El Dorado Hydroelectric Project
FERC Project No. 184

2014 Water Quality Monitoring Report

EL DORADO IRRIGATION DISTRICT
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1.0 Introduction

The El Dorado Irrigation District developed a water quality monitoring plan (Plan; EID 2007) to satisfy the water quality monitoring requirements as required by conditions of the Federal Energy Regulatory Commission (FERC) license for the El Dorado Hydroelectric Project (Project 184)[1]. The monitoring plan was designed to provide information regarding overall water quality within the vicinity of Project 184 (Project), identify potential water quality problems related to the Project operations and where the Project can control such factors, and develop resource measures for the protection, mitigation, and enhancement of water quality.

This report summarizes the results of the 2014 water quality monitoring effort, which is the fourth year of water quality monitoring conducted pursuant to the Plan. The data collected in 2014 were compiled and distributed electronically to the Forest Service (FS), State Water Resources Control Board (SWRCB), and the Project 184 Ecological Resources Committee (ERC) on January 30, 2015, as required by the Plan.

2.0 Sampling Locations

The following sampling locations are identified in the Plan and depicted in Figure 1:

- Echo Creek below Echo Lake dam (WQ1)
- Pyramid Creek below Lake Aloha dam (WQ2)
- Caples Creek below Caples Lake dam (WQ3)
- Silver Fork American River below Silver Lake dam (WQ4)
- South Fork American River upstream of Kyburz diversion dam (WQ5)
- South Fork American River downstream of Kyburz diversion dam (WQ6)
- Carpenter Creek above Carpenter Creek diversion dam (WQ7)
- Carpenter Creek below Carpenter Creek diversion dam (WQ8)
- No Name Creek above No Name Creek diversion dam (WQ9)
- No Name Creek below No Name Creek diversion dam (WQ10)
- Alder Creek above Alder Creek diversion dam (WQ11)
- Alder Creek below Alder Creek diversion dam (WQ12)
- Mill Creek above Mill Creek diversion dam (WQ13)
- Mill Creek below Mill Creek diversion dam (WQ14)
- Bull Creek above Bull Creek diversion dam (WQ15)

[1] Section 7 of the El Dorado Hydroelectric Project Relicensing Settlement Agreement, U.S. Forest Service 4(e) License Condition No. 37, and the California State Water Resources Control Board Section 401 Clean Water Act Water Quality Certification Condition No. 15

- Bull Creek below Bull Creek diversion dam (WQ16)
- Ogilby Creek above Ogilby Creek diversion dam (WQ17)
- Ogilby Creek below Ogilby Creek diversion dam (WQ18)
- Esmeralda Creek above Esmeralda Creek diversion dam (WQ19)
- Esmeralda Creek below Esmeralda Creek diversion dam (WQ20)

The FS, SWRCB, Project 184 ERC, and FERC approved a one-year variance to discontinue monitoring at Mill Creek (WQ13 and WQ14) and Carpenter Creek (WQ7 and WQ8) in 2014 since the diversion structures on these creeks are not operational. Therefore, no water quality monitoring was conducted at these sites in 2014.

3.0 Collection

In-situ and analytical water quality monitoring were performed in 2014 as required by the Plan. Date, time, site location and in-situ water quality data were recorded on a standard form and later transcribed to electronic format in a Microsoft Excel spreadsheet. Sampling occurred over an eight-month period during March, May, June, July, August, September, first storm of the season (November 3, 2014), and December. E. coli samples were collected five times per month from May through September and were scheduled to capture days with high recreational periods (i.e., holiday weekends).

Temperature, dissolved oxygen, conductivity, and pH were measured in the field at each location using an YSI 556: Handheld Multi-Probe Meter. The meter was calibrated prior to each sampling period per manufacturer's specifications. A HACH handheld pH meter was also calibrated and ready for use during each field monitoring event.

Water samples were collected at each location for laboratory analysis of the following parameters: copper, aluminum, conductivity, turbidity, TSS, alkalinity, hardness, and nitrate. California Laboratory Services (CLS) in Rancho Cordova, California, a state certified laboratory, analyzed water samples collected for this effort. All the samples were analyzed pursuant to methodologies approved by the United States Environmental Protection Agency (USEPA), the California Department of Public Health, or Environmental Laboratory Accreditation Program (ELAP) and results were certified to be in compliance both technically and for completeness. All samples met the appropriate hold times.

4.0 Parameters and Results

Temperature

Average, minimum, and maximum temperatures measured at each water quality monitoring site during the 2014 monitoring effort are reported in Table 1. Graphs depicting all *in situ* parameters measured at each monitoring site are provided in Figures 2 - 10.

Table 1. Average, minimum, and maximum water temperatures (°C) at each monitoring site

Site	AVG	MIN	MAX
WQ1	10.7	8.2	18.5
WQ2	15.7	12.3	17.8
WQ3	8.6	3.5	16.3
WQ4	12.0	3.0	19.5
WQ5	9.9	2.3	18.0
WQ6	10.7	3.1	18.7
WQ9	9.8	6.0	14.6
WQ10	10.3	5.7	15.1
WQ11	11.0	4.0	17.2
WQ12	11.9	4.7	19.0
WQ15	10.7	6.1	14.5
WQ16	12.1	10.5	13.8
WQ17	9.2	6.3	12.8
WQ18	10.7	6.8	15.0
WQ19	10.1	6.0	14.4
WQ20	10.9	6.4	15.5

A total of 116 water temperature measurements were recorded in 2014. Water temperatures ranged from a minimum of 2.2 °C at Echo Creek below Echo Lake Dam (WQ1) to 19.5 °C Silver Fork American River below Silver Lake Dam (WQ4). The average water temperature measured throughout the entire project area in 2014 was 10.6 °C. Water temperatures measured at all water quality monitoring sites in 2014 were suitable for trout and other coldwater species throughout the study period. A detailed evaluation of water temperatures in the stream reaches within the vicinity of the Project is provided in the Project No. 184 2014 Water Temperature Monitoring Report (EID 2015).

Dissolved Oxygen

Average, minimum, and maximum dissolved oxygen (DO) concentrations measured at each water quality monitoring site during the 2014 monitoring effort are reported in Table 2. Graphs depicting all *in situ* parameters measured at each monitoring site are provided in Figures 2 - 10.

Table 2. Average, minimum, and maximum DO concentrations (mg/L) at each monitoring site

Site	AVG	MIN	MAX
WQ1	9.2	6.2	11.8
WQ2	8.0	7.5	8.9
WQ3	9.9	7.0	15.4
WQ4	8.4	6.1	11.2
WQ5	10.4	7.8	14.4
WQ6	9.8	7.0	13.3
WQ9	10.8	8.3	1.6
WQ10	10.9	8.2	12.2
WQ11	10.5	7.6	12.2
WQ12	11.3	7.6	14.4
WQ15	10.7	7.3	12.7
WQ16	10.3	8.8	12.0
WQ17	7.9	3.1	11.5
WQ18	10.7	8.6	12.4
WQ19	9.9	6.8	11.8
WQ20	10.7	8.6	12.2

The Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins states "The DO concentrations shall not be reduced below the following minimum levels at any time…waters designated COLD 7.0 mg/L" (CVRWQCB, 1998; Fourth Edition revised October 2011).

A total of 115 DO measurements were recorded in 2014. DO ranged from 3.1 mg/L at Ogilby Creek above Ogilby diversion dam to 15.4 mg/L at Caples Creek below Caples main dam (WQ3). The average DO concentration throughout the entire project area in 2014 was 10.1 mg/L. Eight DO measurements below 7.0 mg/L were recorded during the 2014 monitoring effort. The date, DO concentrations, and location for these measurements are listed below:

July 8, 2014

- 6.1 mg/L at Silver Fork American River below Silver Lake Dam (WQ4)
- 5.4 mg/L at Ogilby Creek above Ogilby Creek diversion dam (WQ17)

August 5, 2014

- 6.4 mg/L at Silver Fork American River below Silver Lake Dam (WQ4)
- 3.1 mg/L at Ogilby Creek above Ogilby Creek diversion dam (WQ17)
- 6.2 mg/L at Echo Creek below Echo Dam (WQ1)

September 10/11, 2014

- 6.9 mg/L at Silver Fork American River below Silver Lake Dam (WQ4)

- 6.8 mg/L at Esmeralda Creek above Esmeralda Creek Diversion Dam (WQ19) November 3, 2014
- 6.7 mg/L at Ogilby Creek above Ogilby Creek diversion dam (WQ17)

Of the seven measurements below 7.0 mg/L, two were within the accuracy range of the meter (±2% of the reading or 0.2 mg/L; whichever is greater). Three measurements below 7.0 mg/L were recorded at Ogilby Creek above Ogilby Creek diversion dam (WQ17) during periods when diversions are not occurring at this location (i.e., July, August, and November). Surface flow in this reach of Ogilby Creek decreased during the monitoring season and was only present in isolated pools by the July monitoring event, which accounts for the low levels of DO measured during July and August. Surface water was absent at Ogilby Creek above Ogilby Creek diversion dam (WQ17) by the September monitoring event. Two measurements less than 7.0 mg/L were recorded at Silver Fork below Silver Lake Dam (WQ4); these measurements were collected in July and August when no diversions were occurring. One measurement of 6.2 mg/L was recorded at Echo Creek below Echo Dam (WQ1) on August 5, 2014 when no diversions were occurring.

Conductivity

Average, minimum, and maximum conductivity levels recorded at each water quality monitoring site during the 2014 monitoring effort are reported in Table 3. Graphs depicting all *in situ* parameters measured at each monitoring site are provided in Figures 2 - 10.

Table 3. Average, minimum, and maximum conductivity levels (uS/cm^3) at each monitoring site

Site	AVG	MIN	MAX
WQ1	10	6	16
WQ2	2	2	2
WQ3	20	18	23
WQ4	15	12	23
WQ5	34	18	50
WQ6	38	24	50
WQ9	157	140	174
WQ10	140	117	155
WQ11	38	26	52
WQ12	43	29	61
WQ15	78	60	87
WQ16	109	87	124
WQ17	57	46	69
WQ18	52	42	65
WQ19	53	35	60
WQ20	40	25	60

Currently there are no criteria or water quality objectives for conductivity within the American River watershed. A total of 116 conductivity measurements were recorded in 2014. Conductivity levels ranged from 2 uS/cm^3 at Echo Creek (WQ2) to 174 uS/cm^3 in No Name Creek above the diversion dam (WQ9). The average conductivity level throughout the entire project area in 2014 was 56 uS/cm^3.

pH

Average, minimum, and maximum pH levels recorded at each water quality monitoring site during the 2014 monitoring effort are reported in Table 4. Graphs depicting all *in situ* parameters measured at each monitoring site are provided in Figures 2 - 10.

Table 4. Average, minimum, and maximum pH levels at each monitoring site

Site	AVG	MIN	MAX
WQ1	7.4	6.7	8.2
WQ2	7.1	6.1	7.9
WQ3	7.2	6.4	7.9
WQ4	7.1	6.5	8.0
WQ5	7.0	6.5	7.5
WQ6	7.1	6.7	7.7
WQ9	7.8	7.5	8.1
WQ10	7.8	7.6	8.3
WQ11	7.4	6.7	7.9
WQ12	7.3	6.6	7.8
WQ15	7.7	7.4	8.1
WQ16	7.7	7.4	7.9
WQ17	6.9	6.2	7.9
WQ18	6.6	5.6	7.3
WQ19	7.1	6.7	7.6
WQ20	7.7	6.6	8.4

The Basin Plan states that "pH shall not be depressed below 6.5 nor raised above 8.5 and that changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD beneficial uses" ((CVRWQCB, 1998; Fourth Edition revised October 2011). A total of 115 pH measurements were recorded in 2014. pH levels ranged from 5.6 at Ogilby Creek below Ogilby diversion dam (WQ18) to 8.4 at Esmeralda Creek above Esmeralda Creek diversion dam (WQ20). The average pH throughout the entire project area in 2014 was 7.3. There was no appreciable difference between the pH measurements upstream or downstream of the diversion at each monitoring site. Five pH measurements below 6.5 were recorded during the 2014 monitoring effort. The pH measurement, location, and date for these measurements include:

- 6.2 at Ogilby Creek below Ogilby diversion dam (WQ18) on May 14, 3014
- 6.4 at Caples Creek below Caples Lake Dam (WQ3) on June 17, 2014
- 6.2 mg/L at Ogilby Creek above Ogilby Creek diversion dam (WQ17) on August 5, 2014
- 6.3 at Pyramid Creek below Lake Aloha Dam (WQ2) on September 10, 2014
- 5.6 at Ogilby Creek below Ogilby diversion dam (WQ18) on November 3, 3014

Consistent with Basin Plan standards, all pH levels were below 8.5 at all locations during all sampling events throughout the year.

Turbidity

Average, minimum, and maximum turbidity levels recorded during the 2014 monitoring effort at each water quality monitoring site are reported in Table 5. Turbidity measurements measured at each monitoring site in 2014 are presented with *in situ* parameters in Figures 2 - 10.

Table 5. Average, minimum, and maximum turbidity levels (NTUs) at each monitoring site

Site	AVG	MIN	MAX
WQ1	0.6	0.0	1.6
WQ2	0.1	0.0	0.3
WQ3	1.0	0.7	2.2
WQ4	0.9	0.6	1.3
WQ5	0.3	0.0	1.0
WQ6	0.4	0.0	1.2
WQ9	0.8	0.0	1.8
WQ10	1.9	0.6	4.0
WQ11	0.4	0.0	1.1
WQ12	0.2	0.0	0.6
WQ15	0.9	0.0	3.8
WQ16	0.1	0.0	0.3
WQ17	0.4	0.0	1.1
WQ18	1.3	0.3	4.2
WQ19	1.3	0.5	2.7
WQ20	0.7	0.4	0.9

* 0 denotes a non-detect result from laboratory analysis

The Basin Plan states, "where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), controllable factors shall not cause downstream turbidity to exceed 2; where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU." (CVRWQCB, 1998; Fourth Edition revised October 2011). All turbidity measurements were generally low throughout the study area (average = 0.7 NTUs) and all turbidity measurements were less than 5 NTUs.

A comparison of turbidity measurements recorded upstream and downstream of diversion dams in 2014 found a total of four occurrences where turbidity downstream of the diversion was greater than 1 NTU of the value measured upstream of the diversion dam. The location, date, and turbidity measurements for these occurrences are provided in Table 6.

Table 6. Turbidity levels (NTUs above and below the diversions when turbidity levels below the diversion were > 1 NTU of the value measured above the diversion dam

	Date	Upstream	Downstream	Difference
No Name	June 10, 2014	0.6	2.2	+1.6
(WQ9/WQ10)	July 8, 2014	0.6	2.5	+1.9
Ogilby Creek	June 17, 2014	0	1.1	+ 1.1
(WQ17/WQ18)	August 5, 2014	0.4	4.2	+3.8

As discussed in the 2008, 2010, and 2012 Project 184 Water Quality Monitoring Reports (EID 2009; EID 2011, EID 2013), a cabin owner has placed a decorative water wheel in the middle of No Name Creek upstream of the designated sampling location (WQ10) which causes an increase in sediment and organic matter to move downstream.

