

**Canada-Newfoundland and Labrador
Water Quality Monitoring Agreement
Annual Work Schedule 2008-2009**

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.

Charles LeBlanc
Administrator, on behalf of
Environment Canada

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

Mr. Martin Goebel Department of Environment & Conservation, on behalf of
Newfoundland & Labrador

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 2008-2009

Schedule B – Work Shared Activities 2008-2009

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
ENVIRODAT and Data Management and Reporting	Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada	Refer to Table B.5 for ENVIRODAT; Refer to Table B.6 for data management and reporting

* 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 2008-2009

Station #	Description	Latitude	Longitude	Samples/year	Sampled By
<u>EASTERN REGION</u>					
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 at Commonwealth Ave.	47 31 19	52 48 29	4	P
NF02ZM0009	Waterford River at Kilbride	47 31 46	52 44 34	4	P
NF02ZM0014	Virginia River at The Boulevard	47 35 02	52 41 29	4	P
NF02ZM0015	Quidi Vidi Lake at Outlet	47 35 02	52 40 51	4	P
NF02ZM0016	Rennies River at Carnell Drive	47 34 40	52 42 03	4	P
NF02ZM0020	Broad Cove Brook	47 35 53	52 52 53	4	P
NF02ZM0098	Virginia River at headwaters	47 35 56	52 45 17	4	P
NF02ZM0109	Mundy Pond at Outlet	47 33 40	52 44 38	4	P
NF02ZM0144	Kelly's Brook at Portugal Cove Rd.	47 34 28	52 42 45	4	P
NF02ZM0175	Waterford River at Brookfield Rd.	47 31 34	52 45 48	4	P
NF02ZM0176	South Brook at Mouth	47 31 41	52 44 48	4	P
NF02ZM0177	Rennies River at Portugal Cove Rd.	47 34 28	52 42 36	4	P
NF02ZM0178	Learys Brook at Clinch Cres.	47 34 21	52 44 21	4	P
NF02ZM0179	Virginia River at Guzzwell Drive	47 35 47	52 42 06	4	P
NF02ZM0180	Virginia River at Newfoundland Dr.	47 35 59	52 42 02	4	P
NF02ZM0181	Waterford River at Blackhead Road	47 32 53	52 43 09	4	P
NF02ZM0182	Waterford River at Bremigans Pond	47 31 07	52 51 21	4	P
NF02ZM0183	Kelligrews River at Kelliview Cres.	47 29 45	53 01 03	4	P
NF02ZM0184	Learys Brook at Outer Ring Road	47 34 16	52 47 29	4	P
NF02ZM0185	South Brook at Headwaters	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
<u>CENTRAL REGION</u>					
NF02YM0003	Indian Brook	49 29 53	56 10 35	4	P
NF02YM0004	South West Brook at Baie Verte	49 55 15	56 13 45	4	P
NF02YO0001	Exploits River at Grand Falls	48 55 27	55 39 21	4	P
NF02YO0121	Peter's River	49 06 21	55 24 38	4	P
NF02YO0020	Exploits River at Aspen Brook	48 56 55	55 54 56	4	P
NF02YO0107	Exploits River at Millertown Dam	48 45 34	56 35 32	4	P
NF02YR0001	Pound Cove Brook	49 11 11	55 55 24	4	P
NF02YO0128	Exploits River below Grand Falls	48 56 12	55 37 03	4	P
NF02YO0142	Corduroy Brook	48 56 21	55 39 47	4	P
NF02YO0143	Exploits River at Bond Bridge	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 at Appleton	48 59 41	54 52 04	4	P
NF02YS0001	Terra Nova River at Terra Nova	48 30 27	54 12 43	4	P
NF02YS0011	Terra Nova River at ES Spencer Bridge	48 38 27	54 02 11	4	P
NF02YS0083	Northwest River at Terra Nova	48 23 44	54 11 53	4	P
<u>WESTERN REGION</u>					
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 at Bridge	49 46 10	56 54 15	4	P
NF02YG0009	Main River at Paradise Pool	49 48 46	57 09 24	4	P
NF02YG0020	Eagle Mountain Brook	49 49 53	57 17 15	4	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 at Little Falls	49 20 54	57 14 07	4	P
NF02YL0012	Humber River at Humber Village Bridge	48 59 01	57 45 40	4	P
NF02YL0013	Corner Brook at Margaret Bowater Park	48 56 40	57 56 12	4	P
NF02YL0029	Wild Cove Brook	48 58 28	57 53 02	4	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

P-Provincial

Notes:

1. A total of 62 stations will be sampled during 2008-2009 on the island portion of the province.
2. For statistical analysis it is important that **at least four samples are collected from each station** representing four seasons in a fiscal year.
3. Total number of samples to be collected is 224.

