Real-Time Water Quality Annual Report

Iron Ore Company of Canada
Labrador West Network

June 4 to
October 23, 2025

Newfoundland Labrador

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

Contents

Acknowledgements

The Real-Time Water Quality Monitoring Program (RTWQ) in Labrador West is fully funded by the Iron Ore Company of Canada (IOC). The program is made successful by a joint partnership between IOC, Environment and Climate Change Canada (ECCC), and the Newfoundland & Labrador Department of Environment, Conservation & Climate Change (ECC), Water Resources Management Division (WRMD).

Various individuals from each sector have been diligently involved to ensure this program is a successful operation including various WRMD staff, Jody Wentzell (IOC), and various WSC staff (ECCC). In addition to these managers, there have been a team of individuals who work together to ensure the day-to-day operations of these stations are providing quality data. Maria Murphy (ECC) was responsible for these water quality stations during 2025. Responsibilities included deployment and removal of instruments, maintenance and calibration of the instruments and preparation of monthly deployment reports. Various staff from the St. John's and Grand Falls – Windsor offices of WRMD are acknowledged for their assistance during deployment and removal procedures in 2025.

ECCC staff are essential in the operation of the data logging/communication aspect of the network for most stations in this network. Staff of the Meteorological Service of Canada Division – Water Survey of Canada, visit the stations regularly to ensure that the data logging and data transmission equipment are working properly. ECCC is also the lead on dealing with stage and flow issues at certain stations. However, the station *Fraggle Rock* is exclusively operated and managed by WRMD.

Introduction

- The real-time water quality-monitoring network on Wabush Lake was established during the summer of 2007 in a partnership between what was then the Newfoundland & Labrador Department of Environment and Conservation (DOEC) and the Iron Ore Company of Canada (IOC).
- This network consisted of two water quality/quantity stations: one located downstream of the IOC tailings disposal area and one located upstream of the same area.
- The official names of these two stations are *Wabush Lake at Dolomite Road* and *Wabush Lake at Lake Outlet*, hereafter referred to as the Dolomite Road station and the Julienne Narrows station, respectively.
- On June 8th, 2016, an additional station was commissioned under this agreement. This station is located at *Dumbell Stream above Dumbell Lake*, hereafter referred to as the Dumbell Stream station.
- On June 12th, 2017 a new station was commissioned under this agreement. This station is located at *Pumphouse Stream above Drum Lake*, hereafter referred to as the Pumphouse Stream station.
- On November 19, 2023 a new station was commissioned under this agreement. This station is located at *Unnamed Tributary above Fraggle Rock Lake*, hereafter referred to as the Fraggle Rock station.
- These stations measure water quality parameters including water temperature, pH, specific conductivity, dissolved oxygen and turbidity, as well as water quantity parameters, stage and flow. Measurements are recorded on an hourly basis during the deployment period.
- In 2025, limited access to helicopters mid-summer due to forest fires on the island resulted in longer than ideal deployment periods. However, instrumentation functioned well during this timeframe.

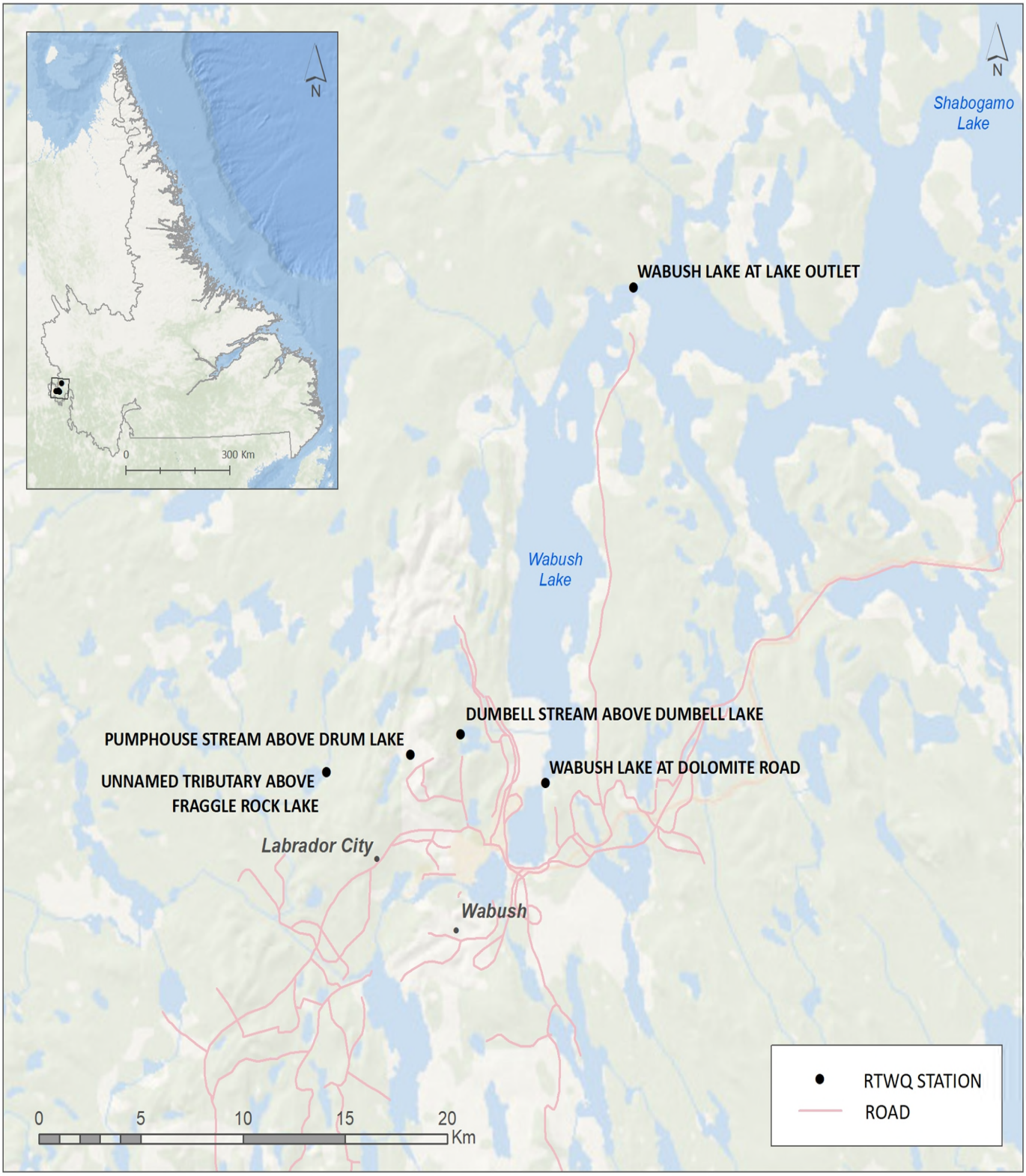


Figure 1: RTWQ Monitoring Stations in Labrador West

- Initial deployment in 2025 was June 4th at Dolomite Road, Julienne Narrows and Fraggle Rock. Dumbell Stream and Pumphouse Stream were deployed June 5th. Instruments were removed for the winter season by October 22nd and 23rd. The following report depicts and discusses water quality events throughout this period.
- The purpose of this network is to monitor, process, and distribute water quality/quantity data to IOC, WRMD and ECCC, for assessment and management of water resources, as well as to provide an early warning for any potential or emerging water issues. Any necessary mitigative measures can then be implemented in a timely manner.
- WRMD provides IOC with deployment reports and an annual report.
- It is important to note that unless otherwise stated, small gaps in data are due to the removal of the instrument for maintenance and calibration.

Maintenance and Calibration

- To ensure accurate data collection, maintenance and calibration of the water quality instrumentation are performed as per manufacturer recommended protocols and operating procedures.
- Maintenance includes a thorough cleaning of the instrument and replacement of any small sensor parts that are damaged or unsuitable for reuse. Once the instrument is cleaned, WRMD staff carefully calibrate each sensor attachment for pH, specific conductivity, dissolved oxygen and turbidity.
- Installation and removal dates for the 2025 season are summarized in the table below.

Table 1: Water quality instrument deployment start and end dates for 2025

Installation	***Removal***	***Deployment duration (days)***
June 4-5	July 30-31	56
July 30-31	September 17-18	48-49
September 17-18	October 22-23	35-36

Quality Assurance and Quality Control

- 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.
- 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 (Table 2).

Table 2: Ranking classifications for deployment and removal

	Rank				
Parameter	**Excellent**	**Good**	**Fair**	**Marginal**	**Poor**
Temperature (°C)	<=+/-0.2	>+/-0.2 to 0.5	>+/-0.5 to 0.8	>+/-0.8 to 1	<+/-1
pH (unit)	<=+/-0.2	>+/-0.2 to 0.5	>+/-0.5 to 0.8	>+/-0.8 to 1	>+/-1
Sp. Conductance (µS/cm)	<=+/-3	>+/-3 to 10	>+/-10 to 15	>+/-15 to 20	>+/-20
Sp. Conductance > 35 µS/cm (%)	<=+/-3	>+/-3 to 10	>+/-10 to 15	>+/-15 to 20	>+/-20
Dissolved Oxygen (mg/L) (% Sat)	<=+/-0.3	>+/-0.3 to 0.5	>+/-0.5 to 0.8	>+/-0.8 to 1	>+/-1
Turbidity <40 NTU (NTU)	<=+/-2	>+/-2 to 5	>+/-5 to 8	>+/-8 to 10	>+/-10
Turbidity > 40 NTU (%)	<=+/-5	>+/-5 to 10	>+/-10 to 15	>+/-15 to 20	>+/-20

- It should be noted that the temperature sensor on any sonde is the most important. All other parameters can be broken down into three groups: temperature dependant, temperature compensated and temperature independent. As the temperature sensor is not isolated from the rest of the sonde, the entire sonde must be at the same temperature before the 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.
- Deployment and removal comparison rankings for the IOC water quality stations for the 2025 deployment season are summarized in Table 3.
- For additional information and explanations of ranking, please refer to the 2025 deployment reports.

Table 3: Comparison rankings for IOC RTWQ stations June 4 to October 23, 2025

Station	*Date*		*Temperature*	*pH*	*Specific Conductivity*	*Dissolved Oxygen*	*Turbidity*
Dolomite Road	4-Jun-25	Deployment	Fair	Good	Excellent	Excellent	Excellent
	30-Jul-25	Removal	Excellent	Good	Excellent	Excellent	Excellent
	30-Jul-25	Deployment	Excellent	Excellent	Excellent	Excellent	Excellent
	17-Sep-25	Removal	Excellent	Good	Excellent	Excellent	Excellent
	17-Sep-25	Deployment	Marginal	Excellent	Excellent	Excellent	Excellent
	22-Oct-25	Removal	Marginal	Fair	Excellent	Good	Excellent
Julienne Narrows	4-Jun-25	Deployment	Fair	Good	Good	Excellent	Excellent
	30-Jul-25	Removal	Fair	Excellent	Good	Excellent	Excellent
	30-Jul-25	Deployment	Poor	Excellent	Marginal	Fair	Poor
	17-Sep-25	Removal	Excellent	Good	Good	Excellent	Fair
	17-Sep-25	Deployment	Good	Excellent	Good	Excellent	Poor
	22-Oct-25	Removal	Fair	Fair	Excellent	Excellent	Excellent
Dumbell Stream	5-Jun-25	Deployment	Excellent	Excellent	Excellent	Excellent	Excellent
	31-Jul-25	Removal	NA	NA	NA	NA	NA
	31-Jul-25	Deployment	Excellent	Excellent	Excellent	Excellent	Excellent
	17-Sep-25	Removal	Excellent	Good	Excellent	Good	Excellent
	17-Sep-25	Deployment	Excellent	Good	Excellent	Poor	Excellent
	23-Oct-25	Removal	Excellent	Good	Excellent	Marginal	Excellent
Pumphouse Stream	5-Jun-25	Deployment	Excellent	Excellent	Excellent	Good	Excellent
	31-Jul-25	Removal	NA	NA	NA	NA	NA
	31-Jul-25	Deployment	Excellent	Excellent	Excellent	Marginal	Excellent
	18-Sep-25	Removal	Excellent	Good	Excellent	Excellent	Poor
	18-Sep-25	Deployment	Excellent	Good	Excellent	Fair	Excellent
	23-Oct-25	Removal	Excellent	Fair	Excellent	Fair	Excellent
Fraggle Rock	4-Jun-25	Removal	Excellent	Excellent	Excellent	Excellent	Excellent
	30-Jul-25	Deployment	Excellent	Good	Excellent	Excellent	Excellent
	30-Jul-25	Deployment	Good	Good	Excellent	Excellent	Excellent
	17-Sep-25	Removal	Excellent	Excellent	Excellent	Excellent	Excellent
	17-Sep-25	Deployment	Excellent	Excellent	Excellent	Good	Excellent
	23-Oct-25	Removal	Excellent	Good	Excellent	Good	Excellent

Data Interpretation

- The following graphs and discussion illustrate water quality-related events from June 4th to October 23rd, 2025 at the five IOC RTWQ stations.
- Water Survey Canada operates the hydrometric component of several stations in this network. 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. Corrected hydrometric data can be obtained at https://wateroffice.ec.gc.ca/ or upon request to Water Survey Canada.
- 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 for Fraggle Rock is provisional and has not undergone quality control checks.
- Weather data is collected from a weather station near Moosehead Lake.
- Sudden decreases continued to occur at Dumbell Stream in 2025. WSC and WRMD are investigating possible causes. Pumphouse stream began to display the same sudden decreases October onwards.

Wabush Lake Network

- Water temperature ranged from 3.8 to 22.7°C at Julienne Narrows during the 2025 deployment season. The median value was 12.90 °C (Figure 2).
- Water temperature ranged from 6.4 to 21.3°C at Dolomite Road during the 2025 deployment season. The median value was 15.0 °C (Figure 2).
- Water temperatures follow a seasonal trend. Warmest temperatures are recorded during the summer months and then temperature values decrease into the fall. Water temperature corresponds with increases/decreases in ambient air temperature.

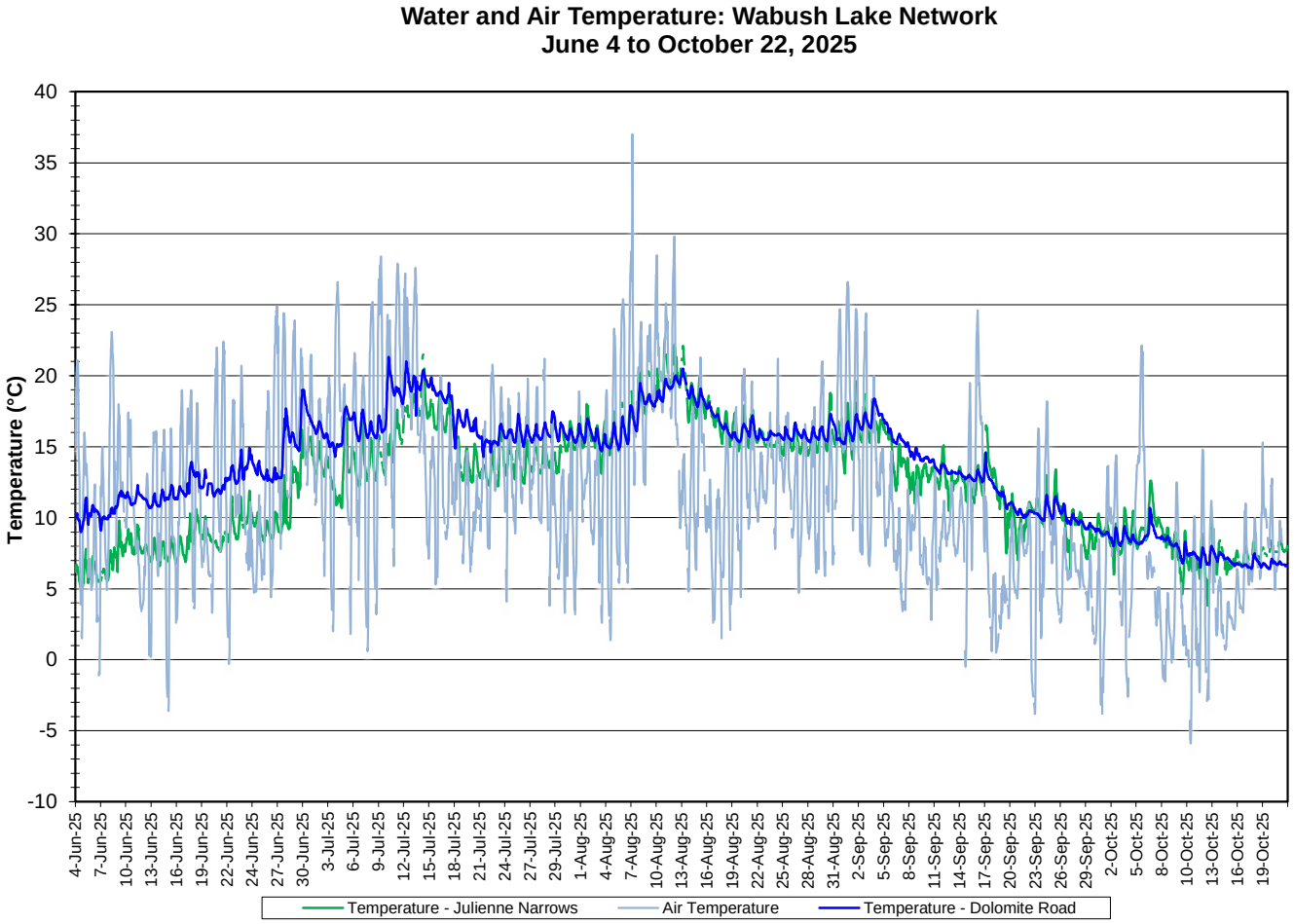


Figure 2: Water and Air Temperature – Wabush Lake Network

- pH ranged from 7.61 to 8.58 pH units at Julienne Narrows and from 7.30 to 8.77 pH units at Dolomite Road (Figure 3) during the 2025 deployment season. The median pH was 8.11 and 7.72 units, respectively.
- pH fluctuates daily at both stations. Peaks are observed during late afternoon and early evening. Some decreases in pH are noted when there are increases in stage.
- pH increased at Dolomite Road during the first half of the deployment season before decreasing gradually for the second portion of deployment. pH at Julienne narrows was fairly consistent.
- All the values during the deployment season are within the CCME Water Quality Guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).
- Water Survey Canada operates the hydrometric component of this station. 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 for these 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.

