

**CANADA-NEWFOUNDLAND and LABRADOR  
WATER QUALITY MONITORING  
AGREEMENT**

**ANNUAL WORK SCHEDULE  
2013 - 2014**



Water Resources Management Division  
Department of Environment & Conservation  
St. John's, Newfoundland and Labrador

Atlantic Water Quality Monitoring - Surveillance de  
la qualité de l'eau de l'Atlantique  
Environment Canada - Environnement Canada  
Dartmouth, Nova Scotia

**Canada-Newfoundland and Labrador  
Water Quality Monitoring Agreement  
Annual Work Schedule –  
Resource Commitment & Work Shared Activities  
2013-2014**

This document outlines cost and work shared activities to be carried out during the current fiscal year under the Canada-Newfoundland and Labrador Water Quality Monitoring Agreement. The document has been reviewed and approved by the Administrators of the Agreement.



David Boerner  
Administrator, on behalf of  
Environment Canada  
Government of Canada



Martin Goebel  
Administrator, on behalf of  
Department of Environment and Conservation  
Government of Newfoundland and Labrador

**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. David Boerner	Environment Canada, 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:

Ms. Hélène Bouchard	Environment Canada (Water Quality Monitoring & Surveillance)
Ms. Christine Garron	Environment Canada (Water Quality Monitoring & Surveillance)
Mr. Art Cook	Environment Canada (Atlantic Laboratory for Environmental Testing)
Mr. Haseen Khan	Water Resources Management Division, Newfoundland & Labrador Department of Environment & Conservation
Ms. Renée Paterson	Water Resources Management Division, Newfoundland & Labrador Department of Environment & Conservation

**Schedule B**

**Shared Activities for Fiscal Year 2013-2014**

**Schedule B –Shared Activities 2013-2014**

Activity	Responsible Agency	Remarks
<p><b>Cost-Shared and Work-Shared Ambient Water Quality Monitoring and Data Management Activities</b></p>	<p>Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada</p>	<p>Refer to <b>Table B.1</b> and <b>Figure A-1</b> for sampling locations in Newfoundland</p> <p>Refer to <b>Table B.2</b> and <b>Figure A-2</b> for sampling locations in Labrador</p> <p>Refer to <b>Table B.3</b> for laboratory analysis details</p> <p>Refer to <b>Table B.4</b> for Shared Activities</p>
<p><b>Additional Cost-Shared Core Activities</b></p>	<p>Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada</p>	<p>Refer to <b>Table B.5</b> for Shared Activities</p>
<p><b>Work-Shared Special Projects</b></p>	<p>Newfoundland and Labrador Department of Environment and Conservation <u>and</u> Environment Canada</p>	<p>Refer to <b>Table B.4</b> for shared activities related to ambient water quality monitoring and data management</p> <p>Refer to <b>Table B.5</b> for cost-shared core activities.</p> <p>Refer to <b>Table B.6</b> for work-shared special projects</p>

**Note:** Details regarding NL efforts for all additional technical projects/activities and the scope of work is documented separately within the NL Water Resources Management Division.

**Table B.1: Index Station Location, Designation and Sampling Frequency 2013-2014 for Newfoundland Stations. Core CESI stations are shaded grey**