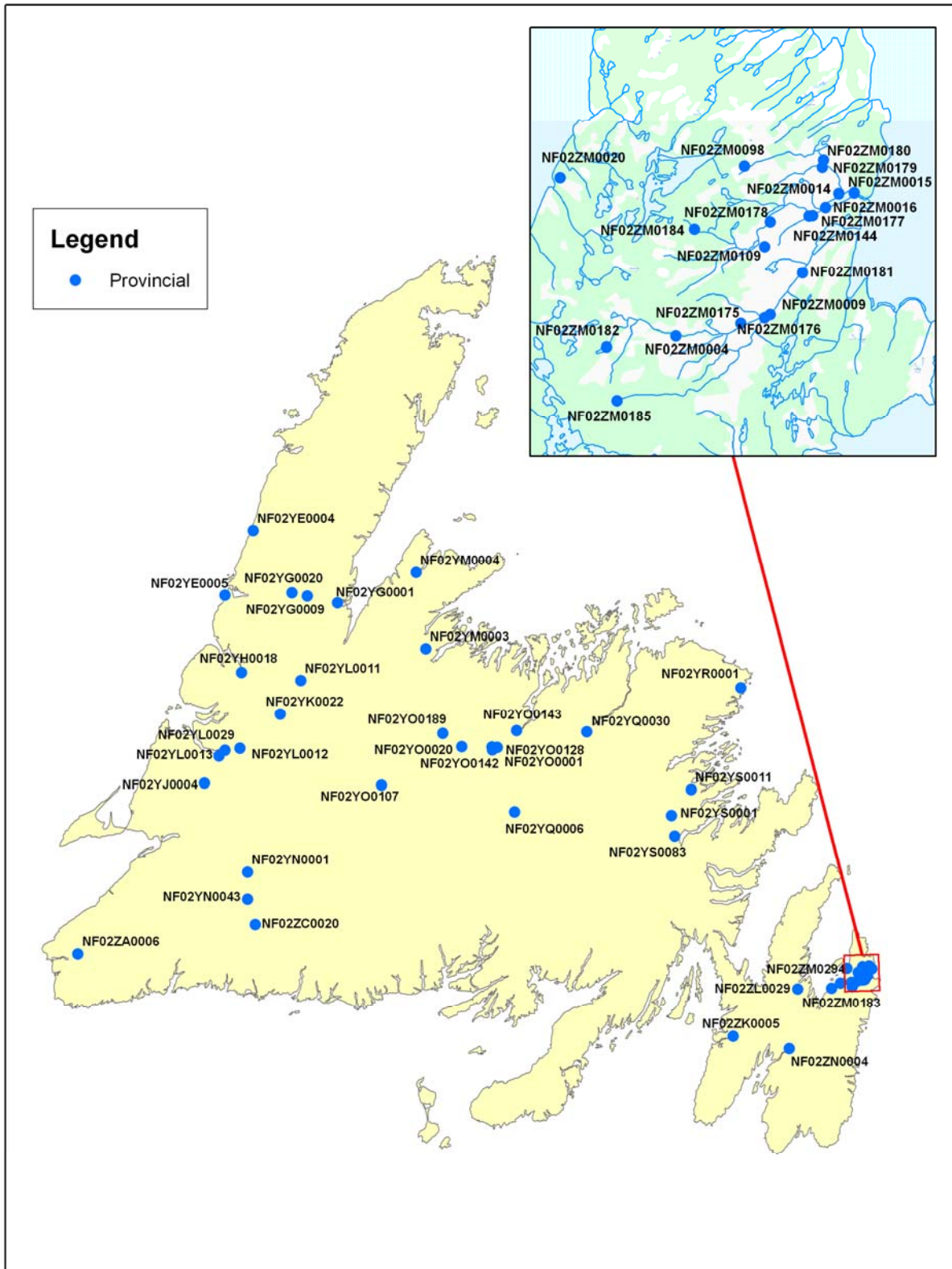


Figure 1 – Water Quality Stations 2008-2009 - Newfoundland

Table B.2: Analytical Parameters 2008 - 2009 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 at Commonwealth Ave.	W	W1, W2	F
NF02ZM0009	Waterford River at Kilbride	W	W1, W2	F
NF02ZM0014	Virginia River at The Boulevard	W	W1, W2	F
NF02ZM0015	Quidi Vidi Lake at Outlet	W	W1, W2	F
NF02ZM0016	Rennies River at Carnell Drive	W	W1, W2	F
NF02ZM0020	Broad Cove Brook	W	W1, W2	F
NF02ZM0098	Virginia River at headwaters	W	W1, W2	F
NF02ZM0109	Mundy Pond at Outlet	W	W1, W2	F
NF02ZM0144	Kelly's Brook at Portugal Cove Rd.	W	W1, W2	F
NF02ZM0175	Waterford River at Brookfield Rd.	W	W1, W2	F
NF02ZM0176	South Brook at Mouth	W	W1, W2	F
NF02ZM0177	Rennies River at Portugal Cove Rd.	W	W1, W2	F
NF02ZM0178	Learys Brook at Clinch Cres.	W	W1, W2	F
NF02ZM0179	Virginia River at Guzzwell Drive	W	W1, W2	F
NF02ZM0180	Virginia River at Newfoundland Dr.	W	W1, W2	F
NF02ZM0181	Waterford River at Blackhead Road	W	W1, W2	F
NF02ZM0182	Waterford River at Bremigans Pond	W	W1, W2	F
NF02ZM0183	Kelligrews River at Kelliview Cres.	W	W1, W2	F
NF02ZM0184	Learys Brook at Outer Ring Road	W	W1, W2	F
NF02ZM0185	South Brook at Headwaters	W	W1, W2	F
NF02ZM0294	Manuals River	W	W1, W2	F
NF02ZN0004	Salmonier River	W	W1, W2	F
<u>CENTRAL REGION</u>				
NF02YM0003	Indian Brook	W	W1, W2	F
NF02YM0004	South West Brook at Baie Verte	W	W1, W2	F
NF02YO0001	Exploits River at Grand Falls	W	W1, W2	F
NF02YO0121	Peter's River	W	W1, W2	F
NF02YO0020	Exploits River at Aspen Brook	W	W1, W2	F
NF02YO0107	Exploits River at Millertown Dam	W	W1, W2	F
NF02YR0001	Pound Cove Brook	W	W1, W2	F
NF02YO0128	Exploits River below Grand Falls	W	W1, W2	F
NF02YO0142	Corduroy Brook	W	W1, W2	F
NF02YO0143	Exploits River at Bond Bridge	W	W1, W2	F
NF02YO0189	Joe's Lake	W	W1, W2	F
NF02YQ0006	North West Gander River	W	W1, W2	F
NF02YQ0030	Gander River at Appleton	W	W1, W2	F
NF02YS0001	Terra Nova River at Terra Nova	W	W1, W2	F
NF02YS0011	Terra Nova River at ES Spencer Bridge	W	W1, W2	F
NF02YS0083	Northwest River at Terra Nova	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 at Bridge	W	W1, W2	F

NF02YG0009	Main River at Paradise Pool	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 at Little Falls	W	W1, W2	F
NF02YL0012	Humber River at Humber Village Bridge	W	W1, W2	F
NF02YL0013	Corner Brook at Margaret Bowater Park	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

* 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 2008-2009

Station #	Description	Latitude	Longitude	Samples/year	Sampled By
<u>EASTERN REGION</u>					
NF02ZM0014	Virginia River at The Boulevard	47 35 02	52 41 29	4	P
NF02ZM0015	Quidi Vidi Lake at Outlet	47 35 02	52 40 51	4	P
NF02ZM0016	Rennies River at Carnell Drive	47 34 40	52 42 03	4	P
NF02ZM0098	Virginia River at Headwaters	47 35 56	52 45 17	4	P
NF02ZM0175	Waterford River at Brookfield Rd.	47 31 34	52 45 48	4	P
NF02ZM0180	Virginia River at Newfoundland Dr.	47 35 59	52 42 02	4	P
NF02ZM0181	Waterford River at Blackhead Rd.	47 32 53	52 43 09	4	P
NF02ZM0182	Waterford River at Bremigans Pond	47 31 07	52 51 21	4	P
NF02ZM0184	Leary's Brook at Outer Ring Road	47 34 16	52 47 29	4	P
NF02ZN0004	Salmonier River	47 10 54	53 23 56	4	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
<u>CENTRAL REGION</u>					
NF02YO0001	Exploits River at Grand Falls	48 55 27	55 39 21	4	P
NF02YO0020	Exploits River at Aspen Brook	48 56 55	55 54 56	4	P
NF02YO0128	Exploits River below Grand Falls	48 56 12	55 37 03	4	P
NF02YO0142	Corduroy Brook	48 56 21	55 39 47	4	P
NF02YO0143	Exploits River at Bond Bridge	49 01 15	55 27 15	4	P
NF02YO0189	Joe's Lake	49 01 43	56 04 01	4	P
NF02YQ0030	Gander River at Appleton	48 59 41	54 52 04	4	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
<u>WESTERN REGION</u>					
NF02YK0022	Humber Canal	49 09 58	57 24 56	4	P
NF02YL0012	Humber River at Humber Village Bridge	48 59 01	57 45 40	4	P
NF02YL0013	Corner Brook at Margaret Bowater Park	48 56 40	57 56 12	4	P
NF02YL0029	Wild Cove Brook	48 58 28	57 53 02	4	P
NF02YL0089	Corner Brook at Swimming Area	48 56 37	57 56 04	2	P
NF02YL0091	Deer Lake at Pasadena Beach	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 at stations for recreational significance will take place in the summer months from July – August.
2. Database maintained under CANAL.
3. Samples are analyzed by provincial lab.

