Halifax Harbour Water Quality Monitoring Project
Survey Summary #194

Survey Date: 28 September 2010
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report194_100928.doc
Data File: HHWQMP_data194_100928.xls
Data Return:

Chemical:	100%
Bacteria:	100%
Profile:	100%
Overall:	**100 %**

Sample Notes:

A supplementary CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 1546 local time (ADT).

QA/QC samples:

Chemical Analysis

		E2-1m	
Detectable Parameter	**Units**	**Reference Sample**	**QA/QC**
Ammonia Nitrogen	mg/L	0	0.09
Total Suspended Solids	mg/L	3.5	4.3
Cobalt	ug/L	0	0
Copper	ug/L	0.5	0.5
Iron	ug/L	2	2
Manganese	ug/L	0	0
Mercury	ug/L	0	0
Zinc	ug/L	2	3

0 = Not Detected

Bacteria (cells/100ml)

	Site	C6-10m	DYC-1m	PC-10m	E2-1m
Fecal Coliform	**Reference**	61	0	0	23
	QA/QC	130	1	0	43
Enterococci	**Reference**	6	0	0	3
	QA/QC	2	0	0	9

0 = Not Detected

Comments:

General: During the days preceding the survey and during the survey there has been some precipitation, with sustained wind from the southeast and the south. This has resulted in a mixed layer extending down to approximately 10m, with temperatures between 11 and 15 °C down to 10m water depth at most sites. There is relatively more stratification in the Bedford Basin because of the supply of colder and more saline water that is subjected to tidal mixing at the sill near the Narrows. The surface water density maximum is found in section D, with a gradient toward the Bedford Basin, and a slight gradient southward through the harbour. The bacteria levels are generally low, with a few values in excess of shellfishing limits. Swimming limits for fecal coliform are exceeded in the 1m depth samples from stations HC and C6.

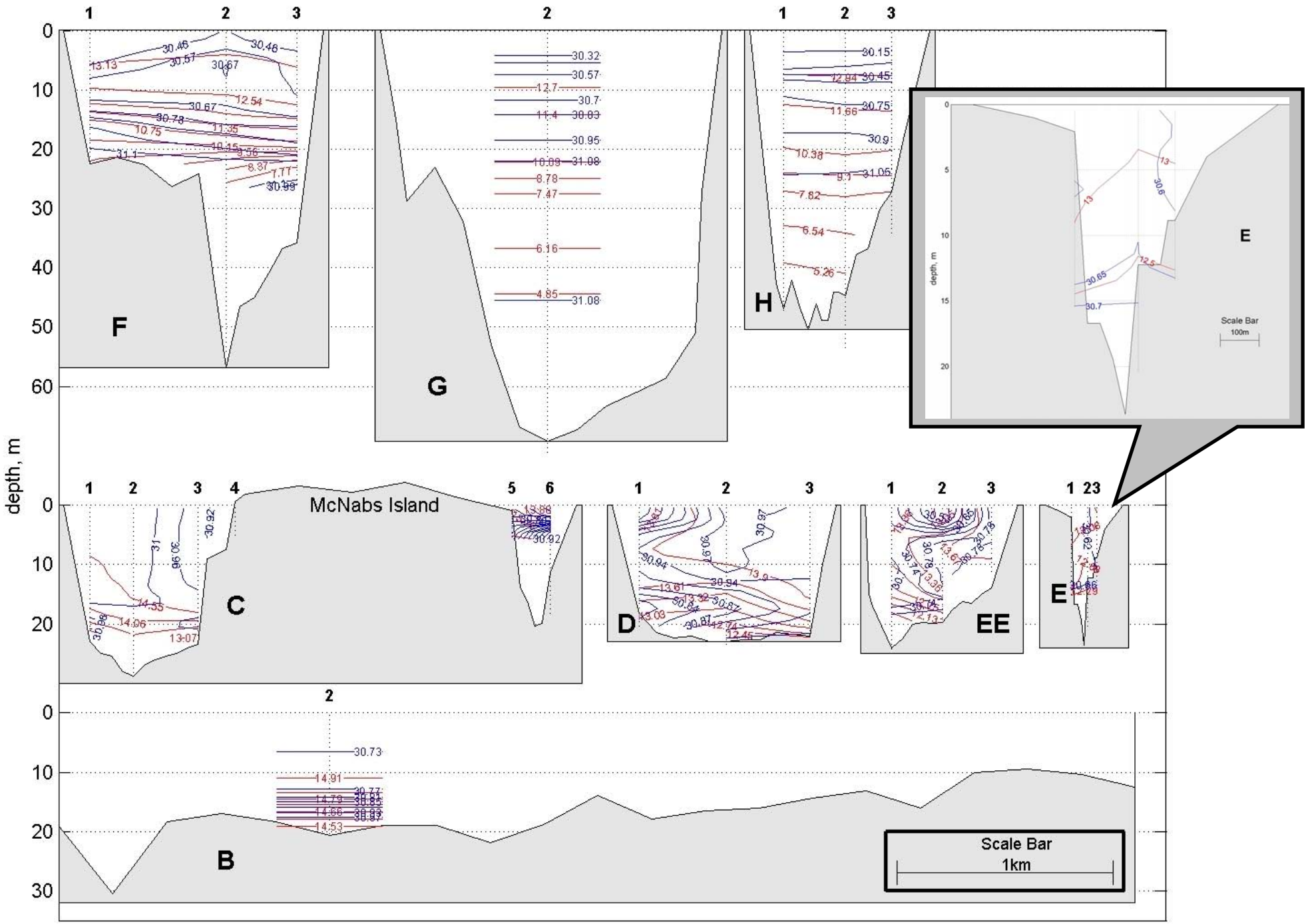
Fluorescence: The fluorescence levels indicate an increase in phytoplankton activity in the Inner Harbour, the Basin and the Northwest Arm. The profile maximum values in these areas occur in the range of 0-10m, and are generally above 20 mg/m^3. The maximum value of 65 mg/m^3 was measured near the surface at BYC.

