Real Time Water Quality Monthly Report for Voisey's Bay Nickel Company Ltd. August/September 2006

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- Voisey's Bay Nickel Company Ltd. will continue to be informed of any significant water quality events in the future in the form of a monthly report.

Maintenance and Calibration of Instrumentation

- August 11th, 2006:
  - VBNC staff removed instruments from Camp Pond Brook, Tributary to Lower Reid Brook and Lower Reid Brook for cleaning and calibration (after 37 day deployment period; normally a 30 day maintenance/calibration schedule is followed, however, the weather was poor so VBNC staff could not fly in the helicopter to retrieve the instruments until the weather improved).
  - VBNC had received the "new" Datasonde thus deployed this instrument into Lower Reid Brook station immediately after removal of original instrument
  - VBNC staff replaced the communication cable at Upper Reid Brook and deployed that instrument
- August 12th, 2006:
  - VBNC staff cleaned and calibrated the instruments and returned them to Camp Pond Brook and Tributary to Lower Reid Brook.
- As of August 12th, 2006 all four surface water stations were successfully deployed.
- Upon removal and redeployment, Minisonde readings were taken for QA/QC purposes. The results from comparing the Minisonde values to the Datasonde values can be seen in **Table 1**. As was mentioned in the previous monthly report, it appears as though the conductivity probe on the Minisonde was not functioning properly leading to "poor" and "fair" rankings upon installation. The Minisonde will be sent away for servicing throughout the winter months when the instruments are not in the water. It appears as though the pH and temperature comparisons remained in the "Excellent" and "Good" categories consistently on installation and redeployment, however, the dissolved oxygen comparisons ranged from "Excellent" to "Poor". Dissolved oxygen is a much more sensitive probe than that of temperature or pH. Servicing will be carried out on all the instruments during the winter months and each sensor will be put through a series of evaluation and proficiency testing to ensure its reading accurately.

Table 1: QA/QC Data Comparison Rankings upon removal and reinstallation in August, 2006

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Upper Reid Brook	**Instrument first deployed on August 11th after communication cable repairs**					
	Aug. 11, 2006	Installation	Excellent	Excellent	Poor	Marginal
Lower Reid Brook	Aug. 11, 2006	Removal	** Comparisons not available due to transmission problems encountered from this station**			
	Aug. 11, 2006	Installation				
Tributary to Lower Reid Bk	Aug. 11, 2006	Removal	Excellent	Excellent	Excellent	Fair
	Aug. 12, 2006	Installation	Excellent	Good	Poor	Poor
Camp Pond Brook	Aug. 11, 2006	Removal	Excellent	Good	Good	Fair
	Aug. 12, 2006	Installation	Excellent	Good	Fair	Excellent

- All surface water stations were deployed from August11th/12th – September18th, 2006 (39-40 days). **Table 2** compares the Minisonde values to that of the Datasonde values when the instruments were removed from each station. Even with the slightly extended deployment period, most of the parameters ranked in the "excellent" and "good" categories upon removal. It appears as though dissolved oxygen was the only parameter that may have drifted.

Table 2: QA/QC Data Comparison Rankings upon removal in September, 2006

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Upper Reid Brook	September 18th, 2006	Removal	Excellent	Marginal	NA*	Marginal
Lower Reid Brook	September 18th, 2006	Removal	NA**	NA**	NA**	NA**
Camp Pond Brook	September 18th, 2006	Removal	Excellent	Excellent	NA*	Good
Tributary to Lower Reid Brook	September 18th, 2006	Removal	Good	Good	NA*	Poor

Notes:
* Conductivity probe on Minisonde not functioning properly; will be sent for servicing over winter months.

** The QA/QC rankings for Lower Reid Brook can not be completed at this time due to the fact that the Lower Reid Brook station was not transmitting data; when logged data is available, the rankings will be updated.

- The groundwater station was deployed on July 7th and was removed (by Department of Environment and Conservation staff and VBNC staff) from the well on September 19th, 2006 for maintenance/calibration; this instrument can be deployed for a longer period of time due to the parameters being monitored (rugged sensors) and the fact that it is a groundwater well with very little change in water quality at this point in time; groundwater quality results and QA/QC results will be summarized in the Annual Report.

Data Interpretation

REID BROOK AT OUTLET OF REID POND (UPPER REID BROOK)

- The Upper Reid Brook station was deployed on August 11th, 2006 after the damaged communication cable was replaced by VBNC staff.

- As can be seen in **Figure 1** the water temperature remained very consistent over the deployment period with a slight decrease as expected. Subsequently, the dissolved oxygen values (**Figure 2**) also remained consistent with a slight increase in the amount of dissolved oxygen in the water as the water temperature decreased.