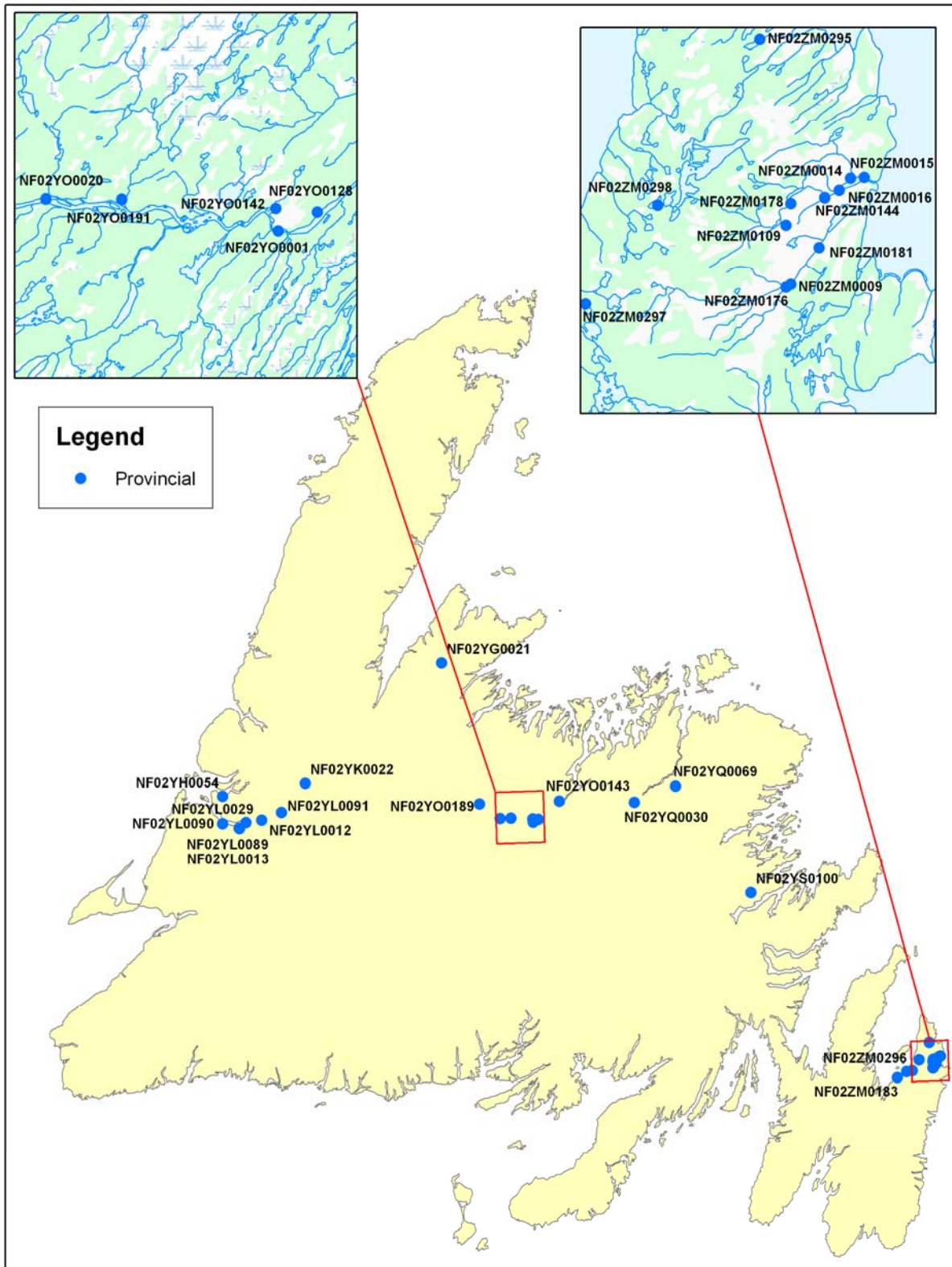


Figure 2 – Bacteriological Water Quality Stations 2008-2009 - Newfoundland

Table B.5: ENVIRODAT – Data Management

Management Activities			
Activity	Lead Agency	NL Contribution*	EC Contribution*
Laboratory procedures and quality control practices.	Environment Canada	N/A	N/A
Data audits, custody and transfer.	Environment Canada	\$1,000	\$4,000
Management of national water quality database (ENVIRODAT).	Environment Canada	N/A	\$2,000
Quality assurance and quality control of datasets.	Newfoundland and Labrador Department of Environment and Conservation	\$11,000	\$2,000
Field sheets and station identification sheets.	Environment Canada	N/A	N/A
Data entry of station identification information and sample submission information upon receipt.	Environment Canada & Newfoundland and Labrador Department of Environment and Conservation	\$1,000	\$2,000
Processing, validating and loading of analytical results performed at NLET or ALET to ENVIRODAT.	Environment Canada	\$3,000	\$3,000
Resolving historical data issues.	Environment Canada & Newfoundland and Labrador Department of Environment and Conservation	\$2,000	\$2,000
Activities relating to problem resolution, data modifications and additions, and requests for information.	Environment Canada	N/A	\$2,000
Availability of data outside the firewall for new data loaded to EMVIRODAT.	Environment Canada	N/A	N/A
Consistent planning and coordinating of modifications to data extraction tools.	Environment Canada	\$1,000	\$1,000
Current Issues			
Storing and grouping of variable and method codes that facilitate data entry, data extraction and data interpretation.	Environment Canada	\$1,000	\$2,000
Implementation of ENVIRODAT Web Service	Environment Canada & Newfoundland and Labrador Department of Environment and	\$3,000	\$3,000

	Conservation		
Future Issues			
On-going grouping of variable and method codes that facilitate data entry, data extraction and data interpretation.	Environment Canada	To be determined	To be determined
Quality flagging of measurement data	Environment Canada	To be determined	To be determined
TOTAL:		\$23,000	\$23,000

* Activities listed in this table are work-shared activities. Listed dollar values are in-kind contributions.

Please refer to Annex for activity details.

Table B.6: Technical Documents and Reporting

Project	Activity	Responsible Agency	NL Contribution*	EC Contribution*	Remarks
1. Maintenance and Updating	1.1 Management of provincial water quality database	Newfoundland and Labrador Department of Environment and Conservation			
	1.2 Update of CANAL webpage	Newfoundland and Labrador Department of Environment and Conservation			
	1.3 On-going updating of the Site Documentation Database	Newfoundland and Labrador Department of Environment and Conservation			
	1.4 On-going updating of the Bacteriological Database	Newfoundland and Labrador Department of Environment and Conservation			
	1.5 On-going updating of the Water Quality Index scores	Newfoundland and Labrador Department of Environment and Conservation	\$13,000**	\$13,000**	- NL is the lead jurisdiction and responsible for the completion of work - EC will pay its share by March 31 st , 2009 to NL Exchequer
	1.6 On-going updating of the summary statistics	Newfoundland and Labrador Department of Environment			

		and Conservation			
	1.7 Real-time Service Delivery (ADRS – reporting)	Newfoundland and Labrador Department of Environment and Conservation			
	1.8 Addition of CABIN Sites to CANAL	Environment Canada & Newfoundland and Labrador Department of Environment and Conservation			
	1.9 On-going updating of the OGC GIS web services	Newfoundland and Labrador Department of Environment and Conservation			
2. Technical Documents – WQMA	2.1 Fact sheets on all CANAL sites	Environment Canada & Newfoundland and Labrador Department of Environment and Conservation	\$13,000**	\$13,000**	- NL is the lead jurisdiction and responsible for the completion of work - EC will pay its share by March 31 st , 2009 to NL Exchequer
	2.2 Water Quality Index – research and development	Newfoundland and Labrador Department of Environment and Conservation			
	2.3 Completion of NL-WQMA	Newfoundland and Labrador			

	Sampling Manual	Department of Environment and Conservation			
	2.4 Create and maintain Recreational Monitoring website	Newfoundland and Labrador Department of Environment and Conservation			
	2.5 On-going Updating of WQMA website	Newfoundland and Labrador Department of Environment and Conservation			
3. Technical Documents - RTWQ	3.1 Real-Time Water Quality Deployment and Annual Reports	Newfoundland and Labrador Department of Environment and Conservation			
	3.2 Planning for Real-Time Water Quality Monitoring for Mega-projects	Newfoundland and Labrador Department of Environment and Conservation			
	3.3 Development of Real-Time Water Quality inventory/servicing database	Newfoundland and Labrador Department of Environment and Conservation			
	3.4 Revision of QA/QC protocols for Real-Time Water Quality data	Newfoundland and Labrador Department of Environment and Conservation			
	3.5 Completion of Real-Time Water Quality Manual	Newfoundland and Labrador Department of Environment and Conservation			

	3.6 On-going Updating of Real-Time Water Quality Website	Newfoundland and Labrador Department of Environment and Conservation			
4. Reporting	4.1 Project WET	Environment Canada & Newfoundland and Labrador Department of Environment and Conservation	\$ 4,000**	\$ 4,000**	- NL is the lead jurisdiction and responsible for the completion of work - EC will pay its share by March 31 st , 2009 to NL Exchequer
	4.2 Fluvarium Project	Environment Canada & Newfoundland and Labrador Department of Environment and Conservation			
TOTAL:			\$30,000**	\$30,000**	

* Activities listed in this table are work-shared activities with the exception of activities marked as **.

**Amount to be paid by each party. Environment Canada will pay its share by March 31, 2009.

Please refer to Annex for activity details.

Schedule C

Cost Shared Activities for Fiscal Year 2008-2009

Schedule C – Cost Shared Activities 2008-2009

Activity	NL Contribution	EC Contribution	Remarks
<p>Recurrent Surveys on Churchill River - week of August 25th, 2008</p>	<p>\$43,000</p>	<p>\$43,000 (\$13,000 to EC lab in Burlington; \$20,000 to EC lab in Moncton; \$5,000 to NL DOEC)</p>	<p>- Co-lead between NL and EC</p> <p>- EC will pay its share by March 31st, 2009 to NL Exchequer</p> <p>- NL equivalent financial contribution is part of the Water Quality Monitoring Agreement budget</p>
<p>Real-time Water Quality Monitoring Network</p> <p>- Operation and maintenance of two federal real-time water quality stations (Main River; Minipi River)</p> <p>- Operation and maintenance of three provincially operated real-time water quality stations (Waterford River; Leary’s Brook; Humber River)</p> <p>- Operation and maintenance of industry funded real-time water quality stations (5 stations at VBNC; 1 station at Long Harbour (VBNC); 2 stations at Come B Chance; 3 stations at Duck Pond Mine; 2 stations at IOC; 4 stations at Lower Churchill River)</p>	<p>\$65,000</p>	<p>\$65,000</p>	<p>- For station details see Table C.1 and Figures 3 & 4</p> <p>- NL is the lead jurisdiction and responsible for the completion of work</p> <p>- EC will pay its share by March 31st, 2009 to NL Exchequer</p> <p>- NL equivalent financial contribution is part of the Water Quality Monitoring Agreement budget</p>
<p>Northern Sampling and Analysis (Labrador)</p>	<p>\$50,000</p>	<p>\$50,000</p>	<p>- Refer to Table C.2 and Figure 5 for sampling details</p> <p>- Labrador water samples are collected by both federal and provincial staff</p> <p>- Refer to Tables C.3 & C.4 for parameter analysis details</p> <p>- NL is the lead jurisdiction and responsible for the completion of work</p>

			<ul style="list-style-type: none"> - EC will pay its share by March 31st, 2009 to NL Exchequer - NL equivalent financial contribution is part of the Water Quality Monitoring Agreement budget
Biomonitoring (Environment Canada)	\$20,000	\$20,000*	<ul style="list-style-type: none"> - Co-lead between NL and EC - EC will pay its share by March 31st, 2009 to NL Exchequer - NL equivalent financial contribution is part of the Water Quality Monitoring Agreement budget
Total	\$178,000	\$178,000	

* This is a minimum EC contribution and is likely to increase.

