

# Halifax Harbour Water Quality Monitoring Project Survey Summary #155

**Survey Date:** 06 May 2008  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report155\_080506.doc  
**Data File:** HHWQMP\_data155\_080506.xls

**Data Return:**  
 Chemical: 100%  
 Bacteria: 100%  
 Profile: 92%  
**Overall: 96%**

### Sample Notes:

A supplemental surface sample was taken at site F2 (“F2-surface” in data file) and analyzed a full suite of parameters.

The CTD cast at PC contained no data - probable user error.

A supplementary CTD cast was taken at the LOBO buoy location (44.6291° N, 63.5915° W) at 15:37 local time.

The DO sensor continues to experience some stability problems, showing up as sporadic spikes in the record. All records are plotted here but the DO records for sites HP1, C4 and E3 have been deleted from the data file and records for sites B2 and D1 have been truncated.

The DO readings are uniformly low compared to the surface reference values collected (see comparison in data file). To match reference data, the presented values should be scaled by a factor of 1.41.

### QA/QC samples:

#### Chemical Analysis

Detectable Parameter	Units	F2 – 1m	
		Reference Sample	QA/QC
Ammonia (as N)	mg/L	0.05	0.05
Total Suspended Solids	mg/L	5.4	5.0
Copper	ug/L	0.4	1.0
Iron	ug/L	9.0	5.0
Manganese	ug/L	<1.0	2.0
Zinc	ug/L	2.0	3.0

### Fecal Coliform (CFU/100ml)

Site	EE3-10m	F1-1m	PC-10m	F2-1m
Reference	46	2	0	9
QA/QC	1600	0	0	1

### Comments

**General:** The harbour as a whole, except in the Narrows, exhibits similar density stratification to that of the previous survey. There appears to be a lens of fresher water in the Narrows resulting in increased stratification there. In the Basin the water below 20 - 30 m is quite uniform in hydrographic properties with high dissolved oxygen concentration. The Halifax STP is fully operational. The UV disinfection system became fully operational on 1 April. Fecal coliform levels remain very low with only two samples exceeding the swimming guidelines. These are both in 10 m samples in the Inner Harbour. Field notes indicate the lack of a visible boil at the Peace Pavilion outfall (perhaps diversion for construction), probably explaining the lower than normal values at EE3. There is a tendency for higher levels in the 10 m samples in the Basin.

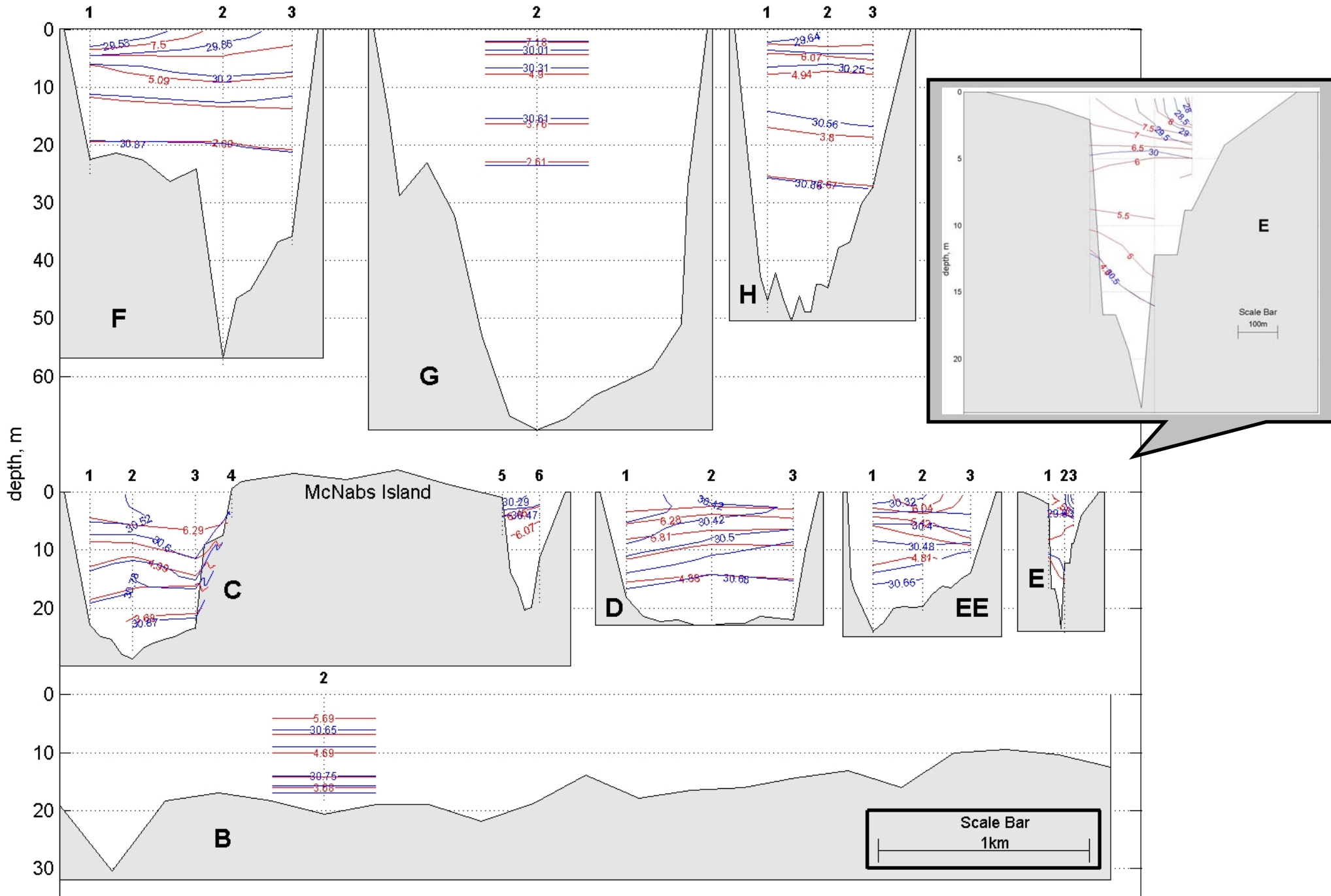
**Fluorescence:** The fluorescence levels are quite uniform in the Basin and Inner Harbour at 10 - 15 mg/m<sup>3</sup> maximums at depths of 7 - 12 m. The profile maximums decrease to less than 2.0 mg/m<sup>3</sup> (near background) in the Outer Harbour.

**TSS:** TSS exhibits relatively low to typical values, with a maximum value of about 9.1 mg/L (mean 5.7 mg/L). The TSS at F2-surface was 120 mg/L.

