

**Canada-Newfoundland and Labrador
Water Quality Monitoring Agreement
Annual Work Schedule 2007-2008**

The attached Schedules A, B, C, D, E, and F outline work activities to be carried out during the current fiscal year under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement. All six Schedules have been reviewed and approved by the Administrators of the Agreement.

Charles LeBlanc
Administrator, on behalf of
Environment Canada

Martin Goebel, P.Eng
Administrator, on behalf of
Newfoundland & Labrador Environment
& Conservation

**Canada-Newfoundland and Labrador
Water Quality Monitoring Agreement
Canadian Environmental Sustainability Indicators (CESI)**

The attached Schedule D, Item # 1 outlines work activities to be carried out during the current fiscal year under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement in part with Environment Canada - Canadian Environmental Sustainability Indicators (CESI). Section 1 in Schedule D has been reviewed and approved by the Administrators of the Agreement.

Jean – François Bibeault
Administrator, on behalf of
Environment Canada – Canadian
Environmental Sustainability Indicators

Martin Goebel, P.Eng
Administrator, on behalf of
Newfoundland & Labrador Environment
& Conservation

**Canada-Newfoundland and Labrador
Water Quality Monitoring Agreement
Environment Canada/First Nations Water Management Strategy**

The attached Schedule D, Item # 2 outlines work activities to be carried out during the current fiscal year under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement in part with Environment Canada/First Nations Water Management Strategy. Section 2 in Schedule D has been reviewed and approved by the Administrators of the Agreement.

Francine Rousseau
Administrator, on behalf of
Environment Canada/First Nations
Water Management Strategy

Martin Goebel, P.Eng
Administrator, on behalf of
Newfoundland & Labrador Environment
& Conservation

Schedule A

Agreement Committees

The following officials are named to administer this Agreement according to Article x under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement:

Mr. Charles LeBlanc Environment Canada Atlantic Region, on behalf of Canada

The Administrators will be assisted by a Coordinating Committee consisting of the following:

Mr. Joe Pomeroy Environment Canada Atlantic Region

Mr. Art Cook Environment Canada Atlantic Region

Mr. Haseen Khan Water Resources Management Division, Newfoundland & Labrador Department of Environment & Conservation

Schedule B

Work Shared Activities for Fiscal Year 2007-08

Schedule B – Work Shared Activities 2007-08

Activity	Responsible Agency	Remarks
Ambient Water Quality Sampling	Newfoundland and Labrador Department of Environment and Conservation	Refer to Table B.1 & Figure 1 for sampling details
Ambient Water Quality Analysis	Environment Canada – National Laboratory for Environmental Testing (NLET)	Refer to Table B.2 and B.3 for analysis details
Recreational Water Quality Sampling and Analysis	Newfoundland and Labrador Department of Environment and Conservation	Refer to Table B.4 and Figure 2 for sampling details
Lake Water Quality Sampling and Analysis and Long-Range Transport of Pollutants (LRTAP)*	Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada – Atlantic Laboratory (ALET)	Refer to Table B.1 & Figure 1 for sampling details
Data Management, Analysis, Interpretation and Reporting	Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada	Refer to Table B.5 for details

* Negotiations are in progress within Environment Canada to transfer this activity to the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement.

Table B.1: Index Station Location, Designation and Sampling Frequency 2007-2008

Station #	Description	Latitude	Longitude	Samples/year	Sampled By
EASTERN REGION					
NF02ZK0005	Northeast River	47 16 23	53 50 25	4	P
NF02ZL0029	Goulds Brook	47 30 18	53 17 28	4	P
NF02ZM0004	Waterford River	47 31 19	52 48 29	4	P
NF02ZM0009	Waterford River	47 31 46	52 44 34	6	P
NF02ZM0014	Virginia River	47 35 02	52 41 29	6	P
NF02ZM0015	Quidi Vidi Outlet	47 35 02	52 40 51	6	P
NF02ZM0016	Rennies River	47 34 40	52 42 03	6	P
NF02ZM0020	Broad Cove Brook	47 35 53	52 52 53	4	P
NF02ZM0098	Virginia River	47 35 56	52 45 17	4	P
NF02ZM0109	Mundy Pond	47 33 40	52 44 38	4	P
NF02ZM0144	Kelly's Brook	47 34 28	52 42 45	6	P
NF02ZM0175	Waterford River	47 31 34	52 45 48	4	P
NF02ZM0176	South Brook	47 31 41	52 44 48	4	P
NF02ZM0177	Rennies River	47 34 28	52 42 36	4	P
NF02ZM0178	Learys Brook	47 34 21	52 44 21	4	P
NF02ZM0179	Virginia River	47 35 47	52 42 06	4	P
NF02ZM0180	Virginia River	47 35 59	52 42 02	4	P
NF02ZM0181	Waterford River	47 32 53	52 43 09	6	P
NF02ZM0182	Waterford River	47 31 07	52 51 21	4	P
NF02ZM0183	Kelligrews River	47 29 45	53 01 03	4	P
NF02ZM0184	Learys Brook	47 34 16	52 47 29	4	P
NF02ZM0185	South Brook	47 29 37	52 51 02	4	P
NF02ZM0294	Manuals River	47 31 11	52 56 41	4	P
NF02ZN0004	Salmonier River	47 10 54	53 23 56	4	P
NF02ZG0016	Garnish River	47 13 00	55 19 48	4	F
NF02ZH0001	Pipers Hole River	47 55 51	54 16 25	4	F
NF02ZK0001	Rocky River	47 13 38	53 34 09	4	F
CENTRAL REGION					
NF02YM0003	Indian Brook	49 29 53	56 10 35	4	P
NF02YM0004	South West Brook	49 55 15	56 13 45	4	P
NF02YO0001	Exploits River	48 55 27	55 39 21	4	P
NF02YO0121	Peter's River	49 06 21	55 24 38	4	P
NF02YO0020	Exploits River	48 56 55	55 54 56	4	P
NF02YO0107	Exploits River	48 45 34	56 35 32	4	P
NF02YO0123	South Twin Lake	49 11 11	55 55 24	4	P
NF02YO0128	Exploits River	48 56 12	55 37 03	4	P
NF02YO0142	Corduroy Brook	48 56 21	55 39 47	4	P
NF02YO0143	Exploits River	49 01 15	55 27 15	4	P
NF02YO0189	Joe's Lake	49 01 43	56 04 01	4	P
NF02YQ0006	North West Gander River	48 34 54	55 30 20	4	P
NF02YQ0030	Gander River	48 59 41	54 52 04	4	P
NF02YS0001	Terra Nova River	48 30 27	54 12 43	4	P
NF02YS0011	Terra Nova River	48 38 27	54 02 11	4	P
NF02YS0083	Northwest River	48 23 44	54 11 53	4	P
WESTERN REGION					
NF02YE0005	Western Brook	49 49 49	57 51 23	4	P

NF02YE0004	Portland Creek	50 10 54	57 36 13	4	P
NF02YG0001	Main River	49 46 10	56 54 15	6	P
NF02YG0009	Main River	49 48 46	57 09 24	4	P
NF02YG0020	Eagle Mountain Brook	49 49 53	57 17 15	6	P
NF02YH0018	Lomond River	49 24 07	57 43 49	4	P
NF02YJ0004	Pinchgut Brook	48 47 51	58 03 43	4	P
NF02YK0022	Humber Canal	49 09 58	57 24 56	4	P
NF02YL0011	Humber River	49 20 54	57 14 07	4	P
NF02YL0012	Humber River	48 59 01	57 45 40	6	P
NF02YL0013	Corner Brook	48 56 40	57 56 12	6	P
NF02YL0029	Wild Cove Brook	48 58 28	57 53 02	6	P
NF02YN0001	Lloyds River	48 18 16	57 43 07	4	P
NF02YN0043	Peter Strides Lake	48 09 13	57 43 24	4	P
NF02ZC0020	Buck Lake	48 00 48	57 39 59	4	P
NF02ZA0006	Grand Codroy River	47 52 08	59 07 05	4	P
NF02ZB0001	Isle aux Mort River	47 36 50	59 00 33	4	F
NF02YC0001	Torrent River	50 36 44	57 10 05	4	F
NF02YJ0006	Harry's River	48 34 32	58 21 48	4	F

P-Provincial

F-Federal

Notes:

1. A total of 62 stations will be sampled during 2007-2008 on the island portion of the province.
2. For statistical analysis it is important that at least four samples are collected from each station.
3. Total number of samples to be collected is 270.
4. Total number of stations sampled by Environment Canada is 6.
5. Total number of stations sampled by Department of Environment and Conservation is 56.

