Real Time Water Quality Report
Aur Resources: Duck Pond Mine
Deployment Period 2007-06-29 to 2007-08-01

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 our 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 surface water impacts from the Tailing Management Area via seepage through Dam A can be measured. A groundwater station with the designation "Monitoring Well after Tailings Dam A," has been established immediately downstream from tailings Dam A, in an attempt to capture any changes in groundwater quality due to seepage from the tailings pond into the groundwater table.
- 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 June 29, 2007 and remained deployed until August 1, 2007 (33-day deployment).
- The Quanta G monitoring probe was installed at the groundwater station (Well after Tailings Dam A) on June 27, and remained deployed until September 27, 2008. An interpretation of groundwater data will be conducted and included in a report at the end of the deployment period.
- *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	2007-06-29	Installation	Good	Good	Good	Excellent
	2007-08-01	Removal	Good	Good	Poor	Good

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	2007-06-29	Installation	Good	Good	Good	Excellent
	2007-08-01	Removal	Excellent	Good	Poor	Good

Data Interpretation

TRIBUTARY TO GILLS POND BROOK

- Water temperatures (**Figure 1**) decreased during periods of heavy rainfall that were recorded in the area from July 6-9, and July19-22. Daily Climate Data is found in **Appendix A**, at the end of this report. Water temperatures showed an overall increasing trend as a result of increasing air temperatures throughout this deployment period. Water temperatures ranged between 9.28 and 26.91^{o}C during this period.

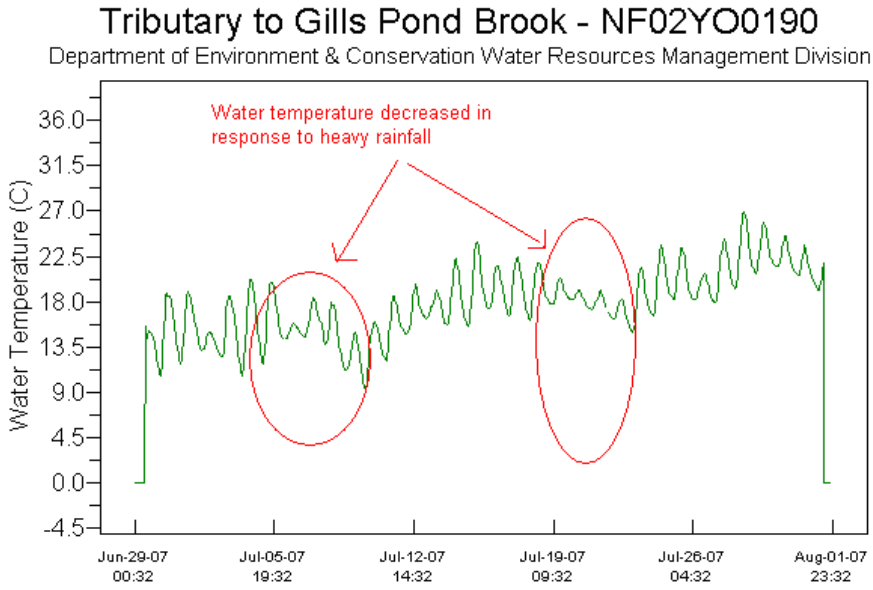

Figure 1

- pH values (**Figure 2**) decreased during periods of heavy rainfall from July 6th - 8th, and July19th – 22nd. The pH values ranged from a minimum of 6.08 to a maximum of 7.31 during this deployment, with most of the values falling within the recommended range (6.5 – 9.0) for the CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life*. Newfoundland and Labrador surface waters are often naturally acidic, influenced by the abundance of acidic bogs and the natural geology of their basins.

