

**Real Time Water Quality Deployment Report
 NF02ZK0023 - Rattling Brook below Bridge (Vale Inco)
 July – August 2008**

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- Vale Inco will be informed of any significant water quality events in the form of a monthly report.
- This monthly report interprets the data from the Rattling Brook River RTWQ station for the period of July 11 to August 13, 2008.

Maintenance and Calibration of Instrumentation

- The Rattling Brook instrument was deployed on July 11, 2008. A second set of data readings were collected at the time of installation, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of QA/QC protocol.
- The QA/QC rankings upon comparing water quality data from both instruments for the removal before the start of the deployment period and the installation at the start of the deployment period are both indicated in **Table 1**. Rankings of “good” and “excellent” were achieved on installation for all parameters.

Table 1: QA/QC Data Comparison Rankings upon removal on July 9th, 2008 and installation on July 11th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Jul. 9, 2008	Removal	Good	Good	Excellent	Excellent
	Jul. 11, 2008	Installation	Good	Good	Excellent	Excellent

- Due to problems with site transmission, data was not available on-line past mid-April. The Rattling Brook instrument was subsequently removed August 13th after a period of 33 days. A second set of data readings were collected at the time of removal, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of QA/QC protocol.
- The QA/QC rankings upon comparing water quality data from both instruments for the removal at the end of the deployment period and the installation after the deployment period are both indicated in **Table 2**. Rankings of “excellent” and “good” on removal were achieved for all parameters. The “excellent” and “good” rankings on removal indicate a high degree of accuracy in the data obtained for all other parameters.

Table 2: QA/QC Data Comparison Rankings upon removal on August 13th, 2008 and installation on August 18th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Aug. 13, 2008	Removal	Excellent	Good	Excellent	Excellent
	Aug. 18, 2008	Installation	Excellent	Good	Excellent	Good

Data Interpretation

- Water temperature values (**Figure 1**) for the deployment period displayed diurnal fluctuations and remained consistent, typical for the summer season. Water temperature ranged between 16 and 24.9°C.

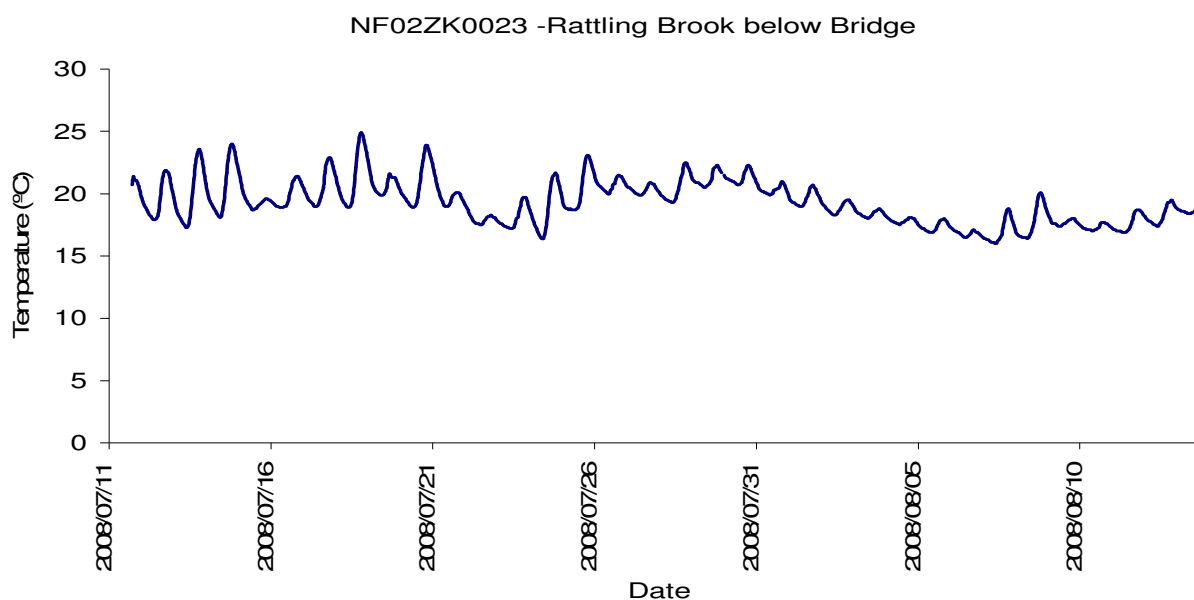


Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period remained consistent. DO values ranged from 7.78 to 9.52 mg/L, most values below the most conservative recommended DO concentration of 9.5 mg/L by the Canadian Council of Ministers of the Environment (CCME) Protection of Freshwater Aquatic Life Guidelines (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 – above 9.5 mg/L).