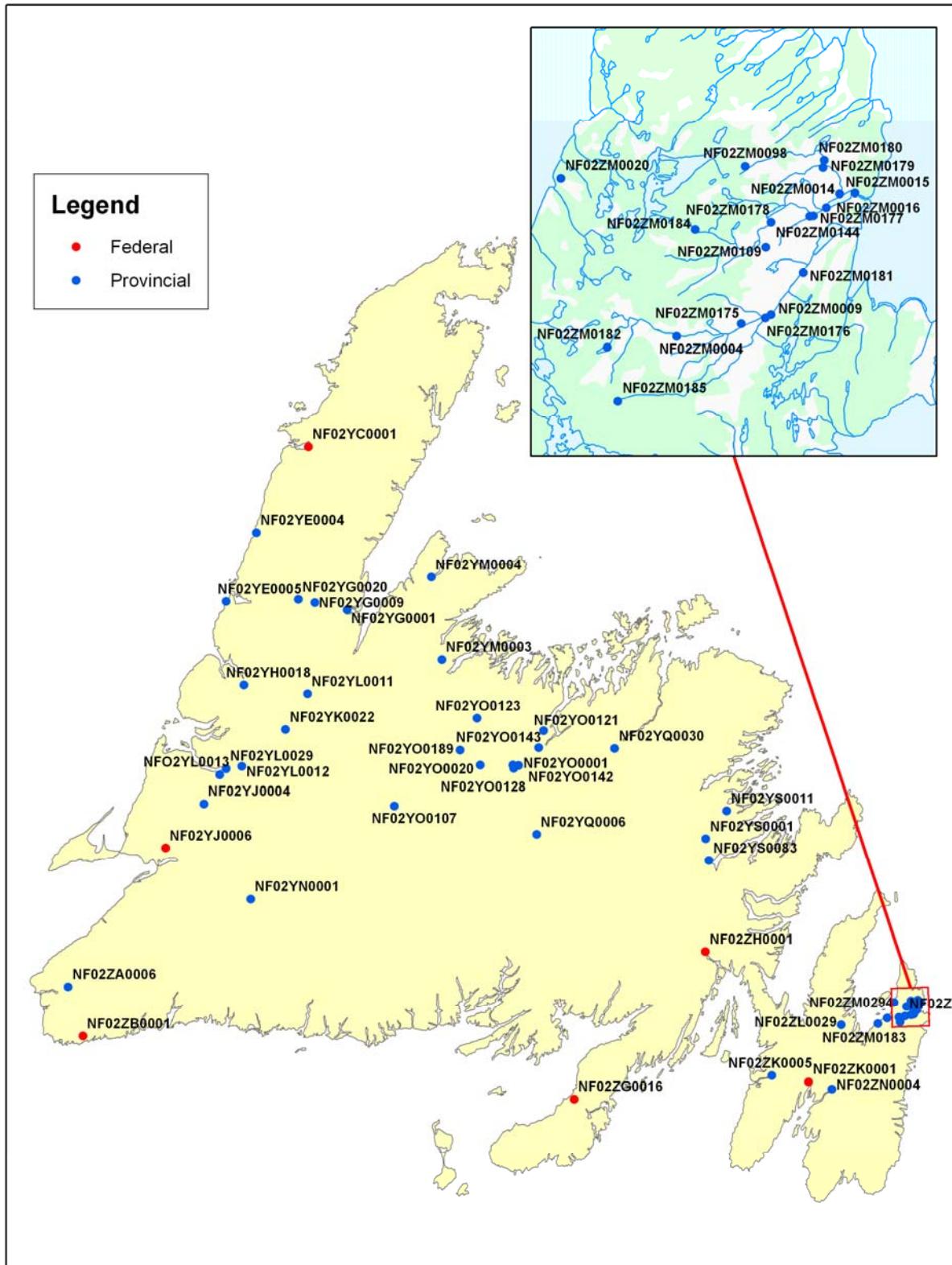


Figure 1 – Water Quality Stations 2007-08 - Newfoundland

Table B.2: Analytical Parameters 2007 - 2008 for Newfoundland Stations

Station #	Description	Sampling Media	Analytical Group *	Analysed By **
<u>EASTERN REGION</u>				
NF02ZK0005	Northeast River	W	W1, W2	F
NF02ZL0029	Goulds Brook	W	W1, W2	F
NF02ZM0004	Waterford River	W	W1, W2	F
NF02ZM0009	Waterford River	W	W1, W2	F
NF02ZM0014	Virginia River	W	W1, W2	F
NF02ZM0015	Quidi Vidi Outlet	W	W1, W2	F
NF02ZM0016	Rennies River	W	W1, W2	F
NF02ZM0020	Broad Cove Brook	W	W1, W2	F
NF02ZM0098	Virginia River	W	W1, W2	F
NF02ZM0109	Mundy Pond	W	W1, W2	F
NF02ZM0144	Kelly's Brook	W	W1, W2	F
NF02ZM0175	Waterford River	W	W1, W2	F
NF02ZM0176	South Brook	W	W1, W2	F
NF02ZM0177	Rennies River	W	W1, W2	F
NF02ZM0178	Learys Brook	W	W1, W2	F
NF02ZM0179	Virginia River	W	W1, W2	F
NF02ZM0180	Virginia River	W	W1, W2	F
NF02ZM0181	Waterford River	W	W1, W2	F
NF02ZM0182	Waterford River	W	W1, W2	F
NF02ZM0183	Kelligrews River	W	W1, W2	F
NF02ZM0184	Learys Brook	W	W1, W2	F
NF02ZM0185	South Brook	W	W1, W2	F
NF02ZM0294	Manuals River	W	W1, W2	F
NF02ZN0004	Salmonier River	W	W1, W2	F
NF02ZG0016	Garnish River	W	W1, W2	F
NF02ZH0001	Pipers Hole River	W	W1, W2	F
NF02ZK0001	Rocky River	W	W1, W2	F
<u>CENTRAL REGION</u>				
NF02YM0003	Indian Brook	W	W1, W2	F
NF02YM0004	South West Brook	W	W1, W2	F
NF02YO0001	Exploits River	W	W1, W2	F
NF02YO0121	Peter's River	W	W1, W2	F
NF02YO0020	Exploits River	W	W1, W2	F
NF02YO0107	Exploits River	W	W1, W2	F
NF02YO0123	South Twin Lake	W	W1, W2	F
NF02YO0128	Exploits River	W	W1, W2	F
NF02YO0142	Corduroy Brook	W	W1, W2	F
NF02YO0143	Exploits River	W	W1, W2	F
NF02YO0189	Joe's Lake	W	W1, W2	F
NF02YQ0006	North West Gander River	W	W1, W2	F
NF02YQ0030	Gander River	W	W1, W2	F
NF02YS0001	Terra Nova River	W	W1, W2	F
NF02YS0011	Terra Nova River	W	W1, W2	F
NF02YS0083	Northwest River	W	W1, W2	F
<u>WESTERN REGION</u>				
NF02YE0005	Western Brook	W	W1, W2	F

NF02YE0004	Portland Creek	W	W1, W2	F
NF02YG0001	Main River	W	W1, W2	F
NF02YG0009	Main River	W	W1, W2	F
NF02YG0020	Eagle Mountain Brook	W	W1, W2	F
NF02YH0018	Lomond River	W	W1, W2	F
NF02YJ0004	Pinchgut Brook	W	W1, W2	F
NF02YK0022	Humber Canal	W	W1, W2	F
NF02YL0011	Humber River	W	W1, W2	F
NF02YL0012	Humber River	W	W1, W2	F
NF02YL0013	Corner Brook	W	W1, W2	F
NF02YL0029	Wild Cove Brook	W	W1, W2	F
NF02YN0001	Lloyds River	W	W1, W2	F
NF02YN0043	Peter Strides Lake	W	W1, W2	F
NF02ZC0020	Buck Lake	W	W1, W2	F
NF02ZA0006	Grand Codroy River	W	W1, W2	F
NF02ZB0001	Isle aux Mort River	W	W1, W2	F
NF02YC0001	Torrent River	W	W1, W2	F
NF02YJ0006	Harry's River	W	W1, W2	F

* Refer to Table B.3 below for analytical group codes

** Federal lab

Table B.3: Analytical Group Codes

Parameter Set	Analysis Type	Parameter Group
1) Water - Physical Parameters, Major Ions and Nutrients		
Temperature, pH, Specific Conductance, Dissolved Oxygen	Field	W1
Turbidity, Colour, pH, Specific Conductance, Calcium (Diss.), Magnesium (Diss.), Potassium (Diss.), Sodium (Diss.), Alkalinity Total or Gran, Chloride (Diss.) IC, Sulphate (Diss.) IC, Dissolved Organic Carbon, Dissolved Inorganic Carbon, Total Nitrogen, Nitrate and Nitrite (Diss.), Total Phosphorus	Lab	W1
2) Water - Total Metals		
Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Chromium, Cobalt, Copper, Gallium, Lanthanum, Iron, Lead, Lithium, Manganese, Molybdenum, Nickel, Rubidium, Selenium, Silver, Strontium, Thallium, Uranium, Vanadium, Zinc	ICAP	W2

Table B.4: Station Location, Designation and Bacteriological Sampling Frequency 2007-2008

Station #	Description	Latitude	Longitude	Samples/year	Sampled By
EASTERN REGION					
NF02ZM0014	Virginia River	47 35 02	52 41 29	2	P
NF02ZM0015	Quidi Vidi Outlet	47 35 02	52 40 51	2	P
NF02ZM0016	Rennies River	47 34 40	52 42 03	2	P
NF02ZM0098	Virginia River	47 35 56	52 45 17	2	P
NF02ZM0175	Waterford River	47 31 34	52 45 48	2	P
NF02ZM0180	Virginia River	47 35 59	52 42 02	2	P
NF02ZM0181	Waterford River	47 32 53	52 43 09	2	P
NF02ZM0182	Waterford River	47 31 07	52 51 21	2	P
NF02ZM0184	Leary's Brook	47 34 16	52 47 29	2	P
NF02ZN0004	Salmonier River	47 10 54	53 23 56	2	P
NF02ZM0297	Topsail Pond	47 31 29	52 54 13	2	P
NF02ZM0298	Sunshine Rotary Park	47 34 31	52 50 36	2	P
NF02ZM0295	Whiteway Pond	47 39 36	52 45 23	2	P
NF02ZM0296	Manuals River	47 31 16	52 56 45	2	P
CENTRAL REGION					
NF02YO0001	Exploits River	48 55 27	55 39 21	2	P
NF02YO0020	Exploits River	48 56 55	55 54 56	2	P
NF02YO0123	South Twin Lake	49 11 11	55 55 24	2	P
NF02YO0128	Exploits River	48 56 12	55 37 03	2	P
NF02YO0142	Corduroy Brook	48 56 21	55 39 47	2	P
NF02YO0143	Exploits River	49 01 15	55 27 15	2	P
NF02YO0189	Joe's Lake	49 01 43	56 04 01	2	P
NF02YQ0030	Gander River	48 59 41	54 52 04	2	P
NF02YG0021	Flatwater Pond	49 45 41	56 18 57	2	P
NF02YO0191	Thunder Brook	48 56 53	55 49 48	2	P
NF02YQ0069	Jonathan's Pond Park	49 03 51	54 32 26	2	P
NF02YS0100	Sandy Pond	48 29 34	54 01 05	2	P
WESTERN REGION					
NF02YK0022	Humber Canal	49 09 58	57 24 56	2	P
NF02YL0011	Humber River	49 20 54	57 14 07	2	P
NF02YL0012	Humber River	48 59 01	57 45 40	2	P
NF02YL0013	Corner Brook	48 56 40	57 56 12	2	P
NF02YL0029	Wild Cove Brook	48 58 28	57 53 02	2	P
NF02YL0089	Corner Brook	48 56 37	57 56 04	2	P
NF02YL0091	Deer Lake	49 01 20	57 36 30	2	P
NF02YH0054	Cox's Brook	49 06 36	58 03 39	2	P
NF02YL0090	Cook's Brook	48 58 11	58 03 55	2	P

Notes:

1. Bacteriological monitoring will take place in the summer months from June - September.
2. Database maintained under CANAL.
3. Samples are analyzed by provincial lab.