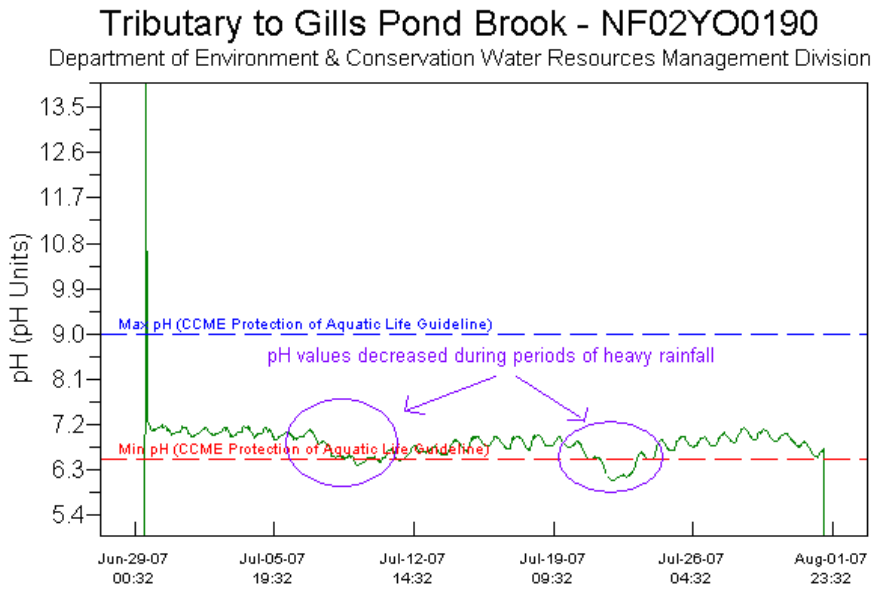

Figure 2

- Specific conductivity values remained fairly constant at background levels from June 29 until July 10. A sudden and sustained elevation in conductivity occurred from July 11 throughout the remainder of the deployment period, with the exception of a plunge in specific conductivity that occurred from July 19-22nd. The elevated conductivity levels correspond to the release of effluent from the Polishing Pond at Duck Pond Mine, which began on July 11, and continued for the remainder of the deployment. A total of 44.9mm of rainfall was recorded in this area from July 19th -22nd, which had a dilution effect, however, conductivity quickly returned to previous elevated levels when the rainfall ceased. Specific conductivity values ranged between 24.3 and 338.0µS/cm during the deployment period.

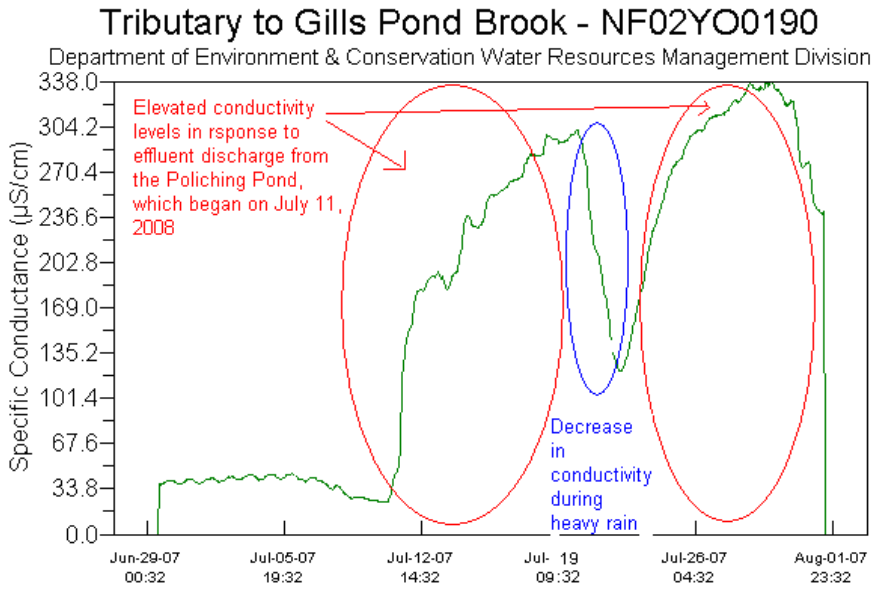

Figure 3

- Dissolved oxygen (DO) (**Figure 4**) values showed an overall decreasing trend during this deployment, which corresponds to increasing air temperatures for the same period. Warmer water can

hold less dissolved oxygen than colder water. DO levels do not appear to be significantly impacted by the effluent discharge from the Polishing Pond. DO values ranged from 7.54 to 10.67 mg/L during this deployment. 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). Seasonally lower DO levels can be expected in the summer months.