Station #	Description	Latitude	Longitude	Samples/year	Classification
<b><u>EASTERN REGION</u></b>					
NF02ZK0005	Northeast River	47 16 23	-53 50 25	8	CABIN site 09-10/ 11-12 /12-13 & 13-14/ Hydrometric / Core CESI Station
NF02ZL0029	Goulds Brook	47 30 18	-53 17 28	5	CABIN site 09-10 / Core CESI Station
NF02ZM0004	Waterford River at Commonwealth Ave.	47 31 19	-52 48 29	4	Local CESI Station
NF02ZM0009	Waterford River at Kilbride	47 31 46	-52 44 34	4	RTWQ / Hydrometric / Local CESI Station / Chemical Management Plan
NF02ZM0014	Virginia River at The Boulevard	47 35 02	-52 41 29	4	Local CESI Station / CABIN site 10-11
NF02ZM0015	Quidi Vidi Lake at Outlet	47 35 02	-52 40 51	4	
NF02ZM0016	Rennies River at Carnell Drive	47 34 40	-52 42 03	4	Local CESI Station
NF02ZM0020	Broad Cove Brook	47 35 53	-52 52 53	4	CABIN site 08-09 / Local CESI Station
NF02ZM0098	Virginia River at headwaters	47 35 56	-52 45 17	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02ZM0109	Mundy Pond at Outlet	47 33 40	-52 44 38	4	
NF02ZM0144	Kelly's Brook at Portugal Cove Rd.	47 34 28	-52 42 45	4	Local CESI Station
NF02ZM0175	Waterford River at Brookfield Rd.	47 31 34	-52 45 48	4	Local CESI Station
NF02ZM0176	South Brook at Mouth	47 31 41	-52 44 48	4	Local CESI Station
NF02ZM0177	Rennies River at Portugal Cove Rd.	47 34 28	-52 42 36	4	Local CESI Station
NF02ZM0178	Learys Brook at Clinch Cres.	47 34 21	-52 44 21	5	RTWQ / Hydrometric / Core CESI Station / CABIN site 11-12
NF02ZM0179	Virginia River at Guzzwell Drive	47 35 47	-52 42 06	4	Local CESI Station
NF02ZM0180	Virginia River at Newfoundland Dr.	47 35 59	-52 42 02	4	Local CESI Station
NF02ZM0181	Waterford River at Blackhead Road	47 32 53	-52 43 09	5	Core CESI Station
NF02ZM0182	Waterford River at Bremigans Pond	47 31 07	-52 51 21	4	Local CESI Station
NF02ZM0183	Kelligrews River at Kelliview Cres.	47 29 45	-53 01 03	4	Local CESI Station / CABIN site 11-12
NF02ZM0184	Learys Brook at Outer Ring Road	47 34 16	-52 47 29	4	Local CESI Station
NF02ZM0185	South Brook at Headwaters	47 29 37	-52 51 02	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02ZM0294	Manuels River	47 31 11	-52 56 41	4	Archaeologically significant / Local CESI Station
NF02ZM0359	Paddy's Pond at Outlet	47 29 17	-53 47 36	4	RTWQ stand-alone station
NF02ZN0004	Salmonier River	47 10 54	-53 23 56	4	Local CESI Station