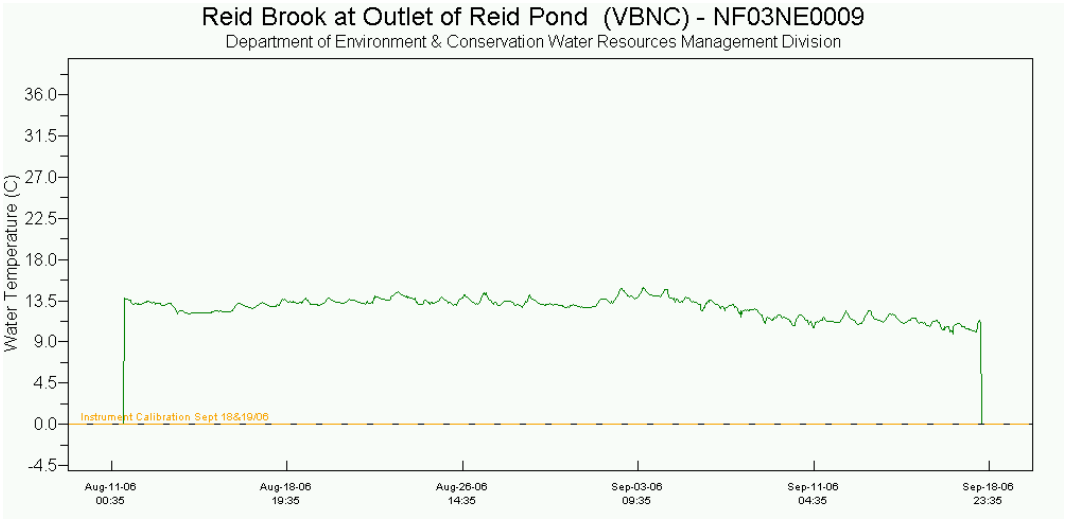


Figure 1

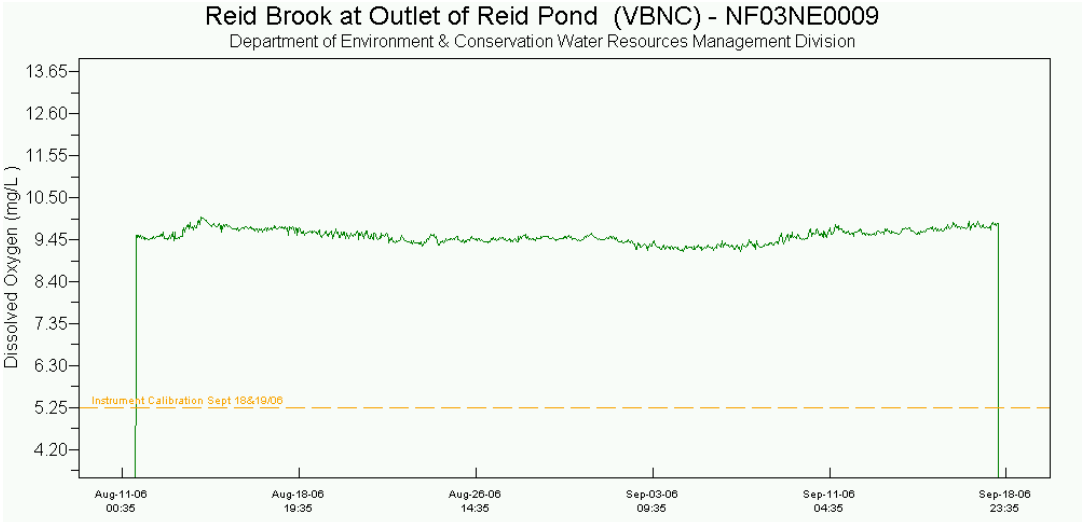


Figure 2

- The pH values demonstrated a slight decrease during the early portion of the deployment period dropping outside the desired range of pH values as indicated in the CCME Protection of Aquatic Life Guidelines; by comparing the pH graph (**Figure 3a**) with the stage graph (**Figure 3b**) it appears as though the decrease in pH values may be attributed to an increase in stage due to heavy precipitation at the time (see **Appendix A**).

