

PT12A – Request for Proposal for the Provision of
Proficiency Testing Samples
Revision 1.7 – April 2017



CALA
Proficiency Testing

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Request for Proposal for the Provision of Proficiency Testing Samples

1.0 BACKGROUND

The Canadian Association for Laboratory Accreditation (CALA) Inc. is a not-for-profit organization that accredits testing laboratories to ISO/IEC 17025. In support of this activity, CALA also coordinates an accredited Proficiency Testing Program. CALA is soliciting proposals for the selection of a Collaborator(s) in support of this Proficiency Testing Program.

The Collaborator(s) shall be responsible for the production, characterization, packaging and shipping of CALA's Proficiency Testing samples.

Inquiries should be directed to Ken Middlebrook, CALA Proficiency Testing Manager (kmiddlebrook@cala.ca).

2.0 DEFINITIONS

Characterization Analysis: chemical, microbiological or other analysis performed in support of the manufacture of the PT samples including analysis to confirm design value, and, where applicable, analysis to demonstrate adequate sample homogeneity and stability.

Collaborator: an organization that prepares, distributes and coordinates the characterization of PT samples under contract to CALA.

Participant: a laboratory that participates in the CALA PT Program.

Production Lot: All samples produced for a test group for a single study that is intended to be identical in composition. For example, all C01A-1 samples produced for October 2017 are considered to be one production lot.

PT Manager: Proficiency Testing Manager for CALA. The PT manager is the contract officer for this contract when awarded.

PT Sample: A single item (artifact) provided to a participant for analysis resulting in the production of a single result for each analyte in the sample.

Reference Laboratory: a laboratory that, under the direction of the Collaborator, provides analytical support for the CALA PT program. In many cases, this may be a laboratory owned and operated by the Collaborator.

Test Group: A distinct PT sample set consisting, in most cases, of four samples (e.g., C01A Major Ions in water).

3.0 STATEMENT OF WORK AND GENERAL REQUIREMENTS

This section provides a general overview of what is required of the Collaborator. Specific details are found in the Deliverables section of this document.

- 3.1 The Collaborator shall produce Proficiency Testing samples for one or more of the test groups detailed in Appendix A. Unless otherwise specified, each test group shall consist of four samples of different concentration, containing one or more analytes. Samples shall be produced, characterized and shipped in accordance with ISO/IEC 17043 *Conformity assessment – General requirements for proficiency testing* (revised from time to time).
- 3.2 The Collaborator shall characterize each analyte in each production lot of samples through analysis of at least one randomly selected sample prior to the scheduled shipping date. For chemistry and physical PT, this shall consist of analyzing one sample per lot. For microbiology this analysis shall consist of the analysis of randomly selected samples at or before shipping (homogeneity testing) and at least one sample at the end of the study (stability testing). This testing shall be conducted in accordance with ISO/IEC 17025: 2005 *General Requirements for the Competence of Testing and Calibration Laboratories* (revised from time to time).
- 3.3 The Collaborator shall provide to CALA the design values and characterization data on each production lot of PT samples prior to production for approval.
- 3.4 The Collaborator shall package PT samples in a way to minimize the risk of damage and exposure to extreme temperatures during storage and shipping, and to minimize risk to anybody handling the samples.
- 3.5 The Collaborator shall distribute samples to participating laboratories by overnight courier. Arrangements shall be made with the courier of choice to avoid extremes in temperature. CALA shall provide all necessary mailing labels and Instruction sheets, in electronic format, that must accompany the samples.

- 3.6 The Collaborator shall provide replacement samples that result from sample loss or damage during shipping, or due to loss or damage in the participant laboratory.
- 3.7 All data concerning the PT samples (e.g., design value, verification testing, participants) shall remain confidential and only be communicated to CALA. The Collaborator shall be required to sign a confidentiality agreement.
- 3.8 The Collaborator shall provide a response to non-conformances arising from a study within 5 working days and implement corrective action if required before the next round of PT samples is prepared.
- 3.9 The Collaborator may use unused samples prepared under this contract for their own purposes under the following conditions:
- The samples may not be used to coordinate a PT study within Canada;
 - The sample labels shall not include the CALA logo or any reference to CALA; and
 - The Collaborator assumes all liability for the use of these samples.
- If the Collaborator intends to use the remaining samples as reference materials, CALA will be prepared to provide summary statistics based on method, and limited to results from accredited laboratories. However, CALA does not take responsibility for demonstrating the long-term stability of the samples.
- 3.10 If the samples have been demonstrated to be stable for long periods of time, the Collaborator may prepare sample lots in far greater numbers than required for any individual study and use them in subsequent studies.

4.0 QUALIFICATIONS

The Collaborator shall be competent in the production, characterization and shipping of PT samples. Competence shall be demonstrated by conformance to the most current version of ISO/IEC 17043 *Conformity assessment – General requirements for proficiency testing*. Preference will be given to a Collaborator that is accredited to ISO/IEC 17043 by an Accreditation Body that is signatory to the APLAC or IAAC MRA for PTP.

The Reference Laboratories used by the Collaborator for sample characterization shall be competent for the analytical testing required in support of the CALA PT program. Competence shall be demonstrated by conformance to the most current version of ISO/IEC 17025 for the relevant analytes. Preference shall be given to Collaborators that are accredited to ISO/IEC 17025 by an Accreditation Body that is an ILAC signatory.

The Collaborator must include work conducted under this contract in their annual internal audits and management reviews and provide relevant portions of these audits and management reviews to CALA upon completion.

Regardless of accreditation status, the Collaborator and Reference Laboratories may be audited by CALA, at CALA's expense, to demonstrate that they meet the requirements of this contract. Any non-conformances to the contract or to ISO/IEC 17043 or to ISO/IEC 17025 must be addressed to CALA's satisfaction within an agreed time-frame.

5.0 DELIVERABLES

5.1 PT Sample Production

5.1.1 General

The PT samples shall be shipped according to the schedule detailed in Appendix A. In the fall of the year CALA will propose a schedule for the upcoming year and solicit Collaborator input and agreement.

PT samples shall:

- be whole samples, not ampoules, concentrates or extracts except where specifically indicated;
- be as similar as possible to real world samples;
- be demonstrated to be sufficiently stable and homogeneous; and
- test the entire analytical method from sample reception to data reporting, including sample preparation.

5.1.2 Selection of Design Values

CALA shall provide the Collaborator with the concentration range that PT samples shall fall within (refer to Appendix A for the current ranges). The Collaborator shall divide these concentration ranges into four approximately equal ranges (or two equal ranges if the test group only consists of two samples). Within each range, the Collaborator shall randomly select a concentration for each of the samples using the RANDBETWEEN function in EXCEL (or an equivalent process).

It is understood that the design value for naturally obtained samples is an approximation and cannot be divided into equal concentration ranges. However, an effort shall be made to select samples that fall into four (or two) different concentrations, covering the entire concentration range.

The design values shall be provided to CALA prior to the samples being produced. Samples shall not be produced until CALA has approved the design.

Should the sample characterization demonstrate that the actual concentration is significantly different than the design value, the Collaborator shall notify the CALA PT Manager immediately. The PT Manager shall decide whether the deviation is acceptable or whether the samples must be re-prepared.

