111.3	12.85	43
-	4/24/15	9.0	8.5	113.7	13.13	232
-	5/10/15	12.8	4.37	107	11.31	46
-	5/22/15	14.8	-	106.4	10.77	56
-	6/6/15	14.5	2.14	108.5	11.1	146
-	6/19/15	16.0	2.2	108.6	10.72	207

US2 Swede Creek	Average/Geomean	1.00	8.9	14.58	90.43	101
-	10/10/14	0.85	11.8	3	85.9	36
-	10/26/14	1.2	-	21.2	91.8	349
-	11/7/14	1.3	10.4	14.09	94.4	135
-	11/22/14	1.45	6.9	26.2	97.2	246
-	12/5/14	1	4.0	9.82	9.51	62
-	12/20/14	1.15	7.0	13.4	100	46
-	1/2/15	2.3	5.5	74.8	10.25	45
Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)

US2 Swede Creek	1/18/15	6.8	23.7	82.2	9.93	126
-	1/30/15	4.4	-	101.1	13.02	-
-	2/14/15	9.1	18.33	105.6	12.13	49
-	2/27/15	7.3	13.28	100.9	12.13	69
-	3/14/15	10.0	38.6	95	10.72	308
-	3/27/15	9.5	11.83	99.5	11.33	-
-	4/11/15	8.8	10.42	94.8	10.97	47
-	4/24/15	8.8	29.2	96.6	11.2	741
-	5/10/15	11.6	6.92	100	10.85	31
-	5/22/15	13.7	5.72	96	9.96	41
-	6/6/15	13.3	7.78	99.1	10.37	121
-	6/19/15	14.6	3.4	93.8	9.52	308

US3 Thomas Creek	Average/Geomean	8.9	18.38	98.34	11.37	155
-	10/10/14	11.7	2.8	94.1	10.18	37
-	10/26/14	11.4	34.6	95	10.38	1330
-	11/7/14	10.3	20.4	95.4	10.55	192
-	11/22/14	7.1	35.8	96.3	11.62	584
-	12/5/14	4.9	19.1	96.4	12.34	157
-	12/20/14	7.2	16.8	95.5	11.54	138
-	1/2/15	3.0	9	93.5	12.5	29
-	1/18/15	7.2	39.2	100.4	12.12	222
-	1/30/15	4.7	-	96.6	12.4	-
-	2/14/15	9.2	23	97.9	11.23	84
-	2/27/15	7.4	14.27	98.3	11.81	50
-	3/14/15	9.8	29.6	99.4	11.28	104
-	3/27/15	9.2	17.43	102	11.73	-
-	4/11/15	8.4	15.21	98.9	11.58	68
-	4/24/15	8.3	32.4	101	11.92	669
-	5/10/15	10.7	7.68	102.2	11.34	99
-	5/22/15	12.5	4.88	101.9	10.09	222
-	6/6/15	12.5	4.43	100.6	10.69	225
-	6/19/15	13.4	4.2	103	10.72	229

US4 Willard Creek	Average/Geomean	9.7	18.62	67.63	8.08	171
-	10/10/14	12.0	87.1	16.5	6.94	25
-	10/26/14	11.5	17.8	68.9	7.51	1111
-	11/7/14	10.6	8.67	79.3	8.67	166
-	11/22/14	7.3	12.4	82.2	9.86	2583
-	12/5/14	5.7	7.18	78.5	9.82	37
-	12/20/14	7.4	6.2	78.8	9.46	28
Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)

US4 Willard Creek	1/2/15	4.1	5.9	77.2	10.05	24
-	1/18/15	7.8	21.4	83.3	9.89	564
-	1/30/15	5.8	-	76.7	9.51	-
-	2/14/15	9.6	15.4	82.2	9.34	333
-	2/27/15	8.3	8.05	81	9.47	528
-	3/14/15	11.0	10.3	73.3	8.1	283
-	3/27/15	10.1	9.04	90.3	10.1	-
-	4/11/15	9.3	7.4	81.6	9.3	38
-	4/24/15	9.4	9	85.1	9.73	250
-	5/10/15	12.7	8.12	63.4	6.73	79
-	5/22/15	13.6	11.14	42.2	4.47	61
-	6/6/15	14.3	16.42	40.6	4.14	1127
-	6/19/15	14.3	73.7	3.8	0.41	228

Lower Samish

LS1 99 Bridge	Average/Geomean	9.2	9.17	102.61	11.83	48
-	10/4/14	12.2	1.9	93.8	10.5	44
-	10/15/14	12.1	6.43	91.3	9.83	288
-	11/1/14	9.8	14.48	94.7	10.68	69
-	11/12/14	5.4	5.45	101.8	12.73	66
-	11/29/14	6.1	29.3	98	12.09	97
-	12/10/14	9.2	8.22	100.7	11.56	46
-	12/27/14	6.2	5.6	100.1	12.15	68
-	1/7/15	5.9	28	105.7	12.98	51
-	1/24/15	8.5	45.5	103	12.11	178
-	2/4/15	6.8	5.4	112.7	13.62	15
-	2/26/15	6.5	5.4	103.1	12.87	11
-	3/4/15	4.3	3.39	110.5	14.36	38
-	3/21/15	9.5	7.3	98.6	11.25	44
-	4/1/15	9.6	5.05	91.8	10.43	16
-	4/18/15	9.3	2.7	109.2	12.42	31
-	4/29/15	10.4	2.9	114.3	12.79	24
-	5/16/15	12.3	2	101.5	10.79	44
-	5/27/15	12.5	1.44	111.2	11.85	49
-	6/13/15	12.7	1.6	105.3	11.07	53
-	6/24/15	14.5	1.25	104.8	10.54	75

LS2 Jolly Rd	Average/Geomean	9.7	4.26	99.56	11.37	46
-	10/4/14	12.4	2.2	95.7	10.27	42
-	10/15/14	12.0	6.68	92.3	9.93	280
Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)

LS2 Jolly Rd	11/1/14	9.8	-	93.7	10.72	47
-	11/12/14	5.3	4.44	90.3	11.28	46
-	11/29/14	-	-	-	-	-
-	12/10/14	9.2	10.56	98	11.24	31
-	12/27/14	6.1	6.5	100.1	12.68	40
-	1/7/15	-	-	-	-	-
-	1/24/15	-	-	-	-	-
-	2/4/15	6.8	5.6	95.3	11.57	21
-	2/26/15	6.7	5.5	102.4	12.51	14
-	3/4/15	4.5	3.45	104.8	13.55	41
-	3/21/15	9.5	6	97.8	11.2	128
-	4/1/15	9.6	5.01	104.3	11.84	16
-	4/18/15	9.4	3.1	109.1	12.46	79
-	4/29/15	10.6	3	106.4	11.86	48
-	5/16/15	12.4	1.8	101.1	10.75	29
-	5/27/15	12.6	1.55	96.8	10.26	54
-	6/13/15	13.2	1.6	104	11.1	56
-	6/24/15	15.2	1.2	100.5	10.07	61

LS3 Chuckanut	Average/Geomean	9.7	12.17	95.29	10.88	50
Bridge	10/4/14	12.4	2.1	95.9	10.11	89
-	10/15/14	12.1	9.65	88	9.47	395
-	11/1/14	9.7	14.52	91.2	10.39	99
-	11/12/14	5.4	6.91	90.8	11.29	16
-	11/29/14	6.4	32.5	94	11.57	81
-	12/10/14	-	12.26	-	-	25
-	12/27/14	6.1	6.7	94.1	11.74	29
-	1/7/15	5.9	35.6	92.6	11.56	84
-	1/24/15	8.5	55.6	101.5	11.87	187
-	2/4/15	7.0	5.9	96.9	11.71	17
-	2/26/15	-	-	-	-	-
-	3/4/15	4.9	5.33	98.6	12.56	25
-	3/21/15	-	-	-	-	-
-	4/1/15	9.7	6.81	97.7	11.06	32
-	4/18/15	-	-	-	-	-
-	4/29/15	10.9	3.6	104.3	11.52	20
-	5/16/15	12.6	2.9	93.7	10.04	23
-	5/27/15	13.0	2.41	98.5	10.34	92
-	6/13/15	14.2	2	99.2	10.18	46
-	6/24/15	15.8	2.17	87.7	8.67	70

