Real Time Water Quality Monthly Report
Rattling Brook below Bridge (Vale Inco)
January - February 2008

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- Vale Inco notified WRMD staff of name change, formerly Voisey's Bay Nickel Company.
- Vale Inco will be informed of any significant water quality events in the future in the form of a monthly report.

Maintenance and Calibration of Instrumentation

- WRMD staff removed the instrument at Rattling Brook on January 18th, 2008 and replaced it with a clean and calibrated instrument.
- Conductivity sensor on QA/QC instrument may not have been calibrated properly, use of old solution, resulting in Fair ranking on installation (Excellent ranking on removal).
- The results of comparing values from a calibrated instrument to the deployed instrument during removal and installation on January 18th, 2008 can be seen in **Table 1.**

Table 1: QA/QC Data Comparison Rankings upon reinstallation on February 25th, 2008

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

- The instrument was deployed until February 25th, 2008 (39-day deployment period) at which point it was removed for maintenance and calibration.
- The results of comparing values from a calibrated instrument to the deployed instrument values during removal on February 25th, 2008 can be seen in **Table 2.**

Table 2: QA/QC Data Comparison Rankings upon removal on February 27th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Feb. 25, 2008	Removal	Excellent	Good	Excellent	Excellent

Data Interpretation

- The water temperature **(Figure 1)** remained relatively stable over the deployment period. Typical for this time of year, the temperature ranged from -0.42 to 2.16°C.

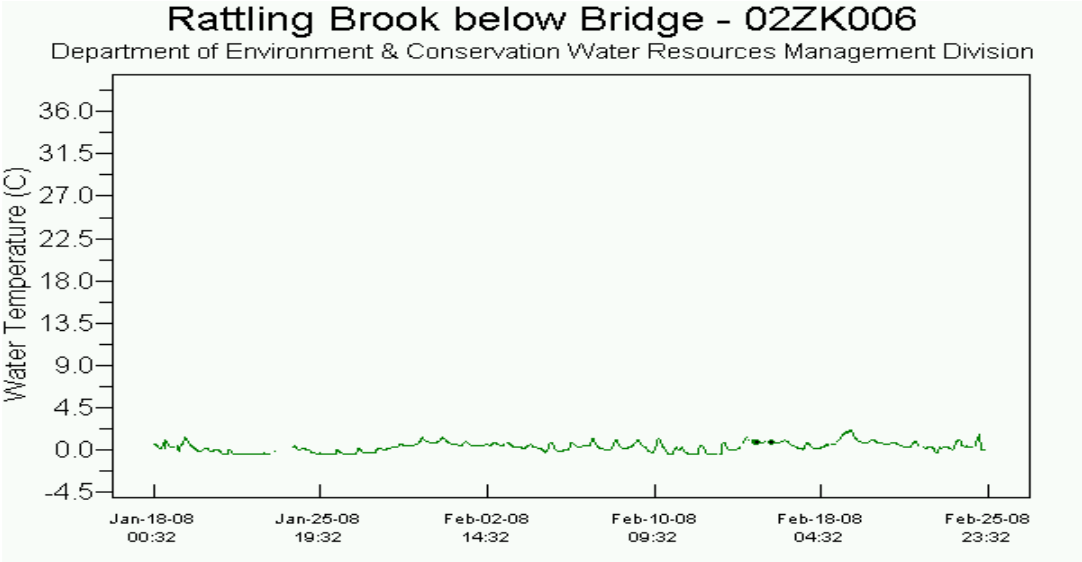

Figure 1

- The dissolved oxygen (DO) values (**Figure 2**) remained relatively stable over the deployment period, consistent with stable temperature. DO values ranged from 13.40 to 14.63 mg/L, all values above 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).

