

Real Time Water Quality Report
Aur Resources: Duck Pond Mine
Deployment Period 2007-05-17 to 2007-06-27

General

- The Water Resources Management Division’s (WRMD) staff monitors the real-time web page on a daily basis. Any unusual observations are investigated, with site visits being carried out as warranted.
- Management at Aur Resources are informed of any significant water quality events or instrumentation problems by WRMD.
- The Tributary to Gills Pond Brook Station is located 1700 m downstream of the final discharge point for the mine’s Polishing Pond. This station is located such that any impacts from the mine discharge on receiving waters can be measured. East Pond Brook Station is located several kilometres downstream of the Tailings Management Area. This station is located such that any impacts from the Tailings Management Area via seepage through Dam A can be measured.
- The Quanta G monitoring probe has been removed from the groundwater station (Well after Tailings Dam A) due to the level of suspended material in the well water. The well will be pumped out frequently in an attempt to improve water clarity.
- Raw (uncorrected) data has been used in the preparation of the graphs and subsequent discussion below.

Maintenance and Calibration of Instrumentation

- Following regular cleaning and calibration of the DataSondes, the instruments were installed in both the Tributary to Gills Pond Brook and East Pond Brook, on May 17, 2007 and remained deployed until June 27, 2007 (41-day deployment). This is the first installation of the East Pond Brook Datasonde since it was repaired at Campbell Scientific after it had sustained damage in March 2007 due to ice conditions.
- *In-situ* measurements of ambient water quality were undertaken with a freshly calibrated Minisonde each time a Datasonde was installed or removed.
- The comparative results between the Minisonde and Datasonde values at the beginning and end of the deployment period are shown in **Table 1** for Tributary to Gill’s Pond Brook and **Table 2** for East Pond Brook.

Table 1: QA/QC Data Comparison Ranking During Deployment Period (Gill’s Pond Brook)

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Tributary to Gill’s Pond Brook	2007-05-17	Installation	Excellent	Excellent	Fair	Fair
	2007-06-27	Removal	Excellent	Excellent	Poor	Poor

Table 2: QA/QC Data Comparison Ranking During Deployment Period (East Pond Brook)

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
East Pond Brook	2007-05-17	Installation	Excellent	Good	Good	Excellent
	2007-06-27	Removal	Excellent	Excellent	Fair	Good

Data Interpretation

TRIBUTARY TO GILLS POND BROOK

- Water temperature (**Figure 1**) displayed an increasing trend for most of the deployment period, with obvious diurnal fluctuations. Water temperatures appeared to decrease during the last week of the deployment, which can be attributed to the decrease in air temperature, shown in the Daily Climate Data in Appendix A, at the end of this report. Water temperatures ranged between 3.05 and 26.53 °C during this period.