TSS: The average TSS levels are moderate (3.5 mg/L). The highest value (6.6 mg/L) is in the Basin (H2- 1m) but there is no clear spatial pattern.

Ammonia: The ammonia-nitrogen levels are moderate with an average value of about 0.06 mg/L. The ammonia levels are elevated in the Inner Harbour, with the highest values of 0.29 mg/L and 0.17 mg/L found at 1m and 10m respectively at station D2. The ammonia concentrations in the Outer Harbour and the Basin were mostly below the 0.05 mg/L detection limit.

Metals: There were no guideline exceedances for metals, and all metals exhibit typical levels below the guidelines.

Dissolved Oxygen: The profile measurements indicate that the dissolved oxygen levels are moderate to high (6-10 mg/L) near the surface at all sites. The DO concentrations decrease below 6 mg/L in depths greater than 10m in the Basin, possibly due to the increase in phytoplankton activity. The lowest value of 2 mg/L was measured at the bottom of the Bedford Basin, at 72m depth at the G2 station. The BBPMP values (comparable to site G2) from September 24 are consistent with the survey observations.


depth, m
F
G
H
E
depth, m
Scale Bar
100m
McNabs Island
C
D
EE
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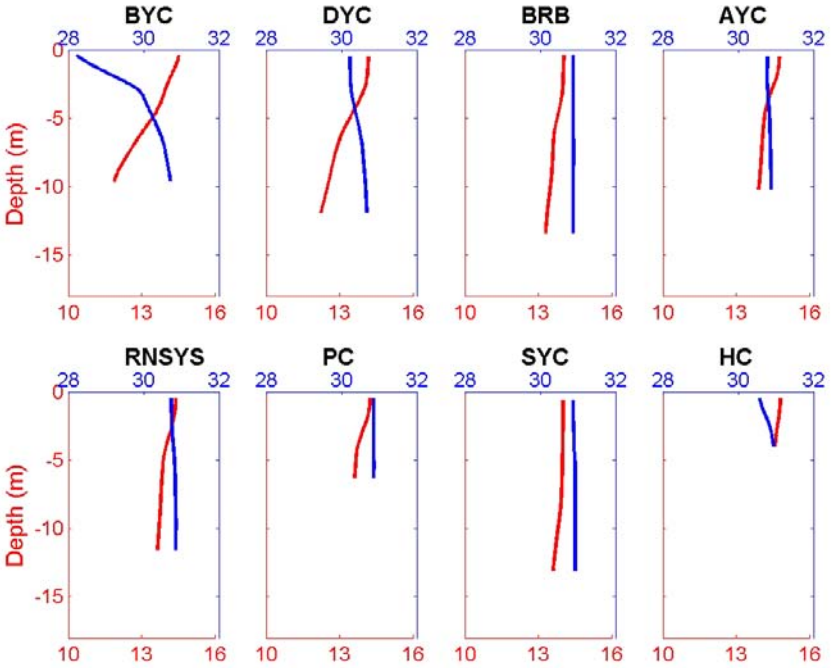
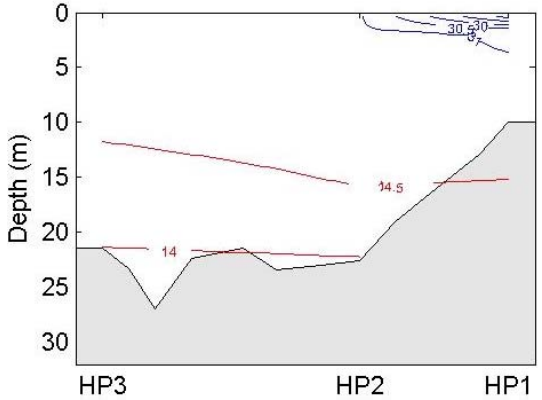
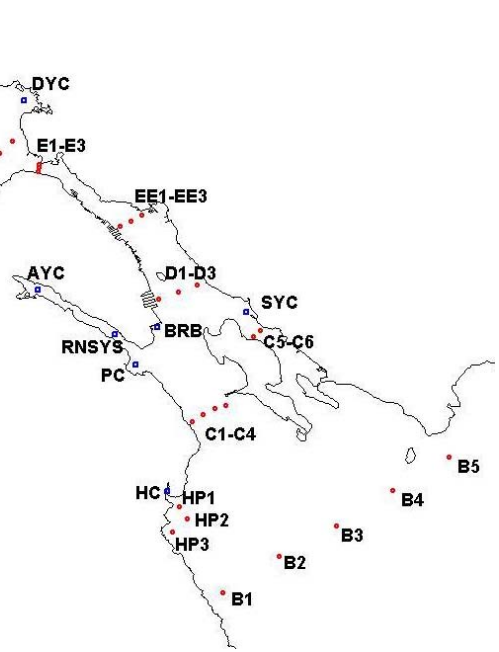
B
Scale Bar
1km

