Halifax Harbour Water Quality Monitoring Project
Weekly Summary #2

Preamble

This report is a summary of preliminary results from the second survey of an ongoing (weekly) water quality monitoring program. On all weeks, bacteriological water samples are taken and in-situ profile data (conductivity, temperature, dissolved oxygen and fluorescence) are measured (Bacteriological Survey). On odd weeks, a suite of chemical and biological samples are collected as well (Complete Survey).

Halifax Harbour Water Quality Guidelines
Halifax Harbour Task Force, 1990

Dissolved Oxygen:	SA	8.0 mg/L
	SB	7.0 mg/L
	SC	6.0 mg/l
Fecal Coliform:		
Shellfishing	14/100mL	
Swimming	200/100mL	
Suspended Particulate Matter (SPM):	10% above ambient	
Metals:		
Copper	2.9 µg/L	
Lead	5.6 µg/L	
Zinc	86.0 µg/L	
Cadmium	9.3 µg/L	
Chromium	50.0 µg/L	
Mercury	0.025 µg/L	
Manganese	100.0 µg/L	
Nickel	8.3 µg/L	
Organic Chemicals:		
Total PCB	0.03 µg/L	
Total PAH	5.0 µg/L	
Oil and Grease	10.0 µg/L	

Where applicable, interpretation of the data is based on the Harbour Water Quality Guidelines, reproduced in the table on the right. Guideline limits do not exist for several of the monitored metals. Specifically these are: Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cobalt, Lithium, Iron, Molybdenum, Selenium, Strontium, Thalium, Tin, Titanium, Uranium, and Vanadium. Detectable quantities of these metals will be summarized in a table below. Additionally, there are biochemical parameters; Carbonaceous Biochemical Oxygen Demand ($CBOD_{5)}$, Ammonia Nitrogen, Chlorophyll (fluorescence), for which no Halifax Harbour-specific criteria exist. These parameters are plotted and interpreted on a relative basis. Parameters with no detectible (<EQL) values are not graphically displayed, but are tabulated below.

For each survey duplicate samples are taken at random for purposes of laboratory QA/QC. In addition, the lab conducts QA/QC on submitted samples. These values, for relevant parameters are compared with primary samples below.

All lab results are included in the accompanying spreadsheet files labeled with the convention: “HHWQMP_datannn_yymmdd”, where “nnn” is the serial survey identifier.

Survey Number: 002

Survey Date: 29 June 04

Nature of Survey: Bacteriological Survey

Data Return: 74%

Data File: HHWQMP_data002-2004_06_29

Data Notes: A substitute CTD (Applied Microsystems Ltd. Model STD12 plus), was used pending delivery of the "project CTD" with its required sensor suite. This device does not have DO or Chlorophyll sensors. Dissolved oxygen readings were made on the boat from the 1m and 10m water samples using a Hydrolab Surveyor 4A instrument. As this is a one time procedure the DO values will not be displayed graphically but will be discussed briefly below and are included in the data file.

QA/QC samples: A blind duplicate sample was acquired at 1 m depth at site H1. The value of 0 cfu/100 ml matched the primary sample.

Preliminary Interpretation:

This survey occurred during relatively dry clear sky conditions. The bacterial levels were significantly lower than in the previous survey, potentially due to reduced source strength (drier conditions) and/or increased die off due to uv radiation. Though lower than Survey #1, the values remain elevated in the inner harbour (transects EE and E and the southern end of Bedford Basin). Bacterial levels were also elevated in the near surface sample at RNSYS.

The dissolved oxygen levels were generally high with a range from 7.5 to 12.8 mg/L and a mean of 10.7 mg/l. The value of 7.5 mg/l, which occurred in the 1m sample at station F1, was the only value below 8 mg/l, the water quality limit for class SA water. A value of 6.75 was reported in the 1 m sample at E1, but was questioned in the field due to instrument fluctuations.