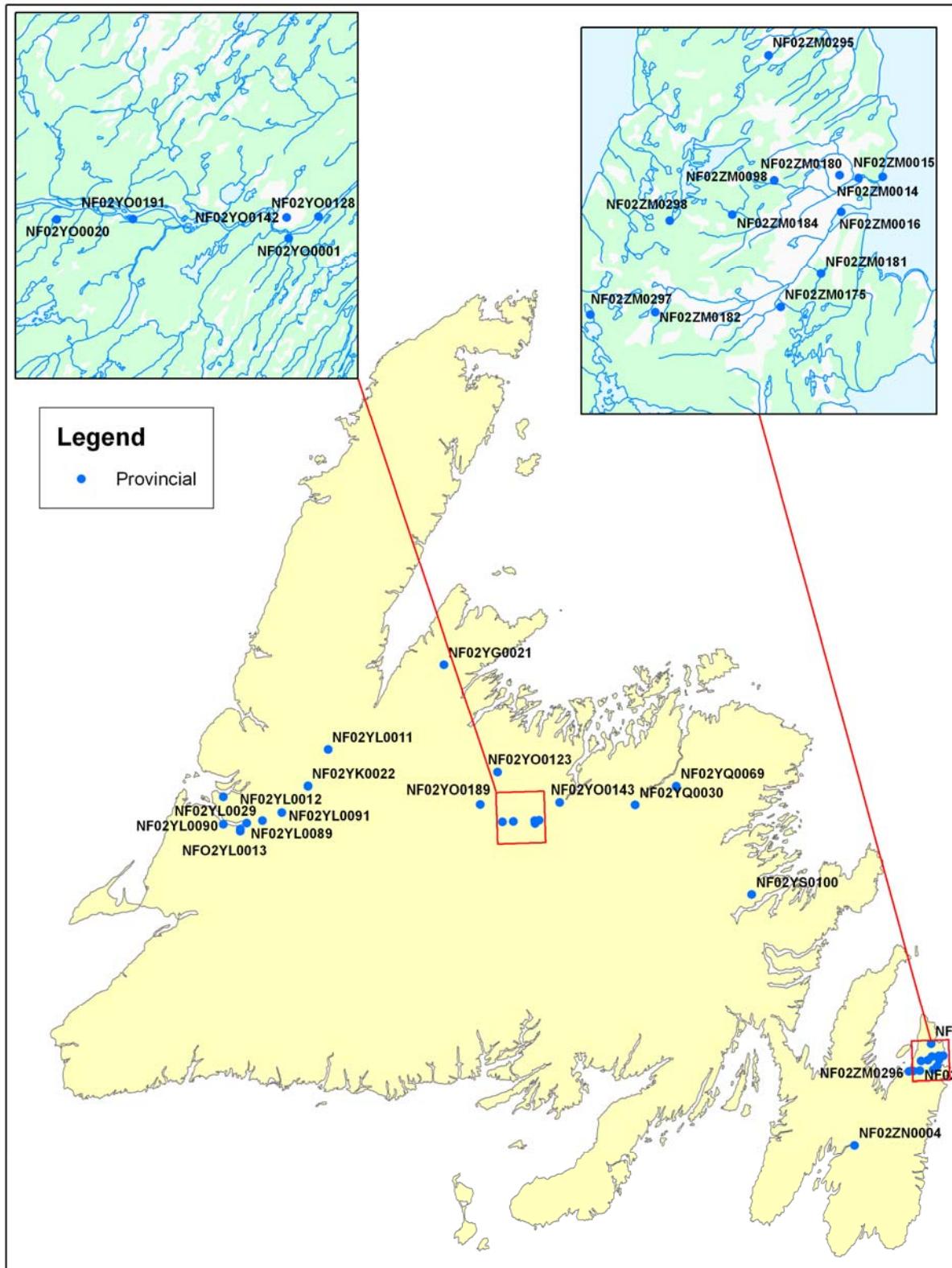


Figure 2 – Bacteriological Water Quality Stations 2007-08 - Newfoundland

Table B.5: Data Management, Analysis, Interpretation and Reporting

Project	Activity	Responsible Agency
1. Quality Assurance and Quality Control (QA/QC)*	1.1 Quality control procedures	Environment Canada
	1.2 Guidelines for good laboratory practice	Environment Canada
	1.3 Guidelines for instrument performance	Environment Canada
2. Data Management*	2.1 Data recording, documentation and validation	Environment Canada
	2.2 Data screening and verification	Environment Canada
	2.3 Data audits, custody and transfer	Environment Canada
	2.4 Management of national water quality database (ENVIRODAT)	Environment Canada
	2.5 Management of provincial water quality database	Newfoundland and Labrador Department of Environment and Conservation
	2.6 Quality assurance and quality control of datasets	Newfoundland and Labrador Department of Environment and Conservation
3. Maintenance and Updating	3.1 On-going updating of the Site Documentation Database	Newfoundland and Labrador Department of Environment and Conservation
	3.2 On-going updating of the Bacteriological Database	Newfoundland and Labrador Department of Environment and Conservation
	3.3 Development of protocols for application of WQI calculation to real time water quality data	Newfoundland and Labrador Department of Environment and Conservation
	3.4 Real-time Service Delivery (ADRS – reporting)	Newfoundland and Labrador Department of Environment and Conservation
	3.5 Development of Station Level Metadata for Real-time Stations	Environment Canada & Newfoundland and Labrador Department of Environment and Conservation

4. Technical Documents – WQMA	4.1 Download of WQMA data from ENVIRODAT for provincial database	Newfoundland and Labrador Department of Environment and Conservation
	4.2 Site specific guidelines using four guideline development methods	Newfoundland and Labrador Department of Environment and Conservation
	4.3 Fact sheets on selected rivers	Newfoundland and Labrador Department of Environment and Conservation
	4.4 Posters on selected rivers	Newfoundland and Labrador Department of Environment and Conservation
	4.5 Water Quality Index – research and development	Newfoundland and Labrador Department of Environment and Conservation
	4.6 Completion of Intensive survey reports – Exploit's River & Corner Brook Stream	Newfoundland and Labrador Department of Environment and Conservation
	4.7 Completion of NL-WQMA Sampling Manual	Newfoundland and Labrador Department of Environment and Conservation
	4.8 Summary of WQMA Data using the WQI	Newfoundland and Labrador Department of Environment and Conservation
	4.9 Create and maintain Recreational Monitoring website	Newfoundland and Labrador Department of Environment and Conservation
	4.10 Update WQMA website	Newfoundland and Labrador Department of Environment and Conservation
	4.11 Update WQI website	Newfoundland and Labrador Department of Environment and Conservation
	4.12 CANAL project position paper in review process of publication	Newfoundland and Labrador Department of Environment and Conservation

5. Technical Documents - RTWQ	5.1 Real-Time Water Quality Monthly and Annual Reports	Newfoundland and Labrador Department of Environment and Conservation
	5.2 Planning for Real-Time Water Quality Monitoring for Mega-projects	Newfoundland and Labrador Department of Environment and Conservation
	5.3 Real-Time Water Quality Workshop	Newfoundland and Labrador Department of Environment and Conservation
	5.4 Development of Real-Time Water Quality inventory/servicing database	Newfoundland and Labrador Department of Environment and Conservation
	5.5 Revision of QA/QC protocols for Real-Time Water Quality data	Newfoundland and Labrador Department of Environment and Conservation
	5.6 Summary of Real-Time Water Quality Data using the WQI	Newfoundland and Labrador Department of Environment and Conservation
	5.7 Completion of Real-Time Water Quality Manual	Newfoundland and Labrador Department of Environment and Conservation
	5.8 Update Real-Time Water Quality Website	Newfoundland and Labrador Department of Environment and Conservation
6. CANAL Maintenance and Update	6.1 Update site documentation database	Newfoundland and Labrador Department of Environment and Conservation
	6.2 Update bacteriological database	Newfoundland and Labrador Department of Environment and Conservation

* QA/QC and data management refers to ENVIRODAT

Schedule C

Cost Shared Activities for Fiscal Year 2007-08

Schedule C – Cost Shared Activities 2007-08

Activity	NL Contribution	EC Contribution	Remarks
Recurrent Surveys			<ul style="list-style-type: none"> - Under planning for fiscal year 2008-09
WQMA watersheds (CANAL) (hydrologic mapping substituting for recurrent survey for 2007-08 due to logistical difficulties)	\$20,000	\$20,000	<ul style="list-style-type: none"> - NL is the lead jurisdiction and responsible for the completion of work - EC will pay its share by March 31st, 2008 to NL Exchequer - NL financial contribution is part of the Water Quality Monitoring Agreement budget
Real-time Water Quality Monitoring Network - Operation and maintenance of two federal real-time water quality stations (Main River; Minipi River) - Operation and maintenance of four provincially operated real-time water quality stations (Waterford River; Leary's Brook; Peters River; Humber River) - Operation and maintenance of industry funded real-time water quality stations (5 stations at VBNC; 1 station at Long Harbour (VBNC); 3 stations at Aur Resources; 2 stations at IOC)	\$50,000	\$50,000	<ul style="list-style-type: none"> - For station details see Table C.1 and Figures 3 & 4 - NL is the lead jurisdiction and responsible for the completion of work - EC will pay its share by March 31st, 2008 to NL Exchequer - NL financial contribution is part of the Water Quality Monitoring Agreement budget
Northern Sampling and Analysis (Labrador)	\$50,000	\$50,000	<ul style="list-style-type: none"> - Refer to Table C.2 and Figure 5 for sampling details - Labrador water samples are collected by both federal and provincial staff - Refer to Tables C.3 & C.4 for parameter analysis details

			<ul style="list-style-type: none">- NL is the lead jurisdiction and responsible for the completion of work- EC will pay its share by March 31st, 2008 to NL Exchequer- NL financial contribution is part of the Water Quality Monitoring Agreement budget
Biomonitoring (Environment Canada)	\$20,000	\$20,000	<ul style="list-style-type: none">- discussions on-going- Joe is lead and will provide additional information
Biomonitoring (IPY)			<ul style="list-style-type: none">- resources under discussion
Education and Outreach	\$5,000	\$5,000	<ul style="list-style-type: none">- further discussion with Todd Smith (EC) and resources
Total	\$145,000	\$145,000	

Table C.1 Real-time Water Quality Monitoring Stations

Station #	Description	Latitude	Longitude	Accessibility	Remarks
<u>VOISEY'S BAY NICKEL COMPANY LTD. (VBNC)</u>					
NF03NE0009	Reid Brook	56 22 22	62 09 43	HS	- These stations are fully industry funded
NF03NE0010	Camp Pond Brook	56 20 32	62 06 24	HS	
NF03NE0011	Lower Reid Brook	56 18 18	62 05 34	HS	
NF03NE0012	Tributary to Reid Brook	56 18 21	62 05 39	HS	
NF03NE0008	Well after Tailings Dam (VBNC)	56 19 42	62 00 17	VA	
<u>AUR RESOURCES INC.</u>					
NF02YO0190	Gill's Pond Brook	48 38 26	56 31 44	VA	- These stations are fully industry funded
NF02YO0193	Well after Tailings Dam (Aur Resources)	48 39 18	56 28 55	VA	
NF02YO0192	East Pond Brook	48 40 55	56 30 39	VA	
<u>IRON ORE COMPANY OF CANADA (IOCC)</u>					
NF03OA0019	Wabush Lake @ Dolomite Road	52 58 00	66 51 33	VA	- These stations are fully industry funded
NF03OA0017	Wabush Lake @ Julianne Narrows	53 09 05	66 47 08	BS	
<u>LONG HARBOUR (VBNC)</u>					
NF02ZK0023	Rattling Brook below Bridge	47 24 51	53 48 26	VA	- This station is fully industry funded
<u>NEWFOUNDLAND AND LABRADOR REFINING CORPORATION (NLRC)</u>					
NF02ZH0009	Come By Chance River	47 55 07	53 56 55	VA	- These stations are fully industry funded - Watson's Brook to be installed upon completion of access road
**	Watson's Brook***			VA	
<u>ENVIRONMENT CANADA</u>					
NF02YG0022	Main River*	49 46 48	57 09 24	HS	- These stations are funded by EC
NF03OE0030	Minipi River *	52 36 53	61 11 11	HS	
NF02ZE0033	Water Supply Intake (Miawpukek watershed)	47 50 56	55 46 04	VA	

<u>DEPARTMENT OF ENVIRONMENT AND CONSERVATION</u>					
NF02ZM0178	Learys Brook*	47 34 21	52 44 21	VA	- These stations are funded by DOEC
NF02ZM0009	Waterford River*	47 31 46	52 44 34	VA	
NF02YO0121	Peter's River*	49 06 21	55 24 38	VA	
NF02YL0012	Humber River*	48 59 01	57 45 40	VA	

* These stations are also part of the ambient water quality index network where grab samples are collected either 4 or 6 times per year.

** Station number to be determined.

*** Exact location and coordinates to be determined.

VA – Vehicle Access

HS – Helicopter Site

BS – Boating Site

Notes:

1. All real-time water quality stations have grab samples collected on a monthly basis for QA/QC purposes; all analysis is completed at the same lab as that used for the analysis of the samples under the drinking water program.
2. Presently, the grab samples collected at Leary's Brook and Humber River real-time stations are being used to develop statistical equations for regression analysis.
3. There will be an approximately 115 grab samples taken for RTWQ stations as part of the QA/QC procedures. The samples will be sent to a private laboratory due to required turnaround times. Laboratory costs will be covered by NL Department of Environment and Conservation.