No Project related activities occurred to account for the increased turbidity measurements recorded in Ogilby Creek below Ogilby diversion dam (WQ18) in June and August 2014. This monitoring site is located at the Bridal Veil Falls picnic and day use area, which is subject to frequent use by the public.

Total Suspended Sediments

Total Suspended Sediment (TSS) concentrations measured at all sample sites in 2014 are plotted in Figure 11.

The Basin Plan has a narrative objective that states, "Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses" (CVRWQCB, 1998; Fourth Edition revised October 2011). TSS measurements were extremely low throughout the project area. Of 118 samples analyzed, 101 samples had TSS levels that were not detectable in laboratory analysis. The highest TSS level was 48 mg/L measured at Bull Creek above Bull Creek diversion dam (WQ15) on November 3, 2014.

Alkalinity

Alkalinity levels measured at all sample sites in 2014 are plotted in Figure 12.

There are currently no Basin Plan objectives for alkalinity. The U.S. Environmental Protection Agency recommends ambient water quality criteria for alkalinity to protect freshwater aquatic life to be measured as a continuous concentration 4-day average expressed as a total recoverable. The aquatic life 4-day average concentration for alkalinity is 20 mg/L. The recommendation also states that "20 mg/L is a minimum concentration except where natural concentrations are less (Water Quality Goals, 2011). The frequency of monitoring in the approved Plan does not provide for a direct relationship to the recommended average concentration.

Average, minimum, and maximum alkalinity concentrations measured during the 2014 monitoring effort at each water quality monitoring site are presented in Table 7.

Table 7. Average, minimum, and maximum alkalinity concentrations (mg/L) measured at each monitoring site

Site	AVG	MIN	MAX
WQ1	5.7	0.0	10.0
WQ2	0.5	0.0	1.8
WQ3	10.3	7.2	12.0
WQ4	7.9	6.2	11.0
WQ5	11.3	7.8	16.0
WQ6	13.1	11.0	16.0
WQ9	84.4	79.0	89.0
WQ10	75.9	66.0	92.0
WQ11	21.0	16.0	29.0
WQ12	21.8	14.0	28.0
WQ15	36.4	16.0	45.0
WQ16	49.5	36.0	55.0
WQ17	29.5	25.0	37.0
WQ18	20.1	16.0	23.0
WQ19	28.9	24.0	34.0
WQ20	17.9	13.0	22.0

The average alkalinity throughout the Project area was 28.2 mg/L. There was no appreciable difference between the alkalinity measurements upstream or downstream of the diversion at each monitoring site. The sampling locations with the highest concentrations of alkalinity were No Name Creek (WQ-09 and WQ10; range 66 – 92 mg/L). The higher alkalinity concentrations measured at these sites is attributed to soil rich in calcium carbonate (CaCO3) that is present under these waters (USDA/NRCS, 2008).

Hardness (Calcium Carbonate)
Hardness levels measured at all sample sites in 2014 are plotted in Figure 13. Average, minimum, and maximum hardness concentrations measured during the 2014 monitoring effort at each water quality monitoring site are presented in Table 8.

Table 8. Average, minimum, and maximum hardness concentrations (mg/L) measured at each monitoring site

Site	AVG	MIN	MAX
WQ1	3.9	2.1	7.9
WQ2	0.3	0.0	1.0
WQ3	8.1	7.4	9.9
WQ4	4.7	4.3	5.2
WQ5	8.7	4.9	13.0
WQ6	11.1	7.7	14.0
WQ9	81.6	72.0	91.0
WQ10	73.5	59.0	84.0
WQ11	14.5	11.0	18.0
WQ12	15.9	11.0	21.0
WQ15	29.9	28.0	34.0
WQ16	41.8	26.0	49.0
WQ17	20.4	17.0	25.0
WQ18	18.9	15.0	23.0
WQ19	19.9	16.0	23.0
WQ20	12.6	10.0	17.0

There is currently no Basin Plan objective for hardness. The average hardness throughout the Project area was 23.5 mg/L. There was no appreciable difference between the hardness measurements upstream or downstream of the diversion at each monitoring site. The sampling locations with the highest hardness value were No Name Creek (WQ9 and WQ10; range = 59 – 91 mg/L). The geology at this location contains large quantities of calcium carbonate that naturally leach into the streams (USDA/NRCS, 2008) producing higher hardness (and alkalinity) concentrations at these locations.

Nitrate (Nitrate plus Nitrite)
Nitrate levels measured at all sample sites in 2014 are plotted in Figure 14.

There are currently no Basin Plan objectives for nitrate. However, the EPA recommends ambient water quality criteria for non-cancer health effects to be 10 mg/L (Water Quality Goals, 2011). Additionally, both the California and Federal primary contaminated levels in drinking water are 10 mg/L. The nitrate levels were extremely low throughout the Project area (range 0 – 0.2 mg/L). Of 118 samples analyzed, 95 samples had nitrate levels that were not detectable in laboratory analysis.

Copper

There is no specific Basin Plan objective for copper; however, the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP, 2005), and the California Toxics Rule (CTR, 2000), provide a formula for deciphering a one-hour total recoverable dissolved copper limit based on its hardness value. This standard has been incorporated by adoption into the Basin Plan. Therefore, the lower the hardness value, the lower the available copper is in the water (greater copper concentration can be allowed due to limited availability of copper in the water table), and the greater the hardness value, the lower the copper concentration must be (more available dissolved copper can affect aquatic life). Of the 118 samples collected, all copper levels were below the SIP/CTR one-hour total recoverable dissolved copper limits. The maximum criteria concentrations are provided in Table 9, which is included with the Figures at the end of this report.

Aluminum

Aluminum concentrations measured at all sample sites in 2014 are plotted in Figure 15.

There are currently no Basin Plan objectives for aluminum. The U.S. Environmental Protection Agency recommends ambient water quality criteria for freshwater aquatic life expressed at a maximum concentration 1-hour average to be 750 ug/L (Water Quality Goals, 2011). Of the 118 samples collected, all samples were below 750 ug/L. The highest aluminium concentration (600 ug/L) was measured at Bull Creek above the diversion dam (WQ15) on November 3, 2014, which was the first storm of the season monitoring event.

E. coli

E. coli concentrations measured at all sample sites in 2014 are plotted in Figure 16. The E. coli concentrations recorded at each site in 2014 are provided in Table 10, which is included with the Figures at the end of this report.

The FS, SWRCB, ERC, and FERC approved a variance from the Plan to utilize Escherichia coli (E. coli) as the bacterial monitoring constituent in lieu of fecal and total coliform testing for the 2012 and 2014 monitoring efforts. The Basin Plan currently does not contain objectives for E. coli; however, the following water quality objective for bacteria is under consideration by the SWRCB as an amendment to the Basin Plan: "In all waters designated for contact recreation (REC-1), the E. coli concentration, based on a minimum of not less than five samples equally spaced over a 30 day period, shall not exceed a geometric mean of 126/100 ml and shall not exceed 235 per 100ml in any single sample." These criteria were identified in the approved variance to be used to evaluate the bacterial results for this monitoring effort.

Only 3 of the 364 samples collected in 2014 (0.8%) exceeded the single sample criterion (>235 MPN/100 ml). Two of these samples were collected at Bull Creek above the diversion dam (WQ15) on August 27, 2014 (248 MPN/100 ml) and September 10, 2014 (345 MPN/100 ml). The geometric mean of six samples collected over a 30-day period at this same site between August 14, 2014 and September 10, 2014 was 32 MPN/100 ml, which is well below the geometric mean criterion of 126 MPN/100 ml. The third sample that exceeded the single sample criterion was collected at Bull Creek below the diversion dam (WQ16) on July 22, 2014 (1299 MPN/100 ml). The geometric mean for five samples collected over a 30-day period at this same site between July 6, 2014 and August 5, 2014 was 11 MPN/100 ml, which is well below the geometric mean criterion of 126 MPN/100 ml.

5.0 Conclusions

Measurements for *in-situ* parameters were similar above and below the diversion dams along each stream reach and provide normal distributions across the sampling locations based on stream flow elevation and time of year. Laboratory-measured analytical parameters also did not vary in the stream reaches above and below the diversion dams. Project operations did not show any measureable increase or decrease in water quality parameters in almost all cases. Therefore, project operations do not affect water quality in the stream reaches.

Water quality in the Project area was within an acceptable range of most all applicable Basin Plan objectives and other criteria during the 2014 monitoring program. Therefore, Project operations did not seem to adversely affect water quality in the stream reaches within the vicinity of the Project.

6.0 Recommendations

As stated in the 2012 monitoring report, the District plans to develop a proposal to reduce or eliminate future water quality monitoring efforts based on the water quality data collected during 2008, 2010, 2012, and now the 2014 monitoring seasons. This proposal will be prepared in consultation with the FS, SWRCB, and ERC. The District planned to submit a proposal for consideration together with report. However, given the likely need for water quality monitoring in 2015 as specified in the Project No. 184 Drought Streamflow Plan, the District has deferred any proposal until the need for streamflow modifications has passed.

7.0 Literature Cited

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Figures

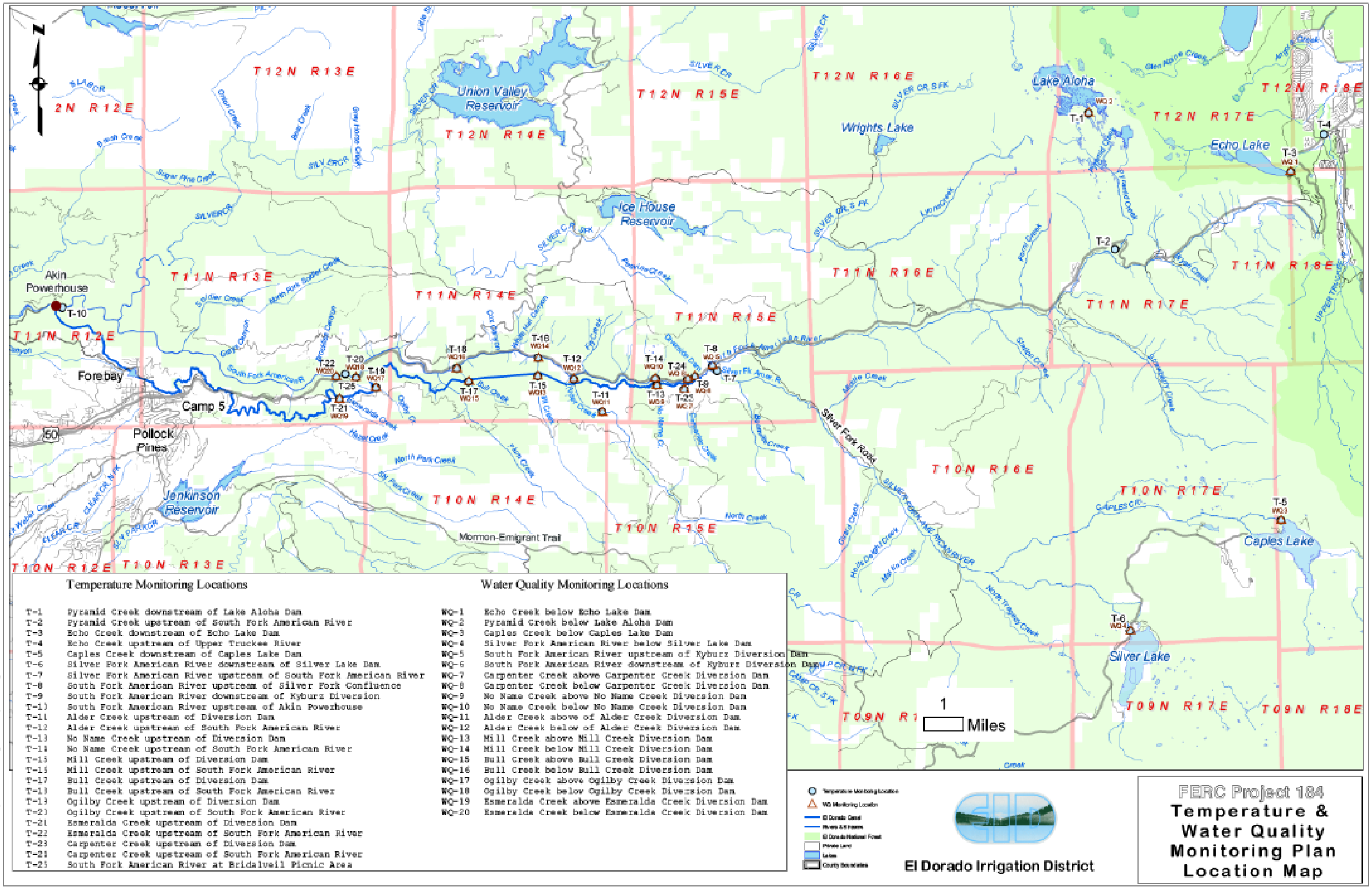

Figure 1. Water Quality Monitoring Sites

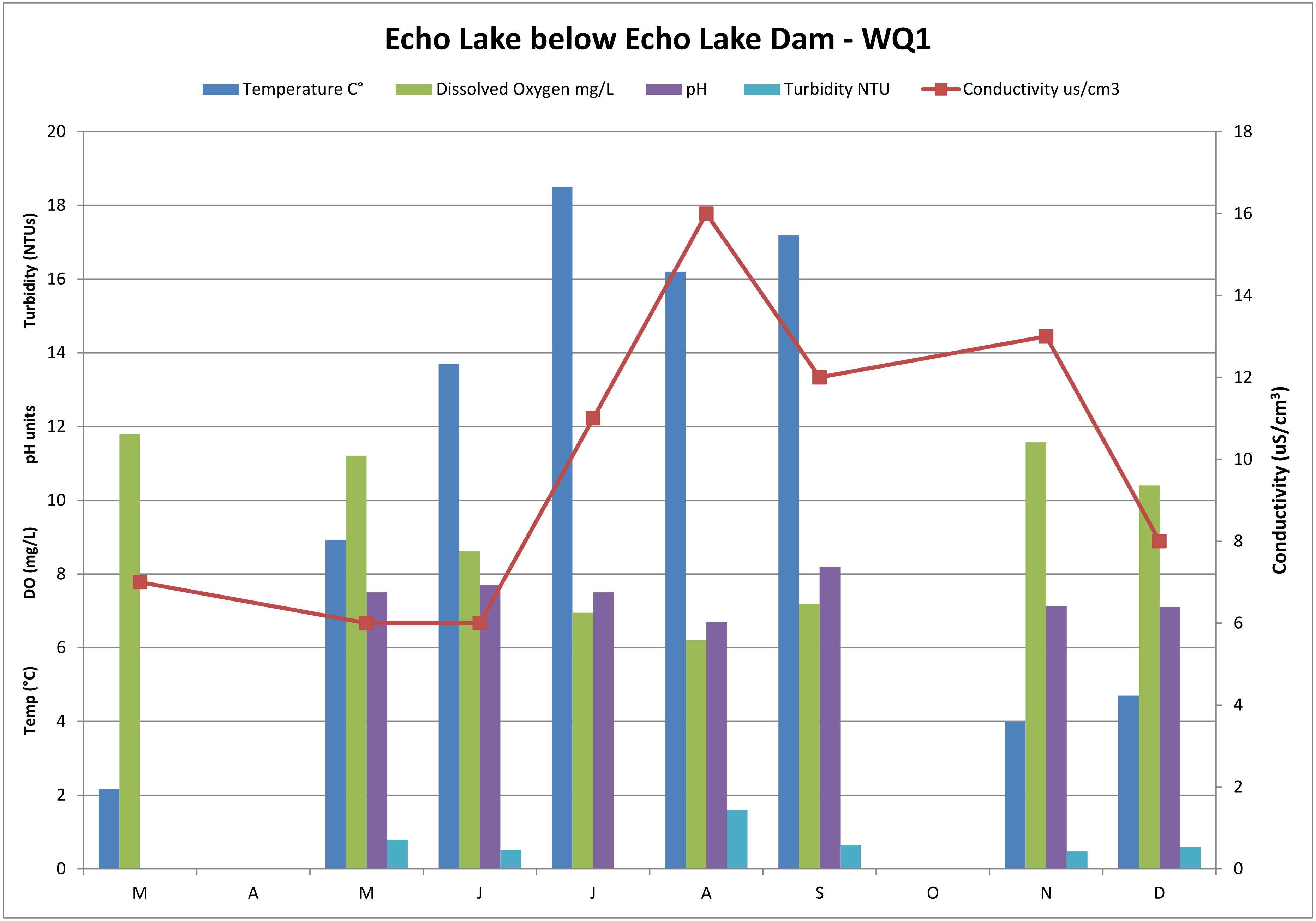

Figure 2. Water temperature, DO, pH, turbidity, and conductivity measured at Echo Lake below Echo Lake Dam - WQ1 in 2014