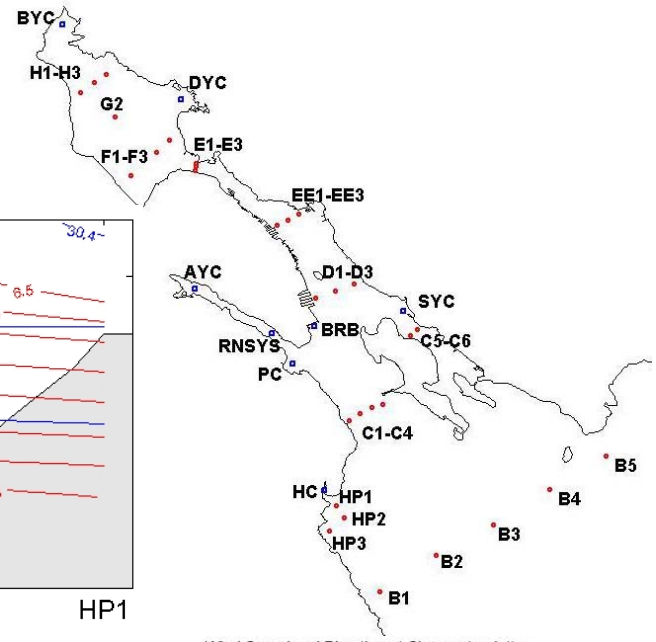
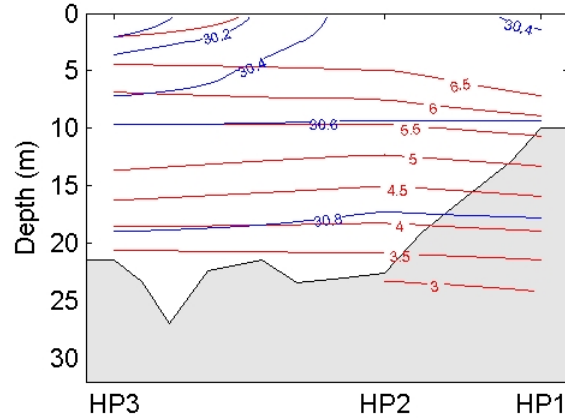
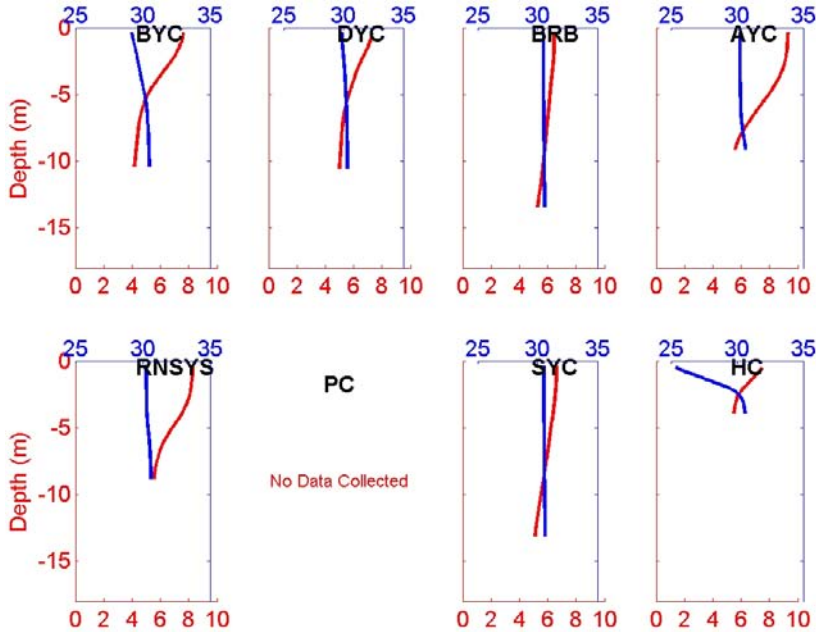
**Ammonia:** The ammonia concentrations are very uniform with all samples with detectable values of (0.05 - 0.06 mg/L), just over the detection limit of 0.05 mg/L. At F2-surface the ammonia concentration was 0.19 mg/L.

**Metals:** There are no guideline exceedences in regular samples. There are two samples with detectable levels of mercury. The F2 surface sample had very high metals. There were three guideline exceedences: copper (5 x guideline), lead (1.3 x guideline) and mercury (1.6 x guideline). There is no guideline for Iron, but the value was 50 - 100 times the concentration in the regular samples.

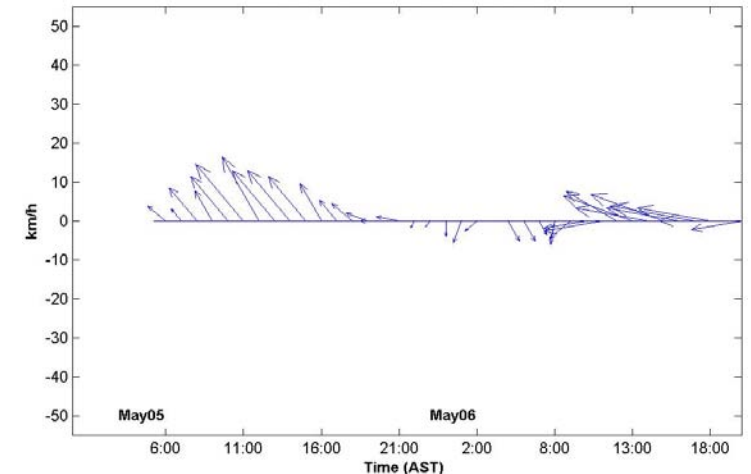
**Dissolved Oxygen:** The DO data, scaled by a factor of 1.41, shows high dissolved oxygen everywhere, including the deep water of the Basin (about 8.0 mg/L). Outside of the Basin bottom water the DO is everywhere > 10.0 mg/L.