<b><u>CENTRAL REGION</u></b>					
NF02YM0003	Indian Brook	49 29 53	-56 10 35	4	CABIN site 08-09 / Hydrometric / Local CESI Station
NF02YM0004	South West Brook at Baie Verte	49 55 15	-56 13 45	4	Hydrometric / Local CESI Station
NF02YO0001	Exploits River at Grand Falls	48 55 27	-55 39 21	4	Local CESI Station
NF02YO0121	Peter's River	49 06 21	-55 24 38	4	Hydrometric /Former RTWQ / Local CESI Station/ CABIN site 12-13
NF02YO0020	Exploits River at Aspen Brook	48 56 55	-55 54 56	4	Local CESI Station
NF02YO0107	Exploits River at Millertown Dam	48 45 34	-56 35 32	5	Hydrometric / Core CESI Station
NF02YR0001	Pound Cove Brook	49 11 11	-55 55 24	4	Comp Guidelines Site/ CABIN site 12-13 / Local CESI Station
NF02YO0128	Exploits River below Grand Falls	48 56 12	-55 37 03	4	Local CESI Station
NF02YO0142	Corduroy Brook	48 56 21	-55 39 47	4	Local CESI Station / CABIN site 11-12
NF02YO0143	Exploits River at Bond Bridge	49 01 15	-55 27 15	4	Local CESI Station
NF02YO0189	Joe's Lake	49 01 43	-56 04 01	4	
NF02YQ0006	Northwest Gander River	48 34 54	-55 30 20	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02YQ0030	Gander River at Appleton	48 59 41	-54 52 04	8	Hydrometric / Core CESI Station
NF02YS0001	Terra Nova River at Terra Nova	48 30 27	-54 12 43	4	Local CESI Station
NF02YS0011	Terra Nova River at ES Spencer Bridge	48 38 27	-54 02 11	5	Hydrometric / Core CESI Station
NF02YS0083	Northwest River at Terra Nova	48 23 44	-54 11 53	4	Hydrometric / National Park / Local CESI Station
<b><u>WESTERN REGION</u></b>					
NF02YE0004	Portland Creek	50 10 54	-57 36 13	4	Local CESI Station
NF02YE0005	Western Brook @ Bridge	49 49 49	-57 51 23	5	CABIN site 08-09 / Core CESI Station
NF02YG0001	Main River at Bridge	49 46 10	-56 54 15	5	Canadian Heritage River /Core CESI Station
NF02YG0009	Main River at Paradise Pool	49 48 46	-57 09 24	4	Former RTWQ / Hydrometric / Canadian Heritage River / Local CESI Station
NF02YG0020	Eagle Mountain Brook	49 49 53	-57 17 15	4	Local CESI Station
NF02YH0018	Lomond River @ Bridge	49 24 07	-57 43 49	4	CABIN site 08-09 / Local CESI Station
NF02YJ0004	Pinchgut Brook	48 47 51	-58 03 43	8	CABIN site 08-09/11-12/12-13 & 13-14 / Core CESI Station
NF02YK0022	Humber Canal	49 09 58	-57 24 56	4	Local CESI Station
NF02YL0011	Humber River at Little Falls	49 20 54	-57 14 07	4	Local CESI Station
NF02YL0012	Humber River at Humber Village Bridge	48 59 01	-57 45 40	5	RTWQ / Hydrometric / Core CESI Station
NF02YL0013	Corner Brook at Margaret Bowater Park	48 56 40	-57 56 12	4	Local CESI Station
NF02YL0029	Wild Cove Brook	48 58 28	-57 53 02	4	Local CESI Station / CABIN site 12-13
NF02YN0001	Lloyds River @ Bridge	48 18 16	-57 43 07	5	CABIN site 09-10 / Core CESI Station



NF02YN0043	Peter Strides Lake	48 09 13	-57 43 24	4	
NF02ZC0020	Buck Lake	48 00 48	-57 39 59	4	
NF02ZA0006	Grand Codroy River	47 52 08	-59 07 05	4	Local CESI Station

Notes:

1. A total of 57 stations (including 12 core CESI stations) will be sampled during 2013-2014 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. All Core CESI stations being sampled 5 times per year.
4. Selected Core CESI stations being sampled 8 times per year to perform sensitivity analysis on frequency of sampling impact on CESI scores.
5. Total number of samples to be collected from all NL stations is 249, including 69 samples from Core CESI stations (this number does not include triplicate or blank samples)
6. All sampling is carried out by provincial staff.

**Table B.2: Northern Index Station Location, Designation and Sampling Frequency 2013-2014 for Labrador Stations. Core CESI stations are shaded grey.**