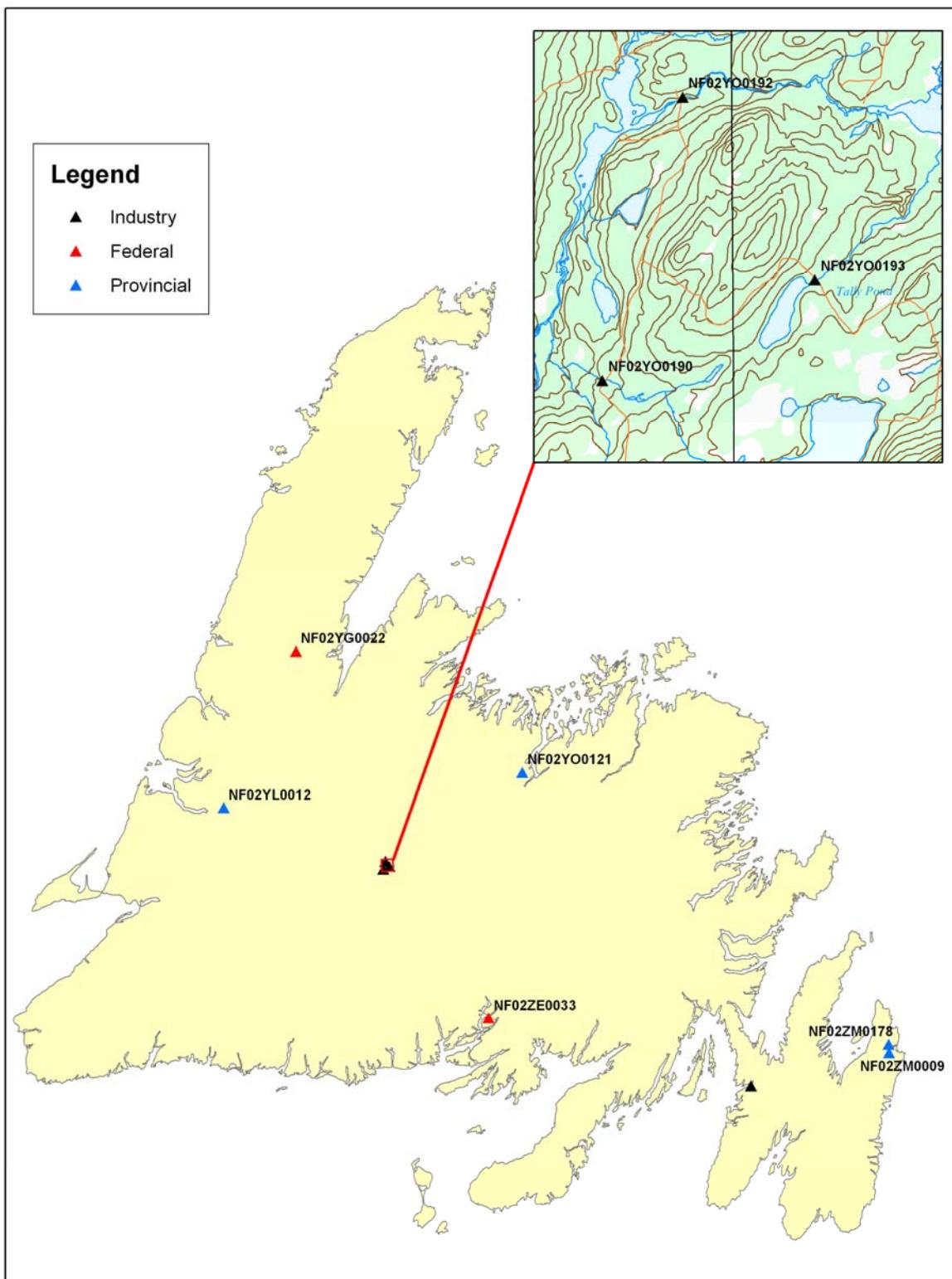


Figure 3 – Real-Time Water Quality Stations 2007-08 - Newfoundland

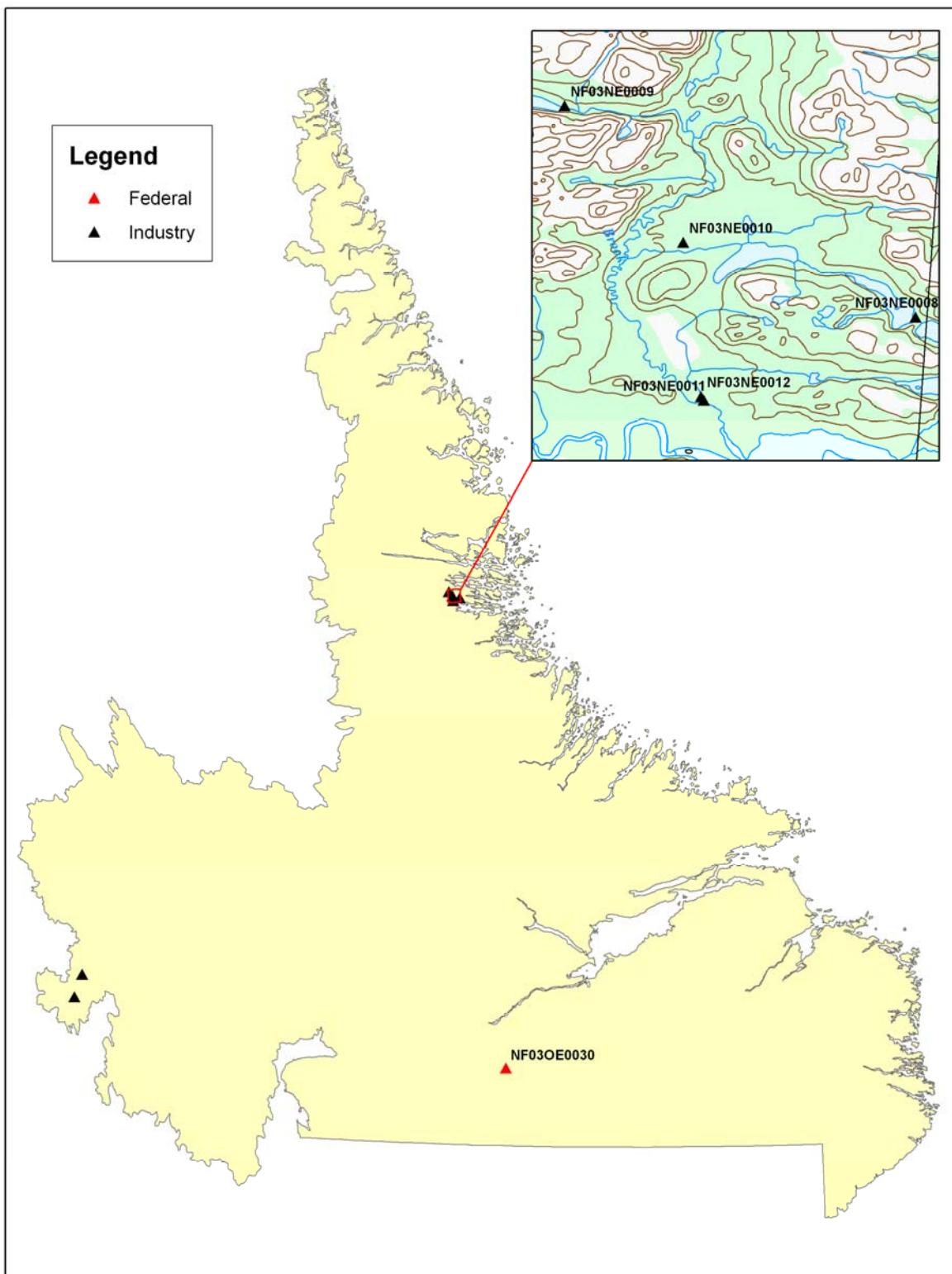


Figure 4 – Real-Time Water Quality Stations 2007-08 - Labrador

Table C.2: Northern Index Station Location, Designation and Sampling Frequency 2007-2008

Station #	Description	Latitude	Longitude	Samples/year	Sampled By
LABRADOR REGION					
NF02XA0001	Little Mecatina River	52 13 42	61 19 32	4	F/P
NF03NF0013	Ugjoktok River	55 13 60	61 17 57	4	F/P
NF03OC0012	Atikonak River	52 58 03	64 39 40	4	F/P
NF03OD0011	East Metchin River	53 26 07	63 14 03	4	F/P
NF03OE0001	Churchill River	53 14 52	60 47 21	4	F/P
NF03OE0030	Minipi River	52 36 53	61 11 11	4	F/P
NF03OE0032	Pinus River	53 08 52	61 33 31	4	F/P
NF03OE0033	Big Pond Brook	53 30 43	60 17 31	4	F/P
NF03PB0025	Naskaupi River	54 07 54	61 25 45	4	F/P
NF03QC0001	Eagle River	53 27 54	57 33 29	4	F/P
NF03QC0002	Alexis River	52 38 57	56 52 17	4	F/P
NF03NG0034	Shipiskan Lake East	54 37 24	62 12 58	4	F/P
NF03OD0012	Wilson River E. Branch	53 18 33	62 55 11	4	F/P
NF03OE0035	Dominion Lake	52 43 45	61 45 17	4	F/P
NF03OE0037	Cache River	53 11 33	62 12 11	4	F/P
NF03PB0028	Cape Caribou River	53 37 16	60 24 52	4	F/P
NF03PB0029	Northwest River	53 31 18	60 08 31	4	F/P
NF03PB0030	Seal Lake Narrows	54 19 55	61 38 27	4	F/P
NF03PB0032	Susan River	53 44 17	60 56 48	4	F/P
NF03PB0037	Wuchusk Lake	54 23 43	61 47 09	4	F/P
NF03QA0044	Carter Basin	53 29 52	59 52 25	4	F/P
NF03QA0045	Kenamu River	53 28 34	59 55 01	4	F/P
	Western Labrador*			4	F/P

* Station number, exact location and coordinates to be determined.

P-Provincial

F-Federal

Notes:

1. A total of 23 stations will be sampled during 2007-2008 in Labrador.
2. The Labrador stations are listed as being sampled 4 times per year; this refers to the number of samples taken (not the number of trips made to the site); there must be a **minimum** of three samples taken each fiscal year at the Labrador sites.
3. All Labrador stations are accessible only by helicopter with the exception of Northwest River (NF03PB0029) and station in western Labrador.

