Request for Proposal for the Production and Shipping of Proficiency Testing Samples

May 12, 2021

PTC | Proficiency Testing Canada

Table of Contents

1.0 BACKGROUND 1

2.0 DEFINITIONS 1

3.0 STATEMENT OF WORK AND GENERAL REQUIREMENTS 2

4.0 QUALIFICATIONS 3

5.0 DELIVERABLES 3

5.1 PT Sample Production 3

5.1.1 General 3

5.1.2 Selection of Design Values 4

5.1.3 Production of Samples 4

5.2 Challenge Samples 6

5.3 PT Sample Characterization 6

5.3.1 Confirmation of Design Value 6

5.3.2 Re-production of PT Sample Production Lot 7

5.3.3 Homogeneity (Microbiology PT only) 7

5.3.4 Stability (Microbiology PT only) 7

5.3.5 Statistically Random Selection 7

5.3.6 Annual Specificity Check (Microbiology PT only) 7

5.4 PT Sample Packaging and Shipping 8

5.5 Electronic Deliverables from Subcontractor to PTC 8

5.6 Electronic Deliverables from Subcontractor to Participants 8

5.7 Deliverables From PTC to the Subcontractor 9

6.0 PERIOD OF THE AGREEMENT 9

7.0 CHANGES TO THE WORK 9

8.0 PROPOSAL AND PRICING 10

8.1 General 10

8.2 Experience, Facilities and Equipment 10

8.3 Sub-contracting 10

8.4 Price Quote 10

9.0 CRITERIA FOR SELECTION OF SUCCESSFUL BIDDER.....11
10.0 PROPOSAL SUBMISSION.....11
APPENDIX A PTC PT Test Groups 12
APPENDIX B Price Quote 44

1.0 BACKGROUND

Proficiency Testing Canada Inc. (PTC) is a not-for-profit organization that operates an ISO/IEC 17043 accredited Proficiency Testing (PT) program. PTC is soliciting proposals for the production, characterization and shipping of PT Samples in support of its accredited Proficiency Testing Program.

The Subcontractor shall be responsible for the production, characterization, packaging and shipping of PTC's PT Samples.

All inquiries should be directed to:

Ken Middlebrook | Executive Director
kmiddlebrook@ptcanada.org
(613) 292-9631.

2.0 DEFINITIONS

Accreditation Body: An organization that is signatory to the International Laboratory Accreditation Cooperation (ILAC) for the accreditation of testing laboratories, proficiency testing providers or reference material producers.

Analyte: The substance whose constituent is identified or measured (e.g., Mercury or *E. coli*).

Characterization: Chemical, microbiological or other analysis performed in support of the manufacture of the PT Samples including analysis to confirm design value, and analysis to demonstrate adequate PT Sample homogeneity and stability.

Design Value: The property values of a PT Sample determined by formulation.

Participant: A laboratory or individual that participates in the PTC PT Program.

Production Lot: All PT Samples produced for a Test Group for a single PT Round that are intended to be identical in composition. For example, all C01A-1 PT Samples produced for October 2021 are considered to be one Production Lot.

PT Round: The complete cycle of a PT event, including the design, production, characterization, shipping, evaluation and issuing of the PT Report. Each PT round will typically involve numerous PT Test Groups.

PT Sample: A single item provided to a Participant for analysis resulting in the production of a single result for an Analyte.

Subcontractor: An organization that prepares, characterizes and distributes the characterization of PT samples under contract to PTC.

Test Group: A distinct PT Sample set typically consisting of four PT Samples (e.g., C01A Major Ions in water).

3.0 STATEMENT OF WORK AND GENERAL REQUIREMENTS

3.1 The Subcontractor shall produce PT Samples for one or more of the Test Groups detailed in Appendix A. Unless otherwise specified, each Test Group shall consist of four PT Samples of different concentration, containing one or more Analyte. PT 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 Subcontractor shall have Manufacturers Safety Data Sheets (MSDS) for each Test Group they produce for PTC.

3.3 The Subcontractor shall provide to PTC the Design Values on each Production Lot of PT Samples prior to production for approval.