Station #	Description	Latitude	Longitude	Samples/year	Classification
<b>LABRADOR REGION</b>					
NF02XA0001	Little Mecatina River	52 13 42	61 19 32	4	Hydrometric / Local CESI Station
NF03NF0013	Ugajoktok River	55 13 60	61 17 57	5	Hydrometric / Core CESI Station
NF03OC0012	Atikonak River	52 58 03	64 39 40	5	Hydrometric / Core CESI Station
NF03OD0011	East Metchin River	53 26 07	63 14 03	4	Hydrometric / Local CESI Station
NF03OE0001	Churchill River Above Upper Muskrat	53 14 52	60 47 21	4	RTWQ / Hydrometric / Local CESI Station
NF03OE0030	Minipi River	52 36 53	61 11 11	5	RTWQ / Hydrometric / Core CESI Station
NF03OE0032	Pinus River	53 08 52	61 33 31	4	Hydrometric / Comp Guidelines Site / Local CESI Station
NF03OE0033	Big Pond Brook	53 30 43	60 17 31	4	Hydrometric / Local CESI Station
NF03PB0025	Naskaupi River	54 07 54	61 25 45	5	Core CESI Station
NF03QC0001	Eagle River	53 27 54	57 33 29	5	Hydrometric / Core CESI Station / Eagle River Plateau Management Zone
NF03QC0002	Alexis River	52 38 57	56 52 17	4	Hydrometric / Local CESI Station
NF03OD0012	Wilson River E. Branch	53 18 33	62 55 11	4	Ashkui /CABIN 10-11 / Local CESI Station
NF03OE0035	Dominion Lake	52 43 45	61 45 17	4	Ashkui / Local CESI Station
NF03OE0037	Cache River	53 11 33	62 12 11	4	Ashkui / Local CESI Station
NF03PB0028	Cape Caribou River	53 37 16	60 24 52	4	Ashkui / Local CESI Station
NF03PB0029	Northwest River	53 31 18	60 08 31	4	Ashkui
NF03PB0030	Seal Lake Narrows	54 19 55	61 38 27	4	Ashkui / Local CESI Station
NF03PB0032	Susan River	53 44 17	60 56 48	4	Ashkui / Local CESI Station
NF03PB0037	Wuchusk Lake	54 23 43	61 47 09	4	Ashkui
NF03QA0044	Carter Basin	53 29 52	59 52 25	4	Ashkui
NF03QA0045	Kenamu River	53 28 34	59 55 01	4	Ashkui / Comp Guidelines Site
NF03OA0020	Ashuanipi River	53 0 06	66 14 30	4	

Notes:

1. A total of 22 stations will be sampled during 2013-2014 in Labrador.
2. The Labrador stations are listed as being sampled four times per year; this refers to the number of samples taken; **there must be a minimum of three samples taken each fiscal year** at the Labrador sites. Generally, five trips are made to each station.
3. All five Core CESI stations in Labrador are accessible only by helicopter.
4. Total number of samples to be collected is 93, including 25 samples from Core CESI stations (this number does not include triplicate or blank samples).
5. All Core CESI stations being sampled 5 times per year if possible.
6. Sampling is carried out by provincial and federal staff (i.e. schedule developed by provincial staff at beginning of sampling season and distributed to federal staff to ensure the preferred number of samples are collected at the remote sites during field visits between either of the two agencies).

**Table B.3 Analytical Parameters, Holding Times and Schemas for 2013-2014**

Parameter	Holding Times (recommended by NLET)	Schema Number	Schema Name	Parameter/ Grouping
<b>MAJOR IONS</b>		<b>1</b>	ALKPHCOND	alkalinity, pH, conductivity
Alkalinity	24 hours*	<b>2</b>	CATIONS/4W	Ca, Mg, Na, and K
Chloride	28 days	<b>5</b>	ANION1-U	NO3 by IC
Sulphate	28 days	<b>6</b>	ANION2-U	Cl and SO4 by IC
Calcium	8 weeks	<b>11</b>	TP1-U	total phosphorus
Magnesium	8 weeks	<b>12</b>	TN2-U	total nitrogen
Sodium	8 weeks	<b>13</b>	DIC/DOC1	dissolved inorganic and organic carbon
Potassium	8 weeks	<b>22</b>	HARDNESS1	Calculation derived from Ca and Mg
<b>PHYSICAL</b>		<b>23</b>	COL-APP	Colour-apparent (unfiltered sample)
pH	24 hours*	<b>24</b>	TURBIDITY3	turbidity
Conductivity	28 days	<b>31</b>	TM2004/T27W	Total metals-27 elements
Colour	48 hours*			
Turbidity	24 hours*			
<b>NUTRIENTS</b>				
Nitrate	24 hours*			
Total Nitrogen	24 hours*			
Total Phosphorus	1 year - according to Standard Methods this is 28 days, which we will be adopting			
DIC/DOC	24 hours*			
<b>METALS</b>				
Total Metals-27 elements	6 months			

**\*27 Metals include:**

aluminum	bismuth	iron	nickel	uranium
antimony	cadmium	lanthanum	rubidium	vanadium
arsenic	cobalt	lead	selenium	zinc
barium	copper	lithium	silver	
beryllium	chromium	manganese	strontium	
boron	gallium	molybdenum	thallium	

\* Due to the logistics involved in sample shipment from NL to NLET in ON, the shorter holding times of 24 and 48 hours are continuously exceeded; a “Stability Study” report prepared by NL ENVC and reviewed/approved by EC addresses this issue. This report is available on the ENVC Departmental web page.

