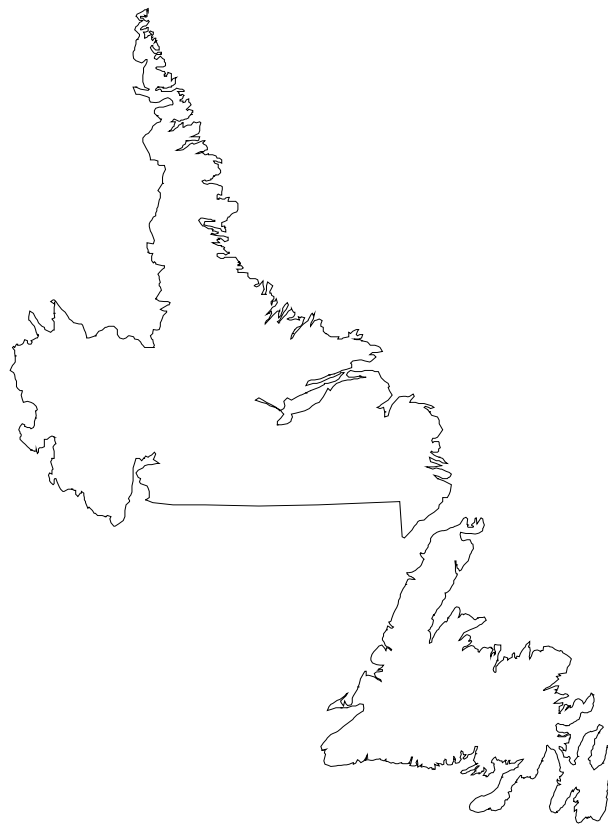


**CANADA-NEWFOUNDLAND and LABRADOR
WATER QUALITY MONITORING
AGREEMENT**

**ANNUAL WORK SCHEDULE
2022 - 2023**



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

Atlantic Water Quality Monitoring - Surveillance de
la qualité de l'eau de l'Atlantique
Environment and Climate Change Canada -
Environnement et Changement climatique Canada
Dartmouth, Nova Scotia

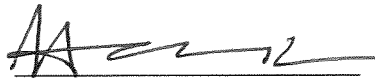
**Canada-Newfoundland and Labrador
Water Quality Monitoring Agreement
Annual Work Schedule –
Resource Commitment & Work Shared Activities
2022-2023**

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.

Volk,
Joanne

Digitally signed by Volk, Joanne
DN: CN = Volk, Joanne C = CA
O = GC OU = EC-EC
Date: 2022.10.03 11:26:45 -
04'00'

Joanne Volk
Administrator, on behalf of
Environment and Climate Change Canada
Government of Canada



Haseen Khan
Administrator, on behalf of
Department of Environment and Climate Change
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:

Ms. Joanne Volk
Environment and Climate Change Canada, on behalf of Canada

Mr. Haseen Khan
Department of Environment and Climate Change, on behalf of Newfoundland & Labrador

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

Ms. Melanie Losier
Environment and Climate Change Canada (Water Quality Monitoring & Surveillance)

Ms. Christine Garron
Environment and Climate Change Canada (Water Quality Monitoring & Surveillance)

Ms. Annette Tobin
Water Resources Management Division, Newfoundland & Labrador Department of
Environment and Climate Change

Schedule B

Shared Activities for Fiscal Year 2022-2023

Schedule B – Shared Activities 2022-2023

Activity	Responsible Agency	Remarks	Total Cost
<p>Cost-Shared and Work-Shared Core Ambient Water Quality Monitoring and Data Management Activities</p>	<p>Newfoundland & Labrador Department of Environment and Climate Change <u>and</u> Environment and Climate Change Canada</p>	<p>Refer to Table B.1 and Figure A-1 for sampling locations in Newfoundland Refer to Table B.2 and Figure A-2 for sampling locations in Labrador Refer to Table B.3 for laboratory analysis details Refer to Table B.4 for Shared Activities</p>	<p>\$16,500 payable to NL (Labrador sampling) \$43,785 payable to ECCC (Laboratory Services)</p>
<p>Additional Cost-Shared Core Activities</p>	<p>Newfoundland & Labrador Department of Environment and Climate Change <u>and</u> Environment and Climate Change Canada</p>	<p>Refer to Table B.5 for Shared Activities</p>	<p>\$32,500 payable to NL (CESI, CABIN, CMP, Data Management)</p>
<p>Work-Shared Special Projects</p>	<p>Newfoundland & Labrador Department of Environment and Climate Change <u>and</u> Environment and Climate Change Canada</p>	<p>Refer to Table B.6 for work-shared special projects</p>	<p>N/A</p>

Table B.1: Index Station Location, Designation and Sampling Frequency 2022-2023 for Newfoundland Stations. Core CESI stations are shaded gray.

