

# Halifax Harbour Water Quality Monitoring Project

## Survey Summary #140

**Survey Date:** 10 October 2007  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report140\_071010.doc  
**Data File:** HHWQMP\_data140\_071010.xls

**Data Return:**  
 Profile: 97%  
 Bacteria: 100%  
 Chemical: 100%  
**Overall: 99%**

**Sample Notes:**

PC was sampled at an alternate site (44.6118N, 63.5684W) due to swell.  
 The CTD was mistakenly not turned on for the CTD cast at C3. The data is missing.  
 A CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W).  
 An extraordinary 1m sample was taken at H3 (SS1) the analysis is as follows:

Parameter	Units	Values	Parameter	Units	Values
Fecal Coliform	cfu/100ml	15	Iron	ug/L	9
Ammonia	mg/L	0.05	Manganese	ug/L	3
TSS	mg/L	29	Nickel	ug/L	1.4
Copper	ug/L	2.9	Zinc	ug/L	10

**QA/QC samples:**

Chemical Analysis		B2 - 1m	
Detectable Parameter	Units	reference sample	QA/QC
Ammonia (as N)	mg/L	2.0	0.08
Total Suspended Solids	mg/L	1.4	2
Copper	ug/L	0.5	0.6
Iron	ug/L	3	66
Nickel	ug/L	<0.5	0.6
Zinc	ug/L	3	49

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

Site	C3-1m	BYC-1m	DYC-10m	B2-1m
Reference	1	31	45	0
QA/QC	8	77	77	6

**Comments:**

**General:** The weather has been dry and the Sackville River is at near annual low levels (0.5 m). The wind was light all day. The stratification, particularly in temperature, is relatively weak and very uniform everywhere. The surface temperature is about 12° C everywhere. The vertical temperature difference in the top 10m ranges from zero to 0.8° C. The coliform values are high in the Inner Harbour, the southern NW Arm, Eastern Passage and section HP, particularly in the near surface samples. There are also high values in many of the 10m samples in the Basin. This pattern in the Basin may reflect a change in the sewage diversion to Fairview Cove. There is no particular evidence of the Fairview Cove discharge either in the salinity or bacteria data. Overall, the flushing appears to be relatively low, though there is not visibly turbid water except as noted below at H2, H3 and F3.

**Fluorescence:** The fluorescence values are somewhat lower everywhere than last survey, except near-surface at H3 (75 mg/ m<sup>3</sup>) and H2 (31 mg/m<sup>3</sup>). This corresponds to very low secchi disk depths (2.0 – 2.5 m) and visual observations of very turbid brown surface water. Turbidity was also observed at F3 without high fluorescence.

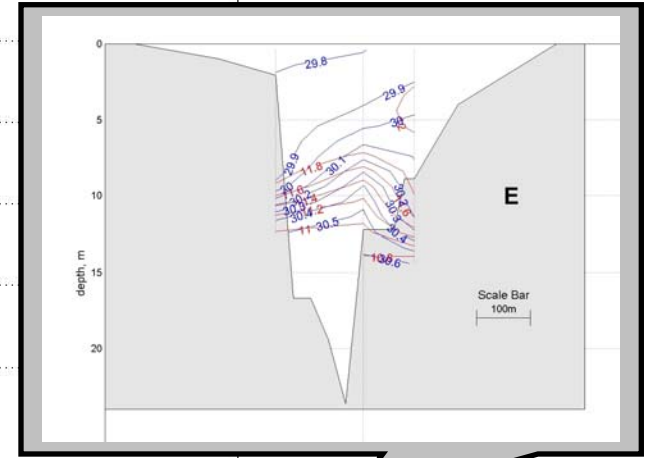
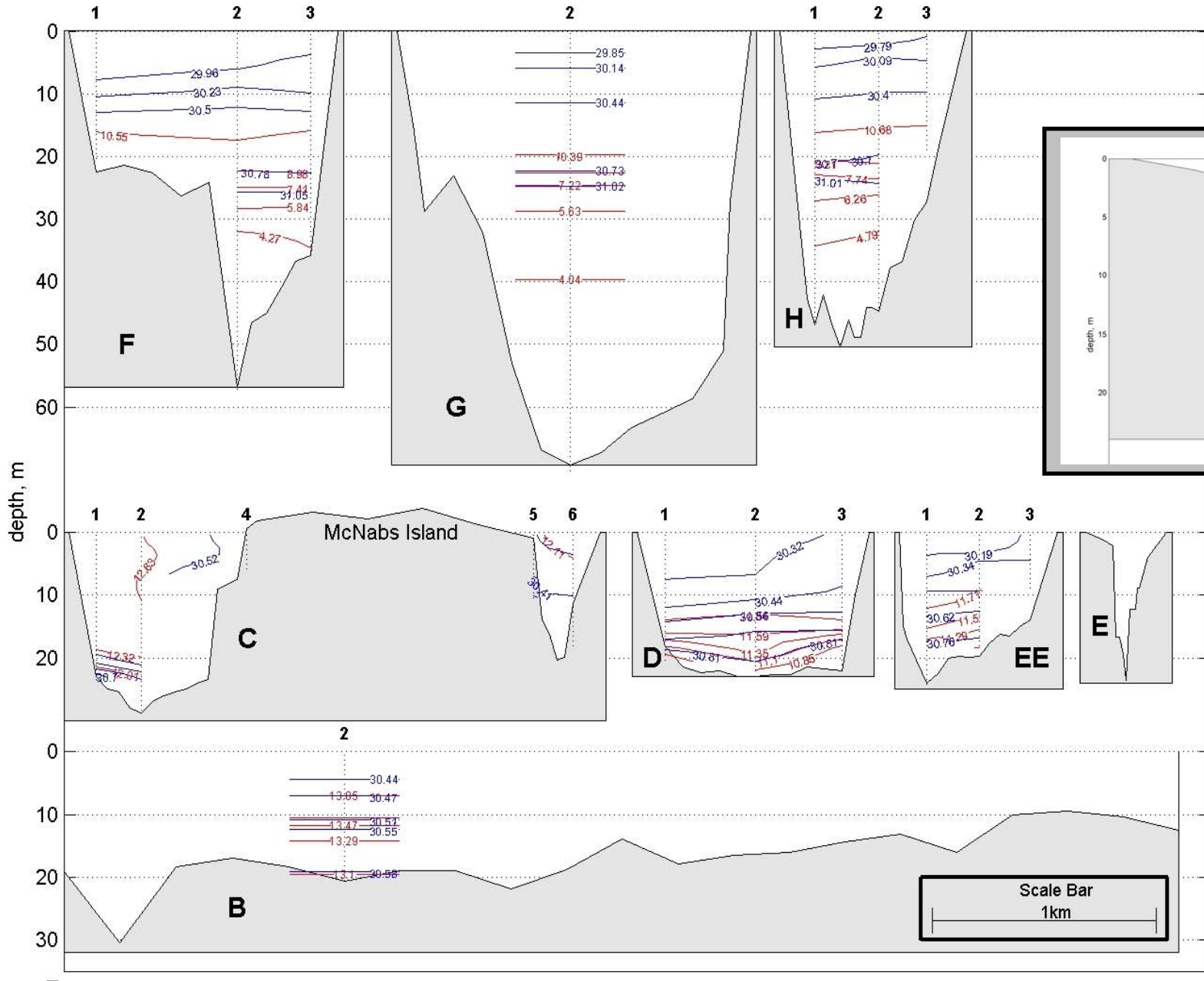
**TSS:** The TSS values at H3 (29 mg/L) and H2 (12 mg/L) are significantly high. Otherwise, the values are a bit high (mean approximately 4.6 mg/L).

