

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- This monthly deployment report interprets the data from a water quality monitoring station on Minipi River below Minipi Lake. A water quality monitoring instrument (s/n 43820) was deployed at this station between September 22 and October 27, 2009, a period of 35 days.
- A transmission error occurred intermittently between September 22 and September 27. This is evident on the graphs throughout the report as data during the first few days of the deployment is sporadic. The cable connected to the antennae at the station has been repaired.

Quality Assurance and Quality Control

- As part of the installation and removal process, parameters are recorded from both the field sonde (in situ) and a similar, newly-calibrated QA sonde (placed side by side). The parameters from both instruments are compared and their variability is ranked as part of the QA/QC protocol (see Table 1).
- All parameters ranked “Excellent” or “Good” at installation. At removal, temperature is ranked “Fair”. The temperature sensor on both sondes will be examined before any future deployment. pH ranked “Poor” and it is likely that the QA/QC sonde did not have enough time to properly stabilize its reading before values were recorded. A QA/QC reading for dissolved oxygen was unavailable due to an error with the sensor on the sonde. Specific conductivity and turbidity were ranked “Good” and “Excellent” respectively.

Table 1: QA/QC Data Comparison Rankings for deployment between September 22 and October 27, 2009.

				Instrument Comparison Ranking				
Station	Date	Action	Instrument Serial Number	Temperature	pH	Conductivity	Dissolved Oxygen	Turbidity
Minipi River below Minipi Lake	22-Sep-09	Installation	43820	Excellent	Excellent	Excellent	Excellent	Excellent
	27-Oct-09	Removal		Fair	Poor	Good	N/A	Excellent

Data Interpretation

Temperature

The water temperature decreases throughout the deployment period (Figure 1). This trend is expected as ambient air temperatures are also decreasing during this time (Appendix 1). Values range between 10.81°C and 0.79°C, averaging 6.60°C.

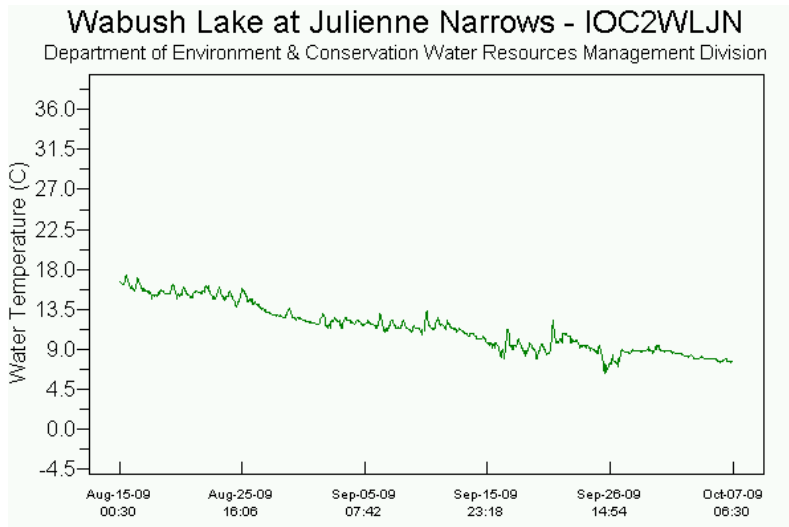


Figure 1: Water Temperature for Minipi River Station, September 22 to October 27, 2009.

pH

pH remains stable throughout the deployment period with values ranging between 6.51 and 6.69 units (Figure 2). All values collected are within the recommended guideline for pH level as suggested by the CCME Guidelines for the Protection of Aquatic Life (>6.5 and < 9.0).