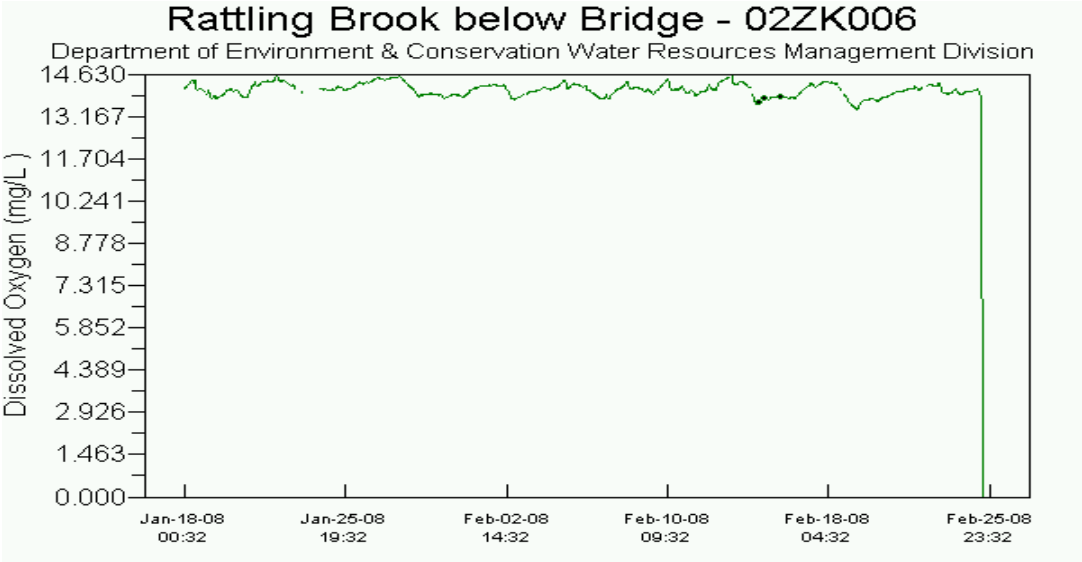

Figure 2

- The pH values **(Figure 3)** experienced downwards drift over the deployment period. Values ranged from 5.42 to 6.07, all below the recommended range (6.5 – 9.0) for the CCME Protection of Aquatic Life guidelines (due to the naturally acidic nature of NL waters).

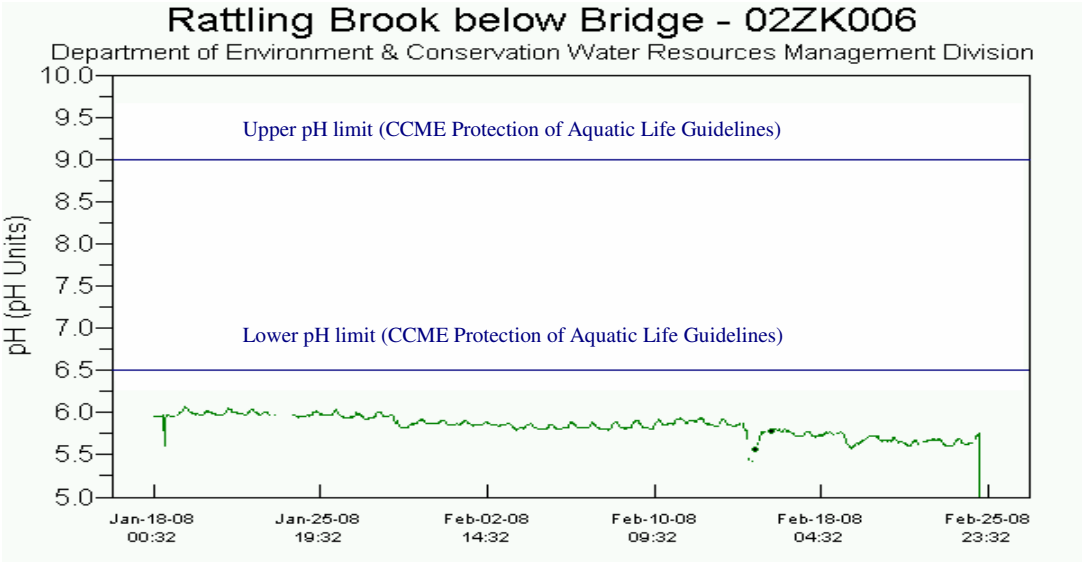

Figure 3

- The specific conductivity values (**Figure 4)** were mostly stable with the exception of a drop at the end of the deployment period due to a precipitation event. Values ranged from 30.5 to 37.9µS/cm.