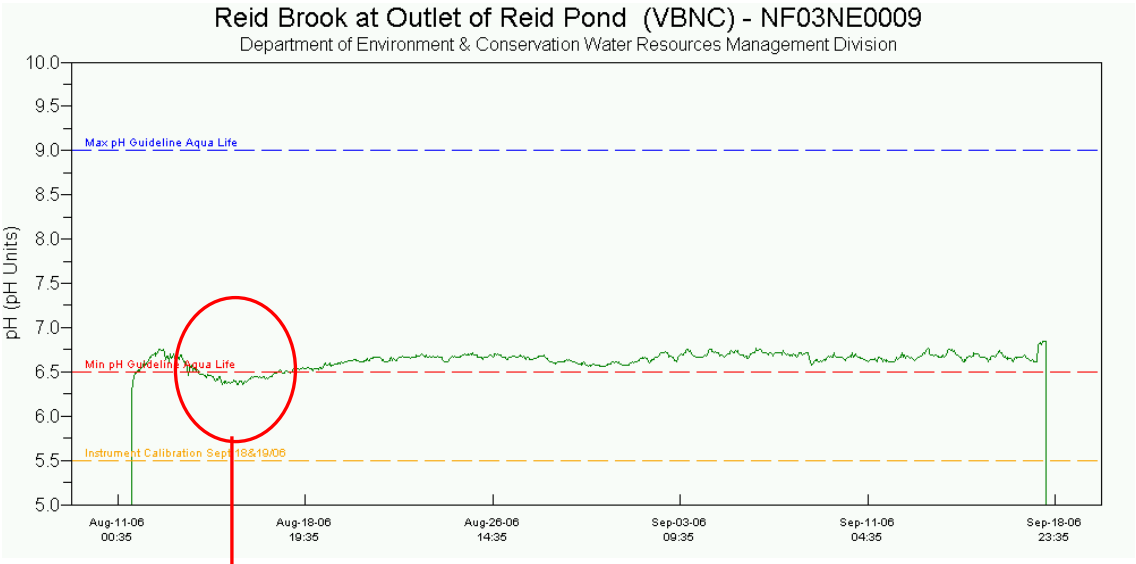


Figure 3a

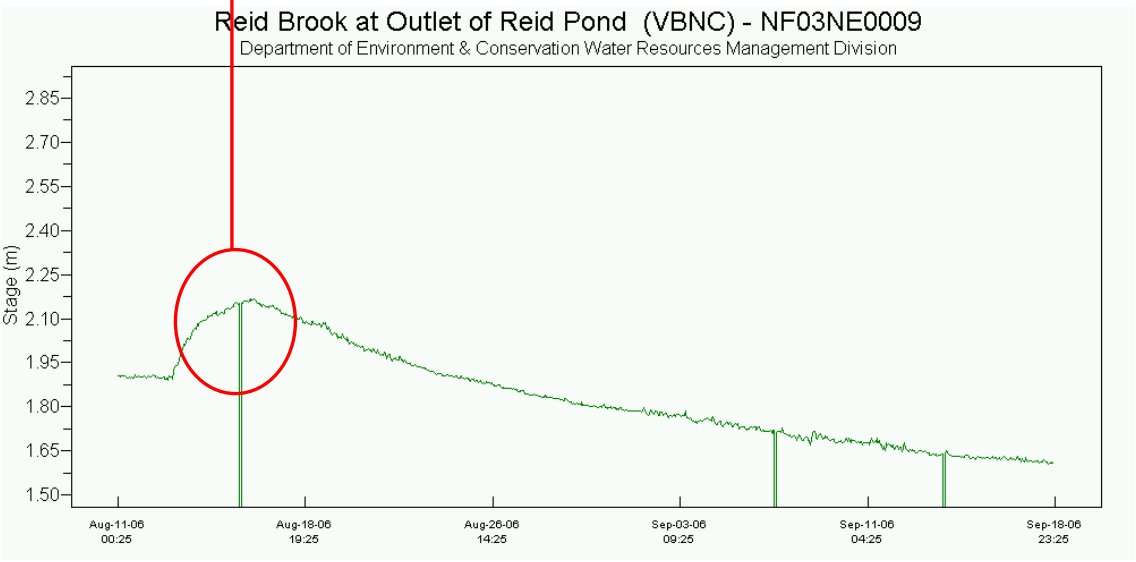


Figure 3b

- The turbidity values (**Figure 4**) remained very low with only slight increases to a maximum of 12.2 NTU over the deployment period. The cause of these sporadic turbidity increases is unknown.

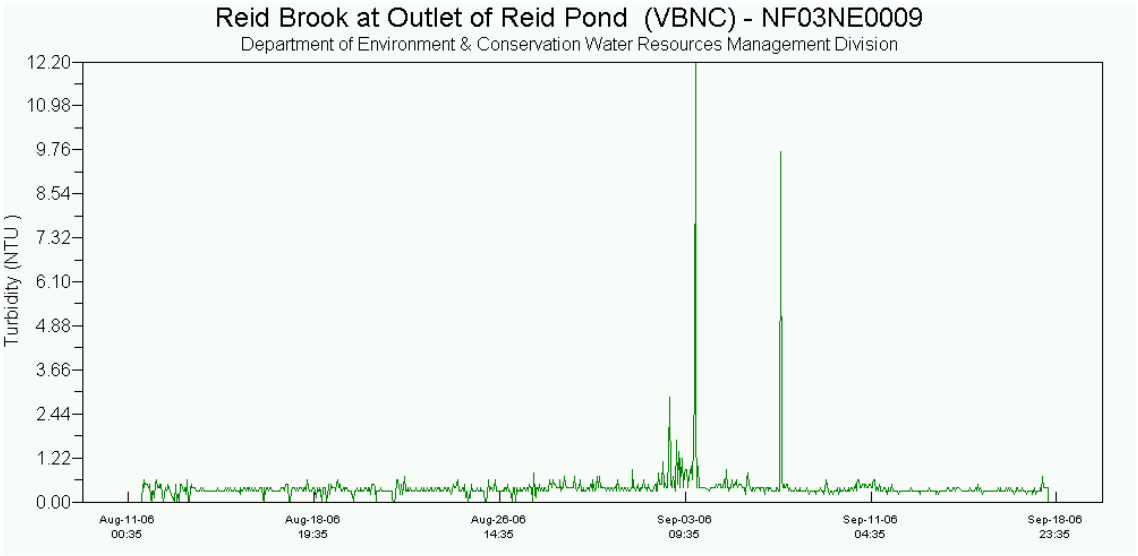


Figure 4

CAMP POND BROOK BELOW CAMP POND

- The majority of water quality parameters including water temperature, pH, and dissolved oxygen (**Figures 5, 6, & 7** respectively) remained very consistent throughout the deployment period without any significant water quality events captured.

