Real Time Water Quality Monthly Report
Come by Chance River
February -March 2008

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- Newfoundland and Labrador Refining Company will be informed of any significant water quality events in the form of a monthly report.

Maintenance and Calibration of Instrumentation

- The datasonde was deployed on February 25, 2008. A second set of data readings was 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 from comparing water quality data from both instruments at the time of installation are indicated in **Table 1**, below. Water temperature, pH and conductivity data comparisons ranked as "excellent" and the dissolved oxygen comparison ranked as "good", indicating that all parameters met the Department's protocol for QA/QC comparisons at the time of installation. This indicates a high degree of confidence in the accuracy of data collected during this deployment period.

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

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Come by Chance River	February 25	Installation	Excellent	Excellent	Excellent	Good

- The Come by Chance instrument was deployed until March 26th, 2008 at which point it was removed for routine maintenance and calibration. A second set of data readings was 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.

Table 2: QA/QC Data Comparison Rankings upon removal on March 26, 2008

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Come by Chance River	March 26	Removal	Good	Good	Excellent	Good

- Rankings of "excellent" and "good" were achieved when comparing all parameter readings from the instrument that had been deployed for 25 days, with a clean freshly calibrated instrument, thus indicating very little fouling or drift had occurred with any sensors during the deployment period. This confirms a high degree of confidence in the accuracy of data recorded by all sensors for the entire deployment.

Data Interpretation

- This monthly report interprets the data from the Come by Chance River RTWQ station for the period of February 25 – March 26, 2008.
- Water temperature data for this deployment period was very stable, ranging between -0.37 and 0.61°C (see **Figure 1**, below).

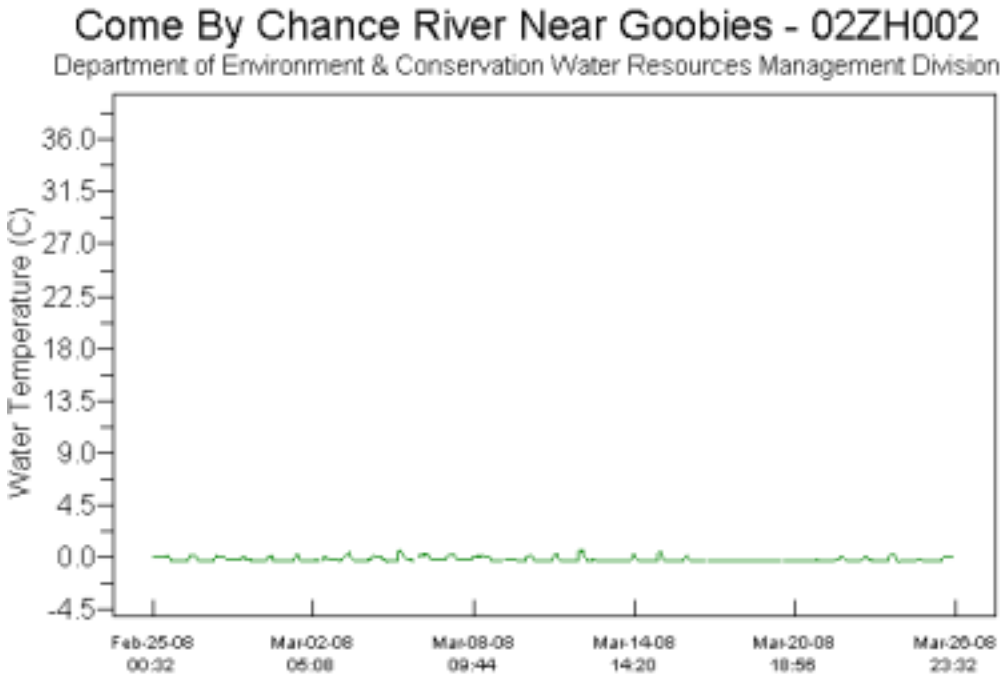

Figure 1

- Dissolved oxygen (DO) values (**Figure 2** below) remained stable, which corresponds with the stable water temperatures recorded during this deployment period. DO values ranged from 12.88 to 14.03 mg/L and all values were above the minimum DO concentrations recommended 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).

