Real Time Water Quality Monthly Report
Rattling Brook below Bridge (VBNC)
October 2007 – November 2007

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis
- Voisey's Bay Nickel Company (VBNC) will be informed of any significant water quality events in the future in the form of a monthly report
- The initial installation of the RTWQ instrumentation at Rattling Brook below Bridge occurred on December 12th, 2006
- Instrument has been sent to supplier for repairs

Maintenance and Calibration of Instrumentation

- The instrument at Rattling Brook was removed on October 3rd, 2007 for repairs and a replacement was installed on November 13th, 2007.
- Replacement instrument was not communicating with datalogger on installation as a result comparison rankings cannot be made for installation. The communication issue was corrected on October 29th, 2007.
- The results of comparing the Minisonde values to Datasonde values during removal and installation on October 3rd/4th, 2007 can be seen in **Table 1**.

Table 1: QA/QC Data Comparison Rankings upon reinstallation on October 4th, 2007

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	October 3rd, 2007	Removal	Good	Fair	Good	Poor
	October 4th, 2007	Installation	NA	NA	NA	NA

- The instrument was deployed until November 13th, 2007 (40-day deployment period) at which point it was removed for maintenance and calibration.
- The recorded deployment period is from October 29 – November 13, 2007.
- The results of comparing the Minisonde values to the Datasonde values during removal on November 13th, 2007 can be seen in **Table 2**.

Table 2: QA/QC Data Comparison Rankings upon removal on October 3rd, 2007

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	November 13th, 2007	Removal	Good	Poor	Excellent	Excellent

Data Interpretation

- The water temperature **(Figure 1)** began to decrease over the recorded deployment period. This is typical for this time of year with a temperature range of 6.53-10.26°C.

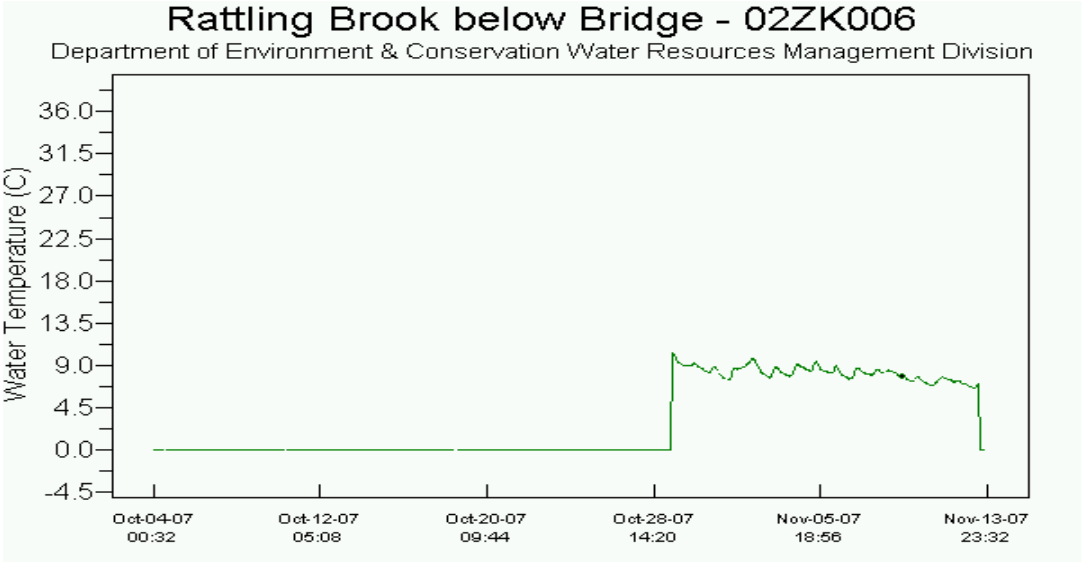

Figure 1

- The dissolved oxygen (DO) values (**Figure 2**) were consistent over the recorded deployment period. DO values ranged from 11.07-12.05mg/L which is aligned with the most conservative values in the CCME Protection of Aquatic Life guidelines for dissolved oxygen (cold water/other life stages – above 6.5; warm water/other life stages – above 5.5; warm water/early life stages – above 6; cold water/early life stages – 9.5 mg/L).