5.1.3 Production of Samples

The Collaborator shall have documented Standard Operating Procedures for the planning, collection, preparation, bottling, characterization, labeling, packaging and distribution of PT samples. The Collaborator shall provide these to CALA upon request. CALA will not release these SOPs to any other party without written approval from the Collaborator and shall destroy them upon termination of the contract.

Chemicals used in the production of PT samples shall be of the highest grade and not used beyond any expiry date indicated by the manufacturer.

Sample containers shall be of sufficient quality to minimize the risk of leaking and damage during shipping. Glass bottles for organics analysis shall use Teflon lined lids, not tinfoil lined. The Collaborator shall have procedures in place to demonstrate that the sample containers are free of contamination and interference.

The Collaborator shall use bottle sealing tape or a similar product to ensure that bottle lids do not become loose during shipping.

Although the container sizes/styles indicated in Appendix A will be used for the majority of participants, the option is available for a participant to select an alternate size/style for a limited number of test groups (see asterisk in Appendix A). For any test group, only one alternate size/style will be made available as an option. For example, the default for C34 oil and grease is a 1000 mL clear, narrow mouth, glass bottle. An option, may be a wide mouth bottle. The collaborator will be informed at least six months prior to a study if alternate bottles are required for a test group.

All weights and volume transfers shall be traceable to the SI. All weighing devices used in the production of PT samples shall be calibrated annually by a laboratory accredited to ISO/IEC 17025 for the calibration being performed. All volume delivery devices used for volumetric transfer of solutions shall be calibrated annually.

A complete audit trail shall be maintained for each production lot of PT samples. This shall include, but is not limited to:

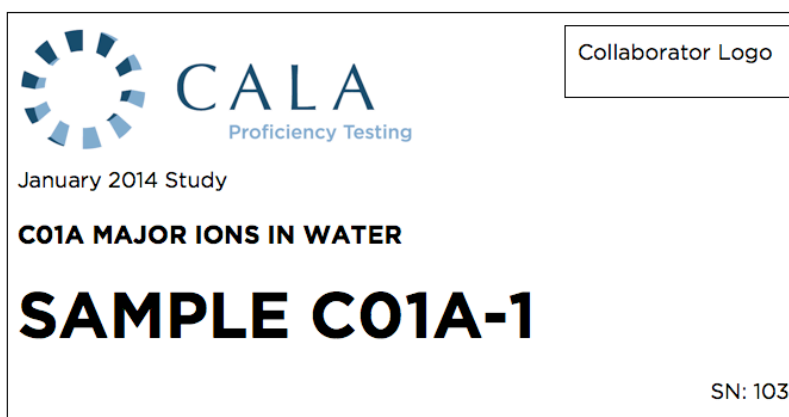
- Lot number, grade/purity, and manufacturer of each chemical used in the production of samples, including preservatives;
- Traceability (e.g., ATTC) for bacterial strains used in microbiology samples;
- Lot number and manufacturer of bottles used in sample production;
- Identification of all significant pieces of equipment used in the production of samples (e.g., balances, adjustable pipettes, etc.);
- Identification of personnel conducting each step of production;
- Storage location and temperature records of storage;
- Tracking numbers of all shipments; and,

- The bottling order of samples and what participant received what bottle.

Labels for the PT samples shall be legible and contain the following information:

- Study information (e.g., CALA PT Study, January 2018);
- The PT sample by Test Group (e.g. C01A MAJOR IONS IN WATER);
- Sample ID (e.g., C01A-1). The font of this identifier shall be larger than all other text and be in bold;
- Serial number denoting the order of sample production; and,
- Preservative if applicable

The following is an example that would be suitable.



It is permissible for the Collaborator to include their own logo on the label as long as it does not mislead the participant into thinking that the Collaborator is the actual PT Provider. The Collaborator logo shall not be larger than the CALA logo.

Each PT sample in a production lot shall be individually numbered (serial number indicated above) denoting the order in which it was produced or bottled, and be tracked to a participant laboratory. This data shall be provided to CALA in an EXCEL format agreed to by CALA.

The label shall be capable of remaining on the bottles under the packaging and shipping conditions experienced by the PT samples.

The Collaborator shall produce sufficient samples in a production lot to:

- Cover the number of samples required for participants;
- Cover the number of samples required for characterization testing; and
- A sufficient contingency for the need to re-ship samples due to damage during shipping or damage in the participant laboratory.

5.2 Challenge Samples

On occasion, CALA introduces a Challenge Sample into the PT study. A Challenge Sample replaces one of the samples in a test group but has been prepared in a way different than routine. For example, it may have a known interferent added, or be prepared in a difficult matrix. CALA will not be charged extra for a challenge sample, however, the Collaborator will be involved in the design and decision to have a Challenge Sample in a study.

5.3 PT Sample Characterization

5.3.1 Confirmation of Design Value

The Collaborator shall confirm the concentrations of the PT samples through analysis of at least one sample from each production lot.

5.3.2 Re-production of Sample Lot

Should the characterization testing confirm a significant deviation from the design value, such that the concentration is outside the published concentration range, the Collaborator shall notify the CALA PT Manager who will decide whether the lot can be used or must be re-prepared. If the lot is to be re-prepared, it will be done so at no additional cost to CALA.

5.3.3 Homogeneity (Microbiology PT only)

Testing shall be conducted on each production lot of PT samples to confirm adequate homogeneity.

This testing shall be carried out on a selection of PT samples after preparation in their final form. The total number of samples taken for homogeneity testing shall be 10% of the total number of samples produced in the production run, with a minimum of 4 samples and a maximum of ten samples. A statistically random selection of samples shall be taken for homogeneity analysis (see 5.3.5).

The testing performed need not be specific for the strain being evaluated. For example, total plate count is sufficient to demonstrate homogeneity as long as the strains of bacteria in the sample recover on plate count media.

5.3.4 Stability (Microbiology PT only)

Each production lot of samples shall be subjected to analysis (a minimum of two samples) on or before the day they are shipped (start) and again after the reporting deadline (end). For Parameters with shorter hold times, the end analyses shall be performed at a time equal to or greater than the hold time indicated in the Instruction Sheet. The testing for the start of the study shall normally be obtained from the homogeneity testing.

5.3.5 Statistically Random Selection

Samples selected for homogeneity and stability testing shall be selected in a systematic, statistically random fashion. From the sequentially numbered set of samples, determine the total number of samples (N) for each concentration, the number of samples required for homogeneity or stability (g) for each concentration and the selection interval ($G = N/g$). Using a random number table or a random number generator, select a number between 1 and G and call it T. Remove samples from the production run in the order T, T + G, T + 2G, T + 3G, etc.

5.3.6 Annual Specificity Check (Microbiology PT only)

For every second study (annually) a sample containing both *E.coli* and a non *E.coli* coliform are analysed using the following media:

- Plate Count Agar, either pour plate or spread plate, incubated at 35°C;
- M-FC Agar by membrane filtration, incubated at 44.5°C;
- M-Endo Agar by membrane filtration, incubated at 35°C;
- Differential Coliforms Agar by membrane filtration, incubated at 35°C;
- Colilert Quantitray, incubated as per manufacturer's instructions.