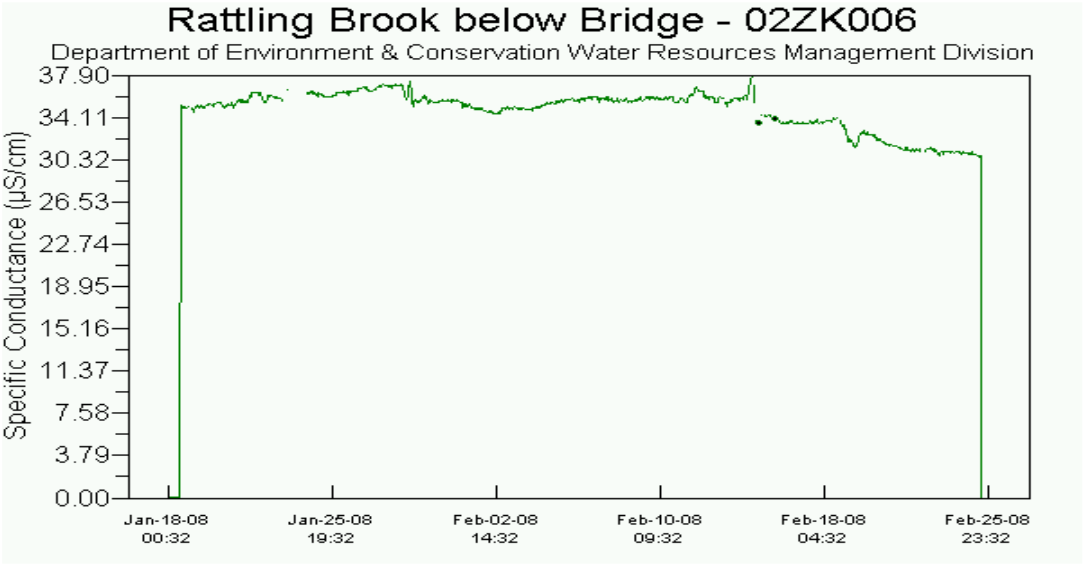

Figure 4

- There were several turbidity values (**Figure 5**) above zero NTU during the deployment period. The values reflected precipitation events occurring about the same time. The highest turbidity value was 50.7 NTU which coincided with the largest precipitation event of the period.

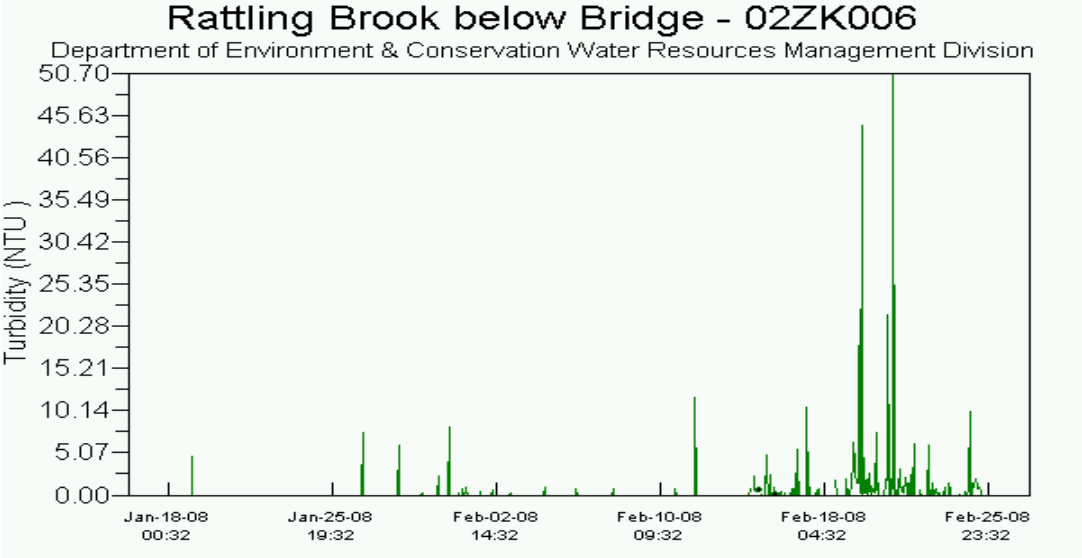

Figure 5

- Stage values (**Figure 6**) ranged from 1.51 to 2.69m (removal of erroneous value of 3.79m) during the deployment period. Stage values were variable and increased with precipitation events (see **Appendix A** for climatological data).