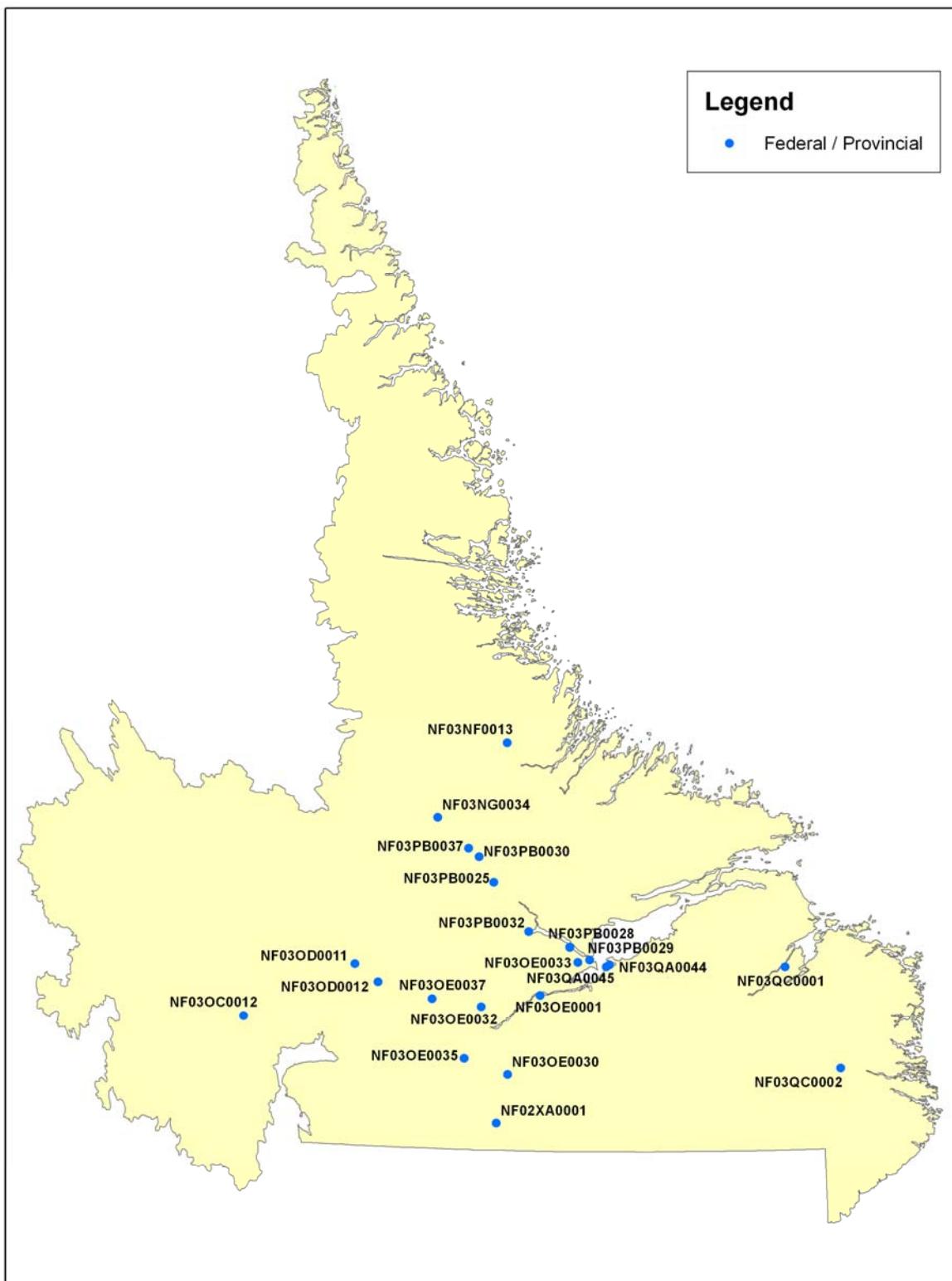


Figure 5 – Water Quality Stations 2007-08 - Labrador

Table C.3: Analytical Parameters 2007 – 2008 for Labrador Stations

Station #	Description	Sampling Media	Analytical Group *	Analysed By **
LABRADOR REGION				
NF02XA0001	Little Mecatina River	W	W1, W2	F
NF03NF0013	Ugjoktok River	W	W1, W2	F
NF03OC0012	Atikonak River	W	W1, W2	F
NF03OD0011	East Metchin River	W	W1, W2	F
NF03OE0001	Churchill River	W	W1, W2	F
NF03OE0030	Minipi River	W	W1, W2	F
NF03OE0032	Pinus River	W	W1, W2	F
NF03OE0033	Big Pond Brook	W	W1, W2	F
NF03PB0025	Naskaupi River	W	W1, W2	F
NF03QC0001	Eagle River	W	W1, W2	F
NF03QC0002	Alexis River	W	W1, W2	F
NF03NG0034	Shipiskan Lake East	W	W1, W2	F
NF03OD0012	Wilson River E. Branch	W	W1, W2	F
NF03OE0035	Dominion Lake	W	W1, W2	F
NF03OE0037	Cache River	W	W1, W2	F
NF03PB0028	Cape Caribou River	W	W1, W2	F
NF03PB0029	Northwest River	W	W1, W2	F
NF03PB0030	Seal Lake Narrows	W	W1, W2	F
NF03PB0032	Susan River	W	W1, W2	F
NF03PB0037	Wuchusk Lake	W	W1, W2	F
NF03QA0044	Carter Basin	W	W1, W2	F
NF03QA0045	Kenamu River	W	W1, W2	F
	Western Labrador***	W	W1, W2	F

* Refer to Table C.4 below for analytical group codes

** Federal lab

*** Station number, exact location and coordinates to be determined

Table C.4: Analytical Group Codes

Parameter Set	Analysis Type	Parameter Group
1) Water - Physical Parameters, Major Ions and Nutrients		
Temperature, pH, Specific Conductance, Dissolved Oxygen	Field	W1
Turbidity, Colour, pH, Specific Conductance, Calcium (Diss.), Magnesium (Diss.), Potassium (Diss.), Sodium (Diss.), Alkalinity Total or Gran, Chloride (Diss.) IC, Sulphate (Diss.) IC, Dissolved Organic Carbon, Dissolved Inorganic Carbon, Total Nitrogen, Nitrate and Nitrite (Diss.), Total Phosphorus	Lab	W1
2) Water - Total Metals		
Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Chromium, Cobalt, Copper, Gallium, Iron, Lanthanum, Lead, Lithium, Manganese, Molybdenum, Nickel, Rubidium, Selenium, Silver, Strontium, Thallium, Uranium, Vanadium, Zinc	ICAP	W2

Schedule D

Special Projects for Fiscal Year 2007-08

Schedule D – Special Projects for Fiscal Year 2007-08

Project	Activity	NL In-kind Contribution	EC Financial Contribution	Remarks
1. Canadian Environmental Sustainability Indicators (CESI)	Site selection, water quality data extraction, and manipulation	\$20,000	\$20,000	- NL is the lead jurisdiction and responsible for the completion of work
	Decision on WQI inputs and calculation of ratings for each station			- EC will pay its share by March 31 st , 2008 to NL Exchequer
	Overview interpretation of results (2 pager on parameters & issues driving the ratings and spatial trends)			- CESI 2007-08 Report
	Data analysis and report preparation			
	Developing a user-friendly on-line water quality index calculator (Phase II)	\$35,000		- Progress on calculator development
2. Environment Canada/First Nations Water Management Strategy	Training to First Nations on Real-time water quality monitoring	\$7,500	\$7,500	- Training course
3. Comparative Guidelines under CCME	Comparative assessment of site-specific objective methodology	\$20,000	\$20,000	- NL is the lead jurisdiction and responsible for the completion of work
4. SCAN Technology	Advanced real-time water quality	\$30,000	\$5,000	- NL is the lead jurisdiction and responsible for the completion of work - EC contribution could go up to \$30K subject to the availability of funds
5. Water Quality Monitoring using Remote Sensing	Using water quality data for remote sensing projects	\$10,000		- NL is the lead jurisdiction and responsible for the completion of work - EC could contribute up to \$10K subject to the availability of funds
6. Environment Canada	Real-time water quality monitoring	\$15,000	\$15,000	- Annual operation and maintenance at Southwest Brook Real-time water quality station
Total		\$137,500	\$67,500	

Schedule E

Samples Collected in 2006-2007 Fiscal Year

Table E.1: Provincial Samples Collected in 2006-2007 Fiscal Year

Station #	Description	Number of Samples Scheduled in 06-07	Number of Samples Collected in 06-07
<u>EASTERN REGION</u>			
NF02ZK0005	Northeast River	4	4
NF02ZL0029	Goulds Brook	4	3
NF02ZM0004	Waterford River	4	4
NF02ZM0009	Waterford River	6	4
NF02ZM0014	Virginia River	12	4
NF02ZM0015	Quidi Vidi Outlet	6	4
NF02ZM0016	Rennies River	6	4
NF02ZM0020	Broad Cove Brook	4	3
NF02ZM0098	Virginia River	4	2
NF02ZM0109	Mundy Pond	4	2
NF02ZM0144	Kelly's Brook	6	3
NF02ZM0175	Waterford River	4	4
NF02ZM0176	South Brook	4	3
NF02ZM0177	Rennies River	4	2
NF02ZM0178	Learys Brook	4	2
NF02ZM0179	Virginia River	4	4
NF02ZM0180	Virginia River	4	4
NF02ZM0181	Waterford River	6	4
NF02ZM0182	Waterford River	4	4
NF02ZM0183	Kelligrews River	4	4
NF02ZM0184	Learys Brook	4	4
NF02ZM0185	South Brook	4	3
NF02ZN0004	Salmonier River	4	4
NF02ZM0294	Manuals River	4	2
<u>CENTRAL REGION</u>			
NF02YM0004	South West Brook	4	3
NF02YM0003	Indian Brook	4	4

Station #	Description	Number of Samples Scheduled in 06-07	Number of Samples Collected in 06-07
NF02YO0123	South Twin Lake	6	4
NF02YO0189	Joe's Lake	6	3
NF02YO0107	Exploits River	6	5
NF02YO0020	Exploits River	6	4
NF02YO0001	Exploits River	6	4
NF02YO0128	Exploits River	6	5
NF02YO0142	Corduroy Brook	6	5
NF02YO0143	Exploits River	6	5
NF02YO0006 (xx)	Peter's River	6	5
NF02YQ0006	North West Gander River	4	3
NF02YQ0030	Gander River	4	4
NF02YR0001	Pound Cove Brook	4	2
NF02YR0021	Middle Brook	4	2
NF02YS0001	Terra Nova River	6	4
NF02YS0011	Terra Nova River	6	4
NF02YS0083	Northwest River	6	4

WESTERN REGION

NF02YE0004	Portland Creek	4	3
NF02YE0005	Western Brook	4	3
NF02YG0001	Main River	6	4
NF02YG0020	Eagle Mountain Brook	6	4
NF02YH0018	Lomond River	4	3
NF02YJ0004	Pinchgut Brook	6	5
NF02YK0022	Humber Canal	6	5
NF02YL0011	Humber River	6	4
NF02YL0012	Humber River	6	5
NF02YL0013	Corner Brook	6	5
NF02YL0029	Wild Cove Brook	6	6
NF02YN0001	Lloyds River	4	3
NF02ZA0006	Grand Codroy River	6	4

Station #	Description	Number of Samples Scheduled in 06-07	Number of Samples Collected in 06-07
<u>LABRADOR REGION</u>			
NF02XA0001	Little Mecatina River	4	4
NF03NF0013	Ugjoktok River	4	4
NF03OC0012	Atikonak River	4	3
NF03OD0011	East Metchin River	4	4
NF03OE0001	Churchill River	4	5
NF03OE0030	Minipi River	4	5
NF03OE0032	Pinus River	4	5
NF03OE0033	Big Pond Brook	4	5
NF03PB0025	Naskaupi River	4	5
NF03QC0001	Eagle River	4	4
NF03QC0002	Alexis River	4	4
NF03NG0034	Shipiskan Lake East	4	5
NF03OD0012	Wilson River E. Branch	4	4
NF03OE0035	Dominion Lake	4	5
NF03OE0037	Cache River	4	4
NF03PB0028	Cape Caribou River	4	5
NF03PB0029	Northwest River	4	4
NF03PB0030	Seal Lake Narrows	4	5
NF03PB0032	Susan River	4	5
NF03PB0037	Wuchusk Lake	4	5
NF03QA0044	Carter Basin	4	5
NF03QA0045	Kenamu River	4	5

Notes:

1. Total number of samples collected in 2006-2007 does not include triplicate samples or bottle blanks.
2. Total number of samples planned for 2006-07 for Eastern region was 120 but 82 were actually sampled.
3. Total number of samples planned for 2006-07 for Central region was 94 but actually 71 were sampled.
4. Total number of samples planned for 2006-07 for Western region was 82 but actually 54 were sampled.
5. Total number of samples planned for 2006-07 for Labrador region was 88; but actually 96 were sampled.