STATION #	DESCRIPTION	LATITUDE	LONGITUDE	DESIGNATION	SAMPLES/ YEAR	CLASSIFICATION
NF02ZK0005	NORTHEAST RIVER NEAR PLACENTIA	47 16 23	-53 50 25	Fed/Prov	5	CABIN Annual site since 2009 (except for 10-11)/ Hydrometric / Core CESI Station
NF02ZL0029	GOULDS BROOK NEAR MAKINSONS	47 30 17	-53 17 27	Fed/Prov	5	CABIN site 09-10 / Core CESI Station
NF02ZM0004	WATERFORD RIVER AT COMMONWEALTH AVENUE	47 31 19	-52 48 29	Provincial	4	Local CESI Station
NF02ZM0009	WATERFORD RIVER AT KILBRIDE	47 31 44	-52 44 40	Fed/Prov	4	RTWQ / Hydrometric / Local CESI Station / Chemical Management Plan
NF02ZM0014	VIRGINIA RIVER AT THE BOULEVARD	47 35 02	-52 41 29	Provincial	4	Local CESI Station / CABIN site 10-11
NF02ZM0015	QUIDI VIDI LAKE AT OUTLET	47 35 04	-52 40 54	Provincial	4	
NF02ZM0016	RENNIE'S RIVER AT CARNELL DRIVE	47 34 40	-52 42 03	Provincial	4	Local CESI Station
NF02ZM0020	BROAD COVE BROOK NEAR ST. PHILLIPS	47 34 16	-52 52 10	Provincial	4	CABIN site 08-09 / Local CESI Station
NF02ZM0098	VIRGINIA RIVER AT HEADWATERS	47 35 56	-52 45 17	Provincial	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02ZM0109	MUNDY POND AT OUTLET	47 33 12	-52 44 07	Provincial	4	
NF02ZM0175	WATERFORD RIVER AT BROOKFIELD ROAD	47 31 34	-52 45 48	Provincial	4	Local CESI Station
NF02ZM0176	SOUTH BROOK AT MOUTH	47 31 41	-52 44 48	Provincial	4	Local CESI Station
NF02ZM0177	RENNIE'S RIVER AT PORTUGAL COVE ROAD	47 34 28	-52 42 36	Provincial	4	Local CESI Station
NF02ZM0178	LEARYS BROOK AT PRINCE PHILIP DRIVE	47 33 50	-52 44 55	Fed/Prov	10	RTWQ / Hydrometric / Core CESI Station / CABIN site 11-12

NF02ZM0179	TRIBUTARY TO VIRGINIA RIVER AT GUZZWELL DRIVE	47 35 47	-52 42 06	Provincial	4	Local CESI Station
NF02ZM0180	VIRGINIA RIVER AT NEWFOUNDLAND DRIVE	47 35 59	-52 42 02	Provincial	4	Local CESI Station
NF02ZM0181	WATERFORD RIVER AT BLACKHEAD ROAD	47 32 53	-52 43 09	Fed/Prov	10	Core CESI Station
NF02ZM0182	WATERFORD RIVER AT BREMIGANS POND DAM	47 31 07	-52 51 21	Provincial	4	Local CESI Station
NF02ZM0183	KELLOGGS RIVER AT KELLIVIEW CRESCENT	47 29 37	-53 00 58	Provincial	4	Local CESI Station / CABIN site 11-12
NF02ZM0185	SOUTH BROOK AT HEADWATERS	47 29 44	-52 48 47	Provincial	4	CABIN site 08-09 / Comp Guidelines Site / Local CESI Station
NF02ZM0294	MANUELS RIVER ABOVE MANUELS ACCESS ROAD	47 31 11	-52 56 41	Provincial	4	Archaeologically significant / Local CESI Station
NF02ZM0359	PADDYS POND AT OUTLET	47 29 17	-52 53 39	Provincial	4	RTWQ stand-alone station
NF02ZN0004	SALMONIER RIVER AT ST. CATHERINES	47 11 29	-53 23 09	Provincial	4	Local CESI Station