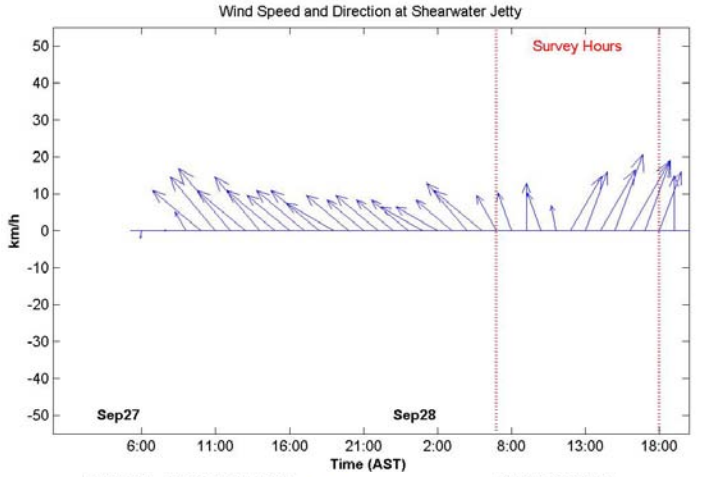
Yacht Clubs

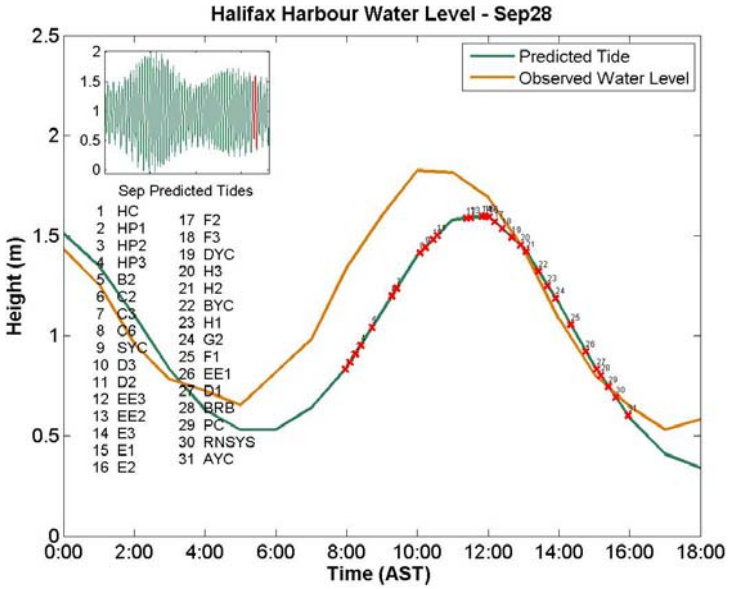
Salinity in PSU **Temperature in ^{o}C**

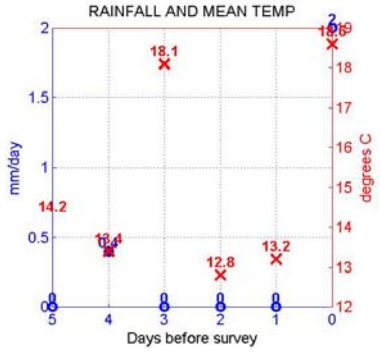


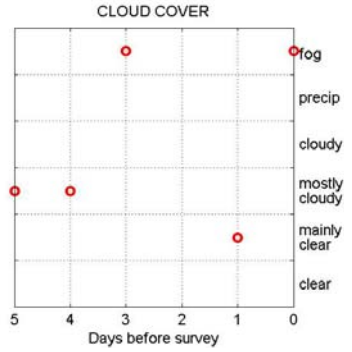






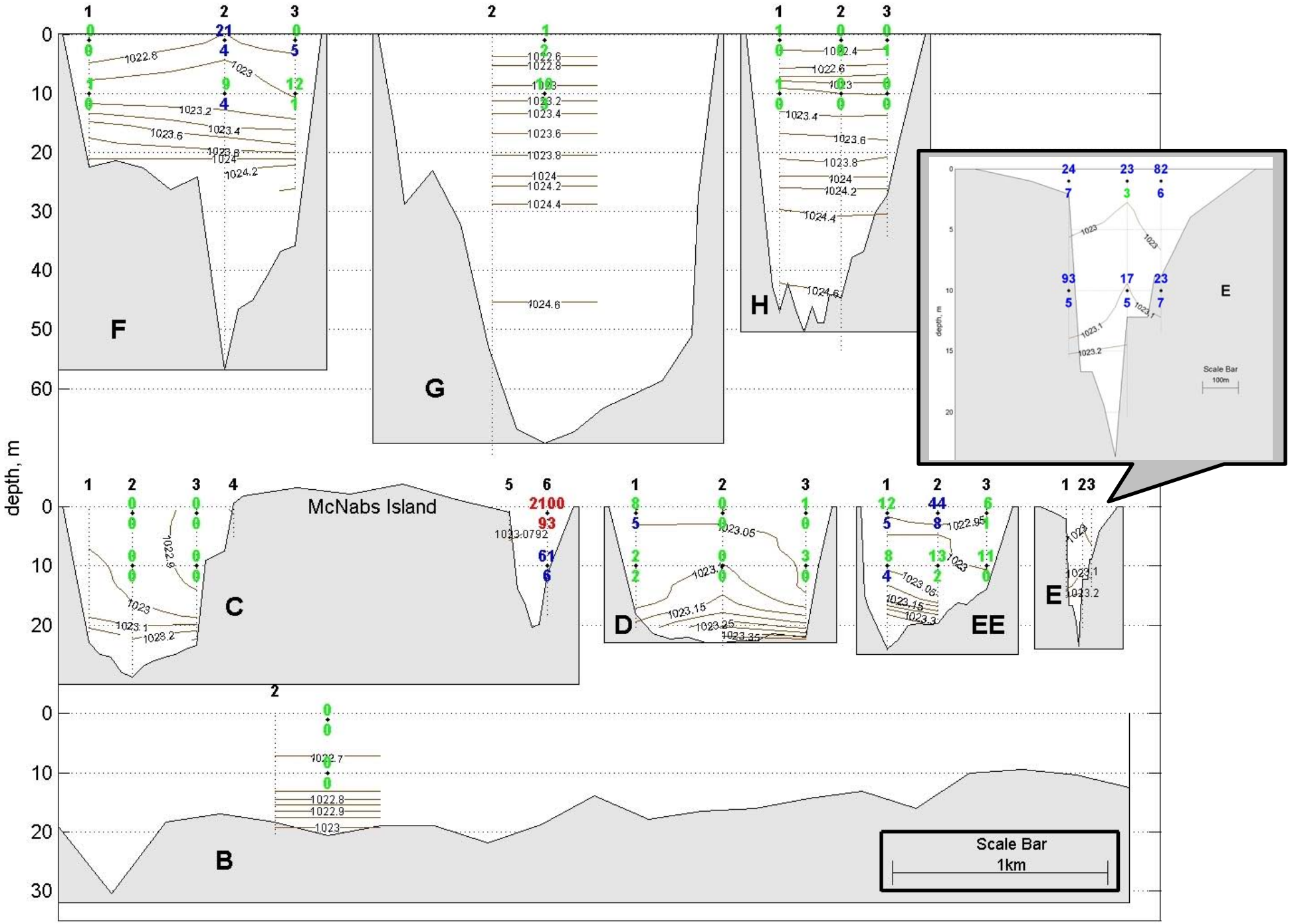






Rainfall and temperature data collected at Shearwater RCS.