Schedule F

Meeting Minutes

Canada-Newfoundland Water Quality Monitoring Agreement
Annual Meeting
St. John's, NL
Confederation Building
April 17th & 18th, 2006

Attendance:

Joe Pomeroy	(Environment Canada)
Art Cook	(Environment Canada)
Haseen Khan	(Dept of Environment and Conservation)
Amir Ali Khan	(Dept of Environment and Conservation)
Renée Paterson	(Dept of Environment and Conservation)
Paul Neary	(Dept of Environment and Conservation)
Rob Holloway	(Dept of Environment and Conservation)

1) Jurisdictional Overview:

Environment Canada

- Joe Pomeroy introduced himself and explained that the recent reorganization within EC has lead to some significant changes with respect to reporting structure.
- Joe is now going to be the contact person (from the federal side) for the Canada-Newfoundland Water Quality Monitoring Agreement (WQMA) providing some stability and opening the communication between the province and the federal government.
- Joe reports to Charles LeBlanc who is currently the acting supervisor.
- Joe explained how “water” has become an issue of national concern once again; Agreements have deteriorated over the past 10 years; steps are now being taken to address this issue.
- Joe was involved with the WQMA back in the early 90’s and thus has a good foundation and open relationships with those involved in the Agreement.
- Joe gave a brief presentation illustrating that EC is now a national team and provided a breakdown of the organizational structure.
- Joe reiterated that he works closely with Art from the analytical perspective.
- The EC regions are waiting to hear back regarding their available budget and resources; the regions should be made aware of their budgets within 4 to 8 weeks; will definitely know by September so that money transfer through the Agreement can still take place.

Water Resources Management Division (WRMD)

- Haseen welcomed Joe and Art to NL and introduced everyone around the table.
- Haseen began by stating that the administrative setup in the Department of Environment and Conservation (DOEC) has changed within the past month with a new Minister (Clyde Jackman) being assigned; he stated that there has also been a number of changes within the Executive (Brenda Caul – DM; Bas Cleary – Acting ADM).
- Haseen is the key contact for both the WQMA and the Hydrometric Agreement.
- Haseen felt that it was very important to set a tentative meeting date for sometime in May to discuss the issues that could not be resolved in this meeting due to “the unknown” regarding the transfer of funds.

- Haseen described that the primary objective of this partnership is to share information and try to move forward and strengthen this program; it is imperative to have a strategic plan.
- Haseen felt that it is good to deal with individuals who have been around since the inception of this Agreement and appreciate its importance; it's a good opportunity to work together under a great partnership.

- Haseen provided a brief history of the Agreement:
 - it was signed in 1986 as a joint federal/provincial partnership
 - the Agreement was written in a way that provided a lot of flexibility for technical people to work within
 - the Agreement was very successful from 1986-1991
 - a decline began in 1991 - 1995 whereby the federal government wanted to reduce/discontinue this Agreement
 - from 1995-2001 both levels of government were disinterested in the Agreement and financial resources were diminishing
 - Tom Pollock worked very hard to provide justification for the need of this Agreement (at both the federal and provincial levels)
 - in 2001 Geoff Howell injected some new resources into the Agreement and started some projects that have since been showcased across the country
 - there were a few dedicated individuals that kept this Agreement alive

- Haseen provided a brief path forward for the Agreement:
 - recent changes within EC provides a good opportunity to strengthen this program; we must take advantage of this 2-3 year window of opportunity
 - need to have concrete deliverables and products resulting from work under the Agreement so that the public can see the benefit of water quality monitoring (output-oriented approach)
 - need to try to optimize the network in order to fill in noticeable data gaps (ex: biological monitoring) while at the same time being selective and strategic
 - there are a lot of interesting projects that can be initiated
 - need to establish a regional relationship throughout Atlantic Canada (i.e. Atlantic Canada Water Managers Meeting)

Technical Presentations

- **Canada and Newfoundland and Labrador Aqua Link (CANAL) Presentation**
 - **Amir Ali Khan**
 - CANAL was first developed as a pilot project through ResEau funding
 - It was developed as a tool to bring water quality data/information to Canadians
 - Its main goal is to convert information to knowledge
 - It is an innovative product that was achieved through partnership under the Agreement
 - There was a substantial exchange of expertise that allowed this project to work

- The general public accesses CANAL through one web page, however, it is blended from federal and provincial servers
- CANAL has also been repackaged and can be accessed through Google Earth
- It is an ideal location to continue to add data /tools
- CANAL web site is launched and is awaiting a press release under the Agreement
- There was a lot of background work to develop CANAL (ie; convert Site Doc into database; convert spreadsheets into database; develop development pressures calculator; development and implementation of WQI protocols with VMV codes; etc.)
- The weakest link with CANAL is the downloading of data from ENVIRODAT; it is not user-friendly and the data is out-of-date; it is not being updated and managed properly.
- There was a lot of work initiated throughout the CANAL project, however, some of the work never got implemented into the web site (i.e. created an automated calculator but did not implement it; watershed rollup capacity of WQI scores not implemented; site-specific guidelines WQI calculator was developed but not implemented; etc)
- NL continued to work in many areas as a result of CANAL (CANAL paper submitted in Dec 2005 awaiting a response; paper on relative ranking of WQMA sites using WQI submitted in Dec 2005 awaiting a response; integration of CANAL into GIS Intranet system)
- There is a lot of work continuing that can be incorporated into the CANAL web site such as:
 - 1) Contour Maps for many water quality parameters
 - 2) Delineated and digitized watersheds maps for all WQMA and hydrometric sites
 - 3) Fact Sheets
 - 4) Watershed Roll-up using WQI scores
 - 5) Automated WQI calculator
 - 6) Utilizing the WQI with real-time data
- The “Key Notes” from this presentation were as follows:
 - 1) Improve functioning of ENVIRODAT
 - 2) Continue to use CANAL as a pilot test site; then import to national site
 - 3) Try to clue up initiatives that have already started
 - 4) Secure additional resources for more initiatives

Action Item: Incorporation of contour maps into CANAL; lead for this project is Ali.

Action Item: Provincial staff (Renee; Annette and Joanne) will work on developing fact sheets for the various major river systems across the province.

Action Item: Incorporation of fact sheets into CANAL; lead for this project is Ali.

- **Real-Time Water Quality Monitoring in NL – Renée Paterson**
- Real-Time Water Quality Monitoring is an innovative technology that is gaining national attention.
- The RTWQ network currently consists of seven active stations with plans for an additional eight stations in 2006-07.

- The presentation touched on issues involved in calibration/maintenance; QA/QC; data communication; data management and reporting.
- The “Key Notes” from this presentation were as follows:
 - 1) This is an innovative and creative way for environmental protection (ie: early warning system).
 - 2) It uses the concept of proactive environmental management.
 - 3) The RTWQ network is expanding and has good potential to become self-sustaining with its own resources.
 - 4) NL is the only province with RTWQ monitoring
 - 5) To this point, it has been 100% fully funded by the province; should pursue incorporating network into the Agreement (ie: stronger foundation).
- **Drinking Water Quality Information System – Paul Neary**
- The application was developed by ESRI Canada and in-house expertise was developed at the same time in conjunction with its development.
- It is a GIS application that incorporates drinking water information and now ambient water quality information as well.
- The WQMA sites can be identified on the map and depending on the station there is a link to the CANAL web site and/or the real-time web site.
- This is available to users within government.
- There is the potential and plans for much more information to be incorporated into this GIS application

2) Annual Work Schedule 2006-07

Monitoring Activities:

1) Addition/Discontinuation of sampling stations:

- There was significant discussion about the addition and discontinuation of sampling sites under the Agreement in Schedule B of the Annual Work Schedule using the email prepared by Annette (listing the changes).
- It was decided that the decisions made by Annette in her preparation of the draft Schedule B were accurate with only minor changes being suggested.
- It was decided that for Virginia River @ the Blvd (Eastern) the sampling frequency would be reduced from 12 to 6 times per year.
- There were some qualifying and additional points that are needed as footnotes.

Action Item: Renee will incorporate all changes to Schedule B of the Annual Work Schedule and distribute when the document is signed.

- Before any of the federal sampling stations are dropped from the south coast of the province, it will be necessary to have a conference call with Howie and his staff to determine if they can logistically remain on the list.

Action Item: Annette will arrange a conference call between Haseen, Joe, Howie and staff to determine logistics for sampling south coast.

2) Labrador Sampling:

- The main issue arising from Labrador is that there is only a short window of opportunity during open water for sampling.
- Haseen suggested that we send our provincial staff once a year and continue to make use of the hydrometric network.
- There was substantial concern raised about the sampling protocols/bottles being used by the individuals from the hydrometric network; possibility of sources of error being introduced.

Action Item: On an annual basis Annette will organize a conference call with all hydrometric network individuals to go through sampling protocols.

Action Item: Annette will travel with the hydrometric network individuals to each Labrador site at least once this year.

- It was decided that all 18 Askui sites will be added back on the Work Schedule to be sampled this fiscal year; there is a definite data gap with respect to northern sites currently being monitored.
- It was decided that all Labrador sites and Askui sites will be listed in the Schedule B to have at least 3 samples per year; this number does not refer to the number of trips but rather the number of samples taken.

3) Recreational Water Quality Monitoring:

- There was discussion regarding the new Recreational Water Quality Monitoring in Schedule D of the Annual Work Schedule; this is a new initiative that should provide interesting results.
- It was decided that the new stations chosen (and listed as 6 times) may have to be reduced since the sampling will take place over the summer months when Officers are on annual leave; will reduce the number to 4 times instead of 6 times (especially for the first year).

Action Item: Joanne and Annette will provide Renee with a short site description and GPS coordinates for any new stations by late May.

Action Item: Renee will email a list of all new stations (coordinates and descriptions) to Abbey requesting station ID numbers when necessary information is received from each regional officer.

Action Item: Any new stations must have a station profile added in the Site Documentation Database and the associated watershed delineated and digitized by Water Quality Officers.

Action Item: Ali will arrange a meeting with Paul and Renee to discuss adding the recreational water quality monitoring stations into CANAL.

4) Real-time Water Quality Monitoring:

- Majority of the information concerning the real-time water quality monitoring network was discussed as part of the presentation at the beginning of the meeting.
- EC will be providing NL with two new hydrolabs to be placed in Main River and Minipi River.
- Haseen provided a cost estimate (ballpark figure) needed for operation/maintenance and data processing and management; this cost does not include helicopter time; this will be discussed and negotiated separately.

Action Item: Renee will be in contact with Todd Smith to discuss the installation of the two new hydrolabs.

- Renee and Ali informed the group that they are pursuing the idea of organizing an additional statistics course on analysing RTWQ data; Joe was very interested in this concept.

Action Item: Ali will inform Joe when another statistics course (RTWQ data) is arranged.

5) Station IDs and Tertiary Watershed Boundaries Not Matching:

- Joanne prepared a document that outlines where the WQMA station IDs do not match the tertiary watershed boundary IDs in many instances throughout the province.
- This problem needs to be corrected because it will lead to issues when trying to integrate WQMA and Hydrometric information into GIS applications.
- It is unclear what the procedure will be to make the necessary changes.

Action Item: Joe will speak with IT in Moncton.

Action Item: Joe will set up a meeting to discuss this issue in greater detail; Joe will be the EC lead while Ali will be the lead from DOEC; Jean-Guy will also have to be brought into the discussion.

Action Item: Ali and Rob will go through the stations in more detail.

6) New Initiatives:

a) First Nations Source Water:

- There are definitely three First Nations areas in our province and possibly more depending on actions being taken in Labrador.
- May be able to include these areas under the new “First Nations Source Water” initiative.
- NL already has a very comprehensive and successful drinking water monitoring program in place; can possibly work the First Nations monitoring into this program.
- Haseen suggested that he is available to give a presentation on the drinking water monitoring program and the OETC program as well.