3.4 For chemistry and physical PT Samples the Subcontractor shall Characterize (analyse) at least one sample PT Sample per Production Lot before PT Samples are shipped. For microbiology PT Samples this Characterization analysis may be conducted immediately after shipping.

3.5 For each Microbiology Production Lot the Subcontractor shall perform an assessment of homogeneity and stability as per 5.3.3 and 5.3.4 below.

3.6 The Subcontractor shall package PT Samples in a way to minimize the risk of contamination, damage and exposure to extreme temperatures during storage and shipping, and to minimize risk to anybody handling the samples.

3.7 The Subcontractor shall distribute PT Samples to participating laboratories by overnight courier. Arrangements shall be made with the courier of choice to avoid extremes in temperature. PTC shall provide all necessary Instruction sheets, in electronic format, that shall accompany the PT Samples.

3.8 For international shipments the Subcontractor shall include an Original Invoice in the shipment.

3.9 The Subcontractor shall provide replacement PT Samples that result from PT Sample loss or damage during shipping, or due to loss or damage in the participant laboratory.

3.10 All data concerning the PT Samples (e.g., Design Value, verification testing, participants) shall remain confidential and only be communicated to PTC.

3.11 The Subcontractor shall provide a response to non-conformances arising from a PT Round within 5 working days and implement corrective action, if required, before the next round of PT Samples is prepared.

3.12 The Subcontractor may use unused PT Samples prepared under this contract for their own purposes under the following conditions:

- The PT Samples may not be used to coordinate a PT Round within Canada;
- The PT Sample labels shall not include the PTC logo or any reference to PTC; and

- The Subcontractor assumes all liability for the use of these PT Samples.

If the Subcontractor intends to use the remaining PT Samples as reference materials, PTC will be prepared to provide summary statistics based on analytical instrumentation, and limited to results from accredited laboratories. However, PTC does not take responsibility for demonstrating the long-term stability of the PT Samples.

3.13 If the PT Samples have been demonstrated to be stable for long periods of time, the Subcontractor may prepare PT Sample Production Lots in far greater numbers than required for any individual PT Round and use them in subsequent Rounds.

4.0 QUALIFICATIONS

4.1 The Subcontractor shall be competent for 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 Subcontractor that is accredited to ISO/IEC 17043 by an Accreditation Body that is signatory to the International Laboratory Accreditation Cooperation (ILAC) for PTP.

4.2 The analytical laboratories used by the Subcontractor for sample characterization shall be competent for the analytical testing required in support of the PTC PT program. Competence shall be demonstrated by conformance to the most current version of ISO/IEC 17025 *General requirements for the competence of testing and calibration laboratories* for the relevant analytes.

4.3 The Subcontractor shall include work conducted under this contract in their internal audits and management reviews and provide relevant portions of these audits and management reviews to PTC upon request.

4.4 Regardless of accreditation status, the Subcontractor may be audited by PTC, at PTC's expense, to demonstrate that they meet the requirements of this contract. Any non-conformance to the contract or to ISO/IEC 17043 or to ISO/IEC 17025 shall be addressed to PTC's satisfaction within an agreed time-frame.

5.0 DELIVERABLES

5.1 PT SAMPLE PRODUCTION

5.1.1 General

5.1.1.1 The PT Samples shall be shipped according to the schedule detailed in Appendix A. In the fall of the year PTC will propose a schedule for the upcoming year and solicit Subcontractor input and agreement.

5.1.1.2 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 PT Sample reception to data reporting, including PT Sample preparation.

5.1.2 Selection of Design Values

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

5.1.2.2 The PT Samples for each PT Round shall cover at least 50% of the published PT concentration range for the Test Group.

5.1.2.3 Efforts shall be made to ensure that analyte concentrations do not routinely follow an increasing or decreasing concentration from sample one to sample four.

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

5.1.2.5 The Design Values shall be provided to PTC prior to the PT Samples being produced. PT Samples shall not be produced until PTC has approved the design.