**Ammonia:** The ammonia values are high with an average value is of 0.30 mg/L. More typical values are near the 0.05 mg/L detection limit. The highest value is 2 mg/L, which compares with the QAQC value of 0.08 at the same site (B2).

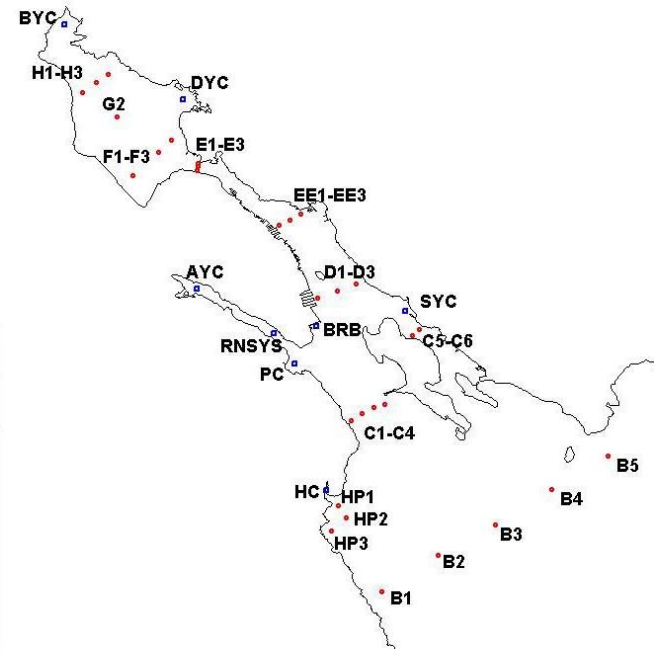
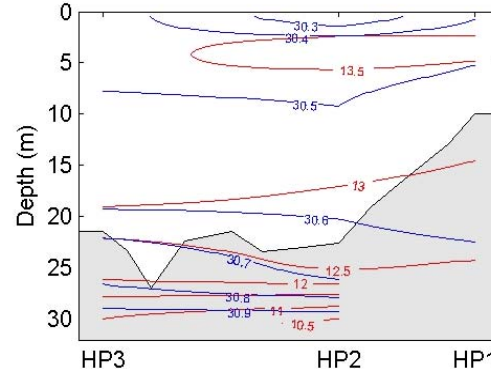
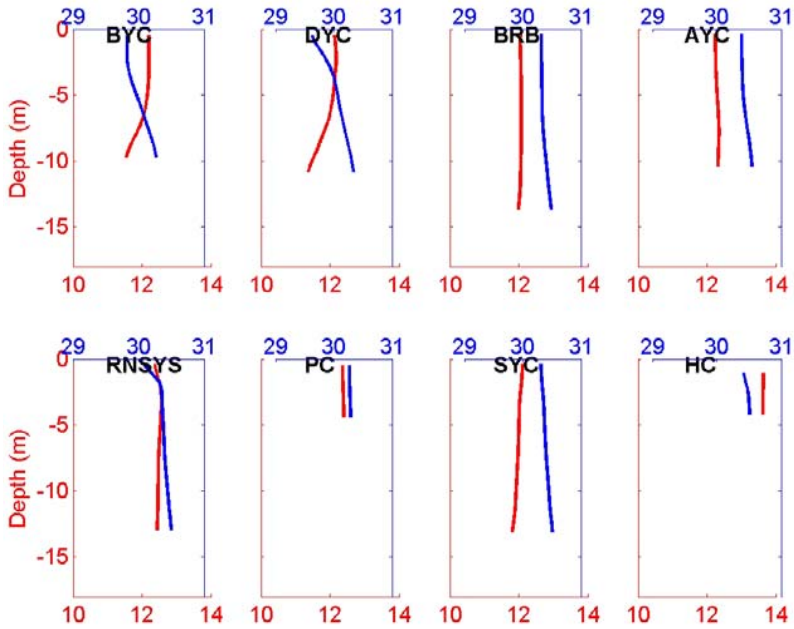
**Dissolved Oxygen:** The DO levels have dropped slightly from last survey. The surface values vary from about 8.0 mg/L to 9.0 mg/L, and are lowest in the Inner Harbour. Going south from the Narrows, the bottom water increases from about 6.5 to 8.0 mg/L (B2). In the Basin the water below 6-8 m drops below the 7.0 mg/L Class SB guideline, as does the water at the head and bottom of the NW Arm. The CTD measured DO value at the LOBO buoy is 7.9 mg/L compared to 6.9 mg/L measured by the buoy. The DO data is not ground-truthed, however this data was obtained with a recently factory calibrated instrument. (see DO discussion in QR#1).