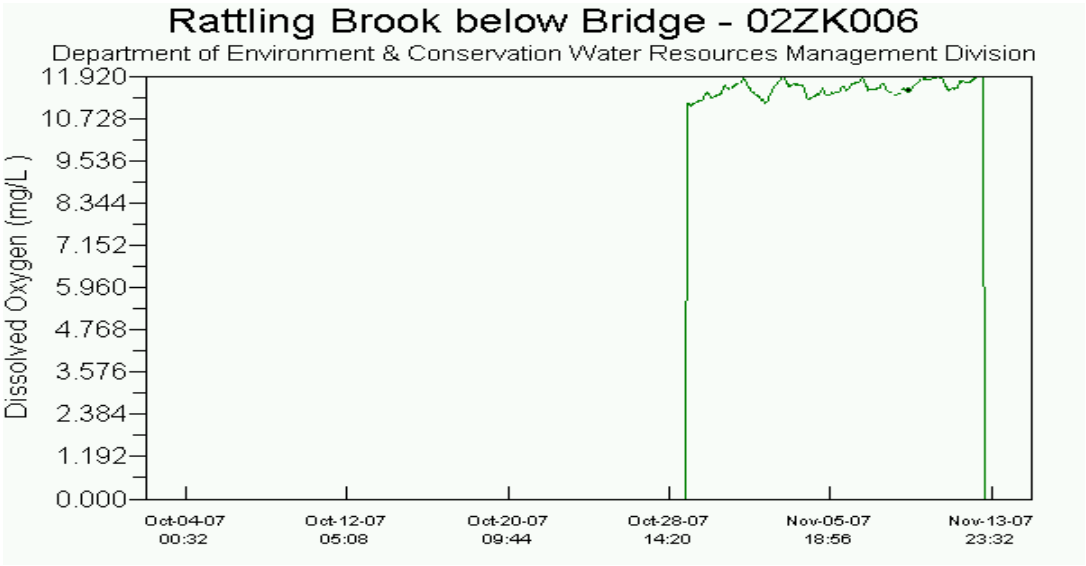

Figure 2

- The pH values **(Figure 3)** for Rattling Brook station remained consistent over the deployment period with values rangeing from 6.17-6.51. Relatively all values fell under the recommended range (6.5 – 9.0) for the CCME Protection of Aquatic Life guidelines which is due to the naturally acidic nature of NL waters.

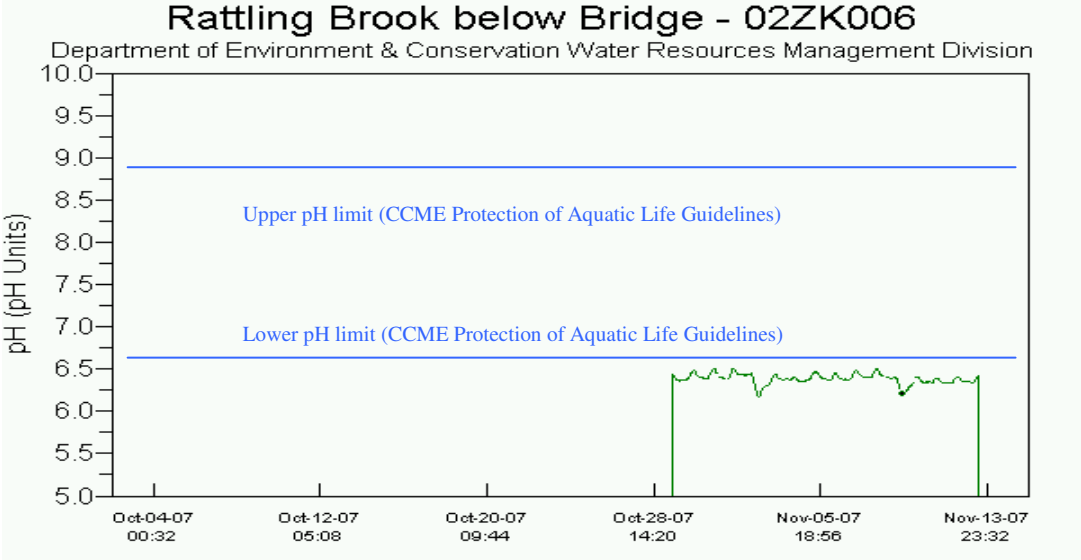

Figure 3

- The specific conductivity values (**Figure 4)** were recorded in mS/cm which resulted in values being off by a factor of 10^3, after correction, recorded values were stable and ranged from 32.1-33.6 µS/cm.