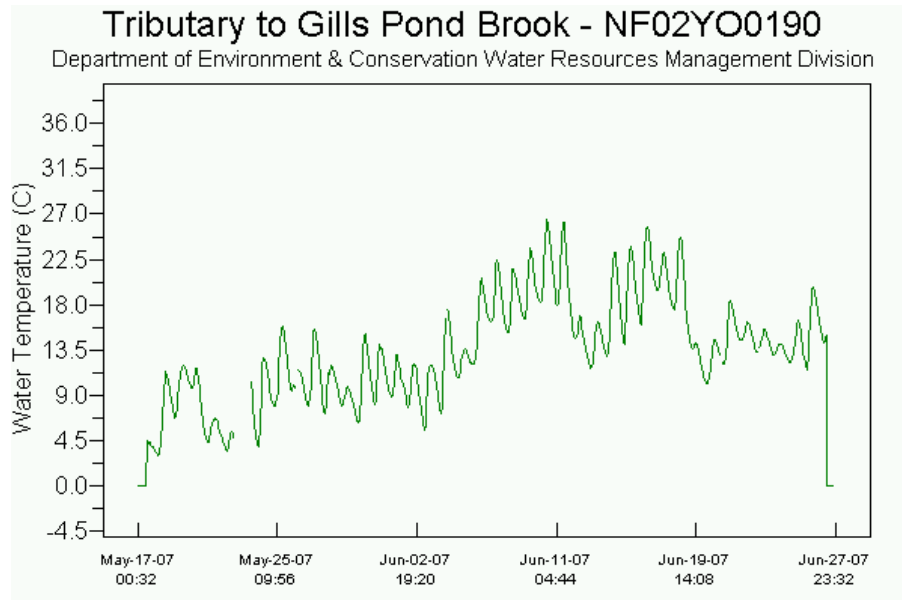


Figure 1

- pH values (**Figure 2**) increased throughout the deployment period, which may be attributed to the seasonal increase in daylight hours, resulting in an increase in photosynthetic activity and thus an increase in pH. The pH values ranged from a minimum of 6.08 to a maximum of 7.27 with some of the values falling below the recommended range (6.5 – 9.0) for the CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life*. Seasonal run-off from the naturally acidic bog-type surrounding terrain may have impacted pH levels the beginning of this deployment.

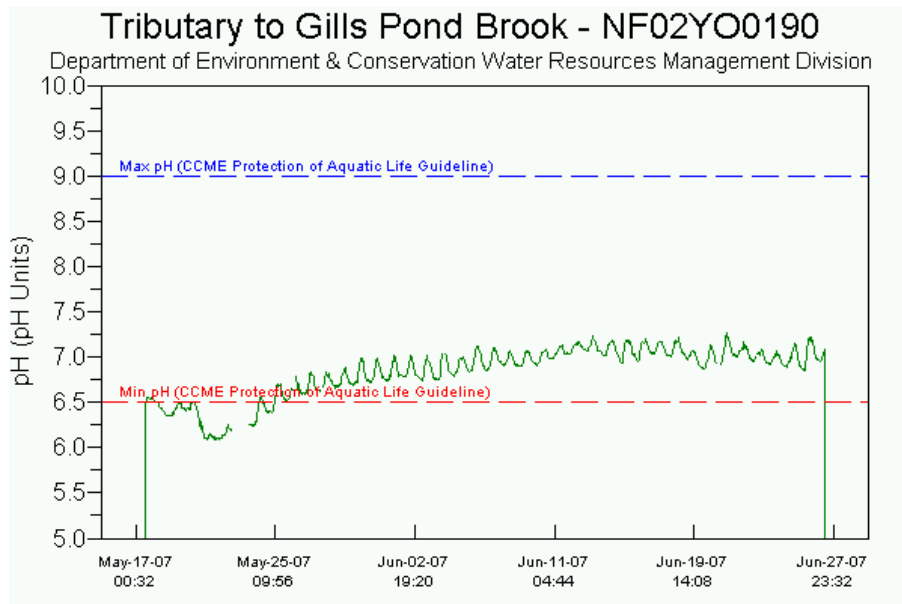


Figure 2

- The specific conductance values (**Figure 3**) increased during this deployment period, with a sharp increase occurring on June 12 and values remaining elevated until June 19, when values consistently decreased. This period of elevated conductivity directly corresponds to a period of effluent discharge from the Polishing Pond which began on June 12 and ended on June 20. Discharge volumes peaked on June 14 and steadily decreased until June 20. Specific conductivity values ranged between 12.1 and 43.5 during the deployment period.