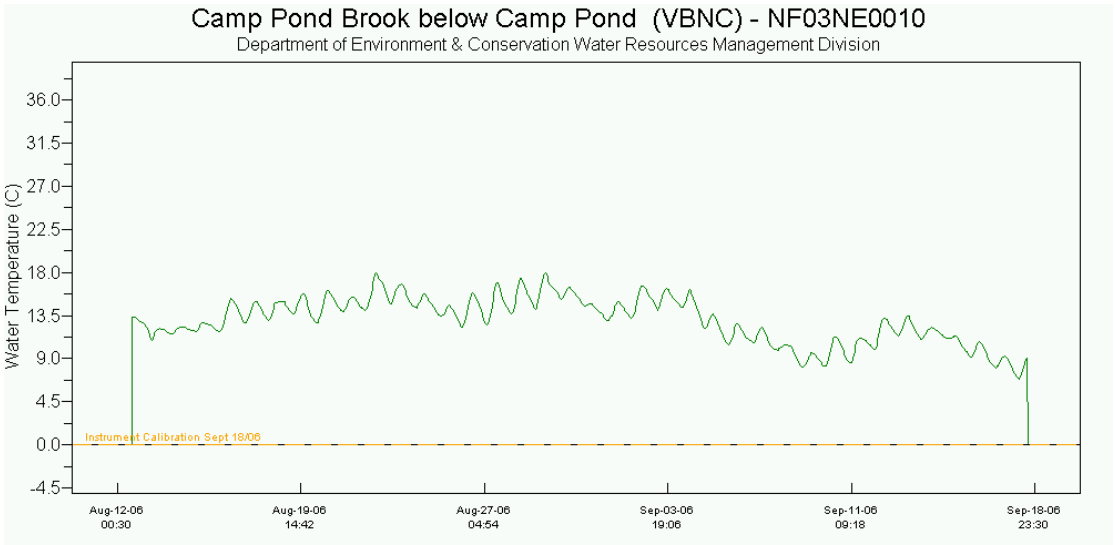


Figure 5

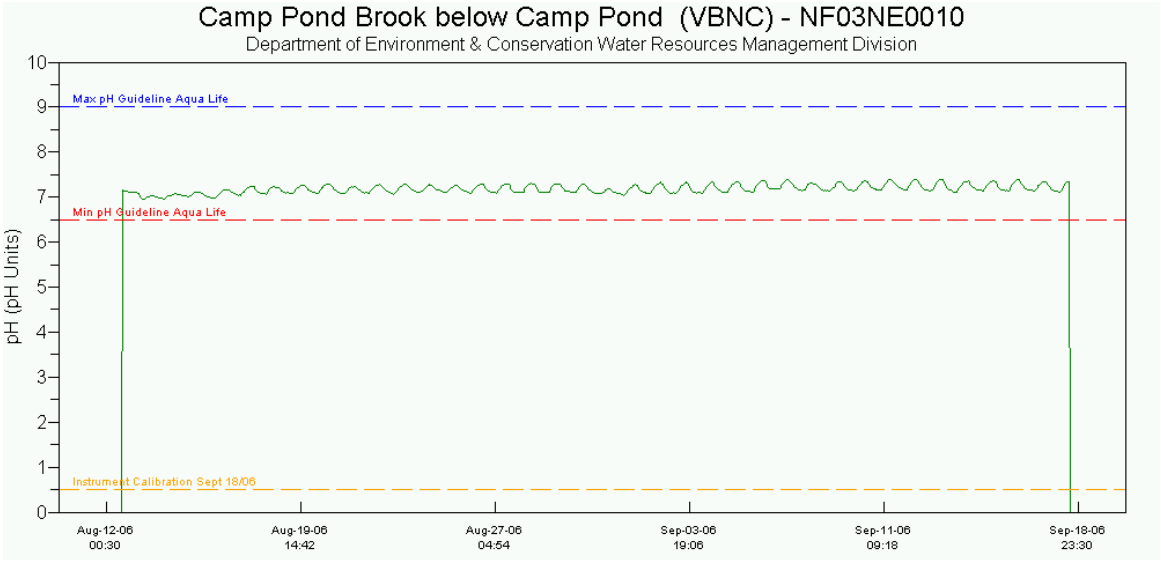
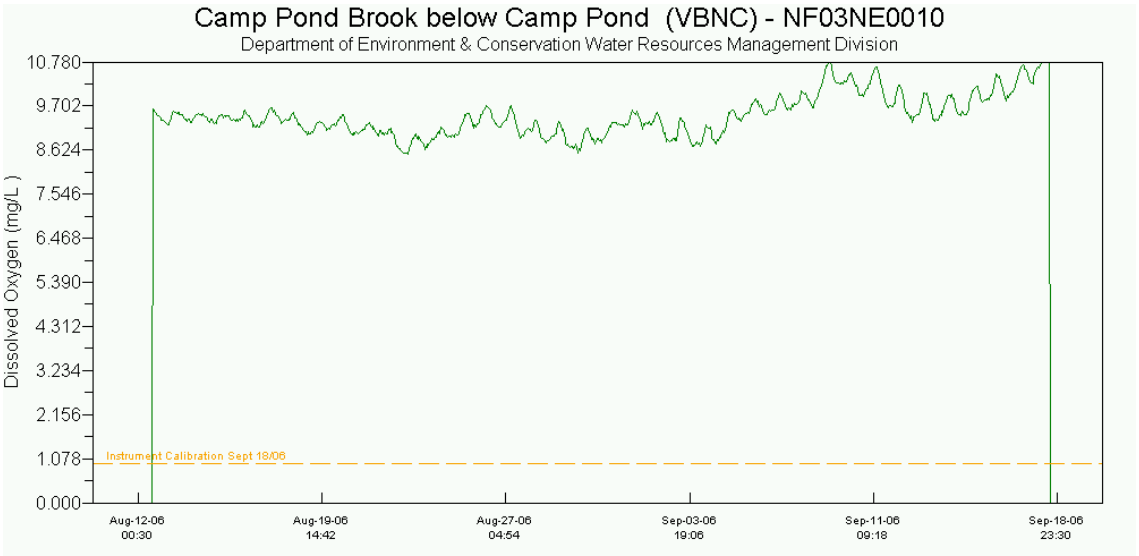