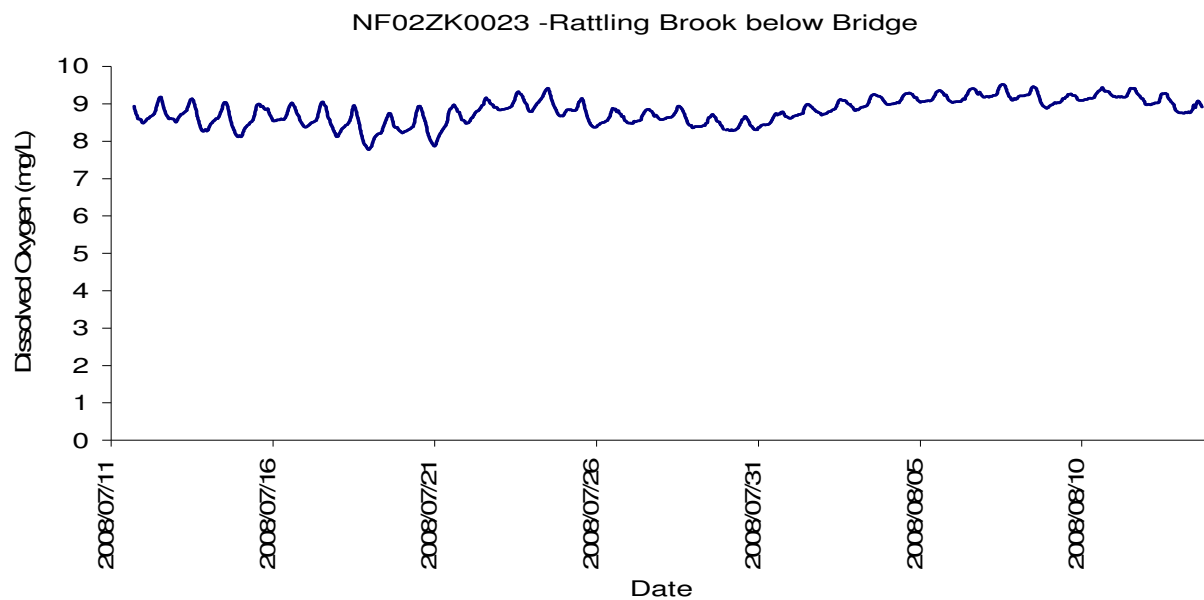


Figure 2

- pH values (**Figure 3**) were consistent over the deployment period. pH values ranged between 6.02 and 6.36, all values below the minimum pH level of 6.5 recommended by the CCME Guidelines for the Protection of Freshwater Aquatic Life (due to the naturally acidic nature of NL waters).