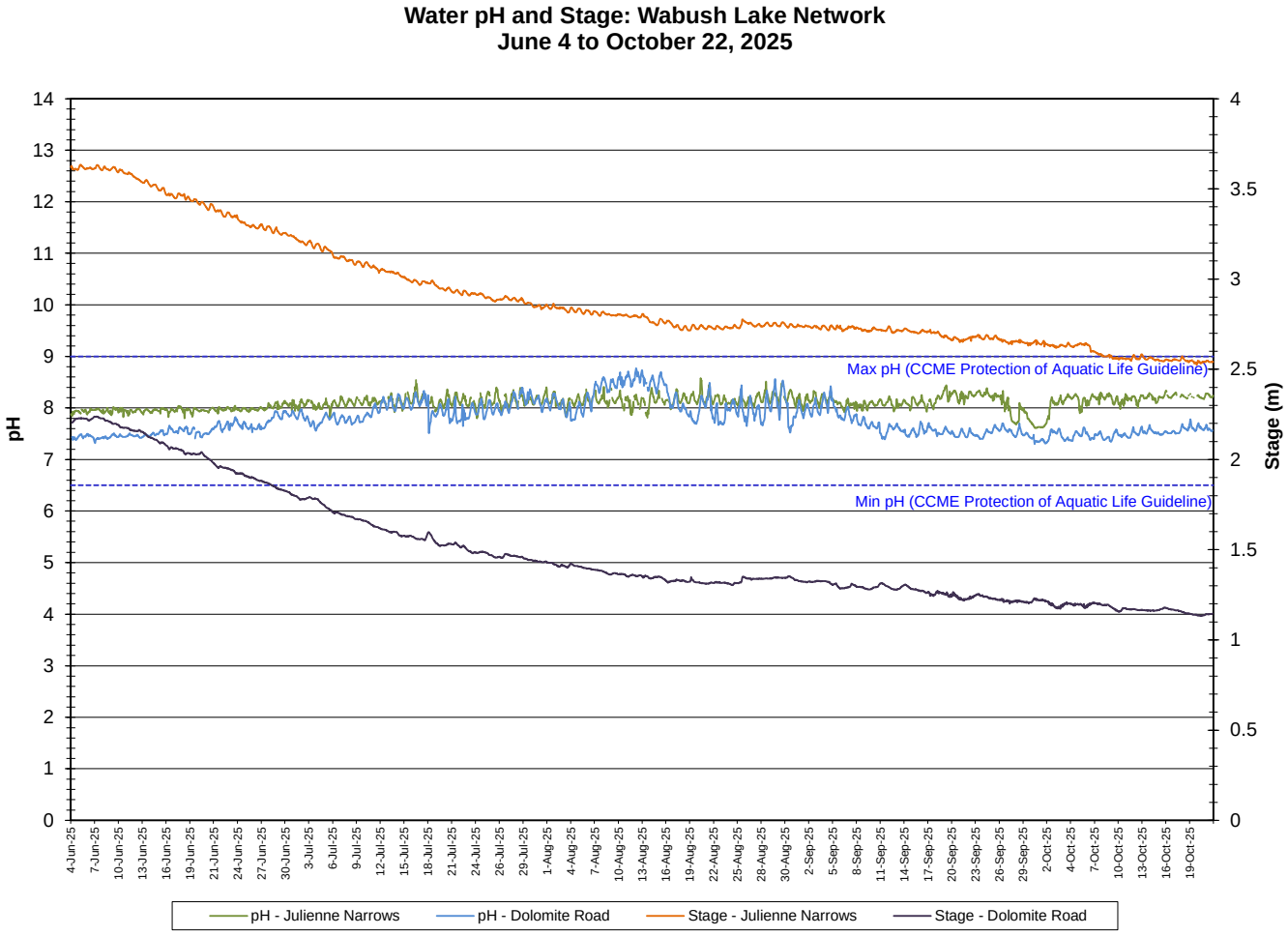


Figure 3: Water pH and Stage – Wabush Lake Network

- Throughout the 2025 deployment season, specific conductivity ranged from 30 to 137.8 µs/cm at Julienne Narrows and from 44.7 to 96.1 µs/cm at Dolomite Road (Figure 4).
- At Dolomite Road, conductivity increased gradually during this deployment season.
- At Julienne Narrows, conductivity was fairly stable overall, but showed significant short-term fluctuations through the season, likely related to wave action and the instrument being partially buried in sand at this location.
- Water Survey Canada operates the hydrometric component of this station. 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 for these 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.

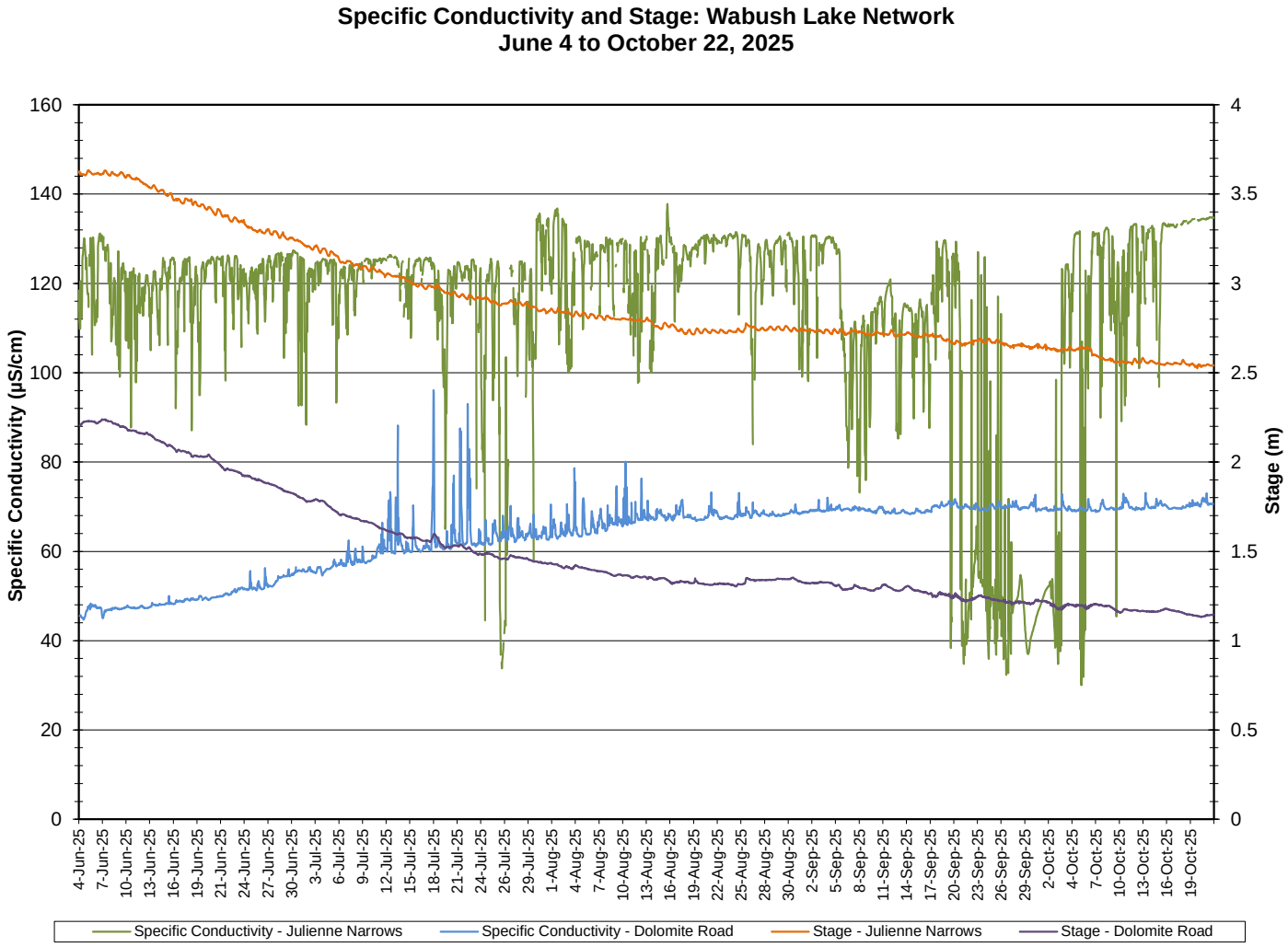


Figure 4: Specific Conductivity and Stage – Wabush Lake Network

- Dissolved oxygen ranged from 0 to 111% saturation and 0.01 to 12.32 mg/l with a median value of 9.64 mg/L at Julienne Narrows (Figure 5). The very low values in July and September are related to the sonde being partially buried in sand.
- Dissolved oxygen ranged from 79.5 to 110.6% saturation and 8.03 to 11.74 mg/l with a median value of 9.51 mg/L at Dolomite Road (Figure 5).
- Dissolved oxygen fluctuated daily at both stations with decreases observed at night.
- Dissolved oxygen follows a seasonal trend related to water temperature at both locations: decreasing into summer and increasing into fall as temperatures first rise then cool.
- All values were above the CCME Water Quality Guideline for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages of 6.5 mg/l except when the sonde appears to be buried. The majority of values recorded were above the minimum CCME Water Quality Guideline for the Protection of Aquatic Life for Cold Water Biota at Early Life Stages of 9.5 mg/l. The guidelines are indicated in blue on Figure 5.

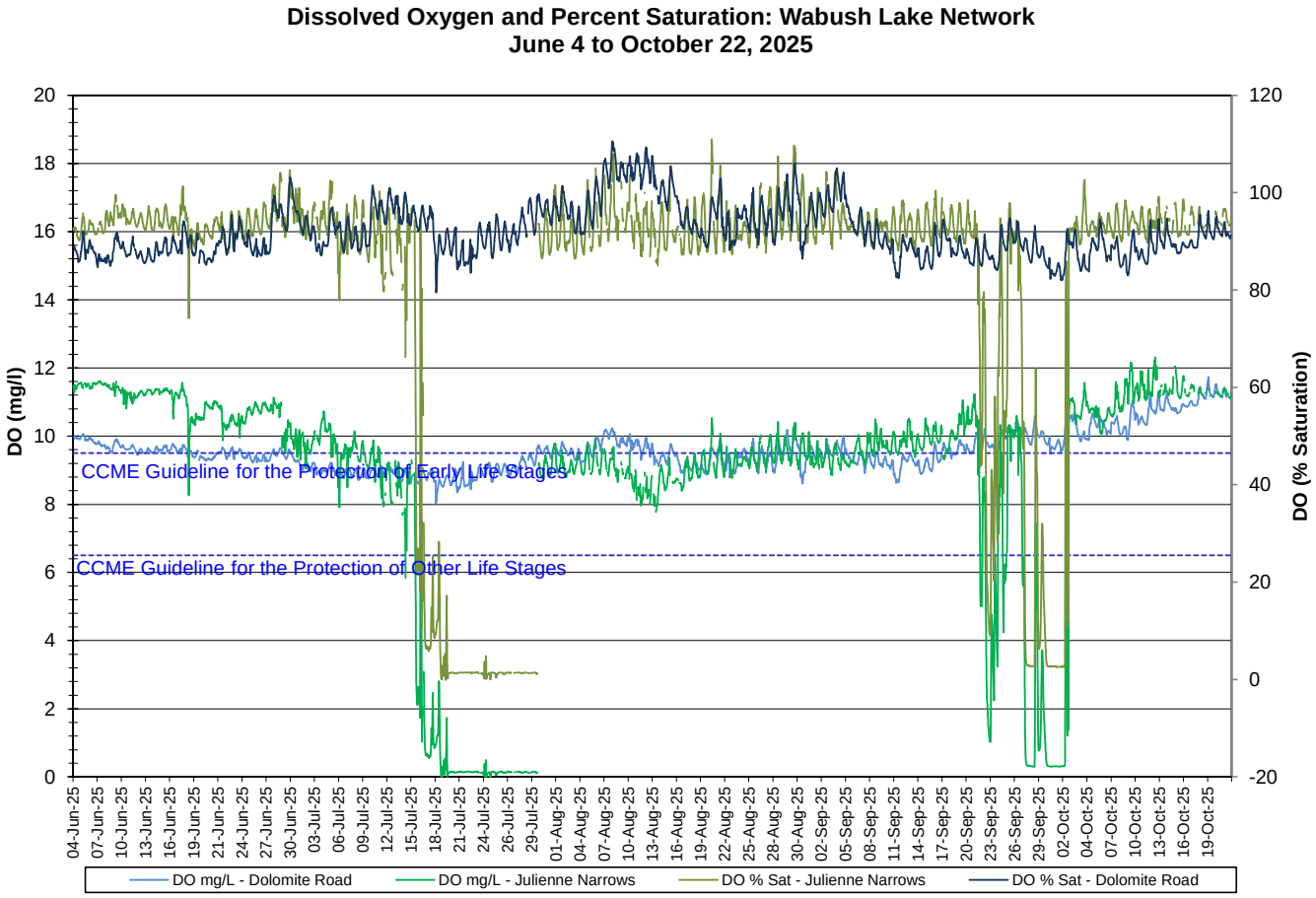


Figure 5: Dissolved Oxygen and Percent Saturation – Wabush Lake Network

- At the Julienne Narrows station, turbidity values ranged from 0 to 374.2 NTU with a median value of 2.4 NTU (Figure 6) indicating some background turbidity (Figure 6b).
- Most turbidity readings are below 20 NTU. There are occasional spikes in turbidity throughout the season, and there is an overall decreasing trend.

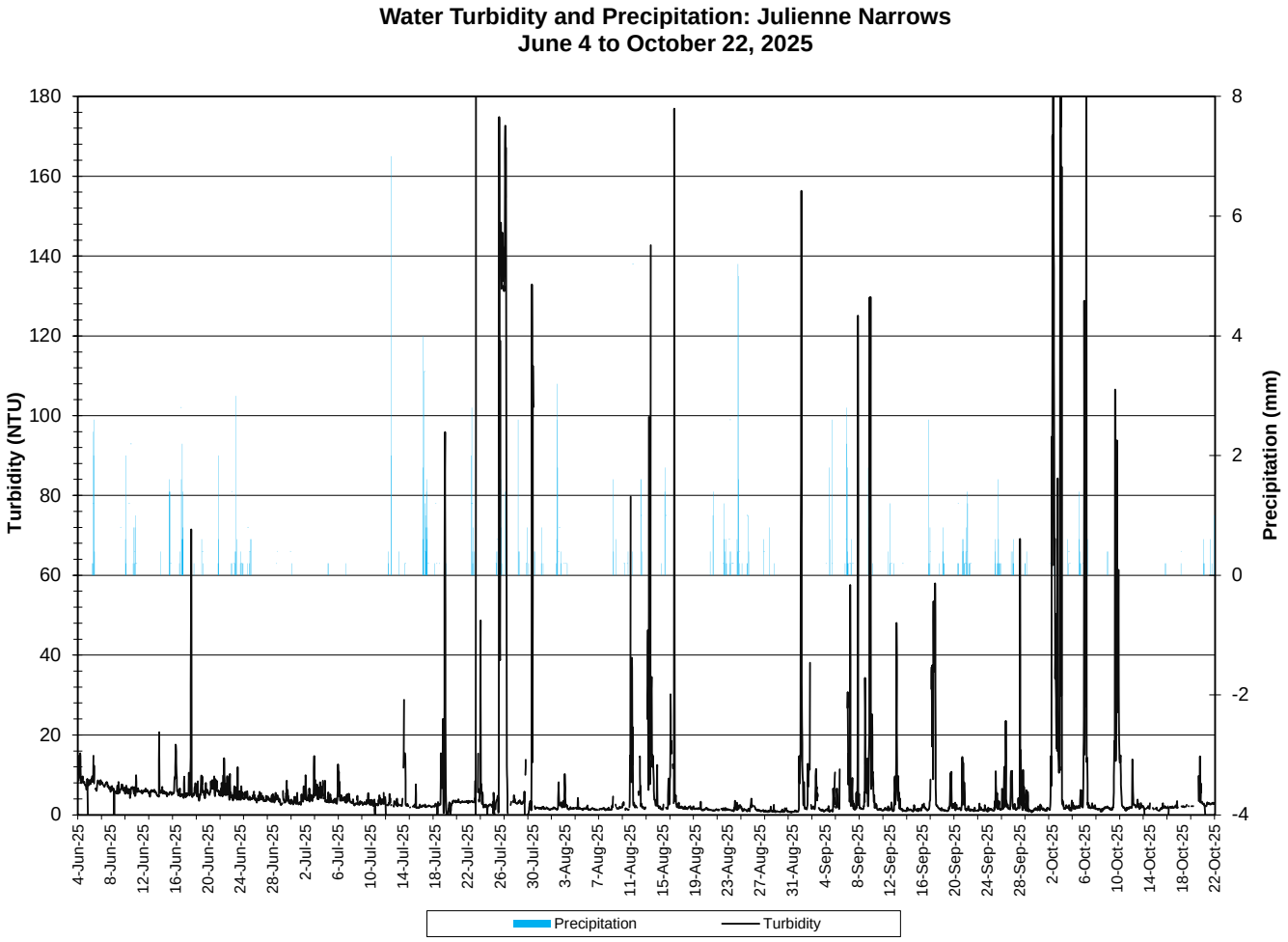


Figure 6: Water Turbidity and Precipitation: Julienne Narrows

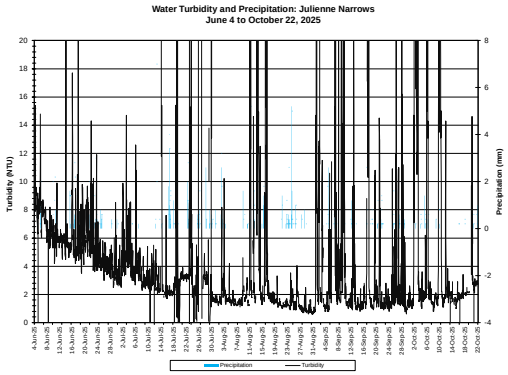


Figure 6b: Water Turbidity <20 NTU and Precipitation: Julienne Narrows

- At the Dolomite Road station, turbidity values ranged from 0.8 to 63.5 NTU, with a median value of 3.2 NTU (Figure 7).
- Background turbidity levels were less than 10 NTU. There is a slight increase in turbidity beginning in early August and continuing until the end of the deployment season.

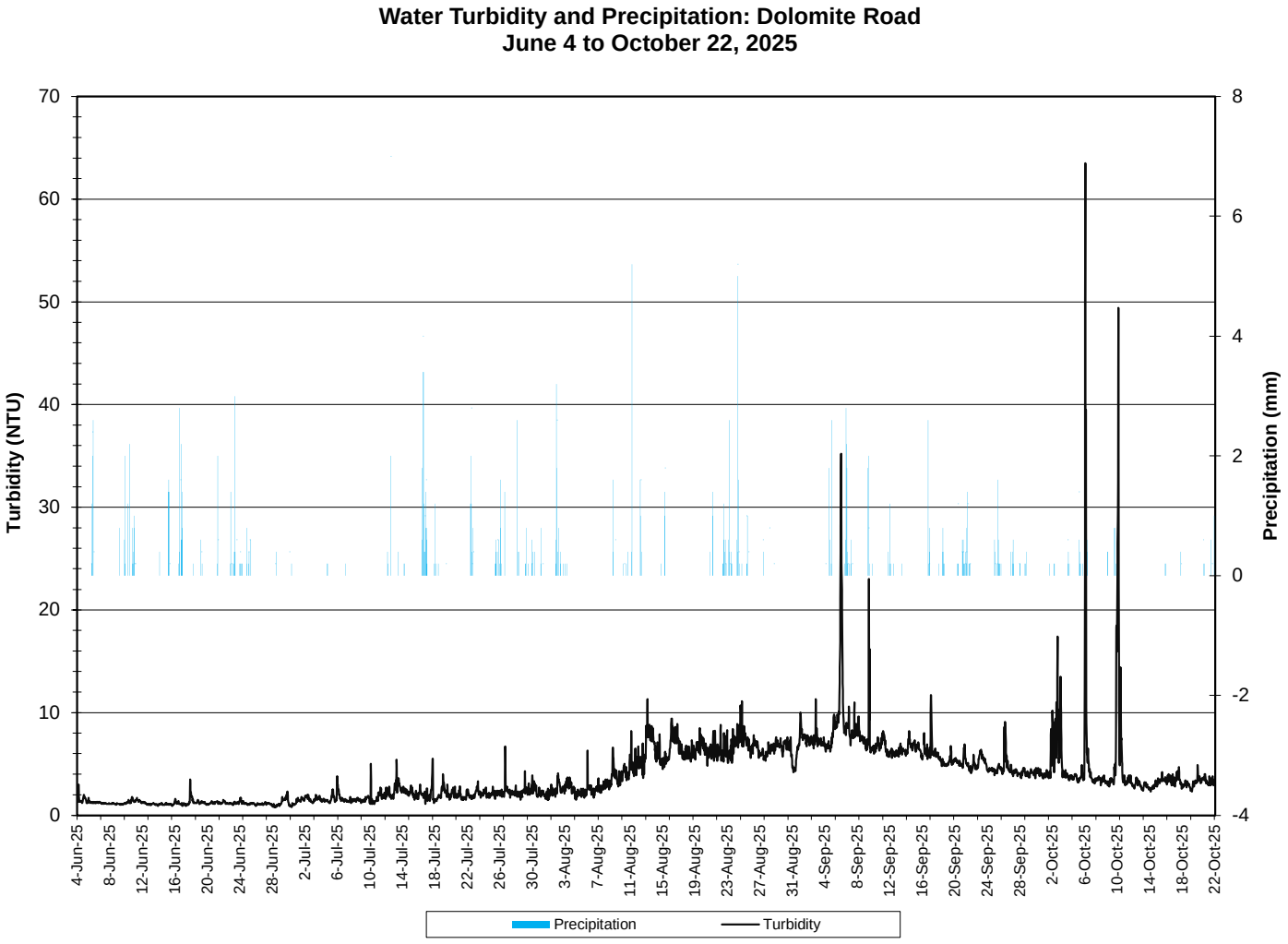


Figure 7: Turbidity and Precipitation: Dolomite Road

- Stage and precipitation are graphed below to show the relationship between rainfall and water level at Julienne Narrows and Dolomite Road (Figure 8).
- At both stations, stage decreased steadily throughout the deployment season.
- Water Survey Canada operates the hydrometric component of this station. 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 for these 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.