CENTRAL REGION

STATION #	DESCRIPTION	LATITUDE	LONGITUDE	DESIGNATION	SAMPLES/ YEAR	CLASSIFICATION
NF02YO0001	EXPLOITS RIVER AT GRAND FALLS	48 55 27	-55 39 35	Provincial	4	Local CESI Station
NF02YO0020	EXPLOITS RIVER AT ASPEN BROOK	48 56 56	-55 54 45	Provincial	4	Local CESI Station
NF02YO0107	EXPLOITS RIVER NEAR MILLERTOWN	48 45 38	-56 34 56	Fed/Prov	4	Hydrometric / Core CESI Station
NF02YO0128	EXPLOITS RIVER BELOW GRAND FALLS	48 56 12	-55 37 03	Provincial	4	Local CESI Station
NF02YO0142	CORDUROY BROOK NEAR CENTENNIAL PARK	48 56 24	-55 39 43	Provincial	4	Local CESI Station / CABIN site 11-12
NF02YO0143	EXPLOITS RIVER AT BOND BRIDGE	49 01 24	-55 26 56	Provincial	4	Local CESI Station
NF02YQ0030	GANDER RIVER AT APPLETON	48 59 40	-54 52 00	Fed/Prov	4	Hydrometric / Core CESI Station

NF02YQ0072	CARELESS BROOK AT RESOURCE ROAD STEEL BRIDGE	48 54 08	-54 59 38	Fed/Prov	4	CABIN Annual site since 2010 /Local CESI Station
NF02YS0001	TERRA NOVA RIVER AT TERRA NOVA	48 30 24	-54 12 36	Provincial	4	Local CESI Station
NF02YS0011	TERRA NOVA RIVER AT SPENCER BRIDGE	48 38 26	-54 02 11	Fed/Prov	4	Hydrometric / Core CESI Station
NF02YS0083	NORTHWEST RIVER AT TERRA NOVA NATIONAL PARK	48 23 50	-54 11 56	Provincial	4	Hydrometric / National Park / Local CESI Station

WESTERN REGION

STATION #	DESCRIPTION	LATITUDE	LONGITUDE	DESIGNATION	SAMPLES/ YEAR	CLASSIFICATION
NF02YE0004	PORTLAND CREEK AT ROUTE 430	50 10 57	-57 36 04	Provincial	4	Local CESI Station
NF02YE0005	WESTERN BROOK AT ROUTE 430	49 49 44	-57 51 18	Fed/Prov	5	CABIN site 08-09 / Core CESI Station
NF02YG0001	MAIN RIVER AT ROUTE 420	49 46 15	-56 54 33	Fed/Prov	5	Canadian Heritage River /Core CESI Station
NF02YL0106	SOUTH BROOK BELOW TCH	49 01 06	-57 37 04	Provincial	4	Hydrometric
NF02YG0020	EAGLE MOUNTAIN BROOK BELOW EAGLE MOUNTAIN POND	49 49 54	-57 17 14	Provincial	4	
NF02YH0018	LOMOND RIVER AT ROUTE 431	49 24 08	-57 43 48	Provincial	4	CABIN site 08-09 / Local CESI Station
NF02YJ0004	PINCHGUT BROOK AT TCH	48 47 49	-58 03 42	Fed/Prov	10	CABIN Annual site since 2008 (except for 09-10 and 10-11) / Core CESI Station
NF02YK0022	HUMBER CANAL AT MAIN DAM ROAD	49 09 59	-57 24 53	Provincial	4	Local CESI Station
NF02YL0011	HUMBER RIVER AT LITTLE FALLS BRIDGE	49 20 52	-57 14 08	Provincial	4	Local CESI Station
NF02YL0012	HUMBER RIVER AT HUMBER VILLAGE BRIDGE	48 59 01	-57 45 37	Fed/Prov	10	RTWQ / Hydrometric / Core CESI Station