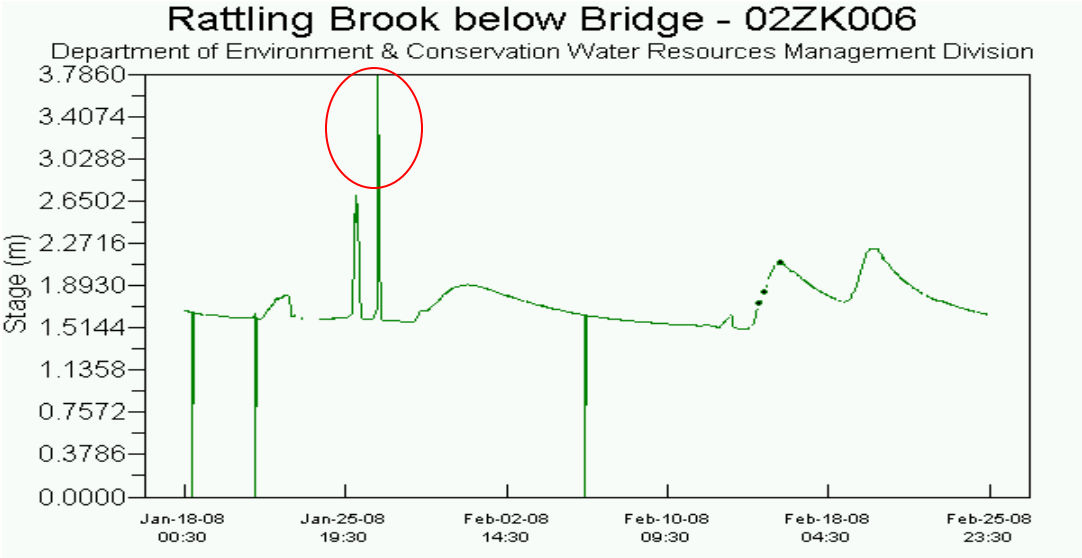

Figure 6

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Appendix A – Climate Data for Argentia, NL (January – February 2008)

Daily Data Report for January 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
01†	1.5	-3.0	-0.8	18.8	0.0	M	M	0.0	5	27	117
02†	2.7	-6.9	-2.1	20.1	0.0	M	M	1.4	5	11	109
03†	0.7	-10.3	-4.8	22.8	0.0	M	M	0.0	4	27	70
04†	-1.8	-12.1	-7.0	25.0	0.0	M	M	0.0	5	24	63
05†	-0.9	-5.9	-3.4	21.4	0.0	M	M	0.0	5	25	63
06†	-0.3	-5.5	-2.9	20.9	0.0	0.0	3.0	1.2	4	12	32
07†	1.4	-2.5	-0.6	18.6	0.0	M	M	0.6	7	21	54
08†	1.6	0.6	1.1	16.9	0.0	M	M	2.0	3	22	44
09†	6.5	0.1	3.3	14.7	0.0	M	M	2.6	3	13	54
10†	6.8	1.2	4.0	14.0	0.0	M	M	6.6		25	70
11†	1.6	-1.0	0.3	17.7	0.0	M	M	0.0		27	78
12†	6.9	-1.0	3.0	15.0	0.0	M	M	22.3		14	72
13†	2.2	-2.4	-0.1	18.1	0.0	M	M	0.0		27	63
14†	-1.5	-3.7	-2.6	20.6	0.0	0.0	2.0	2.2		28	50
15†	2.1	-2.2	-0.1	18.1	0.0	0.0	1.0	10.2		12	78
16†	0.9	-1.2	-0.2	18.2	0.0	M	M	0.7	3	3	67
17†	-0.6	-3.7	-2.2	20.2	0.0	M	M	0.0	2	36	61
18†	0.3	-4.8	-2.3	20.3	0.0	M	M	0.0		15	74
19†	3.7	-2.9	0.4	17.6	0.0	M	M	4.4		18	93
20†	-1.8	-6.1	-4.0	22.0	0.0	0.0	12.0	4.4	1	32	67
21†	-5.9	-12.1	-9.0	27.0	0.0	M	M	0.0	2	29	63
22†	-5.1	-11.4	-8.3	26.3	0.0	M	M	0.0	1	27	61
23†	3.3	-5.7	-1.2	19.2	0.0	M	6.0	17.0		20	93
24†	-0.7	-4.6	-2.7	20.7	0.0	M	M	1.1	8	20	52
25†	-3.2	-11.9	-7.6	25.6	0.0	M	M	3.3	7	35	69
26†	-9.0	-14.3	-11.7	29.7	0.0	M	M	M	7	32	54
27†	-6.3	-12.6	-9.5	27.5	0.0	M	M	0.0		27	37
28†	4.5	-8.3	-1.9	19.9	0.0	M	M	2.1	5	13	72
29†	6.5	0.5	3.5	14.5	0.0	M	M	15.6		11	82
30†	9.2	0.1	4.7	13.3	0.0	M	M	5.7		20	37
31†	7.4	-2.0	2.7	15.3	0.0	M	M	0.0		21	67
Sum				**620.0**	**0.0**	**0.0***	**24.0***	**103.4***			
Avg	**1.1**	**-5**	**-1.98**								