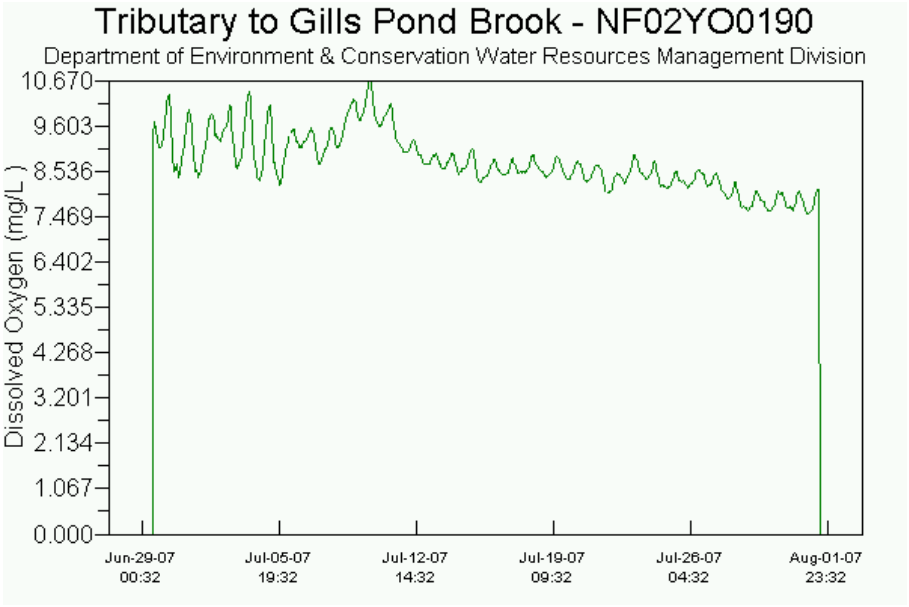

Figure 4

- Turbidity values **(Figure 5)** were impacted by heavy rain and effluent discharge from the Polishing Pond, throughout this deployment period. Rainfall events on July 6th -8th and July 19th -22nd caused sudden spikes in turbidity. Effluent discharge from the Polishing Pond, which began on July 11, 2007 and continued until December 22, 2007 resulted in fluctuations in turbidity levels. Turbidity values ranged from a minimum of 0 to 160.8 NTU during this deployment.

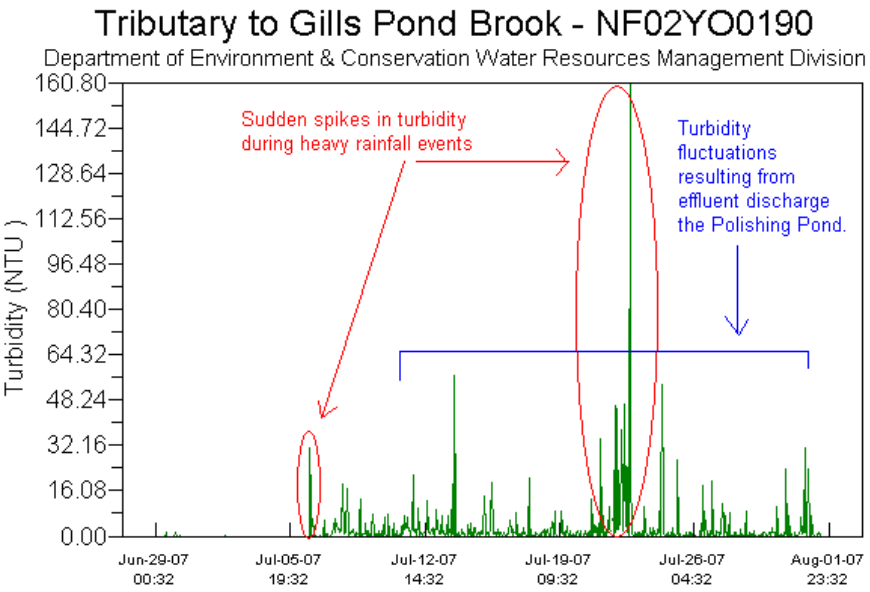

Figure 5

- The stage height **(Figure 6)** (or water level) increased during periods of heavy rainfall on July 6th-8th, and July 19th-22nd. Water levels did not return to background levels as a result of continuous effluent discharge from the Polishing Pond that began on July 11th. Stage height ranged between 1.15 and 1.45m during this deployment.