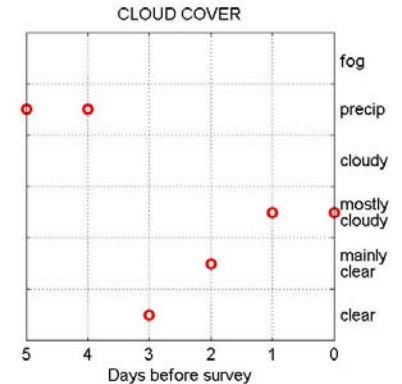
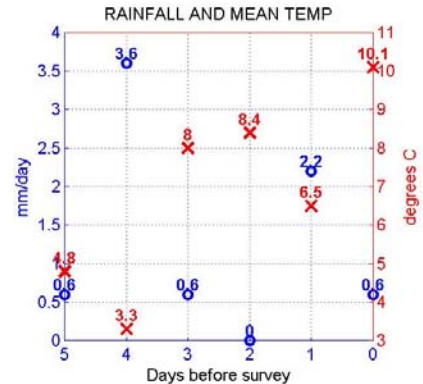
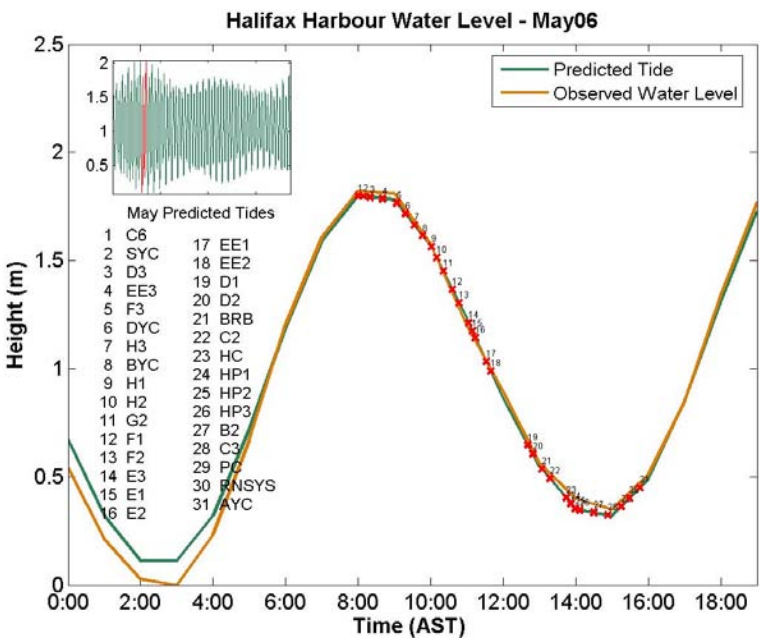
# Yacht Clubs



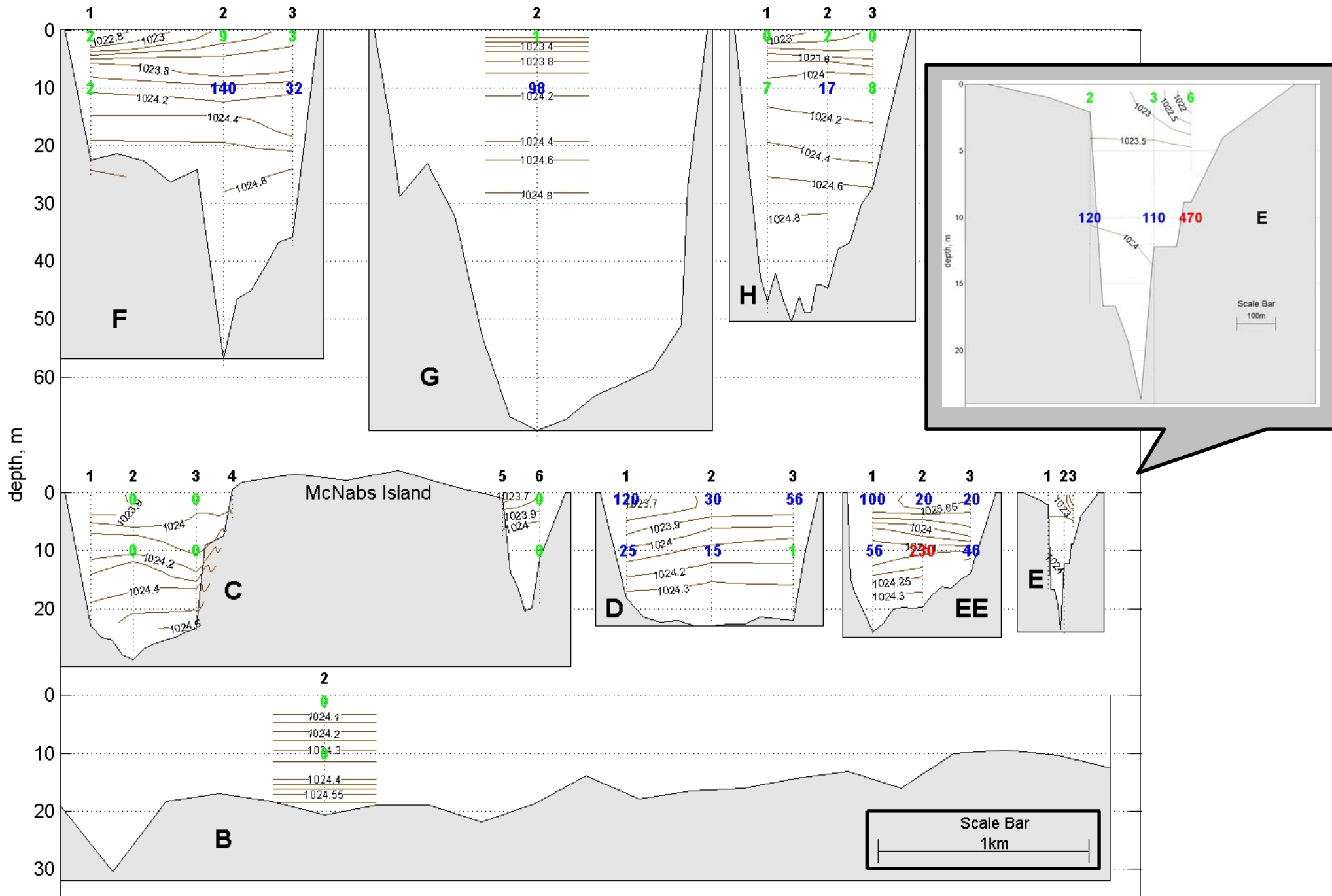
Wind Speed and Direction at Shearwater Jetty