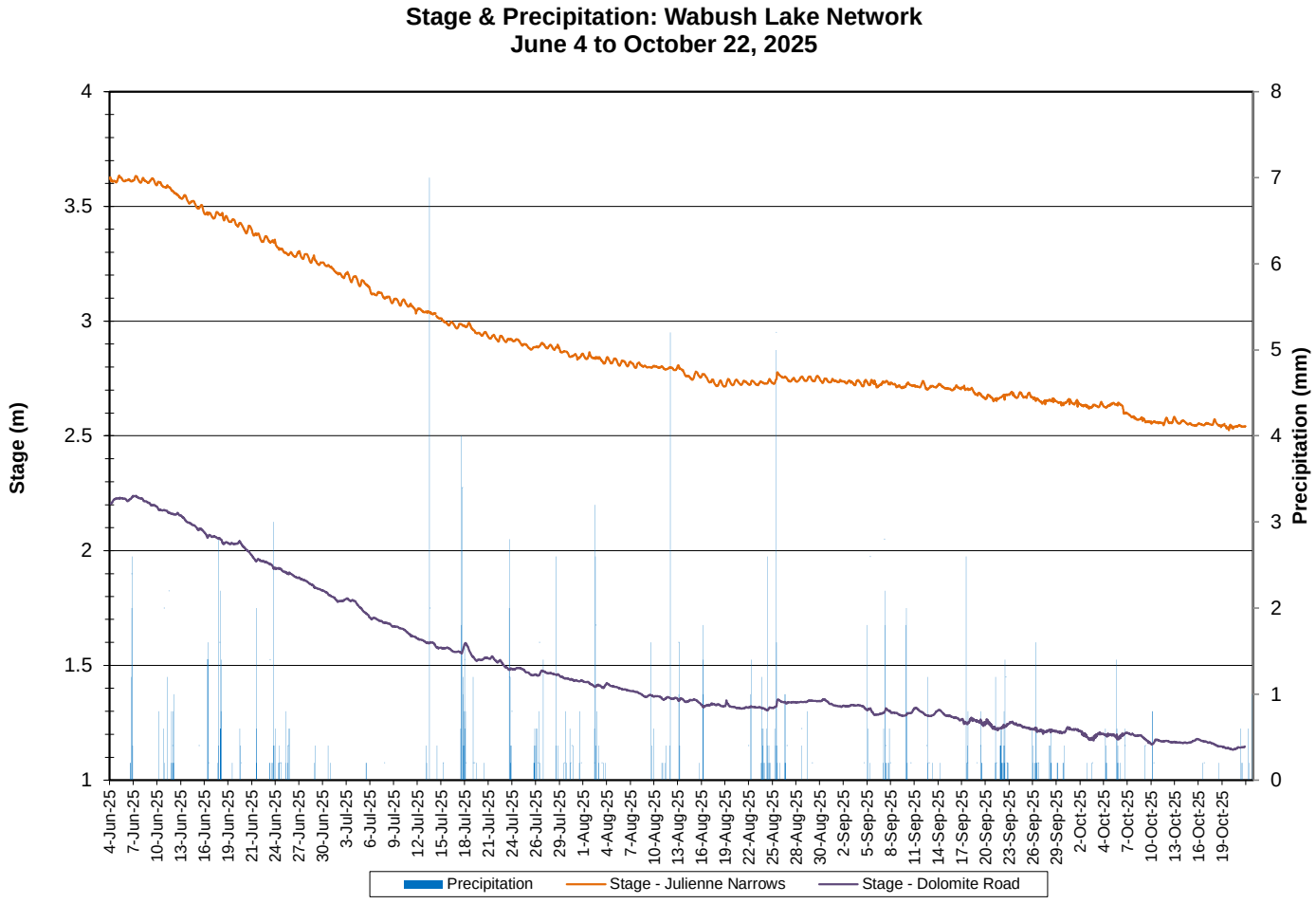


Figure 8: Stage and Precipitation: Wabush Lake Network

Dumbell Stream

- Water temperature ranged from 2.09 to 7.25°C at Dumbell Stream during the 2025 deployment season. The median value was 4.30 °C (Figure 9).
- Water temperature at this station remains within a small range throughout the season and is influenced less than the other stations by air temperature values. It decreased slightly during the last few weeks of the season as Fall approached.

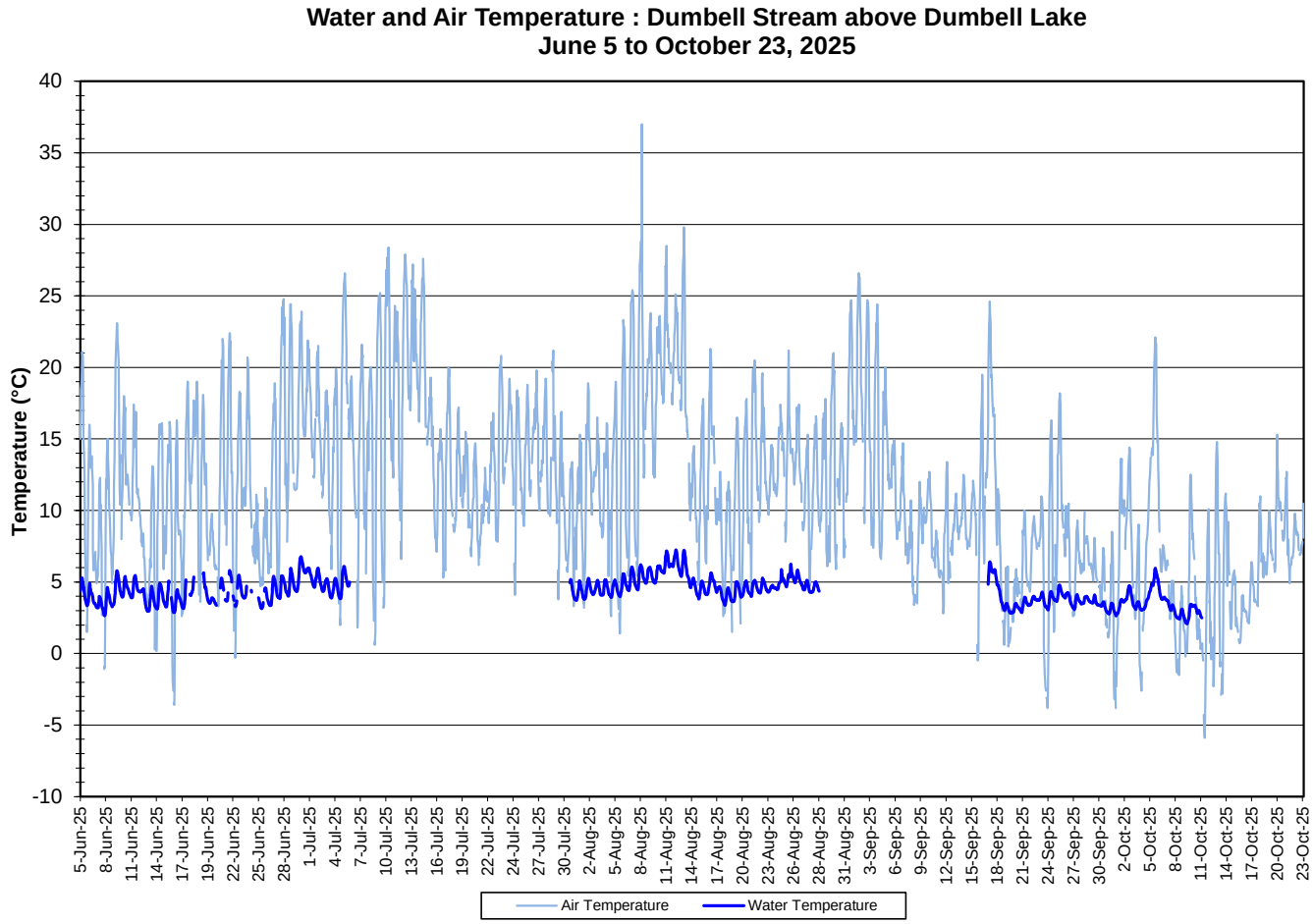


Figure 9: Water and Air Temperature – Dumbell Stream above Dumbell Lake

- pH ranges from 7.51 to 7.98 pH units at Dumbell Stream (Figure 10). The median pH is 7.89 units.
- pH fluctuates daily. Peaks are observed during late afternoon and into early evening.
- All values during the deployment are within the CCME Water Quality Guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).
- pH remained very steady throughout the season, with some fluctuations during stage changes in July.

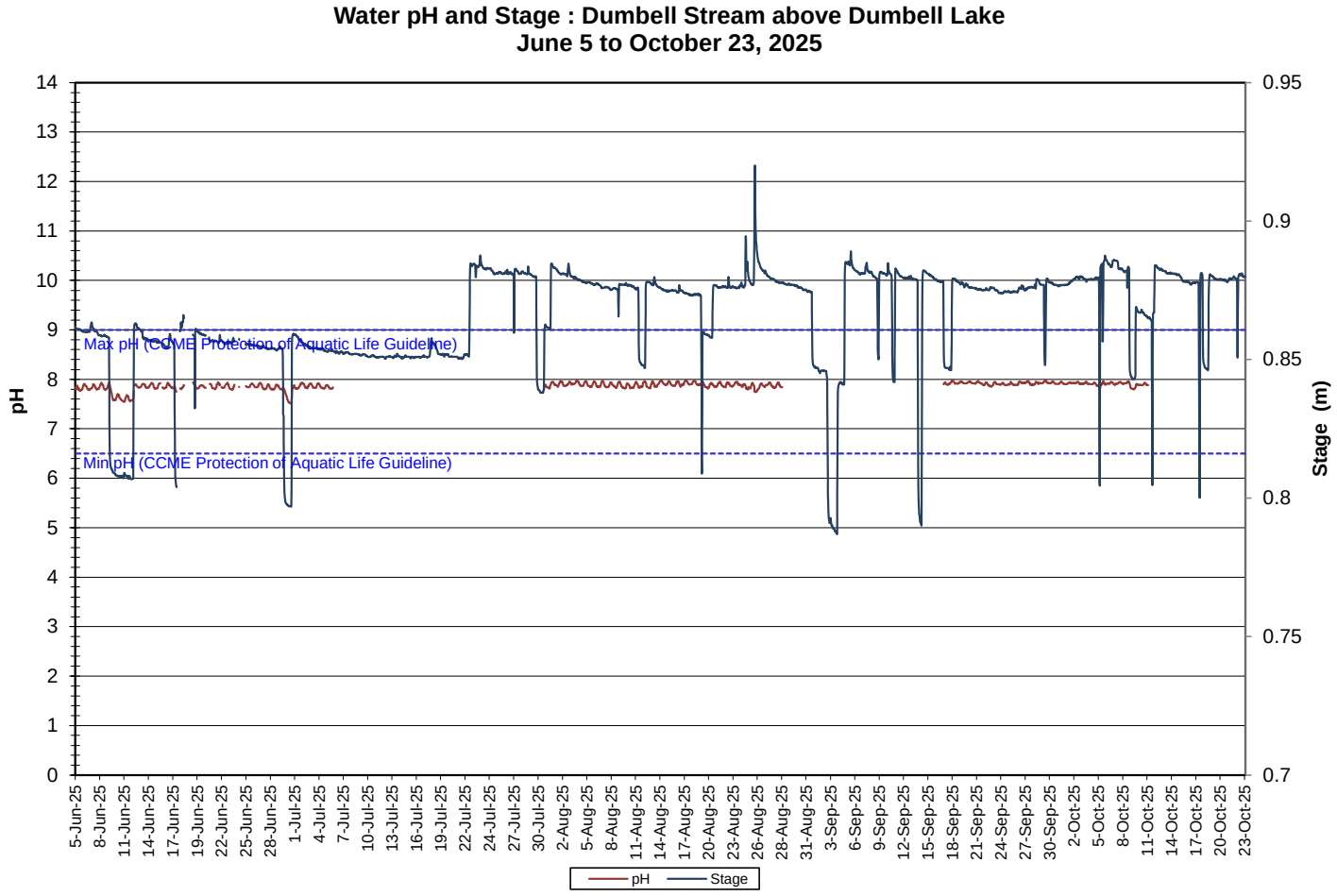


Figure 10: Water pH and Stage – Dumbell Stream above Dumbell Lake

- Throughout the 2025 deployment season, specific conductivity ranged from 94.4 to 222.4 µs/cm at Dumbell Stream (Figure 11).
- Sudden spikes in conductivity have occurred for unknown reasons. Further monitoring and investigation are needed to identify the cause.
- Water Survey Canada operates the hydrometric component of this station. 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 for this station 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.

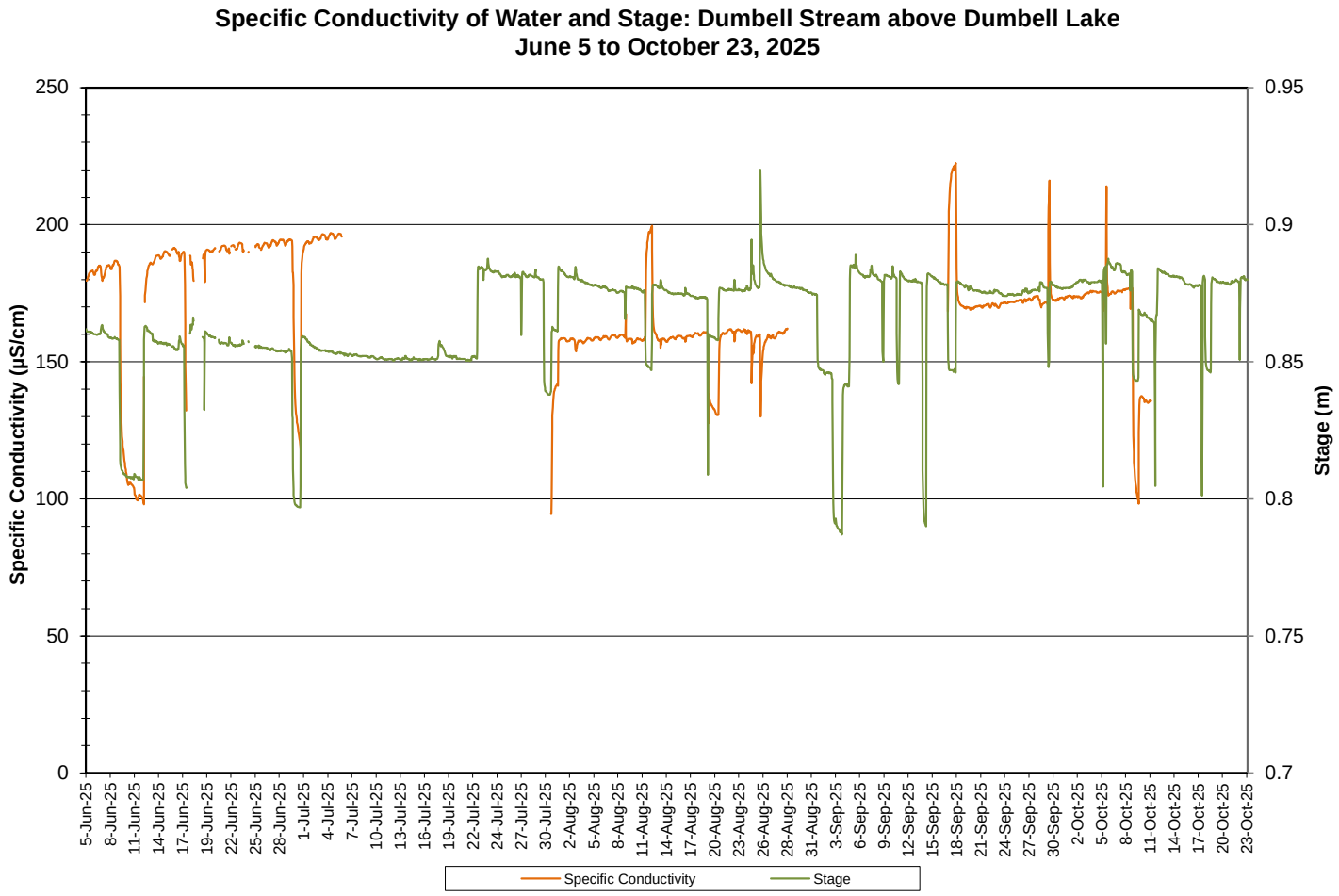


Figure 11: Specific Conductivity and Stage – Dumbell Stream above Dumbell Lake

- Dissolved oxygen ranged from 89.3 to 101.9% saturation and from 11.15 to 13.84 mg/l, with a median value of 12.25 mg/l (Figure 12).
- Dissolved oxygen fluctuated daily with decreases observed at night. There was a noticeable increase in dissolved oxygen in September, corresponding with a seasonal decrease in water temperature.
- All values were above the CCME Water Quality Guidelines for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages (6.5 mg/l) and Early Life Stages (9.5 mg/l). The guidelines are indicated in blue on Figure 12.

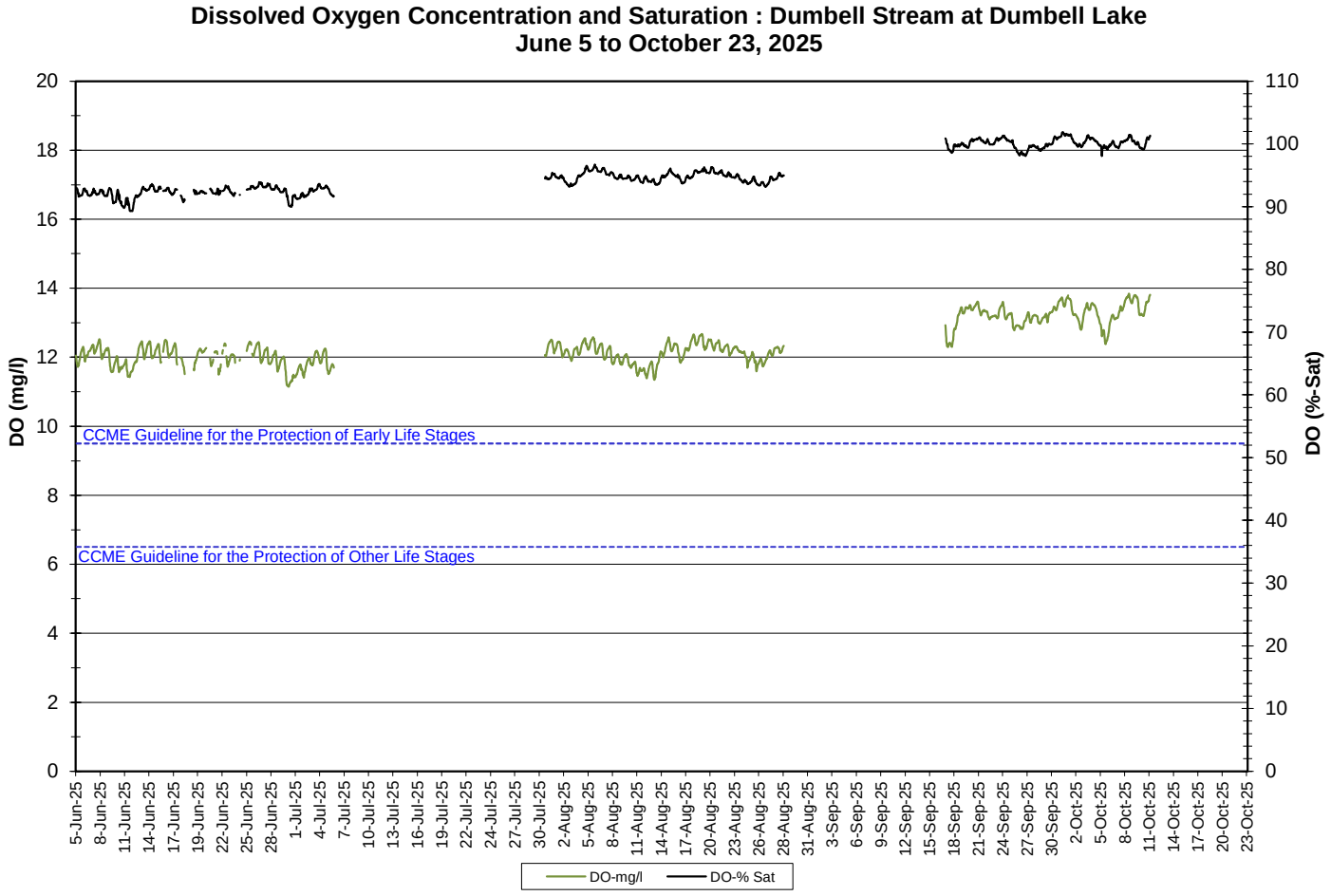


Figure 12: Dissolved Oxygen and Percent Saturation – Dumbell Stream above Dumbell Lake

- Turbidity values range from 0.0 to 60.6 NTU, with a median value of 0.4 NTU (Figure 13) indicating low background turbidity. Turbidity spikes occur infrequently and for short periods of time.
- Most turbidity readings during this deployment season are less than 5.0 NTU.