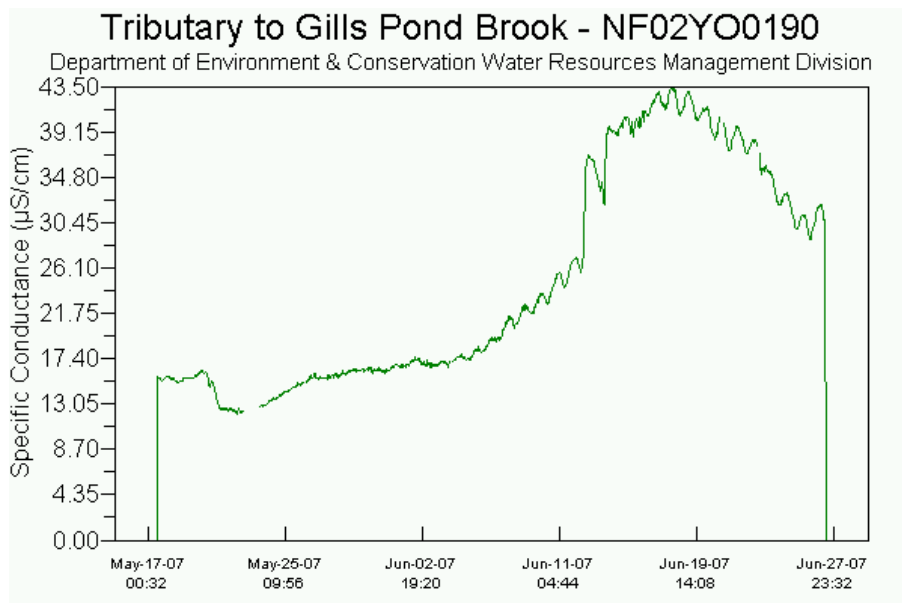


Figure 3

- Dissolved oxygen (DO) (**Figure 4**) values ranged from a minimum of 7.39mg/L to a maximum of 13.06 mg/L over the deployment period. DO displayed an overall decreasing trend for most of the period, which appears to correspond with increasing water temperatures. The lowest DO values occurred between June 7 and June 20, when water temperature values were at their peak. Some values dropped below the recommended minimum CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life* for dissolved oxygen (cold water/other life stages – above 6.5 mg/L; cold water/early life stages – above 9.5 mg/L; warm water/other life stages – above 5.5 mg/L; warm water/early life stages – above 6 mg/L).

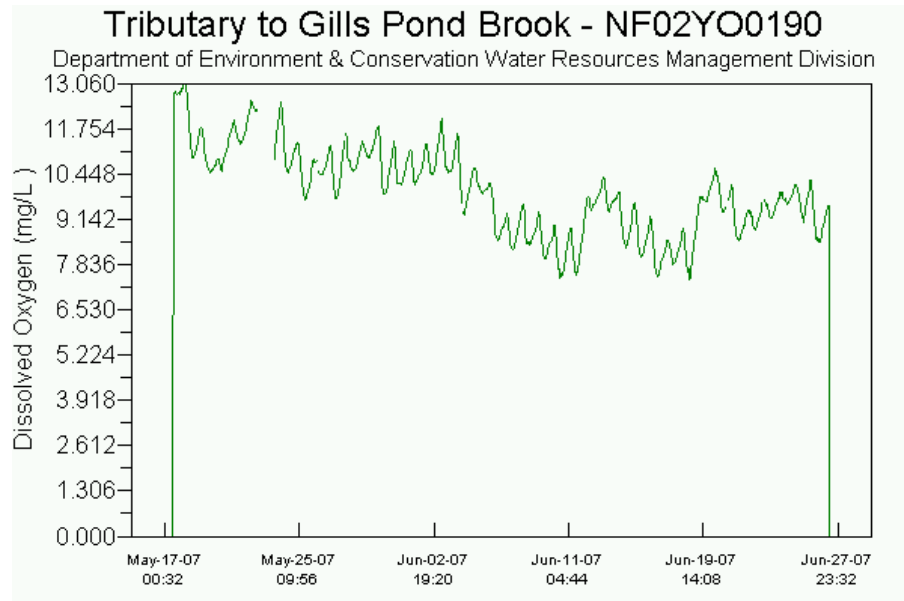


Figure 4

- Turbidity values (**Figure 5**) spiked significantly from May 18-25, which appears to correspond to increased daily air temperatures during the same period, (see **Appendix A**). Increased air temperatures caused substantial snow melt and surface run-off, which is reflected in increased stage height (**Figure 6**, below) for the same period. Turbidity levels were impacted by the surface run-off. There was no discharge from the Polishing Pond from May 18-25. Turbidity values ranged from a minimum of 0 to 226 NTU during this deployment.