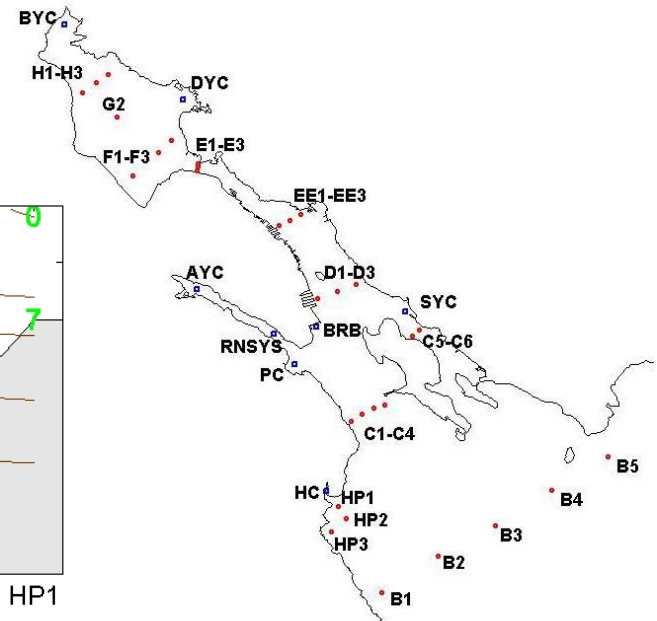
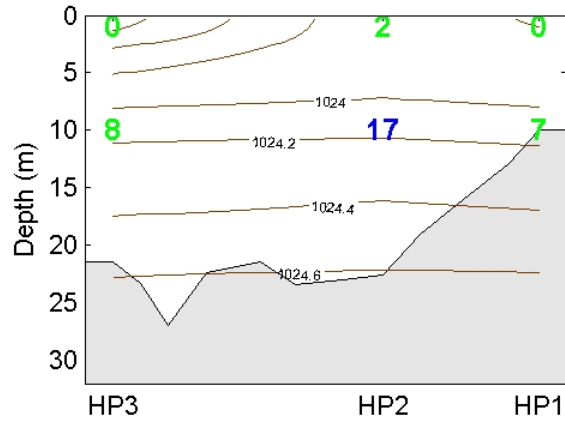
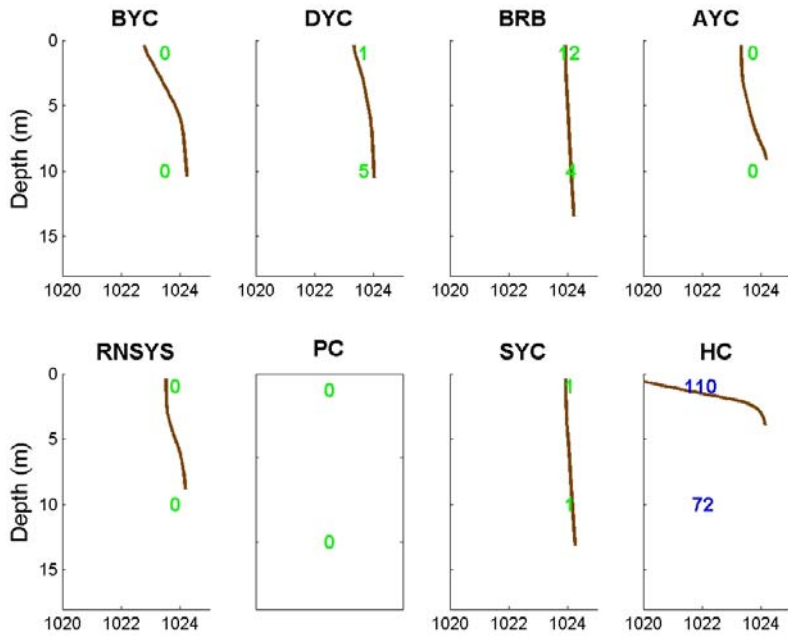
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



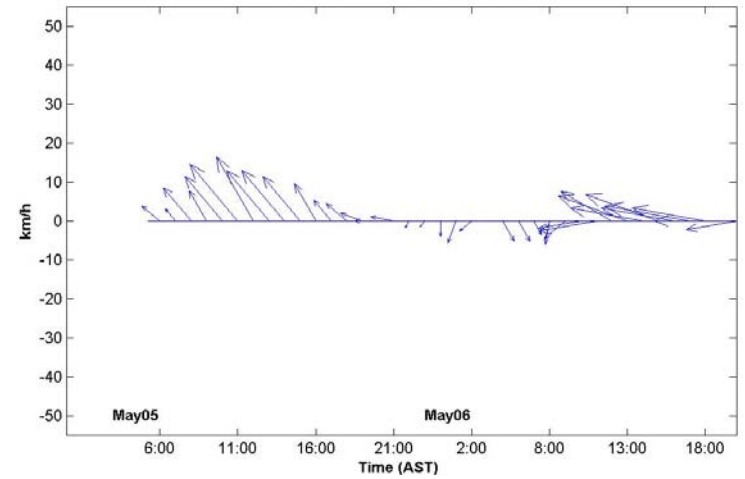
Salinity in PSU      Temperature in °C



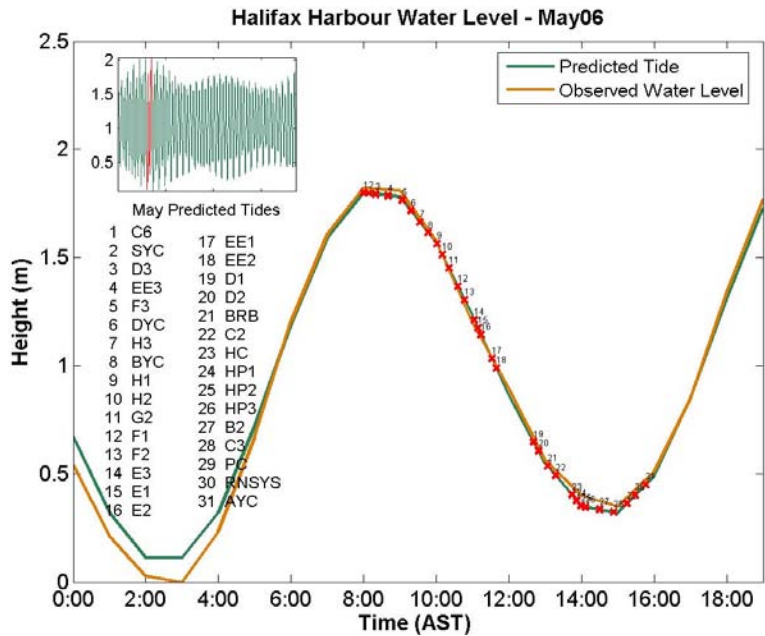
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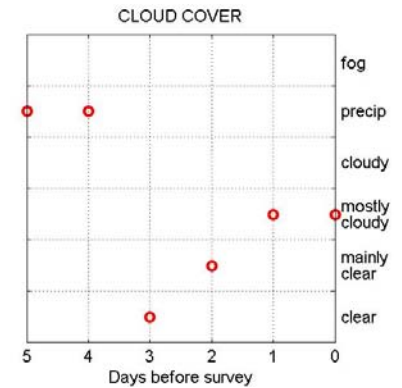
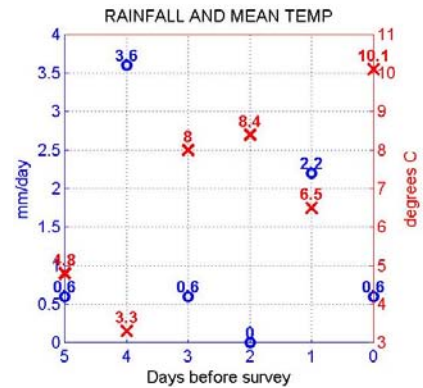