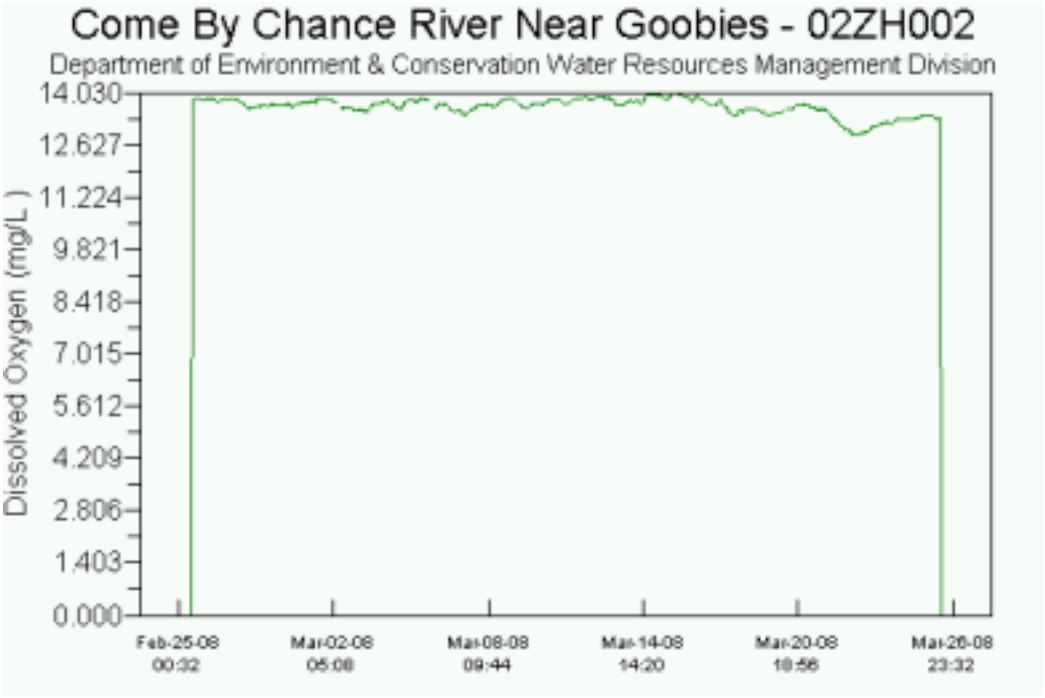

Figure 2

- pH values displayed a slight increasing trend over the duration of this deployment. This may be attributed to increasing daylight hours and the resultant increase in photosynthetic activity. All pH values **(**see **Figure 3** below**)** for Come by Chance River fell below the minimum pH level of 6.5 recommended by the CCME Guidelines for the Protection of Freshwater Aquatic Life. pH levels ranged between 5.63 and 6.15 during this deployment period. Fresh water bodies in NL frequently have pH values below the CCME recommended range, resulting from the typically acidic nature of the surrounding terrain.