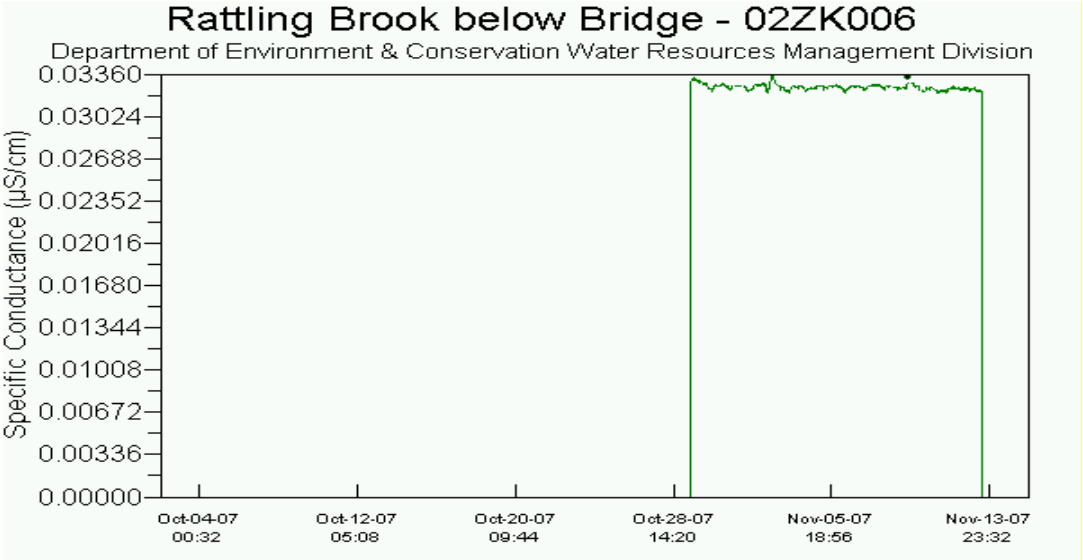

Figure 4

- Turbidity values (**Figure 5**) were recorded at zero NTU throughout the deployment period.

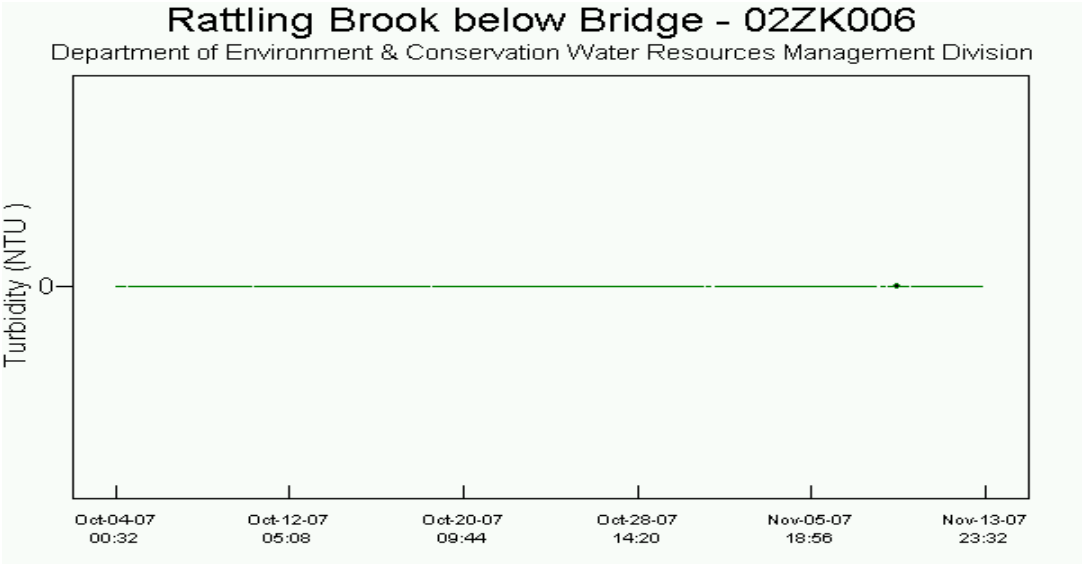

Figure 5

- The stage values (**Figure 6**) indicate that there were three significant events during the deployment period as indicated in Figure 6 (see **Appendix A** for climatological data).

