

Real Time Water Quality Monthly Report for Voisey's Bay Nickel Company Ltd. August/September 2004

General

- The Water Resources Management Division staff analyses 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

- As noted in the previous monthly report, the three Datasondes were calibrated and returned to their respective sites on August 11th and 12th, 2004.
- The Environmental Officer on-site followed the necessary QA/QC protocols when deploying the instruments. All required forms were completed and sent to the Department of Environment and Conservation the following day on August 13th, 2004. The QA/QC data collected from the Minisonde fell within the acceptable range for each parameter at each site with the exception of dissolved oxygen at the Lower Reid Brook station where the Minisonde value differed slightly from the Datasonde value by 1.56 mg/L (the suggested range is within 1mg/L). All other parameters fell within the acceptable range.
- Normally, the instruments are retrieved from the water for maintenance and calibration on a monthly basis. However, it was decided to leave the instruments in the water for an additional 12 days so that the retrieval of the instruments would correspond to the dates when the DOEC and EC staff would be visiting the site.
- The Environmental Officer on-site (Paul Hounsell) and the DOEC staff (Joanne Sweeney) retrieved the three instruments from the sites and brought them back to the office for cleaning and maintenance on September 23rd, 2004. The instruments were calibrated on September 24th, 2004 and returned to the water.
- All necessary QA/QC protocols were followed when retrieving and deploying the instruments. All required forms were completed and sent to the Department of Environment and Conservation on September 28th, 2004.
- When the data from the Datasondes and Minisonde were compared at the end of the longer deployment period (August 11th-September 23rd) it was evident that some parameters had drifted slightly over the longer deployment period. Dissolved oxygen, in particular, drifted at both the Camp Pond Brook and Lower Reid Brook stations. Also, the conductivity drifted at the Lower Reid Brook station. This drift was expected due to the increased deployment time.

Data Interpretation

- Throughout the month of August 12th – September 23rd, there was some activity with respect to water quality at all the stations.
- Most notably, many of the water quality parameters at the Upper Reid Brook station spiked and plummeted for approximately 10 days from September 7th –10th as can be seen in Figures 1, 2, 3 and 4. The Upper Reid Brook site is a very pristine area therefore it is highly unlikely that the spikes are due to an actual water quality event. It is much more likely that the instrumentation was knocked out of position through some means (ie: wildlife). It may not be possible to identify the exact cause of this disturbance. Interestingly, after September 10th, the values returned to fairly normal background levels as expected for this site. The break in the graphs corresponds to the day that they were taken out of the water for maintenance and calibration.