NF02YL0013	CORNER BROOK AT MARGARET BOWATER PARK	48 56 34	-57 55 55	Provincial	4	Local CESI Station
NF02YL0029	WILD COVE BROOK AT ROUTE 440	48 58 26	-57 52 60	Provincial	4	Local CESI Station / CABIN site 12-13
NF02YN0001	LLOYDS RIVER AT ROUTE 480	48 18 28	-57 42 10	Fed/Prov	5	CABIN site 09-10 / Core CESI Station
NF02YN0043	PETER STRIDES LAKE AT ROUTE 480	48 09 13	-57 43 23	Provincial	4	
NF02ZA0006	GRAND CODROY RIVER BELOW OVERFALL BROOK	47 52 08	-59 07 05	Provincial	4	Local CESI Station
NF02ZC0020	BUCK LAKE ON ROUTE 480	48 00 49	-57 39 59	Provincial	4	

Notes:

1. A total of 50 stations (including 12 core CESI stations) will be sampled during 2022-2023 on the island portion of the province.
2. For statistical analysis it is important that at least four (4) samples are collected from each station representing four seasons in a fiscal year.
3. All Core CESI stations should be sampled five (5) times per year, if possible. All local CESI stations will be sampled at least four (4) times per year. Note: Core CESI stations in central are scheduled for 4 samples per year due to staffing limitations and to avoid additional trips. However, the target for 4 samples per year has consistently been met in the past.
4. Total number of samples to be collected from all NL stations is 265 (this includes QA/QC samples); it also includes 77 samples from Core CESI stations. Total number of QA/QC samples to be collected is 36 (this is based on 12 duplicates per year in eastern region, four (4) duplicates per year in central region, eight (8) duplicates per year in western region, and 4 blanks per year in each of these regions).
5. All sampling is carried out by provincial Water Resources Management Division staff.
6. Sampling at all Core CESI sites will include field measurements for pH, conductivity, turbidity, dissolved oxygen and water temperature.

Table B.2: Northern Index Station Location, Designation and Sampling Frequency 2022-2023 for Labrador Stations. Core CESI stations are shaded gray.

LABRADOR REGION							
STATION #	DESCRIPTION	LATITUDE	LONGITUDE	DESIGNATION	SAMPLES/ YEAR	CLASSIFICATION	
NF02XA0001	LITTLE MECATINA RIVER ABOVE LAC FOURMONT	52 13 42	-61 19 32	Fed/Prov	4	Hydrometric / Transboundary / Local CESI Station	
NF03NF0013	UGJOKTOK RIVER BELOW HARP LAKE	55 13 60	-61 17 57	Fed/Prov	4	Hydrometric / Core CESI Station	
NF03OA0020	ASHUANUPI RIVER AT FERGUSON BAY	53 00 06	-66 14 30	Provincial	4	Local CESI Station	
NF03OC0012	ATIKONAK RIVER ABOVE PANCHIA LAKE	52 58 03	-64 39 40	Fed/Prov	4	Hydrometric / Core CESI Station	
NF03OD0011	EAST METCHIN RIVER AT TLH	53 26 05	-63 14 02	Provincial	4	Former Hydrometric / Local CESI Station	
NF03OD0012	WILSON RIVER EAST BRANCH	53 18 33	-62 55 11	Provincial	4	Ashkui / CABIN 10-11 / Local CESI Station	
NF03OE0057	MUSKRAT FALLS RESERVOIR AT LOWER BROOK	53 14 52	-60 47 21	Fed/Prov	4	RTWQ / Hydrometric / Local CESI Station / River turned reservoir site (Muskrat Falls)	
NF03OE0050	CHURCHILL RIVER 6.15KMS BELOW LOWER MUSKRAT FALLS	53 14 16	-60 40 31	Fed/Prov	4	RTWQ/ Hydrometric	
NF03OE0029	CHURCHILL RIVER ABOVE GRIZZLE RAPIDS	52 58 12	-61 26 43	Fed/Prov	4	RTWQ/ Hydrometric	
NF03OE0030	MINIPI RIVER BELOW MINIPI LAKE	52 36 54	-61 11 01	Fed/Prov	4	Former RTWQ / Former Hydrometric / Core CESI Station	
NF03OE0032	PINUS RIVER ABOVE TLH	53 08 52	-61 33 31	Provincial	4	Hydrometric / Comp Guidelines Site / Local CESI Station	
NF03OE0033	BIG POND BROOK BELOW BIG POND	53 30 51	-60 17 39	Provincial	4	Hydrometric / Local CESI Station	
NF03OE0035	DOMINION LAKE OUTFLOW	52 43 44	-61 45 14	Provincial	4	Ashkui / Local CESI Station	
NF03OE0037	CACHE RIVER AT TLH	53 11 34	-62 12 35	Provincial	4	Ashkui / Local CESI Station	