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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†	-1.7	-5.2	-3.5	21.5	0.0	M	M	0.0		27	48
02†	3.4	-6.4	-1.5	19.5	0.0	M	M	6.3		14	74
03†	0.3	-5.0	-2.4	20.4	0.0	M	M	0.0		25	72
04†	-4.1	-6.3	-5.2	23.2	0.0	M	M	0.0		33	44
05†	-4.6	-8.4	-6.5	24.5	0.0	M	M	0.0		33	39
06†	-0.6	-6.7	-3.7	21.7	0.0	M	2.0	0.6		13	44
07†	-1.0	-4.3	-2.7	20.7	0.0	M	M	0.7	2	35	50
08†	-1.2	-4.4	-2.8	20.8	0.0	M	M	0.0		3	50
09†	0.3	-4.4	-2.1	20.1	0.0	M	M	0.0		33	37
10†	-1.8	-6.9	-4.4	22.4	0.0	0.0	8.0	3.5		9	65
11†	2.4	-3.4	-0.5	18.5	0.0	M	M	2.1	4	24	98
12†	-0.7	-4.2	-2.5	20.5	0.0	M	M	0.0	4	26	96
13†	-1.4	-4.6	-3.0	21.0	0.0	M	M	0.0	4	32	39
14†	9.4	-1.4	4.0	14.0	0.0	M	M	48.0		19	115
15†	1.5	-1.7	-0.1	18.1	0.0	M	M	0.0		22	48
16†	1.6	-10.7	-4.6	22.6	0.0	M	M	0.0		29	57
17†	-7.5	-12.1	-9.8	27.8	0.0	M	M	0.0		28	54
18†	8.0	-7.7	0.2	17.8	0.0	M	M	10.6		20	93
19†	9.4	0.0	4.7	13.3	0.0	0.0	24.0	15.0		20	111
20†	1.3	-1.7	-0.2	18.2	0.0	M	M	0.0		24	82
21†	-0.5	-8.0	-4.3	22.3	0.0	M	M	0.0		27	78
22†	-4.7	-8.8	-6.8	24.8	0.0	M	1.0	0.0		28	70
23†	-3.2	-6.2	-4.7	22.7	0.0	0.0	9.0	9.3	1	4	61
24†	-2.5	-8.5	-5.5	23.5	0.0	M	M	0.0		24	48
25†	-0.1	-2.7	-1.4	19.4	0.0	M	M	0.0	7	25	50
26†	1.1	-2.6	-0.8	18.8	0.0	M	M	0.0	7		<31
27†	8.8	-2.1	3.4	14.6	0.0	0.0	M	2.7	6	20	91
28†	3.5	-1.7	0.9	17.1	0.0	M	M	0.0		21	48
29†	-1.6	-10.9	-6.3	24.3	0.0	M	M	0.0		34	37
Sum				**594.1**	**0.0**	**0.0***	**44.0***	**98.8**			
Avg	**0.5**	**-5.4**	**-2.47**								