Action Item: Renee will add a new schedule to the Annual Work Schedule entitled “Drinking Water Monitoring for First Nation Communities”.

Action Item: Haseen and Renee will meet to discuss the contents of this new Schedule.

Action Item: Joe will keep Haseen informed of any new develops in this area.

b) International Polar Year:

- There is a new initiative entitled “International Polar Year” being coordinated by Fred Rona.
- They will be interested in gaining knowledge of aquatic ecosystems and hydrology in northern regions.
- The budget has not yet been determined; may be an opportunity for a special project through the Agreement with IPY funding.

Action Item: Joe will keep Haseen informed of any new develops in this area.

c) Additional Initiatives:

- It was agreed that any new initiatives involving water quality monitoring in NL should go through the Agreement.

Action Item: Joe and Ali will continue to correspond regarding possible options for mapping/modelling in Labrador.

Action Item: Joe will keep Haseen informed of any new initiatives (Meally Mountains; Eagle River; Torngat Park; etc.)

Analytical Services:

1) Bottle # Requirements:

- Art and Renee discussed the number of bottles that will be needed for each region; the overall estimate is 550 bottles in total.

Action Item: Art will submit the number of bottles needed by each region to the lab in Burlington.

Action Item: Annette will contact the lab to find out if bottles have been/going to be sent soon so that Officers can start sampling for the new fiscal year.

Action Item: Art will send any additional information as received from Burlington lab (ie. Schema #'s; etc).

Action Item: Joanne will send the names of all hydrometric network individuals (and associated office) to Art so that he can begin to arrange to have the new bottles (currently being used) sent to them as needed; this information needs to be cced to Haseen and Joe.

Action Item: Art will follow up with the lab about number of bottles needed by hydrometric network individuals and where to send them.

2) Apparent Colour vs. True Colour:

- This issue was resolved before the meeting with discussions between Moncton lab, Burlington lab and Haseen.
- It was agreed that the cost and effort to sample for true colour is too high when the apparent colour value is accurate.

3) Resolution of Sample ID # Problem:

- This issue has been resolved.

Action Item: Renee will send an email to Joanne and Annette at the beginning of the new fiscal year (annually) reminding staff to change Sample ID #'s and reprint all hardcopies of field sheets and labels.

4) VMV Codes and Associated Standard Methods:

- Most VMV codes follow a standard method or a USEPA method.
- The work being done by Chris Lochner (EC) will document the VMV code and associated standard method where available.
- A potential project for a work-term student is to work on the VMV codes and their associated standard methods in conjunction with the work being done on the national level.

Data Management:

1) ENVIRODAT:

- The public version of ENVIRODAT (available through CANAL) is not getting updated frequently enough (not since 2002).
- The public version of ENVIRODAT was a good first attempt but could use some improvements to make it more user-friendly.
- The following issues need to be addressed:
 - 1) the project numbers are not explained
 - 2) it does not differentiate between the full record vs. the spreadsheet download options
 - 3) data opens in notebook and is confusing to read
 - 4) VMV codes are not explained
 - 5) there is an extra column that is not explained
 - 6) no indication of latest available data
- Art feels strongly that the resources are not in place in the regional office (Moncton) to maintain the system to necessary standards; no one has been assigned to this task in many years.
- ENVIRODAT is working on a 6 month delay with respect to available data.

2) Annual Batch Transfer:

- In the past, the province has received a number of batch transfers of the WQMA data.
- This was found to be a very worthwhile exercise.
- Need an in-house provincial database to keep a backup of the data available from ENVIRODAT; cannot solely rely on ENVIRODAT just in case a problem arises.

- Paul Neary distributed a flow diagram illustrating the old NAQUADAT model and how he would like to receive the data from the batch transfer.
- It is necessary to have the complete download from the start of the Agreement (1986) to ensure all data is accounted for.
- Paul Neary will be the contact person for DOEC concerning the batch transfer of data; Paul can travel to Moncton to discuss this issue if need be.

Action Item: Joe will assign this task (batch transfer) to someone in EC; Joe will inform Haseen and Paul who the contact person is from EC so the work can proceed.

Special Study:

- In the early years of the Agreement there were numerous special studies carried out which analysed water, sediment and biota.
- When resources were limited, the special studies diminished.
- Began to carry out special studies on an annual basis starting in 2002.
- The Urban Water Bodies Report (2002) has been completed for sometime.
- The Exploits River Report (2003) is almost complete.
- The data for the Corner Brook Stream (2004) special study had not been received up to this point in time; Art explained that this was an oversight because the data has been analysed for some time.

Action Item: Art will send the data from the Corner Brook Stream special study upon return to Moncton.

- Joe expressed interest in continuing with special studies under the Agreement with participation from both provincial and federal staff.

Action Item: Joe and Haseen will discuss the issue of adding a special study for this upcoming fiscal year in the next meeting.

Technical Documents:

- Under the WQMA, there are numerous technical documents completed or in process such as:
 - 1) **Trend Analysis Report and Paper** - complete
 - 2) **Evaluation and Redesign of Network Report** - complete
 - 3) **Contour Maps** – complete; need to be incorporated into CANAL
 - 4) **Intensive Survey Reports** – on-going; will need to be reviewed by both EC and DOEC
 - 5) **Fact Sheets** – template created using Humber River; working on developing additional fact sheets on major river systems throughout the province; need to be incorporated into CANAL
 - 6) **WQMA Sampling Manual** – to be updated this fiscal year; will need to be reviewed by both EC and DOEC
 - 7) **Posters** – on-going; numerous posters completed
 - 8) **Monthly Real-time Station Reports** – available on web page; on-going
 - 9) **Annual Real-time Station Reports** – on-going; all stations will have an annual report at the end of this calendar year

- 10) **Summary of RTWQ data using WQI** – pilot project complete; work is on-going in this area
- 11) **General Statistical Analysis of RTWQ Data by Site** – on-going this fiscal year
- 12) **Determination of Non-analysed Variables using Regression Analysis on RTWQ Data** – work is on-going in this area
- 13) **Water Quality Modeling Report using RTWQ Data** - on-going this fiscal year
- 14) **Summary of WQMA Data using WQI** – available through CANAL; needs to be updated this fiscal year
- 15) **Discussion Paper on Surface/Groundwater Interactions** - on-going this fiscal year
- 16) **RTWQ Manual** – on-going this fiscal year
- 17) **Scientific Publications** – two papers submitted awaiting decisions

Miscellaneous:

- 1) **ResEau** – there are many projects that fall under this funding; need a status report on this project.

Action Item: Joe will check into the status of ResEau and report back to Haseen.

- 2) **National Water Quality Indicators Project** – this project is proceeding again this year.

Action Item: Art will look at the station list to determine why some Terra Nova sites are not listed but have the same project #; Art will inform Ali.

Action Item: Joe will check into the continuation of funding for this project (at last years level); Joe will inform Haseen of the outcome.

Action Item: Provincial staff will review the data and perform calculations of WQI; will contact Joe with issues as they arise.

- 3) **Site-Specific Guidelines vs. Background Concentration Project** – this is an interesting project that we should pursue; biggest challenge is to locate a reliable source of data.

Action Item: Joe will explore the national sources of data and will check with Connie Gaudet as well; Joe will inform Haseen of the outcome.

- 4) **Delineation and Digitization (as well as QA/QC) of WQMA Watersheds** – this is a top priority; Haseen agreed to contribute \$35,000-\$40,000 to go toward hiring someone to complete this work; Joe will determine the contribution from EC when the budget is determined.

Action Item: Haseen and Joe will discuss this project during the meeting in May.

- 5) **Posters for EC Office** – Joe would like to have copies of the posters for the EC office.

Action Item: Jennifer will order a set of posters and ship to Joe.

- 6) **Atlantic Water Managers Meeting** – A meeting with all the Water Managers would help in building a strong foundation and better relationships throughout the region.

Action Item: Haseen will coordinate a meeting with all the Water Managers from the Atlantic Provinces.

- 7) **Additional meeting** – Haseen and Joe agreed that an additional meeting would be necessary to discuss a preliminary payment schedule when the federal budget is determined.

Action Item: Haseen and Joe will determine when a meeting can be held for this purpose; will invite Jean-Guy to attend the meeting.

- 8) **Wetlands Meeting** – Al will be visiting NL on May 25th and 26th to discuss the continuation of the wetlands project that was initiated in the past fiscal year; it was agreed that the Agreement could be used to transfer funds, however, the linkage with the Agreement starts and ends at that point.

Canada-Newfoundland Water Quality Monitoring Agreement
Annual Meeting
St. John's, NL
Confederation Building
February 27th and 28th, 2007

Attendance:

Joe Pomeroy (Environment Canada)
Vincent Mercier (Environment Canada)
Sarah Hall (Environment Canada – attended AM on February 27th)
Haseen Khan (Dept of Environment and Conservation)

3) Jurisdictional Overview:

- Both Joe and Haseen provided a brief overview of administrative and other changes in their respective jurisdictions.

4) CESI Overview:

- Sarah gave a presentation on CESI reporting and the various issues encountered.
- Haseen and Ali both provided input from a jurisdictional point of view. The discussion touched on a number of issues such as: i) site-specific objectives; ii) other beneficial uses; iii) web portal services under CESI (posting of all past reports); iv) additional key discussion.

5) Annual Work Schedule 2006-07

a) Status of Provincial WQMA sampling

- Provincial staff have been collecting WQMA samples as per Annual Work Schedule 2006-07; therefore by the end of March the majority of stations will have been sampled a minimum of 4 times. It is estimated that approximately 8 stations (out of a total of 27 stations in the Eastern region) will not have the minimum 4 samples due to change in Renee's position. Additionally, anywhere from 4 - 7 stations (out of a total of 18 stations in the Central region) may not have a minimum of 4 samples by the fiscal year end due to extensive workload issues. All stations in the Western region are expected to be sampled the minimum 4 times per year.

b) Status of Federal WQMA sampling (Northern sampling)

- New sampling protocols developed for northern sampling in 2006-07 has been working well. All Labrador stations have been sampled a minimum of 3 times during this fiscal year. Federal sampling has also taken place on the island portion of the province using the same protocols. Eastern federal stations will be sampled a minimum of 4 times by March. Western federal stations will not be sampled a minimum of 4 times by March because the new protocols were not introduced until early summer. 2007-08 will determine if it is possible that western federal sites be sampled 4 times per year. There are no federal stations in the central region. There are a total of 6 stations on the island portion of the province being sampled by federal staff.

c) Status of Recreational Water Quality Monitoring

- 2006-07 was the initial trial run of introducing recreational water quality monitoring into WQMA sampling. In the annual work schedule, sampling was scheduled to occur 4 times throughout the summer season (June – September) for 12 new recreational stations. In the eastern region only 2 samples (June & July) were taken due to a change in Renee's position. In the central region only 2 samples (June & July) were taken due to workload

constraints because of annual leave and the installation of 3 RTWQ stations at Aur Resources during the summer. In the western region 5 samples were taken (June, July(2), August & September). A link from the DOEC website will be established explaining protocols and displaying the bacteriological data.

d) Status of Real-time Water Quality Monitoring

- There are presently 15 stations operational (Waterford River; Leary's Brook; Humber River; Peters River; (who is this??Aur Resources(3); VBNC(5); Conne River; Long Harbour; Minipi River). 8 of the above stations were installed in 2006-07 fiscal year. One new RTWQ monitoring coordinator position was created (and filled by Renee) during 2006-07 fiscal year to begin to address the resource demands of this increasing program. Plans are underway for the installation of 3 additional RTWQ stations (Main River; IOC(2)) in spring 2007.
- It was decided that Joe will initiate the purchase of one new Hydrolab to be used as a spare for rotation at the federal/provincial stations (Main/Minipi). Joe will touch base with Renee to discuss specifics and logistics.
- Haseen brought up the following points: a) all real-time stations are presently collocated with hydrometric stations; b) the majority of the real-time stations (with the exception of the industry sites) are also considered Agreement stations where grab samples are taken and sent to Burlington; c) monthly QA/QC samples are taken at all real-time stations and sent to Accustest Laboratories.