Please refer to Annex for activity details.

Table C.1 Real-time Water Quality Monitoring Stations

Station #	Description	Latitude	Longitude	Accessibility	Remarks
<u>VALE INCO NEWFOUNDLAND AND LABRADOR (VALE INCO NL)</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>DUCK POND OPERATION – TECK COMINCO LTD.</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 @ Julienne Narrows	53 09 05	66 47 08	BS	
<u>LONG HARBOUR (VALE INCO NL)</u>					
NF02ZK0023	Rattling Brook below Bridge	47 24 51	53 48 26	VA	- This station is fully industry funded
<u>NEWFOUNDLAND AND LABRADOR HYDRO (NL HYDRO)</u>					
_____**	Churchill River below Metchin Brook***			HS	- These stations are fully industry funded
_____**	Churchill River at Grizzle Rapids***			HS	
_____**	Churchill River below Muskrat Falls***			HS	
NF03OE0001	Churchill River above Muskrat Falls	53 14 52	60 47 21	HS	- This station is funded by DOEC

<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>MIAWPUKEK WATERSHED (WATER SUPPLY INTAKE)</u>					
NF02ZE0033	Southwest Brook below Southwest Pond	47 50 56	55 46 04	VA	- This station is fully funded by the Canada – Newfoundland and Labrador Water Quality Monitoring Agreement
<u>CANADA-NEWFOUNDLAND AND LABRADOR WATER QUALITY MONITORING AGREEMENT</u>					
NF02YG0009	Main River*	49 46 48	57 09 24	HS	- These stations are fully funded by the Canada – Newfoundland and Labrador Water Quality Monitoring Agreement
NF03OE0030	Minipi River *	52 36 53	61 11 11	HS	
NF02ZE0033	Water Supply Intake (Miawpukek watershed)	47 50 56	55 46 04	VA	
NF02ZM0178	Learys Brook*	47 34 21	52 44 21	VA	
NF02ZM0009	Waterford River*	47 31 46	52 44 34	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 4 times per year.

** Station number to be determined.

*** Exact location and coordinates to be determined.

VA – Vehicle Access Site
 HS – Helicopter Access Site
 BS – Boat Access 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 and the cost is covered by DOEC.
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.