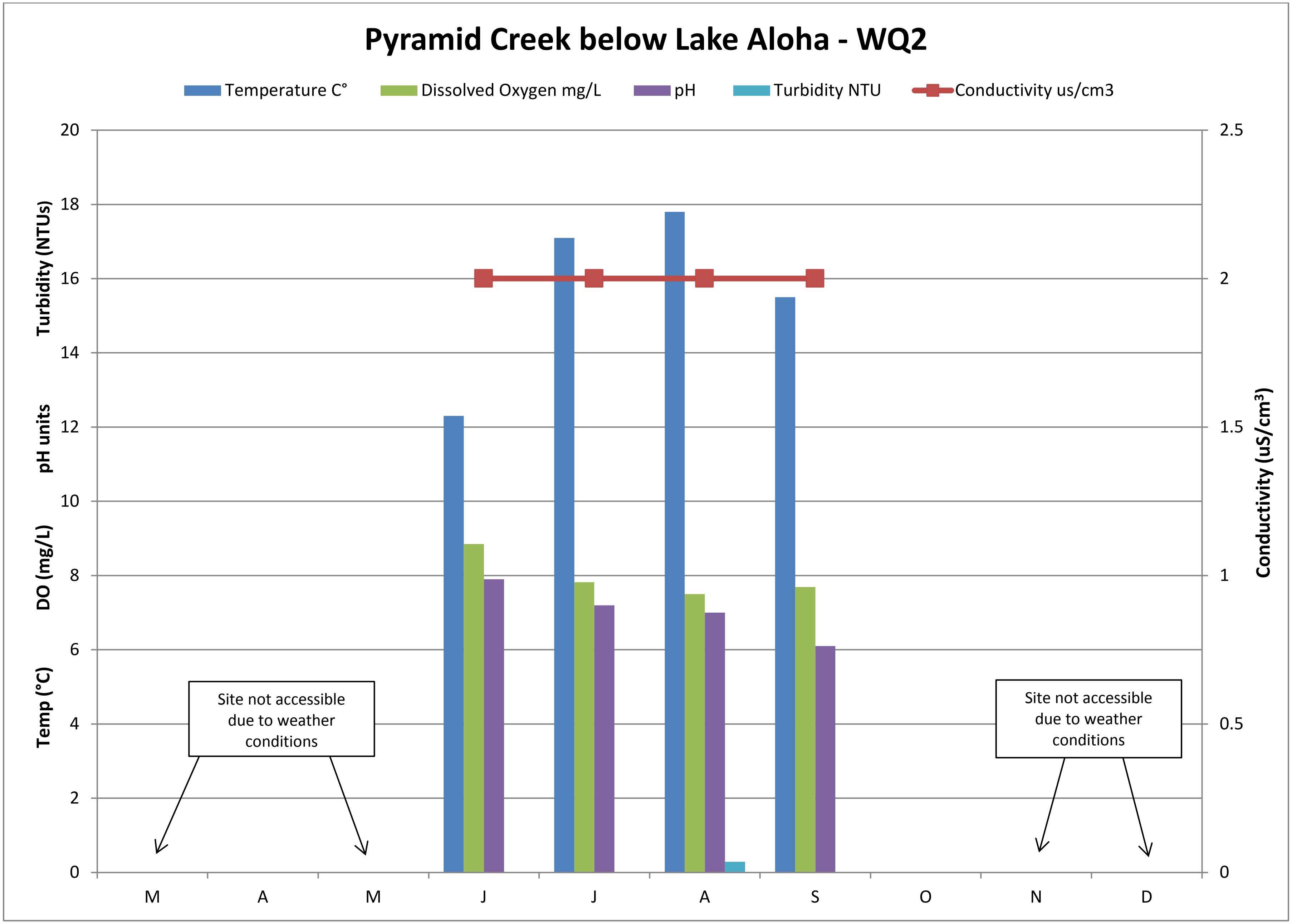

Figure 3. Water temperature, DO, pH, turbidity, and conductivity measured at Pyramid Creek below Lake Aloha - WQ2 in 2014

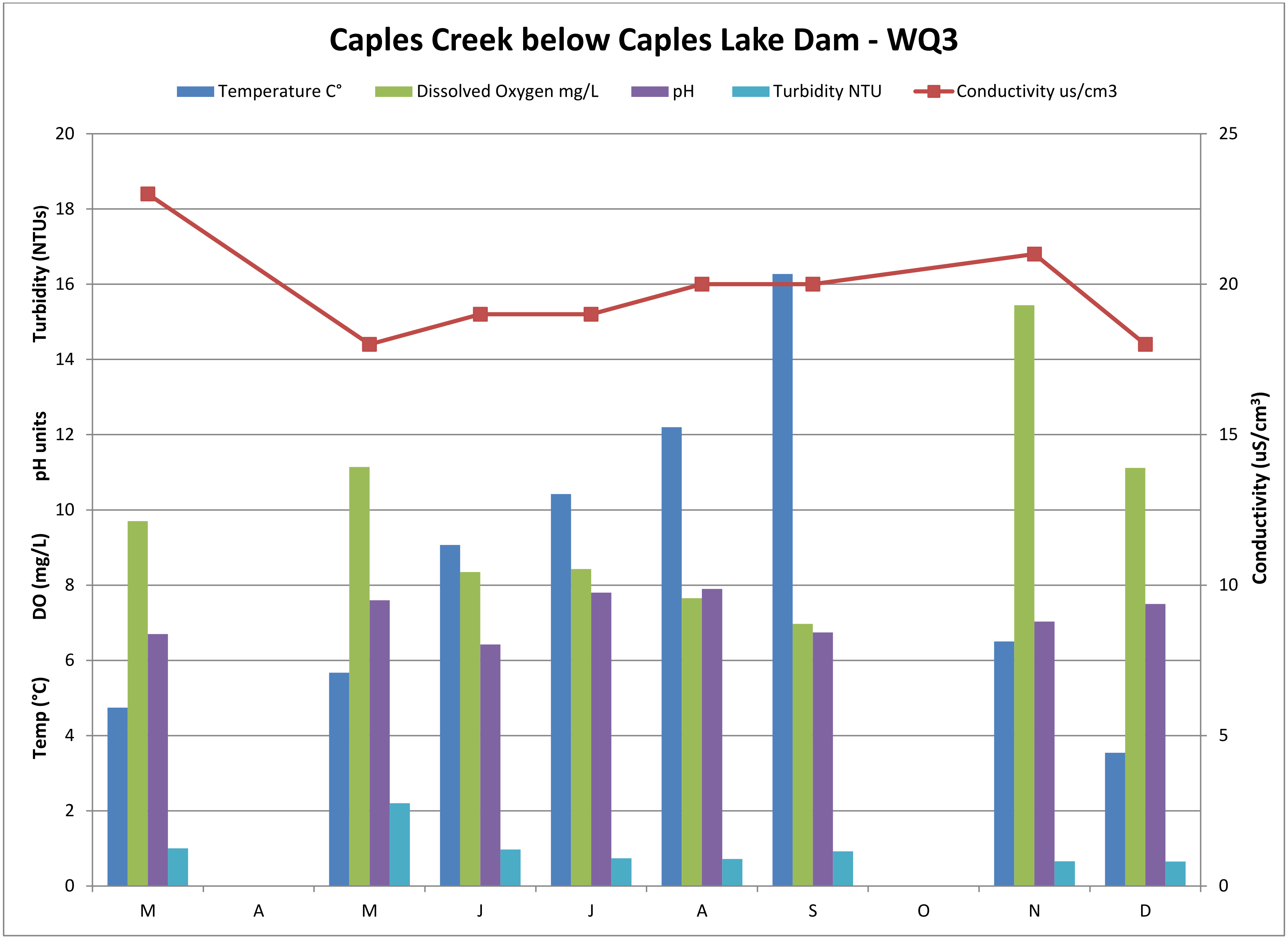

Figure 3. Water temperature, DO, pH, turbidity, and conductivity measured at Caples Creek below Caples Lake Dam – WQ3 in 2014

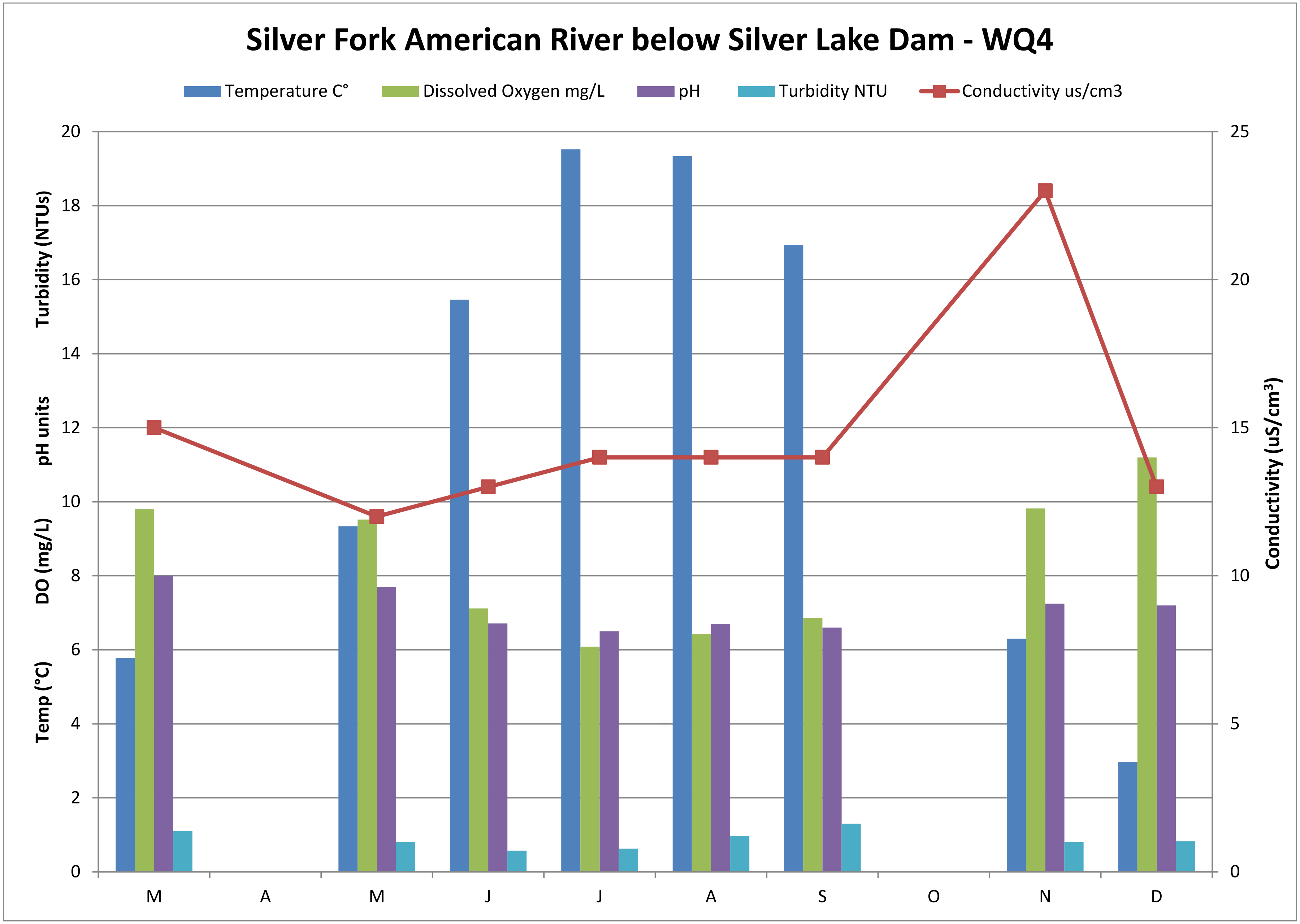

Figure 4. Water temperature, DO, pH, turbidity, and conductivity measured at Silver Fork American River below Silver Lake Dam - WQ4 in 2014