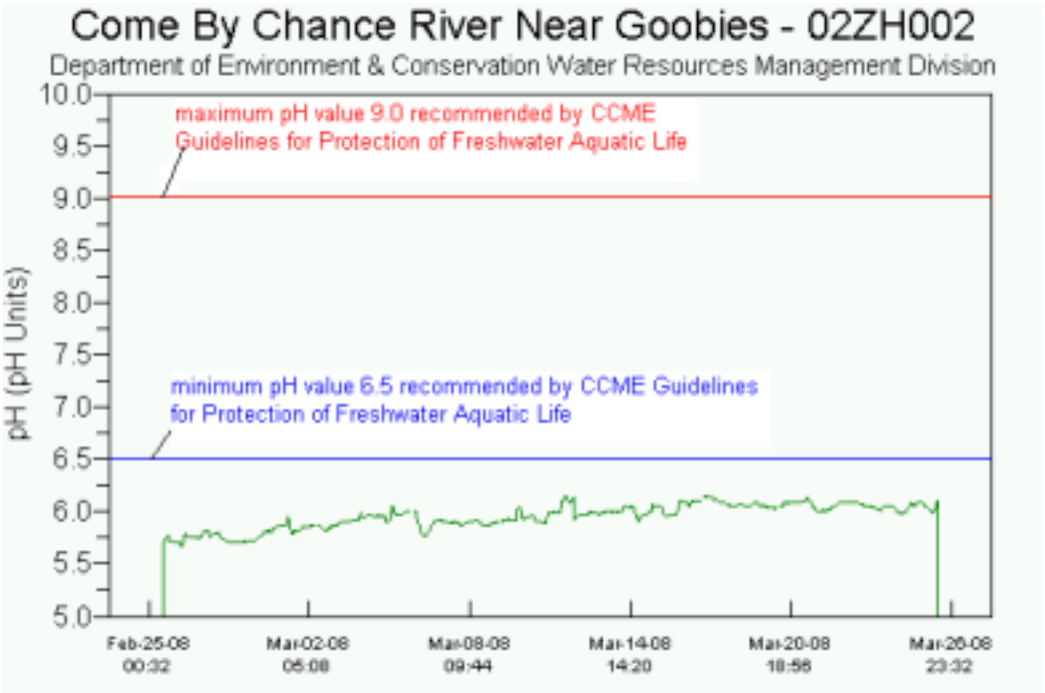

Figure 3

- Specific conductivity values (**Figure 4**), ranged from 50.4 to 170.8µS/cm throughout the reported period. Conductivity spikes that occurred near March 6-8 and March 20-23 correspond to precipitation events that occurred on those dates (see **Appendix A** at end of report). Land run-off this time of year usually contains significant amounts of road salt, resulting in increased conductivity.

Figure 4

- Turbidity values remained constant at 0 NTU for most of the deployment period (see **Figure 5** below). The turbidity spike that occurred over an 8 hour period on March 1st is most likely related to ice or debris temporarily resting near the turbidity sensor.

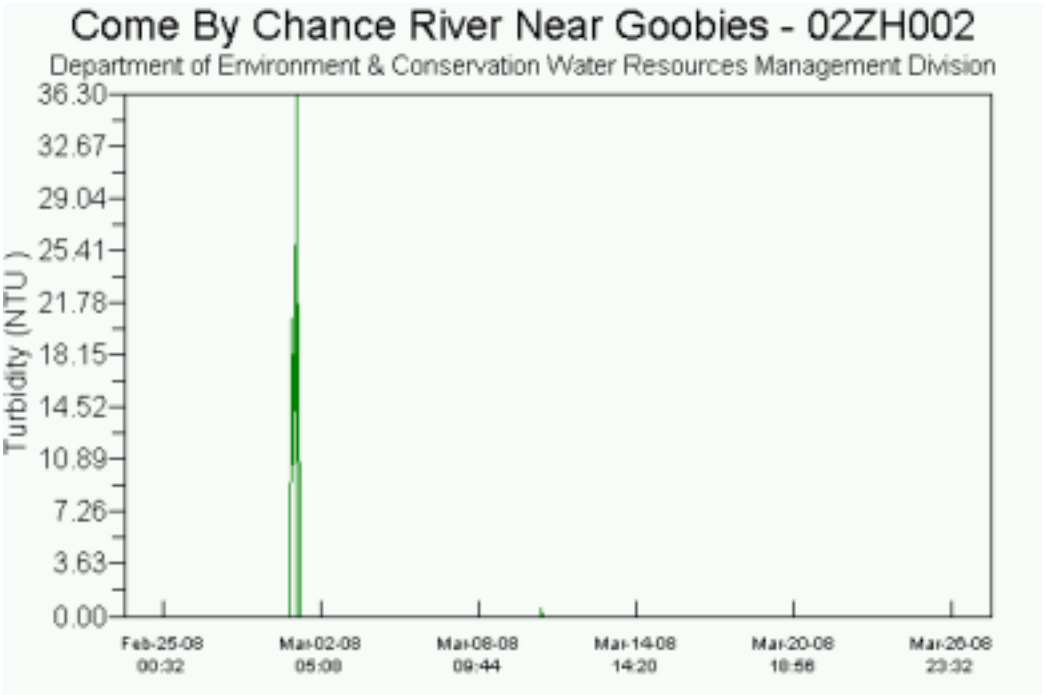

Figure 5

- Stage height fluctuated during the deployment period, ranging between 0.92 and 1.43meters, as shown in **Figure 6** below. A sudden spike that occurred from March 6-8 appeared to be related to significant rainfall and mild temperatures in the area at that time (see **Appendix A**, below).