Figure 6

Figure 7



- The turbidity values (**Figure 8**) and specific conductivity values (**Figure 9**) remained at fairly constant background levels for this station over the deployment period, however, there was a water quality event early in the deployment period which resulted in increases in these parameters. The increases in turbidity and specific conductivity can be attributed to the increase in stage (**Figure 10**) at that time. This rainfall event (**see Appendix A**) was documented earlier in this report with respect to the Reid Pond station.

Figure 8

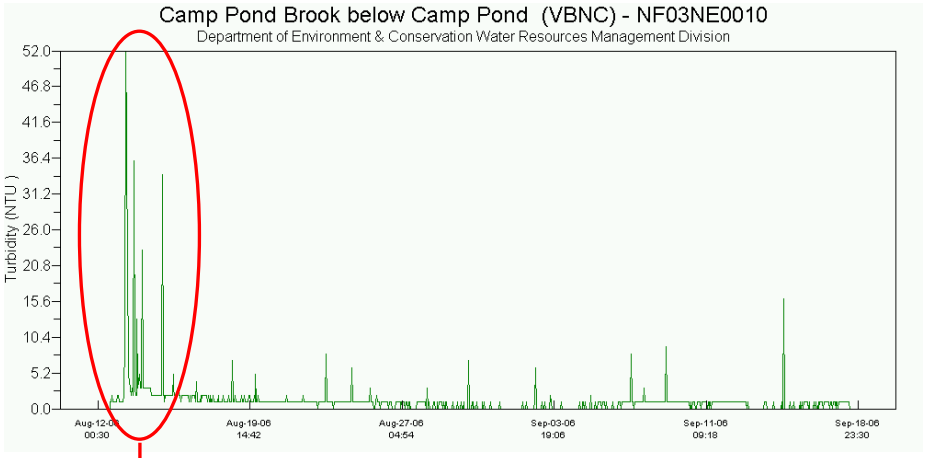


Figure 9

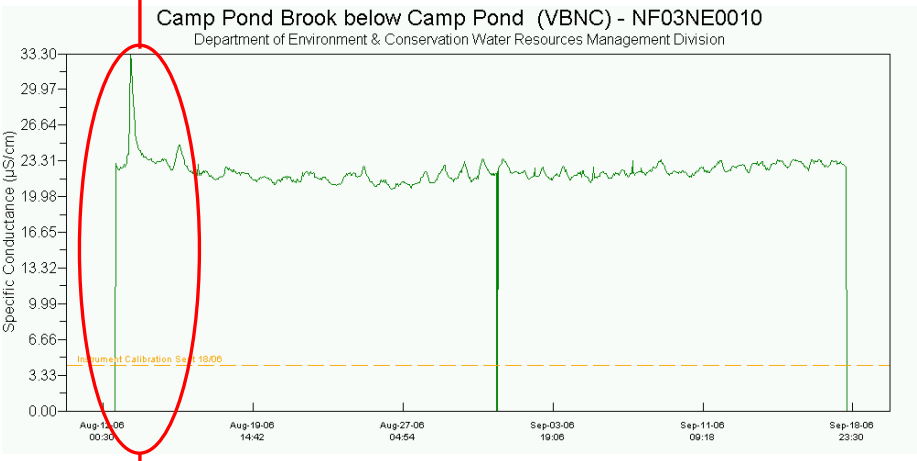
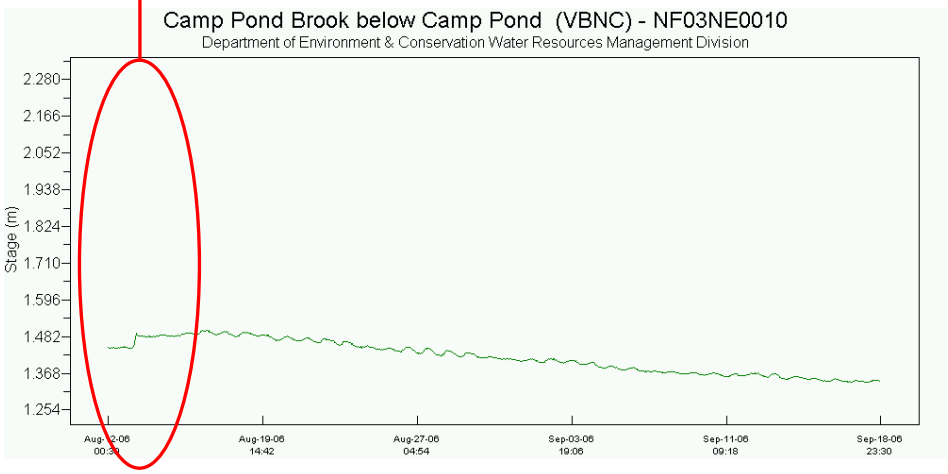