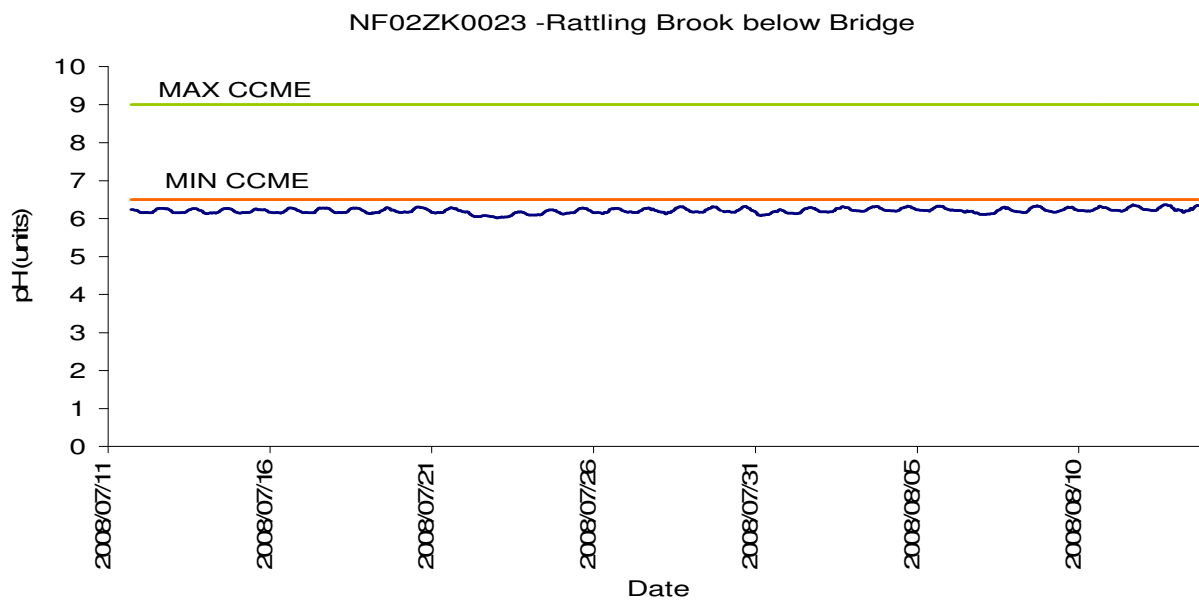


Figure 3

- Specific conductance values (**Figure 4**) experienced a slight rise at the end of the deployment period, possibly corresponding to spikes in turbidity, otherwise values were consistent. Specific conductance ranged from 28.8 to 31.7 μ S/cm.

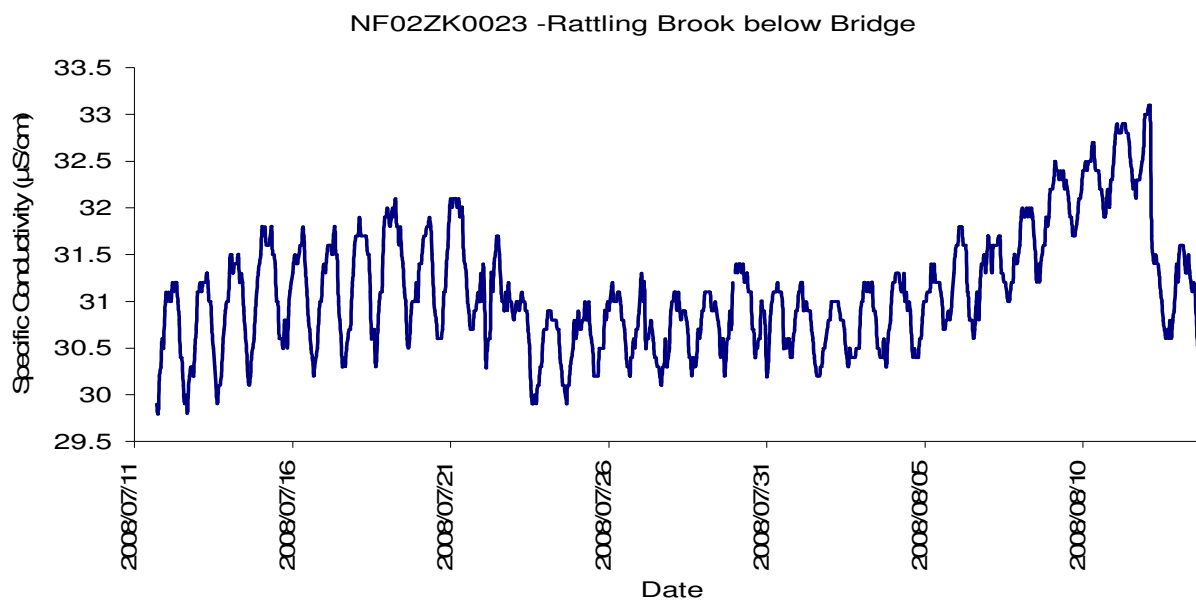


Figure 4

- Turbidity values (**Figure 5**) were at zero NTU for most of the deployment period. Towards the end of the deployment period turbidity spikes which is consistent with precipitation events (**Appendix A**) over the periods of July 19th to the 23rd, July 26th to the 27th and August 4th to the 9th. The maximum turbidity value recorded for the deployment period was 74.8 NTU.