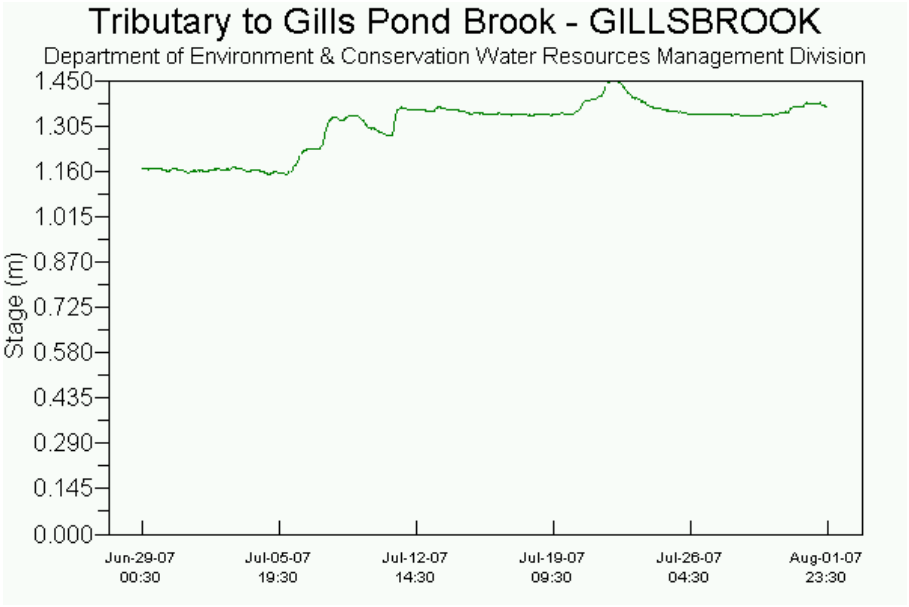

Figure 6

EAST POND BROOK

- Water temperature in East Pond Brook (Figure 7) remained fairly constant throughout the deployment period, with obvious daytime and night time fluctuations. Temperature values ranged from a minimum of 13.13˚ C to 28.23˚C during this period.

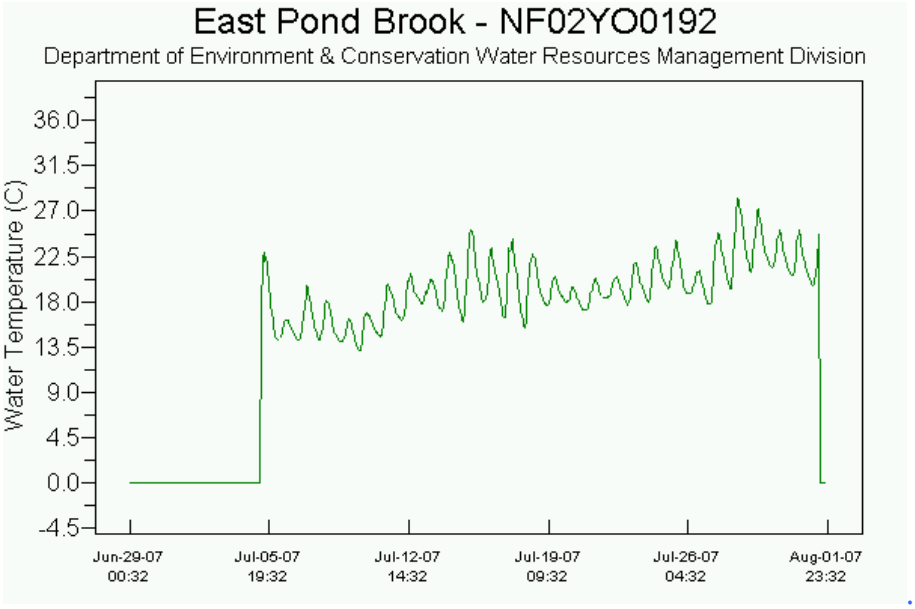

Figure 7

- pH values (**Figure 8**) at East Pond Brook remained fairly constant throughout this deployment, ranging between 6.12 and 6.64 pH units. Most values fell below the pH range recommended by the CCME *Canadian Water Quality Guidelines for the Protection of Aquatic Life*, (6.5 – 9.0). The background pH of this brook is often lower than the CCME recommended pH range, influenced by the acidity of surrounding bogs and the natural geology of the basin.