After incubation, colour pictures are taken of each dish and forwarded to the CALA PT manager for review.

5.4 Sample Packaging and Shipping

The packaging used shall be designed to prevent physical damage to the samples or inappropriate warming or freezing. Sample boxes shall either be Styrofoam lined or use Styrofoam inserts to minimize rapid swings in temperature.

Shipping shall be done by overnight courier in a manner compliant with the Transport of Dangerous Goods Act and the Human Pathogens and Toxins Act. Arrangements shall be made with the courier of choice to avoid extremes in temperature. Choice of courier shall be as follows:

- A participant identified courier using a participant courier account. This option is limited to international shipments;
- A participant identified courier; and,
- A default courier from one of the major companies (e.g., FedEx, Purolator, UPS, DHL) that will be used whenever a participant has not specifically requested a courier. To date, the default courier has been used for the majority of shipments;

At or before shipping, the Collaborator shall send (or arrange to have sent) an email to each participant, detailing the courier name and tracking number(s) for the participant's samples.

At or before shipping the Collaborator shall also provide to CALA the tracking numbers for all shipments in a format agreed to by CALA.

5.5 Electronic Deliverables from Collaborator to CALA

All electronic deliverables shall be in an electronic format agreed to by CALA.

Electronic deliverables and timetables are as follows:

- Proposed design values shall be provided to CALA before sample production;
- Results of characterization testing shall be provided to CALA before shipping, with the exception of microbiology, which will be provided shortly after shipping;
- Courier tracking numbers shall be provided to CALA at the time of sample shipping;
- Data that traces the sample serial number to the laboratory shall be provided to CALA shortly after sample shipping. The format of the serial number records shall be ##&&&\$@@@ where:
 - ## = year (eg. 18)
 - &&& = Test Group (e.g., 05A)
 - \$ = sample number (e.g., 3)
 - @@@ = serial number (e.g., 123)

Resulting in a record of 1805A3123;

- Results of stability testing, where applicable shall be provided at the end of the study; and,
- Shipping receipts for all international shipments except those that use a participant courier account shall be provided within four weeks of shipping.

5.6 Electronic Deliverables from Collaborator to Participants

The only electronic deliverable from the Collaborator to the PT participants is an email sent at or before shipping notifying participants that samples have been shipped and providing the courier tracking number. However, it is expected that the Collaborator will respond to participant queries with respect to shipping and technical issues related to sample production. CALA shall be copied on all communication between the Collaborator and the participant.

5.7 Deliverables From CALA to the Collaborator

At least two weeks prior to shipping, CALA shall provide the following to the Collaborator:

- An EXCEL spreadsheet that includes:
 - Laboratory account number;
 - Laboratory name;
 - Laboratory shipping address;
 - Preferred courier if one is selected;
 - Courier account if one is provided;
 - Laboratory contact name, email and phone;

- A flag for shipments to be held until outstanding payment(s) have been made;
- the samples for each test group that the laboratory are to receive.

This spreadsheet is to be used by the Collaborator to coordinate shipping of the samples.

- An electronic file containing a unique instruction sheet for each participant; and,
- An electronic file for the printing of address labels.

The Collaborator shall print the instruction sheets and the labels for use.

6.0 PERIOD OF THE AGREEMENT

The first round of PT samples for this Agreement shall be shipped January 2018.

The term of this agreement shall be from the initial study date to December 31, 2019, with the possibility of extension for a further 2 years upon mutual agreement. The only pricing change that will be allowed in the first two years is a reduction in pricing should the Collaborator find efficiencies in their process that still conform to this contract.

7.0 CHANGES TO THE WORK

Any changes to the work shall be negotiated and agreed to by the CALA PT Manager and the Collaborator. Changes in the Statement of Work shall be made in writing by CALA in the form of a Contract Amendment.

This agreement may be cancelled by either party with six months notice. CALA shall only reimburse the Collaborator for samples shipped prior to the notice.

This agreement may be cancelled by CALA at any time should the Collaborator fail to comply with terms of the contract. CALA shall only reimburse the Collaborator for samples shipped prior to the notice.

8.0 PROPOSAL AND PRICING

The proposal shall be based on the above requirements for one or more of the Test Groups listed in Appendix A. The proposal shall be consistent with the information provided in Appendix A and shall provide information on:

- procedure for the selection of sample concentrations;
- example of sample labels to be used;
- volume or quantity of sample to be provided;

- type of sample container (i.e. glass vs. plastic / clear vs. amber);
- laboratory and analysis methods to be used for characterization (including media, if appropriate, and method detection limit);
- requirements for sample preservation or holding times; and,
- accreditation status of the Collaborator and Reference Laboratory.

The Collaborator is encouraged to recommend modifications to the tasks identified in this Request for Proposal, or to recommend additional services. However, if the Collaborator opts to do this, they shall provide pricing that will meet all of the tasks identified within the Request for Proposal and a separate list of prices for the recommended modifications.

8.1 Experience, Facilities and Equipment

The Collaborator shall provide:

- a brief description of the organization's experience in producing similar PT samples;
- Identify the facilities to be used and critical equipment available both for sample preparation and characterization;
- A copy of the Collaborator's current Quality Manual;
- An example of a procedure used for the production and shipping of PT samples; and,
- Resumes of key staff involved in PT sample production.

8.2 Sub-contracting

The Collaborator shall provide details of any work to be subcontracted and the identity of the subcontractor.

8.3 Price Quote

Prices quoted shall be documented in Appendix B. All prices shall be quoted in Canadian dollars. Prices shall include a per unit price for each test group (four samples, unless otherwise indicated) to be shipped to participants. The unit cost shall include all costs of sample production, analytical characterization, packaging and shipping (within Canada), and that shall accommodate variations of up to 25 percent in the projected number of sample sets.

The Collaborator shall be reimbursed at the quoted price for any samples that are re-shipped due to loss or damage by the laboratory. The Collaborator shall not be reimbursed for samples that are re-shipped due to loss or damage through the shipping process.

Due to the competitive nature of PT, every effort should be made to quote the lowest prices possible.

9.0 CRITERIA FOR SELECTION OF SUCCESSFUL BIDDER

All proposals submitted by the deadline shall be evaluated by the PT Manager based on the following criteria:

- Proposal Content;
- Previous PT Experience;
- Previous Experience as a CALA Collaborator;
- Accreditation status; and,
- Price

Following the completion of the evaluation process, all bidders shall be notified in writing regarding the acceptance/rejection of their submissions.

CALA shall not necessarily accept the lowest bid, nor any of the bids submitted. CALA may accept one or more different bids to cover all test groups listed in Appendix A.

Information provided in each proposal, including quoted prices, shall not be released to other bidders.

10.0 PROPOSAL SUBMISSION

Proposals are to be submitted to,

Ken Middlebrook
Proficiency Testing Manager
Canadian Association for Laboratory Accreditation Inc.
Suite 102 – 2934 Baseline Road,
Ottawa, ON K2H 1B2
kmiddlebrook@cala.ca

Proposals must be received by this office no later than 4 p.m. July 20, 2017.