**Table B.4 Ambient Water Quality Monitoring and Data Management Activities 2013-14 (Cost-Shared and Work-Shared)**

Management Activities		Leads/Commitments
<p><b>Water Quality Sampling and Analysis</b></p> <p><b>(Cost-shared activity)</b></p>	<p>All water samples are collected by provincial staff.</p> <ul style="list-style-type: none"> <li>- Field data submitted regularly to EC laboratory</li> </ul> <p>Analysis is completed by federal lab to ensure consistency.</p> <ul style="list-style-type: none"> <li>- ISO standards adhered to</li> <li>- Detection limits mutually agreed upon</li> </ul>	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- NL will collect 342 samples 2013-2014, including 94 from Core CESI stations (no triplicate or blanks are included in the above noted total)</li> </ul> <p><i>Additional lab analyses beyond what is required for core CESI stations are used to partially offset provincial sampling costs associated with sample collection at these sites (e.g. travel costs, field personnel time, etc.)</i></p> <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- EC will provide the analytical service for all samples (according to Table B.3) by March 31, 2014.</li> <li>- EC analysis is valued at \$55,000. The cost for EC to collect samples from 12 Core CESI sites in NL alone would exceed that amount.</li> <li>- EC will pay \$15,000 to NL for costs associated with sampling remote Labrador CESI stations, which are accessible only by helicopter.</li> </ul> <p><b>\$15,000 payable to NL</b> (included in cost-shared table B5)</p> <p><b>\$55,000 payable to EC Laboratory Services (For EC Internal Purposes Only)</b></p>

<p><b>Data Management</b> <b>(Work-shared activity)</b></p>	<p>Processing and Loading of NLET Data</p> <ul style="list-style-type: none"> <li>- Conducted by Environment Canada</li> </ul> <p>Accessibility/Availability of NL WQMA Dataset</p> <ul style="list-style-type: none"> <li>- Maintained by Environment Canada</li> </ul>	<p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- validates and corrects data</li> <li>- transfers data to database</li> <li>- ensures NL WQMA dataset is available on external server for download</li> <li>- maintains data transformation package</li> <li>- maintains ENVIRODAT Web Services</li> <li>- ensures filtered copy of database (containing NL WQMA dataset) is available outside the firewall</li> <li>- provides backed up NL WQMA dataset every six months to NL ENVC</li> </ul> <p><u>Newfoundland and Labrador Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- Responsible for reviewing, QA/QCing and subsequently replacing the former dataset</li> <li>- Provides quality-controlled federal and provincial water quality data on public website</li> </ul>
<p><b>Data Management Special Projects</b> <b>(Work-shared activity)</b></p>	<p>Laboratory Comparison Study to verify comparability in analytical results for water quality parameters between NLET and ALET</p>	<p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- Analysis by ALET and NLET completed in 2012-2013</li> <li>- Initial data analysis and reporting will be conducted by EC</li> <li>- Final report to be prepared by EC</li> </ul> <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- Sample collection was completed by NL ENVC in 2012-2013</li> <li>- Input to final report</li> </ul>
	<p>Data Verification and Validation of Sample/Masurement Data</p>	<p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- EC will provide a stand-alone version of the Data Verification and Validation tool, Guidance Manual and training session (via webinar) to NL ENVC</li> </ul> <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- NL ENVC will assess this application and adapt as necessary to apply to the NL WQMA dataset in an approach consistent with that used by other projects within ENVIRODAT</li> </ul>