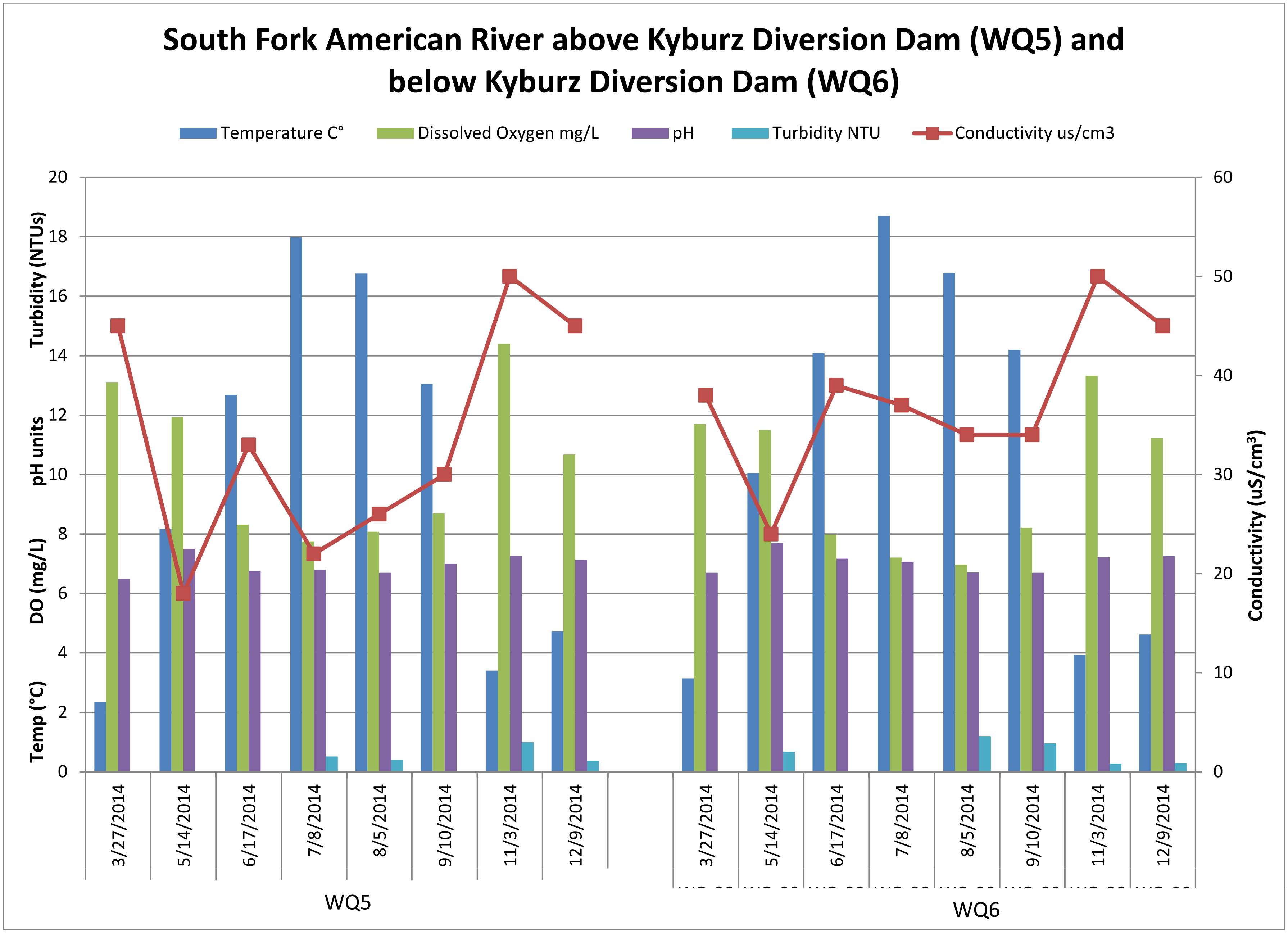

Figure 5. Water temperature, DO, pH, turbidity, and conductivity measured at SFAR above (WQ5) and below (WQ6) Kyburz Diversion Dam in 2014

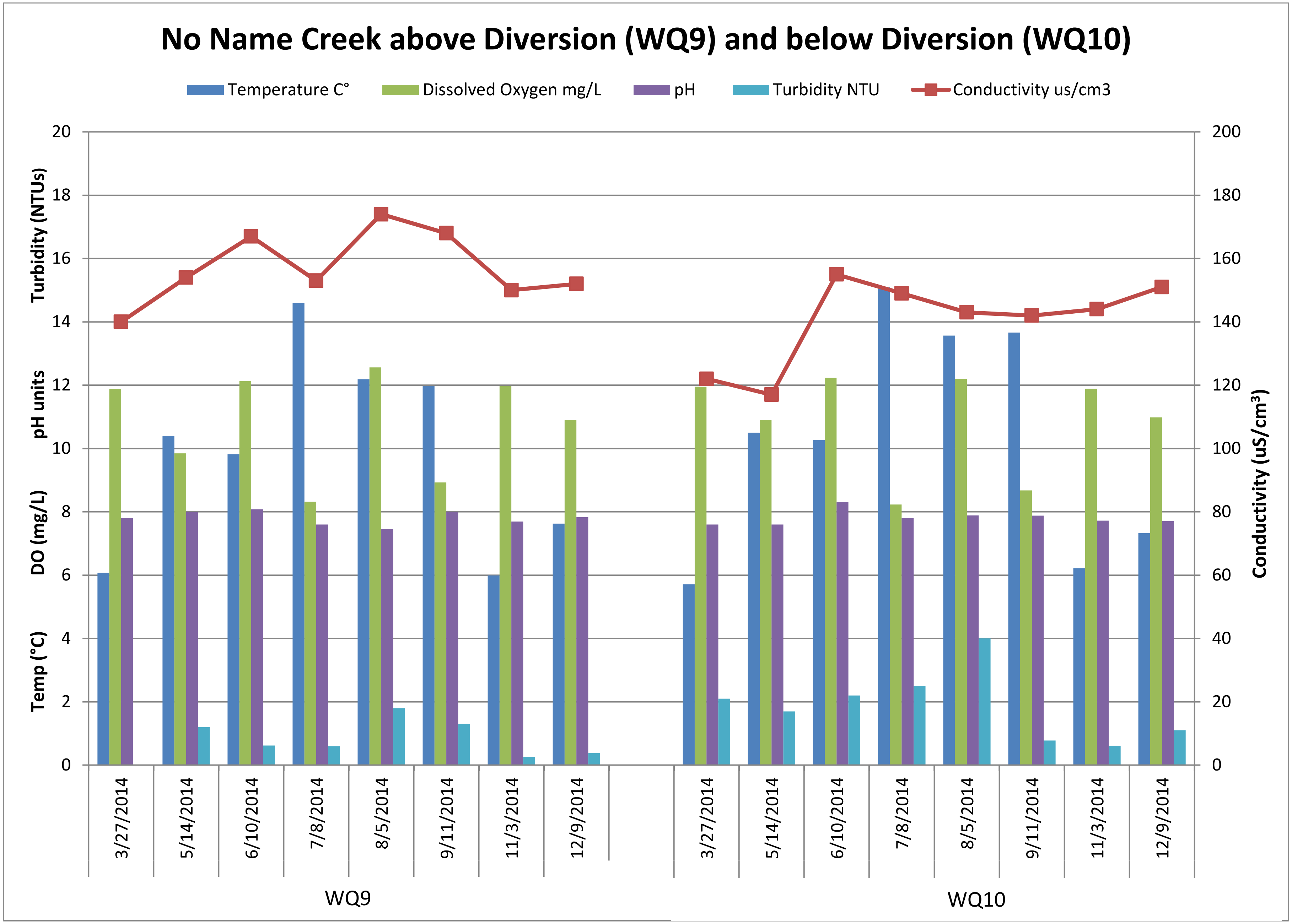

Figure 6. Water temperature, DO, pH, turbidity, and conductivity measured at No Name Creek above (WQ9) and below (WQ10) diversion in 2014

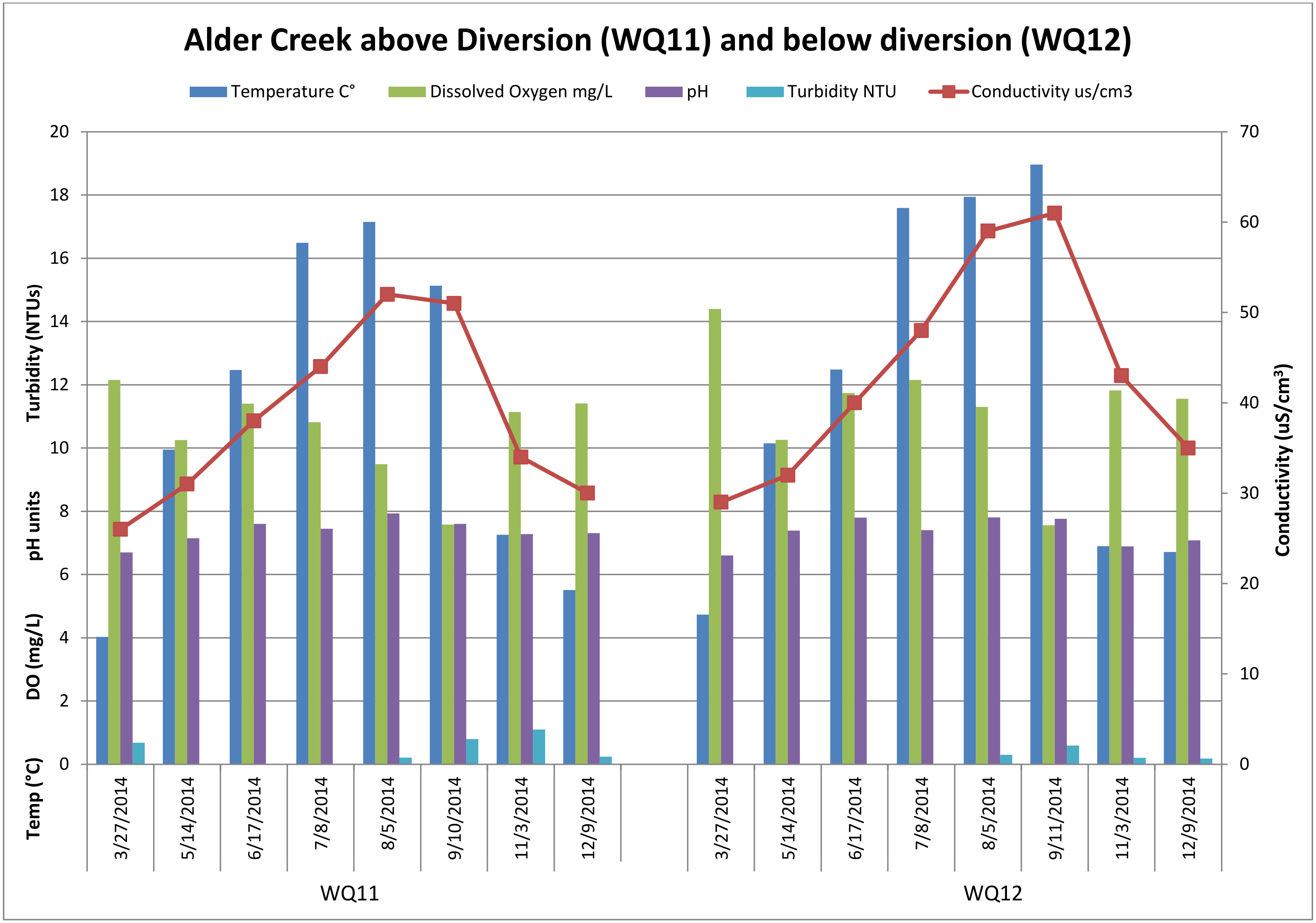

Figure 7. Water temperature, DO, pH, turbidity, and conductivity measured at Alder Creek above (WQ11) and below (WQ12) diversion in 2014

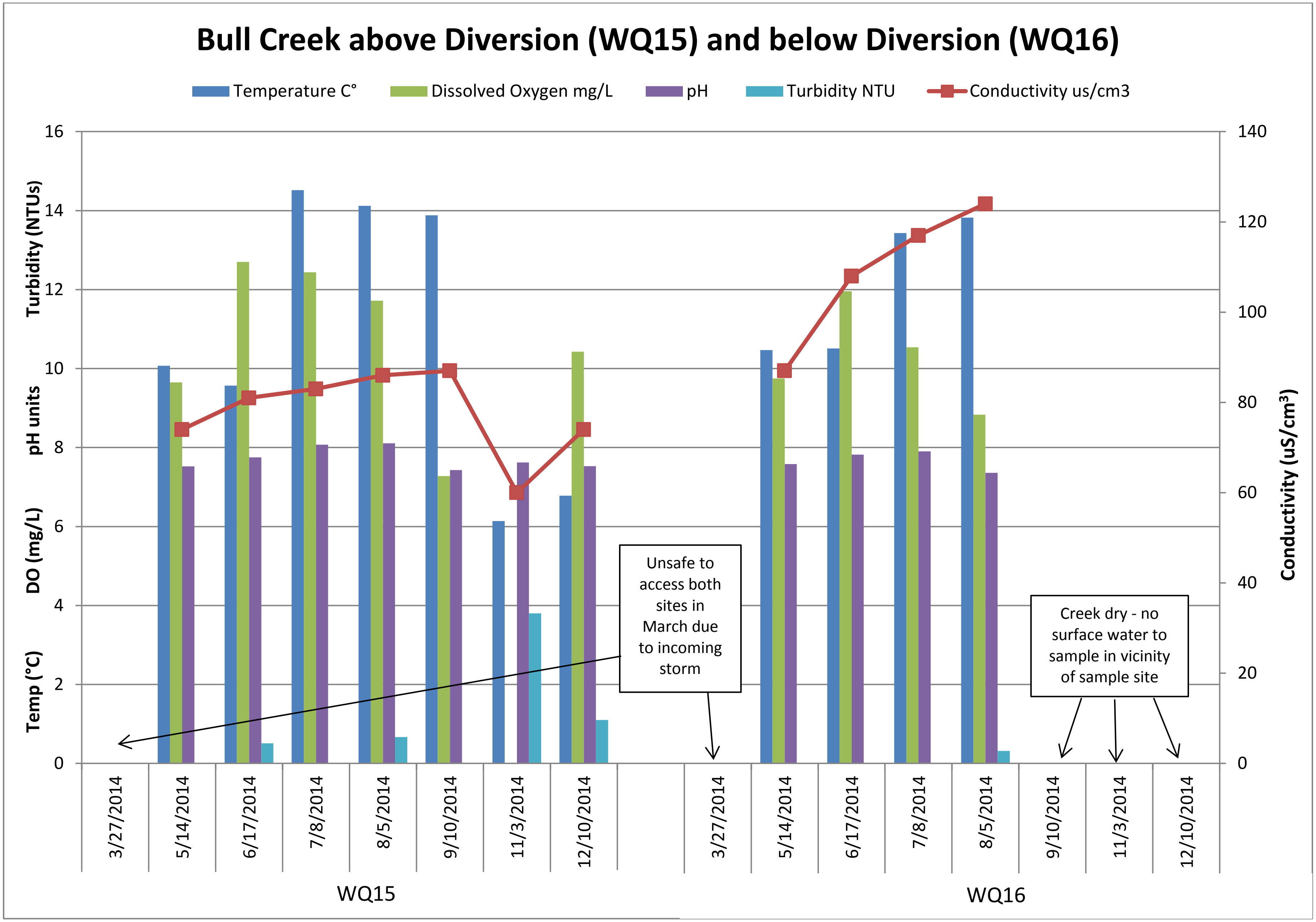

Figure 8. Water temperature, DO, pH, turbidity, and conductivity measured at Bull Creek above (WQ15) and below (WQ16) diversion in 2014