Appendix A

CALA PT TESTING

Test Group		C01A
Test Group Name		Major ions in Water
Parameter and conc. range	Alkalinity 20 - 250 mg/L Chloride 5 - 500 mg/L Conductivity 20 - 2000 uS/cm Calcium 2 - 200 mg/L Magnesium 2 - 50 mg/L Fluoride 0.2 - 4 mg/L Hardness (as CaCO ₃) 10 - 800 mg/L Inorganic Carbon 10 - 100 mg/L Nitrate 0.2 - 20 mg/L as N Nitrate+Nitrite 0.2 - 20 mg/L as N Potassium 1 - 40 mg/L Reactive Silica 0.5 - 30 mg/L Sodium 2 - 150 mg/L Sulphate 5 - 200 mg/L	
Matrix	Water	
# of Samples/round	4	
# rounds/year	2 (March and October)	
Minimum Volume	500 mL	
Container	Plastic	
Preservative	None	
# Labs	170	
# Samples sets per study	225	

Test Group		C01B
Test Group Name		Inorganic Nutrients in Water
Parameter and conc. range	Ammonia 0.5 - 20.0 mg/L as N Organic Carbon 2.0 - 20 mg/L Phosphate 0.1 - 3.0 mg/L as P Bromide 1.0 - 10.0 mg/L Nitrite 0.1 - 1.0 mg/L as N	
Matrix	Water	
# of Samples/round	4	
# rounds/year	2 (March and October)	
Minimum Volume	250	
Container	Plastic	
Preservative	Freezing allowed	
# Labs	157	
# Samples sets per study	188	

Test Group	C02A
Test Group Name	Metals Full Range in Water
Parameters and conc. range	Aluminum 0.001 - 1.60 mg/L Barium 0.001 - 1.60 mg/L Beryllium 0.001 - 0.100 mg/L Boron 0.001 - 1.60 mg/L Cadmium 0.001 - 0.100 mg/L Chromium 0.001 - 1.60 mg/L Cobalt 0.001 - 1.60 mg/L Copper 0.001 - 1.60 mg/L Iron 0.001 - 1.60 mg/L Lead 0.001 - 1.60 mg/L Manganese 0.001 - 1.60 mg/L Molybdenum 0.001 - 1.60 mg/L Nickel 0.001 - 1.60 mg/L Silver 0.001 - 0.100 mg/L Strontium 0.001 - 1.60 mg/L Thallium 0.001 - 0.100 mg/L Tin 0.001 - 0.100 mg/L Titanium 0.001 - 1.60 mg/L Uranium 0.001 - 0.100 mg/L Vanadium 0.001 - 1.60 mg/L Zinc 0.001 - 1.60 mg/L Arsenic 1.0 - 100 µg/L Antimony 1.0 - 100 µg/L Selenium 1.0 - 100 µg/L
Matrix	Water
Analytical method	NA
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250
Container	Plastic
Preservative	0.2% Nitric acid
# Labs	107
# Samples sets per study	115

Test Group	C02B
Test Group Name	Metals (High range) in Water
Parameters and conc. range	Aluminum 0.25 - 1.60 mg/L Barium 0.25 - 1.60 mg/L Boron 0.25 - 1.60 mg/L Chromium 0.25 - 1.60 mg/L Cobalt 0.25 - 1.60 mg/L Copper 0.25 - 1.60 mg/L Iron 0.25 - 1.60 mg/L Lead 0.25 - 1.60 mg/L Manganese 0.25 - 1.60 mg/L Molybdenum 0.25 - 1.60 mg/L Nickel 0.25 - 1.60 mg/L Strontium 0.25 - 1.60 mg/L Thallium 0.25 - 1.60 mg/L Titanium 0.25 - 1.60 mg/L Vanadium 0.25 - 1.60 mg/L Zinc 0.25 - 1.60 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250
Container	Plastic
Preservative	0.2% Nitric acid
# Labs	34
# Samples sets per study	35

Test Group	C02C
Test Group Name	Metals (Total) in Water
Parameters and conc. range	Aluminum 0.25 - 1.60 mg/L Barium 0.25 - 1.60 mg/L Boron 0.25 - 1.60 mg/L Chromium 0.25 - 1.60 mg/L Cobalt 0.25 - 1.60 mg/L Copper 0.25 - 1.60 mg/L Iron 0.25 - 1.60 mg/L Lead 0.25 - 1.60 mg/L Manganese 0.25 - 1.60 mg/L Molybdenum 0.25 - 1.60 mg/L Nickel 0.25 - 1.60 mg/L Strontium 0.25 - 1.60 mg/L Thallium 0.25 - 1.60 mg/L Titanium 0.25 - 1.60 mg/L Vanadium 0.25 - 1.60 mg/L Zinc 0.25 - 1.60 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250
Container	Plastic
Preservative	0.2% Nitric acid
# Labs	71
# Samples sets per study	78
Note: Test groups C02B and C02C are the same samples with different labels.	

Test Group	C03
Test Group Name	TKN and TP in Water
Parameters and conc. range	Total Kjeldahl Nitrogen 2.0 - 20.0 mg/L Total Phosphorus 0.1 - 4.0 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250
Container	Plastic
Preservative	0.1N H ₂ SO ₄
# Labs	114
# Samples sets per study	130
Note: the source of nitrogen and phosphorus used must be one that requires digestion to bring it into a form that can be measured by standard colorimetric procedures	

Test Group	C04A
Test Group Name	Solids in Water
Parameters and conc. range	Total Suspended Solids 10 - 200 mg/L Total Dissolved Solids 100 - 1000 mg/L Volatile Suspended Solids 5 - 150 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	500
Container	Plastic
Preservative	None
# Labs	204
# Samples sets per study	229

Test Group	C04B
Test Group Name	Biochemical Oxygen Demand in Water
Parameters and conc. range	BOD (5 day) 25 - 200 mg/L CBOD (5 day) 25 - 200 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	1000
Container	Plastic
Preservative	Freezing allowed
# Labs	131
# Samples sets per study	135

Test Group	C04C
Test Group Name	Turbidity in Water
Parameters and conc. range	Turbidity 0.5 - 50 NTU
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250
Container	Plastic
Preservative	None
# Labs	105
# Samples sets per study	114

Test Group	C04D
Test Group Name	Chemical Oxygen Demand in Water
Parameters and conc. range	COD 30 - 500 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250
Container	Plastic
Preservative	pH < 2 with 0.1N H ₂ SO ₄
# Labs	99
# Samples sets per study	102

Test Group	C05A
Test Group Name	Microbiology in Water (Quantified)
Parameters and conc. range	E.coli (200 - 1000 CFU/mL) Total coliforms (200 - 1000 CFU/mL) Heterotrophic Plate Count (200 - 1000 CFU/mL)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	3 - 5 mL
Container	Vial
Preservative	Stabilized
# Labs	137
# Samples sets per study	162
Note: Three of the samples must contain E. coli and a non E.coli coliform (e.g., Enterobacter). One sample may be a single strain sample containing just E. coli.	