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
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LS4 Samish at Boat	Average/Geomean	10.4	13.67	93.83	10.55	71
Docks	10/4/14	13.2	7.9	78.1	8.24	47
-	10/15/14	12.6	7.02	79.3	8.42	441
-	11/1/14	10.2	16.36	89.2	.9.2	96
-	11/12/14	5.4	5.38	90.3	11.21	23
-	11/29/14	6.8	27.7	91.2	11.16	80
-	12/10/14	-	17.32	-	-	74
-	12/27/14	6.0	8.4	93.6	11.58	76
-	1/7/15	6.0	45.3	91.7	11.4	175
-	1/24/15	8.6	72.6	100.9	11.65	372
-	2/4/15	7.3	7.6	95.7	11.45	103
-	2/26/15	7.7	10.7	96.1	11.41	28
-	3/4/15	5.6	8.32	98.1	12.31	37
-	3/21/15	9.7	6.9	93	10.53	68
-	4/1/15	10.4	8.56	98.2	10.95	37
-	4/18/15	11.6	3.8	100	10.84	60
-	4/29/15	12.4	4	103.2	11.01	26
-	5/16/15	13.3	4.3	92.2	9.6	71
-	5/27/15	13.9	3.54	96.2	9.88	100
-	6/13/15	16.8	3.6	100	9.73	40
-	6/24/15	20.6	4.17	95.7	8.61	63

Gages Slough

GS1 Regent St. & E Rio Vista St.	Average/Geomean	12.2	4.49	39.53	4.30	131
	10/7/14	16.9	9.65	46.1	4.73	201
-	11/13/14	14.7	1.36	50.6	5.15	202
-	12/11/14	12.5	2.79	54	5.41	34
-	1/8/15	8.3	2.87	40.2	4.66	56
-	1/29/15	10.4	4.25	36.2	4.15	68
-	2/26/15	9.0	6.72	40.3	4.29	134
-	3/24/15	11.5	1.7	17.5	1.86	78
-	4/23/15	11.7	3.22	43.3	4.69	268
-	5/21/15	12.3	9	35.3	4.8	344
-	6/18/15	15.0	3.33	31.8	3.26	300

GS2 Anacortes St.	Average/Geomean	10.7	18.35	33.60	4.10	42
-	10/7/14	15.7	16	24.8	4.6	42
-	11/13/14	10.5	39.4	41.3	4.56	8
-	1/8/15	5.9	1.88	39	4.96	46
Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
GS2 Anacortes St.	1/29/15	7.7	13	24.5	2.9	56

-	2/26/15	7.3	11.3	36.4	4.45	24
-	3/24/15	10.0	17.6	46.8	5.25	84
-	4/23/15	11.2	10.75	55.9	6.04	188
-	5/21/15	13.7	27.9	6.4	1.6	33
-	6/18/15	15.0	14	20	2	54

GS3 S. Spruce St.	Average/Geomean	10.0	6.04	31.86	3.69	24
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-	10/7/14	-	-	-	-	-
-	11/13/14	4.9	5.94	9.4	1.17	36
-	12/11/14	11.1	5.74	36.3	3.62	34
-	1/8/15	8.4	4.27	35.6	4.28	6
-	1/29/15	10.4	2.33	45.4	4.99	12
-	2/26/15	11.5	1.88	49.5	5.39	4
-	3/24/15	11.7	6.44	41.3	4.54	106
-	4/23/15	11.7	15.7	5.5	1.85	112
-	5/21/15	-	-	-	-	-
-	6/18/15	-	-	-	-	-

GS4 McCorquedale	Average/Geomean	10.5	12.26	29.74	3.43	42
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-	10/7/14	13.9	18.3	7.6	0.78	116
-	11/13/14	4.3	8.27	11.4	1.44	16
-	12/11/14	9.0	12.2	44.1	4.97	8
-	1/8/15	5.8	5.5	32.7	4.17	28
-	1/29/15	7.5	6.29	31.6	3.85	32
-	2/26/15	8.0	4.07	44.3	5.21	94
-	3/24/15	10.3	3.56	54.3	6.07	94
-	4/23/15	11.4	5.07	50.1	5.33	170
-	5/21/15	17.6	24.7	10.3	1.05	220
-	6/18/15	17.4	34.6	11	1.39	4



Bay View

BV1 Walker Rd	Average/Geomean	9.4	10.22	98.20	11.30	17
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-	10/5/14	-	-	-	-	-
-	10/22/14	-	-	-	-	-
-	11/2/14	-	-	-	-	-
-	11/19/14	-	-	-	-	-
-	11/30/14	-	-	-	-	-
-	12/17/14	-	-	-	-	-
-	1/1/15	-	-	-	-	-

Site	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
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BV1 Walker Rd	1/14/15	-	-	-	-	-
-	1/25/15	9.2	7.3	88	10.2	160
-	2/11/15	10.6	7.22	108.4	12.5	13
-	2/28/15	-	6	-	-	7
-	3/11/15	-	-	-	-	-
-	3/22/15	8.5	5.27	-	11.2	17
-	4/8/15	-	25.3	-	-	6
-	4/19/15	-	-	-	-	-
-	5/6/15	-	-	-	-	-
-	5/23/15	-	-	-	-	-
-	6/4/15	-	-	-	-	-
-	6/17/15	-	-	-	-	-
-	7/1/15	-	-	-	-	-

BV2 C Street	Average/Geomean	8.3	11.49	93.74	10.78	20
-	10/5/14	-	-	-	-	-
-	10/22/14	13.9	20.5	76.2	7.79	74
-	11/2/14	11.2	8.51	87.4	9.66	69
-	11/19/14	-	-	-	-	-
-	11/30/14	1.4	12	109	12.5	5
-	12/17/14	6.2	-	92.1	11.3	10
-	1/1/15	0.8	8	105	12.8	31
-	1/14/15	3.1	8.2	100.5	13.85	17
-	1/25/15	9.5	14.8	93	10.5	123
-	2/11/15	10.8	11.76	107.7	11.87	7
-	2/28/15	10.8	13.2	107	12	0
-	3/11/15	-	-	-	-	-
-	3/22/15	8.2	10.05	-	11.37	30
-	4/8/15	-	9.56	-	-	94
-	4/19/15	11.0	-	68	7	162
-	5/6/15	12.2	9.82	85.2	8.7	470
-	5/23/15	-	-	-	-	-
-	6/4/15	-	-	-	-	-
-	6/17/15	-	-	-	-	-
-	7/1/15	-	-	-	-	-

BV3 Boat Launch	Average/Geomean	10.0	6.35	90.04	9.46	41
-	10/5/14	-	-	-	-	-
-	10/22/14	14.5	6.8	73.4	7.62	3475
-	11/2/14	10.5	4.02	95.5	9.05	108
-	11/30/14	2.1	11	93.3	10.4	25
Site		Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)

BV3 Boat Launch	12/17/14	7.3	-	84.4	10.4	14
-	1/1/15	3.2	5.3	93	10.7	3
-	1/14/15	-	-	-	-	-
-	1/25/15	10.0	7.6	85	9.26	313
-	2/11/15	10.4	11.35	105.9	11.87	16
-	2/28/15	9.0	11.3	104	10.8	15
-	3/11/15	11.3	6.72	100.1	9.3	19
-	3/22/15	8.5	9.68	105.7	11.41	77
-	4/8/15	10.2	5.35	99.4	10.9	54
-	4/19/15	12.6	1.2	80.6	7.8	9
-	5/6/15	12.0	4.3	92.3	8.86	146
-	5/23/15	14.9	1	77	6.5	72
-	6/4/15	-	-	-	-	-
-	6/17/15	17.5	6	50	4.1	29
-	7/1/15	-	-	-	-	-

BV4 Bay View State	Average/Geomean	11.5	8.65	107.77	10.45	9
Park	10/5/14	18.2	3.2	123.9	10.37	21
-	10/22/14	12.8	34.2	90.3	9.6	1425
-	11/2/14	10.4	6.56	99.4	9.2	72
-	11/19/14	3.1	2.7	105	7.67	3
-	11/30/14	1.2	11.5	85.4	9.7	30
-	12/17/14	7.2	-	87	10.4	12
-	1/1/15	3.3	5.4	94	10.8	38
-	1/14/15	2.6	12.1	97	14	27
-	1/25/15	10.0	6.6	79	7.9	9
-	2/11/15	11.2	3.73	129.3	14.24	0
-	2/28/15	10.2	12	135	13.5	4
-	3/11/15	11.5	14.48	93.5	8.65	15
-	3/22/15	9.8	7.34	124.1	12.82	8
-	4/8/15	12.1	4.68	149	14.69	7
-	4/19/15	16.1	12	103	9.5	2
-	5/6/15	16.0	4.78	149	12.98	0
-	5/23/15	14.6	1	85	7.2	24
-	6/4/15	15.2	9.6	91.5	7.74	75
-	6/17/15	18.0	1	97	8.2	159
-	7/1/15	25.5	11.4	138	9.9	28