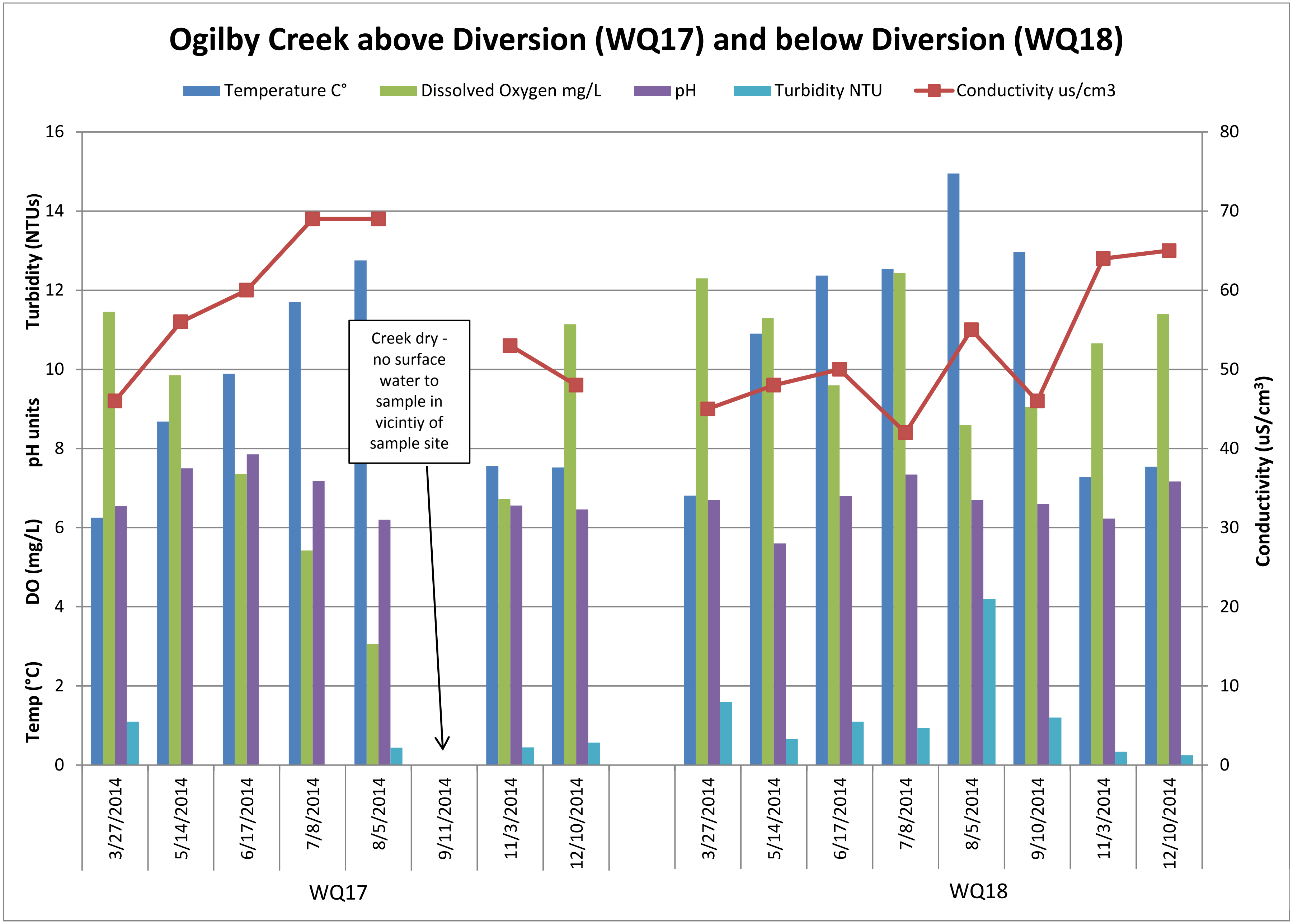

Figure 9. Water temperature, DO, pH, turbidity, and conductivity measured at Ogilby Creek above (WQ17) and below (WQ18) diversion in 2014

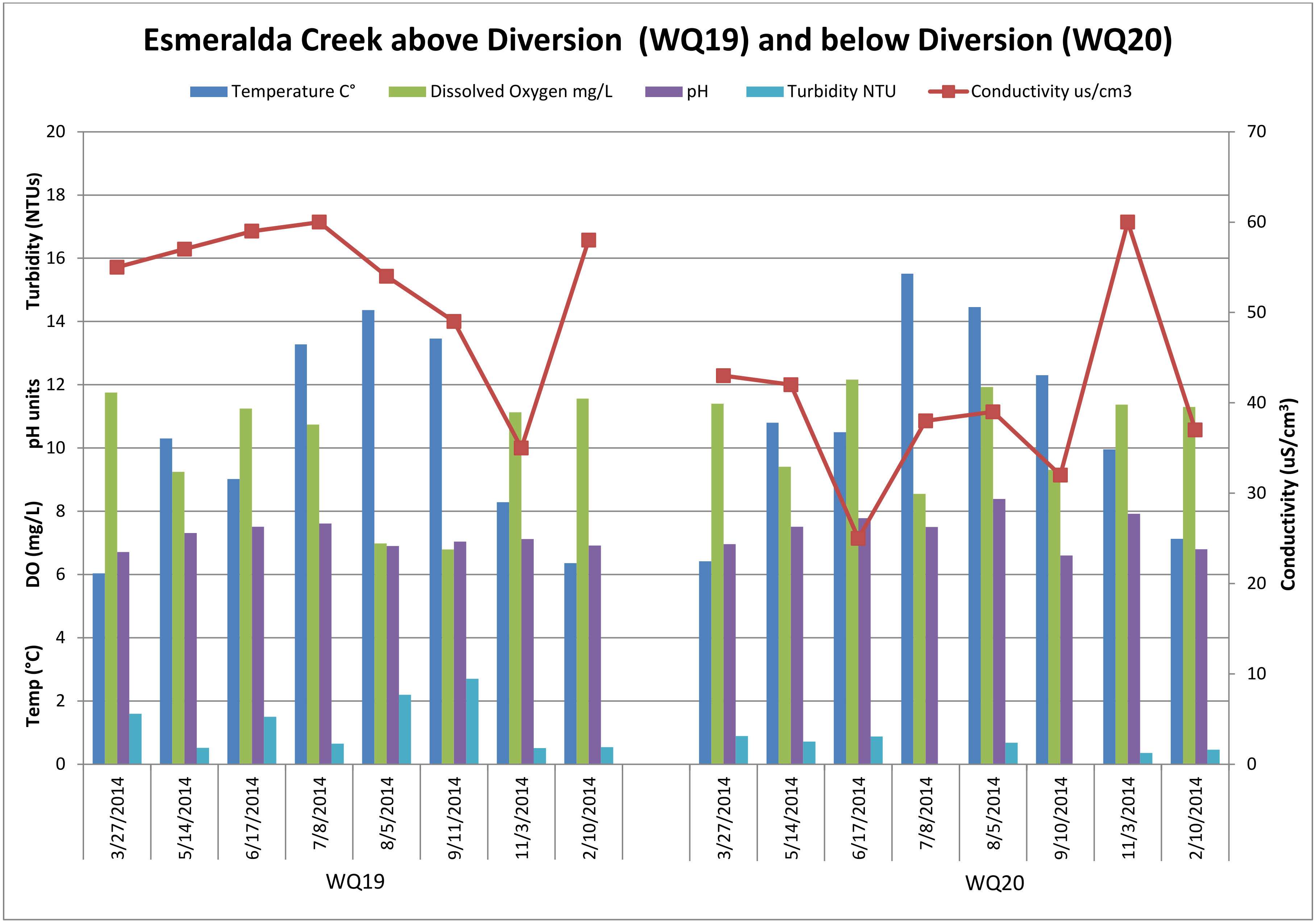

Figure 10. Water temperature, DO, pH, turbidity, and conductivity measured at Esmeralda Creek above (WQ19) and below (WQ20) diversion in 2014

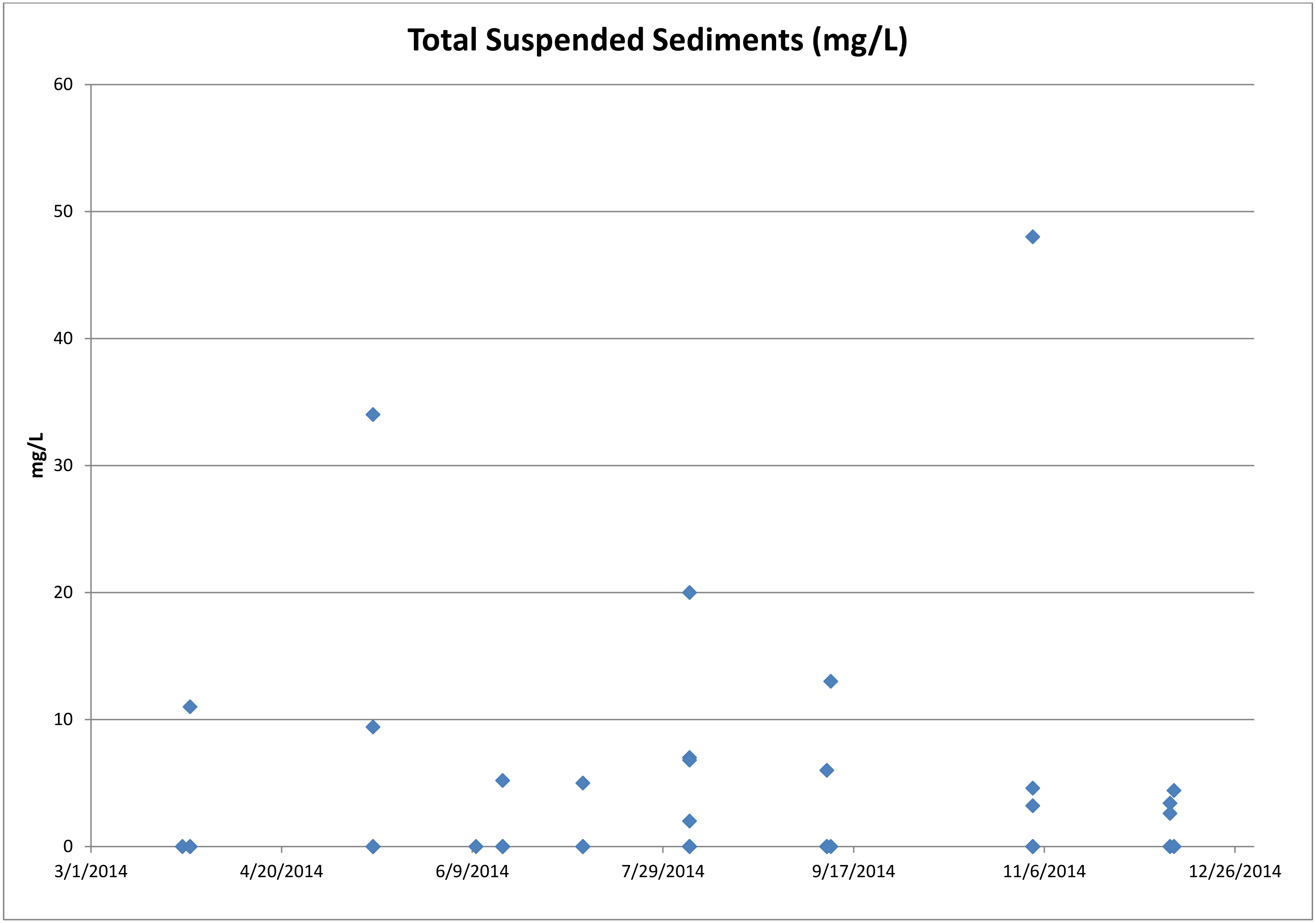

Figure 11. Total Suspended Sediment concentrations (mg/L) measured at all sample sites in 2014