Cloud cover data collected at Shearwater Airport


depth, m
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C
D
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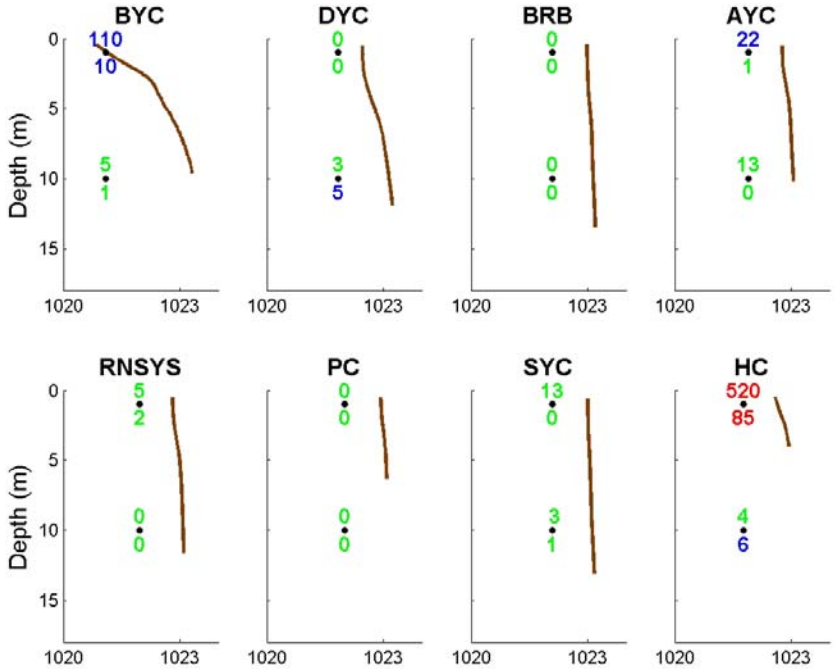
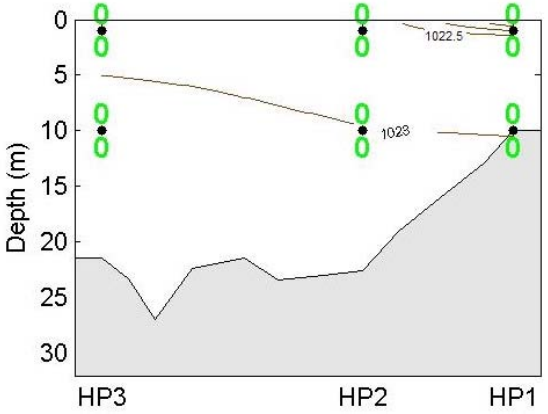
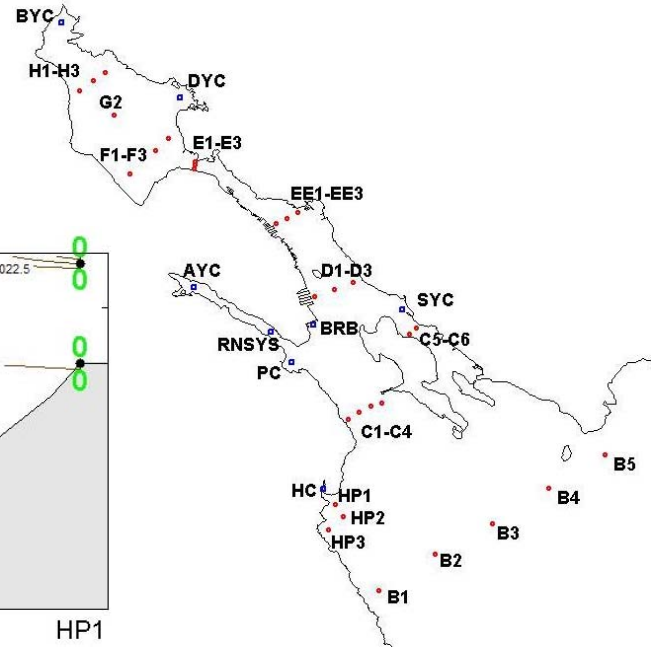
B
McNabs Island
Scale Bar
1km
Scale Bar
100m