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
Fisher Creek						
FC1 Bulson Road	Average/Geomean	8.5	4.85	89.91	10.66	100
Culvert	10/9/14	12.1	5.5	30.1	3.21	750
-	10/24/14	10.6	2.8	84.7	9.43	350
-	11/6/14	12.1	3.45	85.1	9.18	98
-	11/19/14	3.7	15.02	92.3	12.15	73
-	12/4/14	4.1	2.5	94	12.15	103
-	12/17/14	6.7	3.14	94.4	11.48	25
-	12/30/14	1.9	8.6	92.1	12.8	83
-	1/14/15	4.1	3.93	100.2	13.1	183
-	1/29/15	5.5	4.5	103.9	13.29	160
-	2/6/15	7.5	4.9	113	12.95	38
-	2/11/15	8.0	8.1	101.3	11.95	28
-	3/11/15	8.5	4.63	95.2	11.11	40
-	3/26/15	10.9	4.3	100.7	11.15	65
-	4/8/15	8.3	4.13	107.9	12.68	80
-	4/23/15	8.4	3.8	99.2	11.62	55
-	5/6/15	9.0	3.65	109	12.61	75
-	5/21/15	12.1	2.6	89.8	9.7	145
-	6/1/15	12.8	2.84	77.9	8.22	345
-	6/18/15	15.7	3.8	37.5	3.75	188
FC2 23616 Bulson Road	Average/Geomean	8.4	4.32	93.53	11.11	60
Road	10/9/14	12.3	3.1	68.4	7.3	180
-	10/24/14	10.6	3	83.7	9.28	275
-	11/6/14	12.1	3.2	82	8.84	70
-	11/19/14	3.4	2.54	95.4	12.57	85
-	12/4/14	3.9	2.3	92.5	12.25	40
-	12/17/14	6.5	4.01	97.3	11.93	20
-	12/30/14	1.5	8.4	89	12.35	30
-	1/14/15	3.9	16.27	101	13.34	25
-	1/29/15	5.4	4.5	100.6	12.66	10
-	2/6/15	7.5	3	103.5	12.79	10
-	2/11/15	8.1	5.58	102.7	12.18	20
-	3/11/15	8.6	4.03	96.6	11.3	45
-	3/26/15	11.3	4.5	105.3	11.51	30
-	4/8/15	8.5	3.28	109.3	12.79	55
-	4/23/15	8.6	3.2	98.8	11.57	185
-	5/6/15	9.1	2.81	106.4	12.33	250
-	5/21/15	12.2	2.5	95.7	10.25	430
-	6/1/15	13.5	3.14	84.6	8.82	290
-	6/18/15	13.2	2.7	64.3	7.1	40

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
FC3 Starbird Road	Average/Geomean	8.3	3.19	96.35	11.40	60
-	10/9/14	12.5	1.7	75.4	8.1	9
-	10/24/14	10.9	3	86.8	9.57	136
-	11/6/14	12.0	2.7	85.8	9.2	75
-	11/19/14	2.7	2.79	96.7	13.14	47
-	12/4/14	2.9	2.5	92	12.44	40
-	12/17/14	6.4	3.21	99.1	12.36	11
-	12/30/14	1.4	4	89.3	12.49	73
-	1/14/15	3.5	4.32	100.5	13.32	36
-	1/29/15	5.2	3.4	106.1	13.57	44
-	2/6/15	7.3	3.3	105.9	12.66	37
-	2/11/15	7.9	5.34	100.3	11.87	102
-	3/11/15	8.5	3.74	99.7	11.62	63
-	3/26/15	10.9	3.3	104.6	11.57	52
-	4/8/15	8.0	2.88	111.2	13.15	86
-	4/23/15	9.1	3.6	103.8	11.98	212
-	5/6/15	9.4	3.82	112.1	12.15	116
-	5/21/15	12.5	2.1	104	11.21	81
-	6/1/15	13.5	2.83	94	9.78	171
-	6/18/15	13.7	2	63.3	6.45	82
FC4 Franklin Road	Average/Geomean	8.4	3.01	103.72	12.25	69
-	10/9/14	11.9	1	92.8	9.98	30
-	10/24/14	11.2	3	96.3	10.58	283
-	11/6/14	12.4	6.9	96.1	10.22	228
-	11/19/14	3.6	2.27	99.3	13.14	41
-	12/4/14	3.2	2.2	99.5	13.35	173
-	12/17/14	6.5	3.63	105.2	12.93	359
-	12/30/14	1.9	2.7	101.2	14.1	28
-	1/14/15	4.1	2.65	105	13.73	26
-	1/29/15	5.8	2.7	109.5	13.94	15
-	2/6/15	7.7	3.3	109.3	13.05	35
-	2/11/15	8.2	6.1	107.4	12.72	31
-	3/11/15	8.8	3.14	103.2	12	58
-	3/26/15	10.8	4.2	106.8	11.86	33
-	4/8/15	8.4	3.09	113.2	13.26	567
-	4/23/15	9.3	2.9	109.3	12.54	105
-	5/6/15	10.3	2.85	112.3	12.6	99
-	5/21/15	11.8	1.5	108.4	11.73	39
-	6/1/15	12.2	2.17	99.8	10.73	19
-	6/18/15	12.1	0.9	96	10.37	170

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
Trumpeter Basin						
TB1 Stonebridge	Average/Geomean	11.0	3.07	98.03	14.71	68
Adult Community	10/9/14	13.8	0.75	96.4	9.9	1207
-	10/22/14	14.4	3.71	96.5	9.85	300
-	11/6/14	13.7	18.46	97.8	10.08	1660
-	11/19/14	5.0	0.76	96.8	12.3	13
-	12/4/14	5.9	2.03	96.3	12.09	66
-	12/17/14	7.6	2.24	104.5	12.47	13
-	12/30/14	5.0	3.44	103.1	13.19	0
-	1/14/15	5.6	2.71	102.8	12.96	1466
-	1/29/15	7.1	3.02	100.8	12.23	27
-	2/11/15	9.3	6.89	102.5	11.77	233
-	2/26/15	8.5	2.4	97	11.29	53
-	3/11/15	9.3	1.65	100.5	11.49	160
-	3/26/15	12.5	4.59	105.2	11.16	33
-	4/5/15	8.7	1.44	98.4	11.45	0
-	4/30/15	10.6	1.35	95.5	10.75	113
-	5/7/15	11.0	3.58	103	11.2	487
-	5/21/15	13.2	2	117.1	12.13	513
-	6/3/15	13.9	2.24	97.2	10	480
-	6/18/15	14.3	0.74	94.4	96.5	327
-	7/1/15	16.6	1.72	86.2	8.37	633
-	7/27/15	15.8	2.43	88.7	8.74	1267
-	8/13/15	17.0	1.57	84	9.1	73
-	8/26/15	13.3	0.87	89.9	9.41	280
TB2 Frazier Home on College Way	Average/Geomean	11.2	6.16	82.32	9.54	199
	10/9/14	14.3	1.76	77.9	8.12	213
-	10/22/14	14.0	9.06	88.2	9.08	560
-	11/6/14	13.6	28.7	90.3	9.4	840
-	11/19/14	4.0	3.11	90.9	11.95	27
-	12/4/14	4.3	3.78	93.3	12.05	53
-	12/17/14	6.5	5.21	93.2	11.42	27
-	12/30/14	3.1	6.05	100.1	13.35	60
-	1/14/15	5.2	7.28	97.5	12.4	1460
-	1/29/15	6.3	5.73	96.3	11.93	7
-	2/11/15	8.6	13.79	95.6	11.21	67
-	2/26/15	8.1	7.3	91.2	10.85	140
-	3/11/15	9.4	4.43	94.4	10.81	467
-	3/26/15	13.0	15.85	103.2	11.1	73

