

# **Real Time Water Quality Deployment Report**

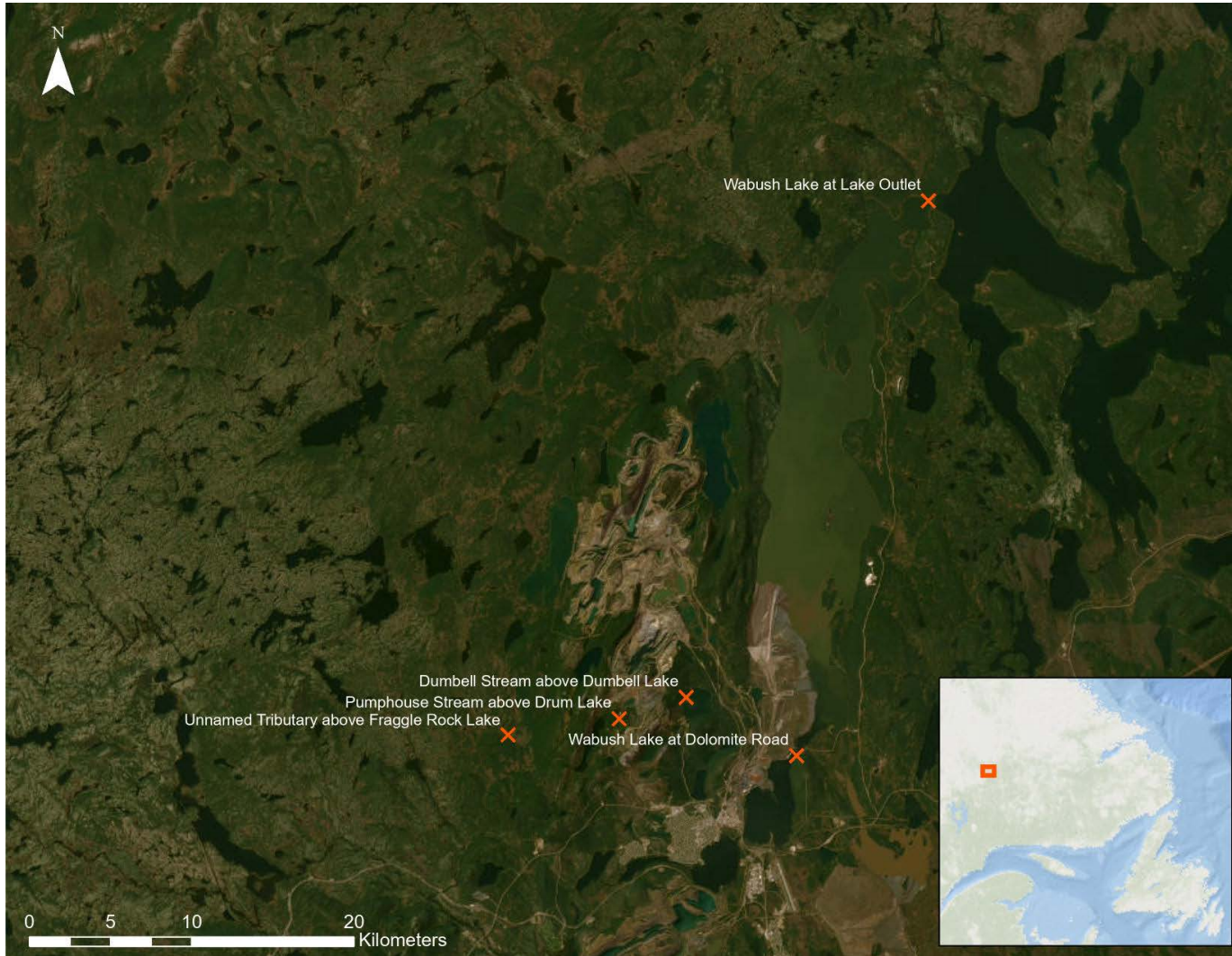
## **Iron Ore Company of Canada - Labrador West Network**

2025-06-04 to 2025-07-31



Government of Newfoundland & Labrador  
Department of Environment, Conservation & Climate Change  
Water Resources Management Division

# IOC - Labrador West Network



- The Water Resources Management Division, in partnership with the Iron Ore Company of Canada (IOC) and Environment and Climate Change Canada (ECCC), maintain a network of real-time water quality (RTWQ) and water quantity stations in Labrador West.
- For simplicity in this report, the stations *Wabush Lake at Dolomite Road* and *Wabush Lake at Lake Outlet* are hereafter referred to as **Dolomite Road** and **Julienne Narrows**, respectively. *Dumbell Stream above Dumbell Lake* is hereafter referred to as **Dumbell Stream**, *Pumphouse Stream above Drum Lake* as **Pumphouse Stream**, and *Unnamed Tributary above Fraggles Rock Lake* as **Fraggles Rock**.
- The stations on Wabush Lake are located upstream (Dolomite Road) and downstream (Julienne Narrows) of the IOC tailings disposal area.
- Water Resources Management Division staff monitor the real-time graphs regularly. They will inform IOC of any significant water quality events by email notification and by monthly deployment reports.

Station Name	Station Number	Latitude	Longitude	Deployment Date	Removal Date
Dolomite Road	NF03OA0019	52.97	-66.86	Jun 4	Jul 30
Dumbell Stream	NF03OA0023	52.99	-66.92	Jun 5	Jul 31
Fraggles Rock	NF03OA0025	52.97	-67.02	Jun 4	Jul 30
Julienne Narrows	NF03OA0017	53.15	-66.79	Jun 4	Jul 30
Pumphouse Stream	NF03OA0024	52.98	-66.96	Jun 5	Jul 31

# Quality Assurance and Quality Control Procedures

As part of the Quality Assurance and Quality Control protocol (QA/QC), an assessment of the reliability of data recorded by an instrument is made at the beginning and end of the deployment period. The procedure is based on the approach used by the United States Geological Survey. With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion adhere to this stringent QA/QC protocol. Corrected data can be obtained upon request.

Parameter	Excellent	Good	Fair	Marginal	Poor
pH	$\leq \pm 0.2$ units	$\leq \pm 0.21 - 0.5$ units	$\leq \pm 0.51 - 0.8$ units	$\leq \pm 0.81 - 1$ units	$> \pm 1$ units
Water Temperature	$\leq \pm 0.2^\circ\text{C}$	$\leq \pm 0.21 - 0.5^\circ\text{C}$	$\leq \pm 0.51 - 0.8^\circ\text{C}$	$\leq \pm 0.81 - 1^\circ\text{C}$	$> \pm 1^\circ\text{C}$
Dissolved oxygen	$\leq \pm 0.3$ mg/L	$\leq \pm 0.31 - 0.5$ mg/L	$\leq \pm 0.51 - 0.8$ mg/L	$\leq \pm 0.81 - 1$ mg/L	$> \pm 1$ mg/L
Turbidity	$\leq \pm 2$ turbidity units or $\leq \pm 5\%$ , whichever is greater	$\leq \pm 2.1-5$ turbidity units or $\leq \pm 5.1-10\%$ , whichever is greater	$\leq \pm 5.1-8$ turbidity units or $\leq \pm 10.1-15\%$ , whichever is greater	$\leq \pm 8.1-10$ turbidity units or $\leq \pm 15.1-20\%$ , whichever is greater	$> \pm 10$ turbidity units or $> \pm 20\%$ , whichever is greater
Specific Conductance	$\leq \pm 3$ $\mu\text{S}/\text{cm}$ or $\leq \pm 3\%$ , whichever is greater	$\leq \pm 3.1-10$ $\mu\text{S}/\text{cm}$ or $\leq \pm 3.1-10\%$ , whichever is greater	$\leq \pm 10 - 15$ $\mu\text{S}/\text{cm}$ or $\leq \pm 10.1-15\%$ , whichever is greater	$\leq \pm 15.1 - 20$ $\mu\text{S}/\text{cm}$ or $\leq \pm 15.1-20\%$ , whichever is greater	$> \pm 20$ $\mu\text{S}/\text{cm}$ or $> \pm 20\%$ , whichever is greater

At deployment and removal, a QA/QC Sonde is temporarily deployed adjacent to the Field Sonde. Values for temperature, pH, conductivity, dissolved oxygen and turbidity are compared between the two instruments. Based on the degree of difference between parameters recorded by the Field Sonde and QA/QC Sonde at deployment and at removal, a qualitative statement is made on the data quality. There are a few circumstances which may cause QA/QC rankings below excellent, including the placement of the QA/QC sonde in relation to the field sonde, the amount of time each sonde was given to stabilize before readings were recorded, and deteriorating performance of one of the sensors.

The temperature sensor on any sonde is the most important. All other parameters can be divided into subgroups of: temperature dependent, temperature compensated, and temperature independent. Due to the temperature sensor's location on the sonde, the entire sonde must be at a constant temperature before the temperature sensor will stabilize. The values may take some time to climb to the appropriate reading; if a reading is taken too soon it may not accurately portray the water body.

Additionally, grab samples are collected during deployment to compare pH, specific conductivity and turbidity values between the field instrument and grab samples. Variability in results may be attributed to differences in the sampling location or depth relative to the sonde's deployment site or insufficient equilibration time for the sonde when initial field data was collected.

## Deployment Notes

Due to a power issue, data was not available during the later portion of the deployment period for Dumbell Stream, Pumphouse Stream and Fraggie Rock.

## Hydrometric Data

Water Survey Canada operates the hydrometric components of most of these stations. Due to differences in protocols, Water Survey Canada hydrometric data is quality controlled on a less frequent basis than water quality data. The hydrometric data shown in this report is provisional and has not undergone quality control checks.

# QAQC

## Deployment Rankings



During deployment, most parameters across all stations ranked as *good* or *excellent*. Temperature ranked *fair* at Dolomite Road and Julienne Narrows.

Grab sample rankings collected during deployment ranked as *good* or *excellent* for most parameters, indicating minimal differences between initial field sonde measurements and grab sample measurements. Grab sample ranking for turbidity at Dolomite Road ranked *fair* and conductivity ranked *poor*.

Upon removal, the majority of parameters at all stations ranked *good* or *excellent*. Temperature ranked *fair* at Julienne Narrows.

There are a few circumstances which may cause less than ideal QA/QC rankings to be obtained. These include: the placement of the QA/QC sonde in relation to the field sonde; the amount of time each sonde was given to stabilize before readings were recorded; and deteriorating performance of one or more of the sensors.