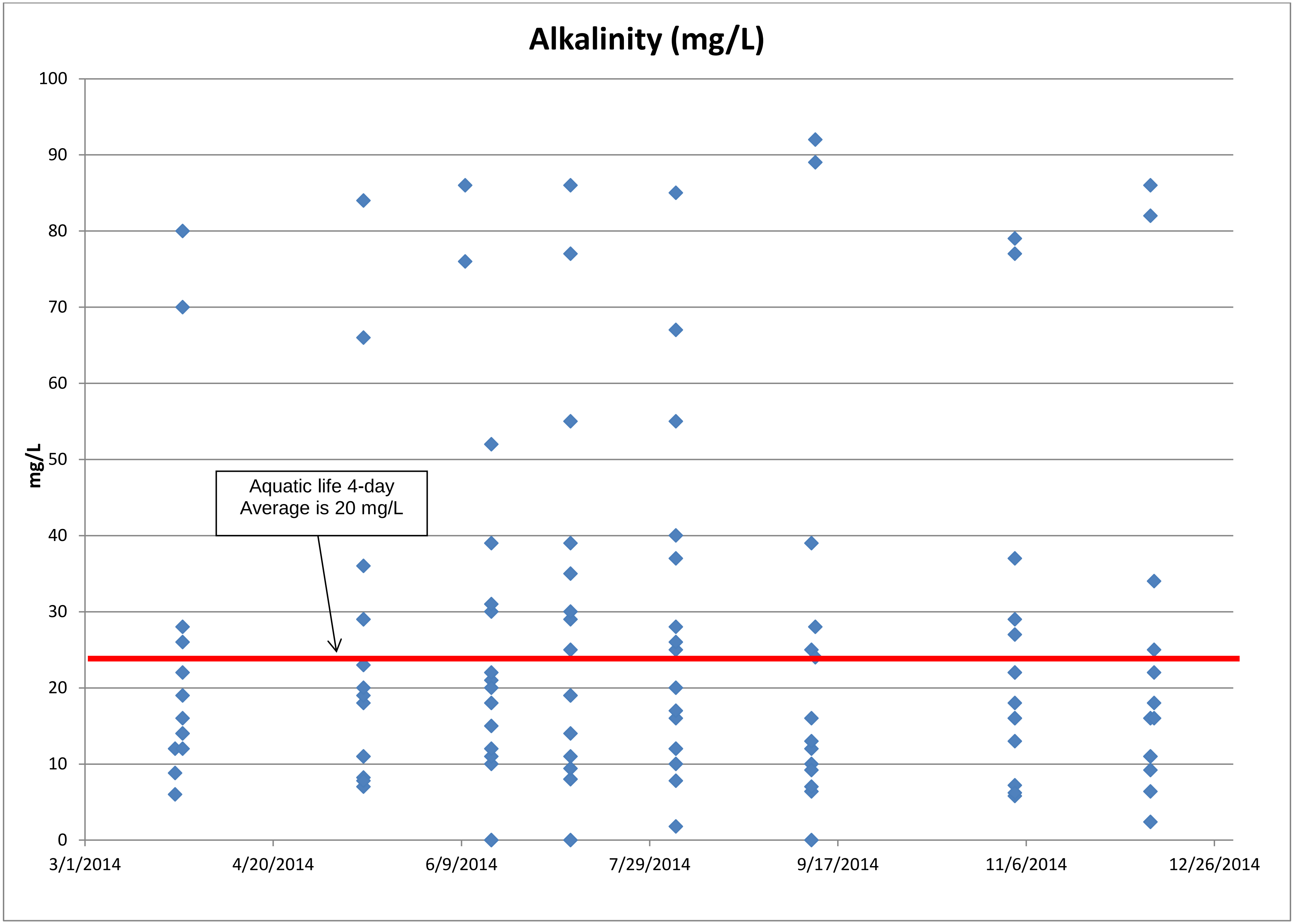

Figure 12. Alkalinity concentrations (mg/L) measured at all sample sites in 2014

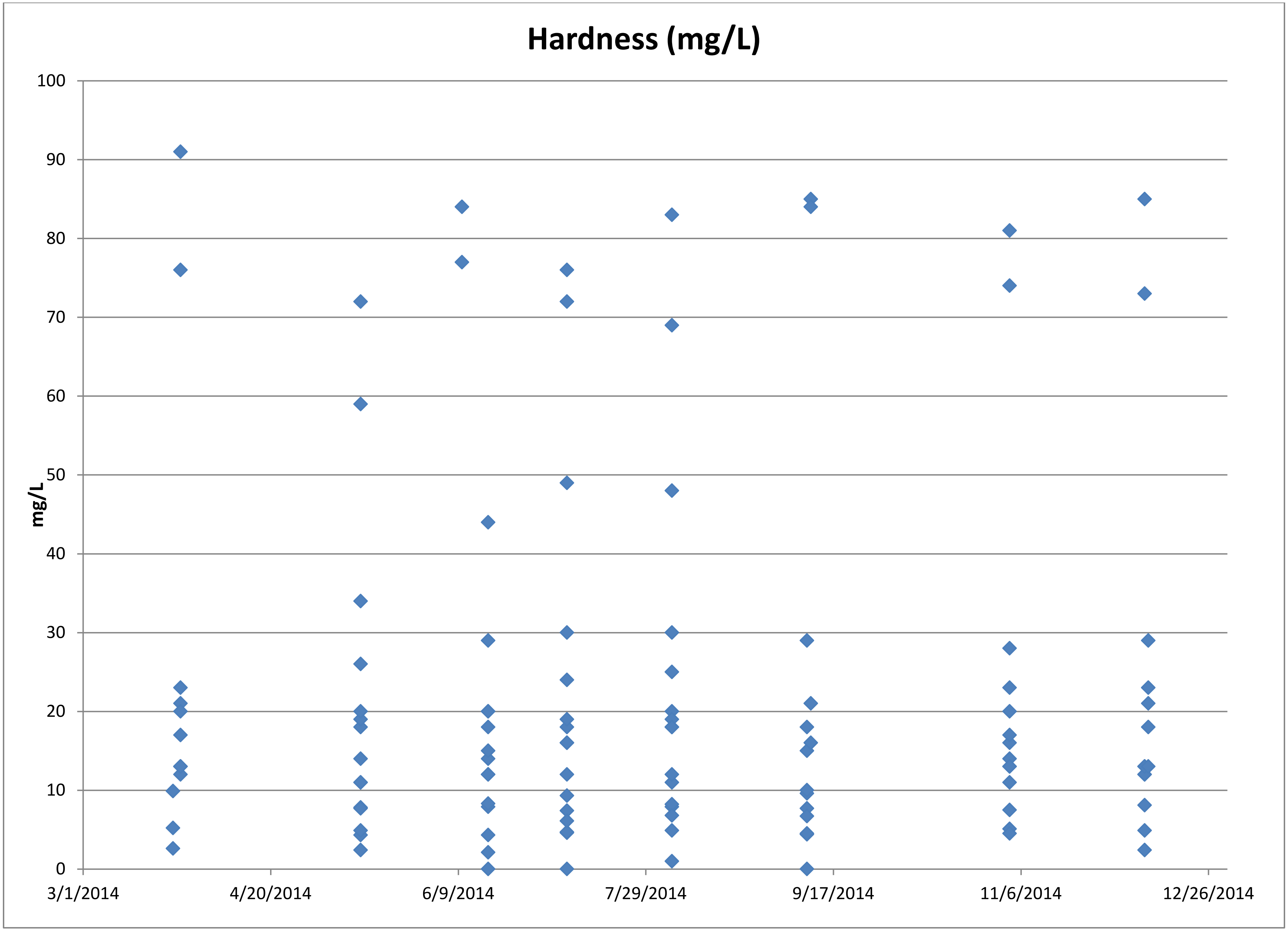

Figure 13. Hardness concentrations (mg/L) measured at all sample sites in 2014

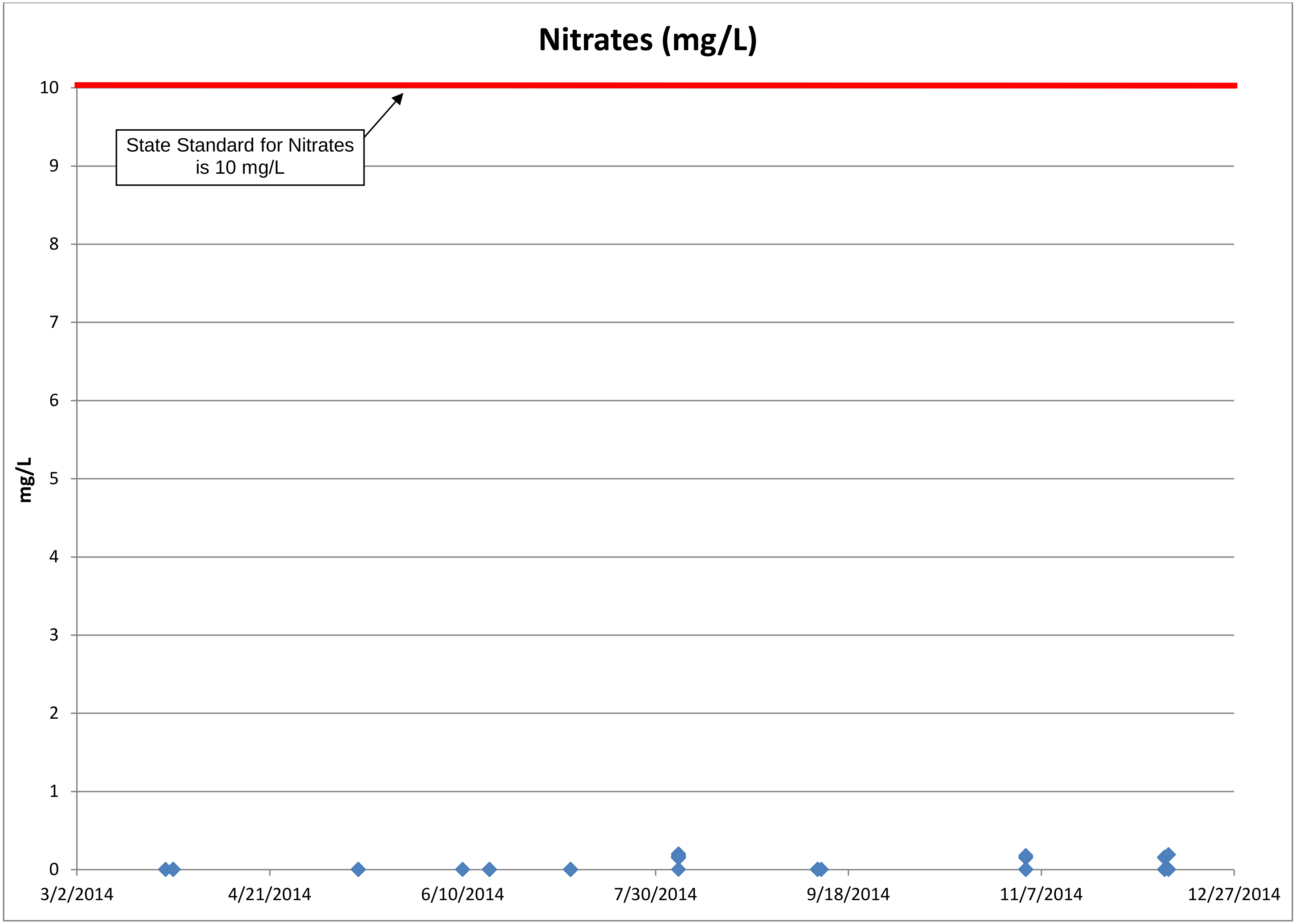

Figure 14. Nitrate concentrations (mg/L) measured at all sample sites in 2014

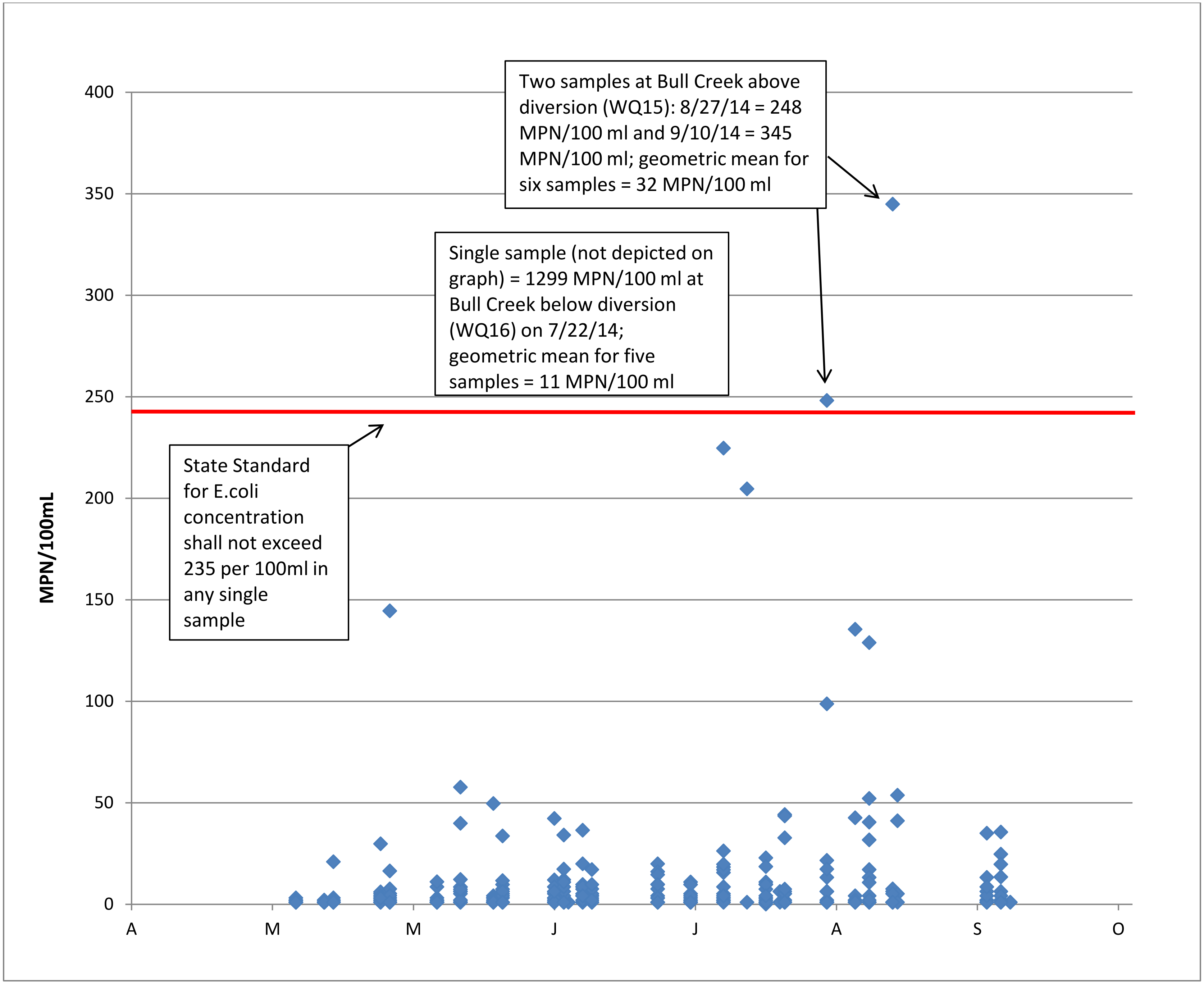

Figure 16. E.coli concentrations (MPN/100 mL) measured at all sample sites in 2014

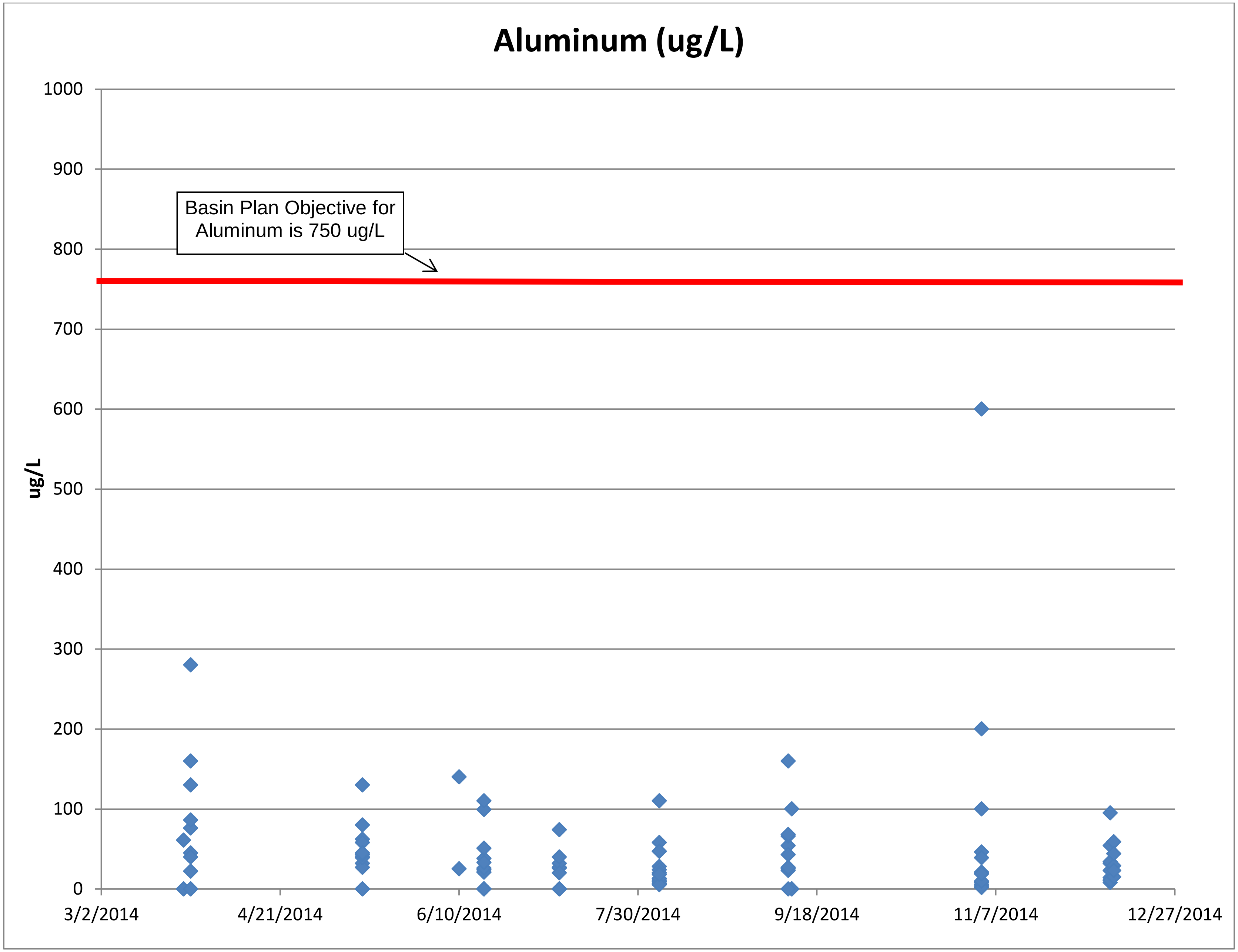

Figure 15. Aluminum concentrations (ug/L) measured at all sample sites in 2014

Table 9. Water Quality Limits for Constituents and Parameters for Copper per California Toxics Rule Criteria to protect freshwater aquatic life