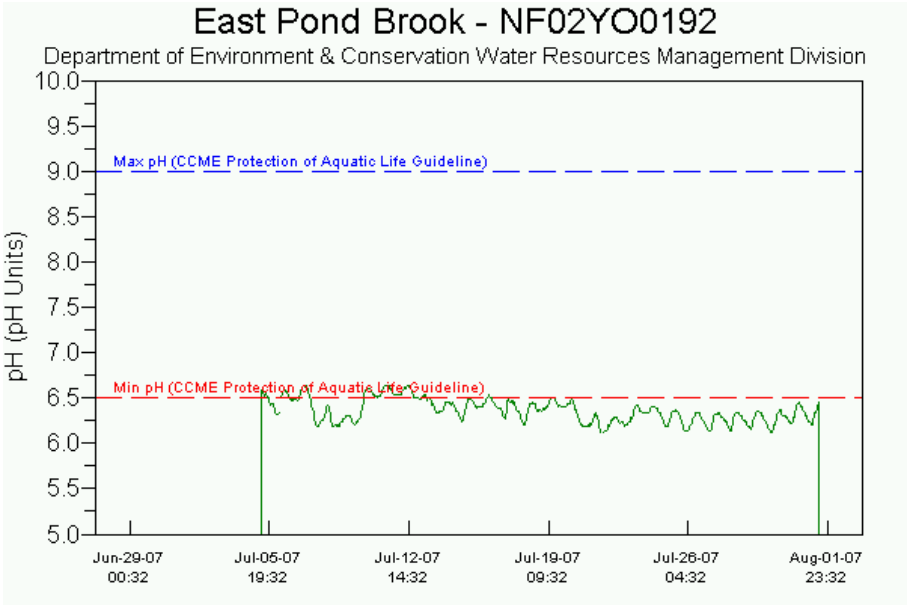

Figure 8

- Specific conductance **(Figure 9)** remained very constant throughout the deployment period, ranging from 23.5 to 28.84µS/cm. The limited variability of conductivity values in East Pond Brook during this deployment period greatly contrasts with the significant increase in conductivity values at Gill's Pond Brook during the same period. It's reasonable to ascertain that effluent discharge from the Polishing Pond influenced conductivity values in Gill's Pond Brook during this deployment.

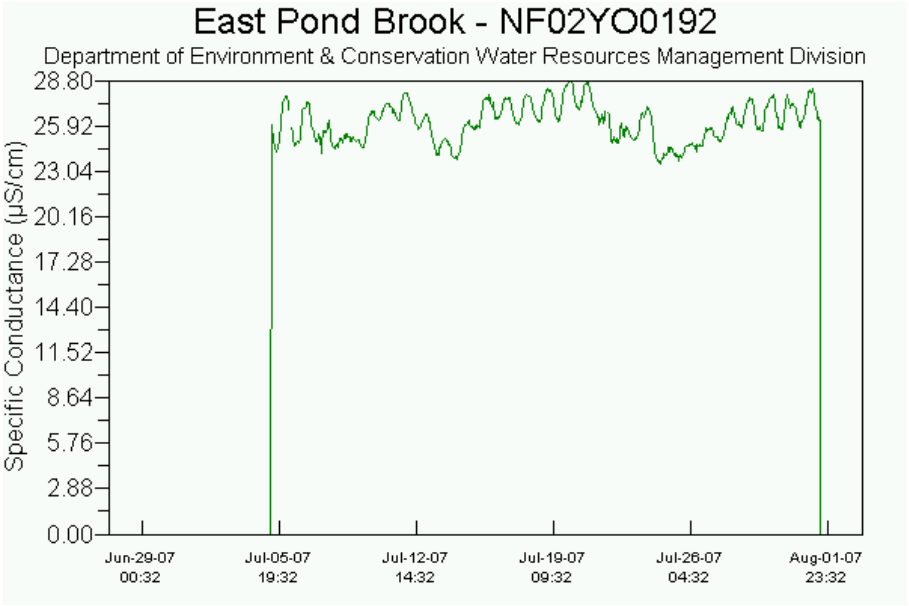

Figure 9

- The dissolved oxygen values (**Figure 10)** ranged from a minimum of 7.54 mg/L to a maximum of 10.06 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. Some dissolved oxygen values fell 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). Seasonally lower DO levels can be expected in the summer months.