**Metals:** In the H3 sample, manganese (3 µg/L), zinc (10 µg/L), nickel (1.4 µg/L) and copper (2.9 µg/L) were all the highest observed this survey. Of these Copper was the only one at, or above, the water quality guideline (2.9 µg/L).

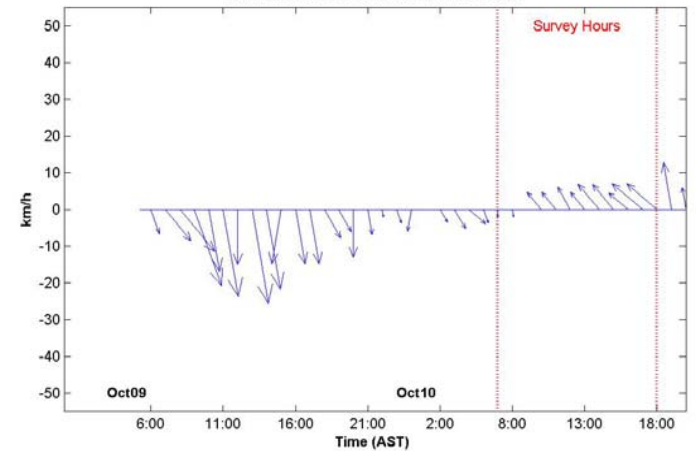
**QA/QC4:** The QA/QC values for the chemical analysis deviate quite widely from the reference sample. The reason is unclear.



# Yacht Clubs

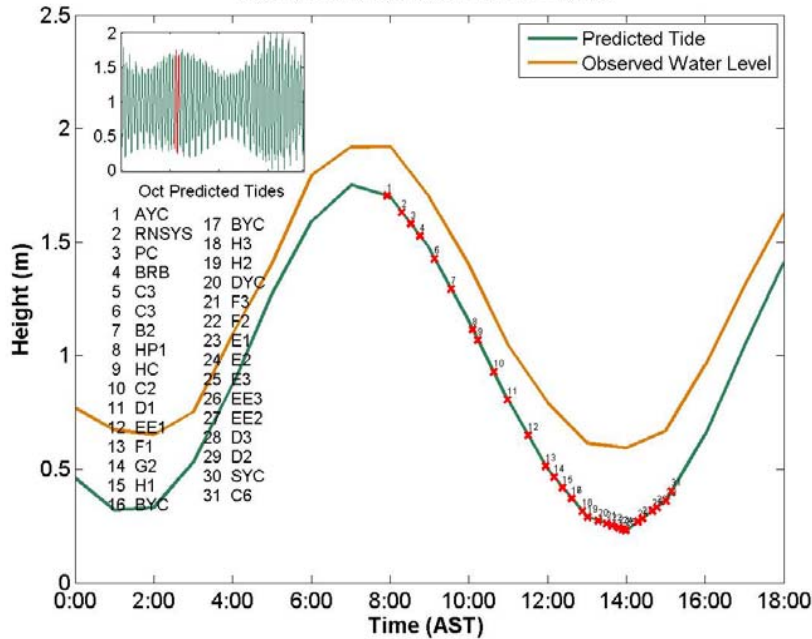


Wind Speed and Direction at Shearwater Jetty



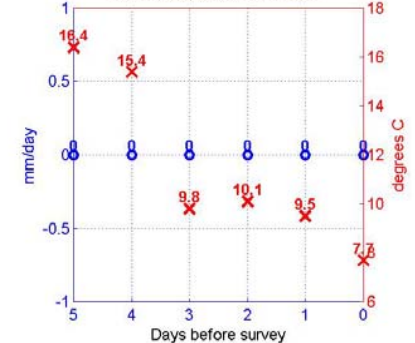
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport

Halifax Harbour Water Level - Oct10

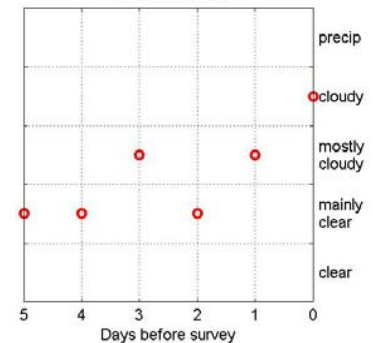


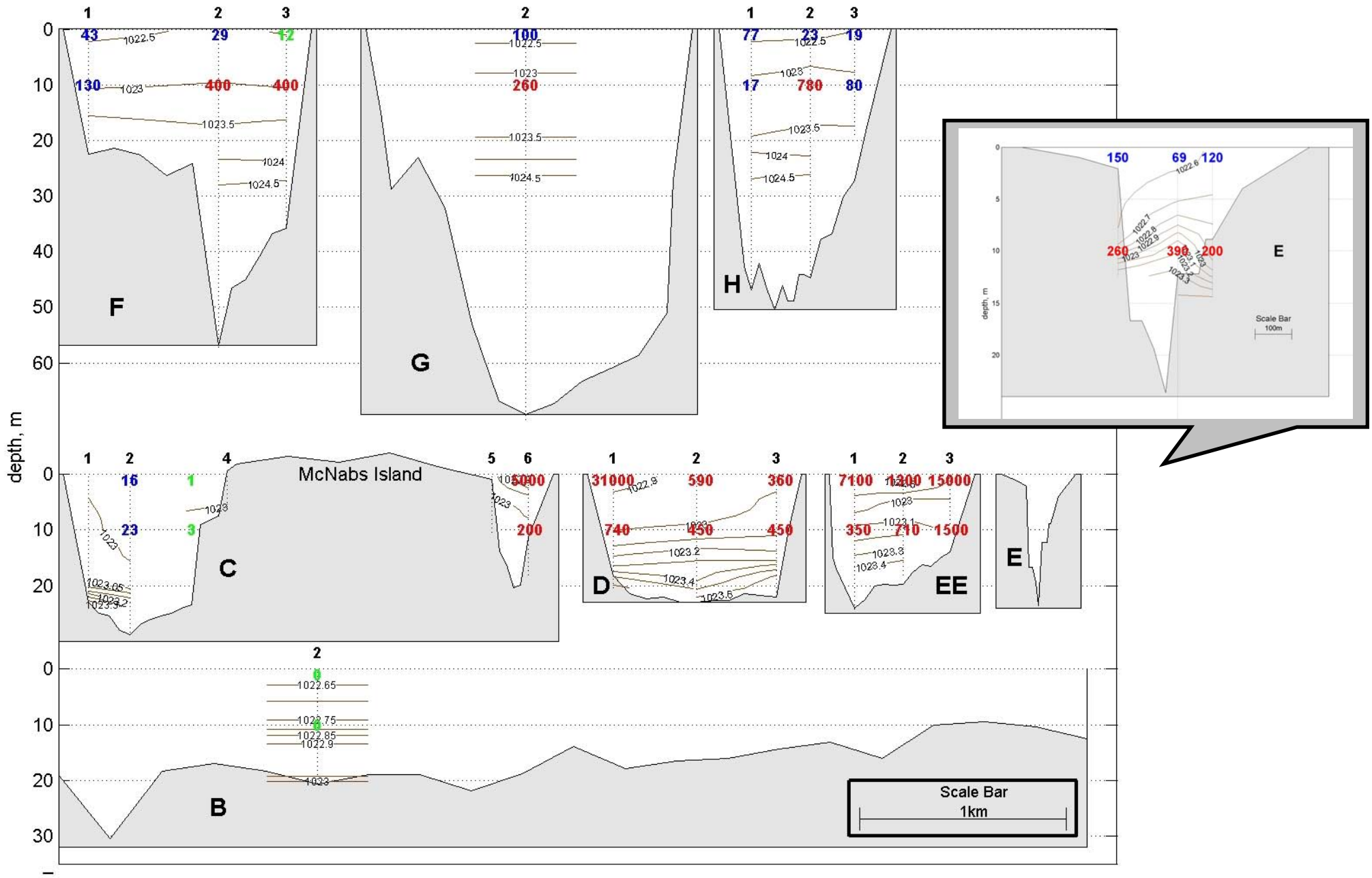
Salinity in PSU      Temperature in °C

RAINFALL AND MEAN TEMP