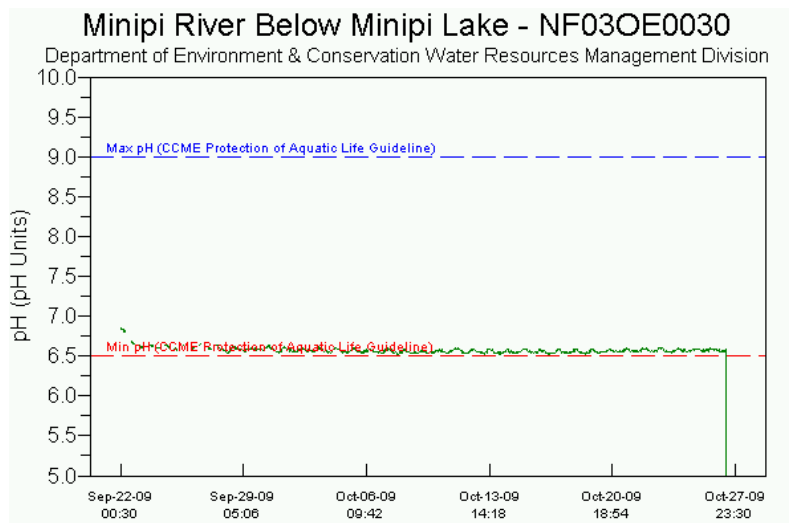


Figure 2: pH for Minipi River Station, September 22 to October 27, 2009.

Specific Conductivity

Specific conductance remains relatively stable throughout the deployment period with values ranging between 15 μ S/cm and 14 μ S/cm (Figure 3).

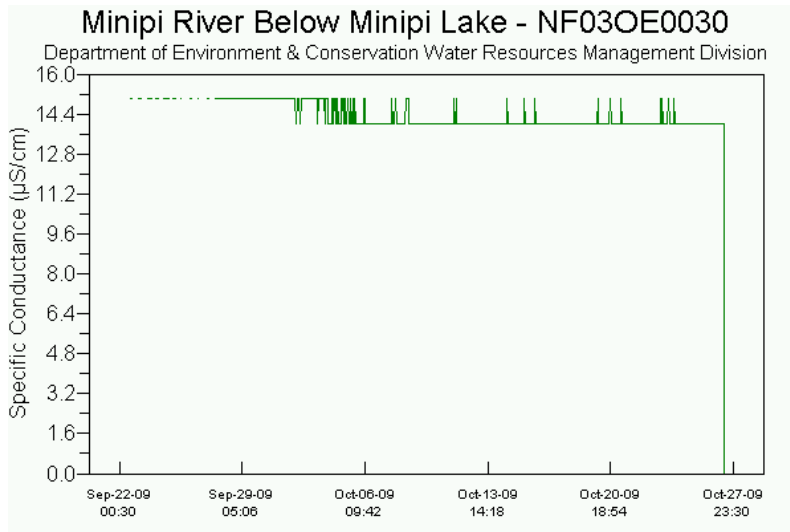


Figure 3: Specific Conductivity for Minipi River Station, September 22 to October 27, 2009.

Dissolved Oxygen and Percent Saturation

Dissolved Oxygen content increases throughout the deployment period (Figure 4). This trend is expected as water and air temperatures are decreasing during this time (Figure 1, Appendix 1). Dissolved oxygen values range between 10.57mg/L and 13.64mg/L, averaging at 11.74mg/L. All recorded values for dissolved oxygen content are within the recommended values for fresh (cold) water as suggested by the CCME Guideline for the Protection of Aquatic Life (>9.0mg/L).

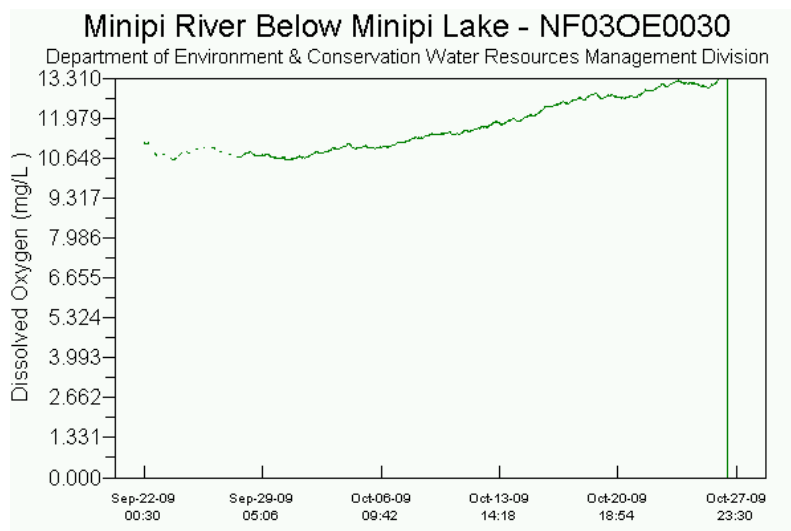


Figure 4: Dissolved Oxygen for Minipi River Station September 22 to October 27, 2009.