Results based on the following equation:

Criteria Maximum Concentration (1-hour Average, dissolved) = (e{0.9422[ln(hardness)] – 1.700})

Sample ID	Date	Copper ug/L	Copper ug/L	Hardness CaCO3 mg/L	Meet or exceed acute criterion
WQ-01	3/25/2014	0.0	0	2.6	ND
WQ-01	5/14/2014	0.0	0	2.4	ND
WQ-01	6/17/2014	0.0	0	2.1	ND
WQ-01	7/8/2014	0.0	0	4.6	ND
WQ-01	8/5/2014	0.3	0.29	7.9	MEET
WQ-01	9/10/2014	0.0	0	4.4	ND
WQ-01	11/3/2014	0.4	0.41	5.1	MEET
WQ-01	12/9/2014	0.2	0.21	2.4	MEET
WQ-02	6/17/2014	0.0	0	0	ND
WQ-02	7/8/2014	0.0	0	0	ND
WQ-02	8/5/2014	0.2	0.15	1	MEET
WQ-02	9/10/2014	0.0	0	0	ND
WQ-03	3/25/2014	0.0	0	9.9	ND
WQ-03	5/14/2014	0.0	0	7.8	ND
WQ-03	6/17/2014	0.0	0	7.9	ND
WQ-03	7/8/2014	0.0	0	7.4	ND
WQ-03	8/5/2014	0.5	0.45	8.2	MEET
WQ-03	9/10/2014	0.0	0	7.7	ND
WQ-03	11/3/2014	0.3	0.34	7.5	MEET
WQ-03	12/9/2014	0.3	0.26	8.1	MEET
WQ-04	3/25/2014	0.0	0	5.2	ND
WQ-04	5/14/2014	0.0	0	4.3	ND
WQ-04	6/17/2014	0.0	0	4.3	ND
WQ-04	7/8/2014	0.0	0	4.7	ND
WQ-04	8/5/2014	0.3	0.28	4.9	MEET
WQ-04	9/10/2014	0.0	0	4.5	ND
WQ-04	11/3/2014	0.3	0.26	4.5	MEET
WQ-04	12/9/2014	0.2	0.24	4.9	MEET
WQ-05	3/27/2014	0.0	0	12.0	ND
WQ-05	5/14/2014	0.0	0	4.9	ND
WQ-05	6/17/2014	0.0	0	8.3	ND
WQ-05	7/8/2014	0.0	0	6.1	ND
WQ-05	8/5/2014	0.7	0.67	6.8	MEET
WQ-05	9/10/2014	0.0	0	6.7	ND
WQ-05	11/3/2014	0.6	0.63	13.0	MEET
WQ-05	12/9/2014	0.3	0.26	12.0	MEET
WQ-06	3/27/2014	0.0	0	13.0	ND
WQ-06	5/14/2014	0.0	0	7.7	ND
WQ-06	6/17/2014	0.0	0	12	ND
WQ-06	7/8/2014	0.0	0	9.3	ND
WQ-06	8/5/2014	0.4	0.38	11.0	MEET
WQ-06	9/10/2014	0.0	0	9.6	ND
WQ-06	11/3/2014	0.3	0.26	14.0	MEET
WQ-06	12/9/2014	0.3	0.28	12.0	MEET
WQ-09	3/27/2014	0.0	0	91.0	ND
WQ-09	5/14/2014	0.0	0	72.0	ND
WQ-09	6/10/2014	0.0	0	84.0	ND
WQ-09	7/8/2014	0.0	0	72.0	ND
WQ-09	8/5/2014	0.2	0.18	83.0	MEET
WQ-09	9/11/2014	0.0	0	85.0	ND
WQ-09	11/3/2014	0.5	0.5	81.0	MEET
WQ-09	12/9/2014	0.3	0.25	85.0	MEET
WQ-10	3/27/2014	0.0	0	76.0	ND
WQ-10	5/14/2014	0.0	0	59.0	ND

Sample ID	Date	Copper ug/L	Copper ug/L	Hardness CaCO3 mg/L	Meet or exceed acute criterion
WQ-10	7/8/2014	0.0	0	76.0	ND
WQ-10	8/5/2014	0.4	0.37	69.0	MEET
WQ-10	9/11/2014	0.0	0	84.0	ND
WQ-10	11/3/2014	0.6	0.64	74.0	MEET
WQ-10	12/9/2014	0.4	0.39	73.0	MEET
WQ-11	3/27/2014	0.0	0	13.0	ND
WQ-11	5/14/2014	0.0	0	11.0	ND
WQ-11	6/17/2014	0.0	0	14.0	ND
WQ-11	7/8/2014	0.0	0	16.0	ND
WQ-11	8/5/2014	0.1	0.13	18.0	MEET
WQ-11	9/10/2014	0.0	0	18.0	ND
WQ-11	11/3/2014	0.4	0.39	13.0	MEET
WQ-11	12/9/2014	0.2	0.23	13.0	MEET
WQ-12	3/27/2014	0.0	0	13.0	ND
WQ-12	5/14/2014	0.0	0	11.0	ND
WQ-12	6/17/2014	0.0	0	15.0	ND
WQ-12	7/8/2014	0.0	0	18.0	ND
WQ-12	8/5/2014	0.2	0.17	20.0	MEET
WQ-12	9/11/2014	0.0	0	21.0	ND
WQ-12	11/3/2014	0.2	0.18	16.0	MEET
WQ-12	12/9/2014	0.2	0.23	13.0	MEET
WQ-15	5/14/2014	0.0	0	34.0	ND
WQ-15	6/17/2014	0.0	0	29.0	ND
WQ-15	7/8/2014	0.0	0	30.0	ND
WQ-15	8/5/2014	0.2	0.21	30.0	MEET
WQ-15	9/10/2014	0.0	0	29.0	ND
WQ-15	11/3/2014	1.1	1.1	28.0	MEET
WQ-15	12/10/2014	0.3	0.34	29.0	MEET
WQ-16	5/14/2014	0.0	0	26.0	ND
WQ-16	6/17/2014	0.0	0	44.0	ND
WQ-16	7/8/2014	0.0	0	49.0	ND
WQ-16	8/5/2014	0.3	0.28	48.0	MEET
WQ-17	3/27/2014	0	0	21.0	ND
WQ-17	5/14/2014	0	0	18.0	ND
WQ-17	6/17/2014	0	0	20.0	ND
WQ-17	7/8/2014	0	0	24	ND
WQ-17	8/5/2014	0.25	0.25	25.0	MEET
WQ-17	11/3/2014	0.18	0.18	17.0	MEET
WQ-17	12/10/2014	0.32	0.32	18.0	MEET
WQ-18	3/27/2014	0	0	20.0	ND
WQ-18	5/14/2014	0	0	19.0	ND
WQ-18	6/17/2014	0	0	18	ND
WQ-18	7/8/2014	0	0	16.0	ND
WQ-18	8/5/2014	0.6	0.6	19.0	MEET
WQ-18	9/10/2014	0	0	15.0	ND
WQ-18	11/3/2014	0.31	0.31	23.0	MEET
WQ-18	12/10/2014	0.59	0.59	21.0	MEET
WQ-19	3/27/2014	0.0	0	23.0	ND
WQ-19	5/14/2014	0.0	0	20.0	ND
WQ-19	6/17/2014	0.0	0	20.0	ND
WQ-19	7/8/2014	0.0	0	19.0	ND
WQ-19	8/5/2014	0.5	0.49	18.0	MEET

Sample ID	Date	Copper ug/L	Copper ug/L	Hardness CaCO3 mg/L	Meet or exceed acute criterion
WQ-19	11/3/2014	0.6	0.55	20.0	MEET
WQ-19	12/10/2014	0.2	0.21	23.0	MEET
WQ-20	3/27/2014	0.0	0	17.0	ND
WQ-20	5/14/2014	0.0	0	14.0	ND
WQ-20	6/17/2014	0.0	0	12.0	ND
WQ-20	7/8/2014	0.0	0	12.0	ND
WQ-20	8/5/2014	0.2	0.17	12.0	MEET
WQ-20	9/10/2014	0.0	0	10.0	ND
WQ-20	11/3/2014	0.3	0.28	11.0	MEET
WQ-20	12/10/2014	0.3	0.26	13.0	MEET

Table 10. E.coli concentrations (MPN/100 mL) for all sample sites in 2014

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-01	5/6/2014	9:45	1.0
WQ-01	5/12/2014	9:15	1.0
WQ-01	5/14/2014	11:55	1.0
WQ-01	5/24/2014	8:20	1.0
WQ-01	5/26/2014	8:45	1.0
WQ-01	6/5/2014	14:30	1.0
WQ-01	6/10/2014	14:40	1.0
WQ-01	6/17/2014	14:40	1.0
WQ-01	6/19/2014	14:30	1.0
WQ-01	6/30/2014	14:30	1.0
WQ-01	7/2/2014	14:30	1
WQ-01	7/6/2014	14:00	1.0
WQ-01	7/8/2014	14:00	2.0
WQ-01	7/22/2014	13:45	19.9
WQ-01	7/29/2014	14:30	2.0
WQ-01	8/5/2014	14:55	15.6
WQ-01	8/10/2014	16:35	1.0
WQ-01	8/14/2014	14:05	2.0
WQ-01	8/17/2014	17:20	1.0
WQ-01	8/27/2014	14:20	2.0
WQ-01	9/2/2014	14:00	1.0
WQ-01	9/5/2014	14:10	1.0
WQ-01	9/10/2014	14:30	1.0
WQ-01	9/30/2014	8:50	1.0
WQ-01	10/5/2014	17:10	1.0
WQ-01			
WQ-01			

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-02	*	*	*
WQ-02	*	*	*
WQ-02	*	*	*
WQ-02	*	*	*
WQ-02	*	*	*
WQ-02	6/5/2014	11:45	1.0
WQ-02	6/10/2014	11:45	1.0
WQ-02	6/17/2014	11:40	1.0
WQ-02	6/19/2014	11:40	1.0
WQ-02	6/30/2014	#	
WQ-02	7/2/2014	11:40	1.0
WQ-02	7/3/2014	11:10	1.0
WQ-02	7/8/2014	11:05	1.0
WQ-02	7/22/2014	11:20	1.0
WQ-02	7/29/2014	11:30	1.0
WQ-02	8/5/2014	12:00	1.0
WQ-02	8/10/2014	14:25	204.6
WQ-02	8/14/2014	11:20	1.0
WQ-02	8/17/2014	14:50	6.3
WQ-02	8/27/2014	11:50	1.0
WQ-02	9/2/2014	11:45	1.0
WQ-02	9/5/2014	11:45	1.0
WQ-02	9/10/2014	11:40	1.0
WQ-02	9/30/2014	#	
WQ-02	10/5/2014	14:45	1.0
WQ-02			
WQ-02			

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-03	5/6/2014	8:15	1.0
WQ-03	5/12/2014	8:00	1.0
WQ-03	5/14/2014	10:23	1.0
WQ-03	5/24/2014	8:50	1.0
WQ-03	5/26/2014	9:25	1.0
WQ-03	6/5/2014	9:25	1.0
WQ-03	6/10/2014	9:40	1.0
WQ-03	6/17/2014	9:35	1.0
WQ-03	6/19/2014	9:55	1.0
WQ-03	6/30/2014	9:50	1.0
WQ-03	7/2/2014	9:40	2.0
WQ-03	7/6/2014	9:50	1.0
WQ-03	7/8/2014	9:45	1.0
WQ-03	7/22/2014	9:40	1.0
WQ-03	7/29/2014	10:00	1.0
WQ-03	8/5/2014	10:00	18.3
WQ-03	8/14/2014	10:15	1.0
WQ-03	8/18/2014	10:20	1.0
WQ-03	8/27/2014	9:35	1.0
WQ-03	9/2/2014	9:45	1.0
WQ-03	9/5/2014	9:40	1.0
WQ-03	9/10/2014	8:50	1.0
WQ-03	9/30/2014	9:45	2.0
WQ-03	10/3/2014	9:15	1.0

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-04	5/6/2014	8:45	1.0
WQ-04	5/12/2014	8:10	1.0
WQ-04	5/14/2014	9:44	1.0
WQ-04	5/24/2014	9:10	1.0
WQ-04	5/26/2014	9:40	1.0
WQ-04	6/5/2014	9:45	1.0
WQ-04	6/10/2014	10:00	1.0
WQ-04	6/17/2014	10:25	1.0
WQ-04	6/19/2014	10:17	1.0
WQ-04	6/30/2014	10:10	1.0
WQ-04	7/2/2014	10:05	1.0
WQ-04	7/6/2014	10:00	1.0
WQ-04	7/8/2014	10:37	1.0
WQ-04	7/22/2014	9:50	1.0
WQ-04	7/29/2014	10:10	1.0
WQ-04	8/5/2014	10:40	3.1
WQ-04	8/14/2014	10:40	1.0
WQ-04	8/18/2014	10:35	1.0
WQ-04	8/27/2014	9:58	1.0
WQ-04	9/2/2014	10:00	1.0
WQ-04	9/5/2014	10:00	1.0
WQ-04	9/10/2014	9:40	1.0
WQ-04	9/30/2014	10:00	1.0
WQ-04	10/3/2014	10:10	1.0