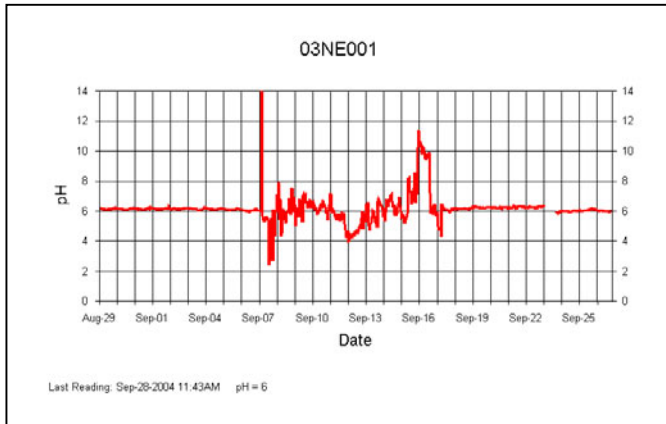


Figure 1

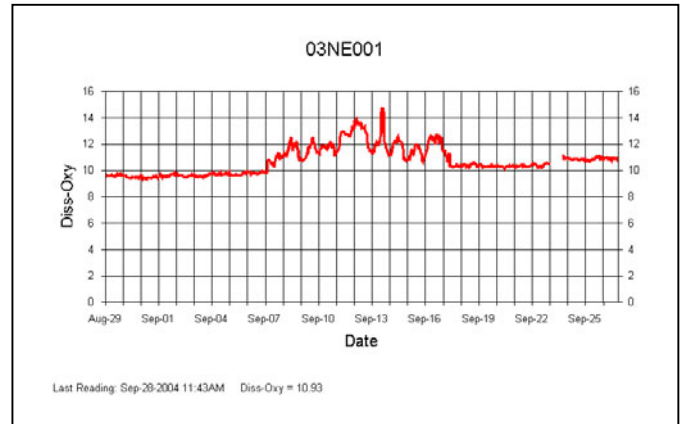


Figure 2

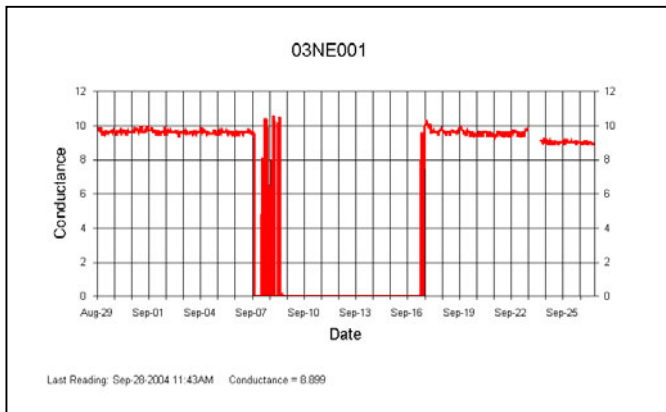


Figure 3

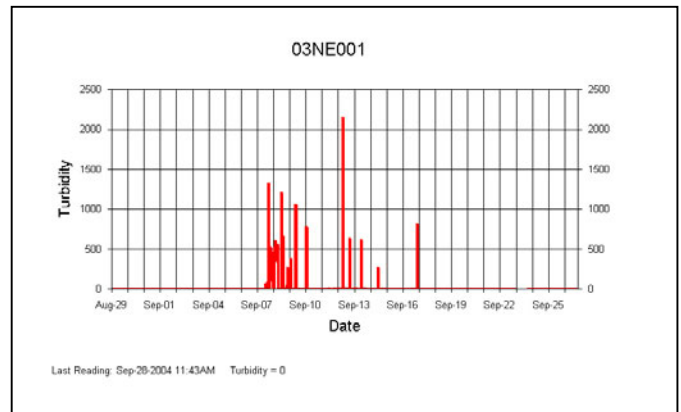


Figure 4

- Throughout the month, most of the water quality parameters remained fairly consistent at Camp Pond Brook. As can be seen in Figures 5 and 6, as the temperature of the water decreases, the amount of dissolved oxygen in the water increases as expected. The graphs drop to zero on the day instrument was taken out for maintenance and calibration.

