

Project Trip Report

Project Name: 2014/2015 Alpine Lakes Drinking Water Quality Monitoring	Date of Trip: December 11, 2014
Project Code: 144282	Submitted By: Steven Clark

Weather: -17° F, 10-15 mph wind

Steven Clark and Jonathan Kirsch arrived at Alpine on Tuesday, December 9, 2014 at 6:20 PM. Upon arrival, Mr. Clark and Mr. Kirsch coordinated with UMIAQ (LCMF) to schedule access to Lake L9312 and Lake L9313 for the planned water quality monitoring event. The Alpine Lakes Drinking Water Quality monitoring was coordinated to coincide with the December 10th Colville River and Nigliq Channel Ice Bridge monitoring event.

At 6:00 AM on December 11, Mr. Clark and Mr. Kirsch attended LCMF's health and safety meeting. Jack Tippleman of LCMF accompanied Mr. Clark and Mr. Kirsch first to the Lake L9312 monitoring site then to the Lake L9313 monitoring site via snow machines, departing Alpine at approximately 9:15 AM.

Ice thickness, total depth, freeboard, temperature, salinity, conductivity, and dissolved oxygen (DO) were collected at predetermined sample locations. Sampling took place at the deepest location in each lake identified from previous monitoring events. Specific conductance (SC) was calculated from observed temperatures and conductivity. Water surface elevations at each sampling location were also surveyed, using local control established by LCMF. Water quality parameters at lakes L9312 and L9313 are discussed below and included in Table 1.

In-situ water temperature, conductivity, and salinity were recorded using an YSI-30 meter. DO was measured using an YSI ProODO meter. All measurements were made from below the ice surface to the lake bottom at a maximum of two-foot intervals. The YSI ProODO meter was calibrated prior to the trip by TTT Environmental. The YSI-30 was calibrated by Baker prior to sampling. The spring Alpine Lakes Drinking Water Quality monitoring event is scheduled for May 2015.

Lake L9312

SC ranged from a minimum of 185 microsiemens per centimeter ($\mu\text{S}/\text{cm}$) at a depth of 11 feet to a maximum of 202 $\mu\text{S}/\text{cm}$ at a depth of 3 feet; average SC was 192 $\mu\text{S}/\text{cm}$.

DO ranged from 46.7 percent (%) at a depth of 11 feet to 108.6% at a depth of 3 feet; average DO was 86.5%. Values of DO greater than 100% may be caused by temperature, solar effect, and the photosynthetic activity of plants in a body of water.

Salinity was constant throughout the water column at 0.1 parts per thousand (ppt).

Lake L9313

SC ranged from a minimum of 315/cm at a depth of 8 feet to a maximum of 324 $\mu\text{S}/\text{cm}$ at a depth of 4 feet; average SC was 319 $\mu\text{S}/\text{cm}$.

DO ranged from 86.6% at a depth of 8 feet to 89.2% at a depth of 6 feet; average DO was 88.2%.

Salinity was constant throughout the water column at 0.1 ppt.

Table 1: Water Quality Parameters at Lakes L9312 and L9313

Alpine Lakes Drinking Water Quality
2014/2015 Monitoring Program



Sample Date: December 11, 2014

Location Time	Water Surface Elevation (ft-BPMSL)	Water Depth (ft)	Ice Thickness (ft)	Snow Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)
Lake L9312 N70°19'52.2" W150°56'59.9" 9:35 AM.	7.75	11.8	2.4	0.1	0.2	1	-	-	-	-	-	-
						2	-	-	-	-	-	-
						3	0.2	103.8	202	15.8	108.6	0.1
						5	0.9	104.0	197	15.2	106.8	0.1
						7	1.9	103.6	189	13.9	100.4	0.1
						9	2.0	102.3	186	9.7	70.0	0.1
						11	2.2	102.1	185	6.4	46.7	0.1
						12	-	-	-	-	-	-
Lake L9313 N70°20'28.1" W150°56'31.5" 10:45 AM	6.01	9.7	2.7	0.1	0.3	1	-	-	-	-	-	-
						2	-	-	-	-	-	-
						3	-	-	-	-	-	-
						4	0.9	171.0	324	12.6	88.7	0.1
						5	-	-	-	-	-	-
						6	1.6	172.7	319	12.5	89.2	0.1
						7	-	-	-	-	-	-
						8	2.2	174.3	315	11.9	86.6	0.1
						9	-	-	-	-	-	-
						10	-	-	-	-	-	-
						11	-	-	-	-	-	-
						12	-	-	-	-	-	-
						13	-	-	-	-	-	-
						14	-	-	-	-	-	-

- Notes:
- (1) All sample location coordinates referenced to NAD83 datum.
 - (2) Time shown indicates the start of the measurement.
 - (3) Elevation of water surface in sample hole correlate to British Petroleum Mean Sea Level
 - (4) Water depth is the distance from the water surface in the sample hole to the bottom of the lake.
 - (5) Freeboard is the distance from the top of ice to the water surface, negative indicates a water level above ice.
 - (6) Sample depth is measured from the water surface.
 - (7) Temperature, salinity, and conductivity were measured using a YSI30 meter.
 - (8) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data.
 - (9) Dissolved oxygen was measured using a YSI ProODO meter.
 - (10) Temperature measurements have an accuracy of +/- 0.2°C