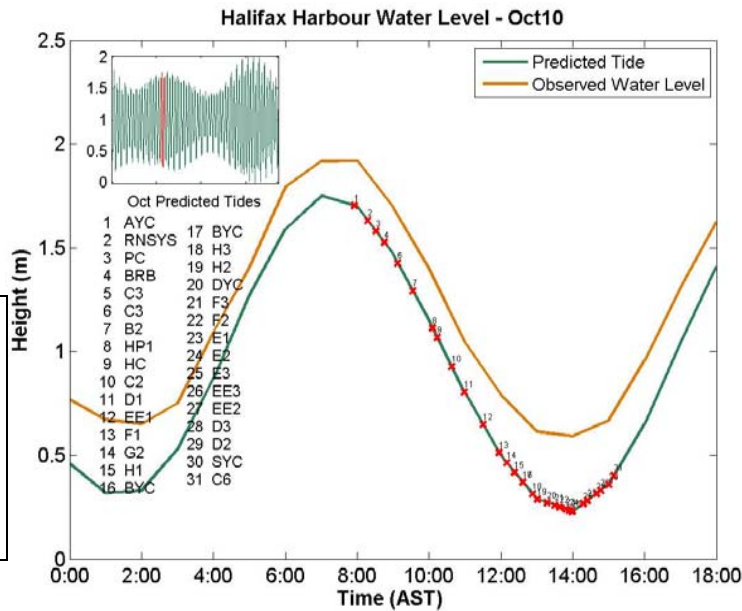
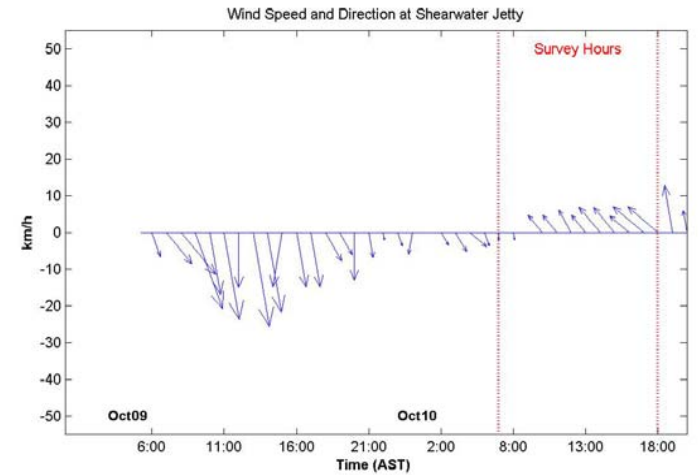
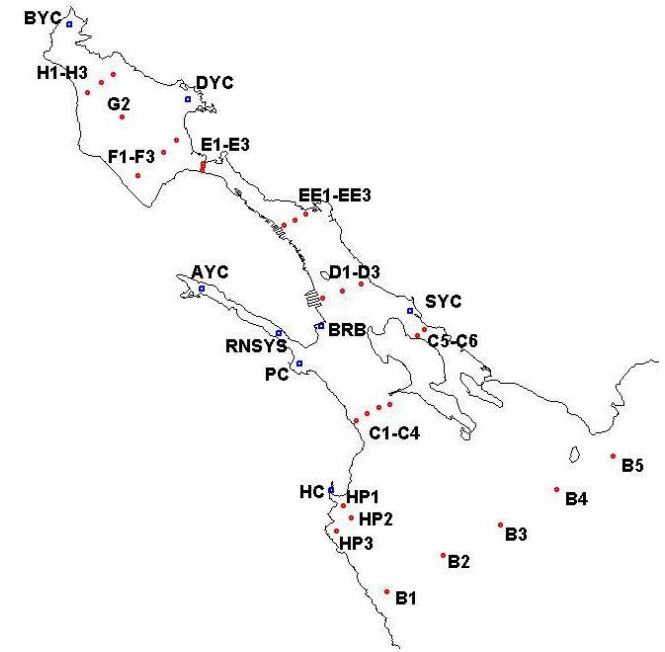
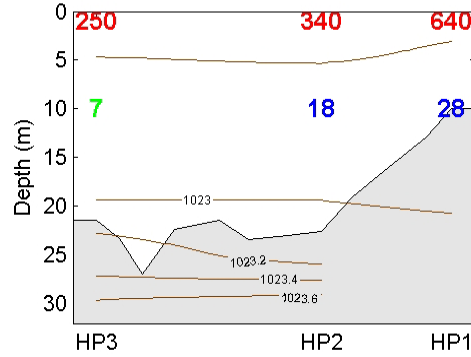
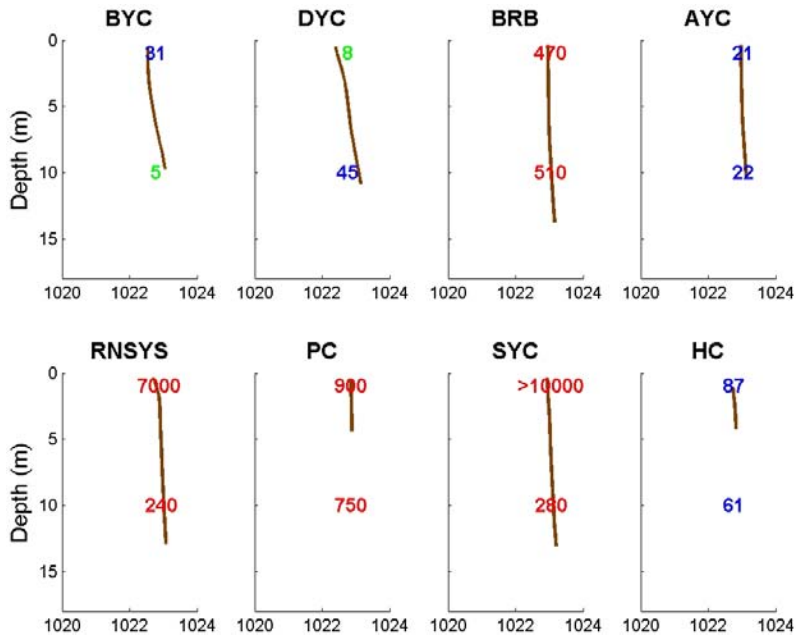