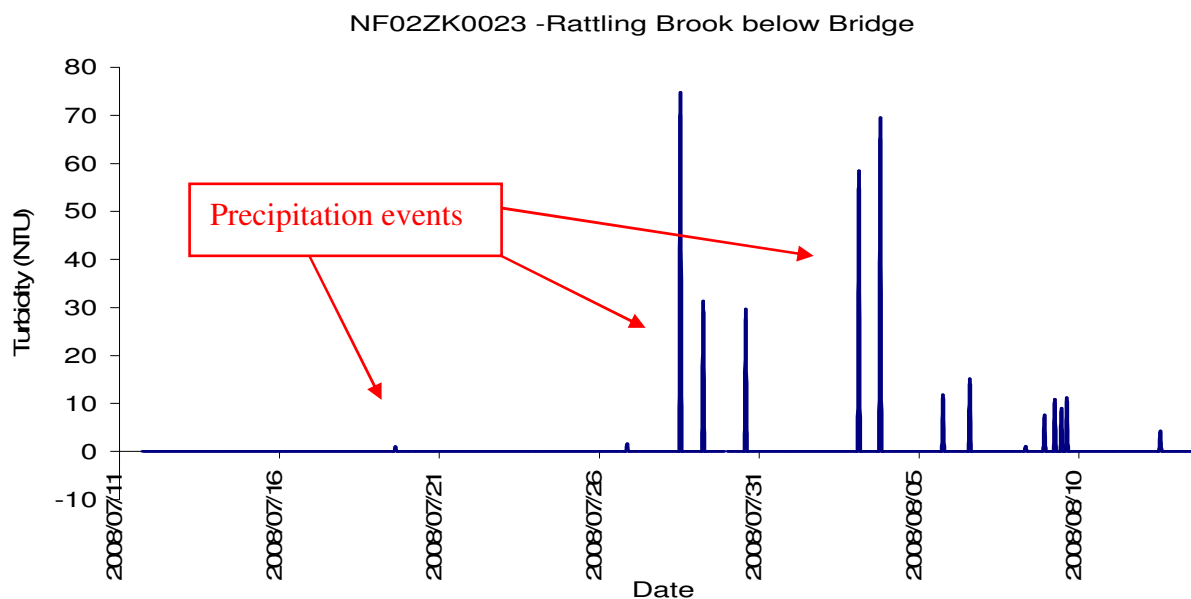


Figure 5

- Stage values (**Figure 6**) were consistent with precipitation events (**Appendix A**) over the periods of July 19th to the 23rd, July 26th to the 27th and August 4th to the 9th. Stage values ranged between 1.425 and 1.594 meters.