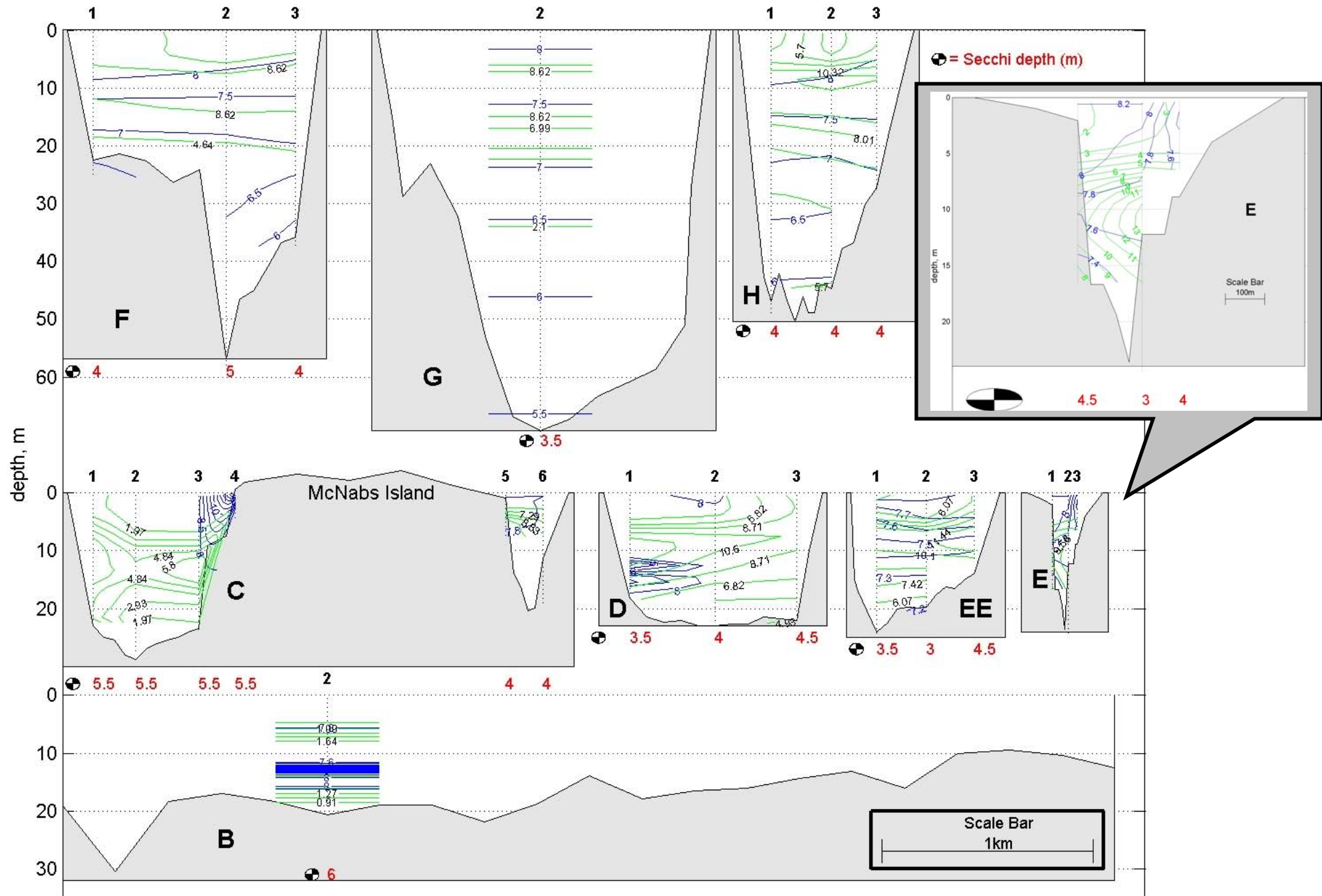
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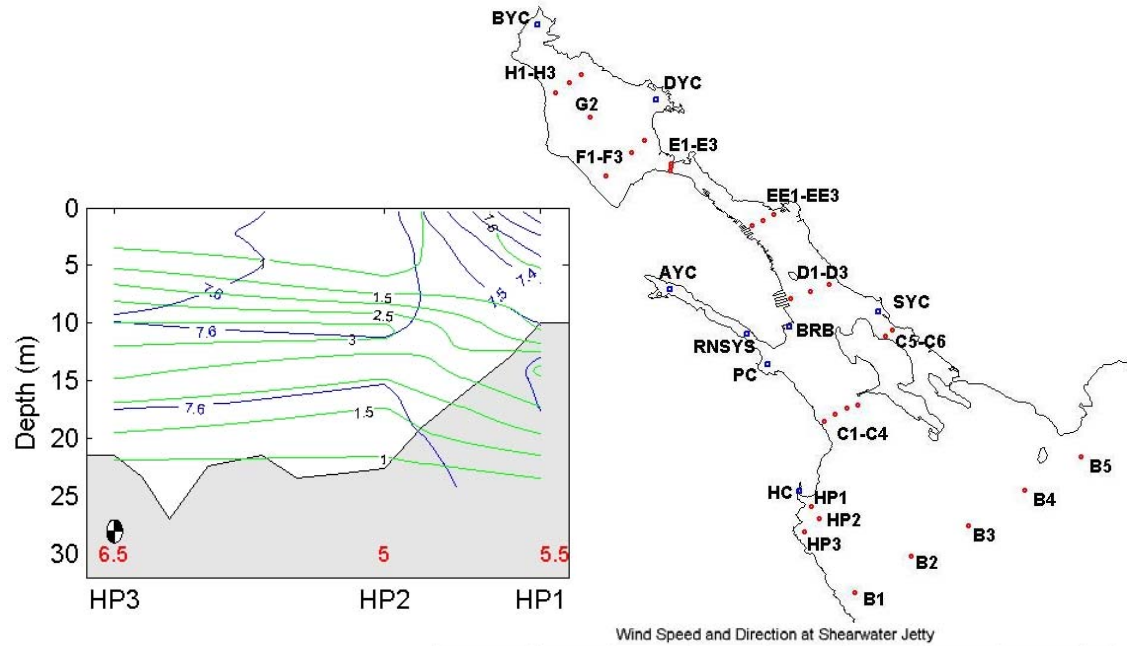
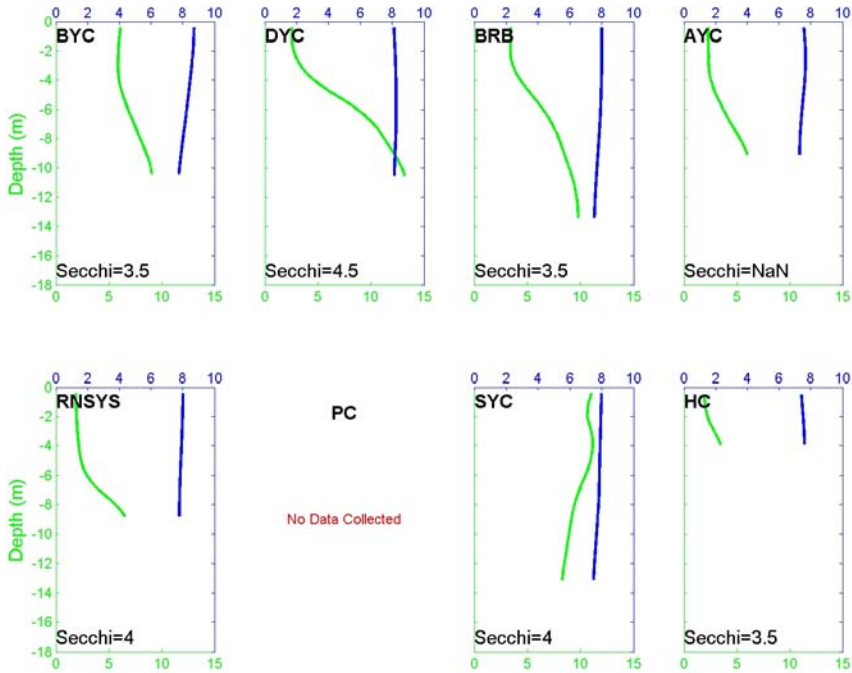
Potential Density in kg/m<sup>3</sup>