Yacht Clubs

Potential Density in kg/m^3







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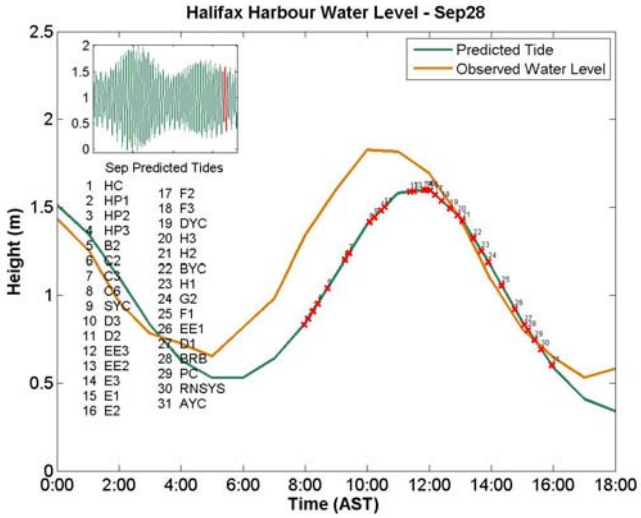
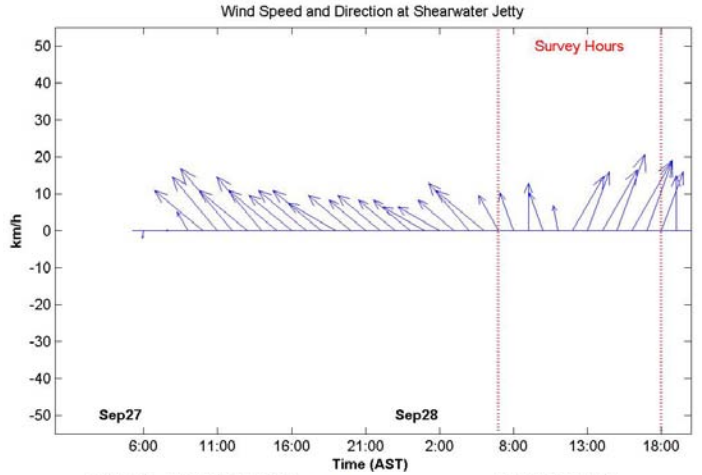
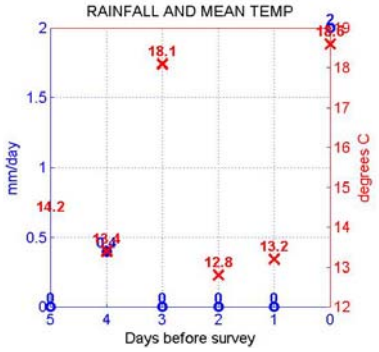
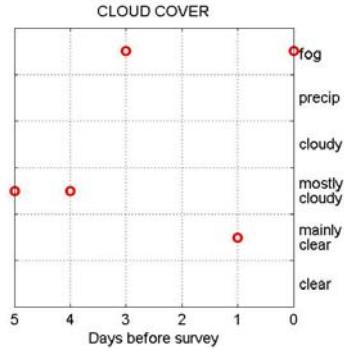
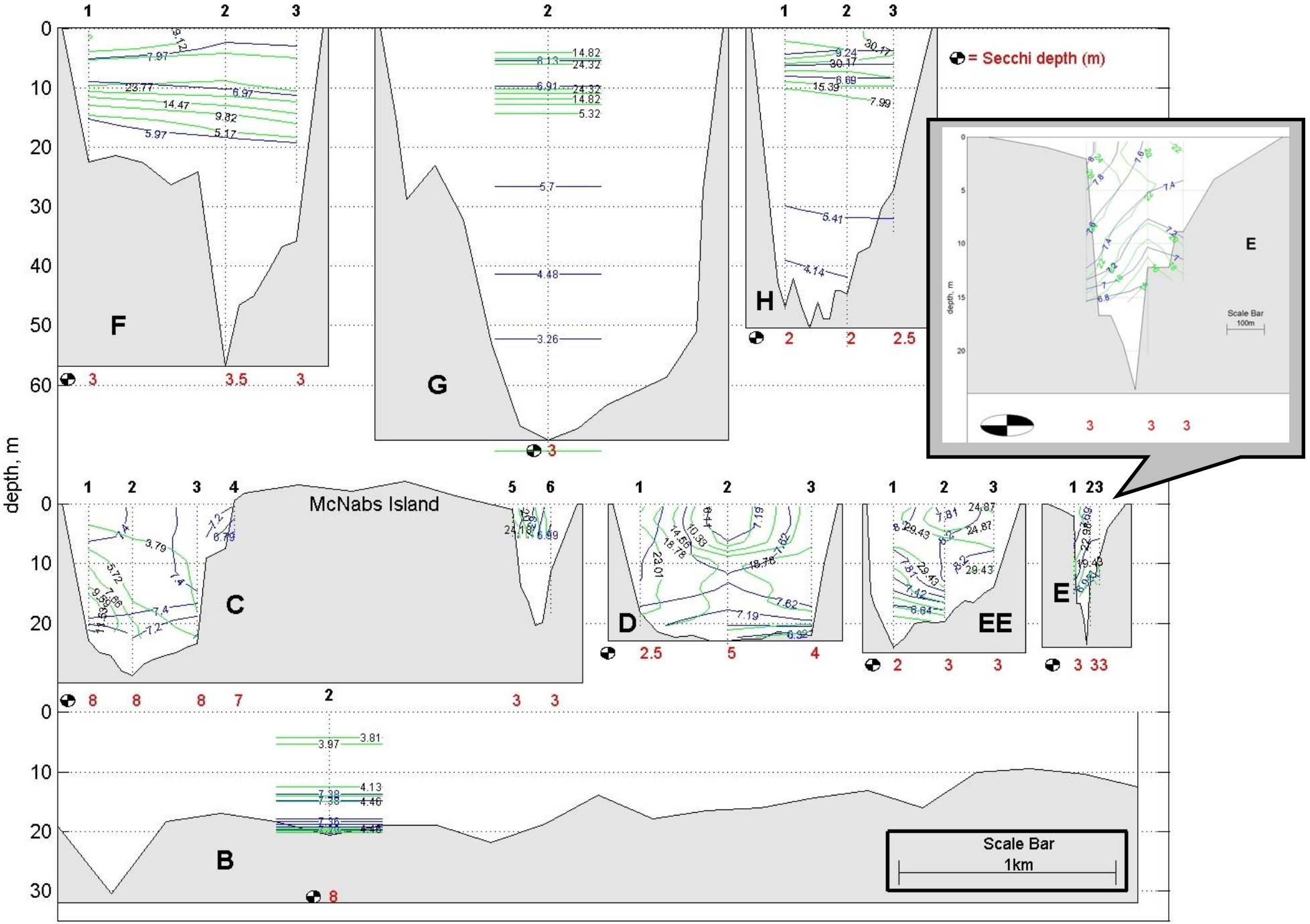