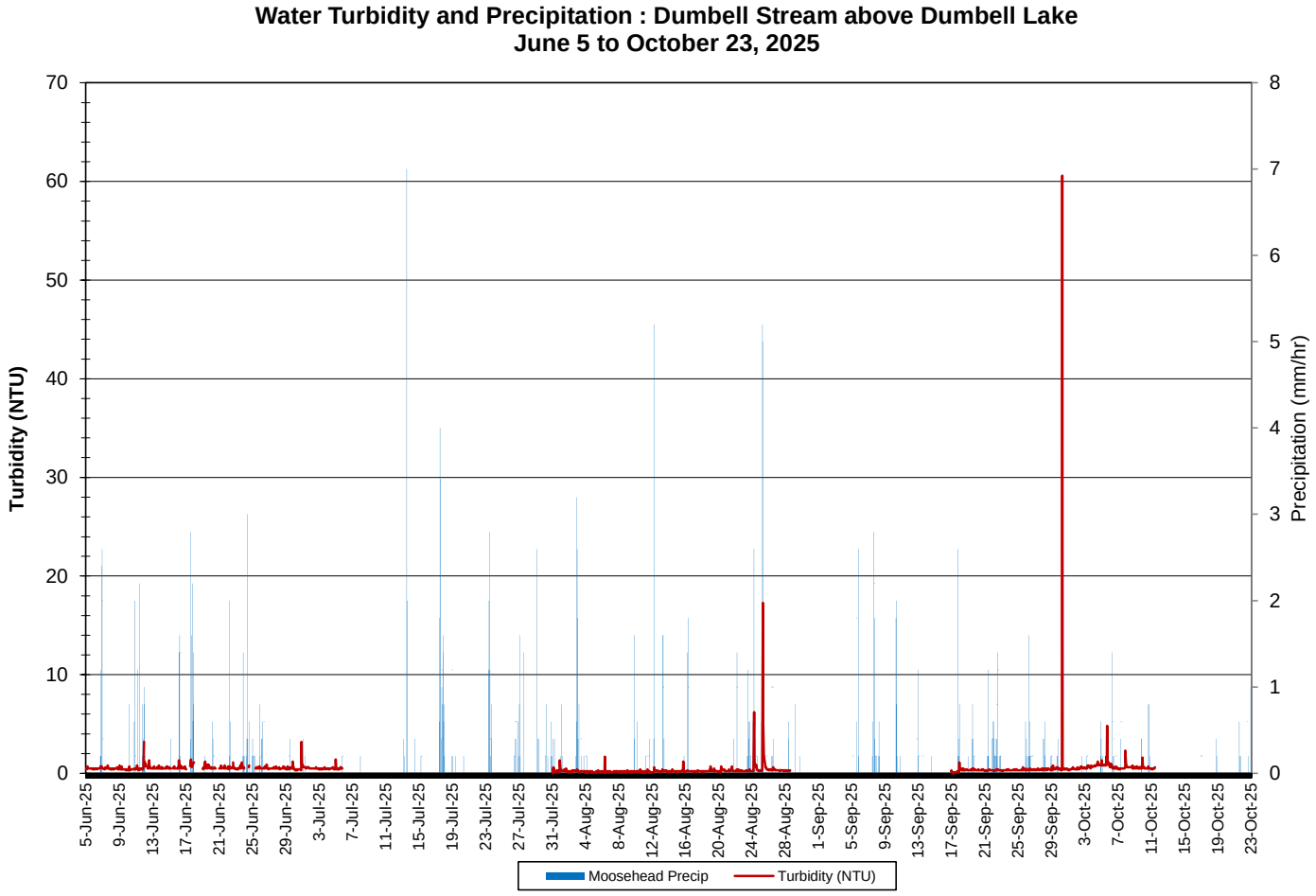


Figure 13: Turbidity and Precipitation – Dumbell Stream above Dumbell Lake

- Stage and precipitation are graphed below to show the relationship between rainfall and water level at Dumbell Stream (Figure 14). Precipitation has a direct effect on stage at this location, though it was not very evident this season due to issues with the hydrometric equipment.
- Water Survey Canada operates the hydrometric component of this station. 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 for this station 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.

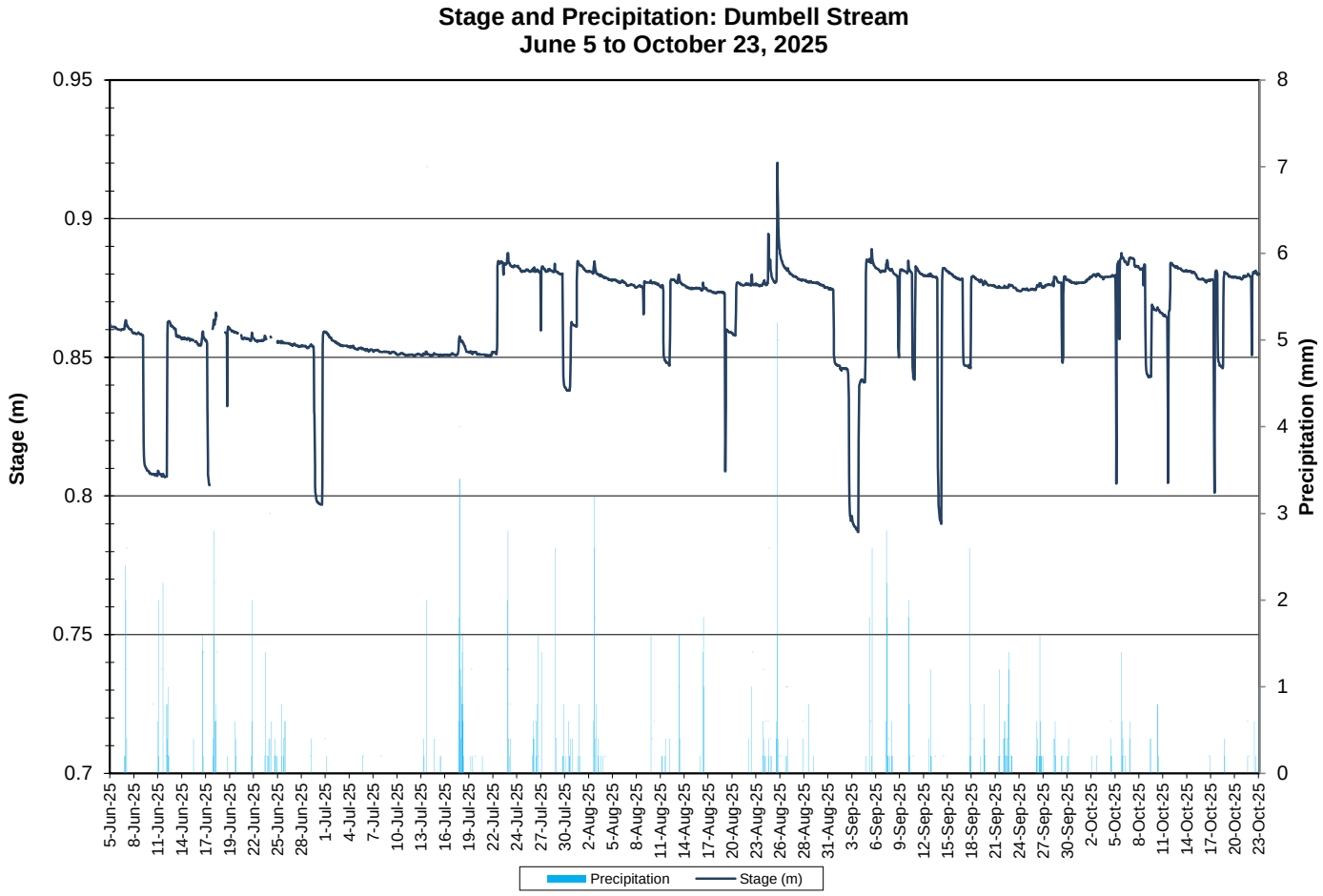


Figure 14: Stage and Precipitation – Dumbell Stream above Dumbell Lake

Pumphouse Stream

- Water temperature ranged from 1.90 to 18.0°C at Pumphouse Stream during the 2025 deployment season. The median value was 7.50°C (Figure 15).
- Water temperature corresponded closely with air temperature fluctuations. Increases were noted during periods of warm ambient air temperature. Water temperature steadily decreased during the later portion of the deployment season.

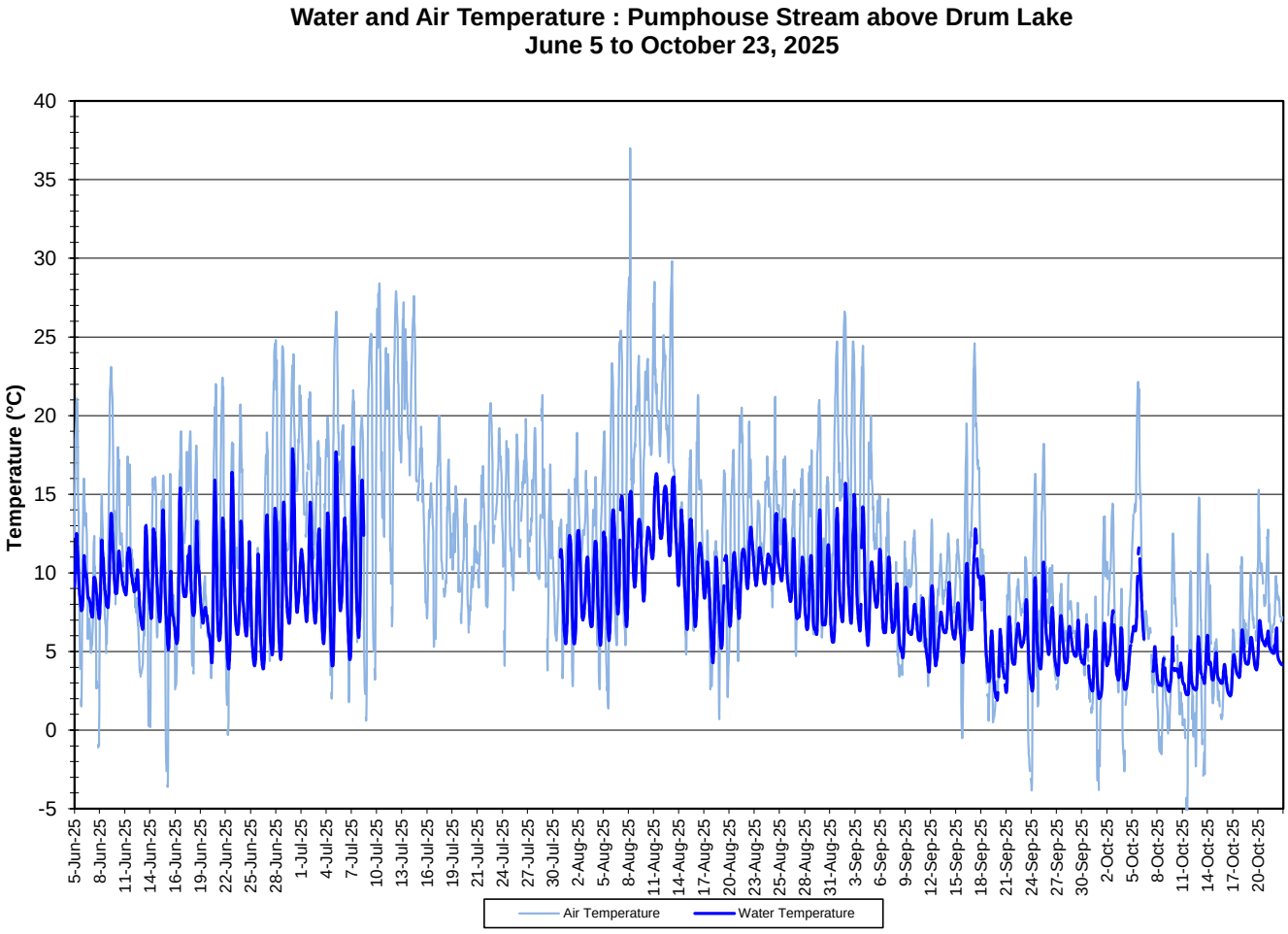


Figure 15: Water and Air Temperature – Pumphouse Stream above Drum Lake

- pH ranged from 6.97 to 8.31 pH units at Pumphouse Stream (Figure 16). The median pH was 7.83 units.
- pH fluctuated daily. Peaks were observed during late afternoon and into the early evening. There are several sharp decreases throughout the season which last for a short period of time. This could be related to precipitation events. Levels were generally stable throughout the deployment period.
- All values during the deployment are within the CCME Water Quality Guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).

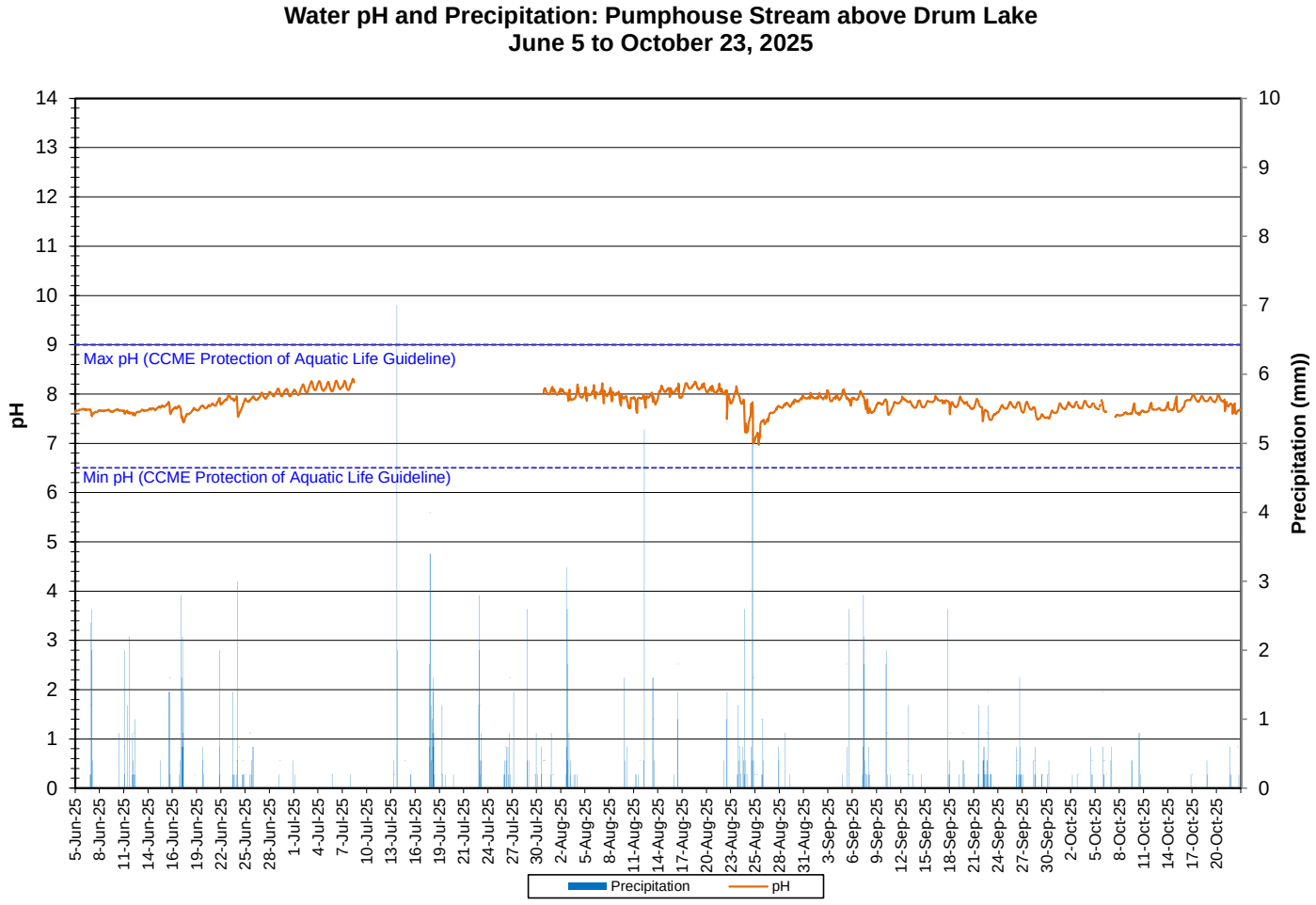


Figure 16: Water pH and Precipitation – Pumphouse Stream above Drum Lake

- Throughout the 2025 deployment season, specific conductivity ranged from 82 to 385.9 µs/cm at Pumphouse Stream (Figure 17) with a median of 327.1 µs/cm.
- Specific conductivity increased over the first half of the season and decreased over the second portion. Many decreases in conductivity coincide with stage increases, but many in September do not and may be related to mining activity.
- Water Survey Canada operates the hydrometric component of this station. 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 for this station 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.