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

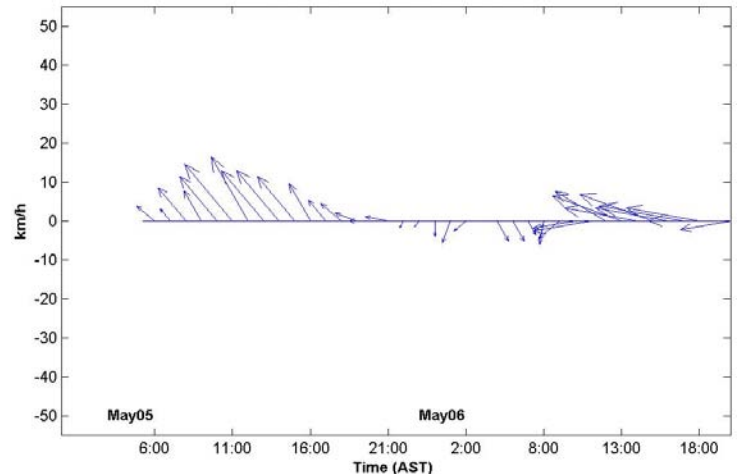




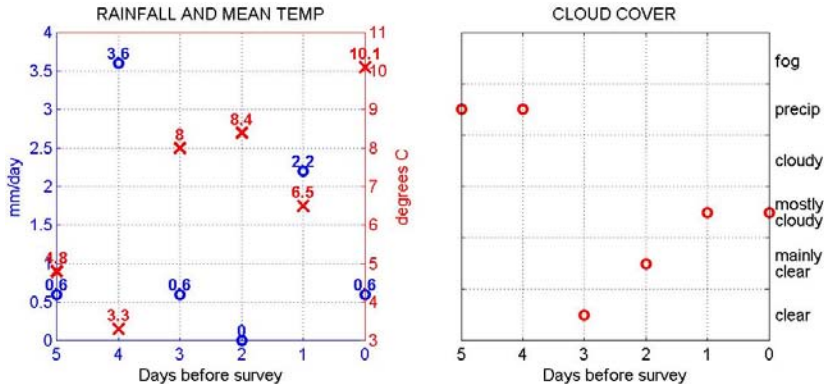
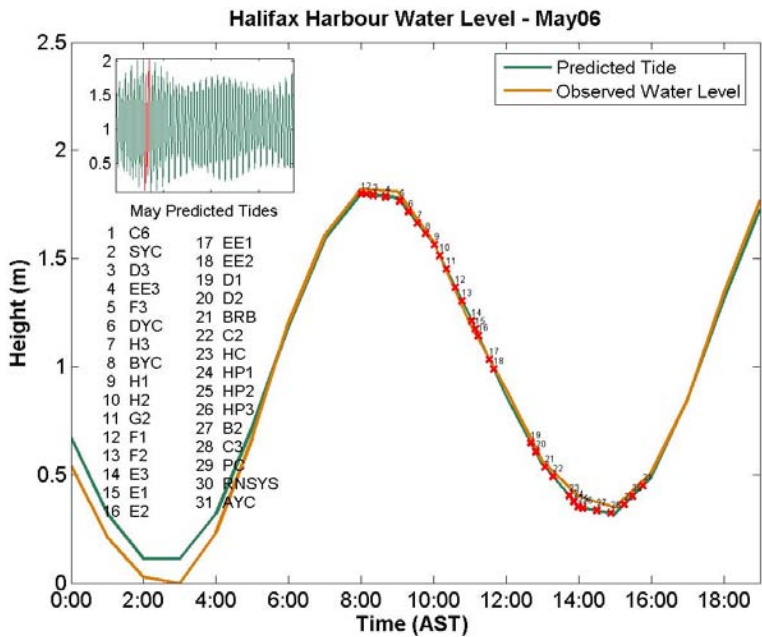
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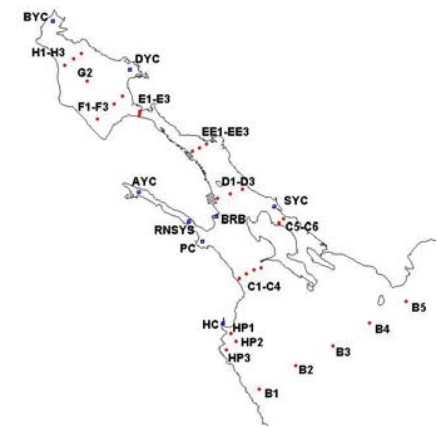
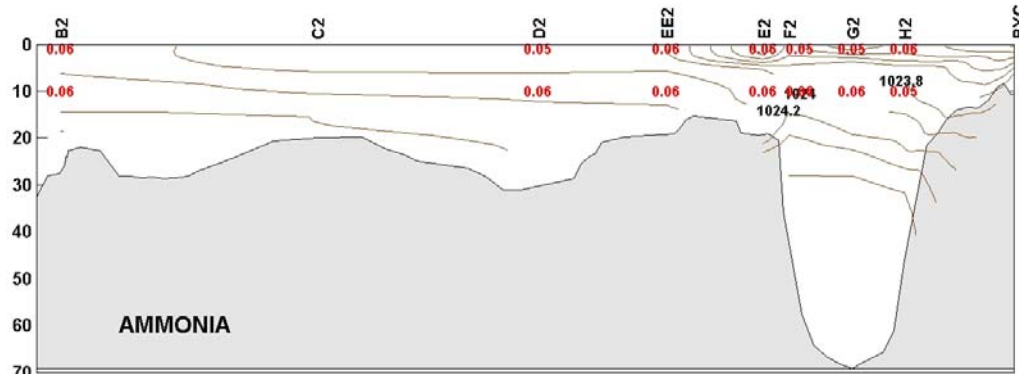
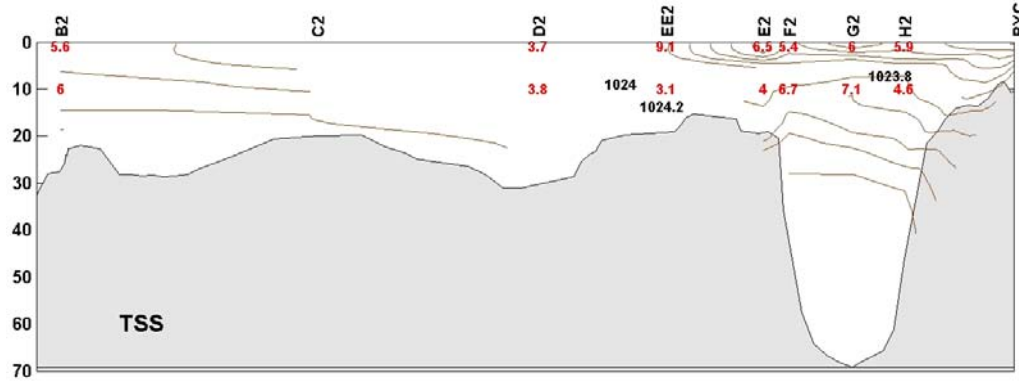


Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



DO in mg/L      Chlorophyll in mg/m<sup>3</sup>

CHEMISTRY



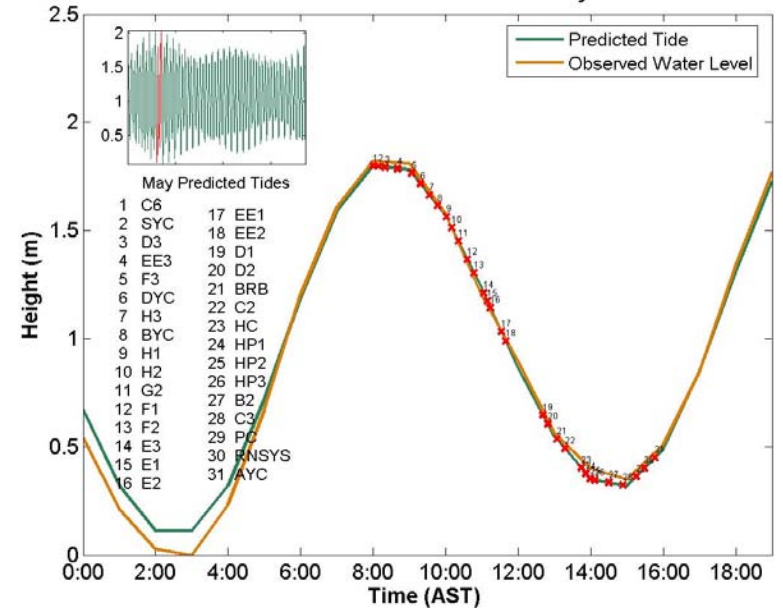
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Potential Density in  $\text{kg/m}^3$

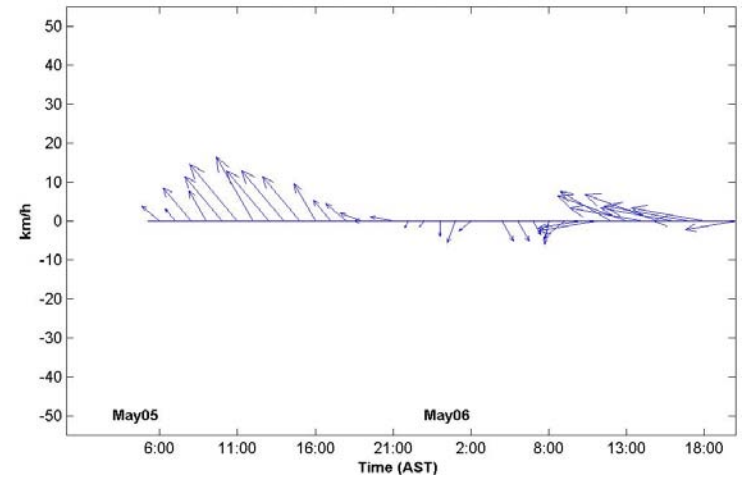
Ammonia in  $\text{mg/L}$

TSS in  $\text{mg/L}$

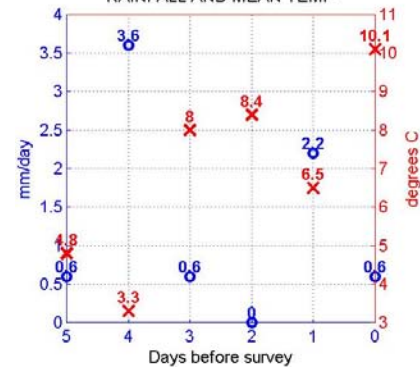
Halifax Harbour Water Level - May06



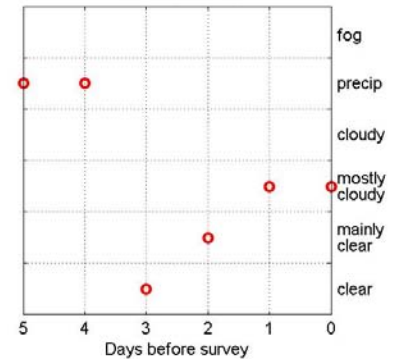
Wind Speed and Direction at Shearwater Jetty