	Above swimming limit	Above shellfish limit	Below limits
Fecal Coliform	200 MPN/100mL	14 MPN/100mL	
●	●	●	
Enterococci	35 CFU/100mL	4 CFU/100mL	


depth, m
= Secchi depth (m)
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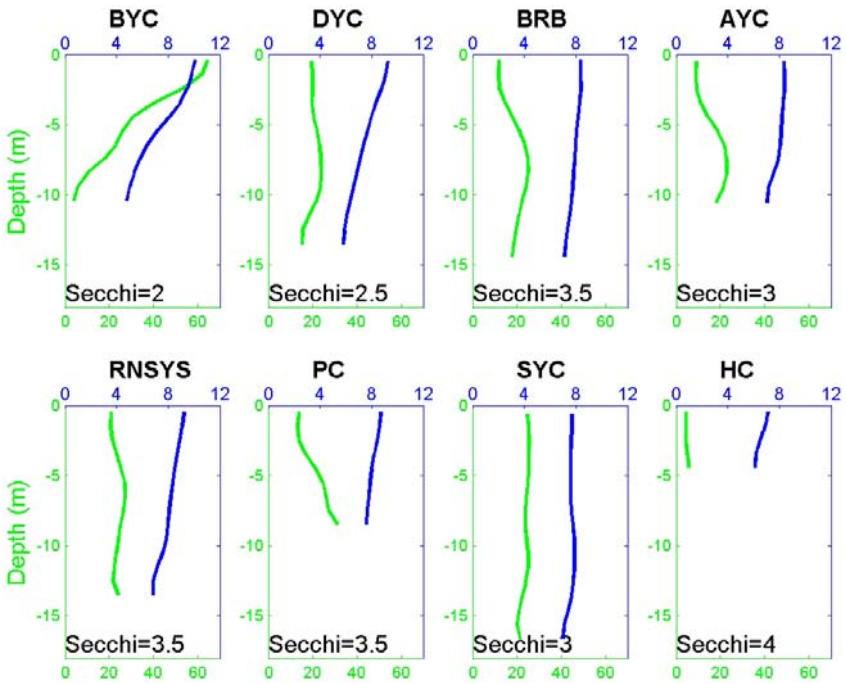
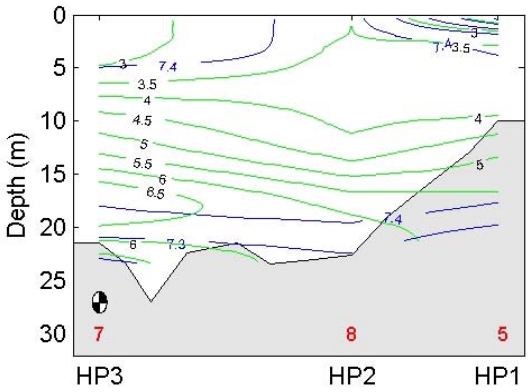
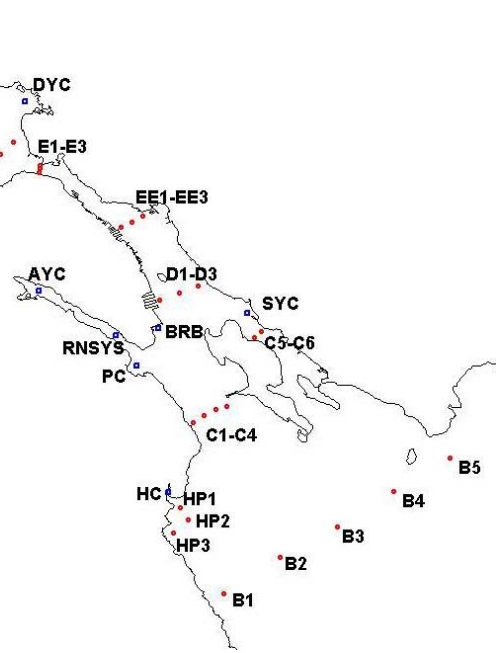
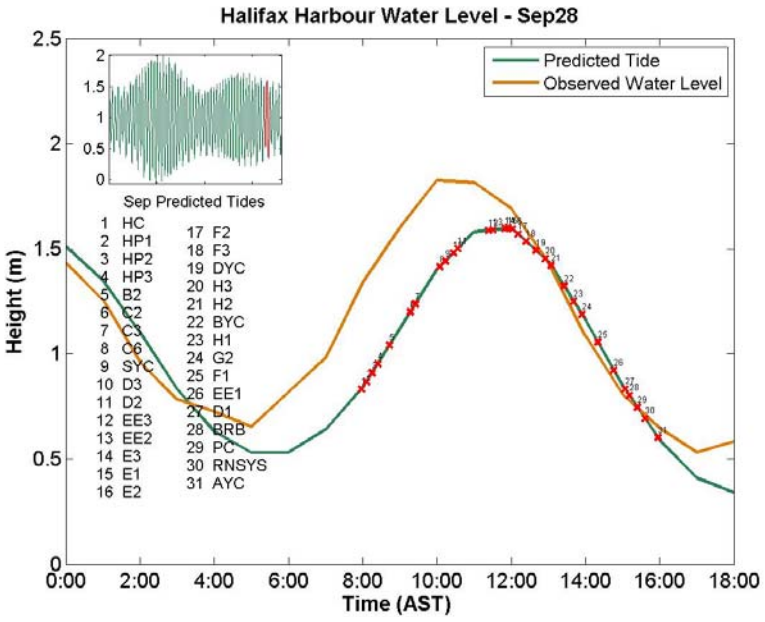
Yacht Clubs