Percent saturation values are derived from dissolved oxygen and water temperature values. During the deployment period between September 22 and October 27, percent saturation values range between 93.6% and 97.6% (Figure 5).

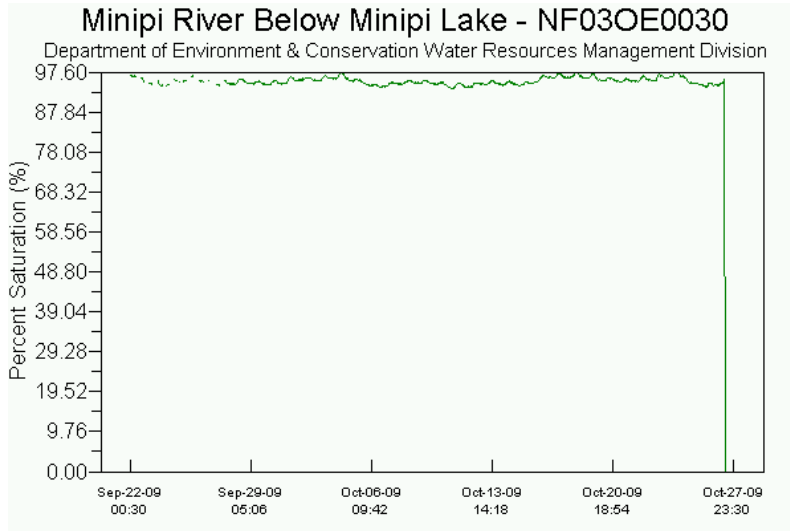


Figure 5: Percent Saturation for Minipi River Station September 22 to October 27, 2009.

Turbidity

Turbidity values remain at 0 NTU for the duration of the deployment period (Figure 6).

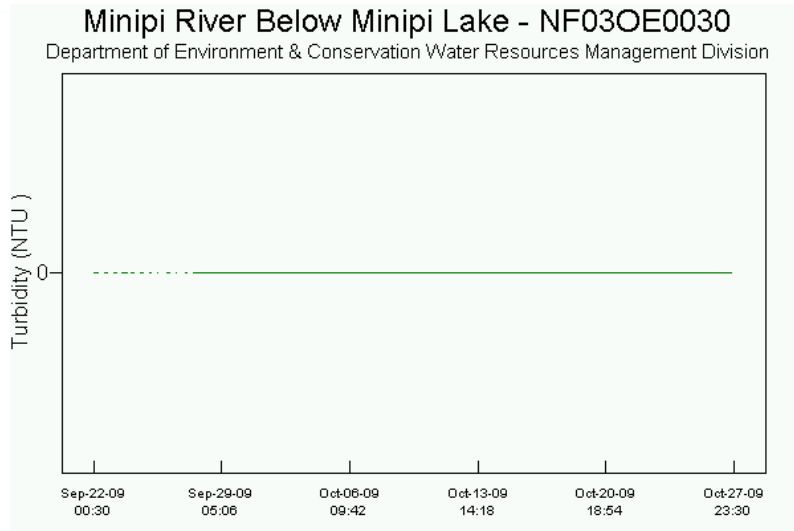


Figure 6: Turbidity for Minipi River Station September 22 to October 27, 2009.

Stage

Stage levels are decreasing throughout the deployment (Figure 7). When the instrument was deployed, stage level was at 4.717m. When the instrument was retrieved on October 27, stage level had dropped to 4.219m.