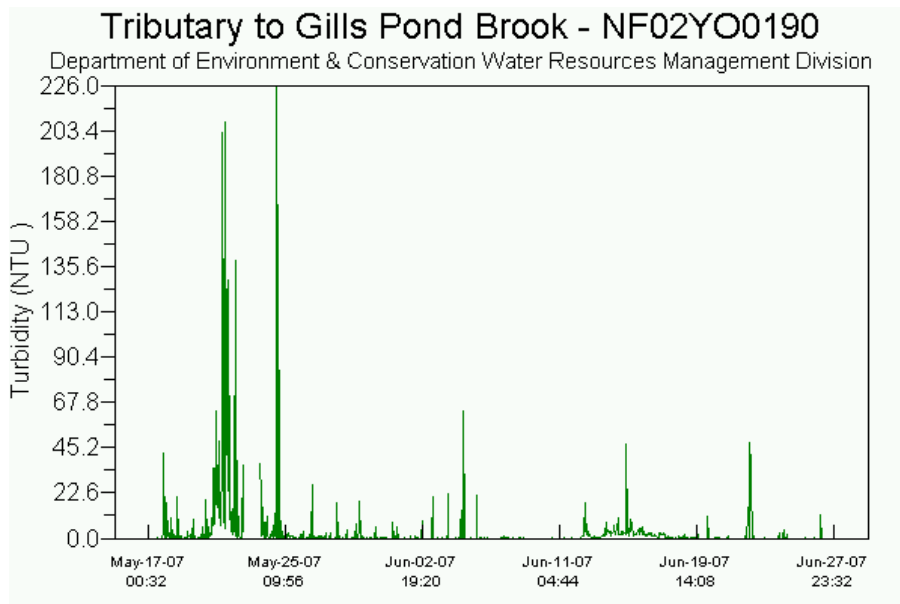


Figure 5

- The stage (Figure 6) or water level ranged from a minimum of 1.177m to a maximum of 1.531m during this deployment. The peak seen near May 20 can be attributed to significant snow melt and surface run-off that occurred at that time. A smaller spike in stage height appears from June 12-16, which may be attributed to peak effluent discharge volumes released from the Polishing Pond.

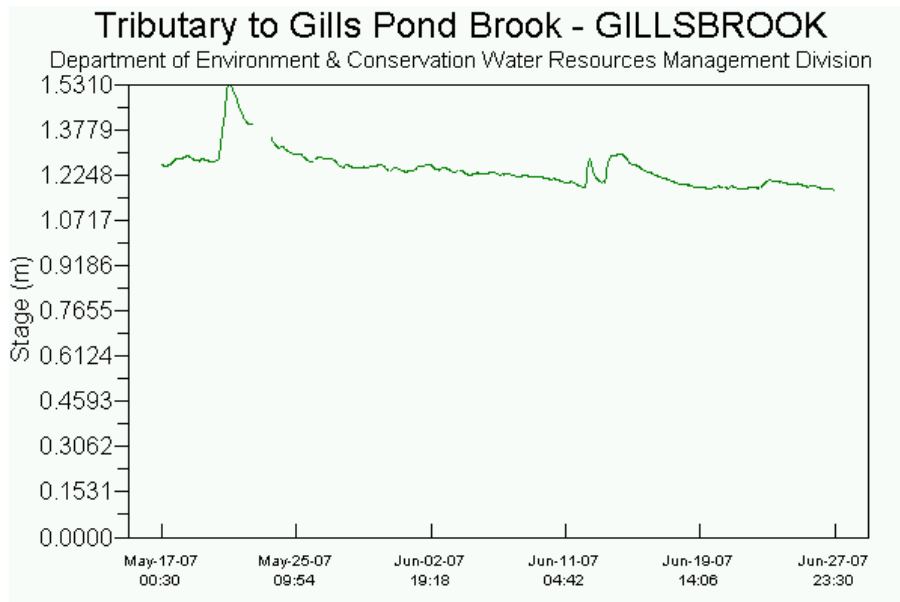


Figure 6

EAST POND BROOK

- The water temperature graph for East Pond Brook (**Figure 7**) is very similar to the graph for Gill's Pond Brook (**Figure 1**) for this deployment period, indicating that fluctuations in water temperature at Gill's Pond Brook are closely related to weather and precipitation, rather than to discharges from the Polishing Pond. Temperature values ranged from a minimum of 4.09° C to 26.53°C over the deployment period.