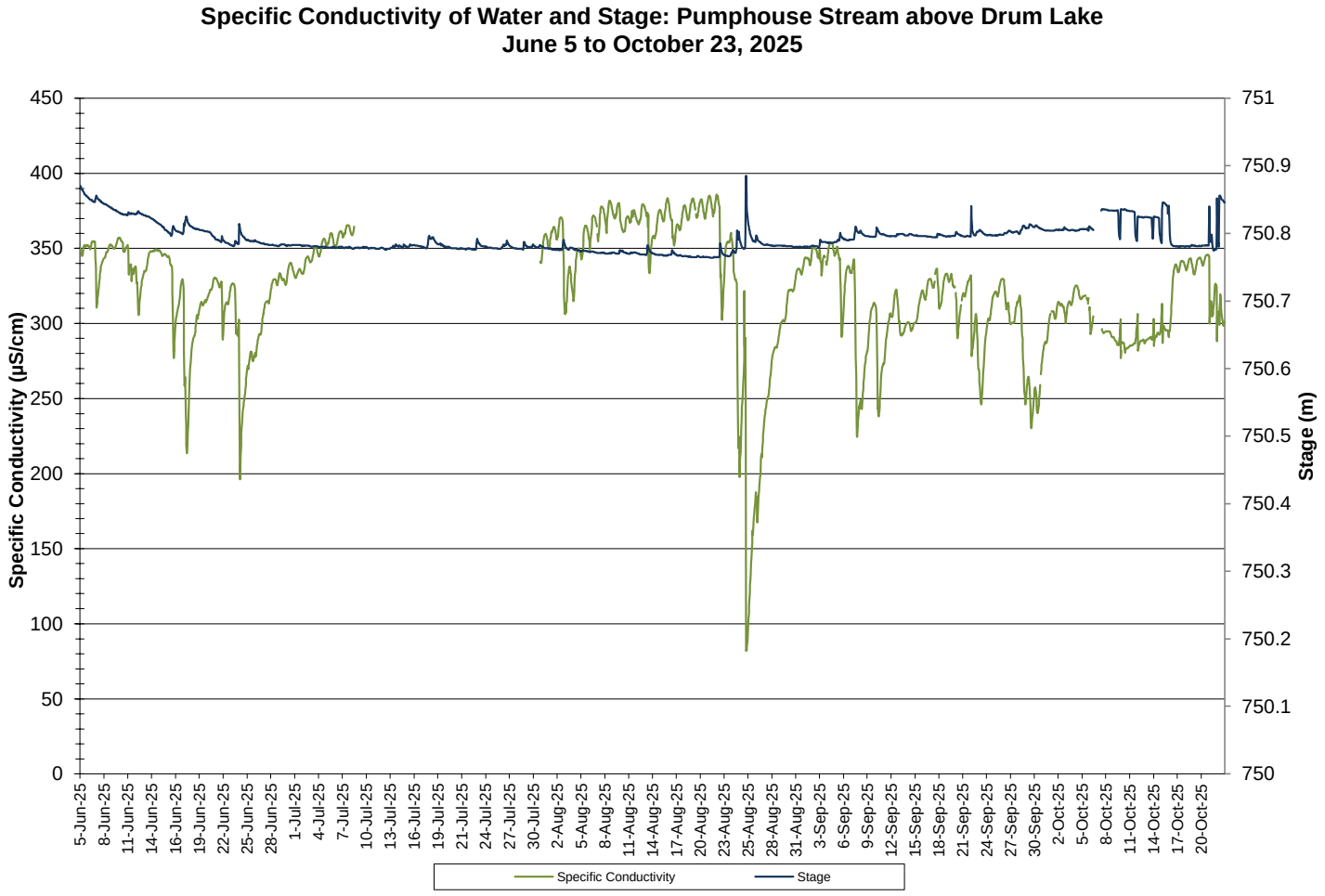


Figure 17: Specific Conductivity and Precipitation – Pumphouse Stream above Drum Lake

- Dissolved oxygen ranged from 43.3 to 139% saturation and 4.32 to 14.24 mg/l with a median value of 10.27 mg/l (Figure 18).
- Dissolved oxygen fluctuated diurnally with decreases observed at night and showed an inverse relationship to increases/decreases in water temperature.
- Most values were above the CCME Water Quality Guideline for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages of 6.5 mg/l, dropping below when water temperatures were warmest. However, a significant number of values recorded were below the minimum guideline for early life stages of 9.5 mg/l until water temperatures decreased and oxygen levels began to rise in September. The guidelines are indicated in blue on Figure 18.

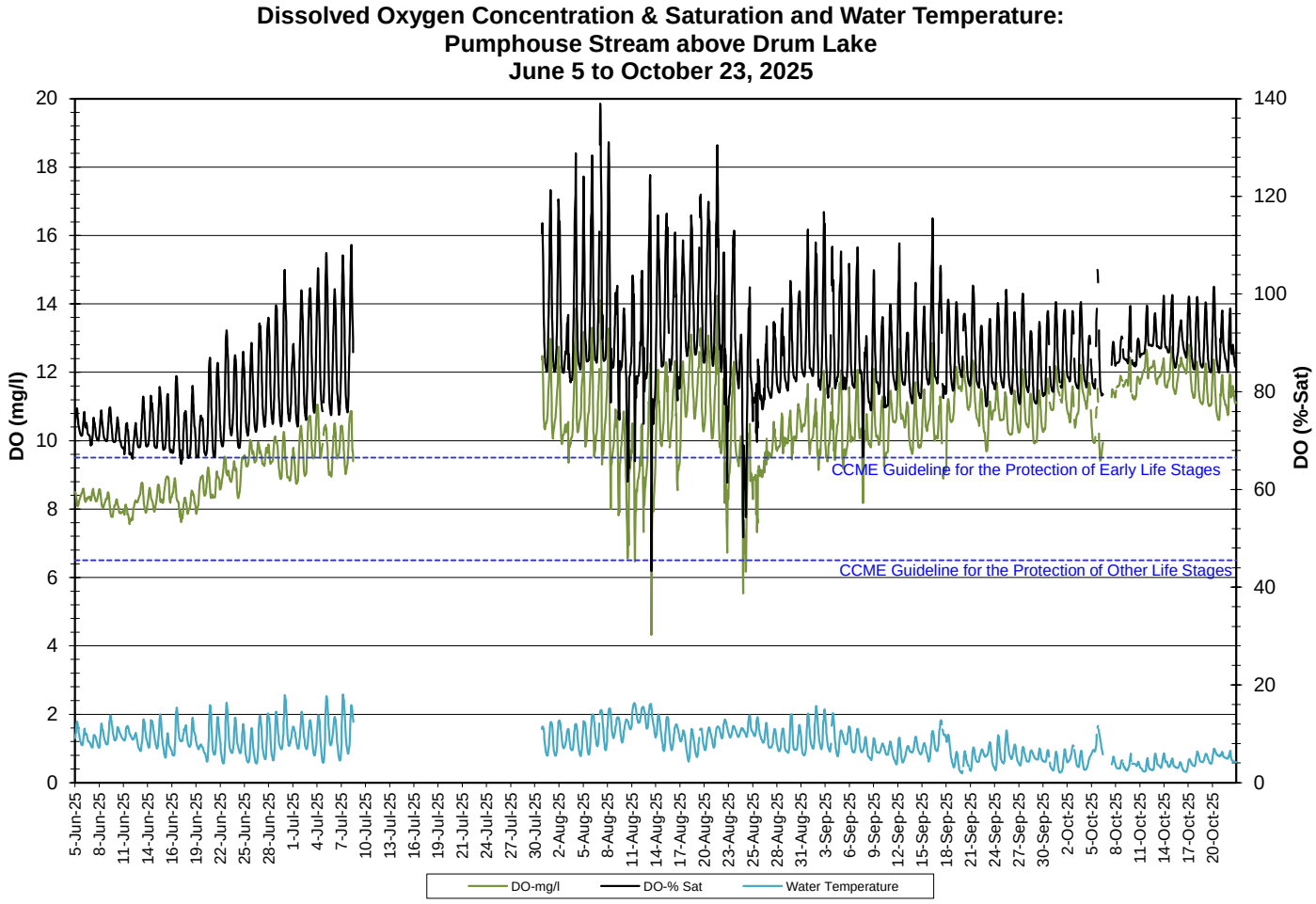


Figure 18: Dissolved Oxygen, Percent Saturation & Water Temperature – Pumphouse Stream above Drum Lake

- Turbidity values range from -0.3 to 29.6 NTU, with a median value was 0.8 NTU (Figure 19).
- Turbidity levels were low throughout the deployment season. Small spikes occur infrequently and for small periods of time. Some spikes can be attributed to precipitation events. High continuous values in October indicate the sensor was likely fouled by debris.

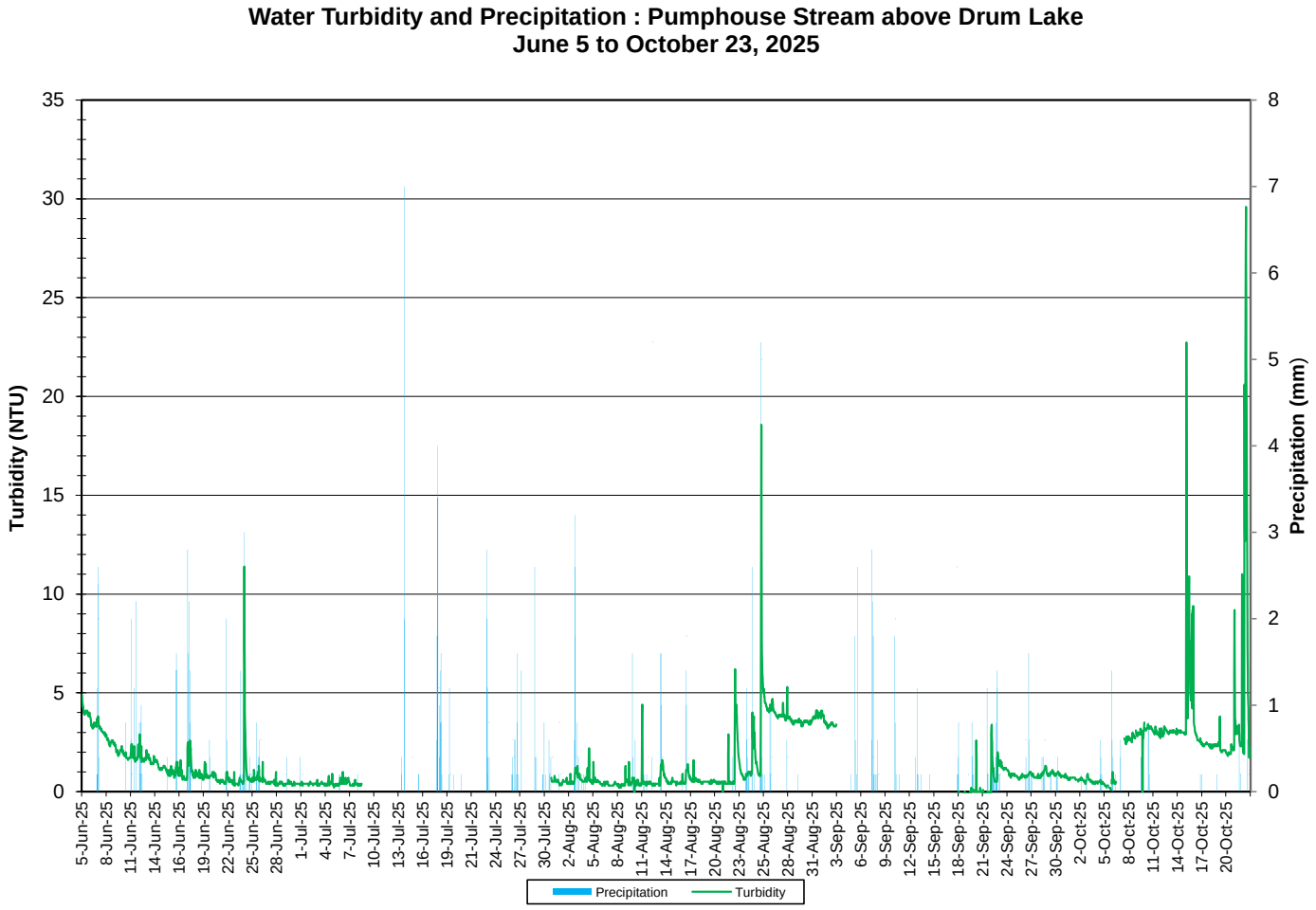


Figure 19: Turbidity and Precipitation – Pumphouse Stream above Drum Lake

- Stage and precipitation are graphed below to show the relationship between rainfall and water level at Pumphouse Stream (Figure 20).
- Stage data shows slight increases after precipitation events.
- Water Survey Canada operates the hydrometric component of this station. 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 for this station 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.

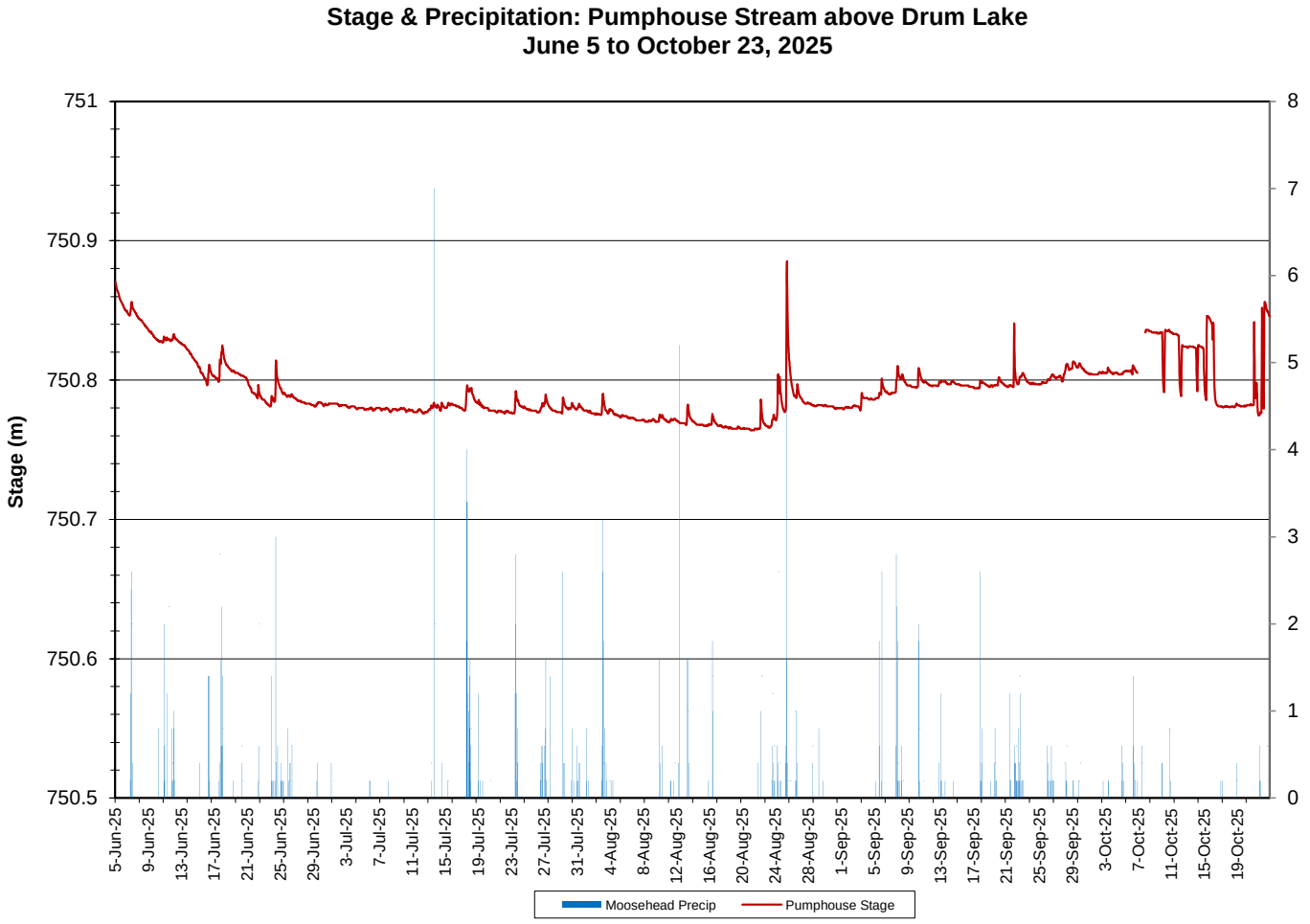


Figure 20: Stage and Precipitation – Pumphouse Stream above Drum Lake

Fraggle Rock

- Water temperature ranged from 1.99 to 20.41°C at Fraggle Rock during the 2025 deployment season. The median value was 11.28 °C (Figure 21).
- Water temperature follows a seasonal trend. Warmest temperatures are recorded during the summer months and then temperature values decrease into the fall. Water temperature corresponds with increases/decreases in ambient seasonal air temperature.

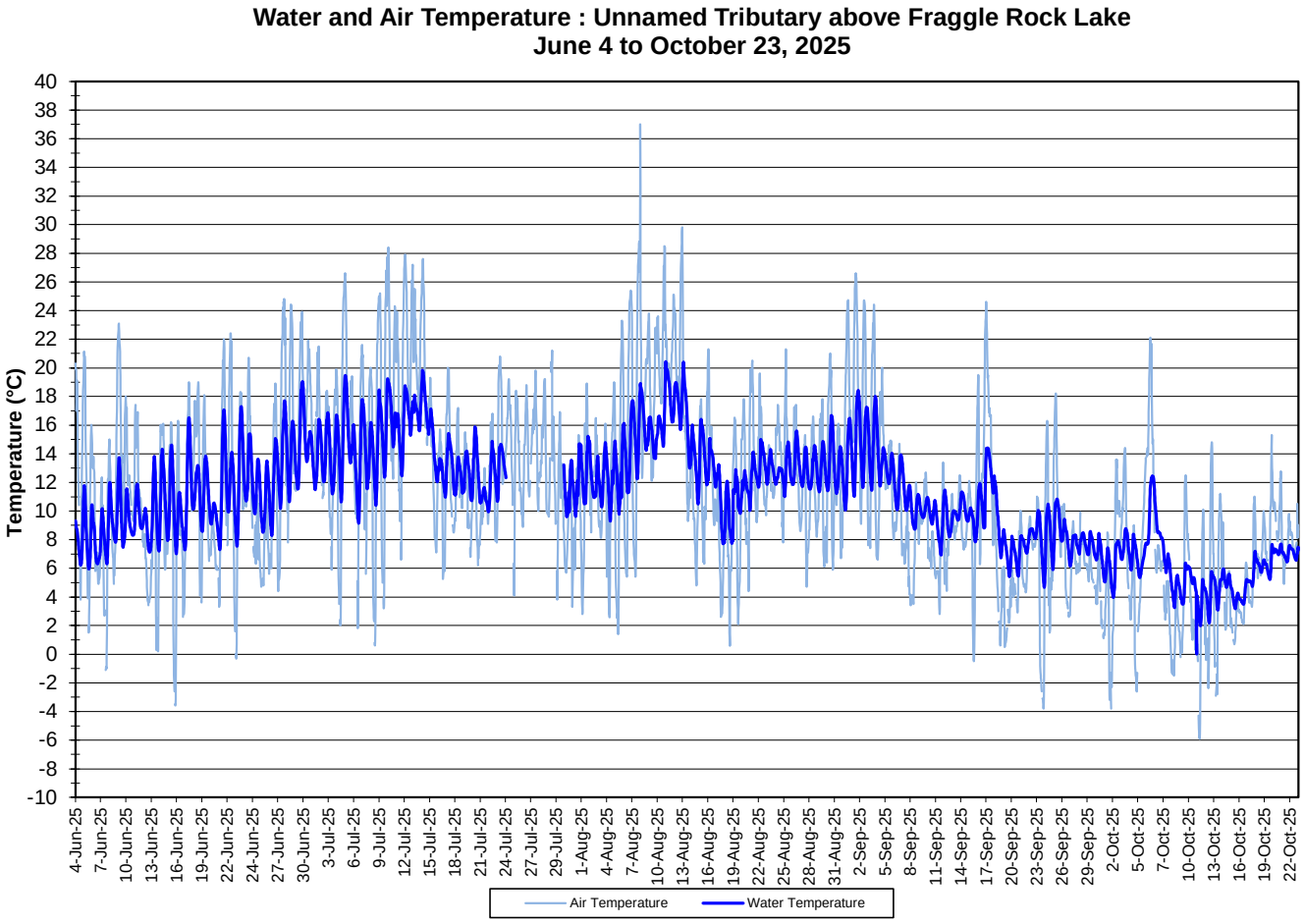


Figure 21: Water and Air Temperature – Unnamed Tributary above Fraggle Rock Lake

- pH ranges from 7.73 to 8.49 pH units at Fraggle Rock (Figure 22). The median pH is 8.23 units.
- pH fluctuates daily. Peaks are observed during late afternoon and into early evening. There is a noticeable temporary decrease in late August which correlates with a significant precipitation event.
- All values during the deployment are within the CCME Water Quality Guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).