### QAQC Rankings

Station	Parameter	Deployment Rank	Grab Sample Deployment	Removal Rank
Dolomite Road	Dissolved Oxygen (mg/l)	Excellent	- -	Excellent
Dolomite Road	pH	Good	Good	Good
Dolomite Road	Specific Conductivity (µS/cm)	Excellent	Poor	Excellent
Dolomite Road	Temperature (°C)	Fair	- -	Excellent
Dolomite Road	Turbidity (NTU)	Excellent	Fair	Excellent
Dumbell Stream	Dissolved Oxygen (mg/l)	Excellent	- -	N/A
Dumbell Stream	pH	Excellent	Excellent	N/A
Dumbell Stream	Specific Conductivity (µS/cm)	Excellent	Excellent	N/A
Dumbell Stream	Temperature (°C)	Excellent	- -	N/A
Dumbell Stream	Turbidity (NTU)	Excellent	N/A	N/A
Fraggle Rock	Dissolved Oxygen (mg/l)	Excellent	- -	Excellent
Fraggle Rock	pH	Excellent	Excellent	Good
Fraggle Rock	Specific Conductivity (µS/cm)	Excellent	Excellent	Excellent
Fraggle Rock	Temperature (°C)	Excellent	- -	Excellent
Fraggle Rock	Turbidity (NTU)	Excellent	Excellent	Excellent
Julienne Narrows	Dissolved Oxygen (mg/l)	Excellent	- -	Excellent
Julienne Narrows	pH	Good	Excellent	Excellent
Julienne Narrows	Specific Conductivity (µS/cm)	Good	Excellent	Good
Julienne Narrows	Temperature (°C)	Fair	- -	Fair
Julienne Narrows	Turbidity (NTU)	Excellent	Excellent	Excellent
Pumphouse Stream	Dissolved Oxygen (mg/l)	Good	- -	N/A
Pumphouse Stream	pH	Excellent	Good	N/A
Pumphouse Stream	Specific Conductivity (µS/cm)	Excellent	Excellent	N/A
Pumphouse Stream	Temperature (°C)	Excellent	- -	N/A
Pumphouse Stream	Turbidity (NTU)	Excellent	Good	N/A

# Water Temperature

Deployment Period Statistics (°C)					
Name	Average	Median	Minimum	Maximum	
Dolomite Road	14.72	15.40	9.00	21.30	
Dumbell Stream	4.37	4.33	2.65	6.77	
Fraggle Rock	12.48	12.43	5.95	19.83	
Julienne Narrows	11.66	12.50	4.90	21.50	
Pumphouse Stream	9.23	8.80	3.90	18.00	

Water temperatures across the network remained steady, with a slight increasing trend throughout the deployment period at Julienne Narrows, Dolomite Road and Fraggle Rock. Increases in water temperature correspond with increasing air temperature into the summer.

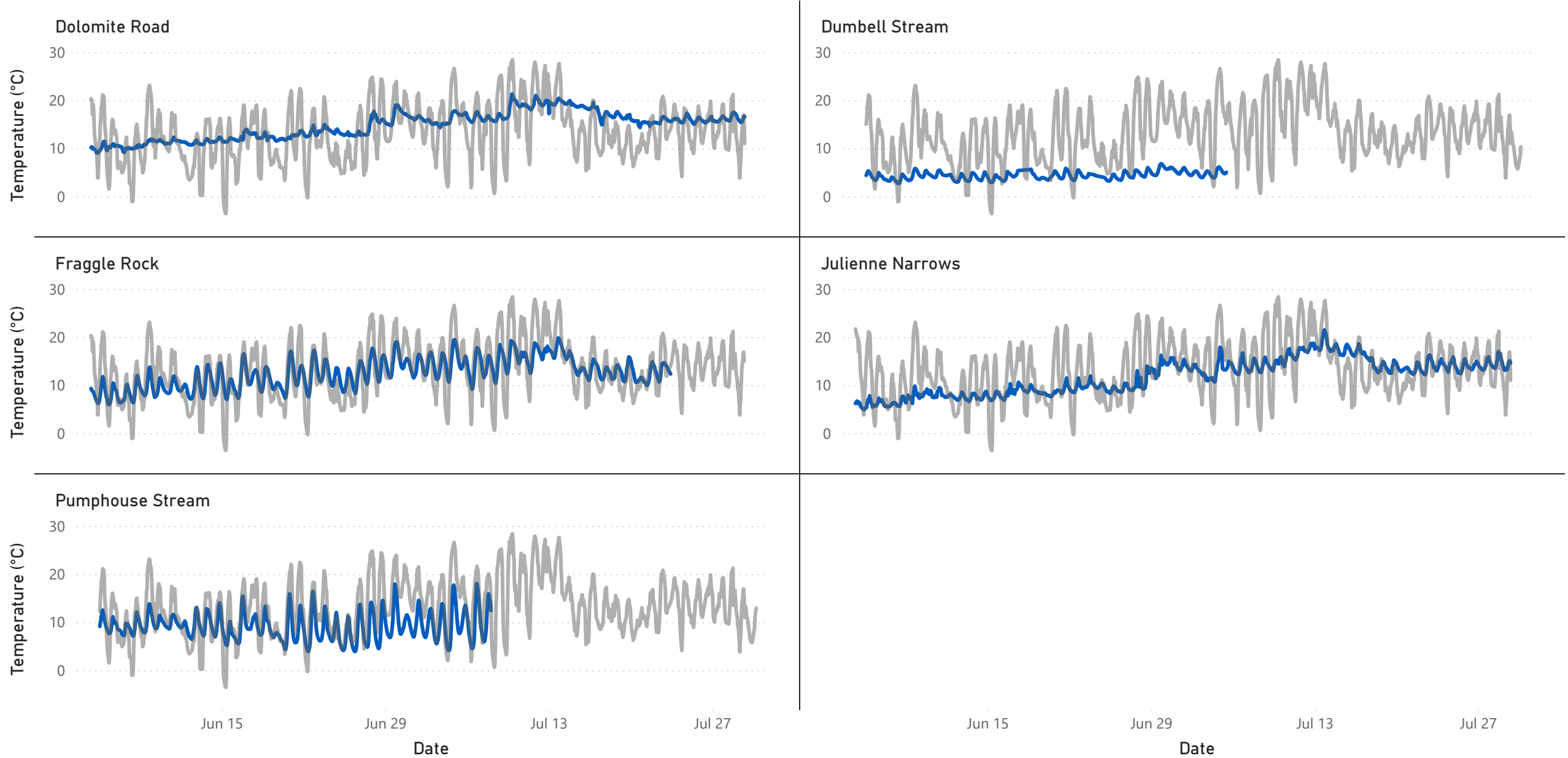
At Dumbell Stream and Pumphouse Stream, water temperatures were lower and didn't fluctuate as greatly. Water temperature at Dumbell Stream is usually lower than all other stations.

A natural daily cycle was also observed, with higher temperatures during the day and lower temperatures at night.

# Water Temperature Station Graphs

Temperature (°C) and Air Temperature (°C)

● Temperature (°C) ● Average of Air Temperature



# pH

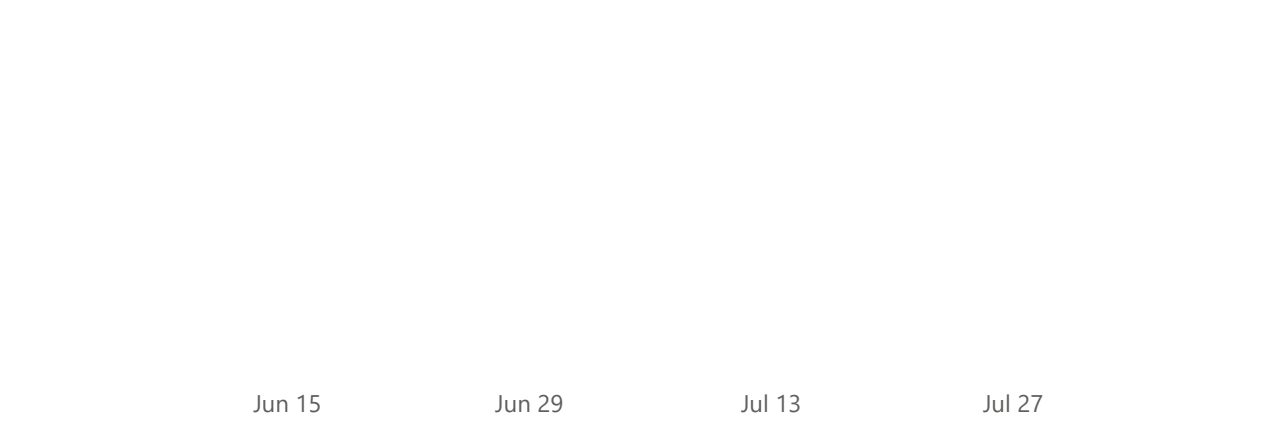
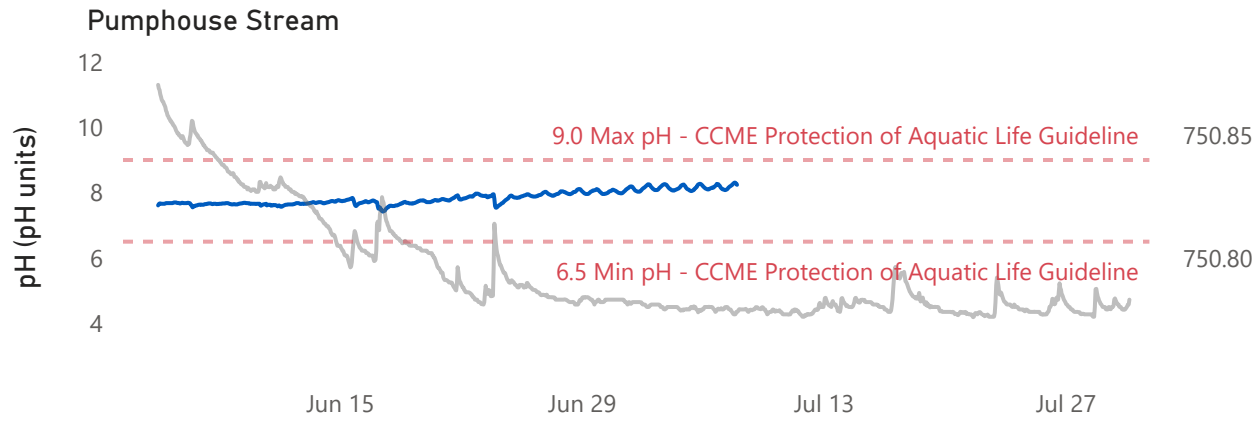
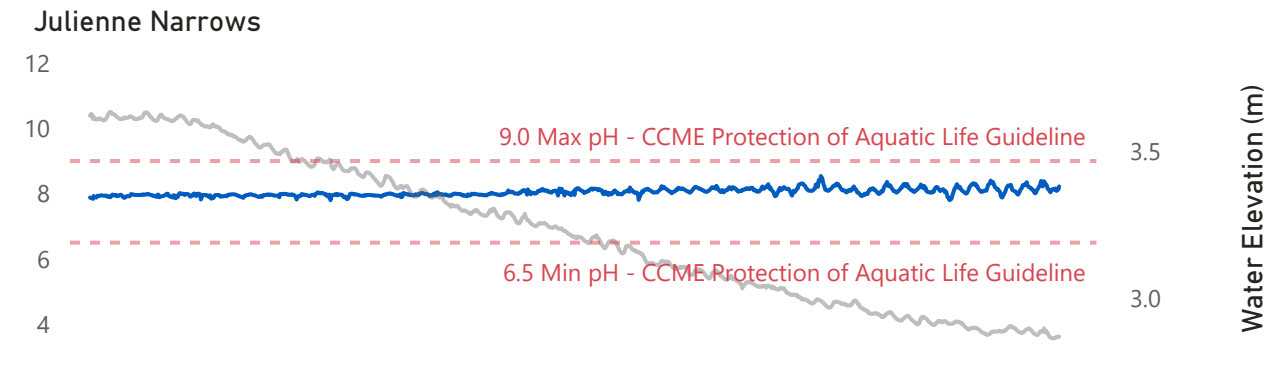
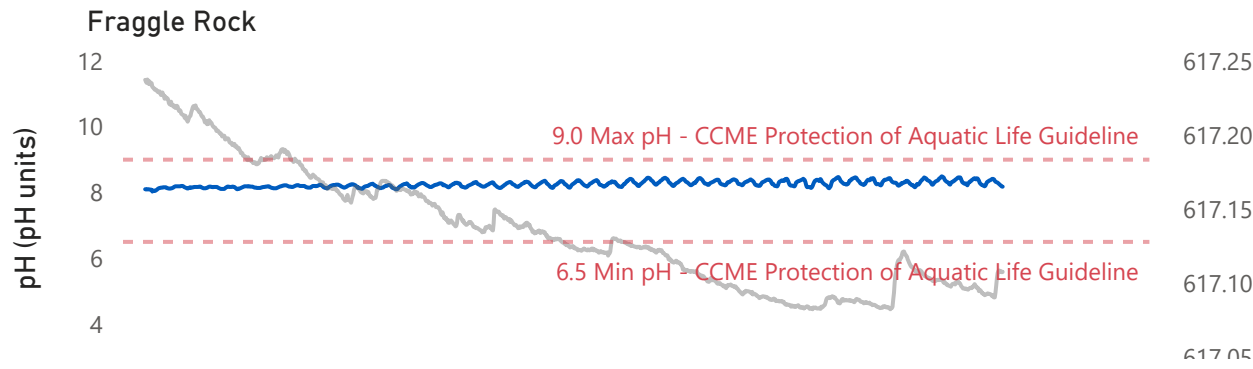
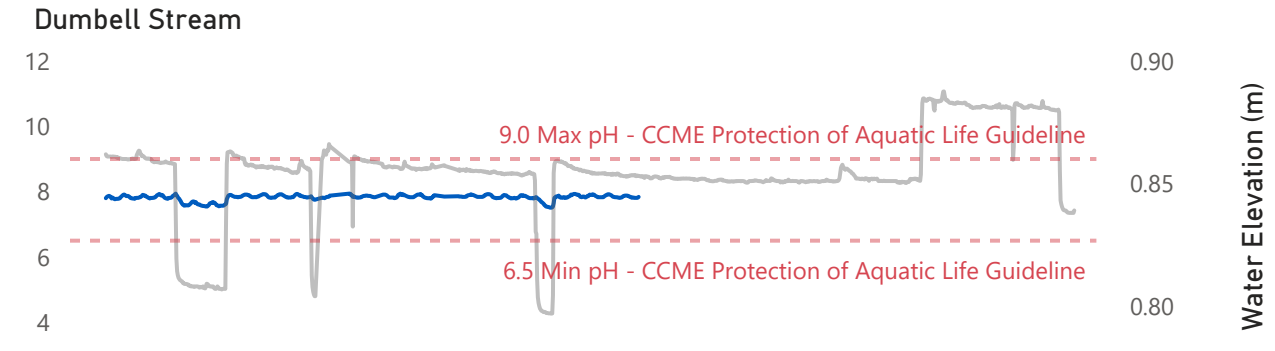
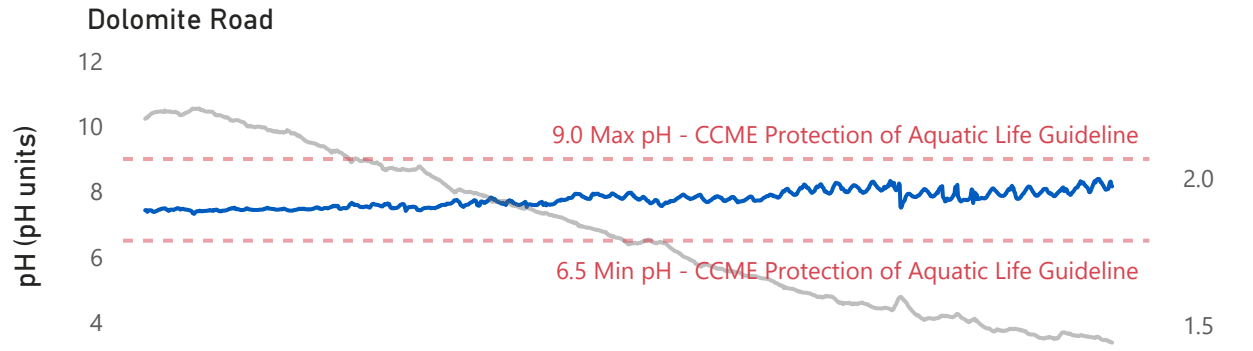
Deployment Period Statistics (pH Units)				
Name	Average	Median	Minimum	Maximum
Dolomite Road	7.76	7.75	7.32	8.39
Dumbell Stream	7.82	7.84	7.51	7.94
Fraggle Rock	8.26	8.24	8.03	8.49
Julienne Narrows	8.04	8.02	7.80	8.54
Pumphouse Stream	7.84	7.78	7.42	8.31