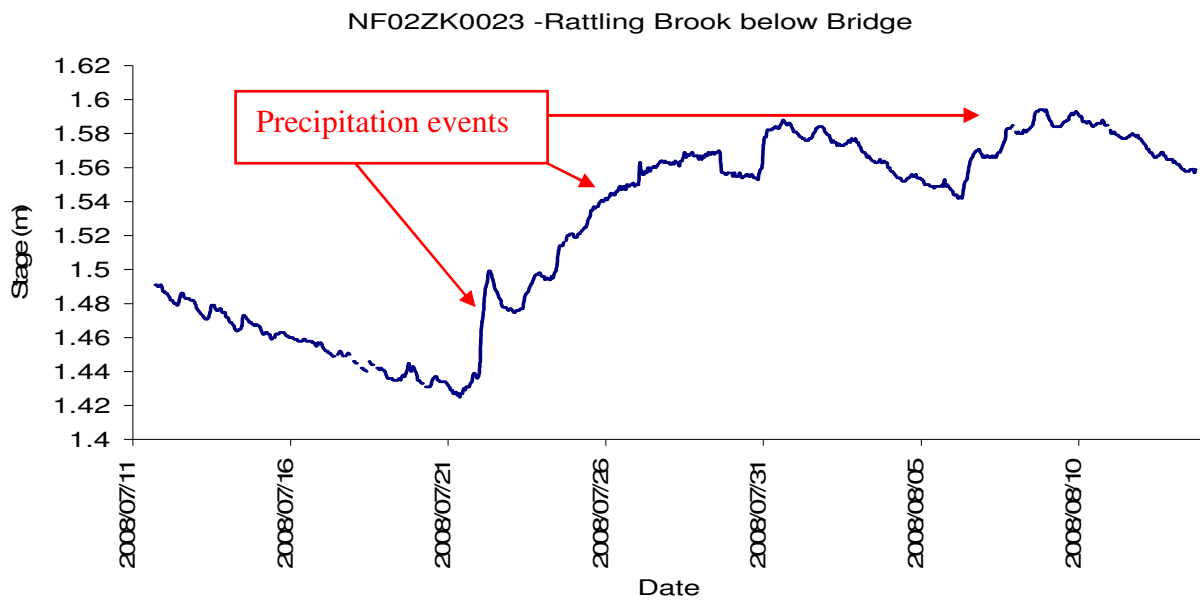









Figure 6

Prepared by: Michael Colbert
Engineer
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 (July 11 to August 13, 2008)

Daily Data Report for July 2008											
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
11†	16.7	11.6	14.2	3.8	0.0	M	M	1.4		21	50
12†	20.1	11.1	15.6	2.4	0.0	M	M	4.1		34	35
13†	16.2	10.6	13.4	4.6	0.0	M	M	0.0		23	37
14†	18.0	10.7	14.4	3.6	0.0	M	M	0.0		18	50
15†	18.3	14.4	16.4	1.6	0.0	M	M	0.7		18	52
16†	18.4	13.9	16.2	1.8	0.0	M	M	0.6			<31
17†	15.7	12.7	14.2	3.8	0.0	M	M	0.0			<31
18†	16.9	12.5	14.7	3.3	0.0	M	M	0.0			<31
19†	15.8	11.9	13.9	4.1	0.0	M	M	11.6			<31
20†	15.2	11.8	13.5	4.5	0.0	M	M	0.6			<31
21†	16.1	11.9	14.0	4.0	0.0	M	M	28.5		11	59
22†	16.2	13.7	15.0	3.0	0.0	M	M	4.0			<31
23†	19.4	9.8	14.6	3.4	0.0	M	M	7.5		9	44
24†	16.8	9.3	13.1	4.9	0.0	M	M	M			<31
25†	17.7	14.0	15.9	2.1	0.0	M	M	0.0			<31
26†	18.5	15.8	17.2	0.8	0.0	M	M	16.0		20	48
27†	17.8	15.9	16.9	1.1	0.0	M	M	15.5		20	43
28†	19.1	16.0	17.6	0.4	0.0	M	M	1.2		20	32
29†	19.1	16.4	17.8	0.2	0.0	M	M	0.0		20	35
30†	20.2	16.1	18.2	0.0	0.2	M	M	5.0			<31
31†	19.3	13.5	16.4	1.6	0.0	M	M	0.6		35	33

Daily Data Report for August 2008

D a y	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†	18.4	13.4	15.9	2.1	0.0	M	M	0.0		5	32
02†	18.6	12.9	15.8	2.2	0.0	M	M	0.0		4	33
03†	15.8	12.2	14.0	4.0	0.0	M	M	0.0			<31
04†	14.7	11.7	13.2	4.8	0.0	M	M	9.3			<31
05†	16.1	12.7	14.4	3.6	0.0	M	M	9.7		5	35
06†	14.9	11.7	13.3	4.7	0.0	M	M	13.9		4	33
07†	18.9	11.7	15.3	2.7	0.0	M	M	0.0		6	32
08†	17.0	12.6	14.8	3.2	0.0	M	M	0.0			<31
09†	16.7	13.2	15.0	3.0	0.0	M	M	5.9			<31
10†	17.1	14.4	15.8	2.2	0.0	M	M	0.0			<31
11†	20.4	15.4	17.9	0.1	0.0	M	M	0.0			<31
12†	23.1	15.1	19.1	0.0	1.1	M	M	1.6		21	39
13†	23.2	15.6	19.4	0.0	1.4	M	M	0.9		21	41