Figure 10



LOWER REID BROOK BELOW TRIBUTARY

- The data from the Lower Reid Brook station cannot be interpreted in this monthly report. As stated in the previous monthly report, a black bear pulled the antenna cable off the roof leaving the station unable to transmit data. This problem was fixed by Environment Canada staff when they visited the site in September.

TRIBUTARY TO REID BROOK

- The majority of water quality parameters including water temperature, pH, and dissolved oxygen (**Figures 11, 12, & 13** respectively) remained consistent throughout the deployment period without any significant water quality events captured.

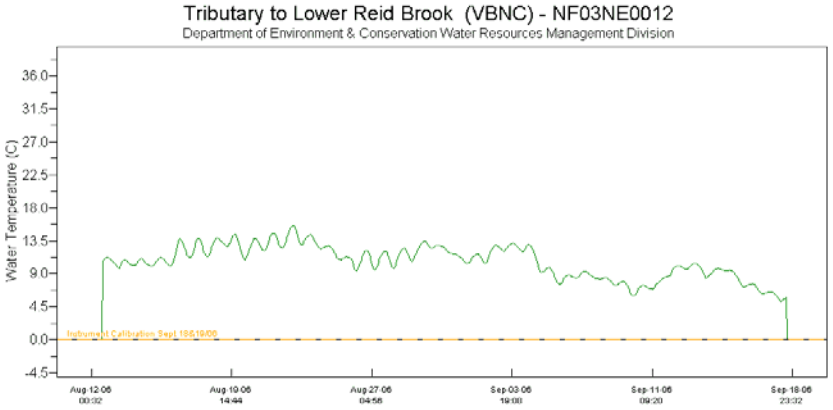


Figure 11

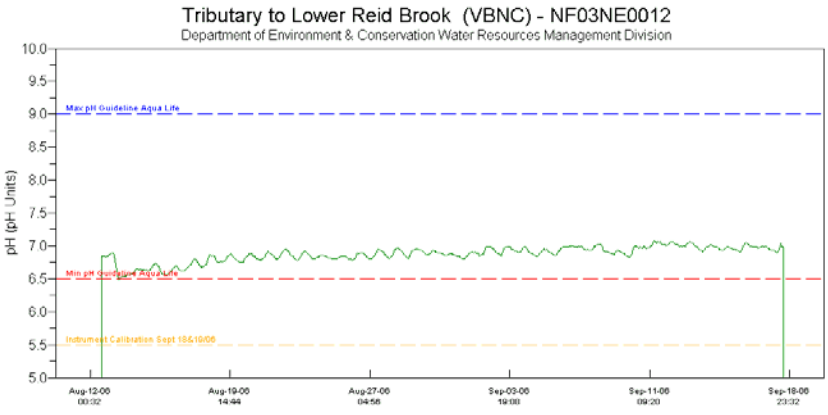


Figure 12

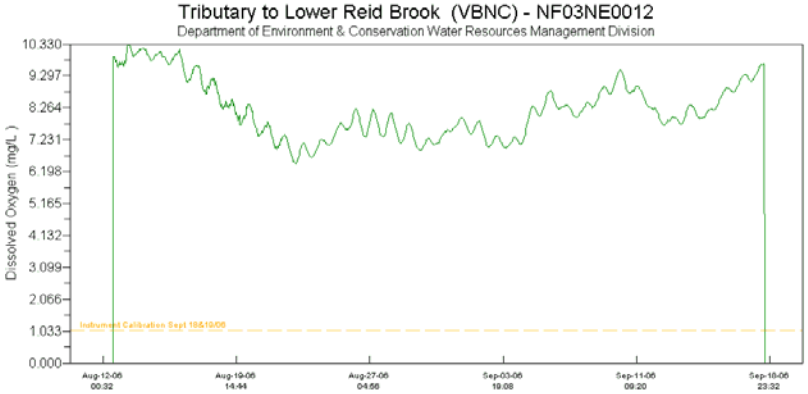


Figure 13

- As was the case with the turbidity readings at the Camp Pond Brook station, the turbidity values at the Tributary to Lower Reid Brook station also showed increases (with a maximum reading of 30.9 NTU) during the time of heavy rainfall early in the deployment period (**Figures 14 & 15; Appendix A**). After this point, the turbidity values fell back to baseline values. With respect to the conductivity values (**Figure 16**), there was a slight rise and fall during the rainfall event, however, the values continued to climb over the deployment period as the stage decreased.