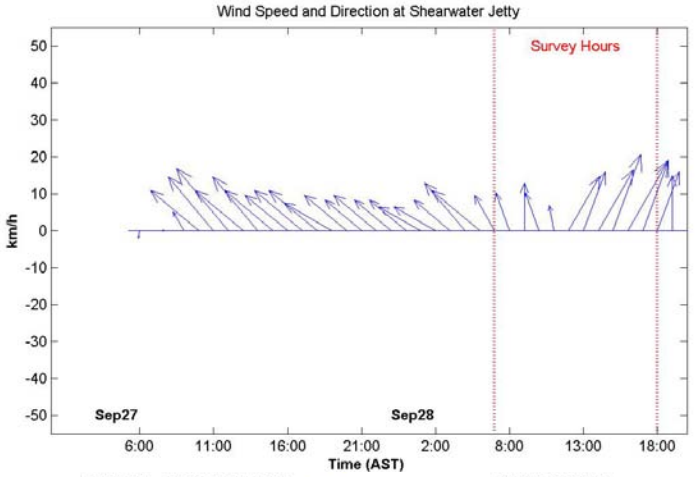
DO in mg/L **Chlorophyll in mg/m^3**

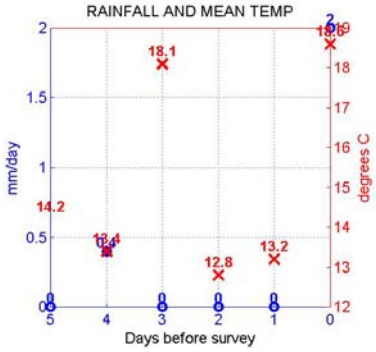


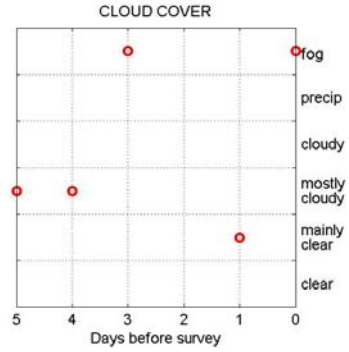












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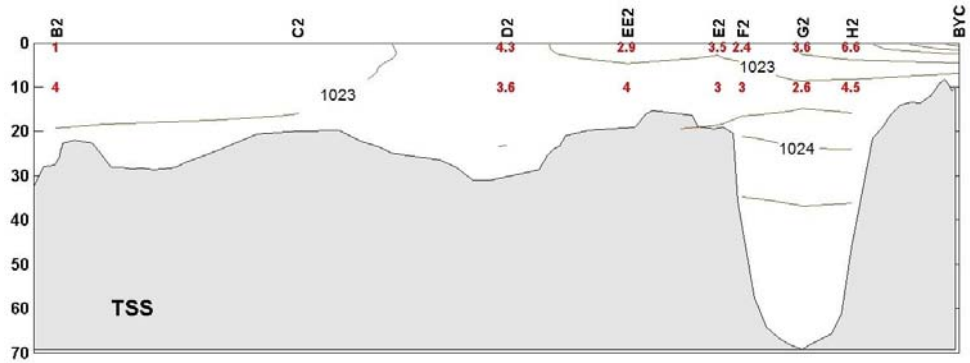