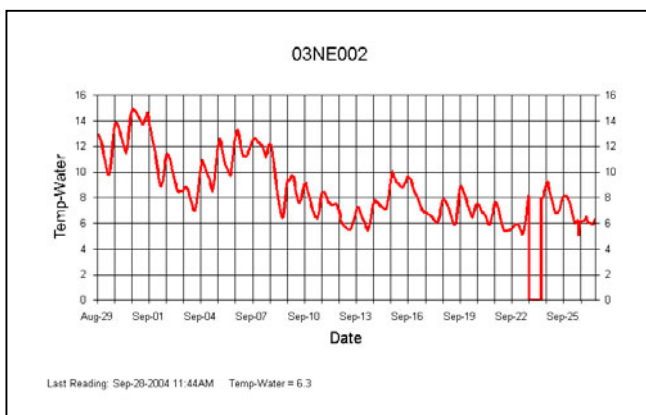


Figure 5

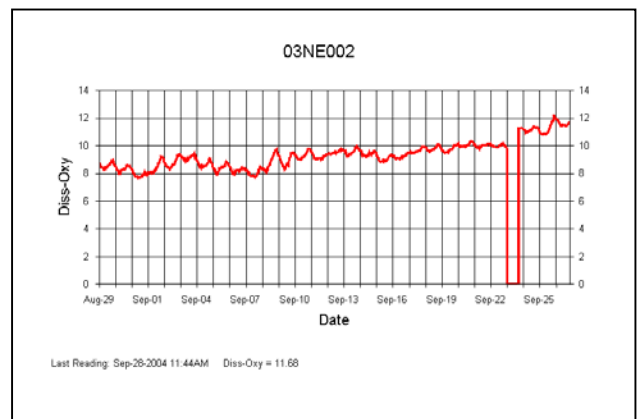


Figure 6

- The conductivity values at Camp Pond Brook show a slightly increasing trend with a maximum value of 39.4 uS/cm reached on September 17th (Figure 7). This increase in conductivity may be associated with the slight increase in stage at that particular point in time (Figure 8). When the conductivity values at Camp Pond Brook and Upper Reid Brook are compared, it is evident that the construction around the area of the Camp Pond Brook site does cause a slight increase in the conductivity values from background values.

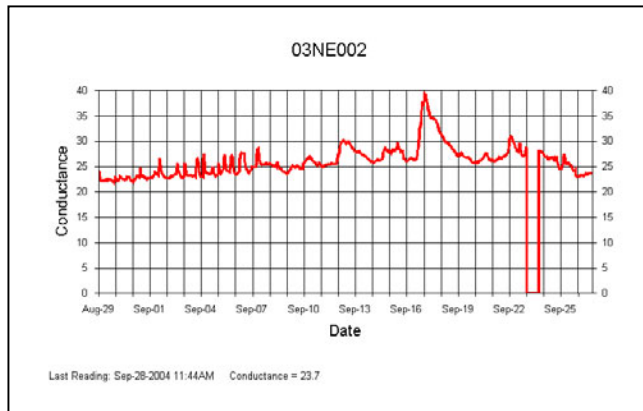


Figure 7

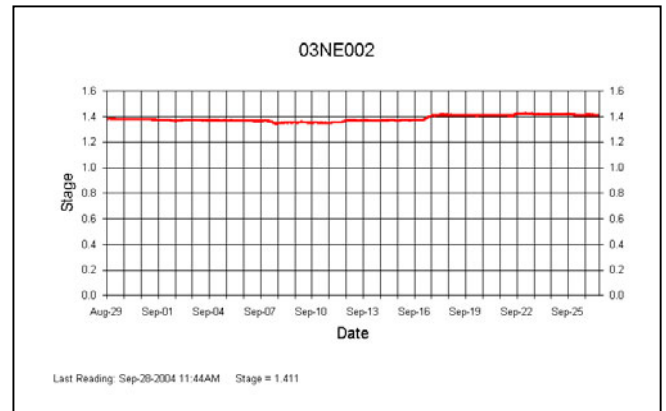


Figure 8

- The turbidity values at Camp Pond Brook remained consistently low with the exception of only two minor spikes on September 6th (22.4 NTU) and September 9th (16.2 NTU) (Figure 9). These spikes are not as significant as the major spikes encountered last year at Camp Pond Brook. When the turbidity values at Camp Pond Brook and Upper Reid Brook are compared, it is evident that the construction around the area of the Camp Pond Brook site does cause a slight increase in the turbidity values from background values.

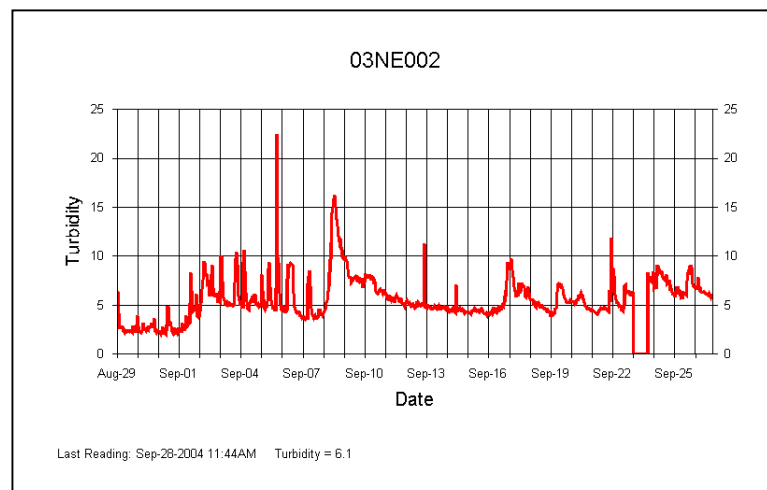


Figure 9

- Finally, the instrument at Lower Reid Brook showed some very interesting water quality events throughout the past month. While some parameters remained constant such as pH and dissolved