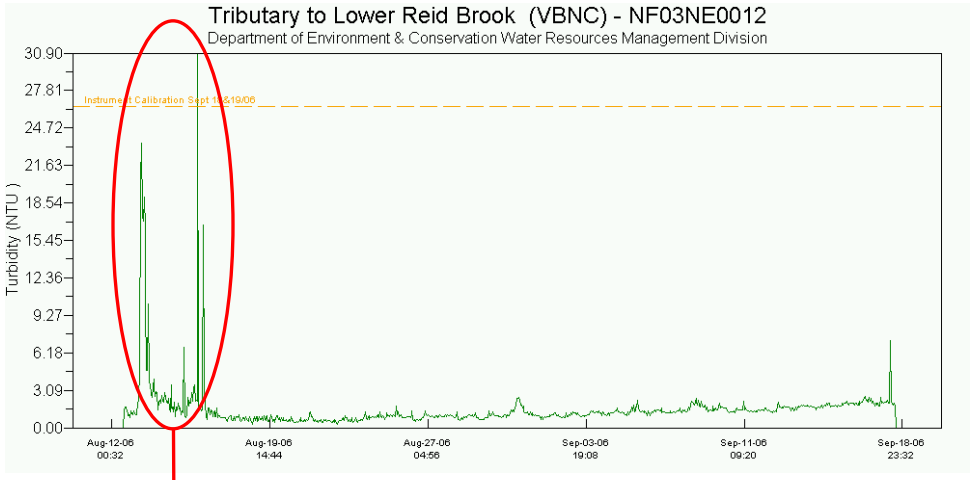


Figure 14

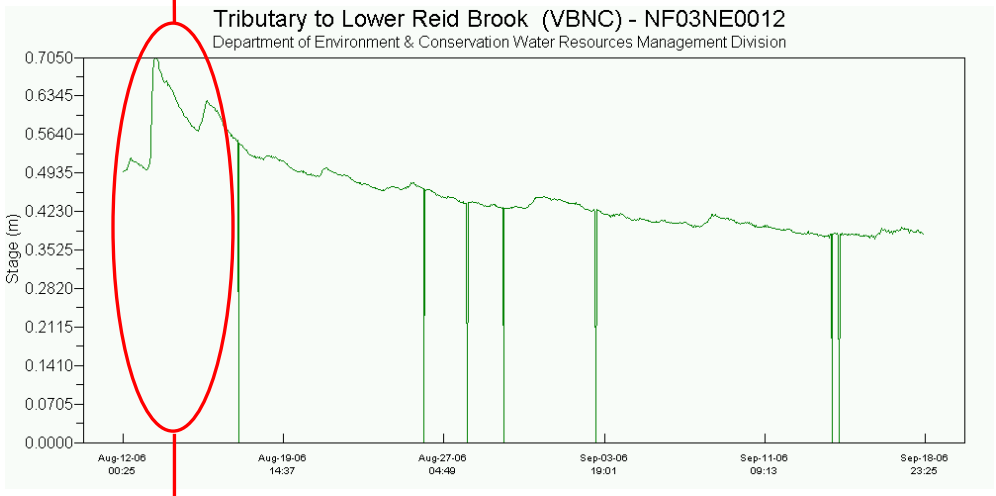


Figure 15

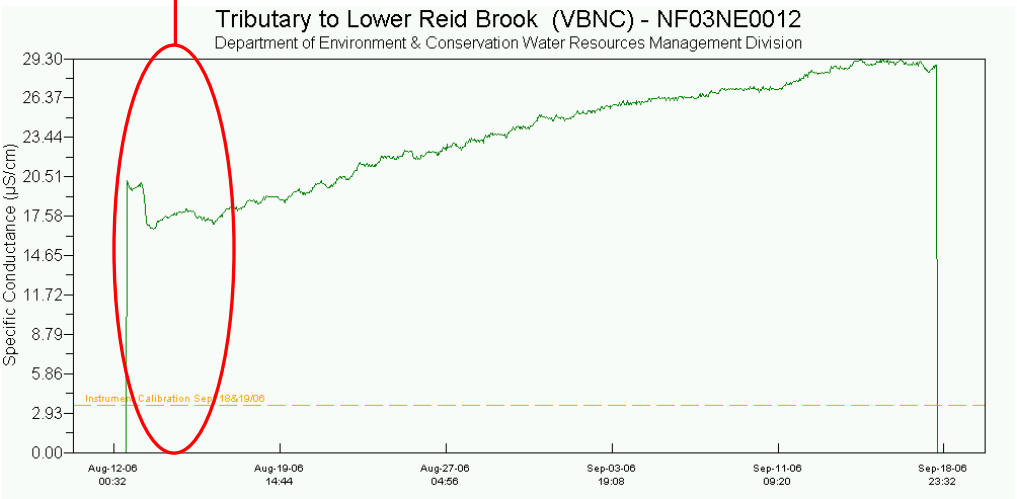


Figure 16

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Appendix A – Climate Data for Nain, Labrador (August & September 2006)