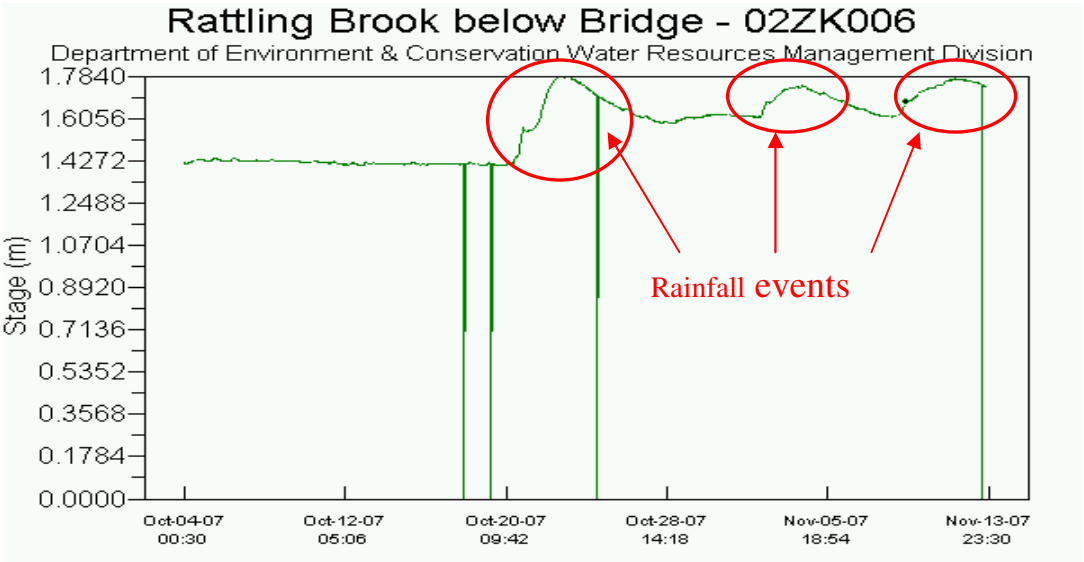

Figure 6

Prepared by: Michael Colbert
Engineer 1
Department of Environment and Conservation
Phone: (709) 729-1681
Fax: (709) 729-0320
E-mail: michaelcolbert@gov.nl.ca

Appendix A – Climate Data for Argentia, NL (October & November 2007)

Daily Data Report for October 2007											
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†	12.9	6.6	9.8	8.2	0.0	M	M	0.0		24	48
02†	14.2	10.6	12.4	5.6	0.0	M	M	0.0		25	48
03†	15.1	10.3	12.7	5.3	0.0	M	M	0.0			<31
04†	15.2	10.5	12.9	5.1	0.0	M	M	2.9		20	48
05†	14.3	11.1	12.7	5.3	0.0	M	M	0.0		26	59
06†	13.5	8.7	11.1	6.9	0.0	M	M	0.0		33	57
07†	10.2	6.8	8.5	9.5	0.0	M	M	0.7		28	52
08†	11.0	6.7	8.9	9.1	0.0	M	M	4.4		33	61
09†	9.0	5.2	7.1	10.9	0.0	M	M	0.0		35	56
10†	11.1	4.2	7.7	10.3	0.0	M	M	0.0		33	33
11†	11.2	4.2	7.7	10.3	0.0	M	M	0.0		11	37
12†	12.1	3.6	7.9	10.1	0.0	M	M	0.0		7	39
13†	11.9	6.1	9.0	9.0	0.0	M	M	9.0		10	63
14†	9.7	7.3	8.5	9.5	0.0	M	M	0.0			<31
15†	12.0	6.6	9.3	8.7	0.0	M	M	7.8			<31
16†	7.7	3.7	5.7	12.3	0.0	M	M	3.0		34	43
17†	8.0	4.4	6.2	11.8	0.0	M	M	0.0		34	57
18†	8.0	4.1	6.1	11.9	0.0	M	M	0.7		27	54
19†	8.7	2.6	5.7	12.3	0.0	M	M	0.0		31	35
20†	15.3	4.3	9.8	8.2	0.0	M	M	25.6		20	74
21†	14.0	8.7	11.4	6.6	0.0	M	M	23.0		21	65
22†	10.3	4.3	7.3	10.7	0.0	M	M	0.0		26	54
23†	14.6	5.3	10.0	8.0	0.0	M	M	0.0		20	69
24†	11.9	5.9	8.9	9.1	0.0	M	M	0.0		21	59
25†	7.2	4.5	5.9	12.1	0.0	M	M	0.0		29	32
26†	8.8	4.4	6.6	11.4	0.0	M	M	0.0		26	54
27†	10.7	7.7	9.2	8.8	0.0	M	M	0.0		26	44
28†	15.6	9.3	12.5	5.5	0.0	M	M	17.9		19	72
29†	10.6	2.5	6.6	11.4	0.0	M	M	9.7		26	54
30†	6.2	1.9	4.1	13.9	0.0	M	M	0.6			<31
31†	4.9	2.1	3.5	14.5	0.0	M	M	0.6		34	43
Sum				**292.3**	**0.0**	**M**	**M**	**105.9**			
Avg	**11.2**	**5.9**	**8.55**								
Xtrm	**15.6**	**1.9**								**20**	**74**