NF03PB0025	NASKAUPI RIVER BELOW NASKAUPI LAKE	54 07 54	-61 25 45	Fed/Prov	4	Core CESI Station
NF03PB0028	CAPE CARIBOU RIVER AT GRAND LAKE	53 37 16	-60 24 52	Provincial	4	Ashkui / Local CESI Station
NF03PB0029	GRAND LAKE OUTFLOW AT NORTH WEST RIVER	53 31 26	-60 08 45	Provincial	4	Ashkui
NF03PB0030	SEAL LAKE AT NARROWS	54 19 55	-61 38 27	Provincial	4	Ashkui
NF03PB0032	SUSAN RIVER NORTH OF BEAVER RIVER	53 44 17	-60 56 48	Provincial	4	Ashkui / Local CESI Station
NF03PB0037	WUCHUSK LAKE AT NASKAUPI RIVER INFLOW	54 23 43	-61 47 09	Provincial	4	Ashkui
NF03QA0044	CARTER BASIN OUTFLOW	53 29 55	-59 52 11	Provincial	4	Ashkui
NF03QA0045	KENAMU RIVER NEAR MOUTH	53 28 34	-59 55 01	Provincial	4	Ashkui / Comp Guidelines Site
NF03QC0001	EAGLE RIVER ABOVE FALLS	53 32 03	-57 29 37	Fed/Prov	4	Hydrometric / Core CESI Station / Eagle River Plateau Management Zone
NF03QC0002	ALEXIS RIVER NEAR PORT HOPE SIMPSON	52 38 57	-56 52 17	Provincial	4	Hydrometric / Local CESI Station
NF02XB0018	TRIBUTARY TO ST. AUGUSTIN RIVER	52 33 06	-59 19 39	Fed/Prov	4	Transboundary/CABIN sampling in 2012

Notes:

1. A total of 25 stations (including five (5) core CESI stations) will be sampled during 2021-2022 in Labrador.
2. The Labrador stations are listed as being sampled four (4) times per year; this refers to the number of samples taken; **there must be a minimum of three (3) samples taken each fiscal year** at the provincial Labrador sites. Generally, four trips are made to each station.
3. Total number of samples to be collected is 109 (this includes QA/QC samples); it also includes 20 samples from Core CESI stations. Total number of QA/QC samples to be collected is nine (9) (this is based on six (6) duplicates and three (3) blanks per year).
4. All five (5) Core CESI stations in Labrador are accessible only by helicopter.
5. All Core CESI stations should be sampled four (4) times per year, if possible, and at least (3) times per year.

6. Sampling at all Core CESI sites will include field measurements for pH, conductivity, turbidity, dissolved oxygen and water temperature.
7. Sampling is carried out by provincial and federal staff (i.e., a schedule is 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 both agencies).

Table B.3 Analytical Parameters, Holding Times and Schemas for 2022-2023

Parameter	Holding Times (recommended by ALET Lab Services)	Schema Name	Parameter/ Grouping
Major Ions			
Alkalinity	14 days	M_pH auto,	alkalinity, pH, conductivity
Chloride	28 days	M_Alkalinity,	
Sulphate	28 days	M_Conductivity	
Calcium	28 days	M_Metals_TR ICP-OES	Ca, Mg, Na, and K and Li
Magnesium	28 days	M_Anions_PKG	Cl, SO4, NO2, NO3, F and Bromide by IC
Sodium	28 days	M_TP	total phosphorus
Potassium	180 days	M_TN	total nitrogen
Bromide	48 hours	M_TOC	dissolved inorganic and organic carbon
Fluoride	48 hours	M_Hardness	Calculation derived from Ca and Mg
Physical		M_Colour	Colour-apparent (unfiltered sample)
pH	48 hours	M_Turbidity	turbidity
Conductivity	28 days	B_Metals_TR ICP-MS	Total Recoverable Metals by ICP-MS*
Colour	48 hours		
Turbidity	48 hours		
Nutrients			
Nitrate	24 hours		
Total Nitrogen	28 days		
Total Phosphorus	28 days		
DIC/TOC	28 days		

***28 Metals include:**

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

Metals analyzed but not required by NL ECC:

europium, gadolinium, germanium, hafnium, holmium, indium, iridium, lutetium, neodymium, niobium, palladium, yttrium, niobium, tin, cesium, cerium, tungsten, platinum, praseodymium, ruthenium, samarium, scandium, tellurium, titanium, terbium, ytterbium, zirconium