Additional Notes:

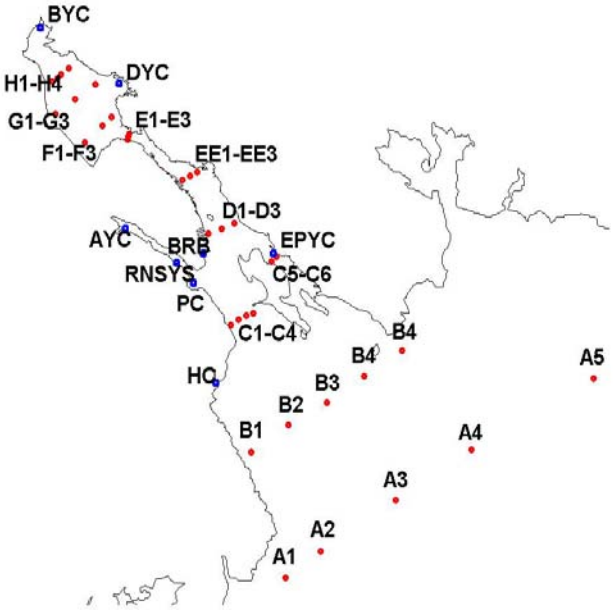
This draft report contains tabulated data that will eventually be presented graphically (values will always be available on accompanying spreadsheet). The graphic displays are under development. When complete this report will be reissued with appropriate graphics.

FECAL COLIFORM

Harbour Water Quality Monitoring Program
Draft Report for June 29, 2004

Bedford Basin

Site	Depth	Time	cfu/100mL
BYC	1m	10:35	0
	10m	10:35	0
H1	1m	10:50	0
Qa/Qc	1m	10:50	0
	10m	10:50	0
H2	1m	11:08	0
	10m	11:08	0
H3	1m	11:16	0
	10m	11:16	0
G2	1m	11:01	0
	10m	11:01	0
DYC	1m	11:30	0
	10m	11:30	0
F1	1m	11:59	0
	10m	11:59	0
F2	1m	11:49	0
	10m	11:49	0
F3	1m	11:42	0
	10m	11:42	100

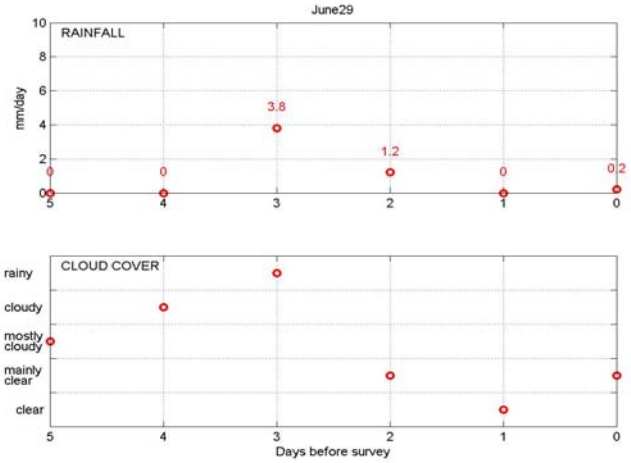


Inner Harbour

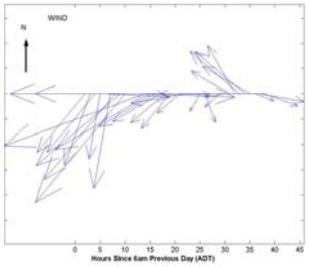
Site	Depth	Time	cfu/100mL
E1	1m	12:18	0
	10m	12:18	0
E2	1m	12:12	100
	10m	12:12	0
E3	1m	12:07	0
	10m	12:07	0
EE1	1m	12:43	400
	10m	12:43	100
EE2	1m	12:37	200
	10m	12:37	200
EE3	1m	12:30	79000
	10m	12:30	500
D1	1m	10:11	0
	10m	10:11	0
D2	1m	10:04	0
	10m	10:04	0
D3	1m	9:56	0
	10m	9:56	0
BRB	1m	13:09	0
	10m	13:09	0

NW Arm and Outer Harbour

Site	Depth	Time	cfu/100mL
AYC	1m	13:38	0
	10m	13:38	0
RNSYS	1m	13:24	800
	10m	13:24	0
PC	1m	13:17	0
	10m	13:17	lab error
EPYC	1m	9:47	lab error
	10m	9:47	lab error
C2	1m	9:20	0
	10m	9:20	0
C3	1m	9:28	0
	10m		sample missing
C6	1m	9:42	0
	10m	9:42	0
HC	1m	9:05	0
	10m	9:05	0
B2	1m	8:30	0
	10m	8:30	0



Wind Direction



Predicted Tides