pH relates to the free hydrogen ions in water, and it is a measure of acidity in water. pH is a critical parameter because it influences the solubility of minerals and chemicals, the availability of nutrients, and the biological processes that occur in aquatic ecosystems. The Canadian Council of Ministers of the Environment (CCME) Freshwater Aquatic Life guideline provides a basis by which to judge the overall health of the brook. Their freshwater guidelines recommend a minimum pH of 6.5 and a maximum pH of 9.0; however, many rivers in Newfoundland and Labrador are naturally more acidic due to the local geology.

pH remained stable and consistent at all stations, with small fluctuations likely resulting from precipitation events. Rainwater, with its naturally lower pH, temporarily dilutes the water column, causing a short-term decrease in pH. However, pH levels typically return to baseline within a few days to weeks. pH at all stations remained within the CCME Guidelines for the Protection of Aquatic Life for the entire deployment period. Noticeable decreases during this deployment period correspond with increases in stage.

# pH Station Graphs

● pH (pH units) ● Water Elevation (m)



# Specific Conductivity

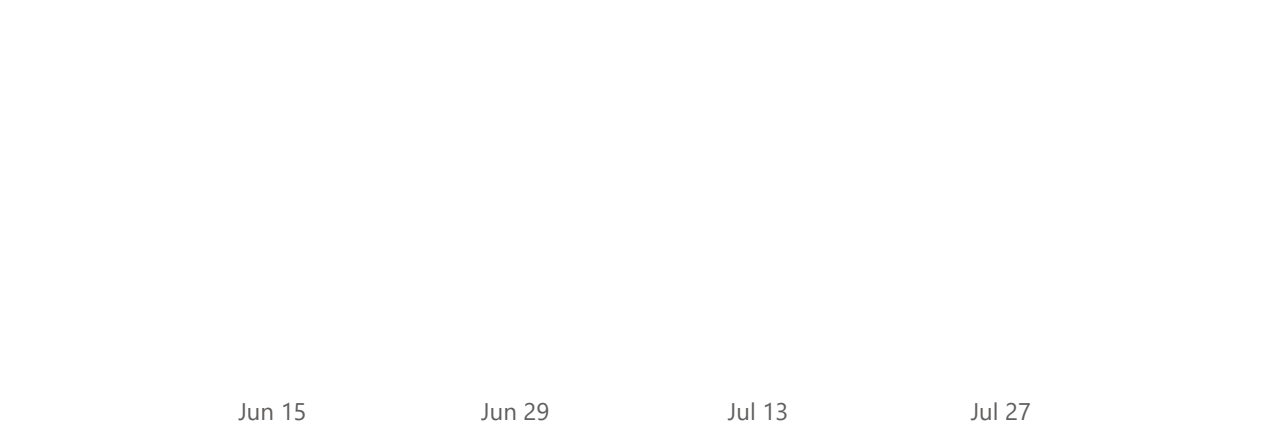
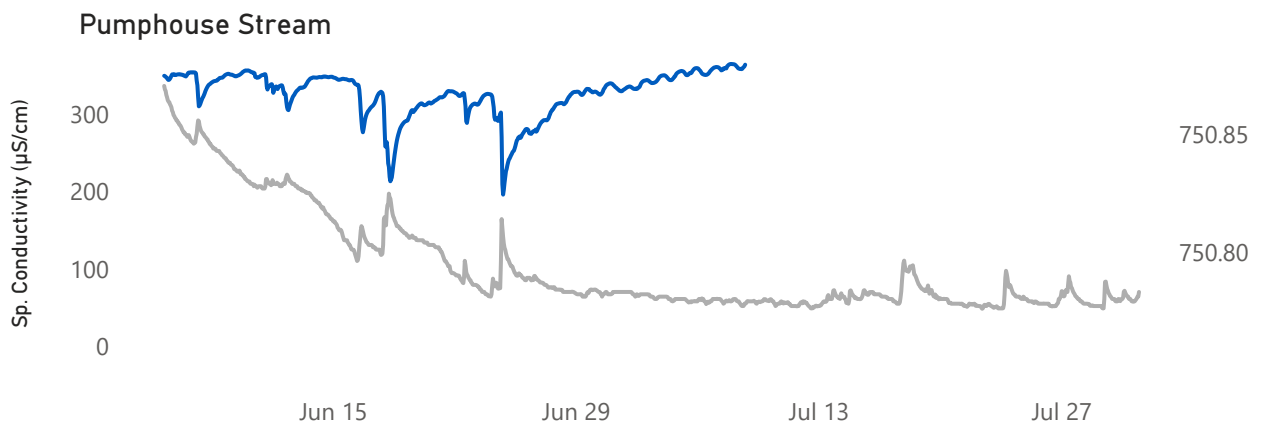
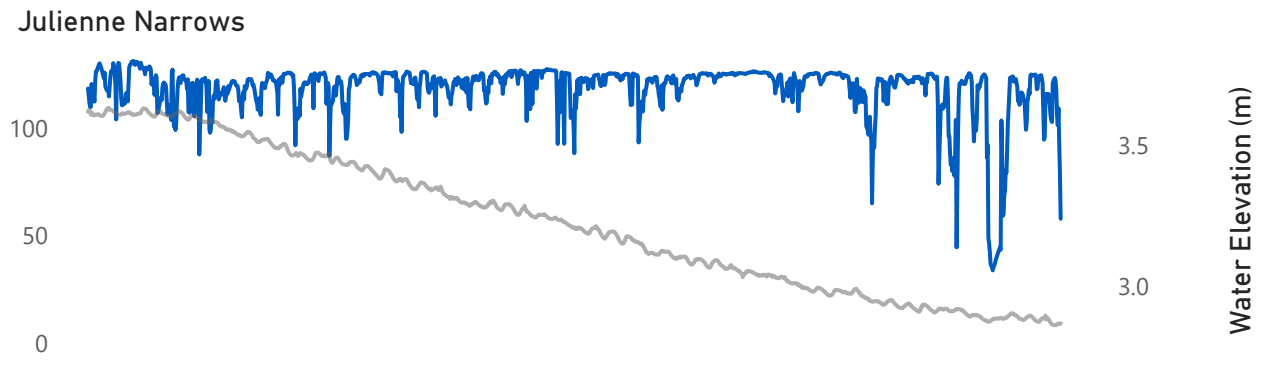
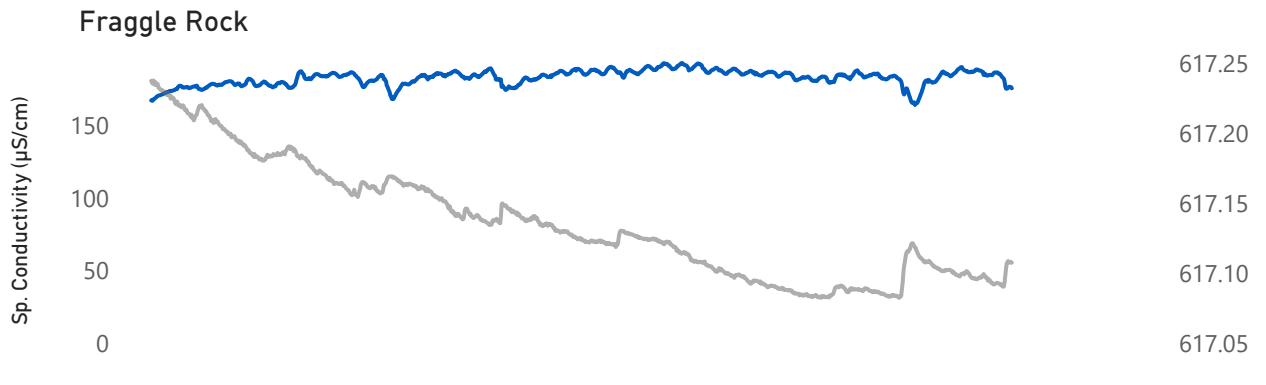
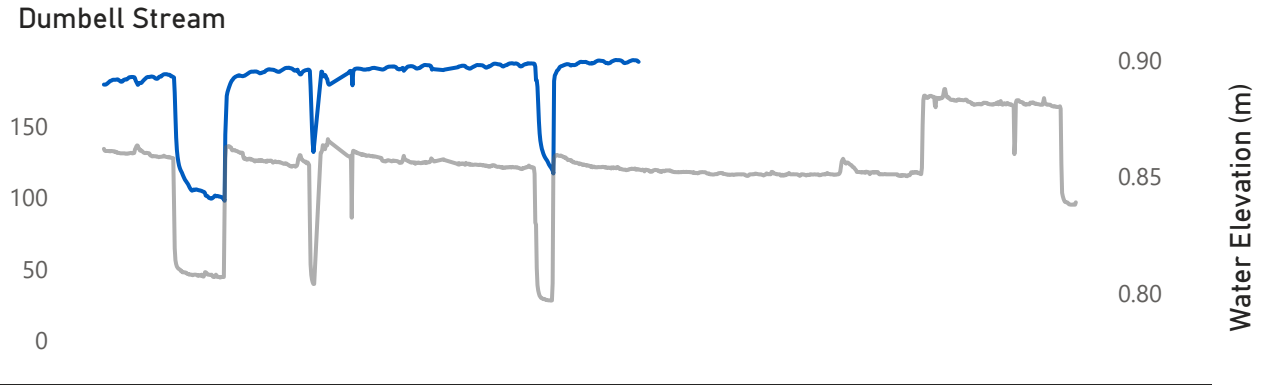
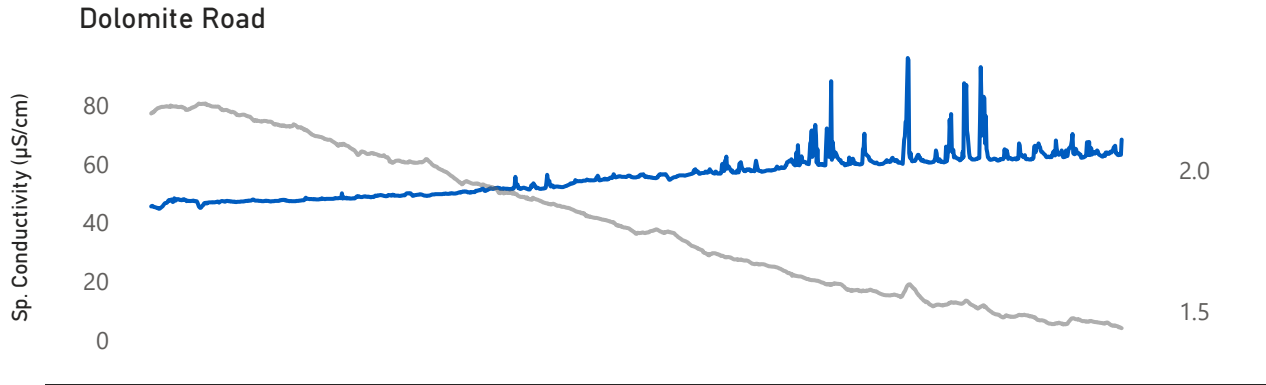
Deployment Period Statistics ( $\mu\text{S}/\text{cm}$ )				
Name	Average	Median	Minimum	Maximum
Dolomite Road	55.65	55.50	44.70	96.10
Dumbell Stream	178.86	190.10	97.90	196.90
Fraggle Rock	182.81	183.91	163.98	192.92
Julienne Narrows	118.40	122.40	33.80	131.20
Pumphouse Stream	327.46	334.45	196.20	365.50