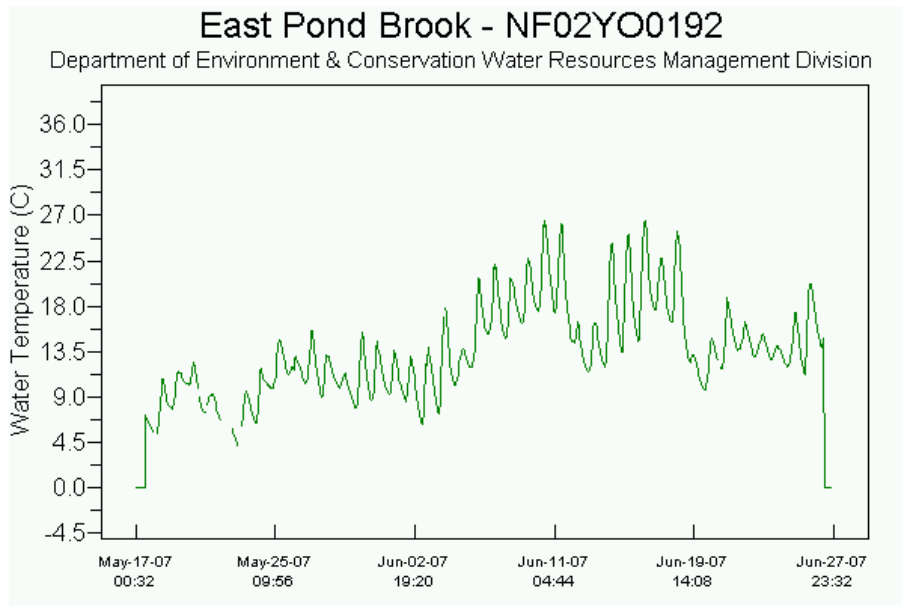


Figure 7

- pH values (**Figure 8**) remained fairly constant throughout the deployment period, ranging from a minimum of 5.44 to a maximum of 6.66 with most of the values falling below the range recommended by the CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life*, (6.5 – 9.0). The background pH of this stream is naturally lower than the recommended range, which may be attributed to the acidic nature of the surrounding bog-type terrain.

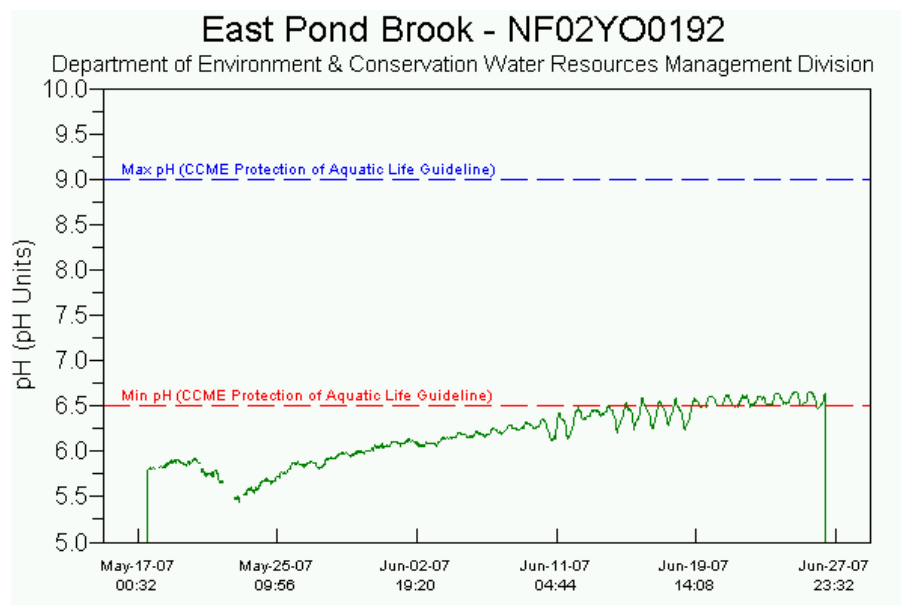


Figure 8

- Specific conductance (**Figure 9**) ranged from a minimum of 9.4 μ S/cm to a maximum of 29.1 μ S/cm over the deployment period. The increasing trend appears to correspond to an increasing trend seen in pH (**Figure 8**) and a decreasing trend seen in stage height (**Figure 12**) during the same period. The sudden downward spike in conductivity that occurred for a short duration on June 18 is probably a transmission error or is related to suspended material contacting the sensor, rather than a water quality event.