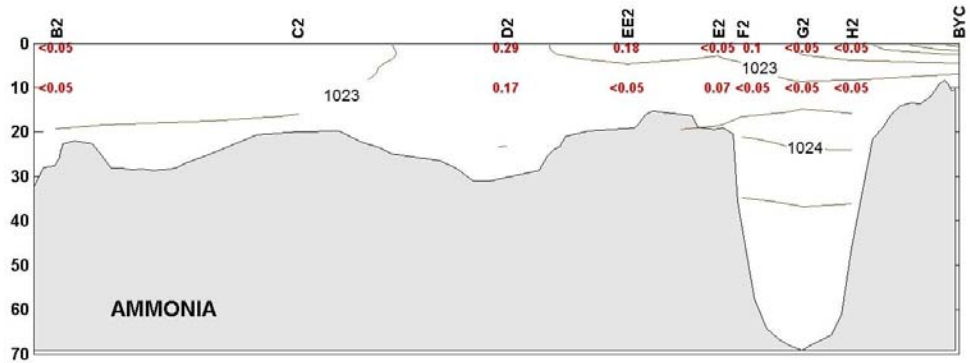

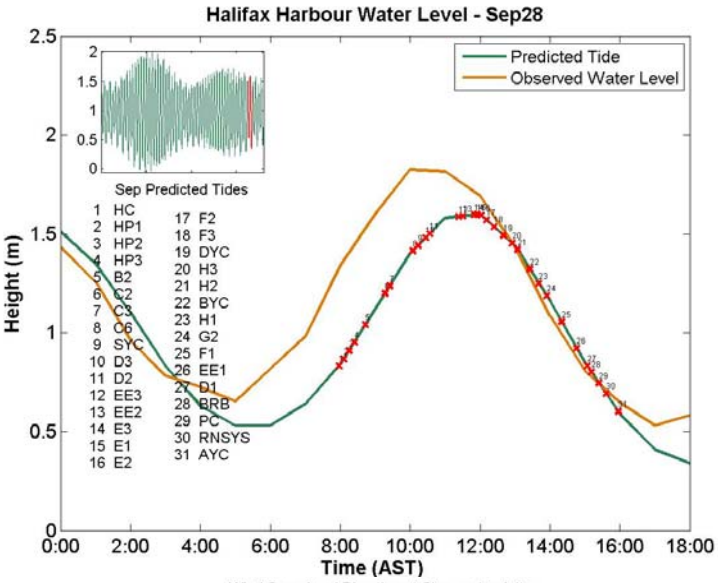

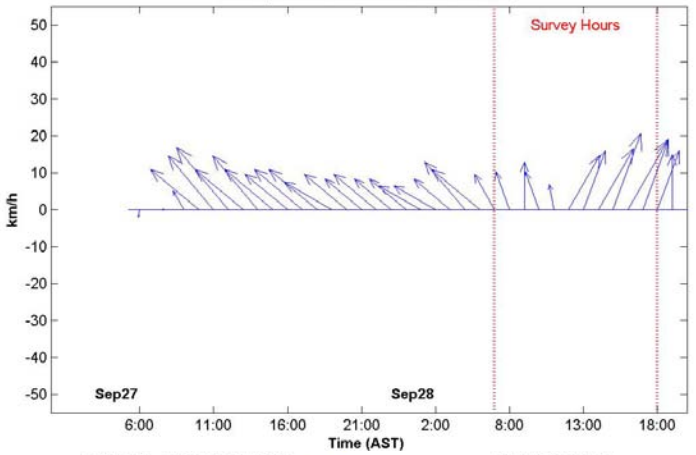

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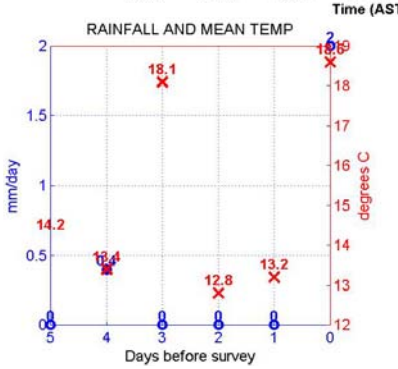
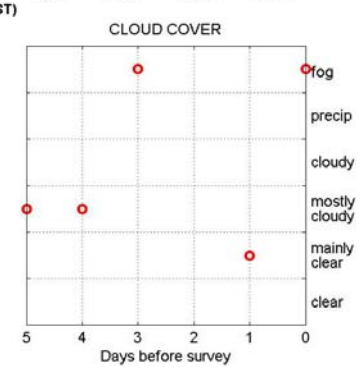
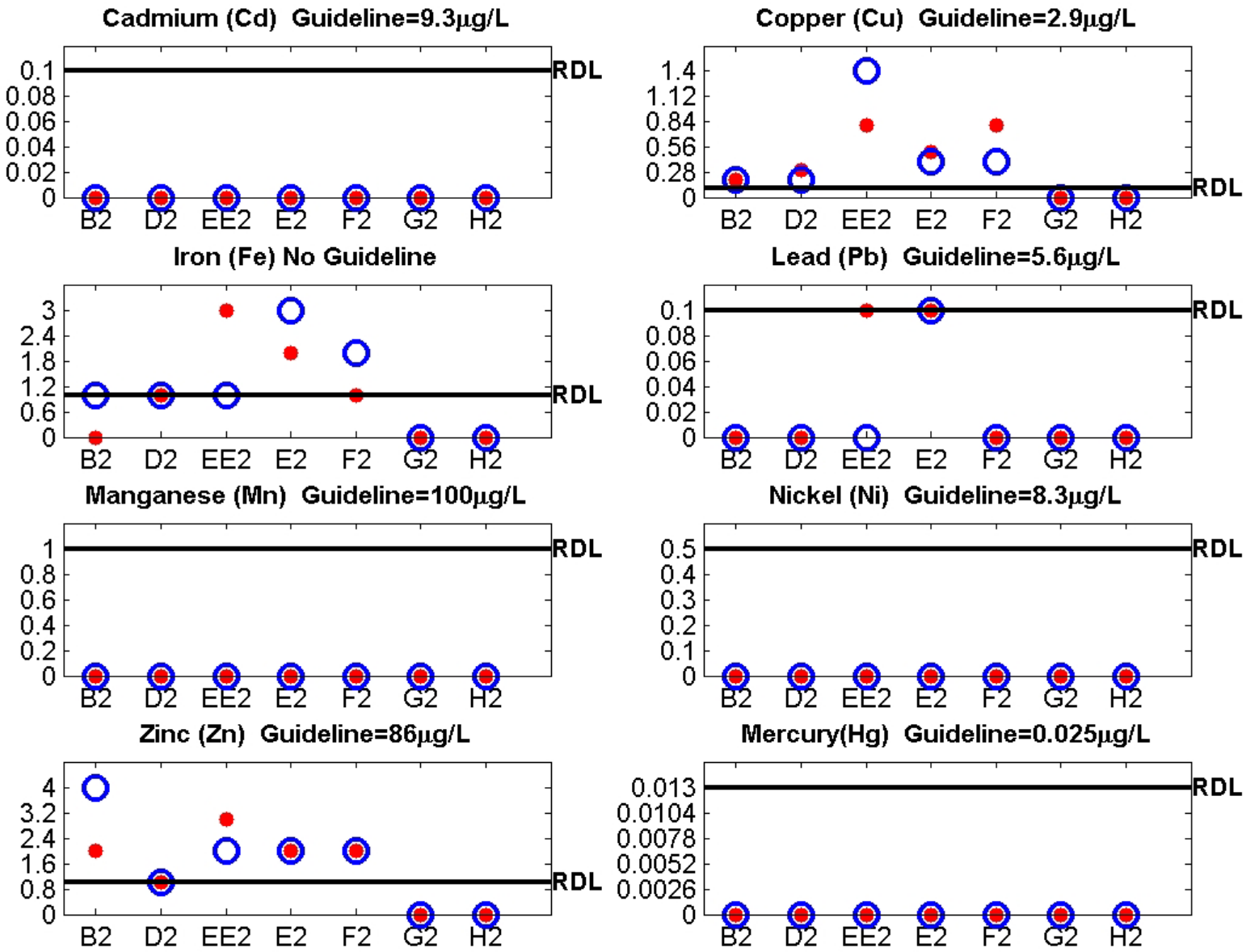




Potential Density Contours in kg/m^3 **Ammonia in mg/L** **TSS in mg/L**



= Ten Metre Water Sample
= One Metre Water Sample
RDL = Reportable Detection Limit
0 = Not Detected

HRM Water Quality Monitoring
Bacteria Summary – September 28, 2010