Test Group	C05B
Test Group Name	Microbiology in Water (Qualitative)
Parameters and conc. range	E. coli (200 – 1000 CFU/mL) Total Coliforms (200 – 1000 CFU/mL)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	3 – 5 mL
Container	Vial
Preservative	Stabilized
# Labs	37
# Samples sets per study	38
Note: Each sample will contain either E. coli, a non E. coli coliform (e.g., Enterobacter) or sterile water.	

Test Group	C06A
Test Group Name	Organochlorine Pesticides in Water
Parameters and conc. range	alpha-BHC (0.05 – 3.0 µg/L) Endosulfan I (0.05 – 3.0 µg/L) Endosulfan II (0.05 – 3.0 µg/L) Endrin (0.05 – 3.0 µg/L) Heptachlor Epoxide (0.05 – 3.0 µg/L) Lindane (gamma-BHC) (0.05 – 3.0 µg/L) Mirex (0.05 – 3.0 µg/L) o,p' – DDT (0.05 – 3.0 µg/L) p,p' – DDT (0.05 – 3.0 µg/L) p,p' Methoxychlor (0.05 – 3.0 µg/L) Aldrin (0.05 – 5 µg/L) Dieldrin (0.05 – 5 µg/L) Heptachlor (0.05 – 5 µg/L) a-Chlordane (0.025 – 5 µg/L) g-Chlordane (0.025 – 5 µg/L)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum default volume	1000 mL
Minimum alternate volume	250 mL
Container	Amber glass/Teflon lined lid
Preservative	
# Labs	25
# Samples sets per study	27

Test Group	C06B
Test Group Name	Total PCBs in Water
Parameters and conc. range	Total PCBs (1.0 - 20 µg/L) Aroclor 1242 (1.0 - 20 µg/L) Aroclor 1248 (1.0 - 20 µg/L) Aroclor 1254 (1.0 - 20 µg/L) Aroclor 1260 (1.0 - 20 µg/L)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum default volume	1000 mL
Minimum alternate volume	250 mL
Container*	Amber glass/Teflon lined lid
Preservative	None
# Labs	35
# Samples sets per study	38
Note: Each sample is only spiked with a single aroclor. However, all four aroclors will be included in each study.	

Test Group	C07
Test Group Name	Polycyclic Aromatic Hydrocarbons in Water
Parameters and conc. range	Acenaphthene 0.4 - 12 µg/L Acenaphthylene 0.4 - 12 µg/L Anthracene 0.4 - 12 µg/L Benzo (a) anthracene 0.4 - 12 µg/L Benzo (a) pyrene 0.4 - 12 µg/L Benzo (b) fluoranthene 0.4 - 12 µg/L Benzo (g,h,i) perylene 0.4 - 12 µg/L Benzo (k) fluoranthene 0.4 - 12 µg/L Chrysene 0.4 - 12 µg/L Dibenzo(a,h)anthracene 0.4 - 12 µg/L Fluoranthene 0.4 - 12 µg/L Fluorene 0.4 - 12 µg/L Indeno (1,2,3 - cd) pyrene 0.4 - 12 µg/L Naphthalene 0.4 - 12 µg/L Phenanthrene 0.4 - 12 µg/L Pyrene 0.4 - 12 µg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum default volume	1000 mL
Minimum alternate volume	250 mL
Container*	Amber glass/Teflon lined lid
Preservative	None
# Labs	52
# Samples sets per study	64

Test Group	C08
Test Group Name	Total PCBs in Oil
Parameters and conc. range	Total PCBs (5 - 150 µg/g) Aroclor 1242 (5 - 150 µg/g) Aroclor 1248 (5 - 150 µg/g) Aroclor 1254 (5 - 150 µg/g) Aroclor 1260 (5 - 150 µg/g)
Matrix	Oil
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	3 mL
Container	Glass vial
Preservative	None
# Labs	38
# Samples sets per study	40
Note: Each sample is only spiked with a single aroclor. However, all four aroclors will be included in each study.	

Test Group	C09
Test Group Name	Metals on Air Filters
Parameters and conc. range	Cadmium 4.0 - 30 µg/HVF Copper 4.0 - 60 µg/HVF Lead 4.0 - 80 µg/HVF Zinc 4.0 - 60 µg/HVF
Matrix	47 mm x 2 (quartz)
# of Samples/round	4 + Blank
# rounds/year	2 (January and June)
Minimum Volume	NA
Container	Petri Dish
Preservative	None
# Labs	13
# Samples sets per study	14

Test Group	C11
Test Group Name	Trout LC50
Parameters and conc. range	Trout LC50 (96 h) 2 - 10 ml/L
Matrix	Phenol solution
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	1000 mL
Container	Amber glass/Teflon lined lid
Preservative	None
# Labs	22
# Samples sets per study	25

Test Group	C12
Test Group Name	Daphnia LC50
Parameters and conc. range	Daphnia LC50 (48 h) 2 - 40 ml/L
Matrix	sodium chloride solution
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	500 mL
Container	Plastic
Preservative	None
# Labs	22
# Samples sets per study	23

Test Group	C13
Test Group Name	Microtox IC50
Parameters and conc. range	Microtox IC50 (15 min) 4 - 10 ml/L
Matrix	phenol solution
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	100 mL
Container	Amber glass/Teflon lined lid
Preservative	None
# Labs	28
# Samples sets per study	29

Test Group	C14
Test Group Name	Cyanide (SAD) in Water
Parameters and conc. range	Cyanide (SAD) 0.2 - 5.0 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	500 mL
Container	Plastic
Preservative	Sodium hydroxide
# Labs	40
# Samples sets per study	40

Note: The cyanide compound used must be one that requires a strong acid processing to bring it into a form that can be measured by the typical colorimetric procedure.

Test Group	C15
Test Group Name	pH in Water
Parameters and conc. range	PH 3.00 - 10.00
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	125 mL
Container	Plastic
Preservative	None
# Labs	202
# Samples sets per study	238