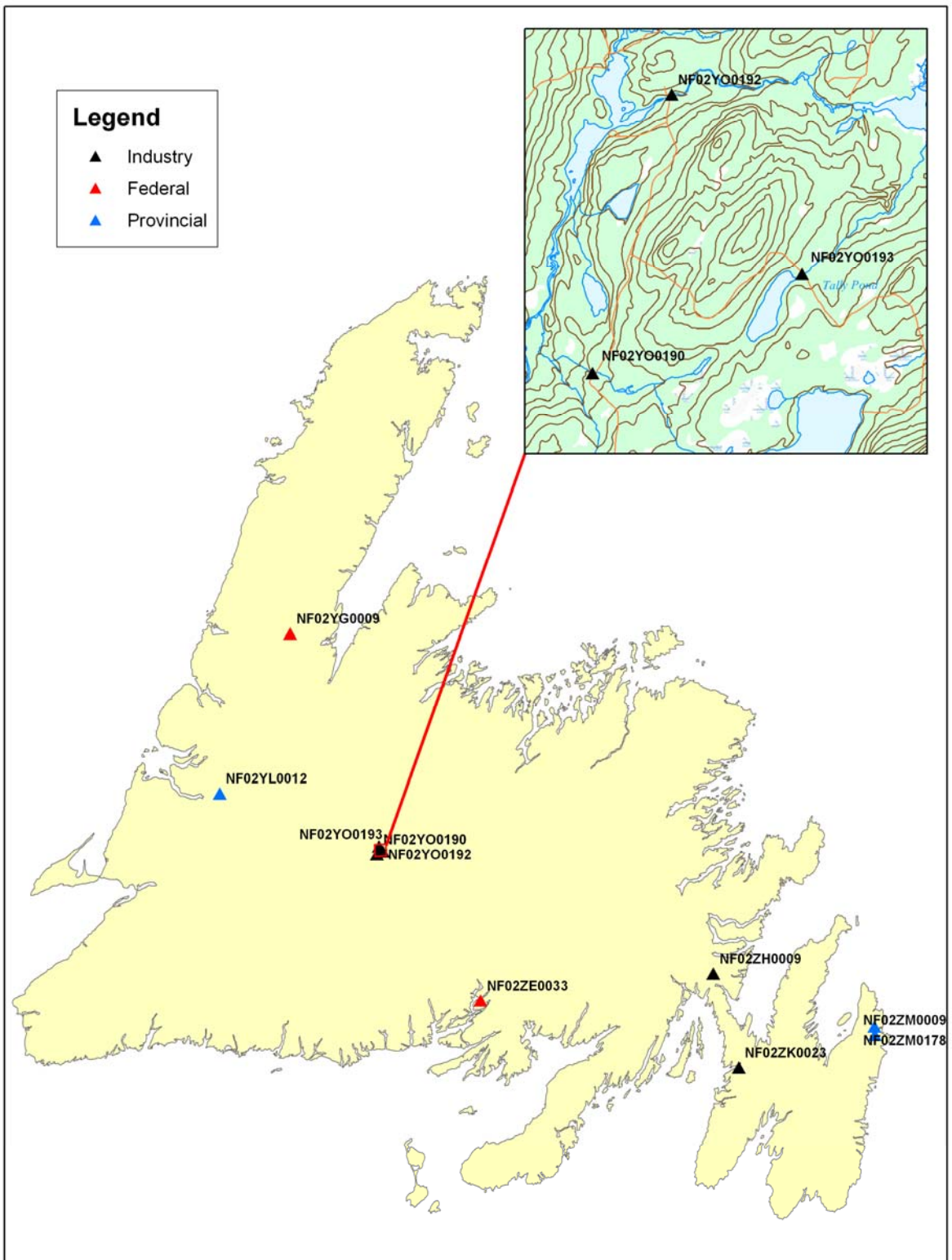


Figure 3 – Real-Time Water Quality Stations 2008-2009 - Newfoundland

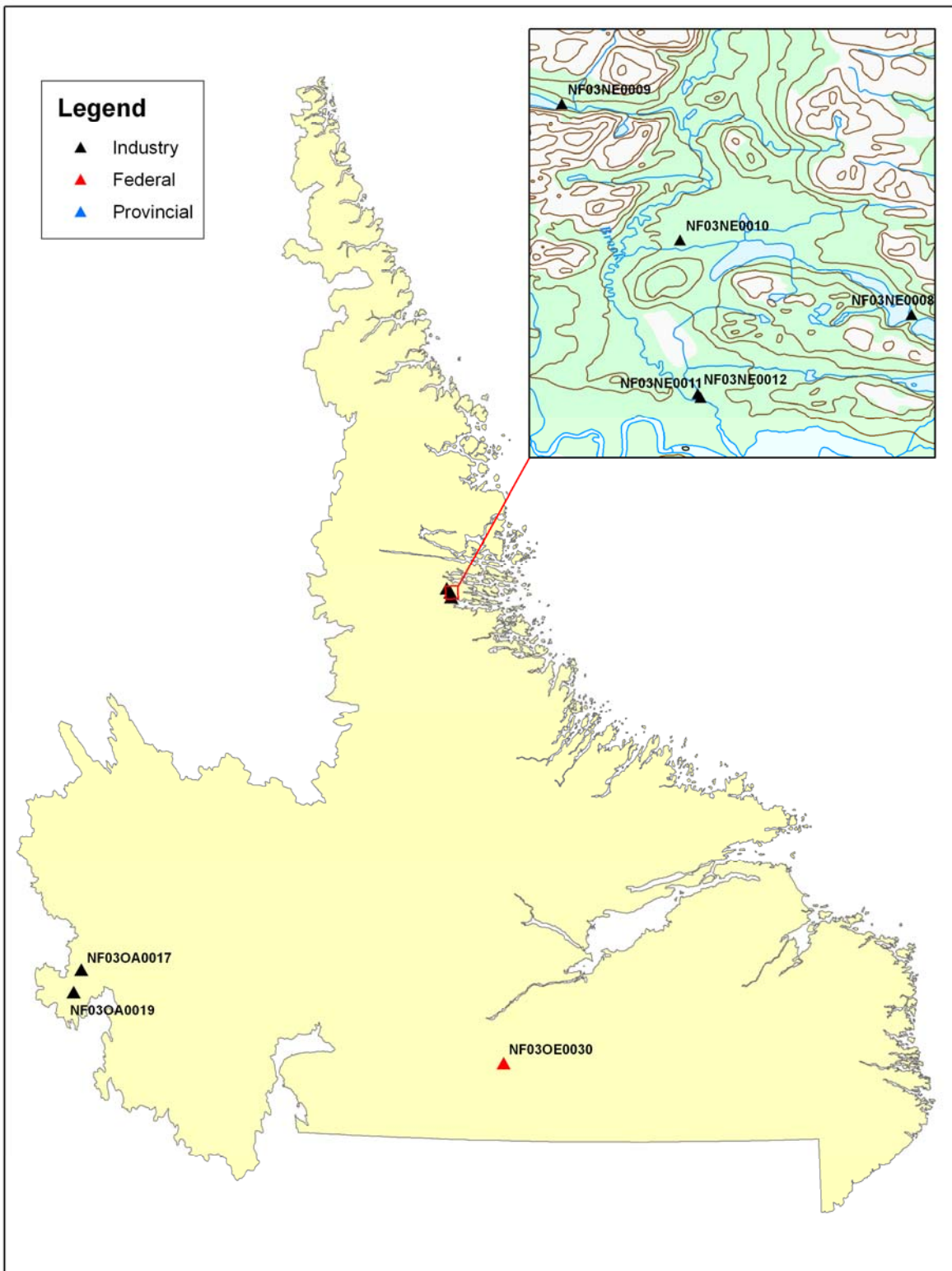


Figure 4 – Real-Time Water Quality Stations 2008-2009 - Labrador

Table C.2: Northern Index Station Location, Designation and Sampling Frequency 2008-2009

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 2008-2009 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.

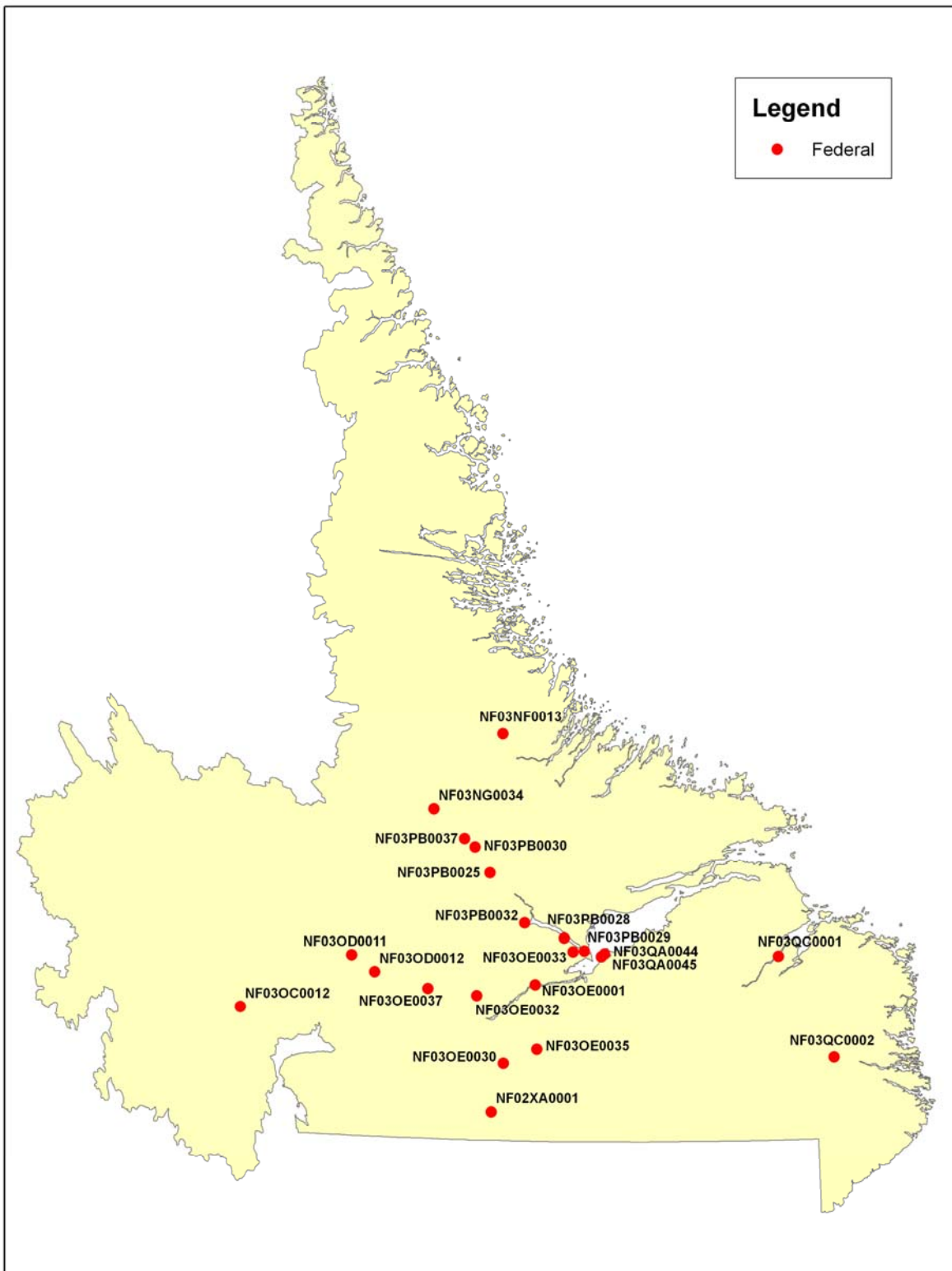


Figure 5 – Water Quality Stations 2008-2009 - Labrador

Table C.3: Analytical Parameters 2008 – 2009 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 2008-2009

Schedule D – Special Projects for Fiscal Year 2008-2009

Project	Activity	Remarks	NL Contribution	EC Contribution
1. Canadian Environmental Sustainability Indicators (CESI)	Site selection, water quality data extraction, and manipulation	- NL is the lead jurisdiction and responsible for the completion of work	\$20,000	\$20,000
	Decision on WQI inputs and calculation of ratings for each station			
	Overview interpretation of results (2 pager on parameters & issues driving the ratings and spatial trends)	- EC will pay its share by March 31 st , 2009 to NL Exchequer		
	Data analysis and report preparation	- CESI 2009 Report		
2. Comparative Guidelines under CCME	Comparative assessment of site-specific objective methodology	- NL is the lead jurisdiction and responsible for the completion of work - EC will pay its share by March 31 st , 2008 to NL Exchequer	\$20,000	\$20,000
3. Mobile Water Quality Testing Lab	In-situ water quality monitoring	- Under discussion for fiscal year 2009-2010		
4. Pharmaceuticals and pesticide monitoring	Sampling for pharmaceuticals and pesticides	- Under discussion for fiscal year 2009-2010		
5. Chemical Management Plan	Development of a chemical management plan	- Under discussion for fiscal year 2009-2010		
Total:			\$40,000	\$40,000

Please refer to Annex for activity details.

Schedule E

Samples Collected in 2007-2008 Fiscal Year

Table E.1: Provincial Samples Collected in 2007-08 Fiscal Year

Station #	Description	Number of Samples Scheduled in 07-08	Number of Samples Collected in 07-08
<u>EASTERN REGION</u>			
NF02ZK0005	Northeast River	4	3
NF02ZL0029	Goulds Brook	4	3
NF02ZM0004	Waterford River	4	4
NF02ZM0009	Waterford River	6	5
NF02ZM0014	Virginia River	6	4
NF02ZM0015	Quidi Vidi Outlet	6	4
NF02ZM0016	Rennies River	6	4
NF02ZM0020	Broad Cove Brook	4	3
NF02ZM0098	Virginia River	4	4
NF02ZM0109	Mundy Pond	4	4
NF02ZM0144	Kelly's Brook	6	3
NF02ZM0175	Waterford River	4	4
NF02ZM0176	South Brook	4	4
NF02ZM0177	Rennies River	4	3
NF02ZM0178	Learys Brook	4	4
NF02ZM0179	Virginia River	4	4
NF02ZM0180	Virginia River	4	4
NF02ZM0181	Waterford River	6	3
NF02ZM0182	Waterford River	4	4
NF02ZM0183	Kelligrews River	4	3
NF02ZM0184	Learys Brook	4	4
NF02ZM0185	South Brook	4	3
NF02ZN0004	Salmonier River	4	3
NF02ZM0294	Manuals River	4	3
NF02ZG0016	Garnish River	4	2
NF02ZH0001	Pipers Hole River	4	2
NF02ZK0001	Rocky River	4	2