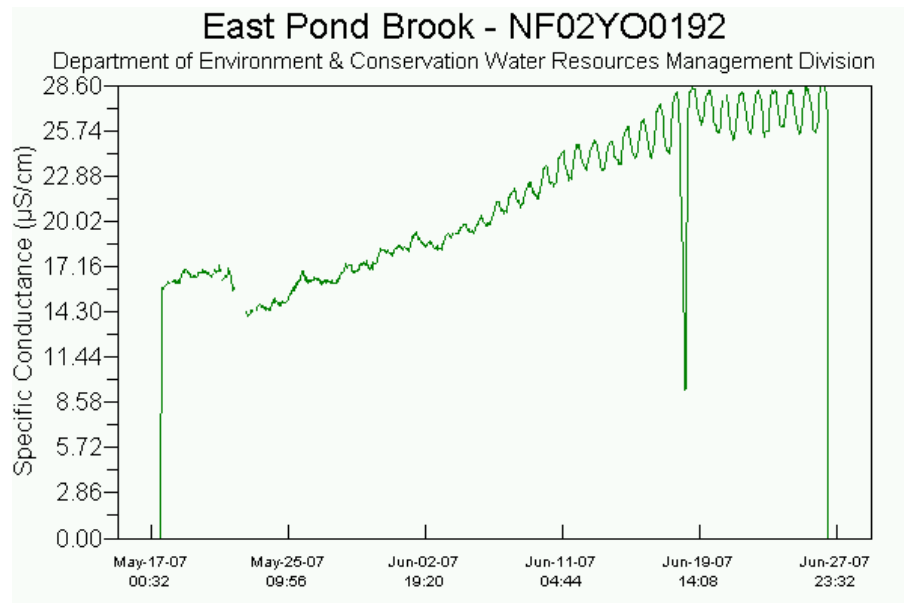


Figure 9

- The dissolved oxygen values (**Figure 10**) ranged from a minimum of 7.89 mg/L to a maximum of 12.81 mg/L over the deployment period. DO displayed an overall decreasing trend for most of the period, which appears to correspond with increasing water temperatures. The lowest DO values occurred between June 7 and June 20, when water temperature values were at their peak. Some dissolved oxygen values fall below the recommended CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life* for dissolved oxygen (cold water/other life stages – above 6.5 mg/L; cold water/early life stages – above 9.5 mg/L; warm water/other life stages – above 5.5 mg/L; warm water/early life stages – above 6 mg/L). The DO graph for East pond Brook closely resembles the DO graph for Gill’s Pond Brook for this deployment period.