oxygen (Figure 10 and 11), others such as turbidity (Figure 12) fluctuated. The main concern is the amount of sedimentation entering this particular waterway. The maximum turbidity value was read on September 17th at 314.2 NTU. In comparison to both Upper Reid Brook and Camp Pond Brook, the turbidity issue at Lower Reid Brook is much more significant. The Environmental Officer on-site was informed of this turbidity issue and has since informed the Department of Environment and Conservation that mitigation measures have been put in place to decrease the amount of sediment-laden water entering Reid Brook.

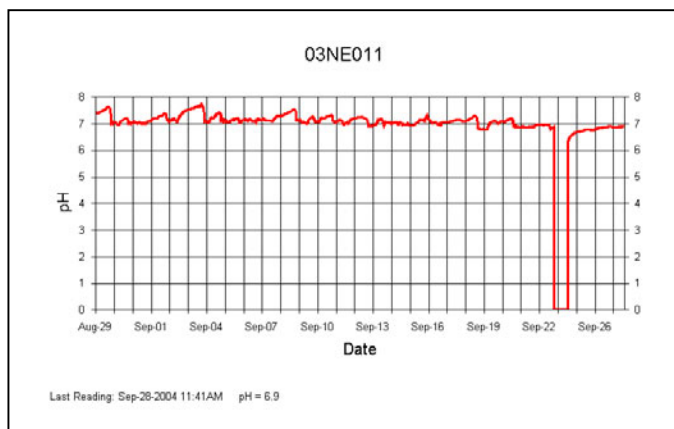


Figure 10

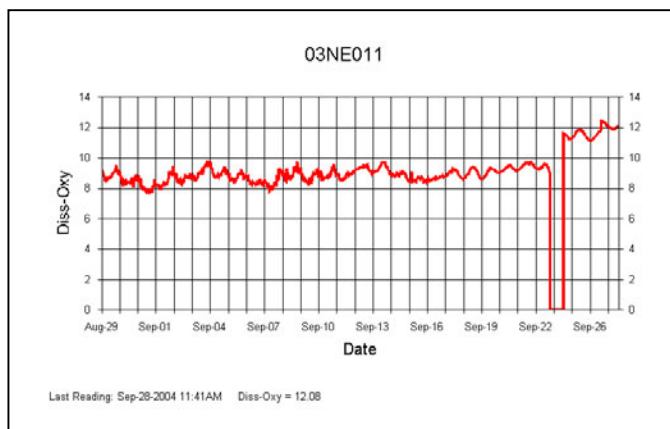


Figure 11

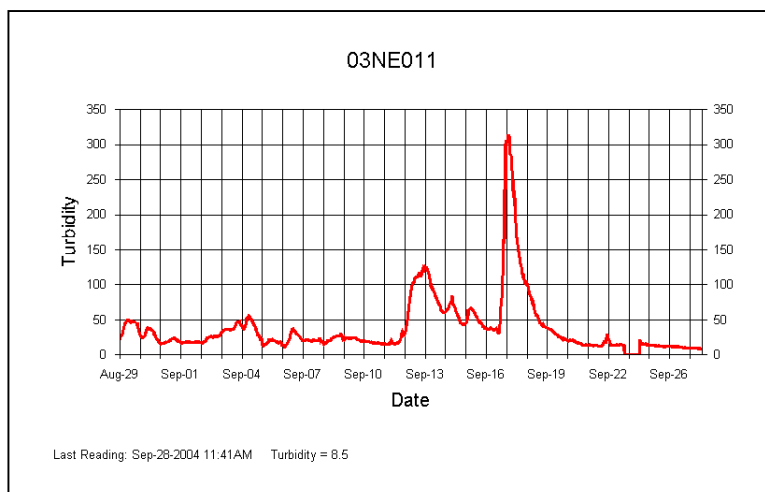


Figure 12

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