	Data extraction tools development and updates	<p><u>Environment Canada</u></p> <ul style="list-style-type: none"><li>- EC will provide a data extraction tool for the water quality database for use by NL</li><li>- EC will provide assistance to NL in the use of the tool for data extraction</li></ul> <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"><li>- NL ENVC will test the tool on their web site for effectiveness</li><li>- NL ENVC will initiate structural changes to CANAL web page - NLENVC will generate and add factsheets for all ambient water monitoring stations to CANAL</li><li>- NLENVC will update the WQI section on CANAL to reflect current CESI values</li><li>- NLENVC will continuously update the metadata that populates CANAL</li></ul>
--	---	--

**Table B.5 Additional Core Activities 2013-2014 (Cost-Shared)**

Project	Activity / In-kind Contributions	Amount Payable to NL Exchequer by Mar 31, 2014
<p><b>Canadian Aquatic Biomonitoring Network (CABIN)</b></p>	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- Monitoring of benthic invertebrates at selected water bodies (reference sites, core CESI sites and annual sites) for maintenance of the long-term reference network in support of the Atlantic Reference Approach Model.</li> <li>- Prepare a Baseline Report on Reference Invertebrate Assemblages in NL</li> <li>- Share spatial data with EC, for use in the reference model</li> </ul> <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- Develop CABIN reference model and associated tools</li> </ul>	<p><b>\$5,000</b></p> <p><b>(matched by NL from annual budget)</b></p>
<p><b>Canadian Environmental Sustainability Indicators (CESI)</b></p>	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- NL will compile, analyse and interpret water quality data at Core CESI stations according to CESI protocols.</li> <li>- NL will produce an overview document, indicating issues driving the ratings and spatial trends.</li> <li>- NL will produce a final report validating/contributing to CESI core stations review for longer term WQI national reporting.</li> </ul> <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- QA/QC of submitted data/results and report to the public on the web</li> </ul>	<p><b>\$20,000</b></p> <p><b>(matched by NL from annual budget)</b></p>
<p><b>Modifications / Improvements to CESI WQI Calculator</b></p>	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- Evaluate CESI Calculator and document solutions to issues encountered</li> <li>- Incorporate improvements to the calculator including addition of statistical data summaries, redesign interface to reflect the new CCME WQI Calculator (i.e. better conceptual flow for end users) and documentation of installation procedures for R Programming and statconnDCOM</li> <li>- Determine the influence of each parameter on the WQI score</li> <li>- Make appropriate improvements to the Help Manual</li> </ul>	<p><b>\$10,000</b></p> <p><b>(matched by NL from annual budget)</b></p>



	<u>Environment Canada and NL Department of Environment and Conservation</u> <ul style="list-style-type: none"> <li>- Publication on the development and application of the CESI WQI Calculator (work shared project).</li> <li>- Conversion of the CESI WQI Calculator to a version for the CCME (work shared project).</li> </ul>	
<b>Chemical Management Plan</b>	<u>NL Department of Environment and Conservation</u> <ul style="list-style-type: none"> <li>- Monthly water sampling at a select location on the Waterford River.</li> </ul>	<b>\$2,500</b>  <b>(matched by NL from annual budget)</b>
<b>Labrador Remote Station Sampling (see Table B4)</b>		<b>\$15,000</b>
	<b>TOTAL:</b>	<b>\$52,500</b>

Therefore Environment Canada will transfer to Newfoundland Exchequer the sum of \$52,500 by March 31, 2014.