Specific conductivity is a common indicator of the concentration of dissolved ions in water, such as salts, acids, and bases. Higher concentrations of dissolved ions result in higher specific conductivity, while pure water exhibits low conductivity. Specific conductivity is often affected by precipitation. During precipitation events, rainwater can temporarily dilute the water column, resulting in a short-term decrease in conductivity. However, high precipitation events can also cause a temporary increase in conductivity if sediment from the bottom of the waterbody is disturbed around the sensor or if runoff carrying dissolved ions enters the water column.

Patterns in conductivity varied across this network. For the two stations located on Wabush Lake (Dolomite Road and Julienne Narrows), one station is situated upstream of the mine's tailings and the other is located downstream. This can explain the difference in variation between these two stations. At Dolomite Road, conductivity increases slightly, while stage decreases. With the smaller streams, fluctuations due to precipitation events are more pronounced. Fraggle Rock is a good example of this; when elevation increased temporarily, conductivity decreased.

# Specific Conductivity Station Graphs

● Specific Conductivity ( $\mu\text{S}/\text{cm}$ ) ● Water Elevation (m)



# Dissolved Oxygen

Name	Deployment Period Statistics							
	Average (mg/L)	Average (% Sat.)	Median (mg/L)	Median (% Sat.)	Minimum (mg/L)	Minimum (% Sat.)	Maximum (mg/L)	Maximum (% Sat.)
Dolomite Road	9.23	90.91	9.26	90.10	8.03	79.50	10.07	103.20
Dumbell Stream	11.97	92.24	12.00	92.40	11.15	89.30	12.52	93.90
Fraggle Rock	9.60	89.73	9.58	89.33	8.27	86.78	10.91	94.43
Julienne Narrows	7.96	71.11	10.16	92.20	0.01	0.00	11.62	104.60
Pumphouse Stream	8.90	77.62	8.82	74.70	7.56	65.30	11.06	109.90

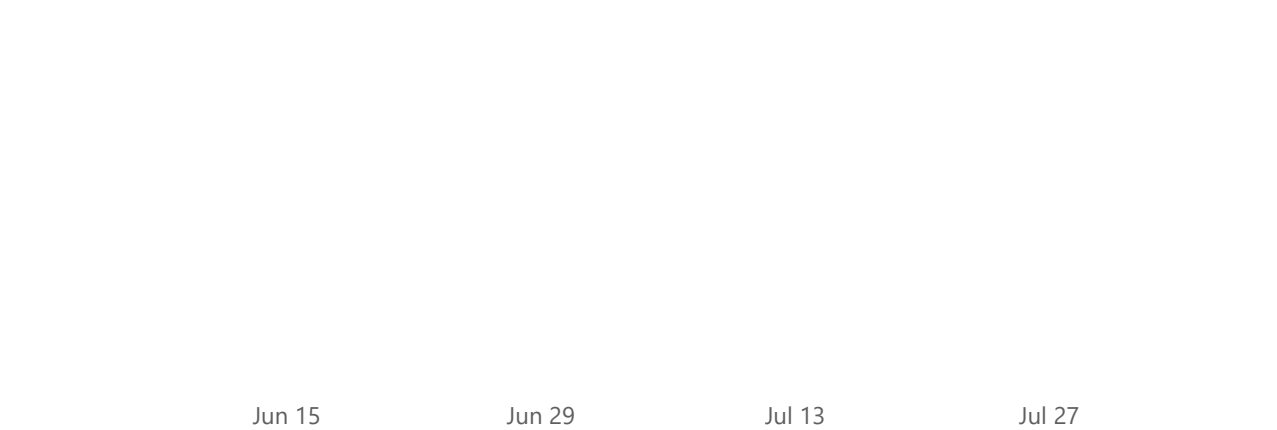
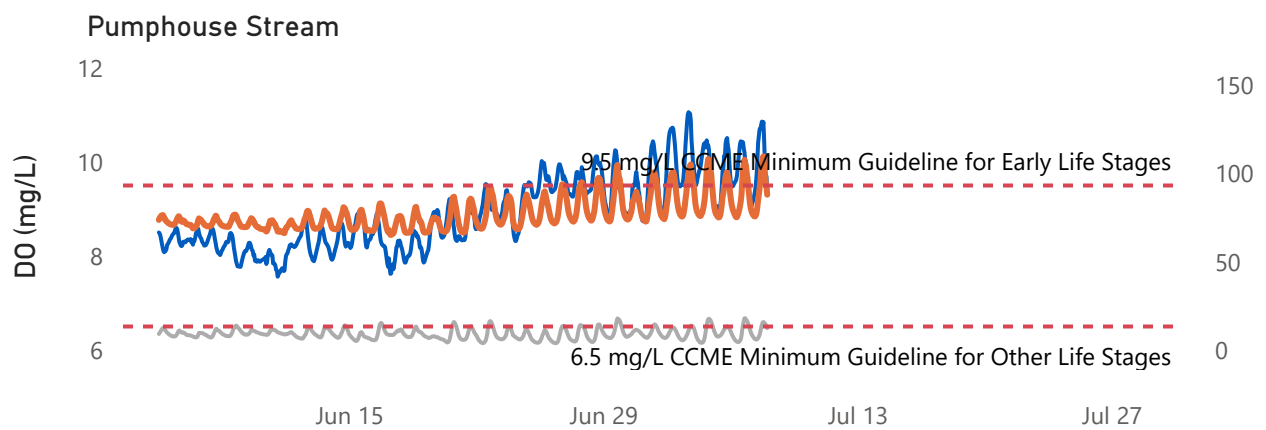
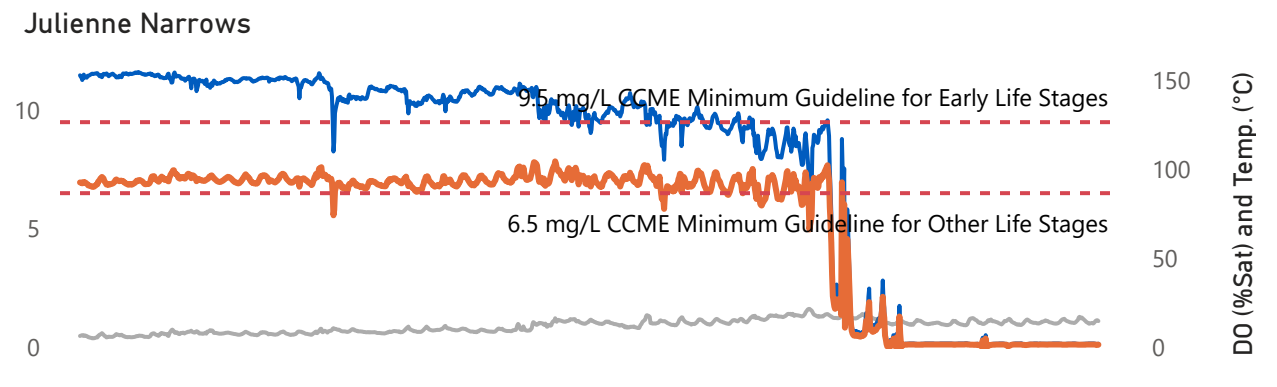
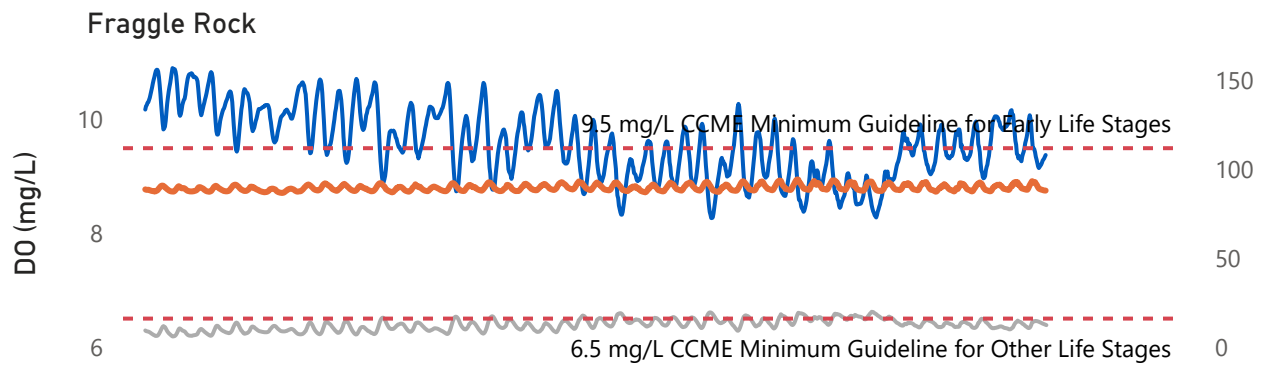
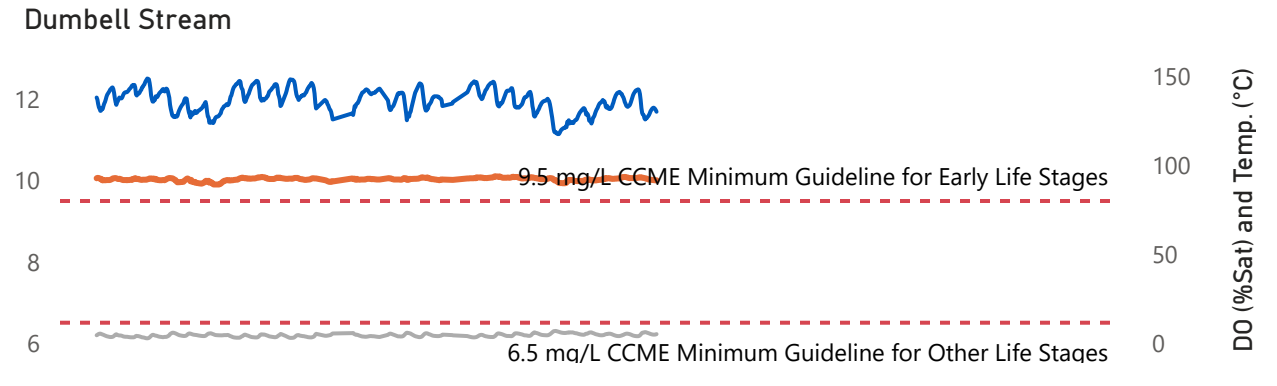
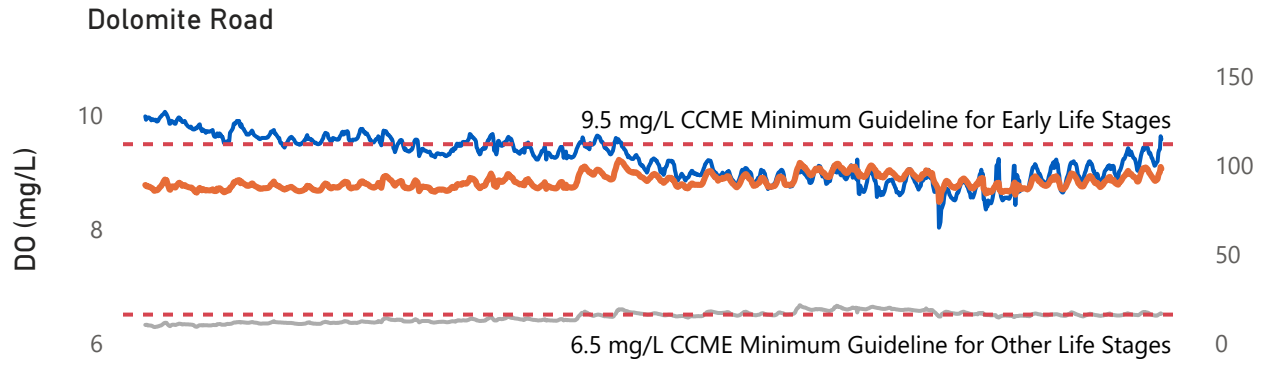
Dissolved oxygen (DO) is crucial for supporting aquatic life, and the CCME (Canadian Council of Ministers of the Environment) Freshwater Aquatic Life guidelines establish reference values to evaluate waterway health. The minimum DO guideline is 9.5 mg/L for early life stages in cold water species and 6.5 mg/L for other life stages. DO concentrations can fluctuate due to factors such as water temperature, atmospheric pressure, and the presence of other dissolved substances. Warmer water typically holds less dissolved oxygen than cooler water.