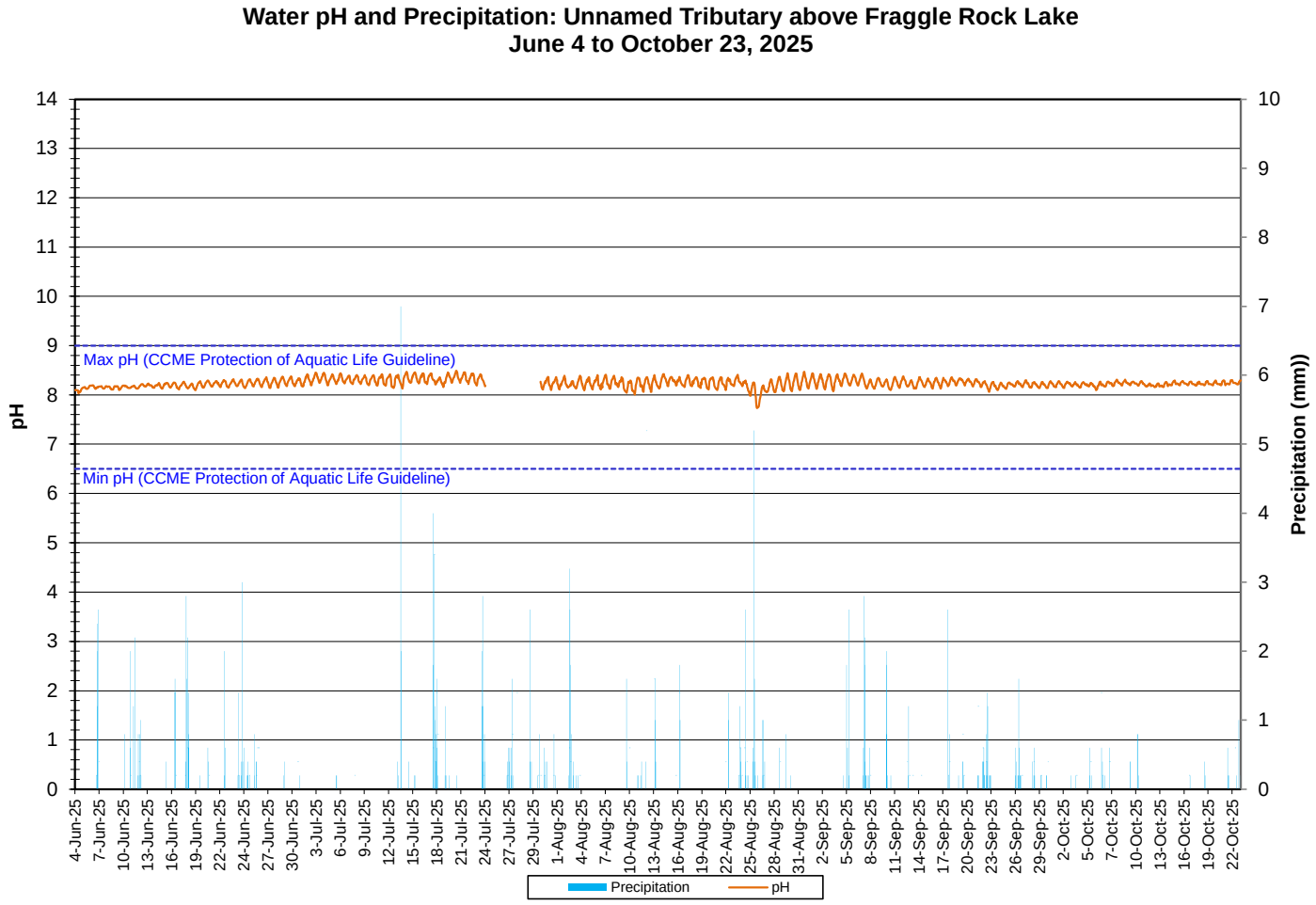


Figure 22: Water pH and Stage – Unnamed Tributary above Fraggle Rock Lake

- Throughout the 2025 deployment season, specific conductivity ranged from 115.2 to 201.7 µs/cm at Fraggle Rock (Figure 23).
- Specific conductivity showed clear decreases when water elevation rose during precipitation events.
- 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 for this station is provisional and has not undergone quality control checks.

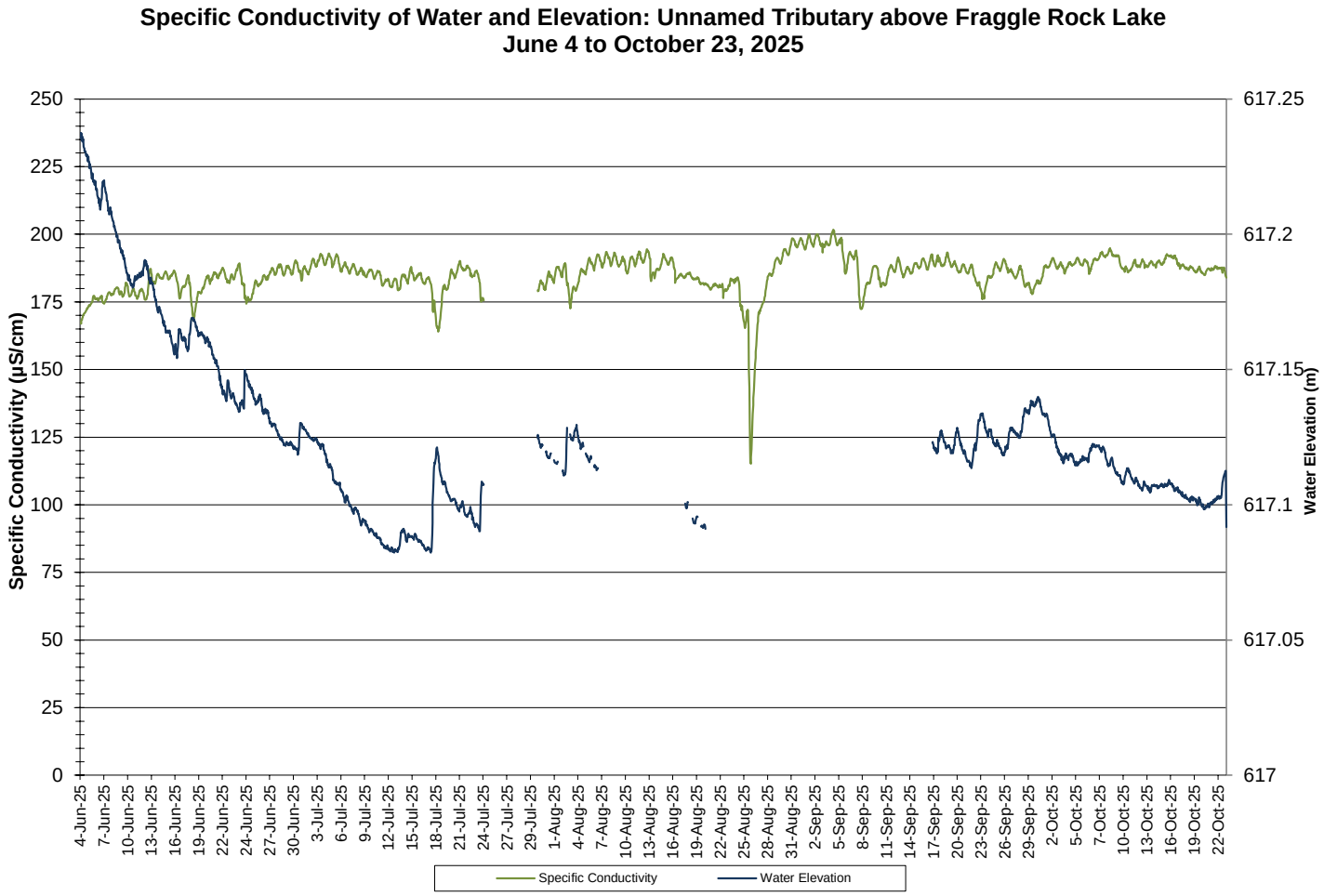


Figure 23: Specific Conductivity and Elevation – Unnamed Tributary above Fraggle Rock Lake

- Dissolved oxygen ranged from 86.8 to 98.9% saturation and 8.27 to 13.32 mg/l with a median value of 10.05 mg/l (Figure 24).
- Dissolved oxygen fluctuated diurnally with decreases observed at night and showed an inverse relationship to increases/decreases in water temperature. Dissolved oxygen levels increased over the course of the deployment season.
- All values were above the CCME Water Quality Guideline of 6.5 mg/L for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages, while the majority were also above the minimum guideline for early life stages of 9.5 mg/l except when water temperatures were warmest.

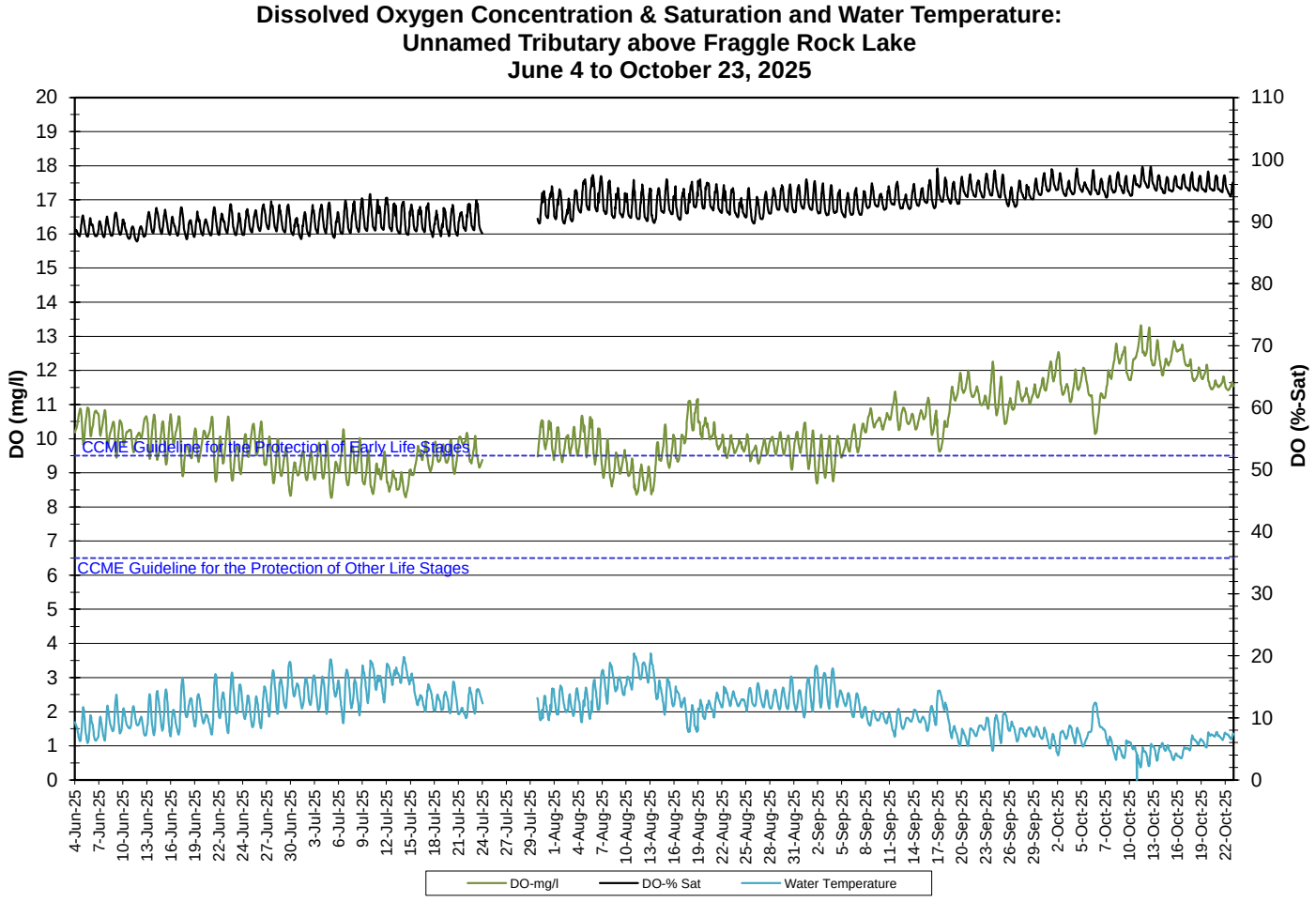


Figure 24: Dissolved Oxygen, Percent Saturation & Water Temperature –

Unnamed Tributary above Fraggle Rock Lake

- Turbidity values range from 0.1 to 5.7 NTU, with a median value of 0.6 NTU (Figure 25).
- Turbidity levels were very low throughout the deployment season. Small spikes occur infrequently and for small periods of time. Most turbidity spikes can be attributed to precipitation events.

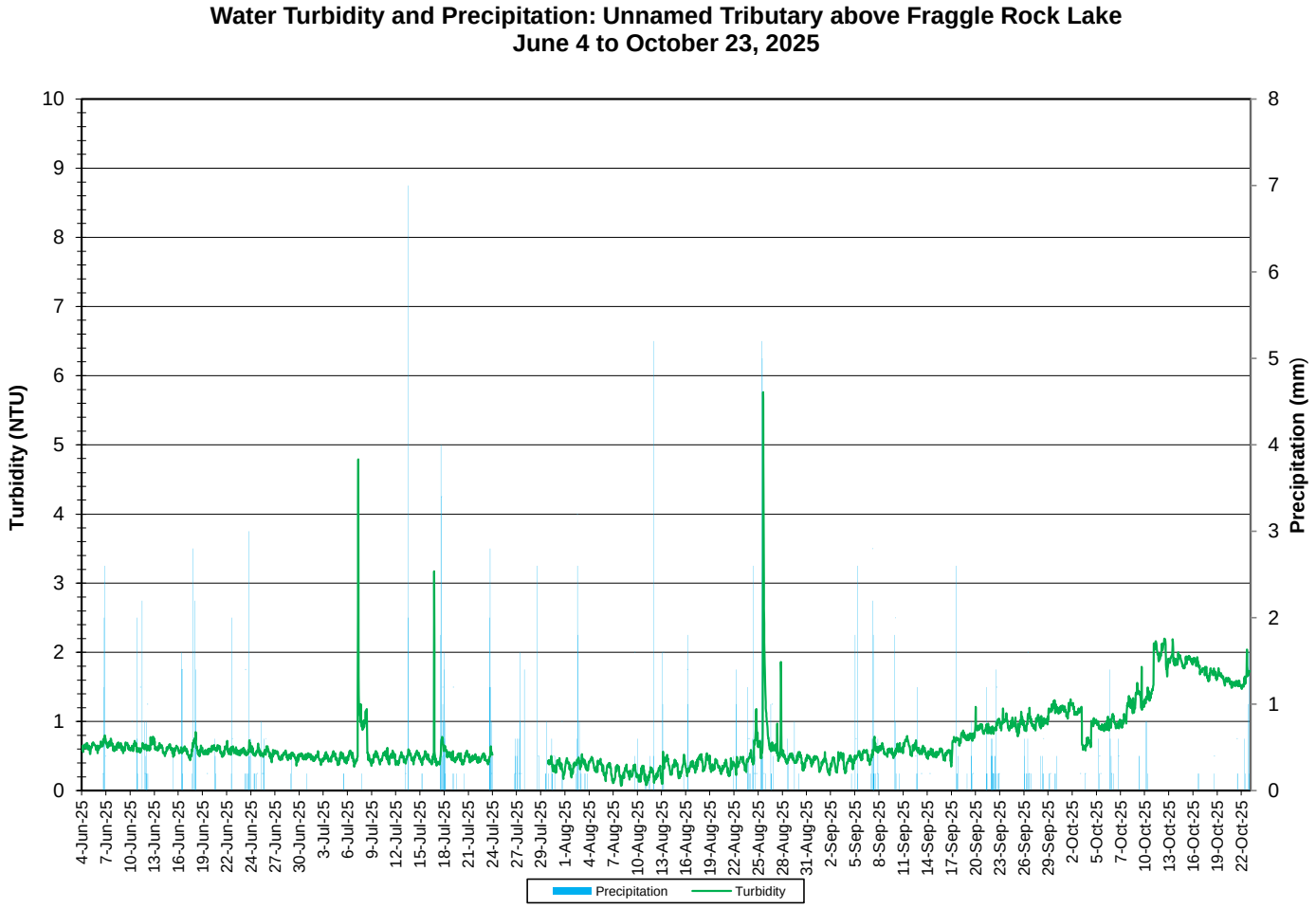


Figure 25: Turbidity and Precipitation – Unnamed Tributary above Fraggle Rock Lake

- Stage and precipitation are graphed below to show the relationship between rainfall and water level at Fraggle Rock (Figure 26).
- Stage data shows distinct increases after precipitation events.
- 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 for this station is provisional and has not undergone quality control checks.

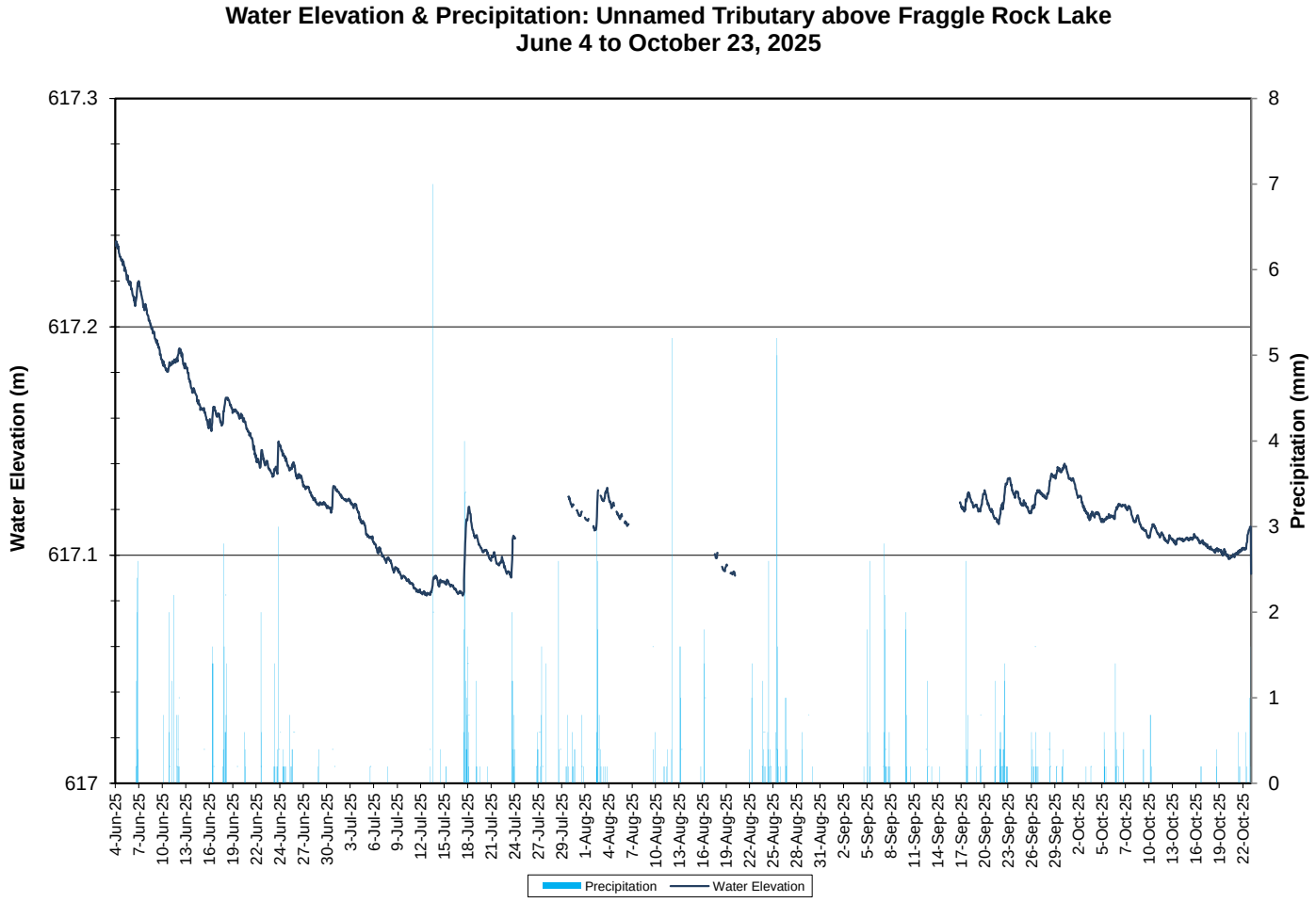


Figure 26: Water Elevation and Precipitation – Unnamed Tributary above Fraggle Rock Lake