Test Group	C16
Test Group Name	BTEX / THM / VOCs in Water
Parameters and conc. range	1,1,1-Trichloroethane 6.0 – 200 µg/L 1,1,2,2-Tetrachloroethane 6.0 – 200 µg/L 1,1,2-Trichloroethane 6.0 – 200 µg/L 1,1-Dichloroethane 6 – 200 µg/L 1,1-Dichloroethylene 6.0 – 200 µg/L 1,2-Dichlorobenzene 6 – 200 µg/L 1,2-Dichloroethane 6 – 200 µg/L 1,2-Dichloropropane 6.0 – 200 µg/L 1,3-Dichlorobenzene 6.0 – 200 µg/L 1,4-Dichlorobenzene 6 – 200 µg/L Acetone (2-Propanone) 6.0 – 200 µg/L Benzene 2.0 – 200 µg/L Bromodichloromethane 20 – 500 µg/L Bromoform 20 – 500 µg/L Carbon Tetrachloride 6 – 200 µg/L Chlorobenzene 6 – 200 µg/L Chlorodibromomethane 20 – 500 µg/L Chloroform 20 – 500 µg/L cis-1,2-Dichloroethylene 6.0 – 200 µg/L cis-1,3-Dichloropropene 6.0 – 200 µg/L Dichloromethane 6 – 200 µg/L Ethylbenzene 2 – 200 µg/L Ethylene Dibromide 6.0 – 200 µg/L m/p-xylene 6 – 200 µg/L Methyl Ethyl Ketone 6.0 – 200 µg/L Methyl t-butyl ether (MTBE) 6.0 – 200 µg/L Methyl isobutyl Ketone (MIBK) 6.0 – 200 µg/L o-xylene 6 – 200 µg/L Styrene 6.0 – 200 µg/L Tetrachloroethylene 6 – 200 µg/L Toluene 6 – 200 µg/L trans-1,2-Dichloroethylene 6.0 – 200 µg/L trans-1,3-Dichloropropene 6.0 – 200 µg/L Trichloroethylene 6 – 200 µg/L Trichlorofluoromethane 6.0 – 200 µg/L Vinyl Chloride 6.0 – 200 µg/L
Matrix	Water
# of Samples/round	4x2
# rounds/year	2 (January and June)
Minimum Volume	40 mL
Container	Amber glass VOC vial
Preservative	NaHSO ₄
# Labs	74
# Samples sets per study	99
Note: Each sample is provided in duplicate.	

Test Group	C17
Test Group Name	Metals in Soil/Sediment
Parameters and conc. range	Aluminum 1000 - 100000 µg/g Antimony 0.5 - 4.0 µg/g Arsenic 5 - 35 µg/g Barium 50 - 500 µg/g Beryllium 1 - 3 µg/g Boron 20 - 200 µg/g Cadmium 0.2 - 6 µg/g Chromium 50 - 150 µg/g Cobalt 10 - 20 µg/g Copper 30 - 600 µg/g Iron 1000 - 50000 µg/g Manganese 100 - 2000 µg/g Mercury 50 - 2000 ng/g Nickel 25 - 1000 µg/g Lead 5 - 400 µg/g Strontium 100 - 500 µg/g Tin 10 - 100 µg/g Titanium 500 - 5000 µg/g Uranium 1 - 5 µg/g Vanadium 25 - 200 µg/g Zinc 40 - 1600 µg/g
Matrix	Soil/sediment
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	25 - 40 g
Container	Plastic or glass
Preservative	None
# Labs	66
# Samples sets per study	72

Test Group	C18
Test Group Name	Polycyclic Aromatic Hydrocarbons in Soil
Parameters and conc. range	Acenaphthene 0.2 - 50 µg/g Acenaphthylene 0.2 - 50 µg/g Anthracene 0.2 - 50 µg/g Benzo (a) anthracene 0.2 - 50 µg/g Benzo (a) pyrene 0.2 - 50 µg/g Benzo (b) fluoranthene 0.2 - 50 µg/g Benzo (g,h,i) perylene 0.2 - 50 µg/g Benzo (k) fluoranthene 0.2 - 50 µg/g Chrysene 0.2 - 50 µg/g Dibenzo(a,h)anthracene 0.2 - 50 µg/g Fluoranthene 0.2 - 50 µg/g Fluorene 0.2 - 50 µg/g Indeno (1,2,3 - cd) pyrene 0.2 - 50 µg/g Naphthalene 0.2 - 50 µg/g Phenanthrene 0.2 - 50 µg/g Pyrene 0.2 - 50 µg/g
Matrix	Soil/sediment
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	25 - 40 g
Container	Glass
Preservative	None
# Labs	42
# Samples sets per study	47

Test Group	C19
Test Group Name	Mercury in Water
Parameters and conc. range	Mercury 0.5 - 5 µg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	125 mL
Container	Glass
Preservative	0.5% Bromine monochloride
# Labs	72
# Samples sets per study	73
Note: The mercury used must be a non-organic mercury, and one that can be readily released by the cold-vapour technique.	

Test Group	C22
Test Group Name	OP Pesticides in Water
Parameters and conc. range	Atrazine 2 - 5 µg/L Azinphos-methyl 10 - 40 µg/L Bendiocarb 1 - 40 µg/L Carbaryl 0.2 - 90 µg/L Carbofuran 0.2 - 90 µg/L Chlorpyriphos (ethyl) 2 - 10 µg/L Cyanazine 2 - 10 µg/L Diazinon 0.5 - 20 µg/L Dimethoate 2 - 20 µg/L Diuron 20 - 50 µg/L Malathion 2 - 10 µg/L Metolachlor 2 - 10 µg/L Metribuzin 2 - 10 µg/L Parathion (ethyl) 0.5 - 20 µg/L Phorate 0.5 - 5 µg/L Simazine 1 - 10 µg/L Terbufos 0.5 - 5 µg/L Trifluralin 1 - 10 µg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Default Volume	1000 mL
Minimum alternate volume	250 mL
Container*	Clear Glass/Teflon lined lids
Preservative	None
# Labs	26
# Samples sets per study	40

Test Group	C24
Test Group Name	Aryloxy Acid Pesticides in Water
Parameters and conc. range	2,4-Dichlorophenoxyacetic acid 0.1 - 10 µg/L 2,4,5-Trichlorophenoxyacetic acid 0.1 - 10 µg/L Bromoxynil 1 - 5 µg/L Dicamba 1 - 10 µg/L Diclofop-methyl (as free acid) 0.5 - 5 µg/L Dinoseb 1 - 10 µg/L Picloram 0.1 - 10 µg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum default volume	1000 mL
Minimum alternate volume	250 mL
Container*	Clear Glass/Teflon lined lids
Preservative	pH < 2 with H ₂ SO ₄
# Labs	21
# Samples sets per study	23

Test Group	C25
Test Group Name	Phenolic Compounds in Water
Parameters and conc. range	2,4,6-Trichlorophenol 2 - 20 µg/L 2,3,4,6-Tetrachlorophenol 2 - 20 µg/L 2,4-Dichlorophenol 2 - 20 µg/L Pentachlorophenol 2 - 20 µg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum default volume	1000 mL
Minimum alternate volume	250 mL
Container*	Clear glass/Teflon lined lid
Preservative	pH < 2 with H ₂ SO ₄
# Labs	24
# Samples sets per study	29

Test Group	C27
Test Group Name	Glyphosate in Water
Parameters and conc. range	Glyphosate 25 - 80 µg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	250 mL
Container	Brown plastic
Preservative	0.01% thiosulphate
# Labs	13
# Samples sets per study	14

Test Group	C29
Test Group Name	Aldicarb in Water
Parameters and conc. range	Aldicarb 1 - 9 µg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	250 mL
Container	Plastic
Preservative	None
# Labs	12
# Samples sets per study	14

Test Group	C31A
Test Group Name	PHC/BTEX in soil
Parameters and conc. range	F1: C6-C10 30 - 3500 mg/kg Benzene 0.1 - 10 mg/kg Ethylbenzene 10 - 200 mg/kg m/p-xylene 100 - 500 mg/kg o-xylene 100 - 500 mg/kg Toluene 10 - 200 mg/kg
Matrix	Soil/Sediment
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	8 g
Container	40 mL VOC vial
Preservative	20 mL methanol
# Labs	52
# Samples sets per study	61