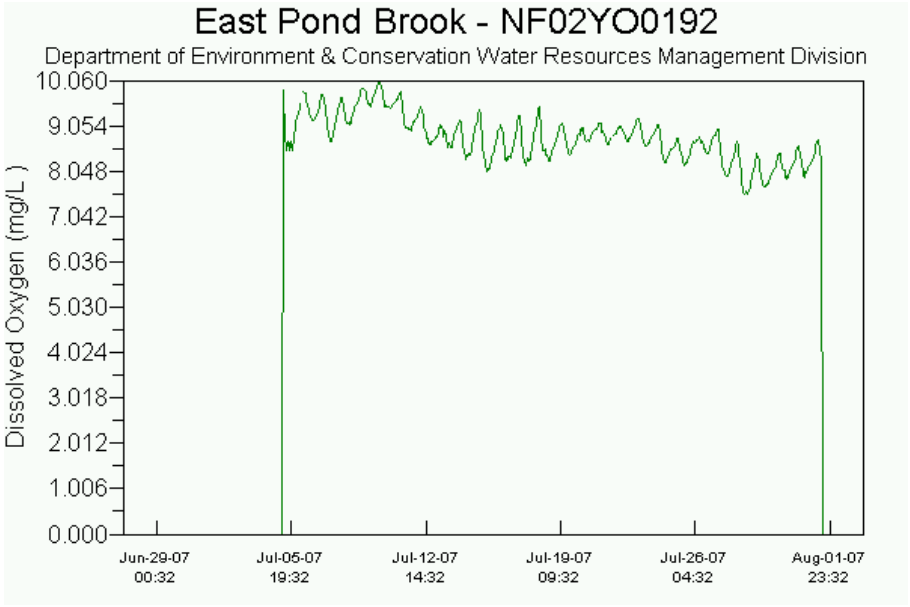

Figure 10

- The turbidity values **(Figure 11)** were consistent at 0 NTU throughout most of the deployment period with the exception of two spikes that corresponded with heavy rainfall on July 6th-8th, and July 19th - 22nd .

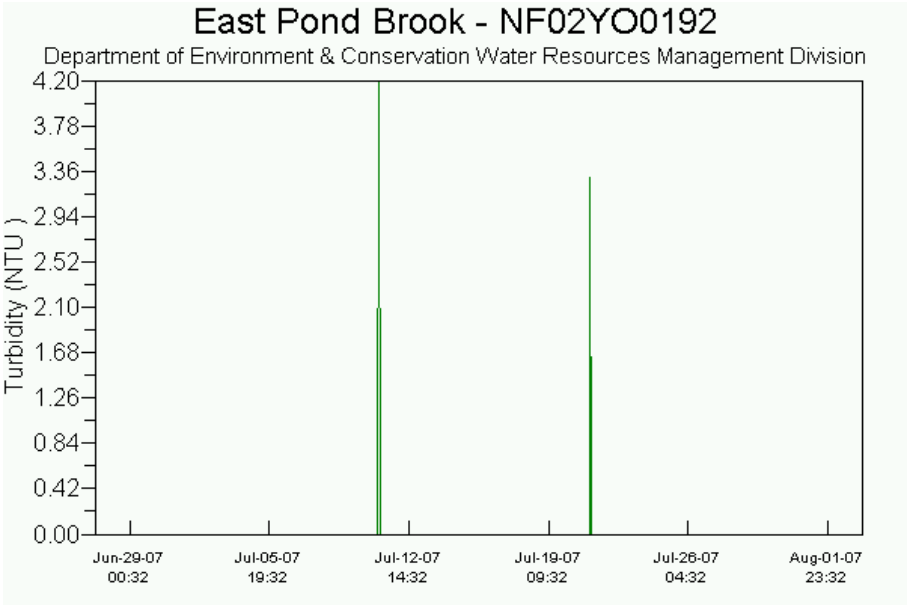

Figure 11

- The stage **(Figure 12)** or water level ranged from a minimum of 0.889m to a maximum of 1.329m. Stage height increased in response to rainfall events from July 6th -8th, and from July 19th -22nd. The downward spikes that appear in the graph on July 9, 14 and 30 appear to be transmission errors.