**Table B.6. Special Projects (Work Shared)**

<p><b>Monitoring Network Evaluation and Optimization</b>  (Work-shared activity)</p>	<p>This on-going project focuses on evaluating the network on a regular basis to ensure that the partner's monitoring objectives are being met and that the network will be sustainable in the long-term.</p> <p>This is a multi-year project that will carry over into 2014-2015.</p>	<p><b>Risk-Based Assessment (station level):</b> <u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- EC will provide a training session (via webinar)</li> <li>- EC will provide NL ENVC with the stand-alone application that computes the RBA score (i.e. Excel and Access versions) at the station level</li> </ul> <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- NL ENVC staff will assess a select number of stations and calculate the associated RBA scores using expert opinion and available scientific data</li> </ul> <p>EC and NL ENVC will collaboratively review the results and determine more specifically how the approach can be optimized for NL waters</p> <p><b>Risk-Based Assessment (basin level):</b> <u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- EC will share the results of the risk-based basin analysis (RBBA), including quantitative stressor intensity information and final aggregated stressor index scores per sub drainage area for NL basins</li> <li>- EC will continue work to integrate higher level of information to the RBBA, including aquatic ecosystems/resources components, hydrological considerations, and analysis at finer scale (sub sub drainage area)</li> </ul> <p><b>Power Analysis:</b> <u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- The evaluation of sampling frequencies for trend detection using power analysis</li> </ul> <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- investigating statistical approaches to optimize the monitoring network within the province</li> <li>- Trend analysis work for NL stations</li> </ul> <p>EC and NL ENVC will collaboratively review all results</p>
<p><b>Intensive Survey</b>  (Work-shared activity)</p>	<p>Completion of Intensive Survey 2009-10 Report (Bonne Bay Ponds)</p>	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- NL ENVC will prepare a final draft report and submit to EC for final review</li> <li>- NL ENVC will make the report available on the Divisional web page</li> </ul>

<p><b>Site-specific Guidelines Project</b>  (Work-shared activity)</p>	<p>Development of site-specific guidelines for select NL water bodies in partnership with industry</p>	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- Development of site-specific guidelines for select parameters at select NL water bodies in partnership with industry where deemed appropriate</li> </ul> <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- EC will provide technical advice and review as needed</li> </ul>
<p><b>Real-time/Web camera Technology Special Projects</b>  (Work-shared activity)</p>	<p>In-situ water quality/quantity/climate monitoring using a mobile environmental monitoring platform (MEMP) on a need-basis across the province</p> <p>Maintenance of camera technology at Leary's Brook Real-Time Station</p> <p>Set up and deployment of UV sensor and buoys owned by EC</p>	<p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- EC will continue to loan the MEMP to NL ENVC</li> <li>- EC and NL ENVC will continue to work together to share expertise on various new technologies including the possibility of using these technologies as part of web reporting</li> </ul> <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- NL ENVC continues to set up and deploy water quality equipment throughout the province</li> <li>- Upgrades and improvements (i.e. addition of web camera) are planned for fiscal year 2013-2014</li> <li>- NL ENVC will continue to dedicate one staff (Ryan Pugh) as the custodian of the MEMP</li> <li>- NL ENVC will continue to share testing results on UV sensor and buoys with EC since this technology may be used more extensively in the Atlantic region</li> </ul>
<p><b>Extrapolation of non-measured data at select real-time stations</b>  (Work-shared activity)</p>	<p>Development of regression models to extrapolate water quality parameters from real-time measurements of related parameters. Results may be applicable to the national program, reducing sampling and analytical costs at some stations.</p>	<p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- Regression models to compare (1) total suspended solids (TSS) concentration vs. real-time turbidity measurements and (2) ion concentration vs. real-time specific conductivity measurements</li> <li>- Grab sample data is being collected to validate the models</li> <li>- Publication of studies</li> </ul> <p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- EC will continue to provide technical advice and review on the approach considering its national applicability</li> </ul>

<p><b>Instrumentation to monitor water quality at key joint monitoring sites</b></p>	<p>Sharing of instrumentation purchase and maintenance expenses for real-time monitoring stations of joint interest</p>	<p><u>Environment Canada</u></p> <ul style="list-style-type: none"> <li>- Provides water quality monitoring equipment on an as-needed basis for real time monitoring at selected stations (currently Minipi River; Leary’s Brook; Waterford River; Humber River).</li> </ul> <p><u>NL Department of Environment and Conservation</u></p> <ul style="list-style-type: none"> <li>- NL ENVC will provide in-kind contribution for regular servicing and performance checks (performed by ENVC) on shared instruments at the lab</li> <li>- Supports work at real-time stations located in conjunction with core CESI stations and/or CMP stations</li> </ul> <p>Five instruments are currently outdated and in need of replacement.</p>
--	---	---