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)	
TB2 Frazier Home on College Way	4/5/15	9.1	3.89	98.1	11.4	267	
	4/30/15	10.9	3.96	91	9.96	187	
	-	5/7/15	11.3	5.98	101	10.9	773
	-	5/21/15	14.1	1.91	106.3	10.82	80
	-	6/3/15	14.6	4.63	83.4	8.6	547
	-	6/18/15	15.9	2.11	5.35	5.05	340
	-	7/1/15	18.4	1.65	63.4	5.94	367
	-	7/27/15	16.7	4.18	71.6	6.96	1667
	-	8/13/15	18.8	0.82	20.1	2.1	600
	-	8/26/15	16.4	0.57	40.9	4	447
TB3 Summerson Nursery Bridge	Average/Geomean	10.4	2.98	88.57	10.05	150	
	10/9/14	13.8	0.65	79.3	8.25	153	
-	10/22/14	13.8	2	82	8.42	640	
-	11/6/14	13.3	6.62	88.9	9.3	140	
-	11/19/14	3.7	1.57	86.1	11.33	47	
-	12/4/14	3.8	2.17	90	11.84	53	
-	12/17/14	6.5	2.79	91.3	11.28	653	
-	12/30/14	2.6	3.62	98.7	13.45	73	
-	1/14/15	4.6	3.78	96.2	12.44	867	
-	1/29/15	6.0	2.8	96.3	12.02	147	
-	2/11/15	8.3	6.43	97.8	11.45	147	
-	2/26/15	7.6	2.67	90.8	10.42	100	
-	3/11/15	8.9	1.97	93	10.81	100	
-	3/26/15	12.4	4.42	104.7	11.1	7	
-	4/5/15	8.4	2.67	91.9	10.77	47	
-	4/30/15	10.0	2.04	91.3	10.35	120	
-	5/7/15	10.4	4.72	105	11.62	227	
-	5/21/15	13.4	1.93	101.2	10.61	100	
-	6/3/15	13.2	1.91	77.8	8.14	200	
-	6/18/15	14.6	0.94	77.4	7.9	160	
-	7/1/15	16.9	1.57	67.4	6.5	847	
-	7/27/15	15.5	1.62	75.3	7.58	580	
-	8/13/15	17.1	9.06	82.5	7.83	73	
-	8/26/15	13.6	0.58	72.3	7.64	367	
TB4 Kiowa Street	Average/Geomean	9.7	2.79	101.00	15.61	165	
	-	10/9/14	13.2	1.22	98.3	10.26	2053
	-	10/22/14	13.2	1.34	96.4	10.11	207
	-	11/6/14	12.8	5.67	98.5	10.42	153
	-	11/19/14	4.0	0.49	95.3	12.59	380

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
TB4 Kiowa Street	12/4/14	3.8	2.27	97.3	12.78	364
-	12/17/14	6.5	3.97	99.3	12.19	20
-	12/30/14	2.8	5.6	101.6	13.77	67
-	1/14/15	4.1	3.87	102.4	13.42	1340
-	1/29/15	6.0	2.3	101.3	12.59	160
-	2/11/15	8.5	6.01	102.1	11.99	260
-	2/26/15	7.4	3.78	96.7	11.6	113
-	3/11/15	8.3	1.66	103.4	12.17	100
-	3/26/15	11.9	4.4	105.2	11.52	7
-	4/5/15	8.0	1.92	100.6	11.9	27
-	4/30/15	9.6	1.76	95.6	11	13
-	5/7/15	10.9	4.91	111.3	12.2	120
-	5/21/15	12.5	3.41	120.5	12.8	260
-	6/3/15	12.3	3.36	96.6	10.6	253
-	6/18/15	13.9	0.65	96.1	98.7	140
-	7/1/15	-	1.04	-	-	313
-	7/27/15	14.3	1.66	94.7	9.64	540
-	8/13/15	17.1	2.13	111.7	10.76	413
-	8/26/15	13.0	0.73	97.1	10.31	707
TB5 Bakerview Park	Average/Geomean	9.1	3.17	92.91	10.69	103
Footbridge	10/9/14	-	-	-	-	-
-	10/22/14	13.0	2.62	86	8.97	107
-	11/6/14	13.4	7.38	92	9.65	313
-	11/19/14	4.4	2.15	88.4	11.45	1
-	12/4/14	4.8	1.9	89.3	11.36	53
-	12/17/14	7.2	2.74	92.2	11.13	227
-	12/30/14	3.3	3	97	13	13
-	1/14/15	4.8	3.06	96.2	12.33	600
-	1/29/15	6.7	2.51	96	11.79	253
-	2/11/15	8.6	4.59	97.1	11.32	367
-	2/26/15	8.1	3.1	94	11.35	93
-	3/11/15	9.0	4.36	96.7	11.21	53
-	3/26/15	12.9	4.11	100.6	10.71	53
-	4/5/15	8.3	2.4	96	11.3	267
-	4/30/15	9.7	2.46	94.1	10.66	80
-	5/7/15	10.5	3.32	108	12.05	353
-	5/21/15	13.4	3.16	101.7	8.8	73
-	6/3/15	12.9	2.6	91.8	9.65	227
-	6/18/15	-	-	-	-	-
-	7/1/15	-	-	-	-	-

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
TB5 Bakerview Park	7/27/15	-	-	-	-	-
Footbridge	8/13/15	-	-	-	-	-
-	8/26/15	13.6	1.56	55.2	5.7	200



Clyde Creek

CC1 Jasper Way	Average/Geomean	7.7	11.27	92.66	10.93	8
-	10/21/14	-	-	-	-	-
-	11/3/14	11.2	6.6	89.2	9.27	20
-	11/18/14	6.0	0.8	73.9	9.19	5
-	12/1/14	3.2	4.47	100.1	13.1	8
-	12/29/14	5.0	-	99.1	10.8	2
-	1/13/15	6.6	11.24	97.2	11.94	10
-	1/26/15	7.9	13.67	101.1	8.75	1600
-	2/10/15	9.6	26.53	92.1	10.86	18
-	2/23/15	6.2	8.29	83.1	11.41	12
-	3/10/15	7.9	6.1	103.8	12.38	10
-	3/23/15	8.3	14.49	83.6	11.01	62
-	4/7/15	8.5	4.03	93.5	10.88	0
-	4/20/15	10.3	1.63	82.2	10.4	-
-	5/5/15	9.5	37.38	105.7	12.06	1600
-	5/18/15	-	-	-	-	-
-	6/4/15	-	-	-	-	-
-	6/17/15	-	-	-	-	-
-	6/30/15	-	-	-	-	-

CC2 Clyde Way	Average/Geomean	8.8	9.38	92.49	10.62	18
-	10/21/14	13.2	1.5	75.4	7.89	210
-	11/3/14	11.8	1.85	89.8	10.2	28
-	11/18/14	5.9	20.8	86.5	10.95	2
-	12/1/14	5.1	3.91	90.5	11.53	20
-	12/29/14	6.3	-	89.2	10.3	2
-	1/13/15	6.8	5.16	92.6	11.24	22
-	1/26/15	8.4	6.78	101.9	11.48	48
-	2/10/15	10.0	12.83	98.1	10.88	48
-	2/23/15	7.1	2.82	93.7	10.76	5
-	3/10/15	7.6	19.8	92.5	11.05	18
-	3/23/15	9.1	6.21	96.4	10.87	2
-	4/7/15	8.5	7.35	95	11.04	8
-	4/20/15	10.5	19.37	94.9	9.98	-

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)	
CC2 Clyde Way	5/5/15	12.4	13.51	98.3	10.47	500	
	5/18/15	-	-	-	-	-	
	-	6/4/15	-	-	-	-	
	-	6/17/15	-	-	-	-	
	-	6/30/15	-	-	-	-	
CC3 Queen Ann Way	Average/Geomean	8.9	6.25	98.35	11.61	14	
	-	10/21/14	13.4	0.84	82.9	8.67	32
	-	11/3/14	11.8	1.66	102	10.56	62
	-	11/18/14	6.3	22.32	95.2	11.7	15
	-	12/1/14	4.6	2.13	97.3	12.56	50
	-	12/29/14	5.9	-	87.1	11.26	2
	-	1/13/15	7.3	6.82	102.5	12.35	35
	-	1/26/15	7.6	6.3	102.2	13.24	5
	-	2/10/15	10.0	14.17	101.5	11.45	30
	-	2/23/15	6.8	2.73	90.1	11.25	2
	-	3/10/15	8.2	5.82	95.2	11.22	30
	-	3/23/15	8.9	3.84	102.6	12.3	2
	-	4/7/15	8.8	5.54	102.2	11.85	2
	-	4/20/15	10.2	6.62	95.3	11.59	-
	-	5/5/15	11.6	7.78	100	10.9	550
	-	5/18/15	11.6	0.99	119.2	13.19	8
	-	6/4/15	-	-	-	-	-
	-	6/17/15	-	-	-	-	-
	-	6/30/15	-	-	-	-	-
	CC4 Marine Drive	Average/Geomean	9.8	6.54	99.99	11.38	53
-		10/21/14	13.5	5.96	93.9	9.77	90
-		11/3/14	12.3	5	98.8	11.06	60
-		11/18/14	9.8	1.69	98.8	12.37	40
-		12/1/14	5.1	4.76	97.1	12.37	12
-		12/29/14	6.3	-	90.5	10.97	2
-		1/13/15	7.5	7.45	98.4	11.78	42
-		1/26/15	8.2	8.08	100.2	11.73	5
-		2/10/15	10.0	17.62	102.2	11.54	90
-		2/23/15	6.8	5.94	92.6	11.12	22
-		3/10/15	8.1	1.47	98.9	11.67	25
-		3/23/15	9.1	7.09	103.1	11.69	5
-		4/7/15	8.6	4.75	100.6	11.75	2
-		4/20/15	9.6	3.28	102.4	11.61	-
-		5/5/15	11.1	22.59	99.4	10.94	800