Table B.4 Core Ambient Water Quality Monitoring and Data Management Activities 2022-2023 (Cost-Shared and Work-Shared)

	Management Activities	Leads/Commitments
<p>Water Quality Sampling and Analysis (Cost-shared activity)</p>	<p>Water samples are collected by provincial staff.</p> <ul style="list-style-type: none"> - Field data submitted regularly to ECCC <p>Analysis is completed by federal lab to ensure consistency.</p> <ul style="list-style-type: none"> - ISO standards adhered to - Detection limits mutually agreed upon 	<p>NL Department of Environment and Climate Change</p> <ul style="list-style-type: none"> - NL will collect 374 samples in 2022-2023, including duplicate and blank samples. <p>Environment and Climate Change Canada</p> <ul style="list-style-type: none"> - ECCC will provide complete analytical service for 374 samples (according to Table B.3) by March 31, 2021. - ECCC analysis is valued at \$43,785 (value of the samples completely analyzed at ECCC Laboratory). - ECCC will pay \$16,500 to NL for costs associated with sampling remote Labrador CESI stations, which are accessible only by helicopter. <p>\$16,500 payable to NL (included in cost-shared Table B5) \$43,785 to ECCC Laboratory Services (For Internal Purposes Only)</p>

<p>Data Management (Work-shared activity)</p>	<p>Processing and Loading of WQ analytical data</p> <ul style="list-style-type: none"> - Conducted by Environment and Climate Change Canada <p>Accessibility/Availability of NL WQMA Dataset</p> <ul style="list-style-type: none"> - Maintained by Environment and Climate Change Canada 	<p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - Verifies and corrects data. - Transfers data to database. - Ensures NL WQMA dataset is available on external server for download. - Maintains database. - Provides a copy of NL WQMA dataset every six months to NL ECC. <p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Responsible for reviewing, validating, and reporting to ECCC any corrections required of the data. - Replacing former dataset.
<p>Data Management Special Projects (Work-shared activity)</p>	<p>Data Verification and Validation of Sample/Measurement Data using Developed Tools</p>	<p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - ECCC will continue to work with NL ECC to ensure all data are receiving the same verification and validation. <p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - NL ECC will continue to use an in-house tool (Envirotrend) to apply to the NL WQMA dataset in an approach consistent with that used by other projects within ECCC Database. This is to be used as an interim data validation tool until ECCC's validation tool can be used and integrated.
	<p>Data extraction tools development and updates</p>	<p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - ECCC will resume monthly release of water chemistry agreement data to the Open Data portal by September 2022.

Table B.5 Additional Core Activities 2022-2023 (Cost-Shared)

Project	Activity / In-kind Contributions	Amount Payable to NL Exchequer
<p>Canadian Aquatic Biomonitoring Network (CABIN)</p>	<p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Monitoring of benthic invertebrates at selected water bodies (four sites) for maintenance of the long-term reference network in support of the Atlantic Reference Approach Model and climate change research + 4 extra samples on Northern Peninsula - Share spatial data with ECCC, for use in the reference model. - CABIN field certification and training (as needed). - Participate in sample collection for special projects as needed. <p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - ECCC cover the costs of the water quality analyses of the 8 CABIN samples (\$1,088 – direct to ESTL through TMU payment). - Develops CABIN reference model and associated tools. - Maintains database. - Prepare course/presentation on how to look at data in Atlantic. - Finalize a Baseline Report on Reference Invertebrate Assemblages in NL (with NL). 	<p>\$5,000</p> <p>Invoice to be provided to ECCC by November 30, 2022</p> <p>(matched by NL from annual budget)</p>
<p>Canadian Environmental Sustainability Indicators (CESI)</p>	<p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Compile, analyse and interpret water quality data at Core and Local CESI stations according to CESI protocols. - Provide input to ECCC review of core sites - Update CANAL metadata website with current year’s CESI data. - Review CESI final report from ECCC for accuracy. - CESI WQI Fact Sheet. <p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - QA/QC of submitted data/results and report to the public on the web. - Evaluation of core network of sites using new risk-based information to ensure representivity within Pease basins. 	<p>\$20,000</p> <p>Invoice to be provided to ECCC by November 30, 2022</p> <p>(matched by NL from annual budget)</p>