CLOUD COVER





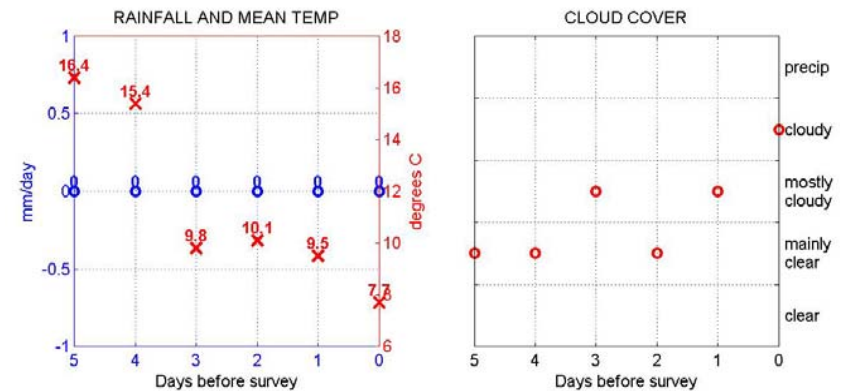
# Yacht Clubs



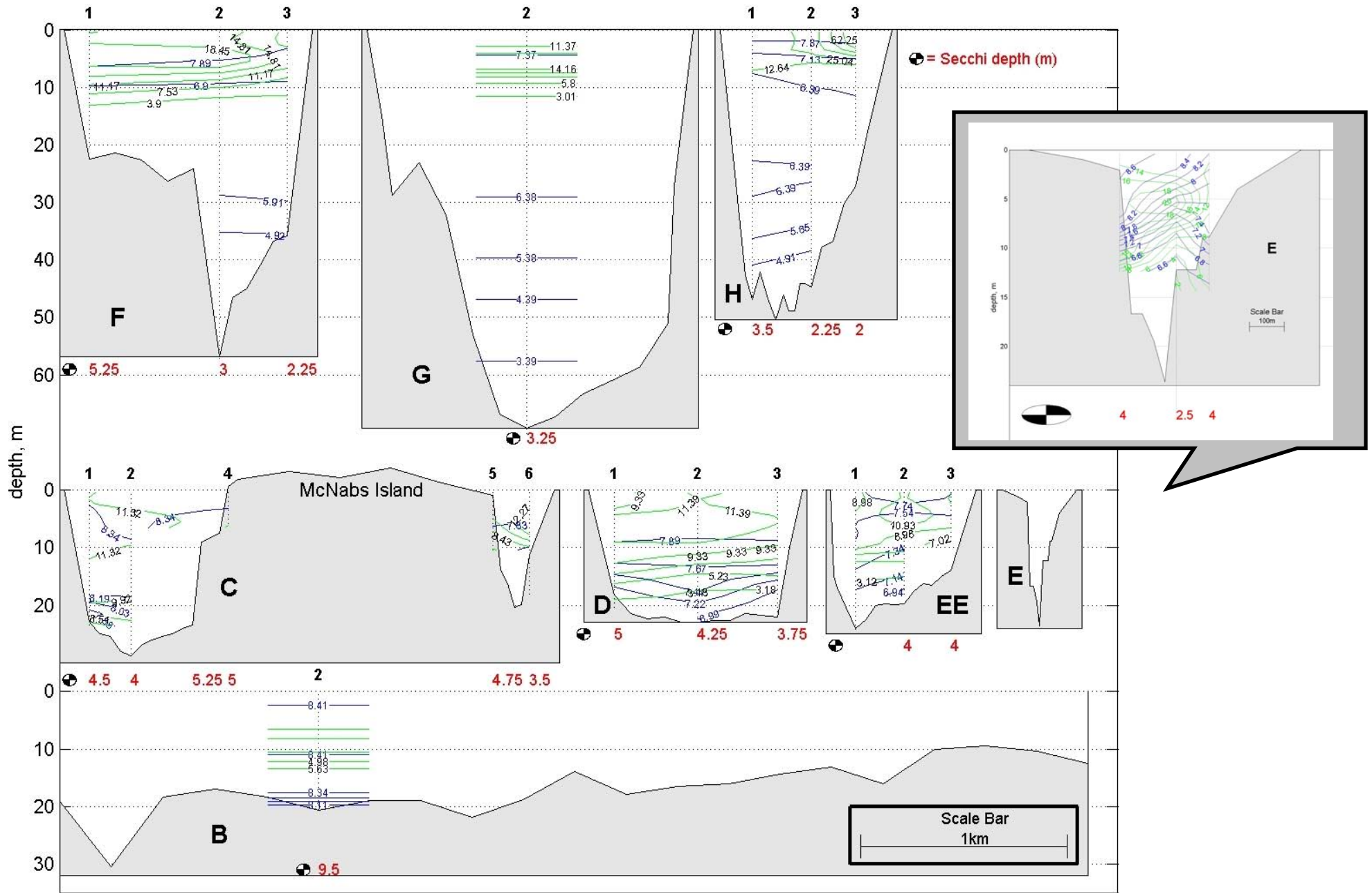
Rainfall and temperature data collected at Shearwater Autoport.  
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Potential Density in  $\text{kg/m}^3$