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
CC4 Marine Drive	5/18/15	11.8	3.15	116.6	11.94	400
-	6/4/15	11.9	3.96	100.4	10.8	1100
-	6/17/15	12.9	3.86	105.6	11.4	1600
-	6/30/15	14.3	4.53	100.4	10.3	600

Kulshan Creek

KC1 S 14th St.	Average/Geomean	10.5	3.45	80.28	11.14	224
-	9/30/14	13.7	1.58	83.2	8.67	530
-	10/13/14	13.5	2.44	81.1	8.45	879
-	10/28/14	12.7	4.36	84.9	9.04	247
-	11/10/14	9.8	2.58	87.2	9.9	230
-	11/25/14	9.0	9.43	93.3	10.84	733
-	12/8/14	8.6	2.88	84.8	9.9	67
-	12/23/14	8.7	3.17	91.1	10.55	20
-	1/5/15	7.2	35.88	101.7	12.31	846
-	1/20/15	6.7	3.76	93.8	11.46	33
-	2/3/15	8.4	2.79	9	10.49	80
-	2/17/15	7.4	2.61	88.1	10.56	40
-	3/2/15	7.1	2.87	86.9	10.54	53
-	3/17/15	9.3	3.52	94.5	11.1	113
-	4/13/15	9.5	2.29	83.1	9.66	1220
-	4/27/15	12.6	2.47	82.3	88.5	80
-	5/11/15	11.8	2.52	108.6	11.72	293
-	5/27/15	12.7	3.13	105	11.2	193
-	6/11/15	14.0	3.36	84.2	8.75	407
-	7/7/15	15.2	3.7	84.1	8.85	586
-	8/4/15	15.2	2.87	80.9	8.19	1385
-	8/18/15	15.0	3.24	99.3	9.96	853

KC2 Parker Way	Average/Geomean	11.3	5.35	54.46	5.90	197
-	9/30/14	14.9	8.66	98.9	9.89	210
-	10/13/14	14.6	2.41	33.5	3.38	899
-	10/28/14	13.5	3.19	60.9	6.34	1060
-	11/10/14	11.2	3.23	60.1	6.8	180
-	11/25/14	9.3	12.49	87.4	9.94	1047
-	12/8/14	9.1	4.38	70.04	8.12	33
-	12/23/14	9.1	5.14	76.9	8.88	20
-	1/5/15	7.2	51.75	100.2	12.13	966
-	1/20/15	7.3	6.9	85.5	10.32	60

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
KC2 Parker Way	2/3/15	8.6	6.55	76.2	8.89	67
-	2/17/15	7.7	6.72	77.6	9.26	100
-	3/2/15	7.7	4.38	77.4	8.92	100
-	3/17/15	9.7	9.42	90.5	10.28	240
-	4/13/15	10.1	17.07	65.6	7.39	1187
-	4/27/15	13.6	4.16	68.3	7.31	87
-	5/11/15	12.9	3.78	58.4	6.13	87
-	5/27/15	13.8	3.97	38.2	3.88	500
-	6/11/15	15.4	3.52	17	1.7	153
-	7/7/15	17.6	2.97	15.9	1.52	153
-	8/4/15	18.1	3.01	17.8	1.77	220
-	8/18/15	17.6	1.52	29.5	2.65	300
KC3 Roosevelt Ave	Average/Geomean	11.5	6.76	14.72	1.57	60
-	9/30/14	15.3	6.27	13	1.31	127
-	10/13/14	14.6	6.27	22.5	2.43	720
-	10/28/14	13.3	3.61	35.5	2.77	60
-	11/10/14	10.5	5.07	19.4	2.21	33
-	11/25/14	9.5	13.61	23.7	2.72	513
-	12/8/14	8.6	3.49	27.4	3.16	83
-	12/23/14	9.1	3.02	17.9	2.08	27
-	1/5/15	7.2	38.51	91.7	11.12	226
-	1/20/15	7.4	6.71	41.6	4.89	153
-	2/3/15	8.5	7.07	28	3.21	93
-	2/17/15	8.3	6.04	36.8	4.26	7
-	3/2/15	7.8	3.59	47.4	5.5	0
-	3/17/15	10.6	3.81	39.4	4.35	13
-	4/13/15	9.1	13.91	17.1	1.92	87
-	4/27/15	15.3	5.76	50.1	4.67	147
-	5/11/15	13.4	17.84	21.1	2.18	160
-	5/27/15	14.2	22.79	3.3	0.32	180
-	6/11/15	16.8	4.12	1.2	0.12	53
-	7/7/15	18.5	7.09	6.1	0.56	160
-	8/4/15	18.1	2.92	0.9	0.1	273
-	8/18/15	17.5	6.21	0.5	0.05	453
KC4 Riverside Dr.	Average/Geomean	10.9	4.92	64.39	6.98	105
-	9/30/14	14.2	1.29	98.5	8.83	480
-	10/13/14	-	2.02	72.2	7.1	667
-	10/28/14	12.8	2.4	65.2	6.11	287
-	11/10/14	10.0	1.58	66.6	7.52	33

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
KC4 Riverside Dr.	11/25/14	8.7	13.36	80.7	9.38	9200
-	12/8/14	8.6	2.48	67.5	7.94	33
-	12/23/14	8.5	2.6	71.7	8.39	187
-	1/5/15	7.0	40.72	94.1	11.42	1720
-	1/20/15	6.8	5.06	78.5	9.58	100
-	2/3/15	8.2	5.33	71.9	8.48	100
-	2/17/15	7.3	3.84	76.5	9.24	33
-	3/2/15	7.5	5.46	82.5	9.83	13
-	3/17/15	9.4	6.7	91.6	10.49	200
-	4/13/15	9.7	4.24	75.1	8.5	800
-	4/27/15	14.0	3.71	77.4	8.24	153
-	5/11/15	13.3	13.59	88.1	9.3	173
-	5/27/15	15.5	3.6	89.5	9.05	353
-	6/11/15	15.2	64.79	4.2	0.42	40
-	7/7/15	18.7	8.07	63.9	5.97	60
-	8/4/15	18.1	3.31	-	-	0
-	8/18/15	16.7	1.92	33	3.23	660
KC5 Lions Park	Average/Geomean	11.0	5.91	69.34	7.43	160
-	9/30/14	15.3	6.82	6.2	6.2	87
-	10/13/14	14.5	8.41	69.8	7.17	867
-	10/28/14	12.8	3.51	71.6	7.61	493
-	11/10/14	-	-	-	-	-
-	11/25/15	8.8	13.39	85.7	9.99	10213
-	12/8/14	8.8	3	70.8	8.2	<1
-	12/23/14	8.8	0.94	76.2	8.83	20
-	1/5/15	7.1	43.18	101.9	12.34	1526
-	1/20/15	7.7	15.47	86.9	9.79	507
-	2/3/15	8.6	11.7	67.5	7.96	287
-	2/17/15	7.6	9.37	72.4	8.64	127
-	3/2/15	7.7	5.86	72.2	8.68	40
-	3/17/15	9.0	7.2	88.5	10.25	287
-	4/13/15	10.4	5.77	70.2	7.86	620
-	4/27/15	12.0	5.26	75.4	7.45	173
-	5/11/15	13.0	5.23	82.2	8.64	186
-	5/27/15	13.4	4.34	85.5	8.42	60
-	6/11/15	15.0	3.69	54.9	5.57	7
-	7/7/15	15.8	4.89	59.1	5.87	1
-	8/4/15	17.0	3.51	36.6	3.53	40
-	8/18/15	17.0	2.63	33.7	2.95	873