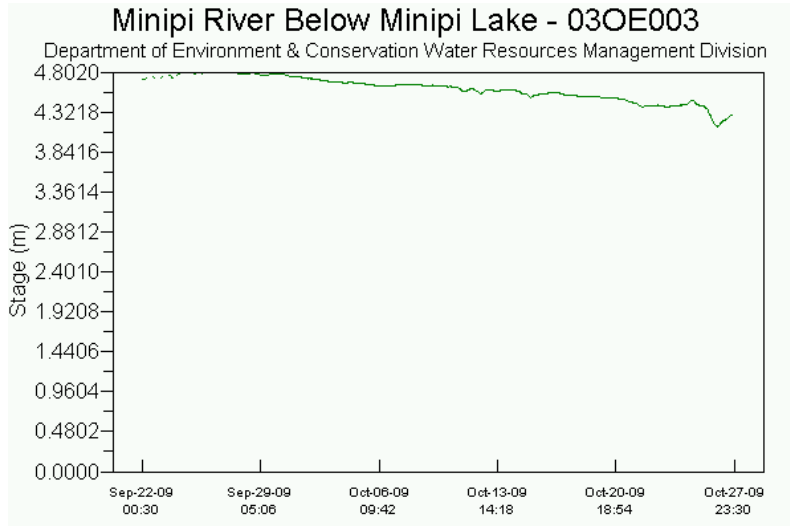


Figure 7: Stage level for Minipi River Station September 22 to October 27, 2009.

Conclusions

The water quality monitoring instrument was deployed at the station on Minipi River below Minipi Lake between September 22 and October 27. Due to a damaged cable, several short transmission errors occurred between September 22 and 27. The cable connecting the data logger to the antennae has now been repaired.

During this deployment period, no water quality events were recorded at the Minipi River Station below Minipi Lake. Typical seasonal patterns are evident in temperature, dissolved oxygen and stage. All values for pH and dissolved oxygen are within the recommended guidelines as suggested by the CCME Guidelines for the Protections of Aquatic Life.

Appendix 1 – Weather Data

Table A-1 : Weather for Happy Valley Goose Bay – September 22 to October 27, 2009

	Max Temp °C	Min Temp °C	Mean Temp °C	Total Precip mm	Dir of Max Gust10's Deg	Spd of Max Gust km/h
23-Sep	22.4	3.6	13	17.4	33E	56E
24-Sep	6.4	1	3.7	2.4	36E	32E
25-Sep	6	-1.3	2.4	0		<31
26-Sep	12.4	-0.9	5.8	T	24E	41E
27-Sep	18.2	5.9	12.1	0	26E	32E
28-Sep	16.6	3.9	10.3	T		<31
29-Sep	14.2	8.7	11.5	T		<31
30-Sep	19.5	7.5	13.5	2.6	9E	37E
1-Oct	11.5	5.6	8.6	0.2	5	46
2-Oct	6.1	3.8	5	0.6	5	37
3-Oct	6.2	-0.3	3	0	4	32
4-Oct	6.6	-1.5	2.6	0		<31
5-Oct	6	-2.1	2	0		<31
6-Oct	5.4	2.4	3.9	26.2	6	54
7-Oct	6.7	3.8	5.3	4.8	6	50
8-Oct	7.3	2.5	4.9	1.2	7	39
9-Oct	4.7	1.3	3	T		<31
10-Oct	6	0.1	3.1	8.8		<31
11-Oct	5.8	0.2	3	3.8		<31
12-Oct	7.3	1.5	4.4	0	32	35
13-Oct	6.4	-0.9	2.8	T	28	44
14-Oct	6.1	-2.2	2	T	35	39
15-Oct	1.7	-3.9	-1.1	T	32	37
16-Oct	4.3	-2.8	0.8	0		<31
17-Oct	4.1	-2.4	0.9	0		<31
18-Oct	3.9	-5.9	-1	0		<31
19-Oct	6.3	-6	0.2	0		<31
20-Oct	3	-5.3	-1.2	0.6		<31
21-Oct	3.5	0.1	1.8	4.2		<31
22-Oct	0.1	-5.3	-2.6	0.6		<31
23-Oct	2.8	-7.2	-2.2	0		<31
24-Oct	3.5	-5.7	-1.1	0		<31
25-Oct	1.2	-1.8	-0.3	24		<31
26-Oct	0.5	-5.7	-2.6	0.8	31	80
27-Oct	-0.6	-9.2	-4.9	0	31	54