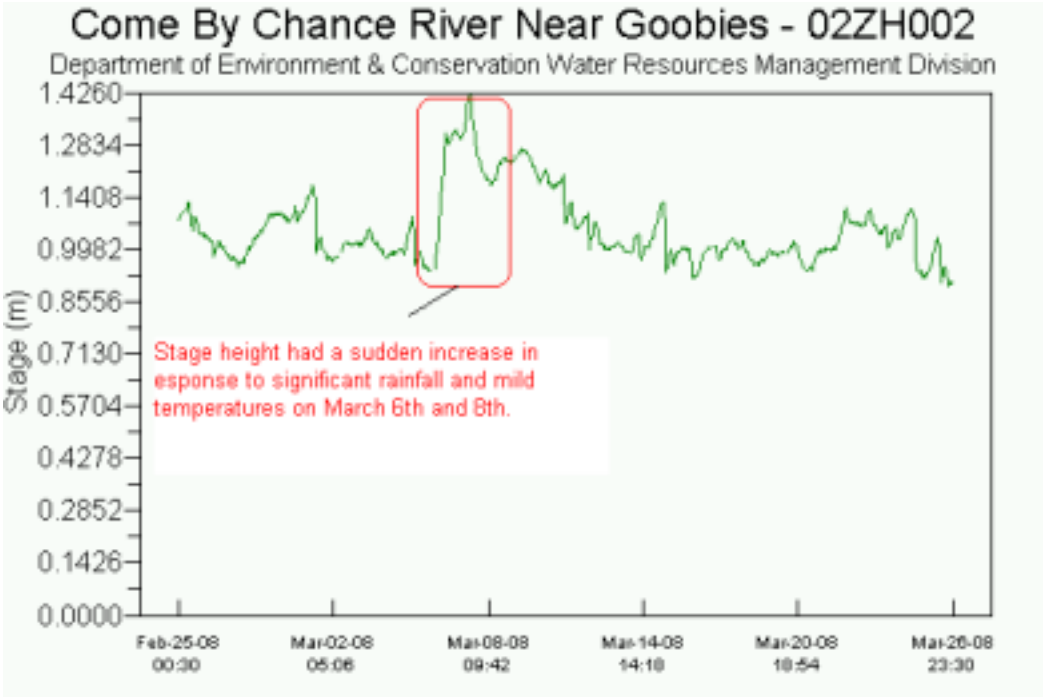

Figure 6

Appendix A: Climate Data for St. John's, NL

(see below)

(February 25-29, 2008)

(March 1-26, 2008)

Daily Data Report for February 2008

Day	Mean Temp °C	Total Rain mm	Total Snow cm	Spd of Max Gust km/h
25†	-3.6	0.0	0.0	35
26†	-1.1	0.0	0.0	<31
27†	1.8	2.2	0.0	70
28†	3.2	0.6	0.0	61
29†	-7.9	0.0	2.6	37

Daily Data Report for March 2008				
Day	Mean Temp °C	Total Rain mm	Total Snow cm	Spd of Max Gust km/h
01†	-9.7	0.0	T	56
02†	-1.0	11.4	7.0	70
03†	-2.5	0.2	2.0	48
04†	-1.3	0.0	T	63
05†	-4.5	T	0.0	72
06†	3.1	5.2	0.0	72
07†	-2.2	0.0	0.0	<31
08†	5.1	4.6	0.0	78
09†	-0.2	9.8	1.2	76
10†	-6.4	0.0	6.0	48
11†	-7.5	0.0	0.0	<31
12†	-2.0	0.0	T	46
13†	-3.0	12.2	14.8	76
14†	-7.1	0.0	0.5	80
15†	-7.3	0.0	T	33
16†	-6.9	0.0	20.4	63
17†	-5.1	0.0	37.4	96
18†	-0.9	16.0	1.2	65E
19†	-0.6	32.6	0.0	<31
20†	-0.3	T	0.0	<31
21†	0.1	11.2	T	63
22†	-1.1	1.4	0.4	35
23†	-3.0	0.8	0.2	63
24†	-4.5	0.0	T	69
25†	-8.0	0.0	6.4	35
26T†	-8.2	0.0	0.4	32

Prepared by: Joanne Sweeney
Environmental Scientist
Water Resources Management Division
Department of Environment and Conservation
Ph: (709) 729-0351