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
Joe Leary Slough						
JL1 Dahlstedt Road	Average/Geomean	11.4	29.09	27.79	3.03	81
-	10/11/14	15.0	126	80	8.43	917
-	10/23/14	11.7	40.4	18	1.9	2605
-	11/8/14	9.5	30.6	6.5	0.68	83
-	11/20/14	9.0	17.2	20.9	2.49	10
-	12/7/14	9.2	20.5	18.5	2.43	43
-	12/18/14	8.7	7.4	49.5	5.9	81
-	1/2/15	7.8	11.9	18.2	2.09	32
-	1/15/15	7.7	13.1	11.6	1.2	4
-	1/25/15	10.2	33.2	39.1	4	266
-	2/12/15	9.9	21.9	36	3.95	75
-	3/4/15	13.4	24	23.6	2.53	21
-	3/12/15	11.0	19.1	30.1	4	159
-	3/28/15	13.7	38.2	17.2	1.7	461
-	4/9/15	9.9	92.2	38	4.3	57
-	4/26/15	15.4	24.2	7.8	0.93	592
-	5/7/15	12.6	43.5	49	5.2	-
-	5/23/15	14.5	41.2	47	4.76	2
-	6/4/15	15.0	47.3	56	5.6	142
-	6/20/15	20.3	42.5	109.3	9.72	107
JL2 Hwy 99.Gear Rd	Average/Geomean	10.8	49.21	46.56	5.20	231
-	10/11/14	14.5	86	62	6.28	3159
-	10/23/14	12.3	38.5	59.7	6.43	9817
-	11/8/14	10.3	90.3	29.3	3.42	-
-	11/20/14	9.2	26	54.2	6.2	45
-	12/7/14	9.2	28.9	39.4	4.52	73
-	12/18/14	8.5	10.9	40	4.6	477
-	1/2/15	7.5	192.1	46.2	5.6	69
-	1/15/15	6.7	40.5	43.1	6.8	76
-	1/25/15	10.4	57.4	21.8	2.5	196
-	2/12/15	10.1	39.1	35.1	3.9	140
-	3/4/15	11.3	41	45.2	5.08	23
-	3/12/15	10.8	30	50.3	5.1	269
-	3/28/15	13.1	58.6	40.4	4.2	2485
-	4/9/15	9.7	58.1	49	5.5	58
-	4/26/15	13.2	66.4	55.8	5.82	1999
-	5/7/15	11.7	48	54.7	6.02	186
-	5/23/15	13.9	67.4	54.5	5.72	35

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
JL2 Hwy 99.Gear Rd	6/4/15	13.3	65	65.5	6.9	70
-	6/20/15	14.5	56.4	71	7.35	652
JL3 Wilson.Avon	Average/Geomean	11.5	54.30	64.14	6.87	56
Allen	10/11/14	13.2	39.4	44	4.4	193
-	10/23/14	11.7	31.1	59.5	6.4	86
-	11/8/14	10.6	33.8	52.8	5.78	52
-	11/20/14	9.2	20.8	73	8.3	28
-	12/7/14	8.8	78.6	59.4	6.95	30
-	12/18/14	8.1	19.2	67.1	8.3	217
-	1/2/15	6.8	42.2	60.3	7.28	6
-	1/15/15	6.7	64.7	62	7	6
-	1/25/15	10.0	81.5	59.2	6.78	214
-	2/12/15	10.0	42.5	55	6.1	39
-	3/4/15	12.3	59	56.8	6.1	10
-	3/12/15	11.5	54.5	60.6	6.7	50
-	3/28/15	14.7	87.4	77	7.3	1613
-	4/9/15	11.6	68.4	66	7.2	20
-	4/26/15	16.8	75.6	84.8	8.23	28
-	5/7/15	16.1	82.1	73	7.15	42
-	5/23/15	16.1	120.4	67.1	6.58	79
-	6/4/15	15.5	89.9	74.5	7.45	249
-	6/20/15	16.7	57.5	81.7	7.92	94
JL4 Tide Gate	Average/Geomean	11.3	29.87	45.20	4.70	81
-	10/11/14	15.3	12.5	48	4.3	337
-	10/23/14	12.5	12.1	48.7	5.12	668
-	11/8/14	10.9	26.1	42.1	5.18	72
-	11/20/14	-	-	-	-	-
-	12/7/14	8.9	34.6	57.5	6.6	136
-	12/18/14	8.2	22.4	38	4.36	12
-	1/2/15	5.3	25.8	43	5.64	19
-	1/15/15	6.2	39.2	40.4	4.8	12
-	1/25/15	10.8	64.7	45.1	3.2	86
-	2/12/15	10.1	35.1	35.2	4.4	116
-	3/4/15	10.0	27.5	38.1	4.45	17
-	3/12/15	11.9	28.4	58	6.1	300
-	3/28/15	13.0	30.4	47	5	215
-	4/9/15	12.5	39.2	36	3.9	54
-	4/26/15	13.3	36.5	57.6	6.23	131
-	5/7/15	14.8	31	45.8	4.7	148

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
JL4 Tide Gate	5/23/15	15.6	40.2	56.3	3.53	39
-	6/4/15	15.6	27.7	34	3.5	133
-	6/20/15	18.7	43.5	55.4	5.23	67

Upper Nookachamps

UN1 Lake McMurray	Average/Geomean	10.2	1.38	62.54	6.93	27
Estates	10/4/14	14.9	1.32	14.9	1.51	57
-	10/14/14	13.2	3	26.4	2.77	694
-	11/1/14	12.4	1	66	7.03	40
-	11/11/14	10.1	0.12	65	7.32	3
-	11/29/14	7.6	1.06	72.5	8.65	26
-	12/9/14	7.7	1.8	58.6	6.95	15
-	12/27/14	6.7	1.39	65.7	7.96	7
-	1/6/15	6.3	5.4	68.7	8.48	38
-	1/24/15	7.2	1.53	76.1	9.02	18
-	2/3/15	6.6	1.9	70.7	8.71	53
-	2/21/15	7.6	2.4	89.2	10.68	9
-	3/3/15	9.9	1	81	10.22	25
-	3/21/15	10.3	1.55	80.8	8.81	7
-	3/31/15	10.0	1.3	104.7	11.47	34
-	4/18/15	11.0	0.93	93.3	10.47	2
-	4/28/15	14.2	1	102.4	10.25	20
-	5/16/15	16.0	0.81	69.5	6.5	32
-	5/26/15	14.9	1.6	48.4	4.84	156
-	6/13/15	13.2	2.33	56.5	5.87	232
-	6/23/15	13.6	2.2	43.3	4.38	83

UN2 Big lake	Average/Geomean	11.0	3.07	80.49	8.79	8
Outflow	10/4/14	16.3	6.68	14.3	1.43	19
-	10/14/14	15.0	7.2	51.8	5.17	358
-	11/1/14	12.9	6.5	81.4	8.61	32
-	11/11/14	10.8	5.5	80.4	8.82	7
-	11/29/14	7.7	2.81	82.2	9.77	24
-	12/9/14	7.3	3.3	95.7	11.56	17
-	12/27/14	6.7	2.53	93.2	11.36	16
-	1/6/15	5.4	5.6	95.7	12.14	21
-	1/24/15	7.3	5.32	101.1	12.07	17
-	2/3/15	7.6	4	84.6	11.34	0
-	2/21/15	8.8	2.4	111.6	12.93	6
-	3/3/15	7.8	2	103.4	12.24	2

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
UN2 Big lake	3/21/15	10.7	3.05	91.8	10.36	16
Outflow	3/31/15	12.0	2.2	102.4	11.14	11
-	4/18/15	11.8	1.51	112.7	12.26	5
-	4/28/15	13.4	2.2	104.4	10.85	4
-	5/16/15	16.6	1.62	100.1	9.6	4
-	5/26/15	18.1	2.2	75	7.13	26
-	6/13/15	20.2	1.74	57	5.2	7
-	6/23/15	21.1	1.7	82	7.25	9
-						
UN3 Otter Pond Rd	Average/Geomean	9.8	3.68	96.69	10.75	41
-	10/4/14	13.9	1.56	33.2	3.4	75
-	10/14/14	15.1	12.1	93.7	9.44	535
-	11/1/14	11.8	10.1	95	10.27	90
-	11/11/14	9.0	3.6	95	9.11	3
-	11/29/14	7.1	4.99	90.6	10.95	11
-	12/9/14	7.0	3.4	104.7	12.7	80
-	12/27/14	6.3	5.98	102.2	12.2	93
-	1/6/15	5.7	10.5	108.5	13.56	44
-	1/24/15	7.3	7.64	105.9	12.78	87
-	2/3/15	7.0	3.3	100.2	12.14	3
-	2/21/15	7.7	5.4	120.9	14.51	3
-	3/3/15	6.0	2.4	115.2	14.27	16
-	3/21/15	9.8	4.79	98.6	11.14	32
-	3/31/15	11.5	4.8	108.5	11.82	49
-	4/18/15	11.5	1.56	120.4	13.04	31
-	4/28/15	14.7	2.2	110.8	11.9	89
-	5/16/15	15.0	2.38	106.2	10.52	98
-	5/26/15	15.1	1.8	91	9.18	49
-	6/13/15	12.2	1.71	87.2	9.4	95
-	6/23/15	13.1	1.5	97.2	10.35	171
UN4 Knapp Road	Average/Geomean	10.5	5.56	77.98	8.59	109
Bridge	10/4/14	14.5	6.59	31	3.24	554
-	10/14/14	13.3	23.2	58	6.09	-
-	11/1/14	11.4	11.3	56.9	6.22	1435
-	11/11/14	9.0	5.4	72.7	8.4	112
-	11/29/14	6.2	4.8	68.1	8.41	280
-	12/9/14	8.2	3.9	93	10.95	60
-	12/27/14	6.3	3.5	86.4	10.67	31
-	1/6/15	6.5	8.8	91.5	11.23	454
-	1/24/15	8.5	9.16	92.2	10.71	1867