NL – to provide a listing of RT probe – location-ownership

e) Status of Special Projects

It was decided that each product developed for each special project should be copied to Joe irrespective of the project authority. Haseen thanked Joe for the excellent cooperation in securing the funding for all the special projects.

i Delineation and digitization of WQMA watersheds

- Delineation and digitization of WQMA watersheds has been completed with the exception of the new RTWQ stations added in 2006-07 and new recreational stations. This project will continue to be an on-going process when new stations are added to the Annual Work Schedules. The stations not delineated and digitized will be completed on an on-going basis. A list of these stations (not delineated/digitized) has been provided to Ali.

ii. CESI project

- All activities required for the 2006 CESI report were completed and sent to EC. Special projects also under CESI as listed in the AWS 2006-07 are:
 1. Development of protocols and calculation of site-specific guidelines; delivered and on-going
 2. Site level templates; delivered and on-going
 3. Short methods paper on protocol used for WQI calculations; delivered and on-going
 4. Revisions to CCME Sediment Quality Index; completed and delivered
 5. Vulnerability Index as a part of the EC Source Water Protection program; delivered and on-going

iii. Technical Reports, Fact Sheets, Manuals and Posters

- Fact sheets: it has been agreed that staff will begin working on developing fact sheets for WQMA sites in the respective regions. These fact sheets will be linked to CANAL, become printed material and eventually into posters on selected rivers. There will be a delay on the opportunity to work on these fact sheets until the WQMA data is brought up-to-date and the new WQI calculations have been completed.

- Water Quality Index: research and development is continuing. The WQI for WQMA stations will be updated when complete updated data from ENVIRODAT is available to DOEC staff. There has also been research into using the WQI for RTWQ data. A special project using daily grab samples and RTWQ data will begin in March 2007 and a report compiled with the WQI results; on-going to be done by April 2007
- Intensive surveys: Corner Brook Stream intensive survey draft has been completed and comments received from DOEC staff and Joe. These comments will be addressed and the report put on the DOEC website. Exploit's River intensive survey draft is currently being written and will be completed by April 2007.
- CANAL project position paper in review process of publication.
- WQMA sampling manual: first draft has been completed and will be sent to DOEC and EC staff for review.
- RTWQ manual: first draft is in progress and will be sent to DOEC and EC staff for review when completed.
- RTWQ monthly and annual reports: due to the large number of RTWQ stations that were installed in this fiscal year and changes in reporting protocols the monthly reporting fell behind schedule. Monthly reports are currently being brought up to date and will be updated by March 2007. Annual reports will be completed as time permits.

6) Data Management

- Ali and Renee joined the meeting for this portion of the meeting.
- It was agreed that a lot of work has been done with respect to data management (ENVIRODAT and CANAL), however, there is much more work to be completed.
- Vincent described some of the new updates that have been completed in ENVIRODAT and stated that work is progressing in making the data up-to-date. Cathy has recently gone on sick leave thus some of the work may be slowed down.
- It was specifically stated that the field parameters (ex: temp; DO; pH...) that are being collected at the time of sampling and sent to Moncton are now being added to ENVIRODAT by EC staff
- Vincent brought up the concept of data validation and suggested that this is something that NL should look into; NL agreed that it is important to somehow validate the data.
- It was agreed by all participants that only one database is necessary (ENVIRODAT) to ensure WQMA data is not coming from numerous sources.
- Ec to determine path forward
- Ali suggested that he and Paul should schedule a visit/meeting with the EC staff in Moncton responsible for ENVIRODAT to look at the way the system works and then provide them with capabilities/tools/needs from a NL perspective. It would be an information exchange opportunity; Vincent agreed to look into scheduling this visit in Moncton potentially for sometime in April.
- Ali, Renee and Vincent provided an update on the progress of CANAL. Within the past couple of months CANAL has been revisited by Federal and Provincial staff. The following improvements/changes are currently in progress.
 - i. Help File
 - DOEC and EC staff have worked together to develop a user friendly help file that will direct users through CANAL and into ENVIRODAT. This help file is in the final stages of review. It will be attached as a button (link) on the CANAL website. Renee quickly demonstrated some of the features of the Help File. Vince to look into getting CANAL help file translated into French

ii. Fact Sheets

- As stated previously, DOEC staff are planning on developing fact sheets for selected WQMA stations. There is currently one fact sheet developed for the Lower Humber River that will be used as a template. The fact sheets will be attached as a button (link) on CANAL website.

iii. Updating of Site Doc/Bacteriological Database

- DOEC staff have recently spent some time updating the site documentation database with the new Recreation WQM and RTWQ Monitoring stations. Only the basic information has been provided, additional information will be added as ground-truthing is performed. The Bacteriological database was updated regularly throughout the summer months as bacteriological data was received from the laboratory. In a recent section meeting it was decided that the Site Documentation database will be updated twice annually in May and October and the bacteriological database will continue to be updated throughout the summer months.

iv. New WQI Calculations

- As discussed previously, the WQI for WQMA stations will be updated when complete updated data from ENVIRODAT is available to DOEC staff.

v. Maps

- Digitized maps have been sent to WQMA staff for review.

vi. Land Cover Graphs

- Land cover graphs have been developed for each WQMA station by Rob and will be updated every 5 years. These graphs are currently being incorporated into the CANAL website.

- With respect to RTWQ data management, Ali stated that there has been significant work done on the Automatic Data Retrieval System in the past year. It would be a good idea to give a demonstration at some point in time (when time permits).

5) Analytical Services

1. Review of NLET Client Package

- WQMA staff have recently received the NLET Client Package for 2007-08 and will be reviewing and providing comments; upon initial review there does not appear to be any significant changes for the upcoming year; communication between NL and NLET continues to be very good.

2. Bottle shipment

- WQMA staff have received correspondence from NLET stating that bottles for 2007-08 sampling season are shipped and should be received shortly.

3. DOC filtration

- Haseen agreed that NL will participate in the DOC filtration pilot project; Joe/Art will be responsible for providing bottles/instructions for pilot project sampling.

6) Invoices for 2006-07

- Haseen stated that all invoices for 2006-07 have been issued
- Joe responded by stating that most invoices have been processed; any outstanding invoices will be processed in a week or two.

7) Annual Work Schedule 2007-08

a) Ambient Water Quality Monitoring Network Design for Island

- Due to the increasing workload it is essential to be strategic in reevaluating the network design. WQMA staff recently reviewed the current WQMA network for the island. It was decided that most WQMA stations in Eastern region will be scheduled to have 4 samples

collected in upcoming year with the exception of 6 sites sampled 6 times per year. All WQMA sites in central region will have 4 samples scheduled in the upcoming year. To optimize workload a few stations (central) may be dropped from the annual work schedule for the 2007-08 fiscal year. These stations will be stations that have a long record of water quality data and have challenges at times in getting 4 samples per year. Most stations in Western will be scheduled to have 4 samples collected in the upcoming year with the exception of 5 sites sampled 6 times per year. One addition to the Western region is Main River at Paradise Pool (in conjunction with Main River RTWQ station).

- NL to assess WQMA network and implications of changes
- Appropriate changes will be made in the 2007-08 Annual Work Schedule.

b) Labrador Ambient Water Quality Monitoring Network

- The joint federal/provincial sampling in Labrador was successful in 2006-07; therefore it will remain the same. The only additions to WQMA stations in Labrador for 2007-08 will be one in Labrador West (in conjunction with IOC RTWQ stations).

c) Federal Sampling

- The federal sampling of select Agreement stations on the island was successful in 2006-07; federal sampling will progress using the same protocols established in 2006-07; Annette Tobin will be the WQMA staff responsible for organization of the federal sampling.

Joe look into ordering pre-cleaned bottles

d) Recreational Water Quality Monitoring

- During the upcoming fiscal year (2007-08) the recreational water quality sampling will be reduced to 2 samples during the summer months (July and August) to deal with increasing workload issues. The same protocols established in 2006-07 will be applied. One addition to the western region will be Cox's Cove swimming area.

e) Lake Monitoring

- Joe will gather more details on Lake Monitoring from an Environment Canada perspective; therefore there will be no decisions on logistics or sites until further notice.

f) Biomonitoring

- Biomonitoring project is scheduled to proceed in the 2007-08 Annual Work Schedule
- Joe will organize a course on CABIN
- This will be added as a new component of Schedule C in the Annual Work Schedule 2007-08.

g) Real-time Water Quality Monitoring Network

- There will be 1 new station established at Main River in Spring 2007 in conjunction with EC. There will also be 2 new stations established at IOC in Labrador in Spring 2007. There is also a possibility of 2 new stations established with NL Refining Corporation (Come By Chance) in 2007.

h) Special Projects

It was agreed that a separate sign off page will be developed in the new Annual Work Schedule (2007-08) for each special project that has a different project authority other than Joe (ex: First Nations Training Course).

i) CESI Projects

- NL will continue to be involved in CESI projects in the upcoming fiscal year.

- Work has begun on the CESI project 2007 by DOEC staff. The number of samples taken for 2003-2005 is being established and DOEC is waiting for water quality data from EC.

ii) Recurrent Survey

- The recurrent survey for 2007-08 will take place in Happy Valley-Goose Bay just downstream of the sewage outfall.
- Joint participation from EC staff and DOEC staff will be required.

iii) Continued Updates to ENVIRODAT/CANAL

- ENVIRODAT and CANAL are dynamic systems that will require continual updating on a regular basis from both EC and DOEC.

iv) Continued Work on Technical Reports, Fact Sheets, Manuals and Posters

- Work will continue to be done on the above mentioned technical reports, fact sheets, manuals and posters in the upcoming fiscal year.

v) ResEau Project

- ResEau project will be removed from the Annual Work Schedule 2007-08 as work in this area is no longer occurring.

vi) First Nations Freshwater Strategy

a) Conne River RTWQ Station

- The RTWQ station was installed November 2006. It was decided in the last section meeting that the Conne River station will be audited by DOEC 4 times per year and monthly reports completed by DOEC. The Band Council will be responsible for the maintenance and calibration of the instruments. Conne River will not be responsible for technical writing or analysis work.

b) Conne River Watershed Management Plan

- We have provided our input on draft plan. Joe to enquire about the status and path forward.

C) First Nations RTWQM Training Course

- The First Nations RTWQM training course has tentatively been booked for May 22 – 24 awaiting response from EC.

vii) Miscellaneous Special Projects

a) Comparative Assessment of Site-specific Objective Methodologies

- Work in this area is essential and will be added as a special project in the upcoming Annual Work Schedule 2007-08.

b) Pharmaceuticals/Endocrine Disrupting Substances

- This is an area of growing concern; a special project will be added in the upcoming Annual Work Schedule 2007-08.

8) Miscellaneous

a) Real-time Groundwater Monitoring Network

- The ground water monitoring section of DOEC (WRMD) has submitted a proposal in conjunction with Agriculture Canada to establish a real-time ground water monitoring network. This will involve the installation of 4 RTWQ ground water stations.

b) Labrador Hydrology Project with Ali

- Project deliverables will be submitted by March 31st.