Station #	Description	Number of Samples Scheduled in 07-08	Number of Samples Collected in 07-08
<u>CENTRAL REGION</u>			
NF02YM0004	South West Brook	4	5
NF02YM0003	Indian Brook	4	4
NF02YO0123	South Twin Lake	4	4
NF02YO0189	Joe's Lake	4	5
NF02YO0107	Exploits River	4	7
NF02YO0020	Exploits River	4	5
NF02YO0001	Exploits River	4	5
NF02YO0128	Exploits River	4	5
NF02YO0142	Corduroy Brook	4	5
NF02YO0143	Exploits River	4	6
NF02YO0006 (xx)	Peter's River	4	5
NF02YQ0006	North West Gander River	4	6
NF02YQ0030	Gander River	4	5
NF02YS0001	Terra Nova River	4	5
NF02YS0011	Terra Nova River	4	7
NF02YS0083	Northwest River	4	6
<u>WESTERN REGION</u>			
NF02YE0004	Portland Creek	4	3
NF02YE0005	Western Brook	4	3
NF02YG0001	Main River	6	5
NF02YG0020	Eagle Mountain Brook	6	5
NF02YH0018	Lomond River	4	3
NF02YJ0004	Pinchgut Brook	4	2
NF02YK0022	Humber Canal	4	2
NF02YL0011	Humber River	4	1
NF02YL0012	Humber River	6	3
NF02YL0013	Corner Brook	6	3
NF02YL0029	Wild Cove Brook	6	2
NF02YN0001	Lloyds River	4	2

Station #	Description	Number of Samples Scheduled in 07-08	Number of Samples Collected in 07-08
NF02ZA0006	Grand Codroy River	4	2
NF02ZC0020	Buck Lake	4	1
NF02YN0043	Peter Stride's Lake	4	1
NF02ZB0001	Isle aux Morts River	4	2
NF02YC0001	Torrent River	4	2
NF02YJ0006	Harry's River	4	1
<u>LABRADOR REGION</u>			
NF02XA0001	Little Mecatina River	4	4
NF03NF0013	Ugjohtok River	4	3
NF03OC0012	Atikonak River	4	3
NF03OD0011	East Metchin River	4	5
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	4
NF03QC0001	Eagle River	4	3
NF03QC0002	Alexis River	4	3
NF03NG0034	Shipiskan Lake East	4	4
NF03OD0012	Wilson River E. Branch	4	5
NF03OE0035	Dominion Lake	4	4
NF03OE0037	Cache River	4	5
NF03PB0028	Cape Caribou River	4	4
NF03PB0029	Northwest River	4	5
NF03PB0030	Seal Lake Narrows	4	4
NF03PB0032	Susan River	4	4
NF03PB0037	Wuchusk Lake	4	4
NF03QA0044	Carter Basin	4	5

Station #	Description	Number of Samples Scheduled in 07-08	Number of Samples Collected in 07-08
NF03QA0045	Kenamu River	4	5

Notes:

1. Total number of samples collected in 2007-08 does not include triplicate samples or bottle blanks.
2. Total number of samples planned for 2007-08 for Eastern region was 120; but 93 were actually sampled.
3. Total number of samples planned for 2007-08 for Central region was 64; but 78 were actually sampled.
4. Total number of samples planned for 2007-08 for Western region was 82; but 43 were actually sampled.
The western position was vacant from November 2007 – March 2008.
5. Total number of samples planned for 2007-08 for Labrador region was 88; but 94 were actually sampled.

Schedule F
Meeting Minutes

Canada-Newfoundland and Labrador Water Quality Monitoring Agreement

Annual Meeting

St. John's, NL

Confederation Building

Date: May 15th, 2007

Attendance:

Joe Pomeroy (Environment Canada)
Haseen Khan (Water Resources Management Division)
Amir Ali Khan (Water Resources Management Division)
Jennifer Bonnell (Water Resources Management Division)

1) Opening Discussion

- Before reviewing the Annual Work Schedule, Joe and Haseen briefly discussed some relevant issues, including the First Nations RTWQ training course and the International Polar Year
- Haseen mentioned the fact that for the first time, the WQMA program was mentioned in by the Deputy Minister in the budget, and thanked Joe for his letters which supported the budget requests that were made and ultimately granted
- Joe gave his support to the opening of a Labrador office under the WQMA, and will send an email to Haseen stating his support.

2) Review of the Annual Work Schedule - General

- **Corrections/additions** for the first several pages included:
 - i. Addition of Jean-François Bibeault as the signing authority for the CESI program (p. 2)
 - ii. Francine Rousseau as the signing authority for INAC (p. 3)
 - iii. Change on p.3 from INAC to Environment Canada/First Nations Water Management Strategy as partners for Schedule D
 - iv. Addition of Art Cook as a member of the Coordinating Committee

ACTION ITEM: Meeting to be scheduled for June 21/22 with Cathy Cormier, Denis Parent, Joe Pomeroy, Jean-François Bibeault, and WRMD staff to discuss ENVIRODAT, CANAL, and CESI (and CESI related products). Haseen will draft an agenda for this meeting.

3) Review of Schedule B – Work Shared Activities 2007-08

- **Lake Water Quality Sampling and Analysis (LRTAP)**
 - i. A discussion is in progress with Tom Clair (EC) regarding LRTAP. Joe suggested that 2007-2008 be a negotiation year, and

2008-2009 be the start of the actual work on this project – negotiations ongoing.

- ii. Responsible agency changed to EC – Atlantic Laboratory for Environmental Testing (ALET)

- **Biomonitoring project was moved to Schedule C**

- i. Discussion of biomonitoring project. NL wants to piggyback on the federal program, as we have no existing expertise in this area.
- ii. Joe has asked for 20,000 for biomonitoring in NL (some of these funds will be required for taxonomic analysis)
- iii. EC will train NL staff to take samples – online training will be available in the coming year
- iv. There is now a dedicated staff member dealing with CABIN (Canadian Aquatic Biomonitoring Network) data
- v. Enough samples need to be taken initially to establish a reference site (background samples, notes on habitat, water samples)
- vi. EC will help NL staff interpret data, etc...
- vii. Opportunities may arise with the International Polar Year (IPY)
 - 1. Email print out was provided by Joe with details of three rivers in Labrador
 - 2. IPY is interested in partnering with NL WRMD
 - 3. Issues remain around obtaining a helicopter to access sites
 - 4. IPY staff would do the work/analysis and put data into CABIN database

ACTION ITEM: Kent Slaney will going to Labrador in July, but it seems unlikely that any extra time could be added to this trip. Annette Tobin will be going to Labrador in October, and has helicopter time then that may possibly be used for IPY. Consultation is needed between IPY and WRMD staff on this issue. Helicopter time in Labrador is in very high demand.

- viii. By moving Biomonitoring to Schedule C (cost shared activities), it will assist in procuring provincial funding for the project

ACTION ITEM: Joe will provide details of this work to Haseen

ACTION ITEM: Joe will bring forward the idea that one of the IPY sites be made near or coincident with existing RTWQ sites

- **EC/First Nations WMS (formerly named INAC) was moved to Schedule D (Special Projects)**

- **Review of Table B.1**

This table was revised by WQMA staff. There are no changes in the Labrador network (with the exception of possible addition of sites in Western Labrador). On the island, the number of stations remained more or less the same, although some sites which have no issues in the long term datasets were dropped, and some were added. Each region no includes 1 or 2 ponds/lakes, and the sampling schedule is base on CESI reporting requirements.

- i. New stations need ENVIRODAT numbers/coordinates (*this applies to all tables where new stations were added*)
- ii. Notes were added to the bottom of the table indicating total # of samples to be collection, total number of stations sampled by federal staff and by provincial staff

- **Review of Table B.4**

- i. Notes added indicating Database (bacteriological) is maintained in CANAL and that samples are analysed by a provincial lab

- **Review of Table B.5**

- i. Section 4.7 – Name change to NL-WQMA Sampling Manual or “Atlantic” WQMA Sampling Manual. NL is updating the sampling manual to reflect our monitoring details and operational matters.