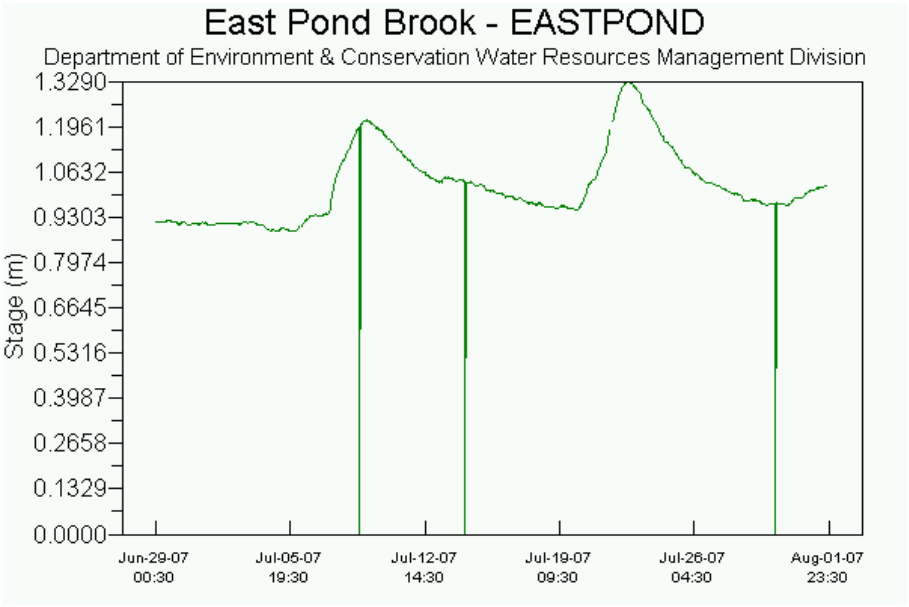

Figure 12

WELL AFTER TAILING DAM A

- The Quanta G was deployed in the groundwater well on June 27, and was **not** removed on August 1 when East pond Brook and Gill's Pond Brook Datasondes were removed. Groundwater quality is generally less susceptible to environmental impacts than surface water, and groundwater probes can therefore be deployed for longer periods of time before requiring cleaning and calibration. The groundwater data will continue to be monitored for consistency.

APPENDIX A

Daily Data Report for July 2007							
Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Precip mm	Spd of Max Gust km/h
01	21.9	3.0	12.5	5.5	0.0	18.6	
02	12.9	7.0	10.0	8.0	0.0	5.5	
03	19.9	8.3	14.1	3.9	0.0	0.0	
04	23.6	2.2	12.9	5.1	0.0	0.0	
05	25.8	5.4	15.6	2.4	0.0	8.4	
06	16.2	7.6	11.9	6.1	0.0	9.4	
07	20.3	13.3	16.8	1.2	0.0	26.2	
08	14.5	11.0	12.8	5.2	0.0	3.1	
09	16.6	7.1	11.9	6.1	0.0	0.0	

10	19.6	1.1	10.4	7.6	0.0	0.0	
11	22.3	10.8	16.6	1.4	0.0	0.0	
12	23.9	14.5	19.2	0.0	1.2	0.0	
13	21.5	17.2	19.4	0.0	1.4	4.9	
14	28.2	12.8	20.5	0.0	2.5	0.0	
15	28.2	7.8	18.0	0.0	0.0	0.0	
16	27.4	12.8	20.1	0.0	2.1	0.0	
17	27.0	10.8	18.9	0.0	0.9	0.0	
18	29.2	7.8	18.5	0.0	0.5	0.0	
19	22.2	13.7	18.0	0.0	0.0	2.0	
20	20.7	16.3	18.5	0.0	0.5	33.4	
21	21.1	17.9	19.5	0.0	1.5	9.5	
22	22.8	16.2	19.5	0.0	1.5	0.0	
23	27.3	7.7	17.5	0.5	0.0	0.0	
24	28.3	14.6	21.5	0.0	3.5	0.0	
25	26.1	16.1	21.1	0.0	3.1	0.0	
26	26.8	14.2	20.5	0.0	2.5	0.0	
27	29.7	10.1	19.9	0.0	1.9	0.0	
28	34.5	17.2	25.9	0.0	7.9	0.0	
29	30.7	15.1	22.9	0.0	4.9	9.4	
30	24.1	17.0	20.6	0.0	2.6	16.6	
31	25.4	18.3	21.9	0.0	3.9	0.0	

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