Throughout the monitoring period, DO concentrations remained above the Canadian Council of Ministers of the Environment (CCME) guideline for the protection of other life stages (6.5 mg/L) at most stations. At Julienne Narrows, levels fell below this guideline due to the instrument being buried. For the guideline for the protection of early life stages (9.5mg/L), levels at most stations fell below this guideline during warmer water temperatures in the summer. Some stations displayed a decrease in dissolved oxygen levels over the course of this deployment period. Dissolved oxygen at Dumbell Stream remained high for the entire deployment period, as water temperatures remained cool.

The pie charts on the following page give a quick view of the percentage of time that levels were below the specified guidelines at each station.

# Dissolved Oxygen Station Graphs

● DO (mg/L) ● Water Temperature (°C) ● Percent Saturation



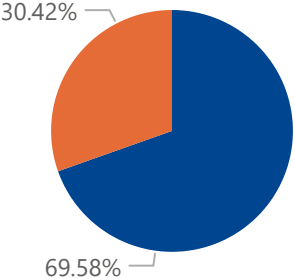
# CCME Guidelines for the Protection of Aquatic Life for Dissolved Oxygen



## CCME Early Life Stages Guideline of 9.5 mg/L

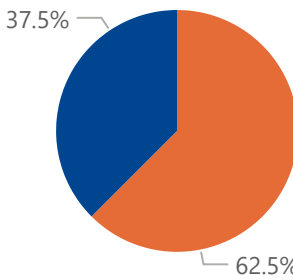
Dolomite Road

● Below ● Above



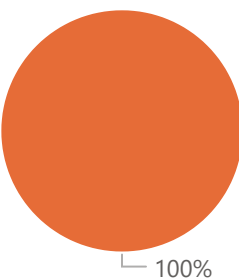
Julienne Narrows

● Above ● Below



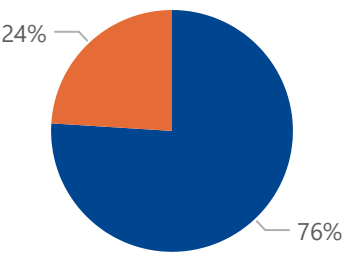
Dumbell Stream

● Above



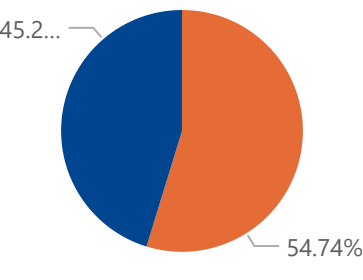
Pumphouse Stream

● Below ● Above



Fraggle Rock

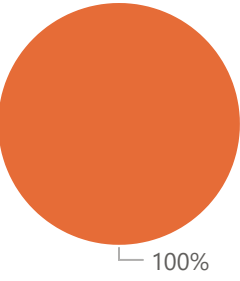
● Above ● Below



## CCME Other Life Stages Guideline of 6.5 mg/L

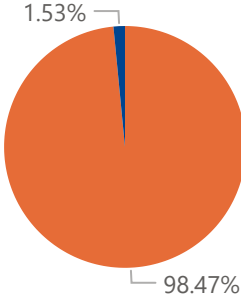
Dolomite Road

● Above



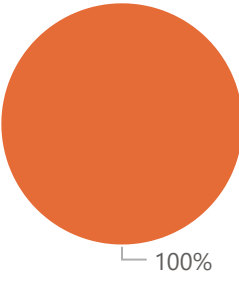
Julienne Narrows

● Above ● Below



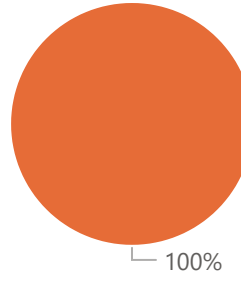
Dumbell Stream

● Above



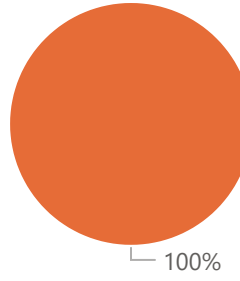
Pumphouse Stream

● Above



Fraggle Rock

● Above



# Turbidity

<b>Deployment Period Statistics (NTU)</b>				
<b>Name</b>	<b>Average</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Dolomite Road</b>	<b>1.60</b>	<b>1.40</b>	<b>0.80</b>	<b>6.70</b>
<b>Dumbell Stream</b>	<b>0.54</b>	<b>0.50</b>	<b>0.30</b>	<b>3.20</b>
<b>Fraggle Rock</b>	<b>0.56</b>	<b>0.54</b>	<b>0.35</b>	<b>4.79</b>
<b>Julienne Narrows</b>	<b>7.62</b>	<b>4.40</b>	<b>0.00</b>	<b>199.40</b>
<b>Pumphouse Stream</b>	<b>1.15</b>	<b>0.70</b>	<b>0.20</b>	<b>11.20</b>

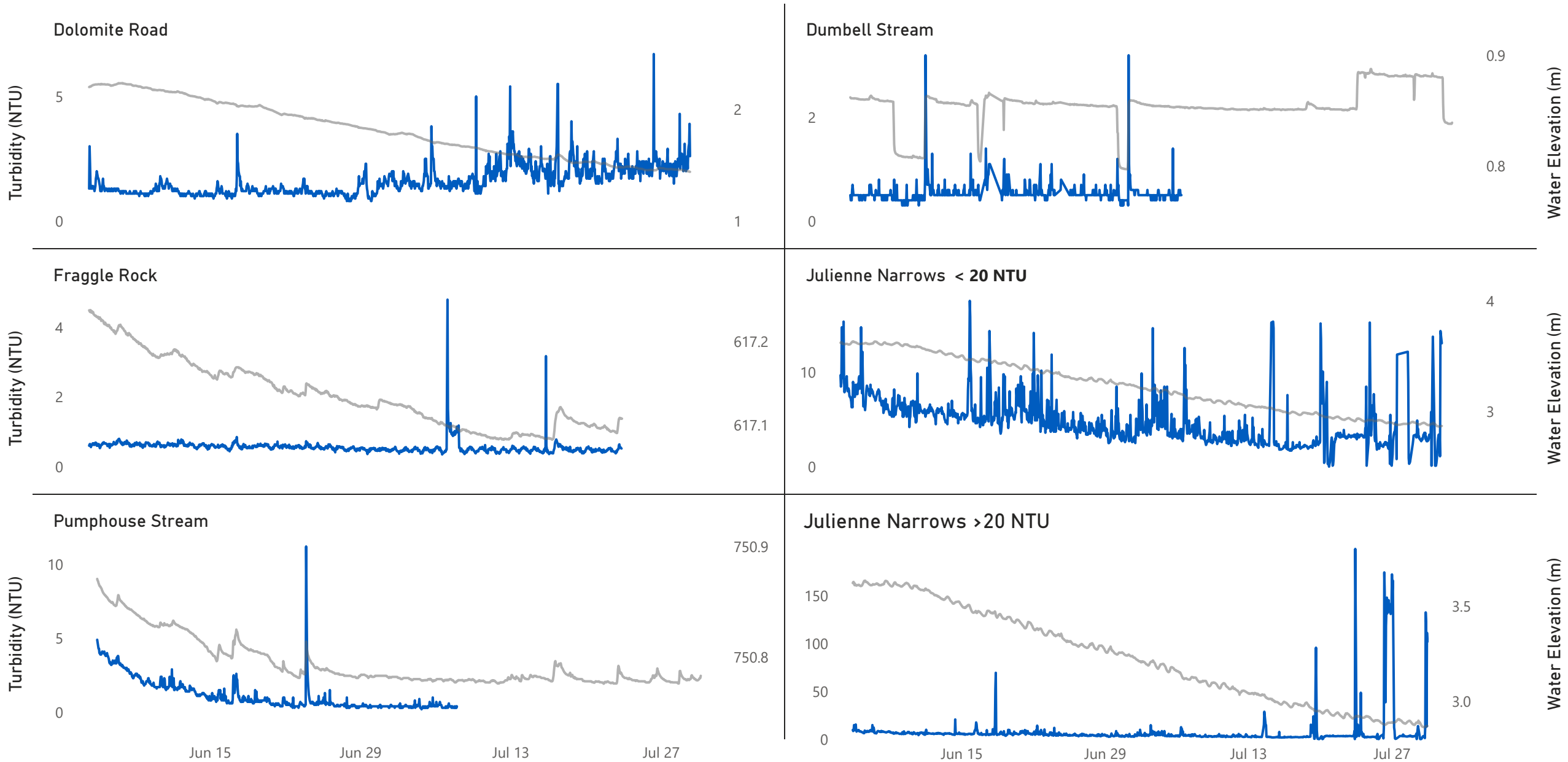
Turbidity, a measure of water cloudiness, often increases during precipitation events as runoff carries silt and debris into the waterbody. High turbidity values can reduce light penetration for aquatic plants, disrupt benthic habitats and potentially harm fish gills or damage monitoring equipment.