**Appendix A**

Figure A-1 – Water Quality Sampling Sites 2013-2014 – Newfoundland

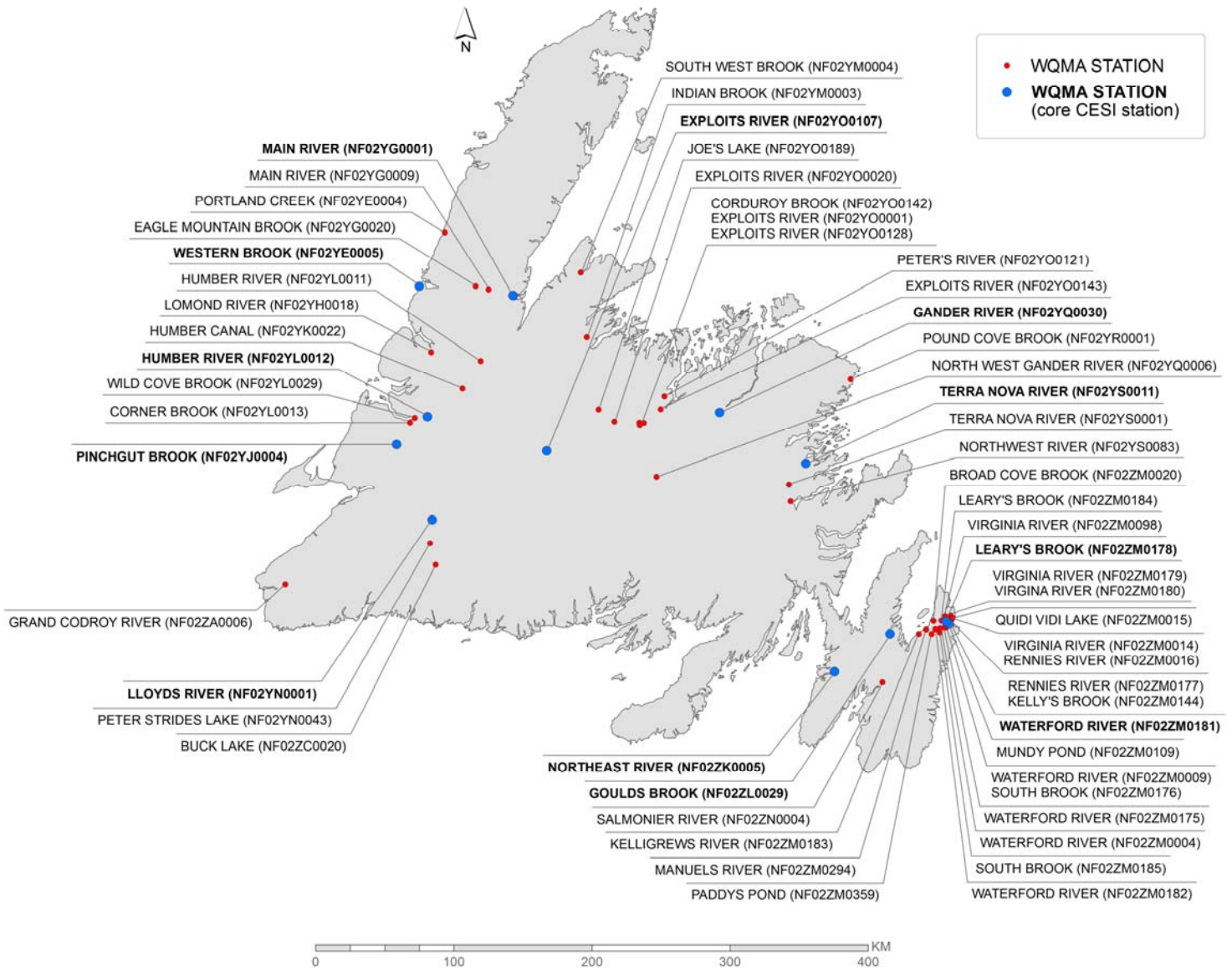


Figure A-2 – Water Quality Sampling Sites 2013-2014 – Labrador