RAINFALL AND MEAN TEMP



CLOUD COVER

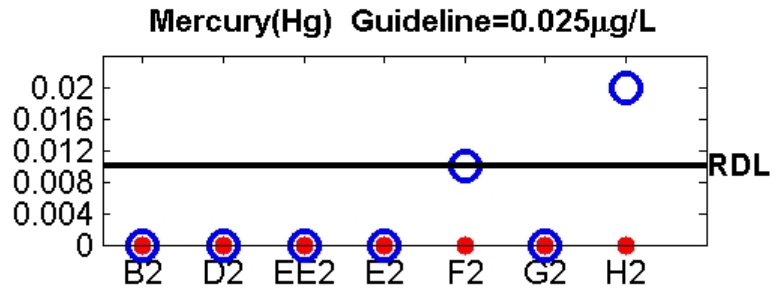
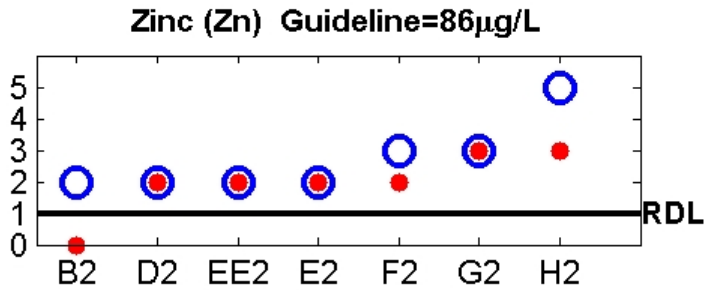
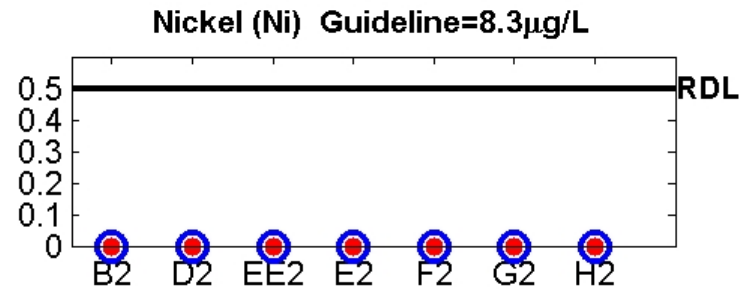
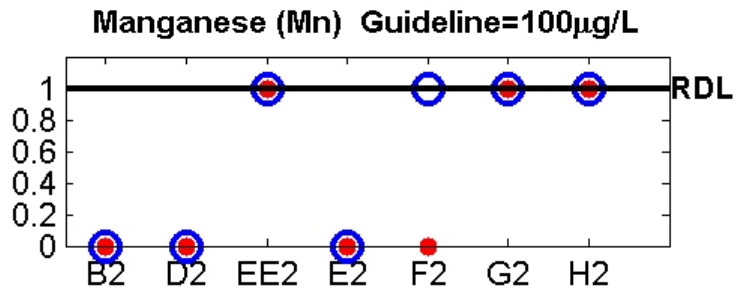
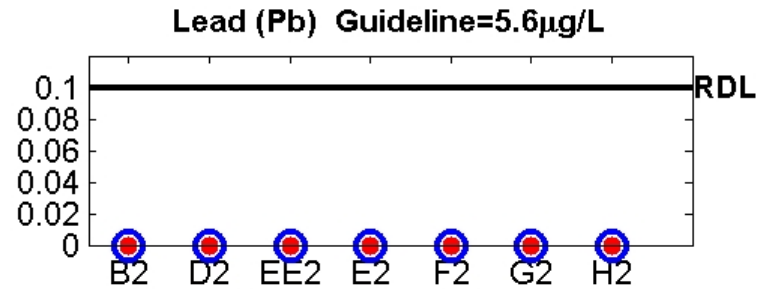
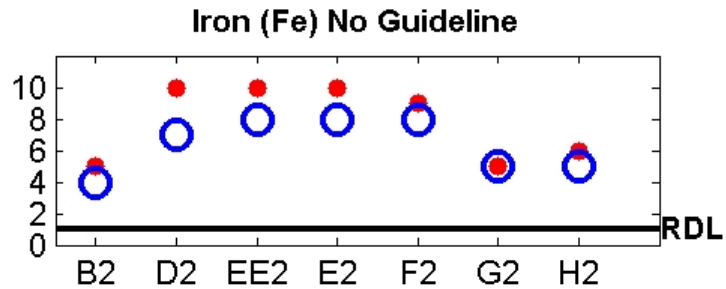
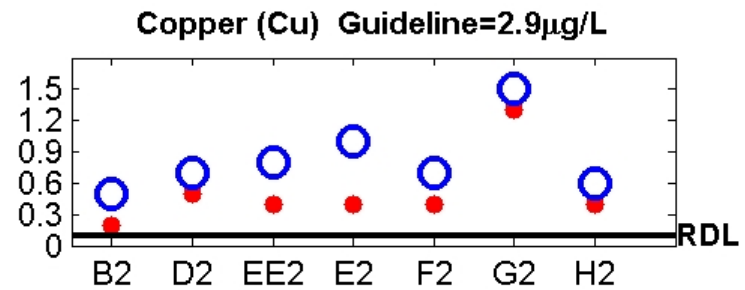
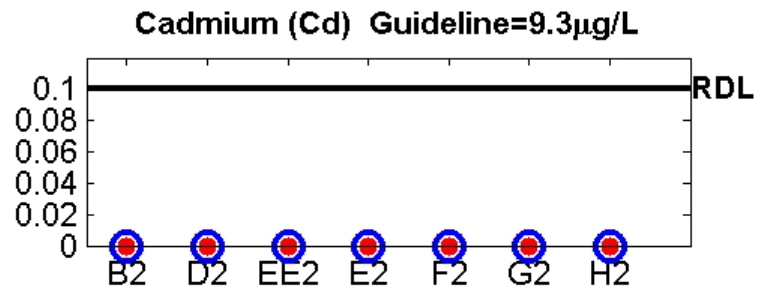


Potential Density in  $\text{kg/m}^3$

Ammonia in  $\text{mg/L}$

TSS in  $\text{mg/L}$





**LEGEND**

- = Ten Metre Sample
- = One Metre Sample
- RDL = Reportable Detection Limit

# HRM Water Quality Monitoring

## Fecal Coliform Summary – May 06, 2008