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
UN4 Knapp Road	2/3/15	7.4	5.8	90.8	10.9	33
Bridge	2/21/15	8.3	7	112	13.13	12
-	3/3/15	6.6	4.6	103.2	12.65	37
-	3/21/15	10.4	5.42	91.3	10.32	26
-	3/31/15	11.2	11.7	91	10	731
-	4/18/15	10.6	2.95	123.7	14.05	10
-	4/28/15	13.5	3	88.9	9.22	55
-	5/16/15	16.5	2.94	81.7	7.75	40
-	5/26/15	17.0	3.1	51.5	5	118
-	6/13/15	19.6	4.62	72	6.57	132
-	6/23/15	19.7	3.7	69.3	6.43	153

Lower Nookachamps

Lower Nookachamps		Average/Geomean	9.3	6.43	97.28	10.97	325
LN1 College Way	10/7/14	9.8	5.38	87.5	9.91	-	
-	10/11/14	-	1.95	-	-	260	
-	10/24/14	12.8	2.7	88.5	9.33	255	
-	11/22/14	8.1	12.8	97.4	11.51	805	
-	12/6/14	7.1	12.22	100.4	12.17	400	
-	12/20/14	7.9	10.55	92.3	10.95	125	
-	1/3/15	4.1	9.9	100.5	13.09	40	
-	1/15/15	5.2	6.55	109.3	13.77	120	
-	1/31/15	6.5	4.67	108.5	13.35	320	
-	2/12/15	9.9	9.98	114	12.89	1705	
-	2/28/15	7.2	8.52	-	-	130	
-	3/14/15	11.5	11.11	108.3	11.75	705	
-	3/26/15	11.1	8.07	111.7	12.16	170	
-	4/11/15	9.7	43.7	123.6	14.04	1640	
-	4/26/15	10.2	13.03	107.5	12.08	2060	
-	5/8/15	12.2	3.49	84.9	8.85	135	
-	5/23/15	14.2	2.22	80.1	7.95	160	
-	6/5/15	14.3	1.58	77.1	7.9	910	
-	6/20/15	14.3	2.99	78.2	8.14	230	
LN2 Hwy 9 Bridge	Average/Geomean	8.0	3.40	92.77	10.78	68	
-	10/7/14	8.7	4.58	63	7.3	-	
-	10/11/14	-	1.47	-	-	159	
-	10/24/14	10.2	3.5	89	10.03	56	
-	11/22/14	6.6	6.78	97	11.87	190	
-	12/6/14	6.0	5.62	89.5	11.1	61	

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
LN2 Hwy 9 Bridge	12/20/14	6.8	3.44	81.9	10.05	37
-	1/3/15	3.0	2.12	83.5	11.16	16
-	1/15/15	4.7	3.27	84.4	10.88	21
-	1/31/15	5.8	2.56	88.7	11.07	20
-	2/12/15	9.1	5.13	105.1	12.19	10
-	2/28/15	6.5	2.72	93	11.1	19
-	3/14/15	9.8	4.91	103.3	11.68	94
-	3/26/15	9.1	5.98	116.7	13.48	181
-	4/11/15	8.2	4.7	128.3	15.18	46
-	4/26/15	6.7	9.62	113	13.79	456
-	5/8/15	11.1	2.02	97.1	10.51	42
-	5/23/15	14.7	2.36	82.6	8.31	178
-	6/5/15	14.8	2.37	95.1	9.44	533
-	6/20/15	14.5	1.1	79.8	8.1	133
LN3 Swan Road	Average/Geomean	8.2	6.06	89.12	10.33	125
-	10/7/14	10.1	6.17	56.7	6.37	-
-	10/11/14	-	2.77	-	-	57
-	10/24/14	11.1	6.05	68.1	7.5	582
-	11/22/14	6.9	8.1	88.6	10.79	440
-	12/6/14	6.1	9.49	81.9	10.11	104
-	12/20/14	6.9	3.43	85.5	10.8	48
-	1/3/15	3.5	4.81	88.3	11.73	122
-	1/15/15	4.5	6.94	89.6	11.61	77
-	1/31/15	6.3	7.66	79.86	9.82	106
-	2/12/15	-	-	-	-	-
-	2/28/15	6.9	5.94	95.5	11.52	27
-	3/14/15	10.6	7.7	94.5	10.49	248
-	3/26/15	8.7	7.19	116.3	13.5	180
-	4/11/15	9.1	6.9	140.8	15.45	120
-	4/26/15	7.6	11.08	105.1	12.57	412
-	5/8/15	12.3	6.28	104.9	10.86	103
-	5/23/15	15.4	4.26	96.2	9.6	101
-	6/5/15	-	5.8	-	-	113
-	6/20/15	16.4	4.42	66.7	6.71	93
LN4 Francis Road	Average/Geomean	8.9	7.91	86.58	9.98	94
-	10/7/14	10.3	6.37	60.7	6.78	-
-	10/11/14	-	8.09	-	-	53
-	10/24/14	10.9	7.68	72.6	10.09	390
-	11/22/14	6.9	8.15	90.2	10.93	460

Site	Date	Water Temp (° C)	Turbidity (NTU)	D.O. (% sat.)	D.O. (mg/l)	FC (CFU/100ml)
LN4 Francis Road	12/6/14	6.1	8.91	74.7	9.27	119
-	12/20/14	7.1	4.7	80.7	9.82	38
-	1/3/15	3.8	5.72	86.3	11.36	49
-	1/15/15	4.6	7.54	87.8	11.4	27
-	1/31/15	6.4	6.27	84.1	10.34	88
-	2/12/15	-	-	-	-	-
-	2/28/15	7.2	8.67	86.2	10.3	36
-	3/14/15	11.0	6.16	85.3	9.4	153
-	3/26/15	8.5	8.6	119.3	13.91	47
-	4/11/15	9.3	7.7	128.5	14.8	101
-	4/25/15	7.6	15.72	100.3	12	323
-	5/8/15	12.7	10.62	106.5	11.25	110
-	5/23/15	16.5	7.27	90.1	8.79	157
-	6/5/15	18.4	8.35	88.4	8.21	71
-	6/20/15	18.8	11.25	59	5.48	71

Appendix B – Storm Team Data

	8/13/14	9/24/14	10/14/14	10/23/14	10/31/14	11//04/14	11/22/14	11/28/14	12/9/14
FR1	620	150	1360	300	150	140	40	40	50
FR2	220	260	620	40	80	220	0	80	0
FR3	160	440	1360	140	40	160	0	160	0
FR4	280	640	660	280	160	380	120	100	60
FR5	220	400	880	1200	460	2540	20	100	20
FR16									
FR6		900	180	40	20	0	0	40	20
FR7	580	1600	1020	680	180	240	280	220	80
FR8		1600	1060	580	340	700	200	120	360
BUT99									
WILDESPCR									
BUTBCR									
WILDES99									
FR9	1600	200	1600	560	480	780	340	240	160
FR15									
FR14									
FR10	460	820	1600	1160	220	560	280	180	460
FR11	280	860	1600	520	260	580	380	200	280
FR12	360	500	1600	840	160	540	18	300	360

	12/24/14	1/5/15	1/18/15	2/5/15	3/15/15	3/15/15	3/22/15	4/24/15	5/5/15	Geomean
FR1	30	20	20	0						28
FR2	20	40	20	20						7
FR3	100	0	60	20	160	160	20	140	1600	9
FR4	100	220	100	200	150	150	30	250	680	186
FR5	100	40	100	0	210	210	10	40	840	5
FR16						260	0	190	1600	63
FR6	0	0	0	0						0
FR7	580	1600	1020	680	180	240	280	220	80	254
FR8		1600	1060	580	340	700	200	120	360	300
BUT99						940	60	160	1600	347
WILDESPCR						60	160	220	620	190
BUTBCR						960	60	140	1300	320
WILDES99						800	40	480	560	305
FR9	1600	200	1600	560	480	780	340	240	160	402
FR15						340	60	220	1600	291
FR14						380	60	80	1600	232
FR13						260	60	220	1600	272
FR10	80	300	180	240	300	300	100	100	225	277
FR11	100	240	460	100	340	340	80	200	940	305
FR12	80	340	260	140	360	360	0	440	525	108