Conclusions

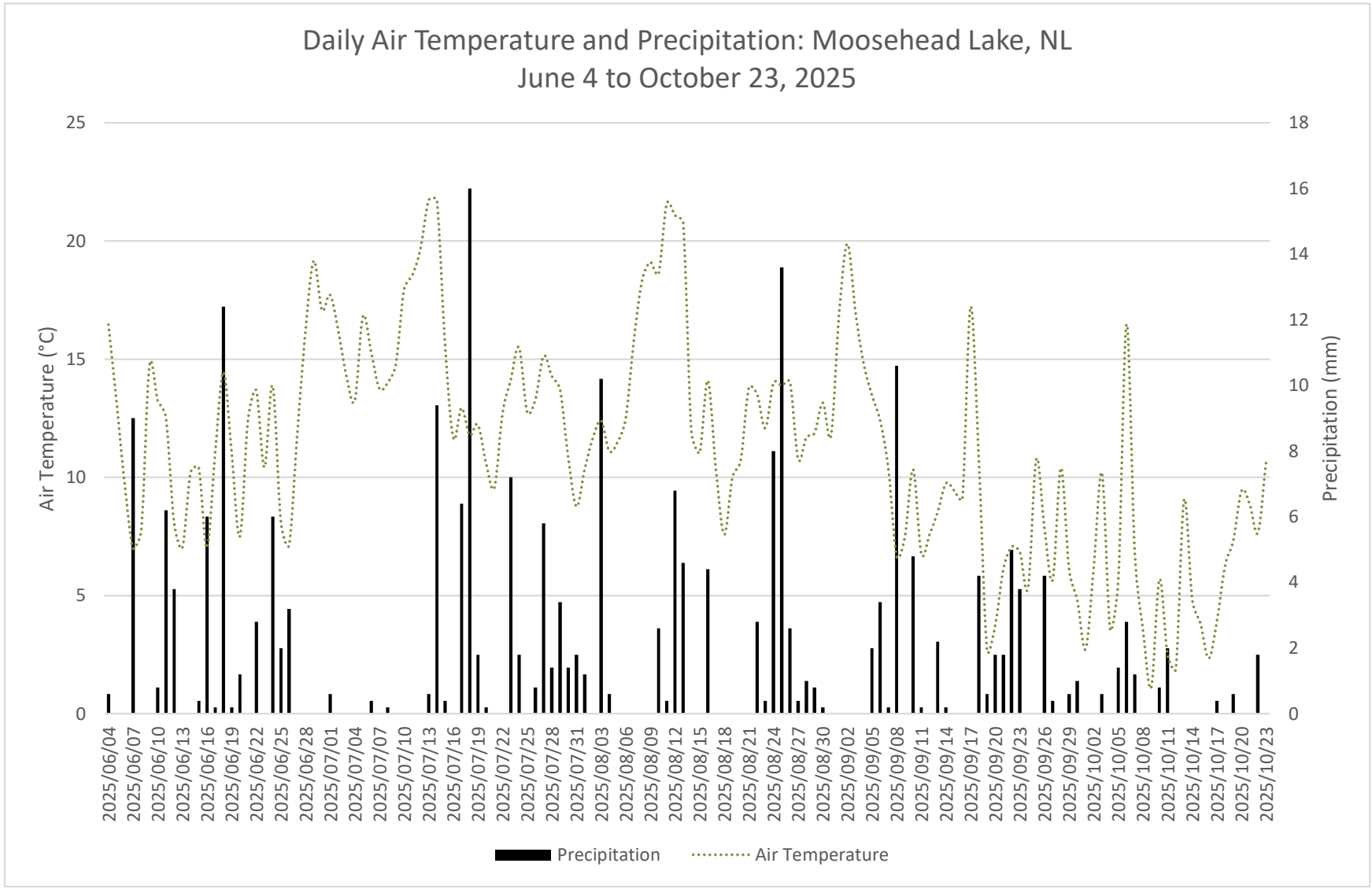
- Instruments at five water quality monitoring stations in Labrador West were deployed for the 2025 field season on June 4-5, 2025 and removed October 22-23, 2025 for the winter season.
- This was the second deployment season with new water quality monitoring equipment at all stations. Instrumentation performed very well.
- Instruments were deployed for periods of 35 to 56 days before maintenance and calibration.
- In most cases, weather related events or increases/decreases in water level could be used to explain the fluctuations.
- Most values recorded were within ranges as suggested by the CCME Water Quality Guidelines for the Protection of Aquatic Life.
- Water temperature followed the seasonal trend of increasing during the summer and decreasing into the fall. Water temperature was cooler at Dumbell Stream but increases/decreases followed the same trends as air temperature.
- All pH values at all stations remained within the acceptable range of the CCME Water Quality Guidelines for Protection of Aquatic Life.
- Specific conductivity differed between the two Wabush Lake stations. This can be attributed to varying concentrations of iron ore tailings, which are deposited into Wabush Lake downstream of Dolomite Road and upstream of Julienne Narrows. At Julienne Narrows, conductivity levels fluctuated significantly, influenced by low water levels and wave action near the monitoring equipment. Pumphouse Stream and Dumbell Stream, being small streams, typically respond to changes in stage. Conductivity decreased at Pumphouse Stream, while Dumbell Stream experienced several sudden and unexplained dips and spikes in conductivity. Further monitoring and investigation are needed to understand these variations.
- For the minimum dissolved oxygen CCME Water Quality Guideline for the Protection of Aquatic Life (9.5 mg/L) for Cold Water Biota at Early Life Stages, most measurements at the two Wabush Lake stations, Pumphouse Stream and Fraggle Rock exceeded the guideline. At Dumbell Stream, all values were above the guideline.
- All values were above the CCME Water Quality Guideline for the Protection of Aquatic Life for Cold water Biota at Other Life Stages of 6.5 mg/l at most stations. At Pumphouse Stream, there were a few instances when the levels dropped below 6.5 mg/l. At Julienne Narrows, there were a few periods below the guideline when the sonde was likely buried in sand.
- Background turbidity levels were low at all stations. Spikes occurred infrequently and for short periods of time. Some spikes can be attributed to precipitation events.

Path Forward

- WRMD staff will deploy real time water quality instruments in spring 2026 when ice conditions allow and perform regular site visits throughout the 2026 deployment season for calibration and maintenance of the instruments.
- If necessary, deployment techniques will be evaluated and adapted to each site, ensuring secure and suitable conditions for RTWQ monitoring.
- WRMD will continue to work on its Automatic Data Retrieval System, to incorporate new capabilities in data management and data display.
- Open communication will continue to be maintained between WRMD, ECCC and IOC employees involved with the agreement, in order to respond to emerging issues on a proactive basis.
- IOC will continue to be informed of data trends and any significant water quality events in the form of email and/or monthly deployment reports, when the deployment season begins. IOC will also receive an annual report, summarizing the events of the deployment season.

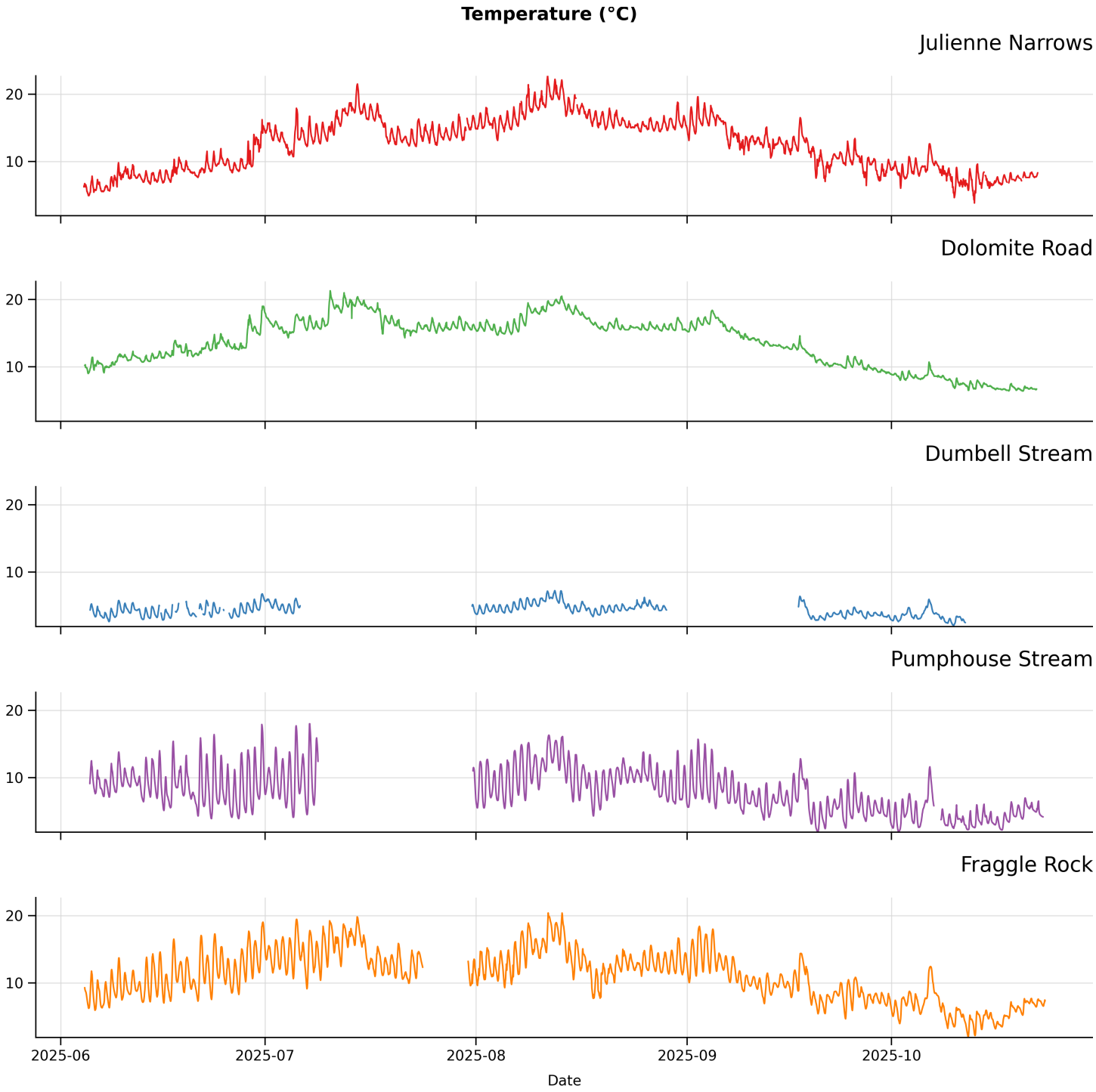
Prepared by:
Department of Environment & Climate Change
Water Resources Management Division

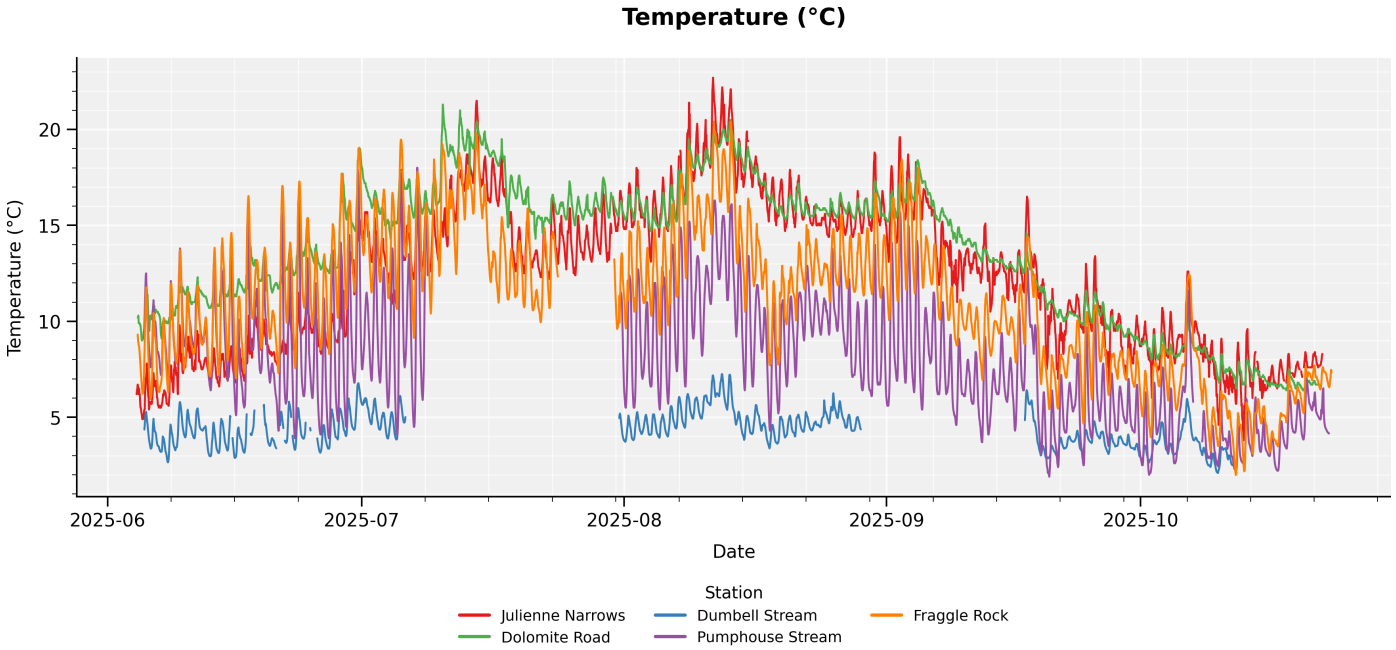
Appendix 1


Daily Air Temperature and Precipitation: Moosehead Lake, NL
June 4 to October 23, 2025
Air Temperature (°C)
Precipitation (mm)
25
20
15
10
5
0
18
16
14
12
10
8
6
4
2
0
2025/06/04
2025/06/07
2025/06/10
2025/06/13
2025/06/16
2025/06/19
2025/06/22
2025/06/25
2025/06/28
2025/07/01
2025/07/04
2025/07/07
2025/07/10
2025/07/13
2025/07/16
2025/07/19
2025/07/22
2025/07/25
2025/07/28
2025/07/31
2025/08/03
2025/08/06
2025/08/09
2025/08/12
2025/08/15
2025/08/18
2025/08/21
2025/08/24
2025/08/27
2025/08/30
2025/09/02
2025/09/05
2025/09/08
2025/09/11
2025/09/14
2025/09/17
2025/09/20
2025/09/23
2025/09/26
2025/09/29
2025/10/02
2025/10/05
2025/10/08
2025/10/11
2025/10/14
2025/10/17
2025/10/20
2025/10/23
Precipitation
Air Temperature

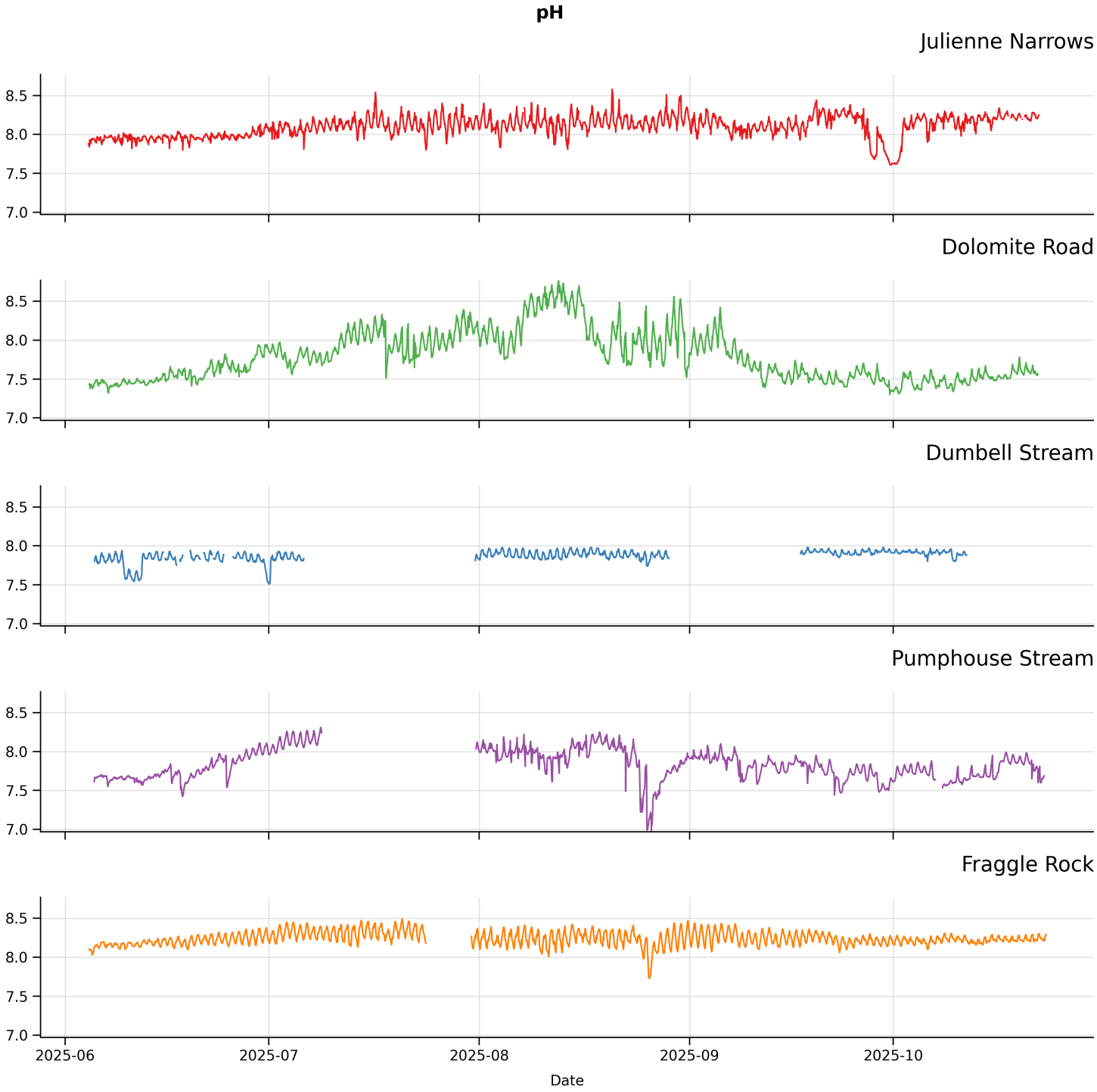
Appendix 2

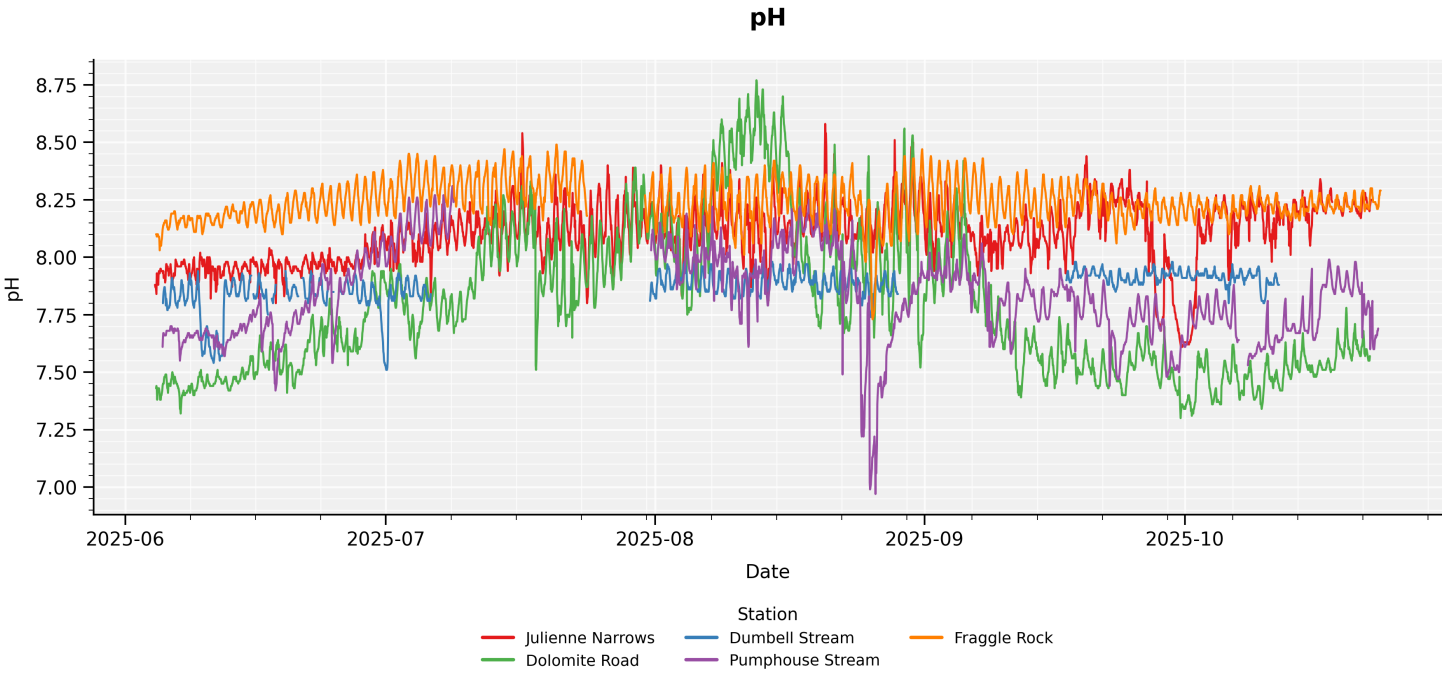
Station to Station Quick View


Temperature (°C)
Julienne Narrows
Dolomite Road
Dumbell Stream
Pumphouse Stream
Fraggle Rock
20
10
2025-06
2025-07
2025-08
2025-09
2025-10
Date