Daily Data Report for August 2006

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days C	Cool Deg Days C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01	12.6	8.9	10.8	7.2	0.0			0.0	0		
02	10.6	6.3	8.5	9.5	0.0			0.0	0		
03	14.4	7.4	10.9	7.1	0.0			0.0	0		
04	18.8	7.8	13.3	4.7	0.0			1.4	0		
05	17.9	10.8	14.4	3.6	0.0			0.0	0		
06	18.7	7.1	12.9	5.1	0.0			0.0	0		
07	14.1	8.0	11.1	6.9	0.0			0.0	0		
08	18.3	10.1	14.2	3.8	0.0			0.0	0		
09	16.8	5.4	11.1	6.9	0.0			6.5	0		
10	15.8	8.5	12.2	5.8	0.0			1.5	0		
11	9.1	7.0	8.1	9.9	0.0			16.5	0		
12	9.7	7.1	8.4	9.6	0.0			33.4	0		
13	9.6	7.8	8.7	9.3	0.0			20.4	0		
14	8.8	6.7	7.8	10.2	0.0			1.4	0		
15	12.8	6.4	9.6	8.4	0.0			9.0	0		
16	21.1	7.9	14.5	3.5	0.0			0.0	0		
17	19.0	10.7	14.9	3.1	0.0			0.0	0		
18	21.4	10.8	16.1	1.9	0.0			5.8	0		
19	19.9	14.4	17.2	0.8	0.0			0.0	0		
20	18.3	7.5	12.9	5.1	0.0			2.0	0		
21	15.9	10.6	13.3	4.7	0.0			1.6	0		
22	19.8	7.3	13.6	4.4	0.0			0.0	0		
23	16.5	7.7	12.1	5.9	0.0			0.0	0		
24	12.2	7.6	9.9	8.1	0.0			2.2	0		
25	11.2	6.1	8.7	9.3	0.0			0.6	0		
26	16.4	3.2	9.8	8.2	0.0			0.0	0		
27	14.2	5.3	9.8	8.2	0.0			0.0	0		
28	16.8	4.8	10.8	7.2	0.0			0.0	0		
29	13.2	5.7	9.5	8.5	0.0			0.0	0		
30	10.1	7.2	8.7	9.3	0.0			0.7	0		
31	9.3	6.9	8.1	9.9	0.0			0.7	0		
Sum				206.1	0.0			103.7			
Avg	14.9	7.7	11.4								
Xtrm	21.4	3.2									

Daily Data Report for September 2006

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days C	Cool Deg Days C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01	14.8	5.9	10.4	7.6	0.0			0.0	0		
02	24.7	7.8	16.3	1.7	0.0			0.0	0		
03	22.4	13.6	18.0	0.0	0.0			0.0	0		
04	19.1	13.9	16.5	1.5	0.0			0.0	0		
05	13.2	5.5	9.4	8.6	0.0			0.0	0		
06	13.6	3.0	8.3	9.7	0.0			0.0	0		
07	13.1	6.8	10.0	8.0	0.0			0.0	0		
08	8.4	5.8	7.1	10.9	0.0			5.5	0		
09	9.8	4.6	7.2	10.8	0.0			0.0	3		
10	12.2	2.7	7.5	10.5	0.0			0.0	1		
11	15.3	5.1	10.2	7.8	0.0			0.0	0		
12	21.5	12.4	17.0	1.0	0.0			0.0	0		
13	20.5	10.8	15.7	2.3	0.0			0.0	0		
14	17.2	8.3	12.8	5.2	0.0			0.0	0		
15	8.2	5.6	6.9	11.1	0.0			0.0	0		
16	8.4	3.5	6.0	12.0	0.0			1.5	0		
17	7.7	2.7	5.2	12.8	0.0			0.6	8		
18	8.1	0.7	4.4	13.6	0.0			0.0	8		
19	7.4	-0.7	3.4	14.6	0.0			0.0	1		
20	6.1	3.8	5.0	13.0	0.0			26.0	0		
21	14.6	4.5	9.6	8.4	0.0			0.0	0		
22	10.3	4.4	7.4	10.6	0.0			0.0	0		
23	10.9	3.1	7.0	11.0	0.0			0.0	0		
24	10.9	0.9	5.9	12.1	0.0			0.0	0		
25	11.1	1.1	6.1	11.9	0.0			0.0	0		
26	11.8	5.1	8.5	9.5	0.0			0.0	0		
27	12.7	1.8	7.3	10.7	0.0			0.0	0		
28	14.4	1.3	7.9	10.1	0.0			0.0	0		
29	17.1	9.4	13.3	4.7	0.0			7.2	0		
30	15.2	6.1	10.7	7.3	0.0			0.7	0		
Sum				259.0	0.0			41.5			
Avg	13.4	5.3	9.4								
Xtrm	24.7	-0.7									