Throughout the deployment period, turbidity levels remained generally low at all stations, indicating clear water conditions. Precipitation events can cause increases in water levels, resulting in short-term turbidity spikes. Values typically return to baseline within a few days.

Toward the end of the deployment period, turbidity increased at Julienne Narrows, likely due to the instrument being buried in sand. A second graph for Julienne Narrows is included to show all data as there were a few large spikes.

# Turbidity Station Graphs

● Turbidity (NTU) ● Water Elevation (m)



# Water Elevation or Stage

<b>Deployment Period Statistics (m)</b>				
<b>Name</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Average</b>	<b>Median</b>
<b>Dolomite Road</b>	<b>1.44</b>	<b>2.24</b>	<b>1.81</b>	<b>1.79</b>
<b>Dumbell Stream</b>	<b>0.80</b>	<b>0.89</b>	<b>0.85</b>	<b>0.85</b>
<b>Fraggle Rock</b>	<b>617.08</b>	<b>617.24</b>	<b>617.14</b>	<b>617.13</b>
<b>Julienne Narrows</b>	<b>2.86</b>	<b>3.63</b>	<b>3.23</b>	<b>3.21</b>
<b>Pumphouse Stream</b>	<b>750.78</b>	<b>750.87</b>	<b>750.79</b>	<b>750.78</b>

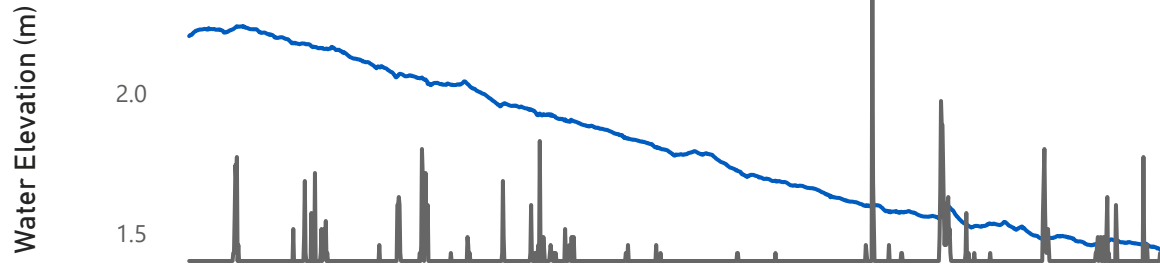
Water elevation provides an estimate of the water level at a monitoring station and plays a vital role in analyzing trends in water quality data, particularly for parameters such as specific conductivity, pH, and turbidity. Water elevation generally rises during precipitation events as rainwater and runoff enter the water column. By monitoring water elevation alongside precipitation events, we can better interpret our data, distinguish whether an elevation increase is caused by rainfall or potential industrial activities, and assess its impact on water quality. Precipitation data was obtained from the weather station at Moosehead Lake, owned by the Department of Forestry, Agriculture and Lands.

Water elevation at most stations decreased throughout the deployment period. The station graphs on the following page demonstrate the effect of precipitation events on water elevation, showing elevation spikes occurring during or shortly after rainfall. There was an increase in water level at Dumbell Stream. However, there may be an issue with the equipment at this station.

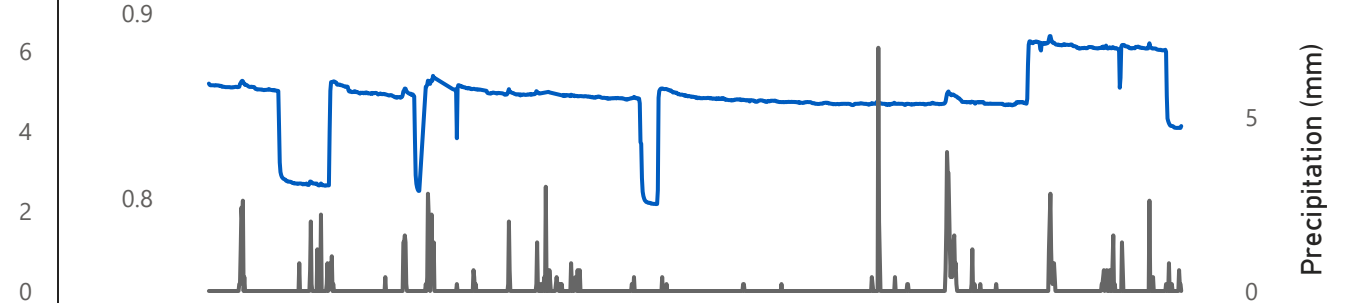
# Water Elevation and Precipitation Station Graphs

● Water Elevation (m) ● Precipitation (mm)