Test Group	C31B
Test Group Name	PHC in Soil
Parameters and conc. range	F2: C10-C16 150 - 6500 mg/kg F3: C16-C34 250 - 12500 mg/kg F4: C34-C50 1000 - 12500 mg/kg
Matrix	Soil/Sediment
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	40 g
Container	Amber glass jars
Preservative	Frozen
# Labs	53
# Samples sets per study	65

Test Group	C32
Test Group Name	Residual Chlorine in Water
Parameters and conc. range	Free Chlorine 0.5 - 3.0 mg/L Total Chlorine 0.5 - 3.0 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250 mL
Container	Plastic
Preservative	None
# Labs	63
# Samples sets per study	89

Test Group	C33
Test Group Name	Total Phenolics in Water
Parameters and conc. range	Phenolics 0.005 - 0.50 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	250
Container	Amber glass/Teflon lined lid
Preservative	H ₂ SO ₄
# Labs	39
# Samples sets per study	42

Test Group	C34
Test Group Name	Total Oil and Grease in Water
Parameters and conc. range	Total Oil and Grease 10 - 500 mg/L Mineral Oil and Grease 10 - 500 mg/L
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum volume	1000
Default container	Narrow mouth Clear glass/Teflon lined lid
Alternate container	Wide mouth clear glass/Teflon lined lid
Preservative	pH < 1 with HCl
# Labs	63
# Samples sets per study	64

Test Group	C35
Test Group Name	PCBs in Soil
Parameters and conc. range	Total PCBs (2 - 150 µg/g) Aroclor 1242 (2 - 150 µg/g) Aroclor 1248 (2 - 150 µg/g) Aroclor 1254 (2 - 150 µg/g) Aroclor 1260 (2 - 150 µg/g)
Matrix	Soil
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	30 g
Container	Glass
Preservative	0.5 - 3.0 mg/L
# Labs	35
# Samples sets per study	36
Note: Each sample is only spiked with a single aroclor. However, all four aroclors will be included in each study.	

Test Group	C36
Test Group Name	VOCs in Soil
Parameters and conc. range	1,1,1-Trichloroethane (5 - 200 µg/g) 1,1,2,2-Tetrachloroethane (5 - 200 µg/g) 1,1,2-Trichloroethane (5 - 200 µg/g) 1,1-Dichloroethane (5 - 200 µg/g) 1,1-Dichloroethylene (5 - 200 µg/g) 1,2-Dichlorobenzene (5 - 200 µg/g) 1,2-Dichloroethane (5 - 200 µg/g) 1,2-Dichloropropane (5 - 200 µg/g) 1,3-Dichlorobenzene (5 - 200 µg/g) 1,4-Dichlorobenzene (5 - 200 µg/g) Acetone (2-Propanone) (5 - 200 µg/g) Benzene (5 - 200 µg/g) Bromodichloromethane (5 - 200 µg/g) Bromoform (5 - 200 µg/g) Carbon Tetrachloride (5 - 200 µg/g) Chlorobenzene (5 - 200 µg/g) Chlorodibromomethane (5 - 200 µg/g) Chloroform (5 - 200 µg/g) cis-1,2-Dichloroethylene (5 - 200 µg/g) cis-1,3-Dichloropropene (5 - 200 µg/g) Dichloromethane (5 - 200 µg/g) Ethylbenzene (5 - 200 µg/g) Ethylene Dibromide (5 - 200 µg/g) m/p-xylene (5 - 200 µg/g) Methyl Ethyl Ketone (5 - 200 µg/g) Methyl t-butyl ether (MTBE) (5 - 200 µg/g) Methyl isobutyl Ketone (MIBK) (5 - 200 µg/g) o-xylene (5 - 200 µg/g) Styrene (5 - 200 µg/g) Tetrachloroethylene (5 - 200 µg/g) Toluene (5 - 200 µg/g) trans-1,2-Dichloroethylene (5 - 200 µg/g) trans-1,3-Dichloropropene (5 - 200 µg/g) Trichloroethylene (5 - 200 µg/g) Trichlorofluoromethane (5 - 200 µg/g)
Matrix	Water
Analytical method	NA
# of Samples/round	4 x 2
# rounds/year	2 (January and June)
Minimum Volume	8 g
Container	40 mL amber VOA vial with teflo-lined septum
Preservative	Methanol (20 mL)
# Labs	42
# Samples sets per study	44

Test Group	C37
Test Group Name	Colour in Water
Parameters and conc. range	True Colour (2 – 50 CU)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	125 mL
Container	Glass
Preservative	
# Labs	59
# Samples sets per study	64
Note: The chemical used must be the cobalt/platinum materials described in Standard Methods.	

Test Group	C38
Test Group Name	VOCs by TCLP
Parameters and conc. range	1,2-Dichlorobenzene (0.025 – 5 mg/L) 1,2-Dichloroethane (0.025 – 5 mg/L) 1,4-Dichlorobenzene (0.025 – 5 mg/L) Benzene (0.025 – 5 mg/L) Carbon tetrachloride (0.025 – 5 mg/L) Chlorobenzene (0.025 – 5 mg/L) Chloroform (0.025 – 5 mg/L) Dichloromethane (0.025 – 5 mg/L) Methyl Ethyl Ketone (1.0 – 5 mg/L) Tetrachloroethylene (0.025 – 5 mg/L) Trichloroethylene (0.025 – 5 mg/L)
Matrix	Soil
# of Samples/round	2
# rounds/year	2 (January and June)
Minimum Volume	100 g
Container	Glass Jar
Preservative	Freezing
# Labs	25
# Samples sets per study	25
Note: The concentration range is the concentration range after leaching the sample as per EPA 1311	

Test Group	C39
Test Group Name	VOCs by TCLP
Parameters and conc.	Silver (0.0010 – 0.050 mg/L) Arsenic (0.010 – 0.050 mg/L) Boron (0.50 – 10.0 mg/L) Barium (0.10 – 2.0 mg/L) Cadmium (0.0010 – 0.050 mg/L) Chromium (0.010 – 0.50 mg/L) Lead (0.010 – 0.50 mg/L) Selenium (0.050 – 1.0 mg/L) Uranium (0.050 – 1.0 mg/L) Mercury (0.00010 – 0.050 mg/L) Fluoride (10 – 100 mg/L) Nitrate-N (2 – 50 mg/L) Nitrate and Nitrite as N (2.8 – 70 mg/L) Cyanide, Weak Acid Diss (0.1 – 5 mg/L)
Matrix	Soil
# of Samples/round	2
# rounds/year	2 (January and June)
Minimum Volume	200 g
Container	Glass or plastic jar
Preservative	NA
# Labs	35
# Samples sets per study	35
Note: The concentration range is the concentration range after leaching the sample as per EPA 1311	