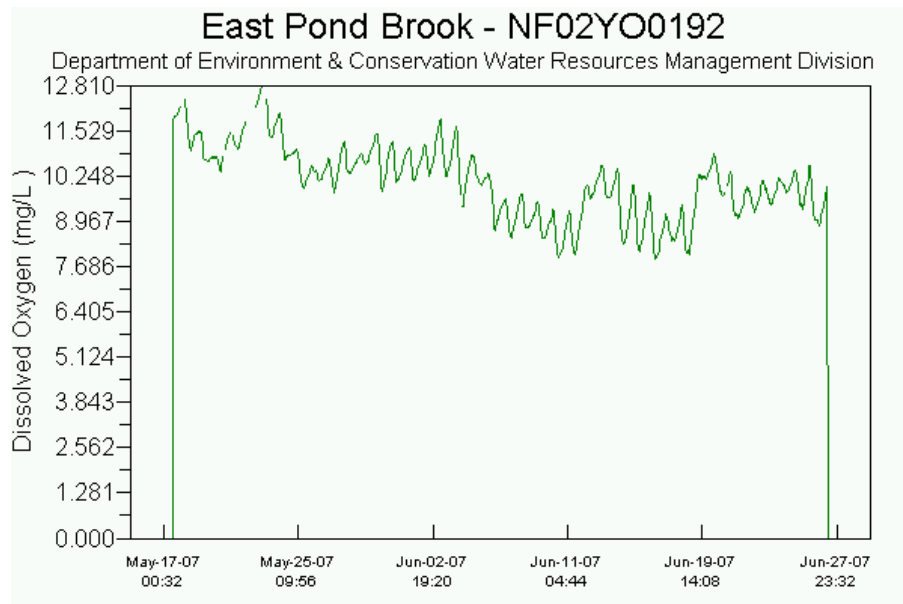


Figure 10

- The turbidity values (**Figure 11**) were consistent at 0 NTU throughout the deployment period with the exception of one variable period occurring from June 19 to June 21.

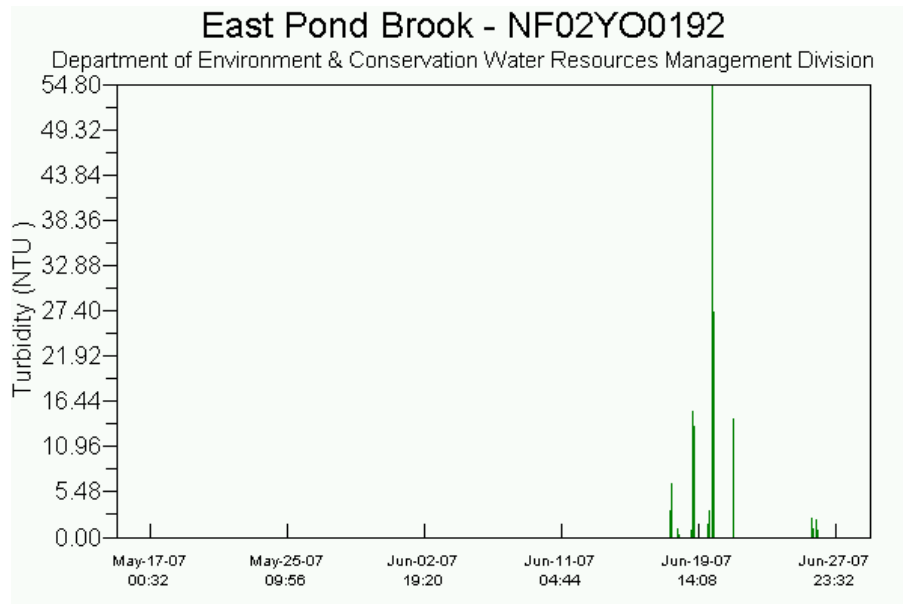


Figure 11

- The stage (**Figure 12**) or water level ranged from a minimum of 0.898m to a maximum of 1.603m. The fluctuations that appear in the graph from May19-21 appear to be transmission errors. on January 9, 2008.