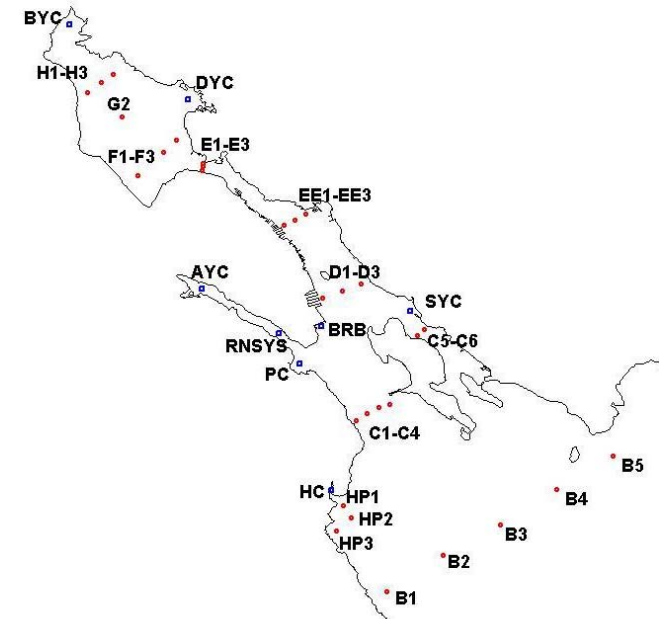
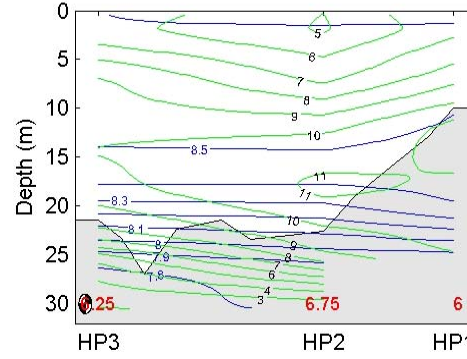
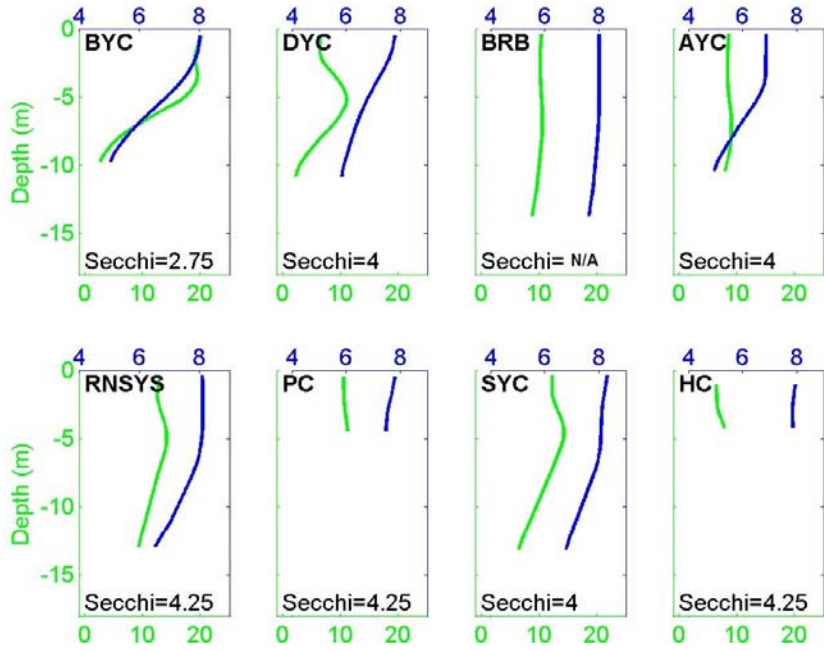
Fecal coliform: **above swimming limit (200 cfu/100mL)**  
**above shellfish limit (14 cfu/100mL)**  
below limits