Daily Data Report for November 2007											
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†	13.7	3.6	8.7	9.3	0.0	M	M	0.0		21	76
02†	16.5	4.9	10.7	7.3	0.0	M	M	22.2		20	93
03†	7.6	1.5	4.6	13.4	0.0	M	M	0.0		12	50
04†	15.4	6.6	11.0	7.0	0.0	M	M	2.6		21	98
05†	11.3	5.0	8.2	9.8	0.0	M	M	0.0		23	32
06†	9.6	2.4	6.0	12.0	0.0	M	M	0.0		2	37
07†	9.0	1.6	5.3	12.7	0.0	M	M	0.0		15	39
08†	11.0	6.1	8.6	9.4	0.0	M	M	10.2		14	70
09†	8.8	2.8	5.8	12.2	0.0	M	M	24.9		2	54
10†	4.1	1.8	3.0	15.0	0.0	M	M	0.0		8	57
11†	12.9	2.4	7.7	10.3	0.0	M	M	20.5		12	76
12†	7.6	3.4	5.5	12.5	0.0	M	M	0.6		23	65
13†	4.6	2.0	3.3	14.7	0.0	M	M	1.4		26	48
14†	6.9	1.9	4.4	13.6	0.0	M	M	0.0		30	43
15†	12.2	4.0	8.1	9.9	0.0	M	M	0.0		21	56
16†	17.0	10.7	13.9	4.1	0.0	M	M	1.3		15	72
17†	14.3	5.4	9.9	8.1	0.0	M	M	5.7		24	96
18†	7.4	0.4	3.9	14.1	0.0	M	M	0.0		2	37
19†	1.6	-1.8	-0.1	18.1	0.0	M	M	0.0		4	41
20†	2.7	-1.5	0.6	17.4	0.0	M	M	3.4		7	48
21†	6.1	1.5	3.8	14.2	0.0	M	M	56.1		9	61
22†	4.0	0.8	2.4	15.6	0.0	M	M	0.0			<31
23†	11.5	1.0	6.3	11.7	0.0	M	M	2.4		18	37
24†	10.6	0.2	5.4	12.6	0.0	M	M	16.0		28	74
25†	4.0	-0.3	1.9	16.1	0.0	M	M	0.0		25	54
26†	6.5	2.6	4.6	13.4	0.0	M	M	1.3		21	59
27†	12.3	4.5	8.4	9.6	0.0	M	M	21.4		21	87
28†	8.7	-0.7	4.0	14.0	0.0	M	M	0.0		26	87
29†	4.4	-2.3	1.1	16.9	0.0	M	M	0.0		13	57
30†	8.9	0.0	4.5	13.5	0.0	M	M	6.3		28	76
Sum				**368.5**	**0.0**	**M**	**M**	**196.3**			
Avg	**9**	**2.4**	**5.69**								
Xtrm	**17.0**	**-2.3**								**21**	**98**