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-05	5/6/2014	10:10	2.0
WQ-05	5/12/2014	9:50	1.0
WQ-05	5/14/2014	13:10	1.0
WQ-05	5/24/2014	10:00	5.2
WQ-05	5/26/2014	10:30	2.0
WQ-05	6/5/2014	10:40	2.0
WQ-05	6/10/2014	10:50	6.3
WQ-05	6/17/2014	12:15	4.1
WQ-05	6/19/2014	11:15	9.7
WQ-05	6/30/2014	11:00	12.0
WQ-05	7/2/2014	11:03	12.1
WQ-05	7/6/2014	10:50	7.4
WQ-05	7/8/2014	11:40	4.1
WQ-05	7/22/2014	11:00	4.1
WQ-05	7/29/2014	11:00	2.0
WQ-05	8/5/2014	11:55	5.2
WQ-05	8/14/2014	11:20	7.4
WQ-05	8/18/2014	11:30	5.2
WQ-05	8/27/2014	10:50	6.3
WQ-05	9/2/2014	10:50	4.1
WQ-05	9/5/2014	10:51	40.4
WQ-05	9/10/2014	11:00	6.3
WQ-05	9/30/2014	11:00	1.0
WQ-05	10/3/2014	15:25	1.0

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-06	5/6/2014	10:20	1.0
WQ-06	5/12/2014	10:00	2.0
WQ-06	5/14/2014	13:33	2.0
WQ-06	5/24/2014	10:10	1.0
WQ-06	5/26/2014	10:40	3.1
WQ-06	6/5/2014	10:50	2.0
WQ-06	6/10/2014	11:00	8.4
WQ-06	6/17/2014	12:47	3.1
WQ-06	6/19/2014	11:20	3.1
WQ-06	6/30/2014	11:15	8.5
WQ-06	7/2/2014	11:08	10.8
WQ-06	7/6/2014	11:05	8.6
WQ-06	7/8/2014	12:18	4.1
WQ-06	7/22/2014	11:15	16.0
WQ-06	7/29/2014	11:10	5.2
WQ-06	8/5/2014	12:50	16.9
WQ-06	8/14/2014	11:30	10.9
WQ-06	8/18/2014	11:40	6.3
WQ-06	8/27/2014	10:58	1.0
WQ-06	9/2/2014	11:00	2.0
WQ-06	9/5/2014	10:58	17.1
WQ-06	9/10/2014	11:28	7.5
WQ-06	9/30/2014	11:10	2.0
WQ-06	10/3/2014	15:15	6.3

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-09	5/6/2014	11:30	2.0
WQ-09	5/12/2014	10:20	2.0
WQ-09	5/14/2014	14:05	20.9
WQ-09	5/24/2014	10:20	3.0
WQ-09	5/26/2014	10:55	1.0
WQ-09	6/5/2014	11:00	3.1
WQ-09	6/10/2014	11:10	2.0
WQ-09	6/17/2014	13:55	3.1
WQ-09	6/19/2014	11:45	5.1
WQ-09	6/30/2014	11:20	6.1
WQ-09	7/2/2014	13:20	3.1
WQ-09	7/6/2014	11:10	9.7
WQ-09	7/8/2014	12:52	4.1
WQ-09	7/22/2014	11:20	9.8
WQ-09	7/29/2014	11:20	10.9
WQ-09	8/5/2014	9:40	8.6
WQ-09	8/14/2014	11:40	3.1
WQ-09	8/18/2014	11:50	2.0
WQ-09	8/27/2014	11:16	13.2
WQ-09	9/2/2014	11:10	2.0
WQ-09	9/5/2014	11:18	31.7
WQ-09	9/11/2014	14:25	5.2
WQ-09	9/30/2014	11:15	6.3
WQ-09	10/3/2014	14:50	35.5

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-10	5/6/2014	11:40	3.1
WQ-10	5/12/2014	10:15	1.0
WQ-10	5/14/2014	14:05	1.0
WQ-10	5/24/2014	10:30	29.8
WQ-10	5/26/2014	11:05	144.5
WQ-10	6/5/2014	11:10	8.6
WQ-10	6/10/2014	11:20	5.2
WQ-10	6/17/2014	14:05	1.0
WQ-10	6/19/2014	11:50	4.1
WQ-10	6/30/2014	11:30	2.0
WQ-10	7/2/2014	13:10	4.1
WQ-10	7/6/2014	11:20	1.0
WQ-10	7/8/2014	12:40	5.2
WQ-10	7/22/2014	11:30	14.6
WQ-10	7/29/2014	11:30	9.7
WQ-10	8/5/2014	9:20	19.7
WQ-10	8/14/2014	11:50	9.8
WQ-10	8/18/2014	12:00	2.0
WQ-10	8/27/2014	11:05	21.6
WQ-10	9/2/2014	11:20	2.0
WQ-10	9/5/2014	11:10	52.1
WQ-10	9/11/2014	14:03	53.7
WQ-10	9/1/3014	11:20	5.2
WQ-10	10/3/2014	15:04	24.6

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-11	5/6/2014	12:15	1.0
WQ-11	5/12/2014	11:00	1.0
WQ-11	5/14/2014	10:00	3.1
WQ-11	5/24/2014	11:00	2.0
WQ-11	5/26/2014	11:30	2.0
WQ-11	6/5/2014	11:35	1.0
WQ-11	6/10/2014	11:40	6.3
WQ-11	6/17/2014	10:00	1.0
WQ-11	6/19/2014	12:25	33.6
WQ-11	6/30/2014	12:20	5.2
WQ-11	7/2/2014	12:28	6.3
WQ-11	7/6/2014	12:10	4.1
WQ-11	7/8/2014	10:00	3.0
WQ-11	7/22/2014	12:00	7.5
WQ-11	7/29/2014	12:00	3.1
WQ-11	8/5/2014	10:45	2.0
WQ-11	8/14/2014	12:20	3.0
WQ-11	8/18/2014	12:30	5.2
WQ-11	8/27/2014	12:20	98.7
WQ-11	9/2/2014	12:00	1.0
WQ-11	9/5/2014	12:15	4.1
WQ-11	9/10/2014	15:25	1.0
WQ-11	9/30/2014	11:50	1.0
WQ-11	10/3/2014	14:25	2.0
WQ-11			
WQ-11			

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-12	5/6/2014	11:50	1.0
WQ-12	5/12/2014	10:30	1.0
WQ-12	5/14/2014	9:20	2.0
WQ-12	5/24/2014	11:40	4.0
WQ-12	5/26/2014	12:00	5.3
WQ-12	6/5/2014	12:05	1.0
WQ-12	6/10/2014	12:10	8.6
WQ-12	6/17/2014	9:20	1.0
WQ-12	6/19/2014	13:00	7.4
WQ-12	6/30/2014	11:50	1.0
WQ-12	7/2/2014	11:55	17.3
WQ-12	7/6/2014	11:40	19.9
WQ-12	7/8/2014	9:30	5.2
WQ-12	7/22/2014	11:40	3.0
WQ-12	7/29/2014	11:40	1.0
WQ-12	8/5/2014	10:05	2.0
WQ-12	8/14/2014	12:00	9.8
WQ-12	8/18/2014	12:10	44.1
WQ-12	8/27/2014	12:30	1.0
WQ-12	9/2/2014	11:30	1.0
WQ-12	9/5/2014	11:40	1.0
WQ-12	9/11/2014	14:50	1.0
WQ-12	9/30/2014	11:30	4.1
WQ-12	10/3/2014	13:30	4.1
WQ-12			
WQ-12			

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-15	5/6/2014	14:15	1.0
WQ-15	5/12/2014	13:15	1.0
WQ-15	5/14/2014	12:00	2.0
WQ-15	5/24/2014	14:05	6.1
WQ-15	5/26/2014	13:20	1.0
WQ-15	6/5/2014	13:40	1.0
WQ-15	6/10/2014	13:30	39.9
WQ-15	6/17/2014	11:30	1.0
WQ-15	6/19/2014	15:07	1.0
WQ-15	6/30/2014	14:00	1.0
WQ-15	7/2/2014	15:40	1.0
WQ-15	7/6/2014	13:50	2.0
WQ-15	7/8/2014	12:30	1.0
WQ-15	7/22/2014	13:30	1.0
WQ-15	7/29/2014	14:10	1.0
WQ-15	8/5/2014	13:00	2.0
WQ-15	8/14/2014	13:20	22.8
WQ-15	8/18/2014	13:50	1.0
WQ-15	8/27/2014	14:30	248.1
WQ-15	9/2/2014	13:00	42.6
WQ-15	9/5/2014	15:05	13.2
WQ-15	9/10/2014	14:03	344.8
WQ-15	9/30/2014	13:30	13.2
WQ-15	10/3/2014	12:40	19.7

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-16	5/6/2014	10:50	1.0
WQ-16	5/12/2014	11:30	1.0
WQ-16	5/14/2014	13:35	1.0
WQ-16	5/24/2014	12:00	2.0
WQ-16	5/26/2014	12:10	7.5
WQ-16	6/5/2014	12:15	11.0
WQ-16	6/10/2014	12:20	57.6
WQ-16	6/17/2014	13:30	49.6
WQ-16	6/19/2014	13:15	11.6
WQ-16	6/30/2014	12:45	3.1
WQ-16	7/2/2014	11:40	34.1
WQ-16	7/6/2014	13:10	5.2
WQ-16	7/8/2014	11:00	7.5
WQ-16	7/22/2014	12:30	1299.7
WQ-16	7/29/2014	12:30	1.0
WQ-16	8/5/2014	11:30	3.1
WQ-16	8/14/2014	13:50	ND
WQ-16	8/18/2014	14:15	43.5
WQ-16	8/27/2014	***	
WQ-16	9/2/2014	***	
WQ-16	9/5/2014	***	
WQ-16	9/10/2014	***	
WQ-16	9/30/2014	***	
WQ-16	10/3/2014	***	

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-17	5/6/2014	15:00	2.0
WQ-17	5/12/2014	14:15	1.0
WQ-17	5/14/2014	12:45	1.0
WQ-17	5/24/2014	14:10	1.0
WQ-17	5/26/2014	14:00	16.4
WQ-17	6/5/2014	14:20	2.0
WQ-17	6/10/2014	14:10	1.0
WQ-17	6/17/2014	12:30	1.0
WQ-17	6/19/2014	14:14	1.0
WQ-17	6/30/2014	14:50	42.2
WQ-17	7/2/2014	14:47	1.0
WQ-17	7/6/2014	14:50	4.1
WQ-17	7/8/2014	13:00	1.0
WQ-17	7/22/2014	14:20	1.0
WQ-17	7/29/2014	14:50	1.0
WQ-17	8/5/2014	15:00	1.0
WQ-17	8/14/2014	14:30	1.0
WQ-17	8/18/2014	14:30	1.0
WQ-17	8/27/2014	***	
WQ-17	9/2/2014	***	
WQ-17	9/5/2014	***	
WQ-17	9/10/2014	***	
WQ-17	9/30/2014	***	
WQ-17	10/3/2014	***	

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-18	5/6/2014	11:00	1.0
WQ-18	5/12/2014	14:45	1.0
WQ-18	5/14/2014	14:50	1.0
WQ-18	5/24/2014	14:45	3.0
WQ-18	5/26/2014	12:20	1.0
WQ-18	6/5/2014	15:15	1.0
WQ-18	6/10/2014	14:45	2.0
WQ-18	6/17/2014	13:43	2.0
WQ-18	6/19/2014	13:35	6.3
WQ-18	6/30/2014	13:00	3.0
WQ-18	7/2/2014	13:57	8.5
WQ-18	7/6/2014	15:30	8.6
WQ-18	7/8/2014	11:30	9.7
WQ-18	7/22/2014	15:10	9.7
WQ-18	7/29/2014	13:00	4.1
WQ-18	8/5/2014	13:56	26.2
WQ-18	8/14/2014	14:10	9.7
WQ-18	8/18/2014	15:10	32.7
WQ-18	8/27/2014	15:35	6.3
WQ-18	9/2/2014	14:45	1.0
WQ-18	9/5/2014	13:00	2.0
WQ-18	9/10/2014	12:30	5.2
WQ-18	9/30/2014	***	
WQ-18	10/3/2014	***	

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-19	5/6/2014	15:10	2.0
WQ-19	5/12/2014	14:30	1.0
WQ-19	5/14/2014	13:00	1.0
WQ-19	5/24/2014	14:20	4.1
WQ-19	5/26/2014	14:15	4.2
WQ-19	6/5/2014	14:00	1.0
WQ-19	6/10/2014	14:20	7.3
WQ-19	6/17/2014	12:50	1.0
WQ-19	6/19/2014	14:09	1.0
WQ-19	6/30/2014	15:00	1.0
WQ-19	7/2/2014	14:40	1.0
WQ-19	7/6/2014	14:50	4.1
WQ-19	7/8/2014	13:30	2.0
WQ-19	7/22/2014	14:30	3.1
WQ-19	7/29/2014	15:10	1.0
WQ-19	8/5/2014	15:15	224.7
WQ-19	8/14/2014	14:50	18.5
WQ-19	8/18/2014	14:50	7.4
WQ-19	8/27/2014	15:55	17.3
WQ-19	9/2/2014	14:00	135.4
WQ-19	9/5/2014	13:45	128.9
WQ-19	9/11/2014	15:15	41.1
WQ-19	9/30/2014	14:30	35.0
WQ-19	10/3/2014	11:07	13.4

Sample ID	Date	Time	E.Coli MPN/100 mL
WQ-20	5/6/2014	15:30	1.0
WQ-20	5/12/2014	15:00	1.0
WQ-20	5/14/2014	13:20	1.0
WQ-20	5/24/2014	15:00	3.0
WQ-20	5/26/2014	14:25	1.0
WQ-20	6/5/2014	14:30	1.0
WQ-20	6/10/2014	15:15	12.2
WQ-20	6/17/2014	13:10	1.0
WQ-20	6/19/2014	13:48	1.0
WQ-20	6/30/2014	15:30	6.3
WQ-20	7/2/2014	11:32	10.9
WQ-20	7/6/2014	15:00	36.4
WQ-20	7/8/2014	13:37	17.1
WQ-20	7/22/2014	15:30	1.0
WQ-20	7/29/2014	15:30	1.0
WQ-20	8/5/2014	14:30	4.1
WQ-20	8/14/2014	14:20	4.1
WQ-20	8/18/2014	15:20	1.0
WQ-20	8/27/2014	15:51	1.0
WQ-20	9/2/2014	14:15	1.0
WQ-20	9/5/2014	13:52	10.7
WQ-20	9/10/2014	15:40	1.0
WQ-20	9/30/2014	14:40	8.5
WQ-20	10/3/2014	10:17	1.0

* Unsafe to reach location due to weather conditions

*** Creek dry - no surface water to sample in vicintiy of sample site

No data available