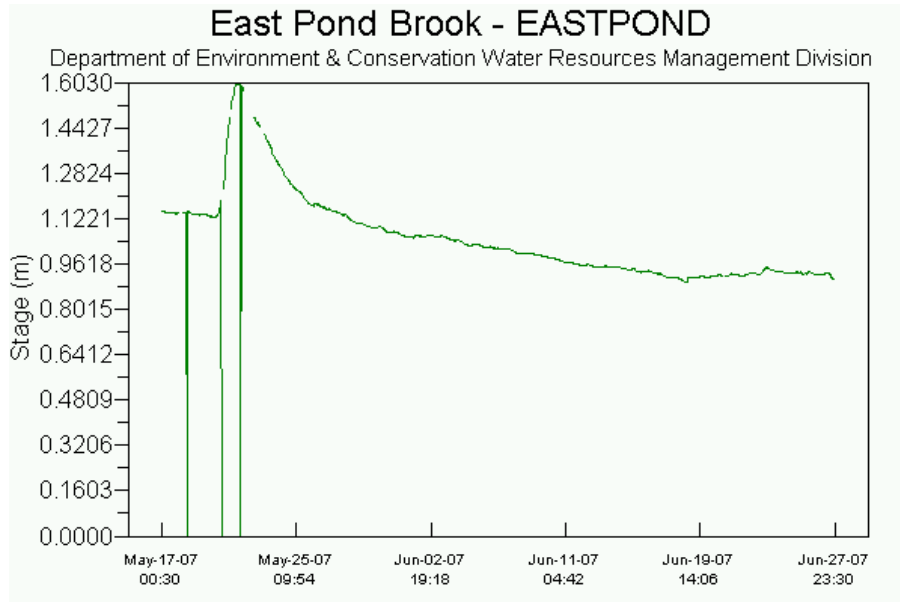


Figure 12

WELL AFTER TAILING DAM A

- The Quanta G monitoring probe has been removed from the groundwater station (Well after Tailings Dam A) due to the level of suspended material in the well water. The well will be pumped out frequently in an attempt to improve water clarity.

APPENDIX A

Daily Data Report for May 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	6.1	0.3	3.2	14.8	0.0	9.0	0.0	9.0	T		<31
02	8.2	0.5	4.4	13.6	0.0	2.8	0.0	2.8	T	M	M
03	8.2	1.3	4.8	13.2	0.0	1.0	0.0	1.0	T	25E	56E
04	7.0	1.1	4.1	13.9	0.0	0.6	0.0	0.6	T	26E	56E
05	5.5	-0.1	2.7	15.3	0.0	0.2	0.0	0.2	0		<31
06	4.4	-0.2	2.1	15.9	0.0	T	T	T	0	32E	37E
07	11.5	-2.2	4.7	13.3	0.0	T	T	T	0	26E	48E
08	9.1	-2.3	3.4	14.6	0.0	2.2	0.0	2.2	0		<31
09	19.4	5.5	12.5	5.5	0.0	0.0	0.0	0.0	0	27E	56E
10	13.4	-1.2	6.1	11.9	0.0	2.2	0.0	2.2	0	25E	37E
11	16.5	-0.1	8.2	9.8	0.0	0.0	0.0	0.0	0	22E	43E

12	19.5	-0.8	9.4	8.6	0.0	3.8	0.0	3.8	0	24E	63E
13	3.0	-1.6	0.7	17.3	0.0	0.0	0.0	0.0	0	3	33
14	1.9	-2.5	-0.3	18.3	0.0	0.0	0.0	0.0	0		<31
15	10.3	-2.2	4.1	13.9	0.0	T	0.0	T	0	23E	41E
16	11.8	-3.1	4.4	13.6	0.0	0.2	0.0	0.2	0	29E	48E
17	6.5	-2.8	1.9	16.1	0.0	11.2	0.0	11.2	0	14E	41E
18	4.4	0.1	2.3	15.7	0.0	0.4	0.0	0.4	0		<31
19	19.9	3.1	11.5	6.5	0.0	T	0.0	T	0	25E	33E
20	21.7	11.2	16.5	1.5	0.0	1.2	0.0	1.2	0	18E	69E
21	19.9	6.3	13.1	4.9	0.0	0.2	0.0	0.2	0	24E	44E
22	10.1	0.2	5.2	12.8	0.0	1.4	0.0	1.4	0	2E	41E
23	4.4	-0.1	2.2	15.8	0.0	0.4	T	0.4	0	3E	37E
24	8.6	-0.2	4.2	13.8	0.0	0.0	0.0	0.0	0		<31
25	12.0	2.4	7.2	10.8	0.0	11.4	0.0	11.4	0		<31
26	9.2	2.4	5.8	12.2	0.0	8.0	0.0	8.0	0	15E	37E
27	9.0	0.5	4.8	13.2	0.0	T	0.0	T	0	27E	41E
28	13.3	-0.4	6.5	11.5	0.0	T	0.0	T	0		<31
29	5.1	2.3	3.7	14.3	0.0	8.4	0.0	8.4	0	15E	37E
30	3.5	0.9	2.2	15.8	0.0	1.8	0.0	1.8	0	5E	56E
31	5.5	-0.2	2.7	15.3	0.0	T	T	T	0	33E	43E
Sum				393.7	0.0	66.4	T	66.4			
Avg	10.0	0.6	5.3								
Xtrm	21.7	-3.1								18*	69*

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