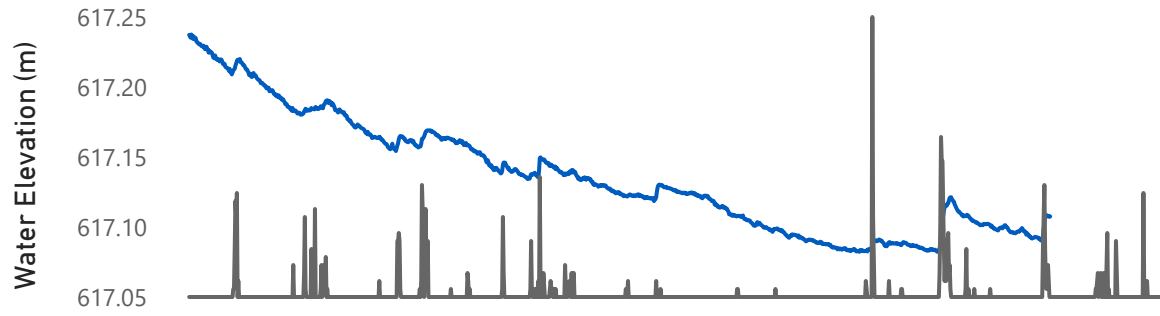
### Dolomite Road



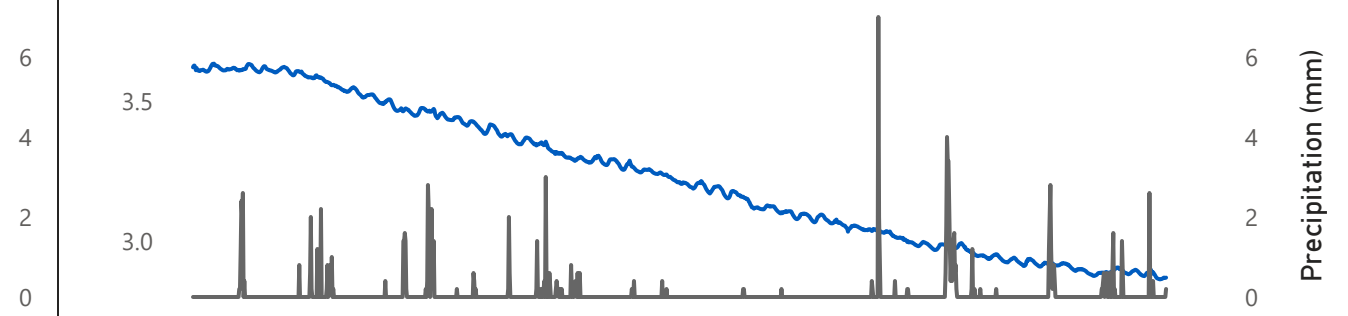
### Dumbell Stream



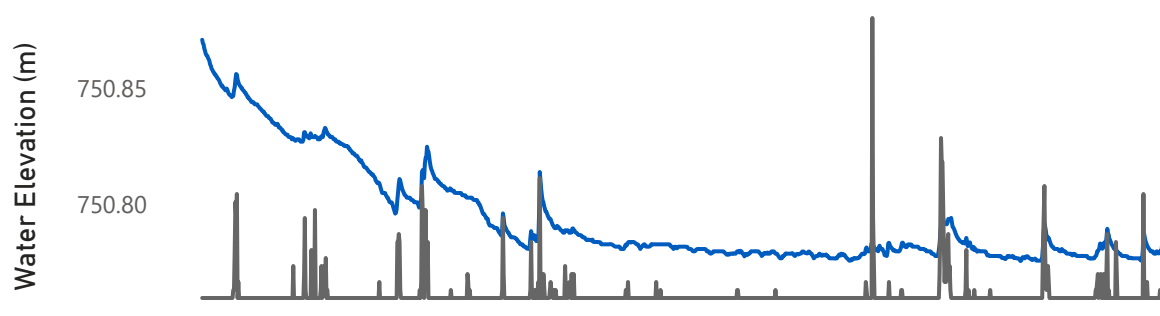
### Fraggle Rock



### Julienne Narrows



### Pumphouse Stream



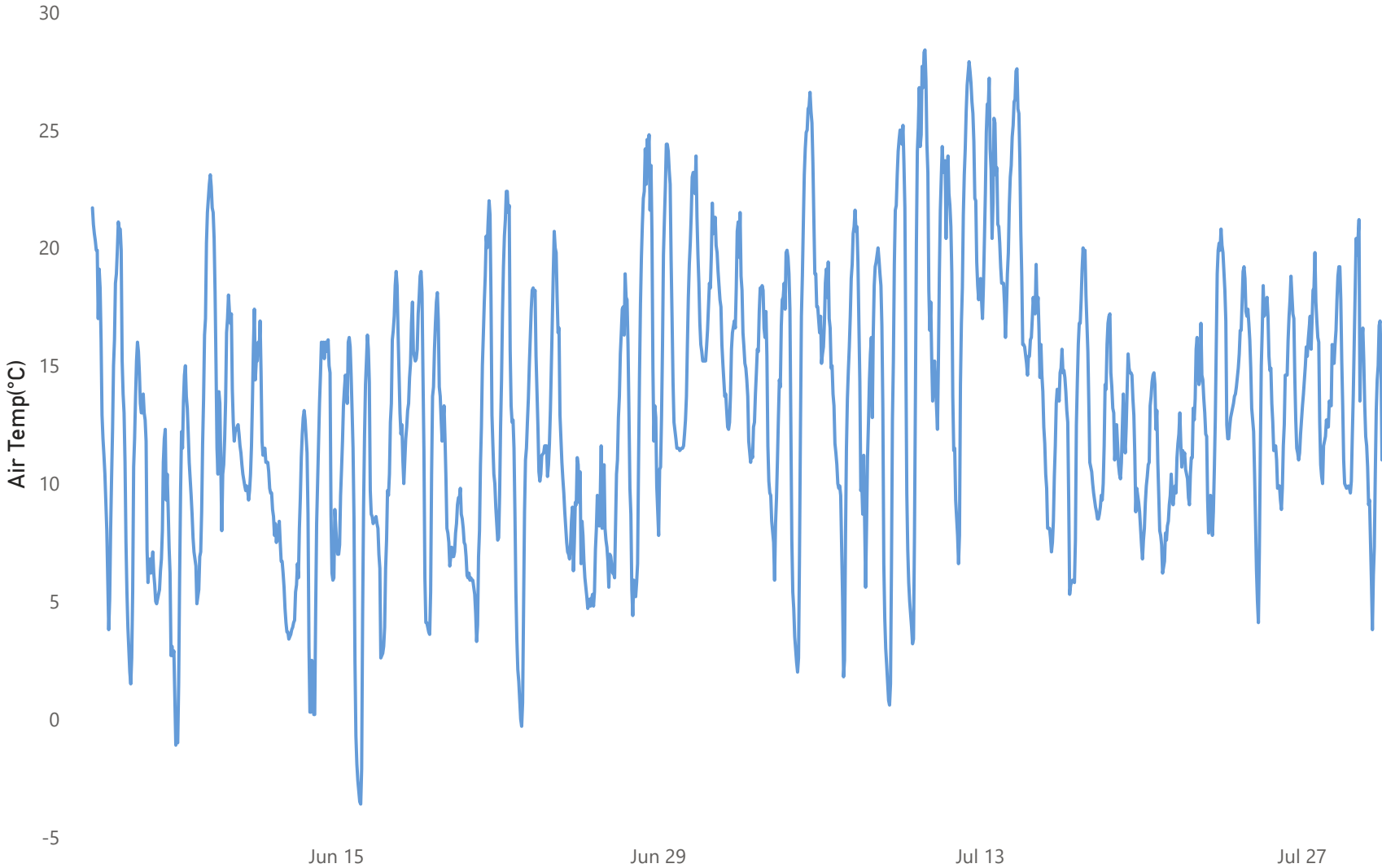
Jun 15 Jun 29 Jul 13 Jul 27

Jun 15 Jun 29 Jul 13 Jul 27

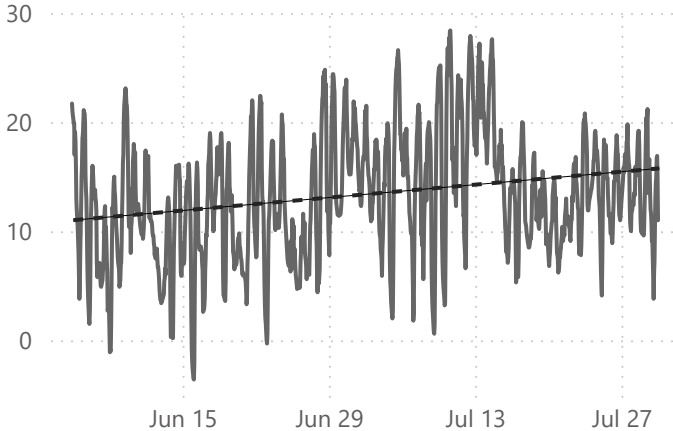


# Air Temperature Data (hourly)

Retrieved from Moosehead Lake Weather Station



## Air Temperature Trendline



**13.38**  
Average (°C)

**13.30**  
Median (°C)

**-3.60**  
Minimum (°C)

**28.40**  
Maximum (°C)

# Deployment Summary

- Instruments were deployed on June 4<sup>th</sup> and 5<sup>th</sup> and removed by July 31<sup>st</sup>. This was the first deployment for 2025.
- In most cases, precipitation events or increases/decreases in water level could be used to explain the data fluctuations. Most values recorded were within ranges as suggested by the CCME Guidelines for the Protection of Aquatic Life for pH and dissolved oxygen.
- Water temperature corresponded with air temperature at all stations. Temperature ranged between 2.65°C and 21.50°C at these stations during deployment.
- All pH values were within the recommended CCME Guidelines for the Protection of Aquatic Life. pH ranged between 7.32 and 8.54. Fluctuations were noted between day and night.
- Specific conductivity ranged from 44.70 µs/cm to 96.10 µs/cm at Dolomite Road, 33.80 µs/cm to 131.20 µs/cm at Julienne Narrows, 97.90 µs/cm to 196.90 µs/cm at Dumbell Stream, 196.20 µs/cm to 365.50 µs/cm at Pumphouse Stream and 163.98 µs/cm to 192.92 µs/cm at Fraggie Rock.
- At most stations dissolved oxygen values were above the minimum CCME Guideline for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages of 6.5 mg/L. Julienne Narrows was the only station with data that fell below this guideline, likely due to the instrument being buried in sand. When dissolved oxygen values are compared to the CCME Guideline for the Protection of Aquatic Life for Cold Water Biota at Early Life Stages of 9.5 mg/L, most stations had data fall below this guideline when temperatures were warmest. Dumbell Stream is the only station that was above both guidelines for the entire deployment period.
- Turbidity at Dolomite Road ranged from 0.80 to 6.70 NTU, 0.00 to 199.40 at Julienne Narrows, 0.30 to 3.20 NTU at Dumbell Stream, 0.20 to 11.20 NTU at Pumphouse Stream, and 0.35 to 4.79 NTU at Fraggie Rock.
- Overall, water stage levels at Dolomite Road, Julienne Narrows, Pumphouse Stream, and Fraggie Rock decreased. Water levels at Dumbell Stream exhibited abnormal stage responses following rainfall events, suggesting potential issues with the hydrometric equipment at this location. This observation has been forwarded to the Water Survey of Canada (WSC) for further investigation. An initial attempt was made to address the issue, but it was unsuccessful due to a power failure.
- Water Survey Canada operates the hydrometric component of certain stations. Due to differences in protocols, Water Survey Canada hydrometric data is quality controlled on a less frequent basis than water quality data. The hydrometric data shown in this report for certain stations is provisional and has not undergone quality control checks. Corrected hydrometric data can be obtained at <https://wateroffice.ec.gc.ca/> or upon request to Water Survey Canada. For stations that are solely operated by the Water Resources Management Division, hydrometric data is quality controlled on a less frequent basis than water quality data due to differences in protocols. The hydrometric data shown in this report for Fraggie Rock is provisional and has not undergone quality control checks.
- Grab sample results are attached.



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Bureau Veritas Job #: C566844  
Report Date: 2025/06/23

NL Department of Environment, Climate Change and  
Municipalities  
Your P.O. #: 224006869-5  
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW66 JULIENNE NARROWS								
Sampling Date		2025/06/04 10:30						
Matrix		W						
Sample #		2025-6302-00-SI-SP						
Registration #		SA-0000						
<b>RESULTS OF ANALYSES OF WATER</b>								
<b>Calculated Parameters</b>								
Hardness (CaCO3)	-	59	1.0	mg/L	N/A	2025/06/13		9944983
Total Kjeldahl Nitrogen (TKN)	-	ND	0.10	mg/L	N/A	2025/06/20		9945095
Nitrate (N)	-	0.70	0.050	mg/L	N/A	2025/06/20		9944989
Total dissolved solids (calc., EC)	-	68	1.0	mg/L	N/A	2025/06/17		9945094
<b>Inorganics</b>								
Conductivity	-	120	1.0	uS/cm	N/A	2025/06/16	M2C	9950198
Chloride (Cl-)	-	1.9	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Sulphate (SO4)	-	4.0	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Total Alkalinity (Total as CaCO3)	-	52	2.0	mg/L	N/A	2025/06/16	M2C	9950200
Colour	-	23	5.0	TCU	N/A	2025/06/19	MCN	9952116
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/06/16	M2C	9950202
Nitrate + Nitrite (N)	-	0.70	0.050	mg/L	N/A	2025/06/19	MCN	9952081
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/06/19	EMT	9952115
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/06/18	MCN	9951534
Total Nitrogen (N)	-	0.78	0.10	mg/L	N/A	2025/06/20	SSI	9953533
Dissolved Organic Carbon (C)	-	3.1	0.50	mg/L	N/A	2025/06/18	S6S	9952231
Total Organic Carbon (C)	-	3.3	0.50	mg/L	N/A	2025/06/18	S6S	9952240
pH	-	7.86		pH	N/A	2025/06/16	M2C	9950197
Total Phosphorus	-	ND	0.004	mg/L	2025/06/13	2025/06/14	SSV	9949568
Total Suspended Solids	-	4.6	1.0	mg/L	2025/06/11	2025/06/11	ISM	9946985
Turbidity	-	4.7	0.10	NTU	N/A	2025/06/19	M2C	9953574
<b>MERCURY BY COLD VAPOUR AA (WATER)</b>								
<b>Metals</b>								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/06/18	2025/06/18	JEP	9951528
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Aluminum (Al)	-	0.038	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Aluminum (Al)	-	0.038	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Arsenic (As)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Barium (Ba)	-	0.0027	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Barium (Ba)	-	0.0026	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Boron (B)	-	ND	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Boron (B)	-	ND	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/06/12	2025/06/12	MLB	9947840



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Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW66 JULIENNE NARROWS								
Sampling Date		2025/06/04 10:30						
Matrix		W						
Sample #		2025-6302-00-SI-SP						
Registration #		SA-0000						
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Calcium (Ca)	-	14	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Calcium (Ca)	-	13	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Copper (Cu)	-	0.00054	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Copper (Cu)	-	0.00058	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Iron (Fe)	-	0.14	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Iron (Fe)	-	0.14	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Lead (Pb)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Magnesium (Mg)	-	6.1	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Magnesium (Mg)	-	5.9	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Manganese (Mn)	-	0.038	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Manganese (Mn)	-	0.036	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Phosphorus (P)	-	ND	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Potassium (K)	-	1.2	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Potassium (K)	-	1.2	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Selenium (Se)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Sodium (Na)	-	1.7	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Sodium (Na)	-	1.7	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Strontium (Sr)	-	0.017	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Strontium (Sr)	-	0.016	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Uranium (U)	-	0.00015	0.00010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Uranium (U)	-	0.00015	0.00010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Dup.Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840



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Bureau Veritas Job #: C566844  
Report Date: 2025/06/23

NL Department of Environment, Climate Change and  
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Your P.O. #: 224006869-5  
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW68 DOLOMITE ROAD								
Sampling Date		2025/06/04 14:00						
Matrix		W						
Sample #		2025-6304-00-SI-SP						
Registration #		SA-0000						
<b>RESULTS OF ANALYSES OF WATER</b>								
<b>Calculated Parameters</b>								
Hardness (CaCO3)	-	20	1.0	mg/L	N/A	2025/06/12		9944983
Total Kjeldahl Nitrogen (TKN)	-	0.14	0.10	mg/L	N/A	2025/06/18		9945095
Nitrate (N)	-	0.090	0.050	mg/L	N/A	2025/06/20		9944989
Total dissolved solids (calc., EC)	-	26	1.0	mg/L	N/A	2025/06/18		9945094
<b>Inorganics</b>								
Conductivity	-	46	1.0	uS/cm	N/A	2025/06/17	M2C	9951140
Chloride (Cl-)	-	ND	1.0	mg/L	N/A	2025/06/13	RSU	9947742
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/06/13	RSU	9947742
Sulphate (SO4)	-	2.0	1.0	mg/L	N/A	2025/06/13	RSU	9947742
Total Alkalinity (Total as CaCO3)	-	18	2.0	mg/L	N/A	2025/06/17	M2C	9951142
Colour	-	33	5.0	TCU	N/A	2025/06/19	MCN	9952116
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/06/17	M2C	9951144
Nitrate + Nitrite (N)	-	0.090	0.050	mg/L	N/A	2025/06/19	MCN	9952081
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/06/19	EMT	9952115
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/06/13	KMC	9948397
Dup.Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/06/13	KMC	9948397
Total Nitrogen (N)	-	0.24	0.10	mg/L	N/A	2025/06/18	SSI	9951452
Dissolved Organic Carbon (C)	-	5.4	0.50	mg/L	N/A	2025/06/18	S6S	9952231
Total Organic Carbon (C)	-	5.8	0.50	mg/L	N/A	2025/06/16	SSI	9950293
Dup.Total Organic Carbon (C)	-	5.8	0.50	mg/L	N/A	2025/06/16	SSI	9950293
pH	-	7.41		pH	N/A	2025/06/17	M2C	9951138
Total Phosphorus	-	0.006	0.004	mg/L	2025/06/13	2025/06/14	SSV	9949568
Total Suspended Solids	-	2.8	1.0	mg/L	2025/06/11	2025/06/11	ISM	9946985
Turbidity	-	1.3	0.10	NTU	N/A	2025/06/19	M2C	9953582
<b>MERCURY BY COLD VAPOUR AA (WATER)</b>								
<b>Metals</b>								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/06/18	2025/06/18	JEP	9951528
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Aluminum (Al)	-	0.053	0.0050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Barium (Ba)	-	0.0083	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Boron (B)	-	ND	0.050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Calcium (Ca)	-	4.9	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Copper (Cu)	-	0.00061	0.00050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Iron (Fe)	-	0.12	0.050	mg/L	2025/06/10	2025/06/11	MOA	9946386