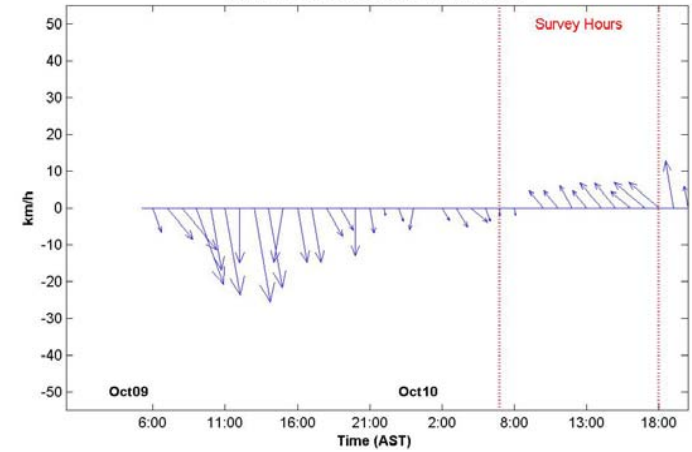




# Yacht Clubs

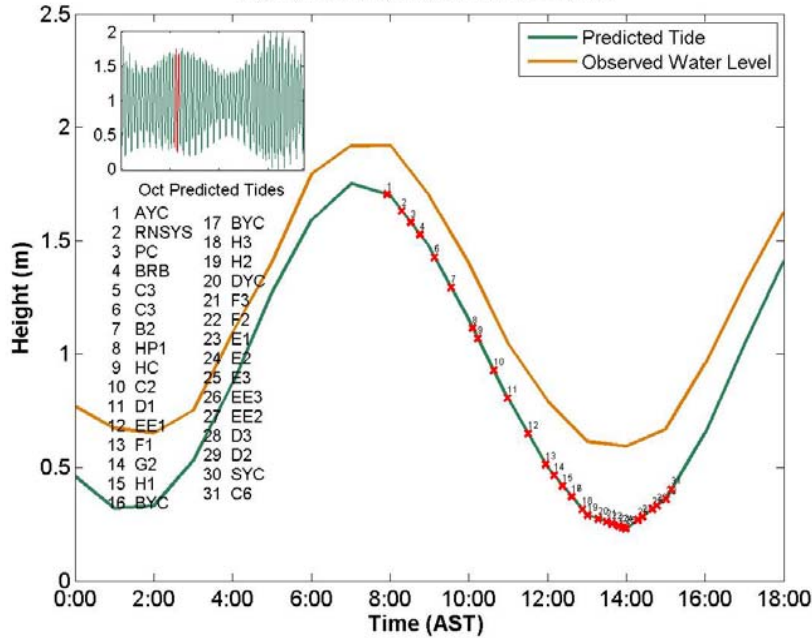


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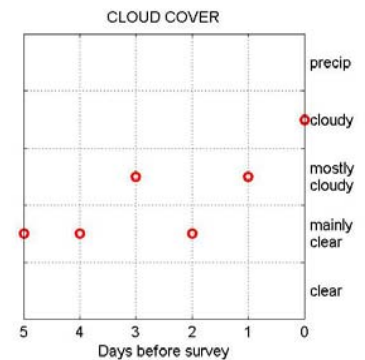
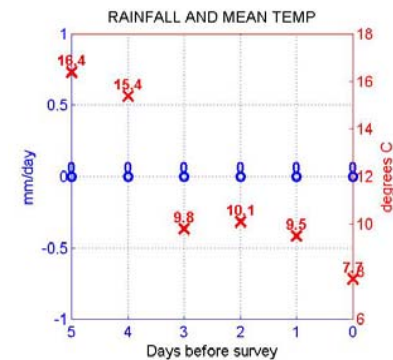
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport

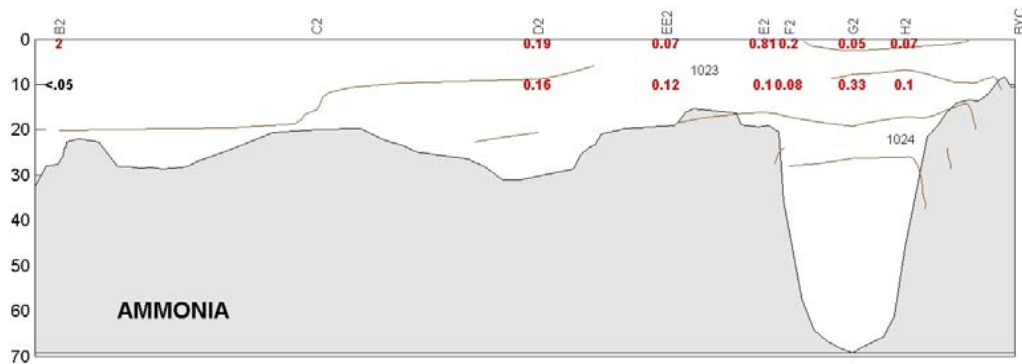
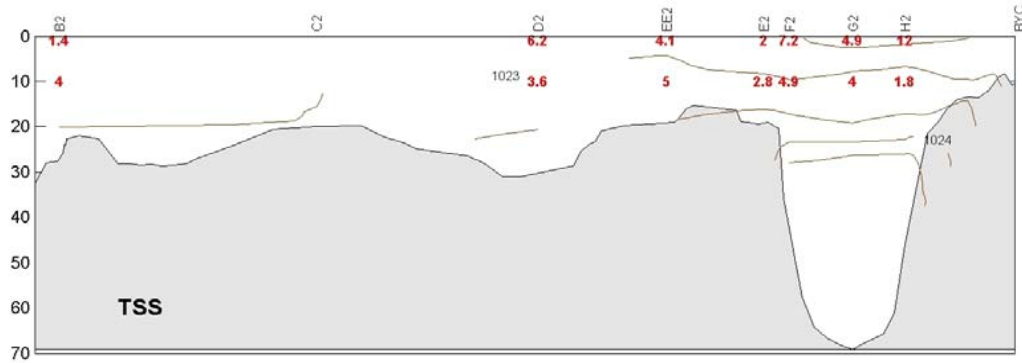
Halifax Harbour Water Level - Oct10



DO in mg/L

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





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

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

Ammonia in  $\text{mg/L}$

TSS in  $\text{mg/L}$

Halifax Harbour Water Level - Oct10