<p>Modifications / Improvements to CESI WQI Calculator</p>	<ul style="list-style-type: none"> - Use of Risk-based Adaptive Management Framework (RBAMF) to categorize NL core sites for CESI reporting. 	<p>\$5,000 Invoice to be provided to ECCC by September 30, 2022</p>
<p>Chemical Management Plan</p>	<p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Regular troubleshooting support and corresponding update in the CESI Calculator coding as required. - Update of CESI WQI Calculator Help Manual as required. <p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - Investigate how Trend Analysis can be incorporated into the CESI Calculator. - Inclusion of French version of CESI Help Manual. 	<p>\$2,500 Invoice to be provided to ECCC by November 30, 2022</p> <p>(matched by NL from annual budget)</p>
<p>Labrador Remote Station Sampling (see Table B4)</p>	<p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Quarterly sampling at Waterford River @ Killbride for Alkylphenols and PFOS <p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Remote station sampling in Labrador 	<p>\$16,500 Invoice to be provided to ECCC by September 30, 2022</p>
	<p>TOTAL:</p>	<p>\$49,000</p>

Therefore, Environment and Climate Change Canada will transfer to Newfoundland and Labrador Exchequer the sum of \$21,500 by October 31, 2022 and \$27,500 by December 31, 2022.

Table B.6. Special Projects 2022-2023 (Work-Shared)

<p>Monitoring Network Evaluation and Optimization (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>These are multi-year projects that will carry over into 2022-2023.</p>	<p>Risk-Based Adaptive Management Approach (station level, basin level, statistical tools): <u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - ECCC will continue to provide guidance and advice as required and work with NL ECC to optimize approach for NL waters. - Sampling frequencies will be evaluated on an on-going basis. <p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - NL ECC will add Risk-Based Assessment results to each station profile page on CANAL. Results have been shared on the Departmental main webpage. - NL ECC will continue work on the Trend Analysis Report Phase 3 (2006-2020). - ECCC and NL ECC will collaboratively review all results and the possible publications will be explored.
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<p>Extrapolation of non-measured data at select real-time stations (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>These are multi-year projects that will continue in 2022-23.</p>	<p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Continue developing regression models to compare total suspended solids (TSS) concentration vs. real-time turbidity and major ions vs real-time conductivity. The model shall be developed at stations having sufficient grab samples (at least 30) with additional three years of samples to validate the models. - Continue updating TSS data and ionic concentration (sodium, calcium, chloride, and sulphate) data to develop site specific regression model. - Validate the turbidity vs TSS Lower Churchill River model using TSS grab samples from 2021 - 2023. <p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - ECCC will continue to provide technical advice and review on the approach considering its national applicability.
<p>Real-time Instrumentation Special Projects (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>Sharing of instrumentation purchase, deployment and maintenance expenses for real-time monitoring stations of joint interest.</p>	<p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - ECCC will continue to loan the Mobile Environmental Monitoring Platform (MEMP) to NL ECC until March 31, 2023. - ECCC and NL ECC will continue to work together to share expertise on various new technologies associated with the MEMP. - ECCC will continue to loan the camera and modem to NL ECC for Leary’s Brook. - ECCC will continue to loan sonde to NL ECC. <p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - NL ECC will maintain in good condition the MEMP and all loaded equipment therein. - NL ECC will acknowledge ECCC in all publications arising from the collection of data using the unit. - NL ECC will provide in-kind contribution for regular servicing and performance checks on shared instruments at core CESI sites. - NL ECC continues to set up and deploy water quality equipment throughout the province. - NL ECC will dedicate a team of staff as the custodians of the MEMP. - NL ECC will continue to share testing results of new technologies with ECCC (i.e., drone technology; buoy technology; real-time instrumentation; etc.).

<p>Real-time water Quality Monitoring products (Work-shared activity)</p>	<p>Technical reports for real-time and automated water quality monitoring activities.</p>	<p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Report on review of long-term continuous monitoring results from industry partnerships. - NL ECC will continue to share products and information with Fresh Water Quality Monitoring and Surveillance as they become available. <p><u>Environment and Climate Change Canada</u></p> <ul style="list-style-type: none"> - ECCC will continue to provide technical advice and review on the technical reports considering its national applicability; may adapt manuals to reflect national program. - ECCC will continue to share products and information developed by, and associated with the Automated Fresh Water Quality Monitoring and Surveillance Task Group.
<p>Progress Reporting</p>	<p>Progress reports for auditing purposes.</p>	<p><u>NL Department of Environment and Climate Change</u></p> <ul style="list-style-type: none"> - Complete 2021-2022 Progress Report.