Test Group	C40A
Test Group Name	PHCs in Water
Parameters and conc.	Benzene (1 – 100 µg/L) Ethylbenzene (1 – 100 µg/L) F1: C6 – C10 (20 – 1000 µg/L) m/p-Xylene (1 – 100 µg/L) o-Xylene (1 – 100 µg/L) Toluene (1 – 100 µg/L)
Matrix	Water
Analytical method	
# of Samples/round	4 (2 vials per sample)
# rounds/year	2 (January and June)
Default Minimum Volume	40 mL
Container	Glass VOC vial
Preservative	NaHSO ₄
# Labs	44
# Samples sets per study	49

Test Group	C40B
Test Group Name	PHCs in Water
Parameters and conc.	F2: C10 – C16 (200 – 50,000 µg/L) F3: C16 – C34 (200 – 50,000 µg/L) F4: C34 – C50 (200 – 50,000 µg/L)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Default Minimum Volume	1000 mL
Alternate Minimum Volume	250 mL
Container	Glass
Preservative	
# Labs	42
# Samples sets per study	46

Test Group	C41
Test Group Name	Hexavalent Chromium in Water
Parameters and conc. range	Hexavalent Chromium (50 - 500 µg/L)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	125 mL
Container	Glass or HDPE
Preservative	pH 9.3 – 9.7 ammonium sulphate
# Labs	27
# Samples sets per study	28

Test Group	C42
Test Group Name	Sulphide in Water
Parameters and conc. range	Sulphide (1 – 10 mg/L)
Matrix	Water
# of Samples/round	4
# rounds/year	2 (March and October)
Minimum Volume	125 mL
Container	Amber Glass
Preservative	pH 10 NaOH and ZnOAc
# Labs	19
# Samples sets per study	20

NEW Test Group		C43
Test Group Name		Solids in Soil
Parameters and conc. range	Fixed Solids (80 - 100 %) Percent Moisture (1 - 30%) Total Solids (70 - 100%) Volatile Solids (1 - 20%)	
Matrix	Soil	
# of Samples/round	2	
# rounds/year	2 (January and June)	
Minimum Volume	40 g	
Container	Glass or HDPE wide mouth jar	
Preservative		
# Labs	20	
# Samples sets per study	20	

NEW Test Group		C44
Test Group Name		Nutrients in Soil
Parameters and conc. range	Ammonia as N (300 - 3000 µg/g) Kjeldahl Nitrogen -TKN (400 - 4000 µg/g) Organic Carbon (1000 - 15000 µg/g) Phosphorus (300 - 3000 µg/g)	
Matrix	Soil	
# of Samples/round	2	
# rounds/year	2 (January and June)	
Minimum Volume	40 g	
Container	Glass or HDPE wide mouth jar	
Preservative		
# Labs	20	
# Samples sets per study	20	
Note: If the Collaborator is bidding on C17, the formulation of C17 may be augmented to include these analytes but separately labeled after bottling.		

NEW Test Group		C45
Test Group Name		Anions in Soil
Parameters and conc. range	Bromide (10 - 100 µg/g) Chloride (200 - 1000 µg/g) Fluoride (25 - 500 µg/g) Nitrate - N (25 - 500 µg/g) Phosphate (25 - 500 µg/g) Sulphate (25 - 2000 µg/g)	
Matrix	Soil	
# of Samples/round	2	
# rounds/year	2 (January and June)	
Minimum Volume	40 g	
Container	Glass or HDPE wide mouth jar	
Preservative		
# Labs	20	
# Samples sets per study	20	
Note: If the Collaborator is bidding on C17, the formulation of C17 may be augmented to include these analytes but separately labeled after bottling.		

Test Group	P50
Test Group Name	Chlorine in Water (treatment operator)
Parameters and conc. range	Total Chlorine (0.5 – 3.0 mg/L) Free Chlorine (0.5 – 3.0 mg/L)
Matrix	Water
# of Samples/round	2
# rounds/year	2 (March and October)
Minimum Volume	125 mL
Container	Plastic
Preservative	None
# Labs	10
# Samples sets per study	15
Note: These are the same as two of the C32 samples, with different labels.	

Test Group	P51
Test Group Name	Turbidity in Water (treatment operator)
Parameters and conc. range	Turbidity (0.5 – 10.0 NTU)
Matrix	Water
# of Samples/round	2
# rounds/year	2 (March and October)
Minimum Volume	125 mL
Container	Plastic
Preservative	None
# Labs	10
# Samples sets per study	10
Note: These are the same as two of the C04C samples, with different labels.	

Test Group	P52
Test Group Name	pH in Water (treatment operator)
Parameters and conc. range	pH (4 – 8 pH units)
Matrix	Water
# of Samples/round	2
# rounds/year	2 (March and October)
Minimum Volume	125 mL
Container	Plastic
Preservative	None
# Labs	10
# Samples sets per study	10
Note: These are the same as two of the C15 samples, with different labels.	

Appendix B

Price Quote

Cost per study should be estimated for an entire PT round based on the projected participation rate in Appendix A. The unit price is the total cost per test group set and includes all costs, including shipping. The potential Collaborator must provide costs for both a set of four option and a set of two option for all of the test groups that they are bidding for. The price for ampoules should only be provided for test groups that the Collaborator has the equipment and ability to provide. All prices are to be quoted in Canadian dollars.

Test Group	Price per set of 4	Price per set of 2	Price per set of 4 ampoules
C01A Major Ions in Water			
C01B Inorganic Nutireints in Water			
C02A Full Range Metals in Water			
C02B High Range Metals in Water			
C02C Total Metals in Water			
C03 TKN and TP in Water			
C04A Solids in Water			
C04B BOD in Water			
C04C Turbidity in Water			
C04D COD in Water			
C05A Microbiology in Water (Quantitative)			
C05B Microbiology in Water (Qualitative)			
C06A OC Pesticides in Water			
C06B PCBs in Water			
C07 PAHs in Water			
C08 PCBs in Oil			
C09 Metals on Air Filters (Quartz)			
C11 Toxicology (Trout)			
C12 Toxicology (<i>Daphnia</i>)			
C13 Toxicology (Microtox)			
C14 Cyanide in Water			
C15 pH in Water			
C16 VOCs in Water			
C17 Metals in Soil			
C18 PAHs in Soil			
C19 Mercury in Water			
C22 OP Pesticides in Water			
C24 Aryloxy Acid Pesticides in Water			
C25 Phenolic Compounds in Water			

Test Group	Price per set of 4	Price per set of 2	Price per set of 4 ampoules
C27 Glyphosate in Water			
C29 Aldicarb in Water			
C31A BTEX and F1 PHCs in Soil			
C31B F2, F3 and F4 PHCs in Soil			
C32 Chlorine in Water			
C33 4-AAP Phenolics in Water			
C34 Oil and Grease in Water			
C35 PCBs in Soil			
C36 VOCs in Soil			
C37 Colour in Water			
C38 VOCs by TCLP in Soil			
C39 Metals, Anions and Cyanide by TCLP in Soil			
C40A PHCs in water			
C40B PHCs in water			
C41 Hexavalent Chromium in water			
C42 Sulphide in water			
C43 Solids in soil			
C44 Nutrients in soil			
C45 Anions in soil			
P50 Chlorine in Water for Treatment Operators			
P51 Turbidity in Water for Treatment Operators			
P52 pH in Water for Treatment Operators			