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Your P.O. #: 224006869-5  
Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW68 DOLOMITE ROAD								
Sampling Date		2025/06/04 14:00						
Matrix		W						
Sample #		2025-6304-00-SI-SP						
Registration #		SA-0000						
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Magnesium (Mg)	-	1.9	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Manganese (Mn)	-	0.039	0.0020	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Potassium (K)	-	0.72	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Sodium (Na)	-	0.67	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Strontium (Sr)	-	0.011	0.0020	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Uranium (U)	-	ND	0.00010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/06/10	2025/06/11	MOA	9946386



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Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW71 DUMBELL STREAM								
Sampling Date		2025/06/05 10:55						
Matrix		W						
Sample #		2025-6307-00-SI-SP						
Registration #		SA-0000						
<b>RESULTS OF ANALYSES OF WATER</b>								
<b>Calculated Parameters</b>								
Hardness (CaCO3)	-	80	1.0	mg/L	N/A	2025/06/12		9944983
Total Kjeldahl Nitrogen (TKN)	-	2.5	0.25	mg/L	N/A	2025/06/21		9945095
Nitrate (N)	-	8.6	0.25	mg/L	N/A	2025/06/19		9944989
Total dissolved solids (calc., EC)	-	99	1.0	mg/L	N/A	2025/06/17		9945094
<b>Inorganics</b>								
Conductivity	-	180	1.0	uS/cm	N/A	2025/06/16	M2C	9950198
Chloride (Cl-)	-	1.5	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Sulphate (SO4)	-	8.1	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Total Alkalinity (Total as CaCO3)	-	45	2.0	mg/L	N/A	2025/06/16	M2C	9950200
Colour	-	ND	5.0	TCU	N/A	2025/06/19	MCN	9952118
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/06/16	M2C	9950202
Nitrate + Nitrite (N)	-	8.6	0.25	mg/L	N/A	2025/06/19	MCN	9952082
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/06/19	EMT	9952117
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/06/18	MCN	9951534
Total Nitrogen (N)	-	9.7	0.10	mg/L	N/A	2025/06/20	SSI	9953554
Dissolved Organic Carbon (C)	-	1.0	0.50	mg/L	N/A	2025/06/19	S6S	9952499
Total Organic Carbon (C)	-	0.98	0.50	mg/L	N/A	2025/06/19	S6S	9952248
pH	-	7.82		pH	N/A	2025/06/16	M2C	9950197
Total Phosphorus	-	ND	0.004	mg/L	2025/06/13	2025/06/14	SSV	9949568
Total Suspended Solids	-	ND	1.0	mg/L	2025/06/12	2025/06/13	DME	9947849
Turbidity	-	ND	0.10	NTU	N/A	2025/06/19	M2C	9953582
<b>MERCURY BY COLD VAPOUR AA (WATER)</b>								
<b>Metals</b>								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/06/18	2025/06/18	JEP	9951528
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Aluminum (Al)	-	0.017	0.0050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Barium (Ba)	-	0.0044	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Boron (B)	-	ND	0.050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Calcium (Ca)	-	19	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Copper (Cu)	-	0.00055	0.00050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Iron (Fe)	-	ND	0.050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Magnesium (Mg)	-	8.0	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386



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Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW71 DUMBELL STREAM								
Sampling Date 2025/06/05 10:55								
Matrix W								
Sample # 2025-6307-00-SI-SP								
Registration # SA-0000								
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Manganese (Mn)	-	0.0047	0.0020	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Potassium (K)	-	1.2	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Sodium (Na)	-	0.74	0.10	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Strontium (Sr)	-	0.022	0.0020	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Uranium (U)	-	ND	0.00010	mg/L	2025/06/10	2025/06/11	MOA	9946386
Total Zinc (Zn)	-	0.0074	0.0050	mg/L	2025/06/10	2025/06/11	MOA	9946386



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Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW70 PUMPHOUSE STREAM								
Sampling Date		2025/06/05 09:20						
Matrix		W						
Sample #		2025-6306-00-SI-SP						
Registration #		SA-0000						
<b>RESULTS OF ANALYSES OF WATER</b>								
<b>Calculated Parameters</b>								
Hardness (CaCO3)	-	140	1.0	mg/L	N/A	2025/06/13		9944983
Total Kjeldahl Nitrogen (TKN)	-	12	0.50	mg/L	N/A	2025/06/18		9945095
Nitrate (N)	-	16	0.75	mg/L	N/A	2025/06/19		9944989
Total dissolved solids (calc., EC)	-	200	1.0	mg/L	N/A	2025/06/18		9945094
<b>Inorganics</b>								
Conductivity	-	350	1.0	uS/cm	N/A	2025/06/17	M2C	9951140
Chloride (Cl-)	-	3.9	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Sulphate (SO4)	-	29	1.0	mg/L	N/A	2025/06/13	VP2	9947751
Total Alkalinity (Total as CaCO3)	-	74	2.0	mg/L	N/A	2025/06/17	M2C	9951142
Colour	-	8.8	5.0	TCU	N/A	2025/06/19	MCN	9952118
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/06/17	M2C	9951144
Nitrate + Nitrite (N)	-	17	0.75	mg/L	N/A	2025/06/19	MCN	9952082
Nitrite (N)	-	0.092	0.010	mg/L	N/A	2025/06/19	EMT	9952117
Nitrogen (Ammonia Nitrogen)	-	4.8	0.25	mg/L	N/A	2025/06/18	MCN	9951522
Total Nitrogen (N)	-	23	0.30	mg/L	N/A	2025/06/18	SSI	9951452
Dissolved Organic Carbon (C)	-	2.7	0.50	mg/L	N/A	2025/06/18	S6S	9952231
Total Organic Carbon (C)	-	2.8	0.50	mg/L	N/A	2025/06/18	S6S	9952240
pH	-	7.73		pH	N/A	2025/06/17	M2C	9951138
Total Phosphorus	-	ND	0.004	mg/L	2025/06/13	2025/06/14	SSV	9949568
Total Suspended Solids	-	1.6	1.0	mg/L	2025/06/12	2025/06/13	DME	9947849
Turbidity	-	2.5	0.10	NTU	N/A	2025/06/19	M2C	9953582
<b>MERCURY BY COLD VAPOUR AA (WATER)</b>								
<b>Metals</b>								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/06/18	2025/06/18	JEP	9951528
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Aluminum (Al)	-	0.044	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Barium (Ba)	-	0.011	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Boron (B)	-	ND	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Calcium (Ca)	-	33	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Copper (Cu)	-	0.00085	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Iron (Fe)	-	0.23	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Magnesium (Mg)	-	15	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840



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Sampler Initials: MM

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW70 PUMPHOUSE STREAM								
Sampling Date		2025/06/05 09:20						
Matrix		W						
Sample #		2025-6306-00-SI-SP						
Registration #		SA-0000						
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Manganese (Mn)	-	0.094	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Potassium (K)	-	2.3	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Sodium (Na)	-	1.3	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Strontium (Sr)	-	0.070	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Uranium (U)	-	0.00032	0.00010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840



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Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW69 FRAGGLE ROCK								
Sampling Date		2025/06/04 15:00						
Matrix		W						
Sample #		2025-6305-00-SI-SP						
Registration #		SA-0000						
<b>RESULTS OF ANALYSES OF WATER</b>								
<b>Calculated Parameters</b>								
Hardness (CaCO3)	-	85	1.0	mg/L	N/A	2025/06/13		9944983
Total Kjeldahl Nitrogen (TKN)	-	ND	0.10	mg/L	N/A	2025/06/20		9945095
Nitrate (N)	-	1.2	0.050	mg/L	N/A	2025/06/19		9944989
Total dissolved solids (calc., EC)	-	94	1.0	mg/L	N/A	2025/06/17		9945094
<b>Inorganics</b>								
Conductivity	-	170	1.0	uS/cm	N/A	2025/06/16	M2C	9950198
Chloride (Cl-)	-	1.7	1.0	mg/L	N/A	2025/06/13	RSU	9947742
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2025/06/13	RSU	9947742
Sulphate (SO4)	-	8.4	1.0	mg/L	N/A	2025/06/13	RSU	9947742
Total Alkalinity (Total as CaCO3)	-	69	2.0	mg/L	N/A	2025/06/16	M2C	9950200
Colour	-	24	5.0	TCU	N/A	2025/06/19	MCN	9952118
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2025/06/16	M2C	9950202
Nitrate + Nitrite (N)	-	1.2	0.050	mg/L	N/A	2025/06/19	MCN	9952082
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/06/19	EMT	9952117
Nitrogen (Ammonia Nitrogen)	-	0.062	0.050	mg/L	N/A	2025/06/18	MCN	9951522
Total Nitrogen (N)	-	1.3	0.10	mg/L	N/A	2025/06/20	SSI	9953533
Dissolved Organic Carbon (C)	-	3.6	0.50	mg/L	N/A	2025/06/18	S6S	9952231
Total Organic Carbon (C)	-	3.9	0.50	mg/L	N/A	2025/06/18	SSI	9952031
pH	-	7.94		pH	N/A	2025/06/16	M2C	9950197
Total Phosphorus	-	ND	0.004	mg/L	2025/06/13	2025/06/14	SSV	9949568
Total Suspended Solids	-	1.8	1.0	mg/L	2025/06/11	2025/06/11	ISM	9946985
Turbidity	-	0.58	0.10	NTU	N/A	2025/06/19	M2C	9953582
<b>MERCURY BY COLD VAPOUR AA (WATER)</b>								
<b>Metals</b>								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/06/18	2025/06/18	JEP	9951528
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Aluminum (Al)	-	0.023	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Barium (Ba)	-	0.0059	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Boron (B)	-	ND	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Calcium (Ca)	-	15	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Copper (Cu)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Iron (Fe)	-	0.055	0.050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Magnesium (Mg)	-	11	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840



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Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ARRW69 FRAGGLE ROCK								
Sampling Date		2025/06/04 15:00						
Matrix		W						
Sample #		2025-6305-00-SI-SP						
Registration #		SA-0000						
<b>ELEMENTS BY ICP/MS (WATER)</b>								
<b>Metals</b>								
Total Manganese (Mn)	-	0.022	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Potassium (K)	-	1.2	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Sodium (Na)	-	0.99	0.10	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Strontium (Sr)	-	0.014	0.0020	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Uranium (U)	-	0.00019	0.00010	mg/L	2025/06/12	2025/06/12	MLB	9947840
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/06/12	2025/06/12	MLB	9947840