ACTION ITEM: NL will send a draft to Joe for review by EC staff and by other jurisdictions in the Atlantic Province, who will be welcome to use the manual as well

- ii. Notes added at bottom of table indicating that QA/QC and Data Management Sections (1 and 2) refers to ENVIRODAT
- iii. Section 6 added – CANAL Maintenance and Update
- iv. Haseen discussed the meeting he had with NL Hydro, who want to establish eight new RTWQ stations for the Lower Churchill development, as well as the two new stations at the Come by Chance oil refinery

ACTION ITEM – Jennifer and Ali to discuss Table B.5, the relevancy, adequacy and status of these tasks

ACTION ITEM – Jennifer and Ali to discuss the new CANAL maintenance and update section (Section 6), and develop sub-tasks

ACTION ITEM – Ali, Jennifer and Renee to discuss the revision of the QA/QC protocol (Haseen is not satisfied with the current protocol) and whether to add anything to the RTWQ section of this table (Section 5)

4) **Review of Schedule C (Cost Shared Activities)**

- **Web Service Activity**
 - i. Renamed to Recurrent Surveys (web service for digitized hydrologic watershed mapping (CANAL))
 - ii. The original task of digitizing WQMA watersheds is completed, and now NL would like to do hydrometric boundaries (those that are co-existent, near or nested with WQMA watersheds)
 - iii. Joe, Haseen and Ali all want to move this work forward
 - iv. Currently, 50,000 is given to hydrometric group (per year) Haseen suggests that
 - v. Haseen stressed the importance of doing this work jointly

ACTION ITEM: Joe to discuss with Jean –Guy the prospect of using some of this funding to work on technical projects

- **Real-Time Water Quality Monitoring Network**
 - i. Joe may not be able to provide Hydrolabs for this project
 - ii. Both EC and WRMD have increased the amount to 50,000 each for this project (EC has requested this, but it is not confirmed)
- **Biomonitoring Project Added to Schedule C**
 - i. Both EC and WRMD to contribute 20,000, with the note that discussion is ongoing
 - ii. Biomonitoring under IPY is also added, with the note that resources are still in negotiation
- **Application of Sediment Quality Index** – removed from Schedule C
- **CESI** – removed from Schedule C
- **Vulnerability index Project** - removed from Schedule C
- **Development of user friendly online WQI calculator** – removed from Schedule C
- **Addition of an Education and Outreach Project**
 - i. Further discussions will take place with Todd Smith (EC)
 - ii. Awareness program needed to promote the work of the WQMA, possibly including lectures, posters, fact sheets, pamphlets
 - iii. No dollar value indicated
- **Table C.1**
 - i. Notation was added to indicate vehicular access (as opposed to helicopter or boat access)

ACTION ITEM: Ali to contact Todd Smith to discuss Education and Outreach

5) **Haseen Khan and Ali Khan – Advancement Projects**

Before reviewing Schedule D, a discussion about potential projects that Ali and Haseen are interested in took place.

- **Comparative Guidelines Project**
 - i. This project would look at biological methods of establishing site-specific water quality guidelines, and compare them with the statistical methods of deriving site-specific guidelines
 - ii. This project has been added to Schedule D
 - iii. Ken Doe (EC) has toxicology facilities that may be able to be used for this project

ACTION ITEM: Joe will Email Ken Doe to invite him to the Comparative Guidelines meeting June 26/27.

- **RTWQ Advanced Technology Project**
 - i. Pilot project using IMMERSAT technology at Leary's Brook to gain expertise and to potentially use in the future at sites where water quality information is needed, but not water quantity information (i.e. not required to joint with hydrometric sites in order to record data)
 - ii. Pilot project using SCAN technology at drinking water sites and oil refineries – contaminant alarm system and oil detection.
 - iii. Haseen is looking for about 50-60,000 a year for both projects (in total).
 - iv. Joe is not sure of the budget, but is very interested in this work, and further discussion is needed.
 - v. EC may have funds at a later date

6) **Review of Schedule D**

- **CESI**
 - i. Development of protocols for site-specific guidelines – removed

ACTION ITEM: Jennifer and Ali to email Joe/Denis with draft of this report for review, and will send a copy of it to Les Swain for his input as well (issues remain around use of pH, sample size, etc).

- ii. Site-level templates – removed
- iii. Short method paper on protocol for WQI calculations – removed
- iv. Application of Sediment Quality Index – removed (project completed and sent to NGSO)

1. Once the biomonitoring project has made progress, this Index may be integrated
- v. Vulnerability Index – removed (funding cancelled)
- vi. CCME WQI and RTWQ – removed
 1. There were some problems with this project, and about 75% of it is done
 2. Joe told Ali to finish it as possible, and send it along when it is completed

ACTION ITEM: When Joanne Sweeney is in the St. John's office, she will complete work on this project

- vii. **Development of user friendly WQI online calculator, Phase II** – meeting in June to discuss this issue with Jean-Francois Bibeault
 1. Amounts increased to 35,000 contribution from both WRMD and EC

ACTION ITEM: Ali will send an email to Joe explaining the project, so he can look for funding for this project (otherwise it is currently on hold)

- viii. Creating inventory of land cover for watersheds (WQMA) – removed (completed and loaded into CANAL)
 - ix. **Comparative Guidelines project added under CESI**
 1. Funding to be 20,000 each from WRMD and EC
- **INAC – name changed to Environment Canada/First Nations Water Management Strategy**
 - i. Additional task under this added: Annual operation and maintenance at Conne River (15,000 from each partner – EC and WRMD)
 - ii. This project will move to Schedule C next year
 - **Addition of Advanced RTWQ Monitoring Project**
 - i. SCAN Technology
 - ii. 30,000 from each partner is required and both parties will try and determine if funding is available during this year (EC and WRMD)
 - **Addition of Water Quality Monitoring using Remote Sensing**
 - i. Taken from Ali's MEMO (#3): monitoring of water quality using remote sensing and calibration of imagery using real-time water quality monitoring in Newfoundland and Labrador
 - ii. 10,000 from each partner is required and both parties will try and determine if funding is available during this year (EC and WRMD)

7) Review of Schedule E

- Update sampling info for Central Region
- Add notes at the end of the table with total # of samples planned for each region, and the total 3 of samples collected for each region

Canada-Newfoundland and Labrador Water Quality Monitoring Agreement

St. John's, NL

Confederation Building

Date: March 19th, 2008

Attendance:

Joe Pomeroy (Environment Canada)

Haseen Khan (Water Resources Management Division)

Art Cook (Environment Canada)

The objective of this meeting was to discuss the progress of the 2007-2008 Annual Work Schedule and plan for the 2008-2009 Annual Work Schedule.

Annex

Activity Details for Fiscal Year 2008-2009

Annex

Table B.5 – ENVIRODAT – Data Management

Laboratory procedures and quality control practices: Laboratory analyses are done to ISO guidelines 17025 specifications. Detection limits for all parameters must be mutually agreed upon between EC and NL DOEC.

Data audits, custody and transfer: Data is audited yearly to identify trends in errors and re-occurring issues. NL DOEC agreement data will be housed within the EC ENVIRODAT database. Relevant data transfers to ENVIRODAT will be carried out by EC. An extraction tool will be provided that will allow NL DOEC to extract data for purposes of review and interpretation.

Management of national water quality database (ENVIRODAT): Databases are backed up daily for recovery purposes. Off-site backups are kept for disaster recovery purposes. Database management is an important on-going function requiring dedicated resources. Modifications/upgrades/ additions to ENVIRODAT are managed through one-point of contact to ensure consistent approach.

Quality assurance and quality control of datasets: Datasets are checked to ensure that sample locations, parameter suites, results, etc. are accurate and representative of the sampled station.

Field sheets and station identification sheets: Design of field sheets and station identification sheets are implemented in coordination with NL DOEC. Proposed changes are vetted by NL DOEC as part of consultation process.

Data entry of station identification information and sample submission information upon receipt: Station identification sheets are checked to ensure that geo-coordinates and station identification are valid. Sample submission sheets are checked to ensure correct information is identified and initialized. Inconsistencies are resolved through communication with NL DOEC.

Processing, validating and loading of analytical results performed at NLET or ALET to ENVIRODAT: Data from NLET is checked bi-weekly to determine when new data is ready for transfer. Data is validated as to sample number, station id, sample date, sample time, and field parameters to ensure that sample data matches expected data collected for sample. Inconsistencies are resolved through communication with NL DOEC.

Resolving historical data issues: Missing data are addressed for previous years as required. Erroneous sample information is corrected as needed and changes are tracked and communicated.

Activities relating to problem resolution, data modification and additions, and requests for information: Providing one-point contact for data management issues. Problem resolution is timely and well-communicated.

Availability of data outside the firewall for new data loaded to ENVIRODAT:

Mechanism exists to ensure data is ported to external EC server on a weekly basis.

Consistent planning and coordinating of modifications to data extraction tools: Modifications to ENVIRODAT data extraction tools are coordinated in consultation with NL DOEC. Modifications will not adversely affect the ability of partners to extract data.

Storing and grouping of variable and method codes that facilitate data entry, data extraction and data interpretation: Variables and methods are grouped in a fashion that

provides efficiency and ease-of-use for data extraction tools. Variables and methods are grouped so that data user can easily identify like variables for data interpretation.

Implementation of ENVIRODAT Web Service: EC to coordinate design of web service. NL DOEC to implement mechanism to utilize service.

On-going grouping of variable and method codes that facilitate data entry, data extraction and data interpretation: Variables and methods and grouped in a fashion that provides efficiency and ease-of-use for data extraction tools.

Quality flagging of measurement data: Identify confidence levels. Integrate quality flagging into web service and data extraction tools.