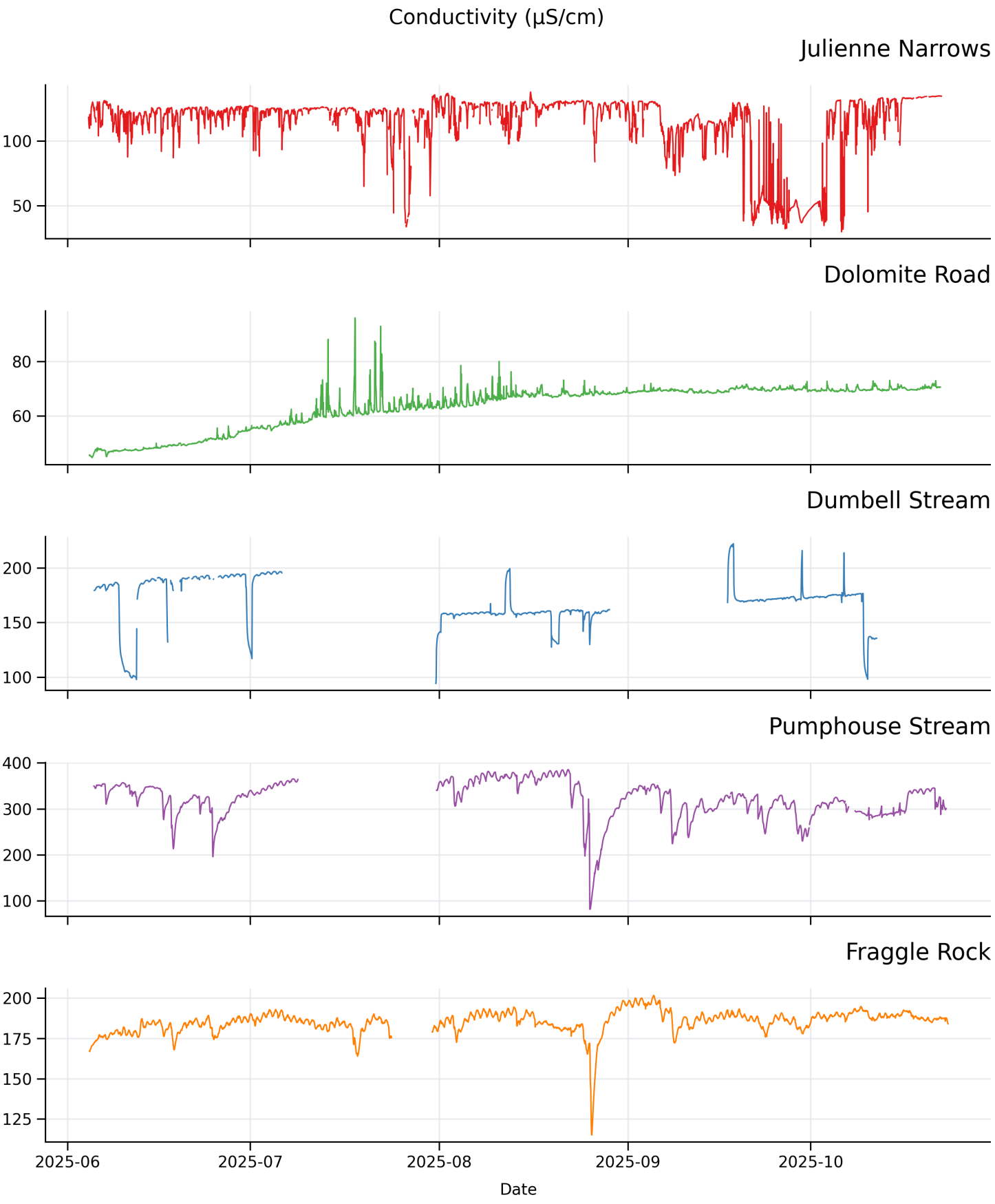


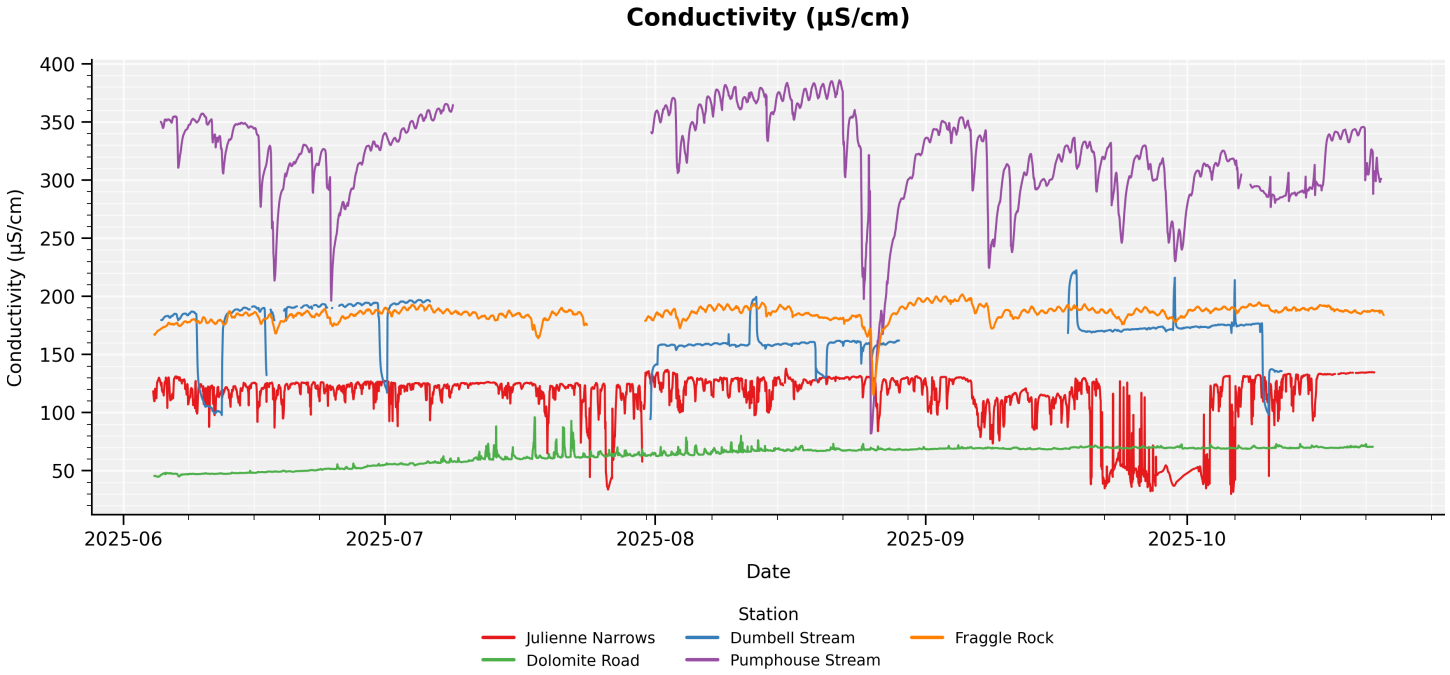
Temperature (ºC)					
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**	**Fraggle Rock**
Min	6.40	2.09	1.90	3.8	1.99
Max	21.3	7.25	18.0	22.7	20.41
Median	15.0	4.30	7.50	12.9	11.28


pH
Julienne Narrows
Dolomite Road
Dumbell Stream
Pumphouse Stream
Fraggle Rock
8.5
8.0
7.5
7.0
2025-06
2025-07
2025-08
2025-09
2025-10
Date



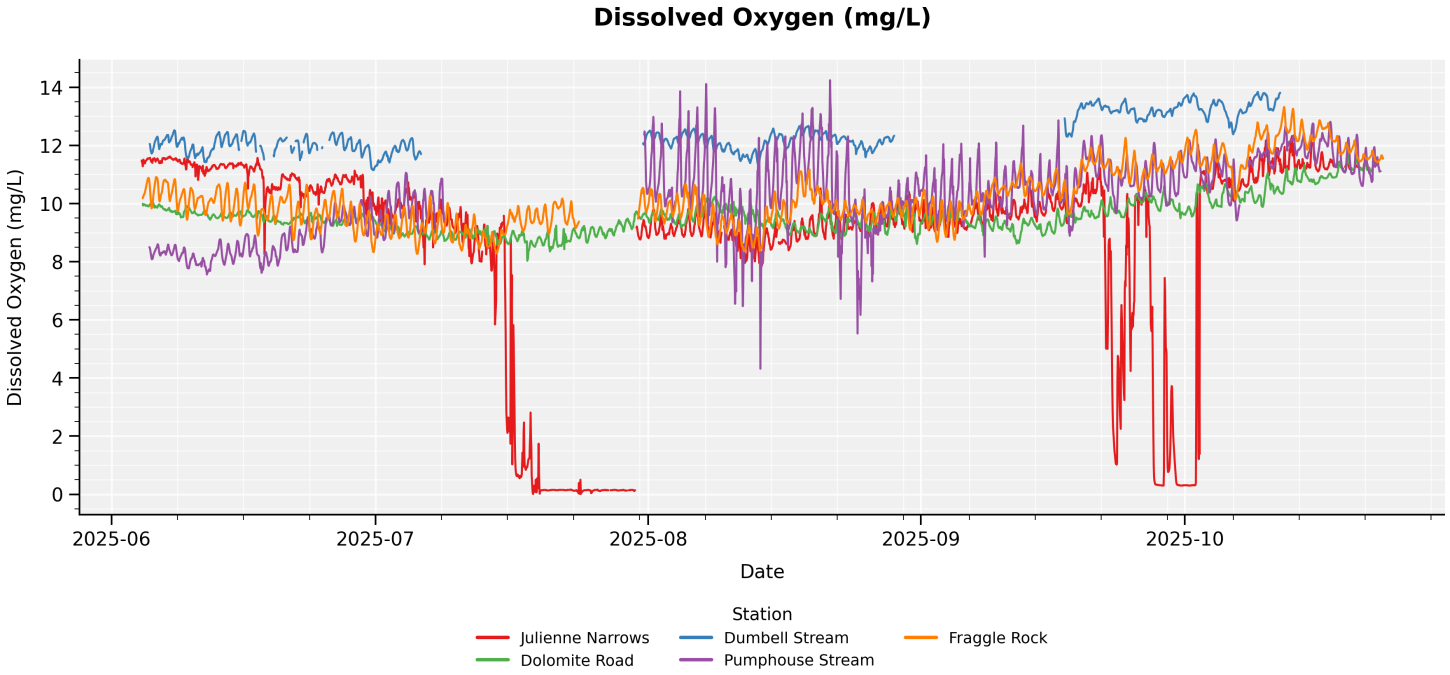
pH					
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**	**Fraggle Rock**
Min	7.30	7.51	6.97	7.61	7.73
Max	8.77	7.98	8.31	8.58	8.49
Median	7.72	7.89	7.83	8.11	8.23


Conductivity (µS/cm)
Julienne Narrows
100
50
Dolomite Road
80
60
Dumbell Stream
200
150
100
Pumphouse Stream
400
300
200
100
Fraggle Rock
200
175
150
125
2025-06
2025-07
2025-08
2025-09
2025-10
Date

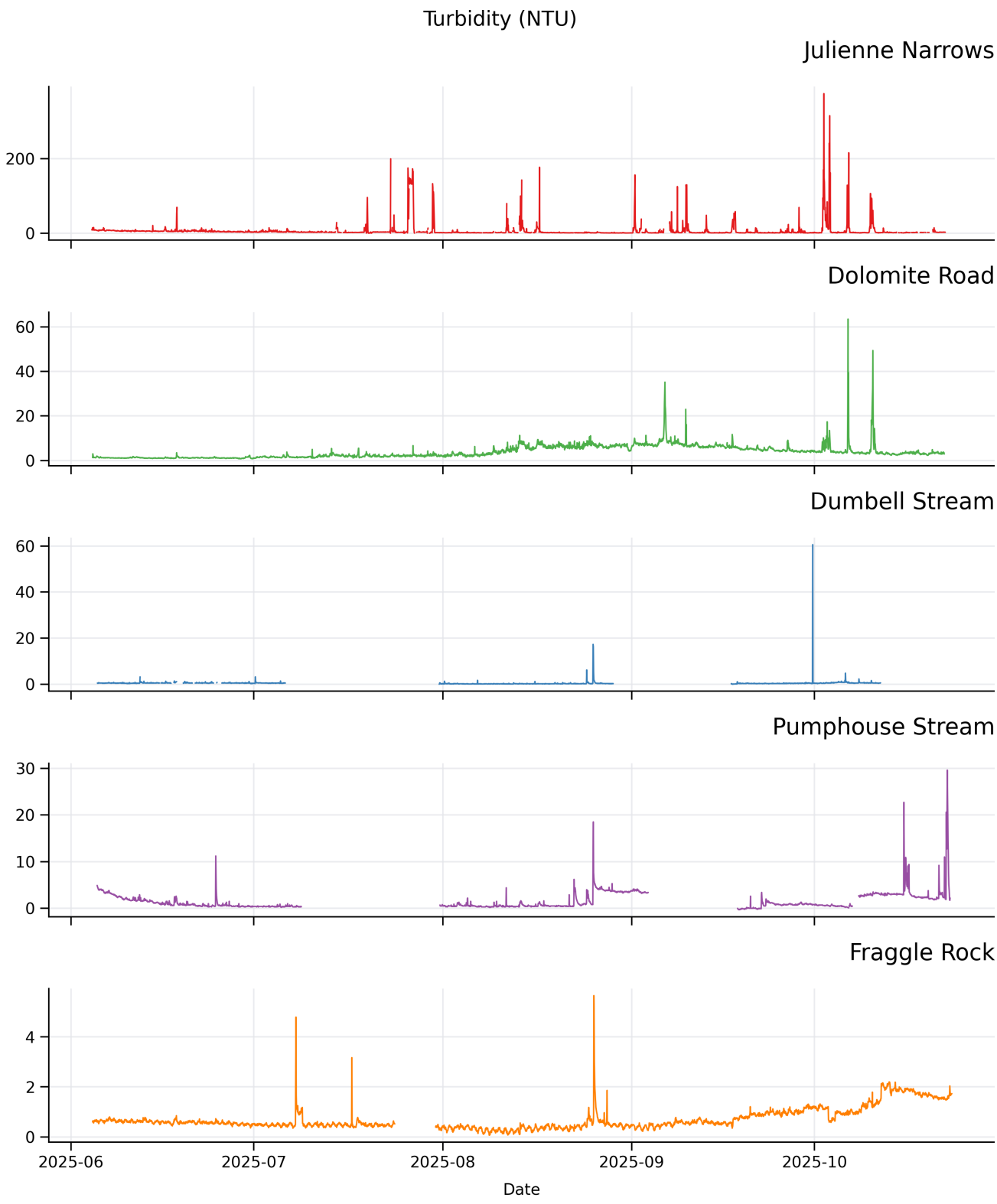


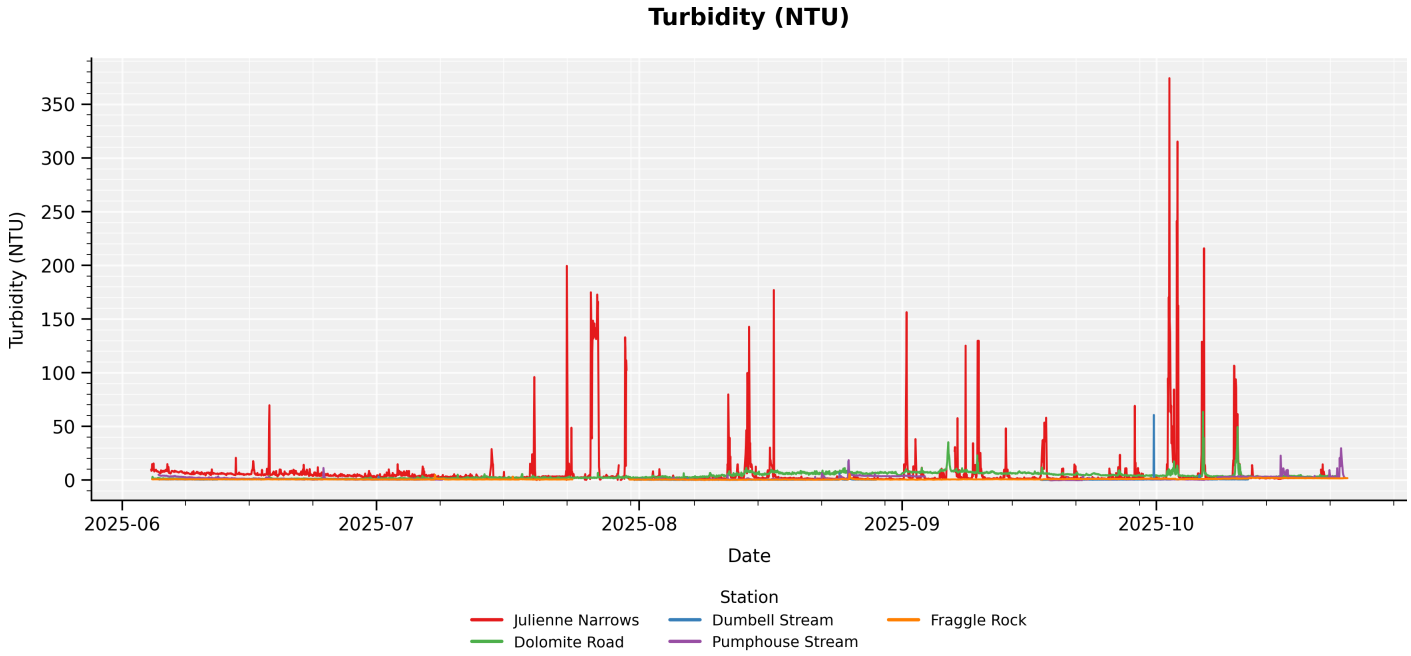
Specific Conductivity (µS/cm)					
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**	**Fraggle Rock**
Min	44.7	94.4	82	30	115.2
Max	96.1	222.4	385.9	137.8	201.7
Median	67.5	171.4	327.1	122.5	186.3


Dissolved Oxygen (mg/L)
Julienne Narrows
Dolomite Road
Dumbell Stream
Pumphouse Stream
Fraggle Rock
10
5
2025-06
2025-07
2025-08
2025-09
2025-10
Date



Dissolved Oxygen (mg/l)					
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**	**Fraggle Rock**
Min	8.03	11.15	4.32	0.01	8.27
Max	11.74	13.84	14.24	12.32	13.32
Median	9.51	12.25	10.27	9.64	10.05


Turbidity (NTU)
Julienne Narrows
200
0
Dolomite Road
60
40
20
0
Dumbell Stream
60
40
20
0
Pumphouse Stream
30
20
10
0
Fraggle Rock
4
2
0
2025-06
2025-07
2025-08
2025-09
2025-10
Date



Turbidity (NTU)					
	Dolomite Road	**Dumbell Stream**	**Pumphouse Stream**	**Julienne Narrows**	**Fraggle Rock**
Min	0.8	0	-0.3	0	0.1
Max	63.5	60.6	29.6	374.2	5.7
Median	3.2	0.4	0.8	2.4	0.6