Appendix A

Figure A-1 – Water Quality Sampling Sites 2022-2023 – Newfoundland

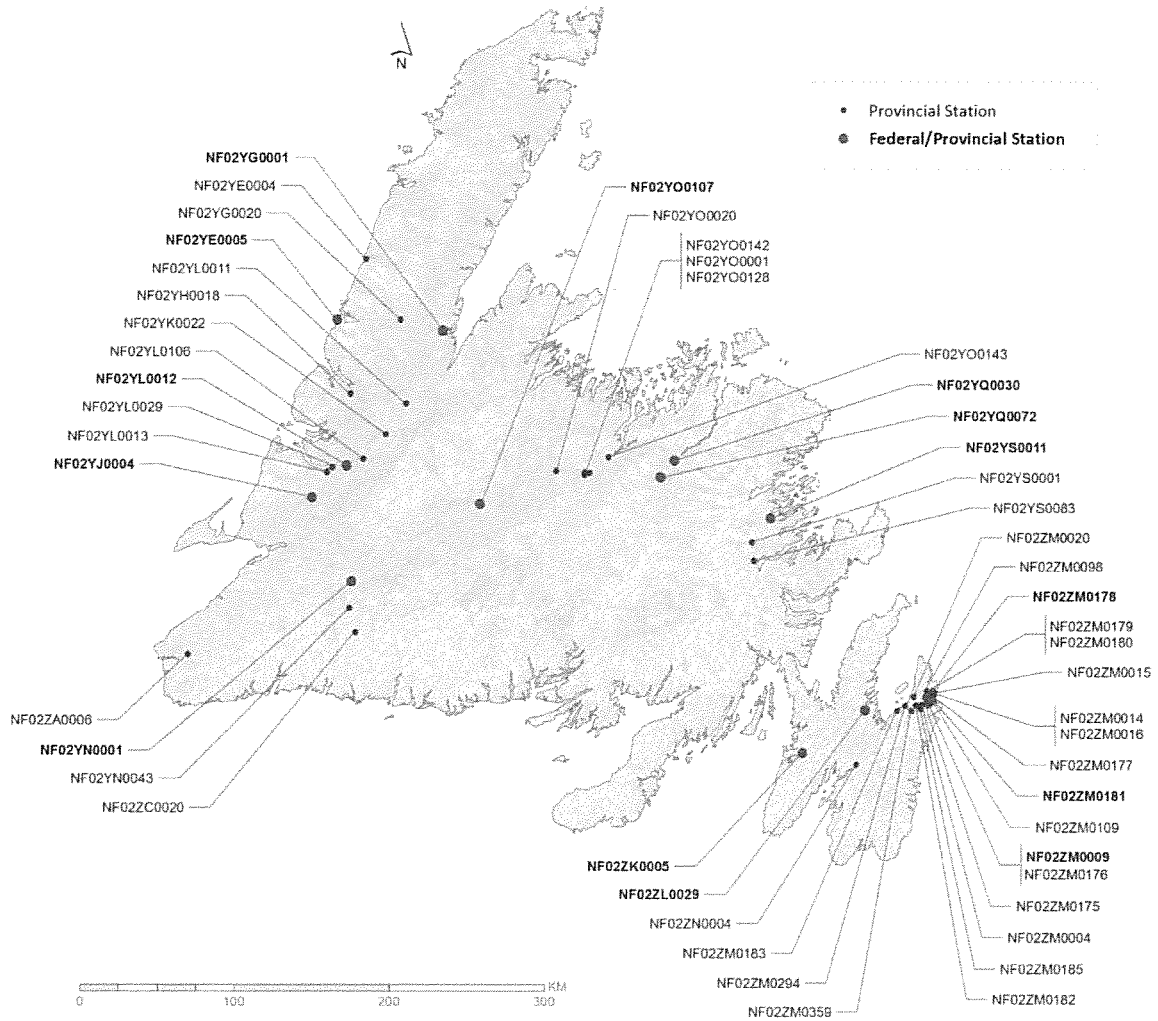


Figure A-2 – Water Quality Sampling Sites 2022-2023 – Labrador