Table B.6: Technical Documents and Reporting

Management of Provincial Water Quality Database: Updating and management of the provincial water quality database.

Update of CANAL webpage: Continual updating of the CANAL webpage to reflect all new or changed information.

On-going Updating of the Site Documentation Database: Updating the station profiles for all existing stations and adding any new stations to the site documentation with required information.

On-going Updating of the Bacteriological Database: Updating the bacteriological data as new data becomes available from the recreational and WQMA bacteriological monitoring programs.

On-going Updating of the Water Quality Index Scores: Updating the Water Quality Index scores using the most recent data from ENVIRODAT.

On-going Updating of Summary Statistics: Updating the summary statistics using the most recent data from ENVIRODAT.

Real-time Service Delivery (ADRS-reporting): Upgrades and development of new applications for the ADRS software.

Addition of CABIN sites to CANAL: Upgrade the site documentation and CANAL to reflect the new stations that are developed to be used for the biomonitoring program (CABIN).

On-going Updating of the OGC GIS web services: Updating the stations drainage boundary polygons, ambient stations location points and real time station location points.

Fact sheets on all CANAL site: Development of fact sheets that depict the watershed characteristics, water quality, WQI scores, trend analysis and other relevant information for each station on the CANAL website.

Water Quality Index- Research and Development: On-going research and development for new and innovative uses for the water quality index.

Completion of NL-WQMA Sampling Manual: Complete the WQMA sampling manual update with the final revisions and post on the website.

Create and Maintain Recreational Monitoring website: A website to be developed for the recreational monitoring network.

On-going Updating of the WQMA website: Updating the WQMA website with any changes for the 2008-2009 fiscal year.

Real-time Water Quality Monitoring Deployment and Annual Report: On-going development of deployment reports after each deployment period. Annual report to be completed at the end of each calendar year for all stations that are industry funded.

Planning for Real-time Water Quality Monitoring for Mega-projects: Reviewing all projects that apply for Environmental Assessment that may affect water quality. Provide input and

recommendations to Environmental Assessment for real-time water quality monitoring where deemed appropriate.

Development of Real-time Water Quality Inventory/Service Database: A database to be developed to track the real-time equipment and any servicing on each piece of equipment. This database will be used to track issues with equipment and/or stations.

Revision or QA/QC protocols for Real-Time Water Quality Data: Review and update the QA/QC protocols to ensure they are applicable for NL stations.

Completion of Real-time Water Quality Manual: Make final revisions to the real-time water quality manual and post it on the real-time website.

Update Real-time Water Quality Website: Updating the WQMA website with and changes for the 2008-2009 fiscal year.

Project WET: The mission of Project WET is to reach children, parents, educators, and communities of the world with water education. We invite you to join us in educating children about the most precious resource on the planet – water. Project WET activities engage students with hands-on, interdisciplinary lessons that teach important concepts about water. WRMD is partnering with Environment Canada and Project WET staff to deliver training in Labrador in the fall of 2008.

Fluvarium Project: The Fluvarium is planning on re-designing the exhibit level of their facility. It has been agreed that the overall concept we will use is: *“Water is a finite resource that is essential for life and as it circulates through the water cycle it shapes the land, forms ecosystems and is a key component of habitat for all living things including people”*. WRMD staff is on the revitalization planning committee, and the WRMD and Environment Canada are teaming up to create an exhibit focusing on the Real Time Water Quality Monitoring Program, and the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement stations located throughout the province. Planning for the revitalization of the exhibit floor is scheduled to wrap up in October, 2008, with building beginning in January 2009.

Schedule C – Cost Shared Activities 2008-09

Intensive Survey on Churchill River: An intensive survey will be conducted on a portion of the Churchill River from August 20-27, 2008. The survey will concentrate on the stretch of the river below Muskrat Falls and extending out to the inner estuary just beyond the Mud Lake tributary. The focus of the study will be to assess the impact of two sewage outfalls from Happy Valley-Goose Bay on the Churchill River. This is an issue that is not currently being addressed and has been identified as a concern by the local community. Impacts to water, sediment and biota will be assessed. This study will also serve as a baseline should wastewater treatment become available to the community. Subsequent surveys could be completed as a follow-up to municipal wastewater upgrades. The field component will consist of two days of transects to scope out and to finalize sampling locations. Transects will be completed using a multi-parameter sonde coupled with a GPS to simultaneously collect location information and water quality parameters along the river. Several vertical profiles will also be completed to determine optimal sampling depths and to assess the saltwater-freshwater interface. Data from these transects will be interpreted and presented in the report to support the overall assessment. The third day will consist of sampling for water and sediment at locations pre-determined and verified during the first two days. The final two days will consist of collecting representative biota samples at three locations.

Real-time Water Quality Monitoring Network: Operation and maintenance of three federal real-time water quality stations (Main River; Minipi River; Southwest River – Conne River). Operation and maintenance of three provincially operated real-time water quality stations (Waterford River; Leary's Brook; Humber River). Operation and maintenance of industry funded real-time water quality stations (5 stations at VBNC; 1 station at Long Harbour (VBNC); 2 stations at Come By Chance; 3 stations at Duck Pond Mine; 2 stations at IOC; 4 stations at Lower Churchill River).

Northern Sampling and Analysis (Labrador): There will be 22 agreement locations in the Labrador portion of the province sampled a minimum of 3 times per year between May and October.

Biomonitoring: Field training for the CABIN program will take place in July 2008. Four individuals from the Department of Environment and Conservation, along with colleagues from ACAP and Parks Canada will participate in this training. Under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement, this will be the first year of implementation of CABIN sampling, therefore only a token number (3 to 5) of sites will be selected for each region. While final site selection has not been completed, we will aim to have reference sites selected which are located at or near existing WQMA sites. If no such sites are identified, consideration will be given to having new WQMA sites established to correspond with CABIN reference sites.

Canadian Environmental Sustainability Indicators (CESI): The Newfoundland and Labrador Water Resources Management Division (WRMD) has been involved in the CESI Reporting initiative since 2005. For the past three years, the WRMD has contributed calculations and interpretation of water chemistry data from a number of Federal and Provincial stations toward national water reporting. For the 2008-09 fiscal year, the Province will again be responsible for collating the data, validating the data through standard QA/QC procedures, undertaking variable analyses and selection, defining appropriate guidelines for use in the calculator, calculating the WQI, and providing a regional interpretive summary for the WQI scores. Environment Canada will provide support to the Provincial managers during the calculation of the index, selection of the variables and interpretation of results. Environment Canada will provide review of the results prior to submission to the National CESI coordinating committee to ensure the data meets the minimum reporting requirements for national reporting. Environment Canada will also be the liaison between the Provincial project and the National CESI coordinating committee.

Comparative Guidelines under CCME: This project, which will provide locally relevant SSG for use in provincial and national reporting such as Water Quality Index (WQI) reporting under the Canadian Environment and Sustainability Indicators (CESI) projects, is in its second year. Newfoundland and Labrador currently uses national guidelines (Canadian Council of Ministers of the Environment Guidelines for the Protection of Aquatic Life) that are not necessarily appropriate for sites in the province because of naturally occurring elevated concentrations of certain metals. Because biologically based site-specific guidelines are considered the gold standard of guideline development, this project seeks to compare the guidelines developed using the Water Effects Ratio (WER) method to those developed using the Background Concentration (BC) Procedure. Aluminum was selected as a candidate for SSG development, as natural background levels at the majority of lakes and rivers in Newfoundland and Labrador exceed the current national guideline. Elevated levels of naturally occurring Aluminum are also present in other Atlantic Provinces (NS, NB). Work conducted for this project should help the development

of SSGs in those provinces as well. In the 2007-08 fiscal year two sites in the central and western regions of the province were selected and water was analyzed for toxicological effects at a laboratory in Ontario (contract won via tender). Les Swain, a nationally recognized expert in the development of site-specific guidelines, will continue to be involved in this project as a consultant to assist and train Water Resources Management Division staff in this area. The SSGs that are developed using the Water Effects Ratio will be compared to simpler, more cost-effective guideline generation methods to establish their applicability for the province of Newfoundland and Labrador. An additional site will be added to the project in the 2008-09 fiscal year, in the eastern region of the Province. This site will undergo the same toxicological testing that was completed on the two existing project sites during the last fiscal year. Depending on progress of work being undertaken by the Moncton, NB office of Environment Canada, this project may incorporate field filtering for complex aluminum to evaluate against the SSGs determined using WER.

Mobile Water Quality Testing Lab: This is under discussion for fiscal year 2009-2010.

Pharmaceuticals and Pesticide Monitoring: This is under discussion for fiscal year 2009-2010.

Chemical Management Plan: This is under discussion for fiscal year 2009-2010.