Site ID	Friday Creek Sites
FR1	Friday Creek at Lake Samish outfall
FR2	Bear Creek at Lake Samish Road
FR3	Friday Creek at Lake Samish Road (Alger)
FR4	Silver Creek at Alger Hall
FR5	Unnamed tributary on Alger-Cain Lake Road west of Corbell Lane
FR6	Silver Creek at Cain Lake outfall
FR16	Friday Creek at 2nd crossing north of Donovan Park
FR7	Friday Creek north of Parsons Creek Road
FR8	Butler Creek at Friday Creek Road
BUT99	Butler Creek at Hwy 99
WILDESPCR	Wildes Creek at Parsons Creek Road
BUTBCR	Butler Creek at Butler Creek Road
WILDES99	Wildes Creek at Hwy 99
FR15	Friday Creek at Friday Creek Road north of Wildes Creek
FR9	Wildes Creek at Friday Creek Road
FR14	Friday Creek above Wildes Creek
FR13	Friday Creek at first Friday Creek Road crossing
FR10	Friday Creek at Pomona Grange Park
FR11	Friday Creek at Prairie Road
FR12	Friday Creek on North Green Road at KOA

Appendix C. Quality Objectives

parameter	method	precision (Rel. Std. Dev.)	accuracy	detection level
Dissolved Oxygen (DO)	YSI 55 Probe	Unavailable	± 0.3 mg/l	0-20 mg/l
Total depth	Fixed.hand-held Tape	± 20%	± 0.05 meters	0 - 1 cm
Turbidity	Turbidimeter	Unavailable	0.01 NTU	0-19.9 NTU 0-199.9 NTU
Temperature	YSI 55 Probe	Unavailable	0.2° C	°-5 to 45° C

parameter	method	test equipment	filter type	incubation
Fecal coliform bacteria	Membrane Filtration	Millipore sterifil aseptic system	47 mm membrane filter .45 um pore space	Millipore single chamber incubator Temp. range 30°c (±0.5) 44.5°c (±0.2)

Standard Operating Procedures (SOP's)

1. Dissolved Oxygen (DO)- Samples will be taken with a bottle placed in an extension pole and dipped using the Standard Methods. DO will be measured using a YSI 55 probe. Results will be recorded as DO mg/l.

DO testing procedure (YSI 55 Probe):

- i. Turn probe on and calibrate immediately when picking up equipment. Make sure sponge inside the calibration chamber is wet with distilled water.
 - ii. Place probe in water below the surface of water and move probe back and forth until the reading stabilizes. Record the result in mg/l. Leave probe on for the rest of the sampling.
- 2.** Temperature will be measured with a YSI probe and recorded in °C.
- 3.** Total depth is measured using depth gauges installed at some sites.
- 4.** Water clarity will be determined by placing a sample into a turbidimeter (EPA approved VWR 66120-200)
- i. Warm-up Turbidimeter 30 minutes and calibrates w. 0 NTU polymer standard using the "zero-adjustment".
 - ii. Thoroughly shake the water sample in a clean sampling jar.
 - iii. Pour sample into unscratched, clean, and Kim-wiped vial. Mix again
 - iv. Place in turbidimeter w. index line facing directly out to the front.
 - v. Read and record the steady reading after the highest readings settle.
 - vi. If reading is greater than 200 NTU, dilute the sample by 50%. (x 2).

variable	sampling equipment	sample container	sample preservation	maximum holding time
fecal coliform	Pole w.glass bottle	glass bottle pre-sterilized	ice chest with ice pack	1 hr
<u>d. oxygen</u>	YSI probe	instream	none	immediately
total depth	Installed depth gauge	instream	none	immediately
temperature	YSI probe	instream	none	immediately
	thermometer	instream	none	immediately
turbidity	turbidimeter	glass bottle, wide-mouth	ice chest	2 hrs

Equipment calibration and maintenance

1. Millipore Sterifil Filtration System maintenance

Maintenance: Immediately after use disassemble the apparatus and clean the components to ensure optimum performance.

- i. Remove the cover from the funnel. Carefully remove the O-ring using forceps. Remove the support screen from the base by pushing a short blunt rod through the base outlet.
- ii. Clean all components with a sponge, hot water, and non-alkaline, non-abrasive cleanser (anti-bacterial soap). Remove stubborn residues on the insides of the holder, cover port, and flask side arms using a plastic bristle brush and pipe cleaner dipped in cleanser (do not use any steel wool or abrasive materials that can harm the components).
- iii. Rinse the components with lab water and sterilize.

2. Sample Containers and Equipment maintenance

Maintenance: Empty bottles and place in Liquinox and warm water. Wash with a bottlebrush. Double rinse with tap water and final rinse with distilled water. Autoclave all fecal coliform sample bottles and graduated cylinders.

3. Millipore Portable Single Chamber Incubator maintenance

Maintenance: Clean the exterior case and interior chamber with a damp cloth and warm water (anti-bacterial soap). Give final spray with rubbing alcohol.

4. VWR Turbidimeter

Calibration: Insert 0 NTU polymer standard with the range control set at "20". Set the "Zero Control" to 0. Set the coarse so that the meter reads as close to zero as possible. Calibrate turbidimeter annually.

5. YSI Meters (DO, Temp)

Calibration: Press and release UP ARROW and DOWN ARROW keys at the same time. Enter "0" for altitude and salinity, and ENTER afterwards. Instrument is calibrated.

Maintenance: Turn YSI 55 off and rinse probe with distilled water after each use. Replace membrane filters and Kim-wipe moisturizers monthly. Replace batteries as needed.

Appendix D. Sample Data Sheet

Date: _____

**Lower Samish Watershed
Skagit Stream Team
Water Quality Monitoring**

Field Work By _____

Lab Work By: _____

Dupe Site _____
FC Results _____

Site LS1. Old Hwy. 99 Samish Bridge Water Appearance <input type="checkbox"/> Scum/Film <input type="checkbox"/> Foam <input type="checkbox"/> Muddy Brown <input type="checkbox"/> Milky <input type="checkbox"/> Clear <input type="checkbox"/> Oily Sheen <input type="checkbox"/> Frozen <input type="checkbox"/> Other _____ Field: Biological/Unusual Observations:	Time of Sample	Total Depth	Water Temp	Turbidity
		ft	°C	NTU's
	D.O. saturation	D.O.		Fecal Coliform
	%	mg/L		$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$
	Lab metadata			Fecal Coliform
				$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$

Site LS2. Samish River @ Jolly Road Water Appearance <input type="checkbox"/> Scum/Film <input type="checkbox"/> Foam <input type="checkbox"/> Muddy Brown <input type="checkbox"/> Milky <input type="checkbox"/> Clear <input type="checkbox"/> Oily Sheen <input type="checkbox"/> Frozen <input type="checkbox"/> Other _____ Field: Biological/Unusual Observations:	Time of Sample	Total Depth	Water Temp	Turbidity
		ft	°C	NTU's
	D.O. saturation	D.O.		Fecal Coliform
	%	mg/L		$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$
	Lab metadata			Fecal Coliform
				$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$

Site LS3. Samish River @ Chuckanut Drive Bridge Water Appearance <input type="checkbox"/> Scum/Film <input type="checkbox"/> Foam <input type="checkbox"/> Muddy Brown <input type="checkbox"/> Milky <input type="checkbox"/> Clear <input type="checkbox"/> Oily Sheen <input type="checkbox"/> Frozen <input type="checkbox"/> Other _____ Field: Biological/Unusual Observations:	Time of Sample	Total Depth	Water Temp	Turbidity
		ft	°C	NTU's
	D.O. saturation	D.O.		Fecal Coliform
	%	mg/L		$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$
	Lab metadata			Fecal Coliform
				$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$

Site LS4. Samish River @ Mouth (Boat Dock) Water Appearance <input type="checkbox"/> Scum/Film <input type="checkbox"/> Foam <input type="checkbox"/> Muddy Brown <input type="checkbox"/> Milky <input type="checkbox"/> Clear <input type="checkbox"/> Oily Sheen <input type="checkbox"/> Frozen <input type="checkbox"/> Other _____ Field: Biological/Unusual Observations:	Time of Sample	Total Depth	Water Temp	Turbidity
		ft	°C	NTU's
	D.O. saturation	D.O.		Fecal Coliform
	%	mg/L		$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$
	Lab metadata			Fecal Coliform
				$\frac{\text{FC}}{\text{mL}} = \frac{\text{FC}}{\mathbf{100 \text{ mL}}}$

Additional notes or observations: