

## Halifax Harbour Water Quality Monitoring Project Survey Summary #130

**Survey Date:** 23 May 2007  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report130\_070523.doc  
**Data File:** HHWQMP\_data130\_070523.xls

### Data Return:

Profile: 97%  
 Bacteria: 100%  
 Chemical: 96%  
**Overall: 98%**

### Sample Notes:

The CTD profile data from EE1 did not pass QA procedure. The data is plotted here but has been deleted from the data file. The 1m metals sample for site B2 was misplaced by the lab.

### QA/QC samples:

#### Chemical Analysis

Detectable Parameter	Units	B2 - 10m	
		reference sample	QA/QC
Ammonia (as N)	mg/L	<0.05	0.05
Total Suspended Solids	mg/L	2	1
Copper	ug/L	0.2	0.2
Iron	ug/L	4	5
Manganese	ug/L	1	1

#### Fecal Coliform (CFU/100ml)

Site	PC-1m	HC-1m	HC-10m	B2-10m
Reference	54	14	19	0
QA/QC	50	12	10	0

### Comments:

**General:** A large rainfall event (53+mm) 3-4 days earlier has resulted in a considerable freshening of the surface water (< 20 m) in the Basin. The freshest water appears on the south-western side of the Basin, consistent with the predominant north wind. Below 20 m, the salinity has changed little and the water column remains relatively uniform. The increase in surface freshness is evident, to a

lesser degree, in the remainder of the harbour, but the bottom water remains relatively unchanged. The entire harbour, except the deep Basin, has warmed relatively uniformly about 1-1.5° C. The deepest water in the Basin has warmed by about 0.1° C. The density in the deeper Basin is not much greater than the bottom water in the rest of the harbour. The fecal coliform (fc) values are quite low and exhibit a typical pattern, higher in the 1 m samples in the Inner Harbour and the 10m samples in the Basin. The higher values in the 1m samples in the E section are likely due to the ongoing diversion of sewage to the Fairview Cove CSO. Once again a coastal plume with elevated fc values is evident at HP1. The likely source is the Tribune Head outfall.

**Fluorescence:** The profile maximums occur at about 6-8 m throughout the Basin and Inner Harbour. In the southern Basin and Narrows the values are relatively high (22-23 mg/m<sup>3</sup>). The values at the surface in the Narrows (E section) are almost 20 mg/m<sup>3</sup>. The field notes indicate that here the water is very brown and “murky” (secchi depths approx 2m). This brown colour is noted to a lesser extent throughout the Basin (secchi depths approx 4 m). The brown colour looks qualitatively different than the “tannin brown” sometimes visible in the Basin. In the Inner Harbour the values are relatively unchanged from last survey and the surface water is noted to be relatively clear (secchi depth 5-6 m). In the Outer Harbour (B2) the fluorescence is very low (< 1 mg/m<sup>3</sup>).

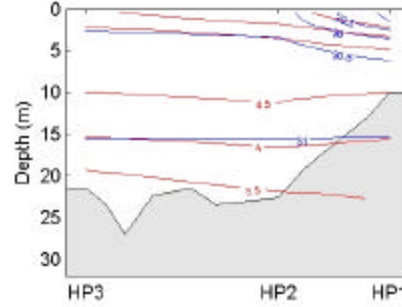
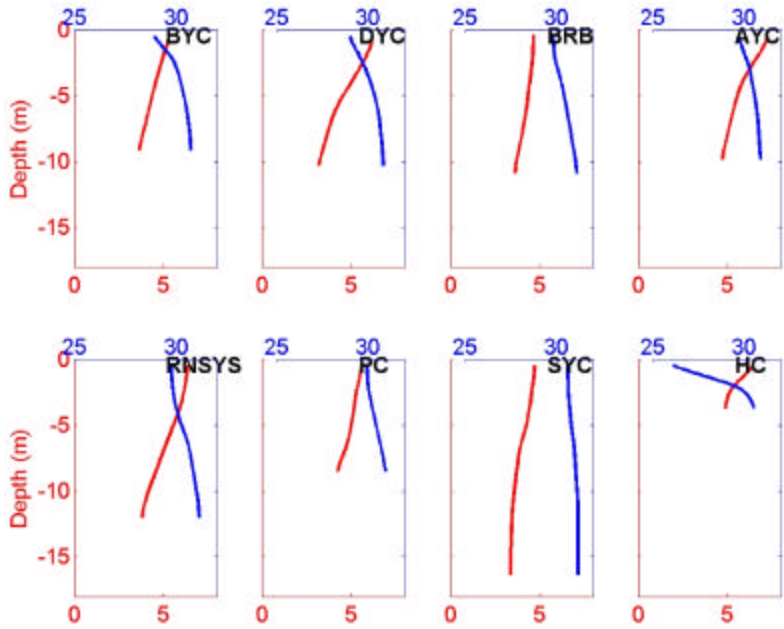
**Ammonia:** There are some detectable levels in the Inner Harbour and Basin, mostly in the 10m samples.

**TSS:** The highest values (6-8 mg/L) are in the 1m samples in the Narrows and Basin. The exception is at site G2 where the TSS is 2 mg/L. The high values correlate with observation of water colour, high near surface fluorescence levels and low secchi disk readings.

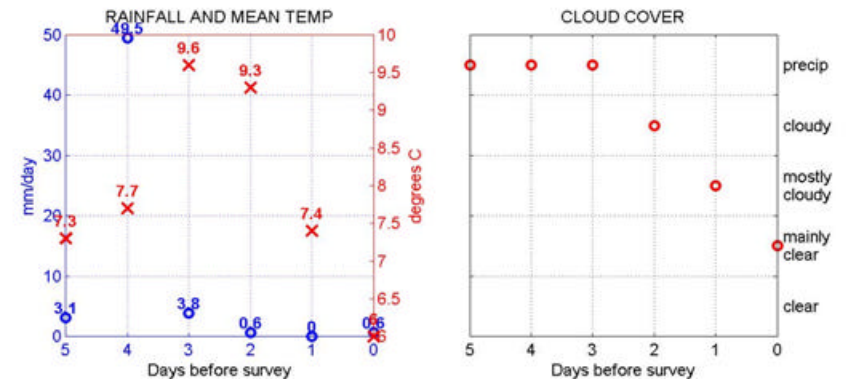
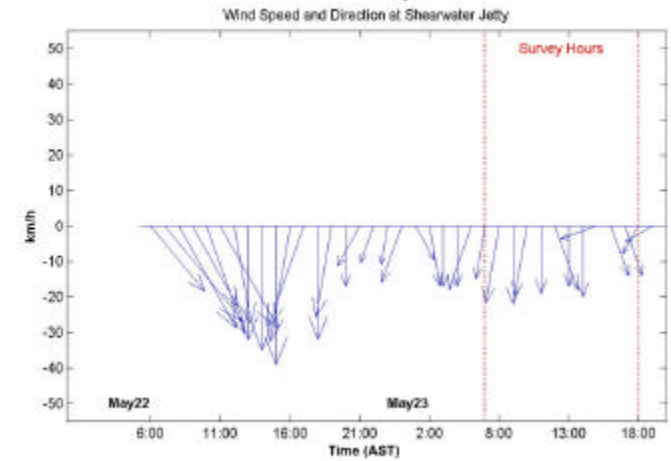
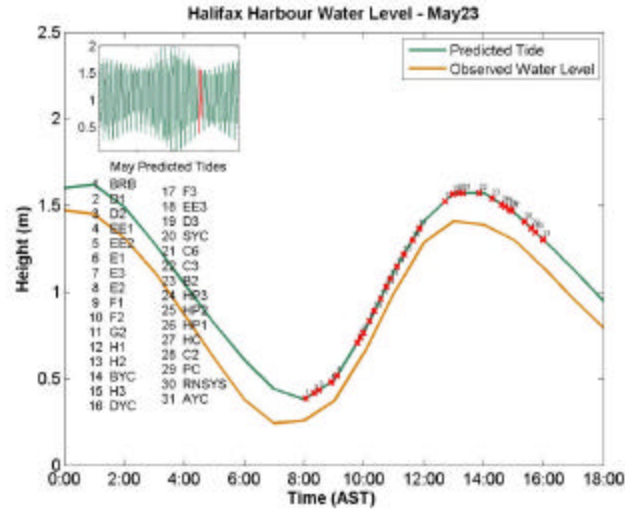
**Dissolved Oxygen:** The dissolved oxygen (DO) data indicate that levels are quite uniform, ranging only from about 7.5- 8.1 mg/L, in water <20 m in depth. The maximum values (>8.0 mg/L) correspond to high surface fluorescence levels in the Narrows and Southern Basin. The only values below applicable use specific guidelines are below 30m water depth in the Basin (< 7.0 mg/L) and in the Outer Harbour (B2) where the DO of about 7.7 mg/L is slightly below the 8.0 mg/L criteria. The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).



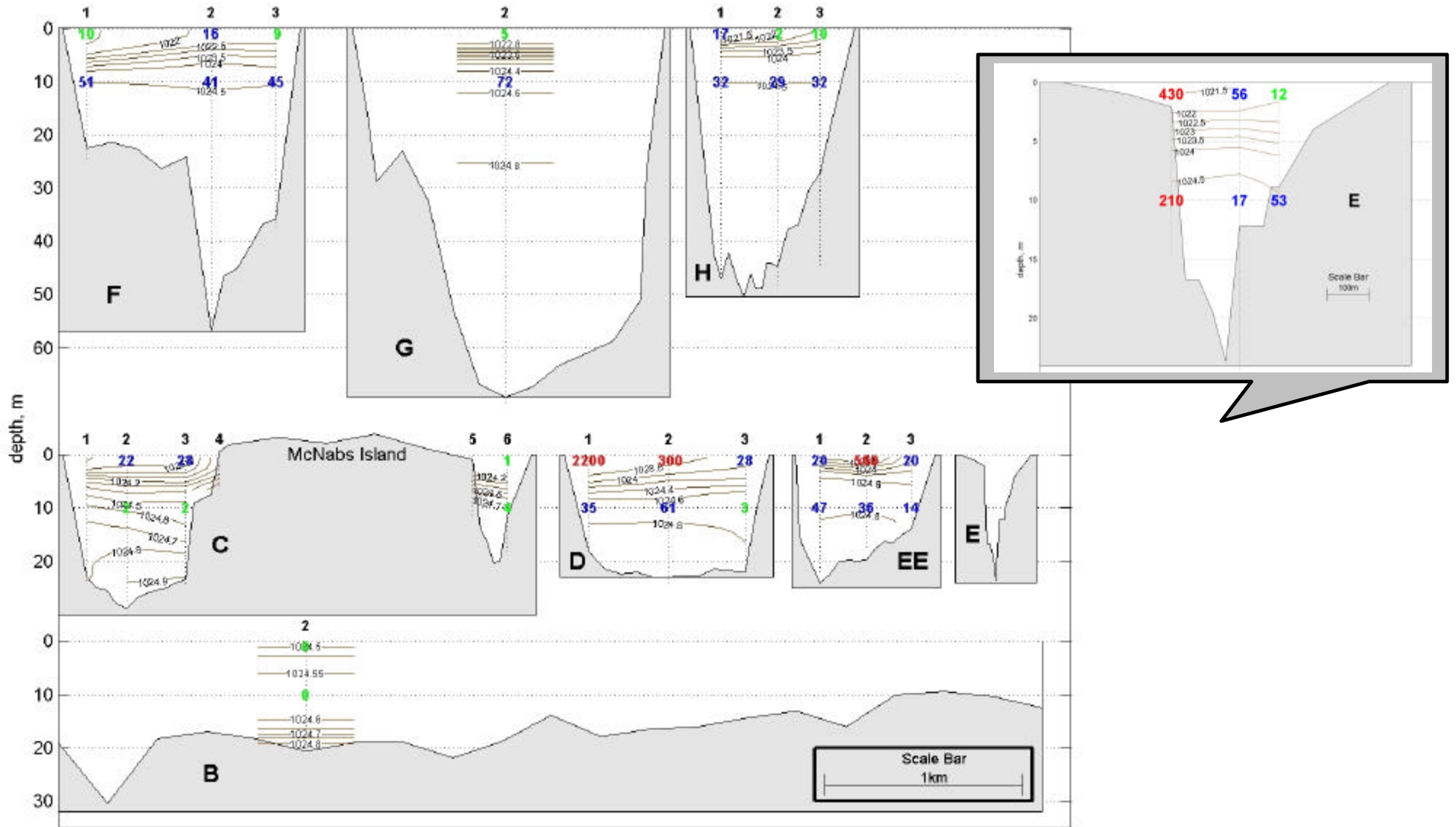
# Yacht Clubs



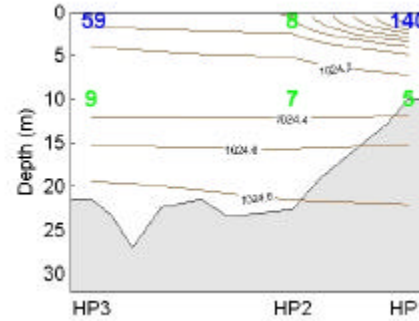
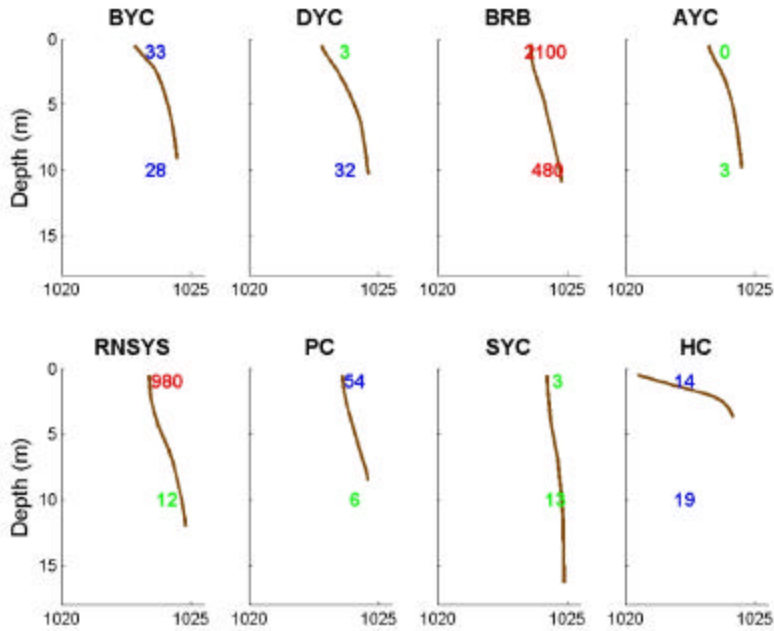
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



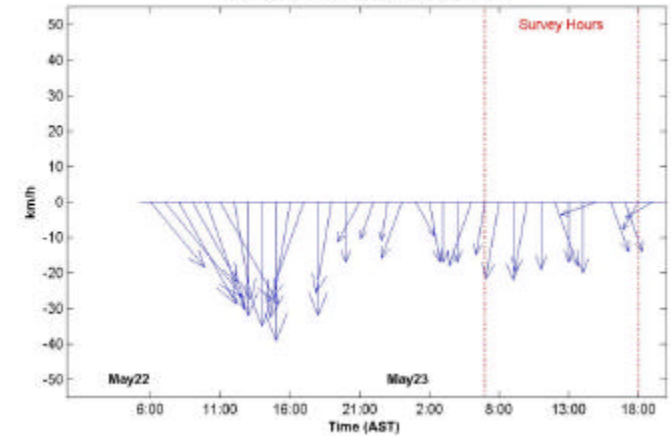
Salinity in PSU      Temperature in °C



# Yacht Clubs

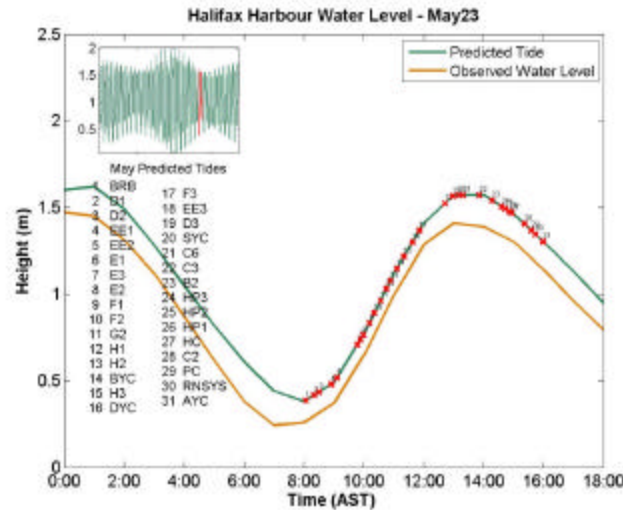


Wind Speed and Direction at Shearwater Jetty



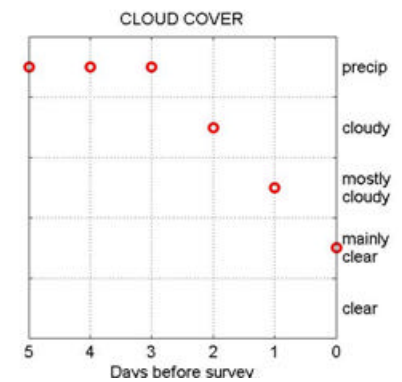
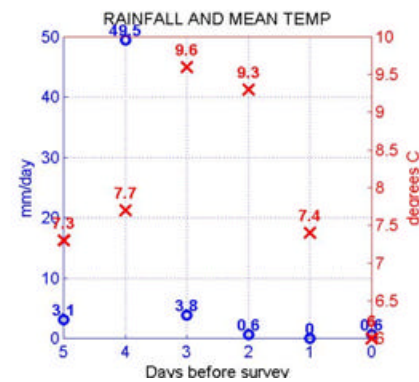
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Cloud cover data collected at Shearwater Airport

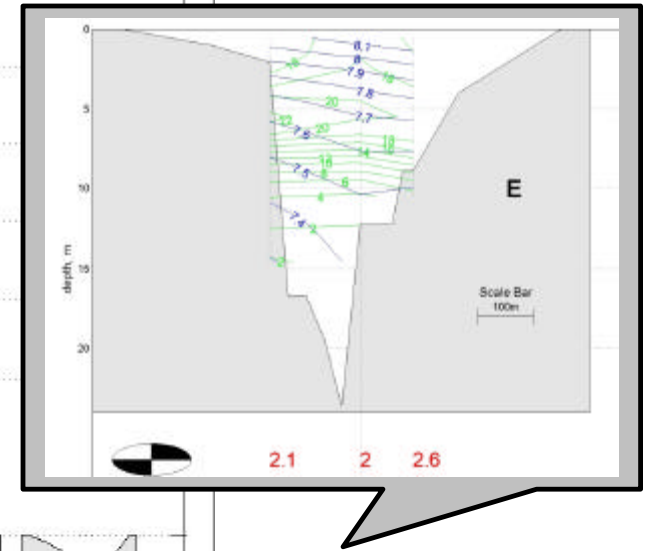
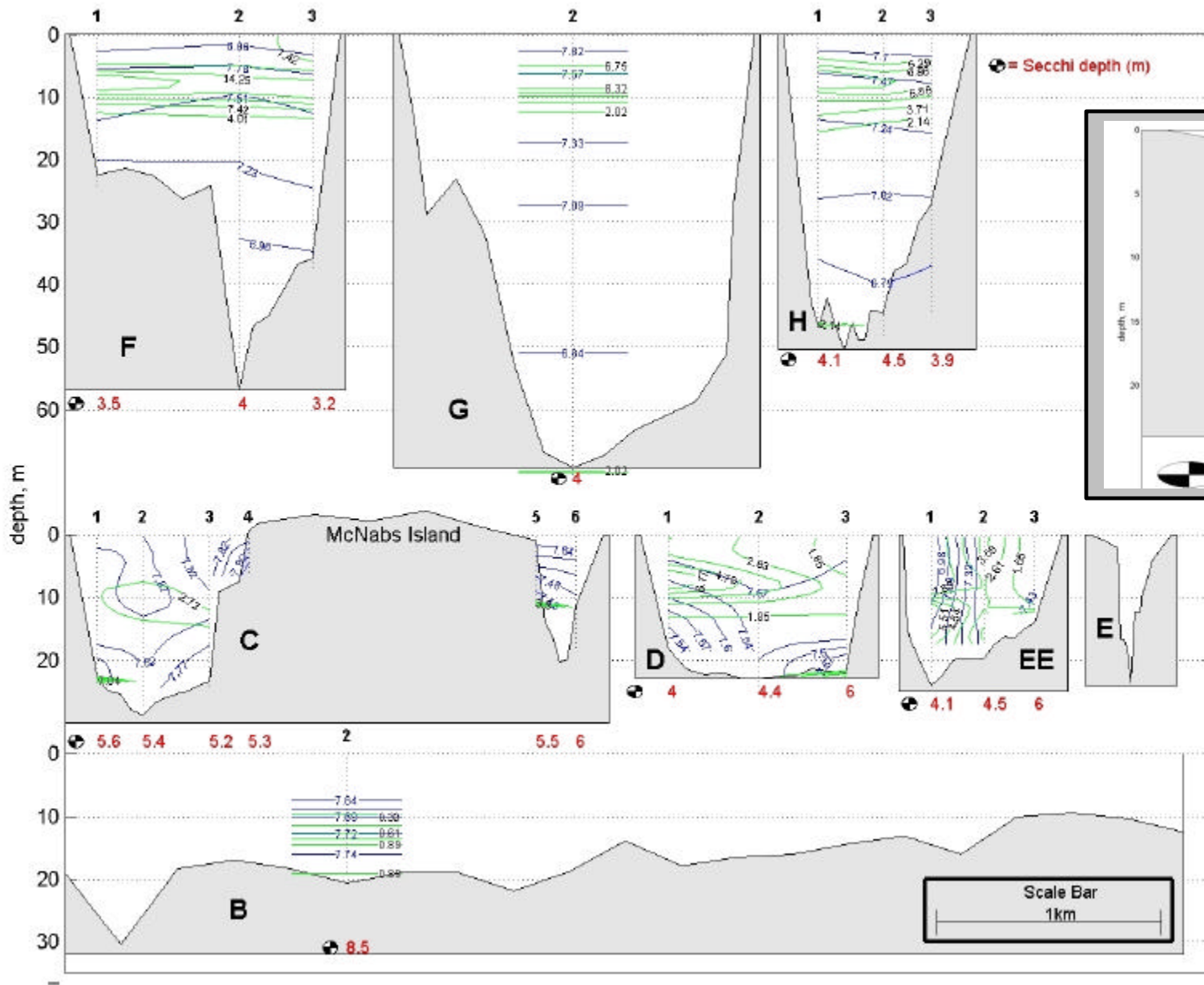


Potential Density in kg/m<sup>3</sup>

Fecal coliform: **above swimming limit (200 cfu/100mL)**  
**above shellfish limit (14 cfu/100mL)**  
 below limits

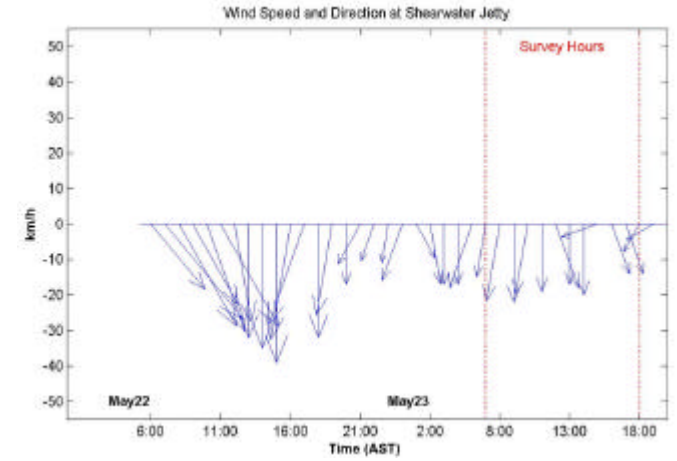
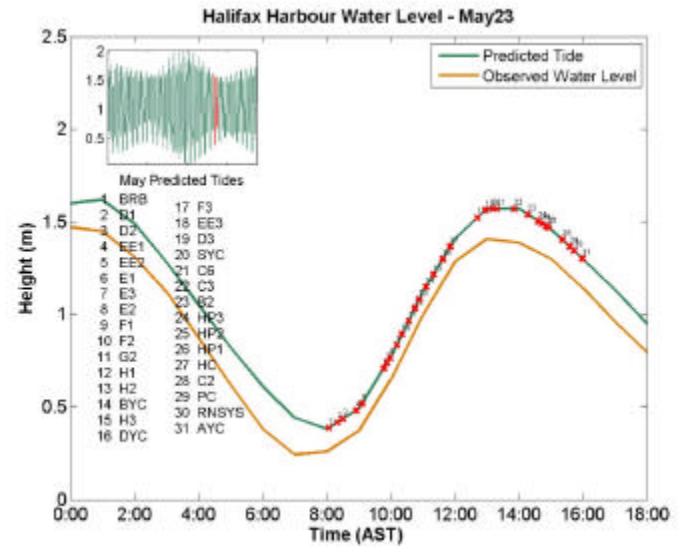
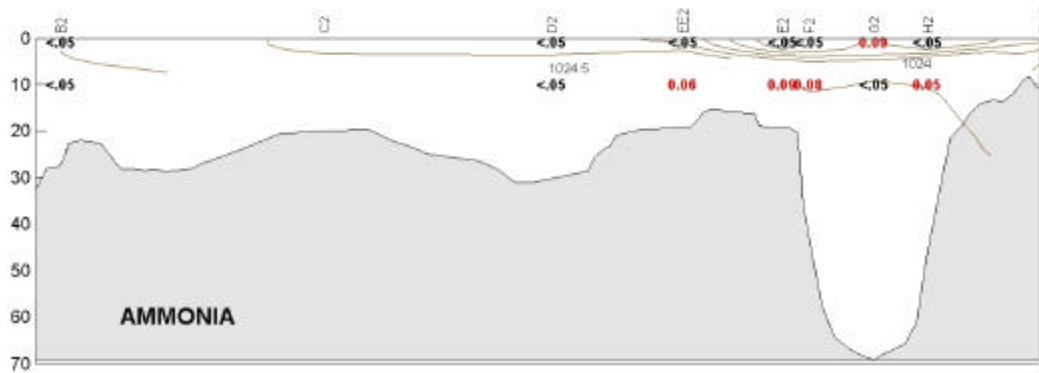
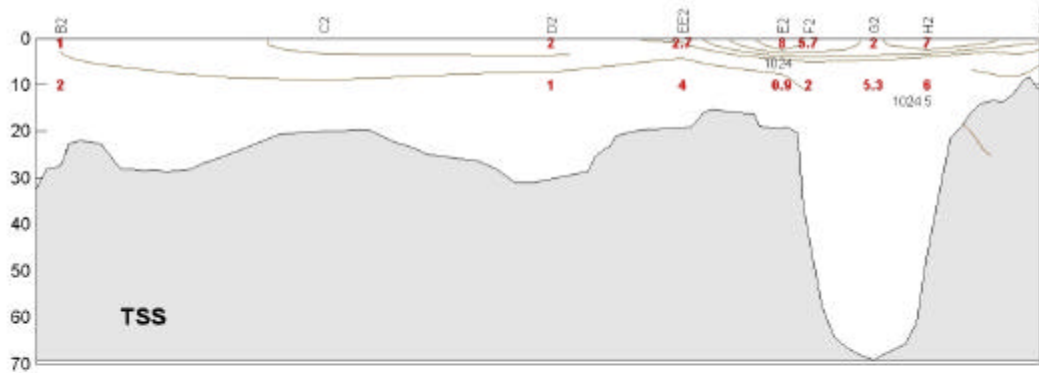




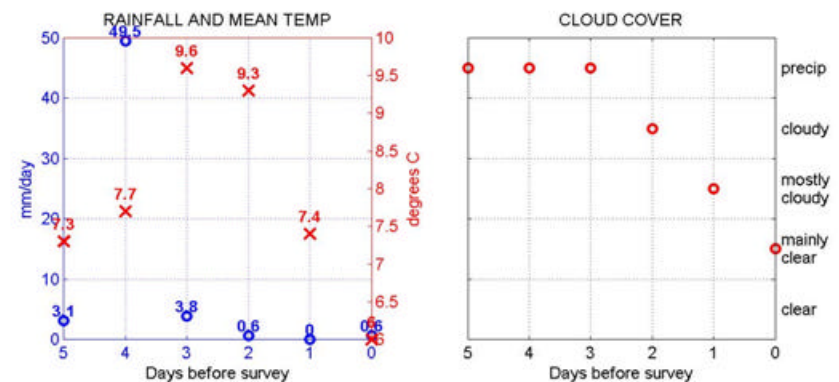




CHEMISTRY



Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport

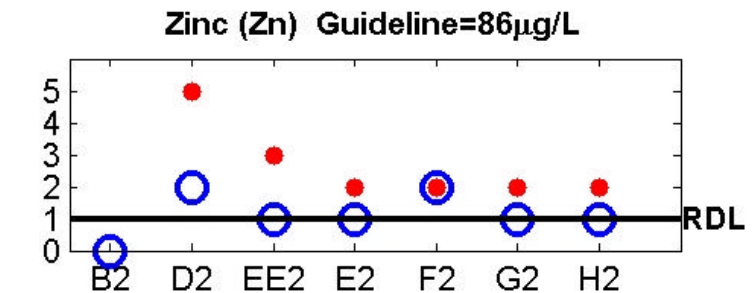
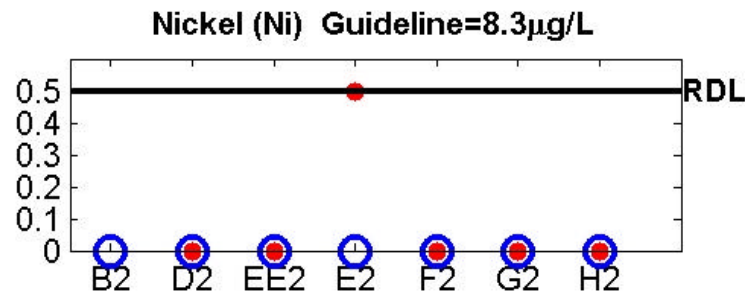
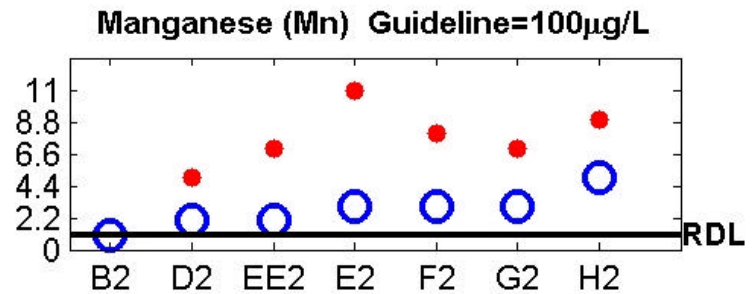
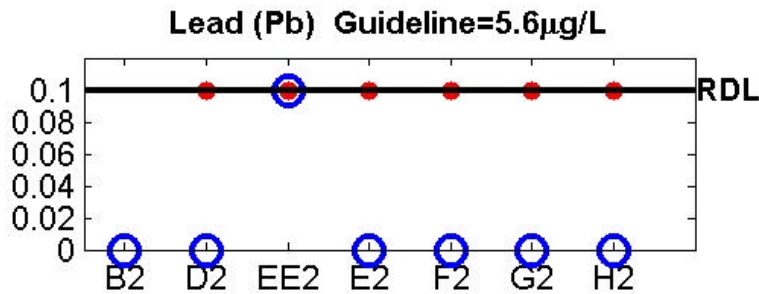
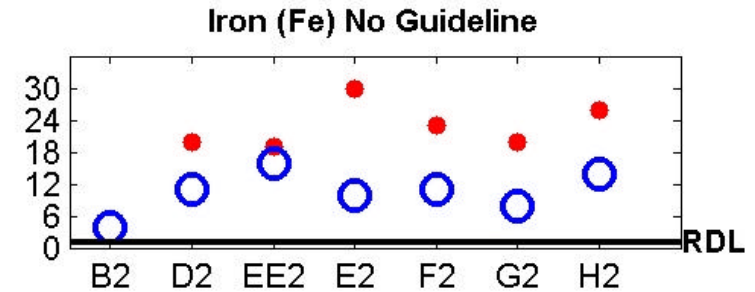
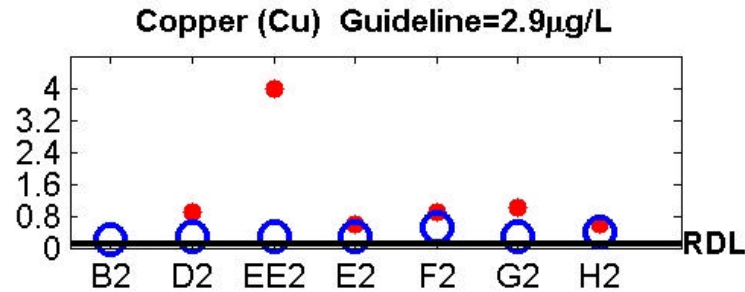
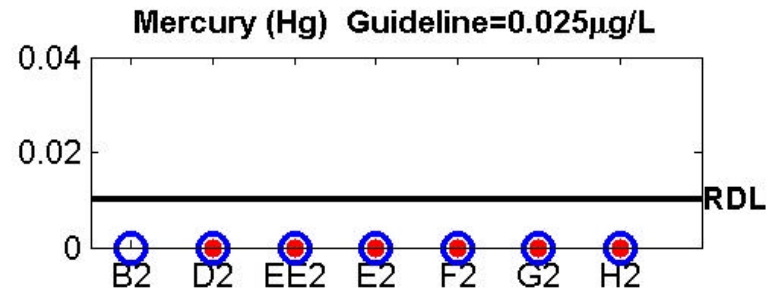
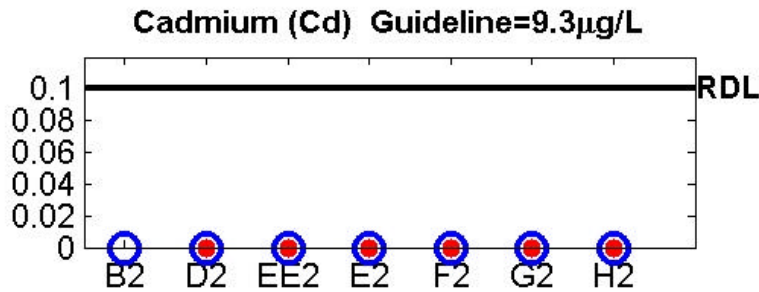


Potential Density in kg/m<sup>3</sup>

Ammonia in mg/L

TSS in mg/L





**LEGEND**  
 ○ = Ten Metre Sample  
 ● = One Metre Sample  
 RDL = Reportable Detection Limit