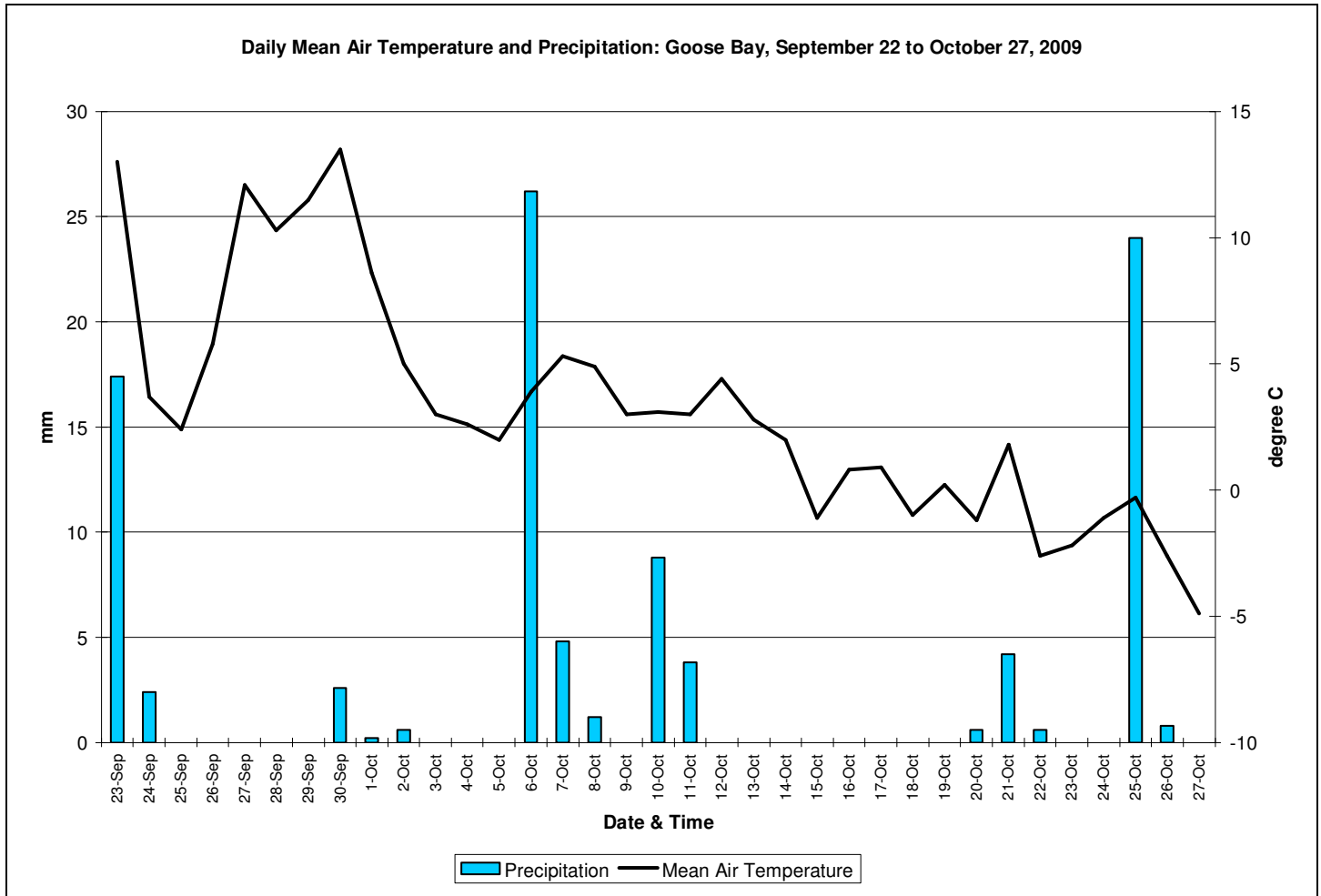


Figure A-1: Mean daily air temperature and precipitation Happy Valley-Goose Bay area, September 22 to October 27, 2009.

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