5.1.2.6 Should the PT Sample characterization demonstrate that the actual concentration is significantly different than the Design Value, the Subcontractor shall notify the PTC Executive Director immediately. The Executive Director shall decide whether the deviation is acceptable or whether the PT Samples shall be re-prepared.

5.1.3 Production of Samples

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

5.1.3.2 Materials used in the production of PT Samples shall be of the highest quality and are not be used beyond any expiry date indicated by the manufacturer.

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

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

5.1.3.5 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 250 mL glass bottle. The Subcontractor will be informed at least six months prior to a PT Round if alternate bottles are required for a test group.

5.1.3.6 All weights and volume transfers made during PT Sample production 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, by an accreditation body signatory to ILAC. All volume delivery devices used for volumetric transfer of solutions shall be calibrated annually.

5.1.3.7 PT Samples requiring special storage conditions prior to shipping (e.g., refrigeration or freezing) shall be stored appropriately and the temperature of storage monitored.

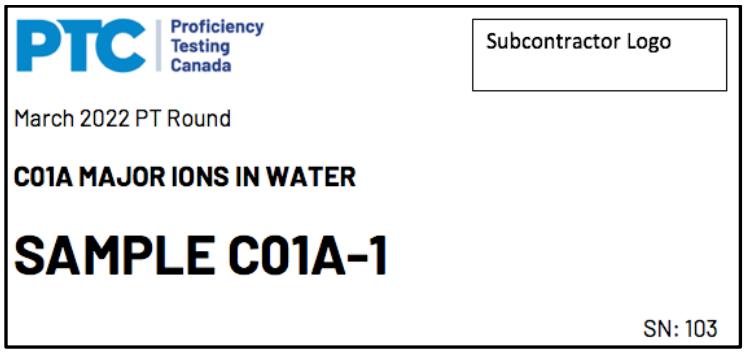
5.1.3.8 A complete audit trail shall be maintained for each Production Lot of PT Samples. This shall include, but is not limited to:

- Lot number, grade/purity, and manufacturer of each chemical or material used in the production of PT Samples, including preservatives;
- Traceability (e.g., ATTC) for bacterial strains used in microbiology samples;
- Lot number and manufacturer of bottles used in PT Sample production;
- Identification of all significant pieces of equipment used in the production of PT 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 PT Samples and what Participant received what bottle.

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

- PT Round information (e.g., March 2022 PT Round);
- The name of the PT Test Group (e.g. C01A MAJOR IONS IN WATER);
- PT 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 PT Sample production; and,
- Preservative if applicable

The following is an example that would be suitable.



5.1.3.10 It is permissible for the Subcontractor to include their own logo on the label as long as it does not mislead the Participant into thinking that the Subcontractor is the PT Provider. The Subcontractor logo shall not be larger than the PTC logo.

5.1.3.11 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 PTC in an EXCEL format agreed to by PTC.

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

5.1.3.13 The Subcontractor shall produce sufficient PT Samples in a production lot to:

- Cover the number of PT Samples required for participants;
- Cover the number of PT Samples required for Characterization testing; and
- A sufficient contingency for the need to re-ship PT Samples due to damage during shipping or damage in the Participant laboratory.

5.2 CHALLENGE SAMPLES

5.2.1 On occasion, PTC introduces a Challenge Sample into the PT Round. A Challenge Sample replaces one of the PT 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. PTC will not be charged extra for a Challenge Sample; however, the Subcontractor will be involved in the design and decision to have a Challenge Sample in a PT Round.

5.2.2 Should the Challenge PT Round be documented in a published paper, the Subcontractor will be invited to be co-author of the paper.

5.3 PT SAMPLE CHARACTERIZATION

5.3.1 Confirmation of Design Value

5.3.1.1 The Subcontractor shall confirm the concentrations of the PT Samples through analysis of at least one PT Sample from each Production Lot.

5.3.2 Re-preparation of PT Sample Production Lot

5.3.2.1 Should the Characterization testing confirm a significant deviation from the Design Value, such that the concentration is outside the contracted concentration range, the Subcontractor shall notify PTC who will decide whether the lot can be used or shall be re-prepared. If the lot is to be re-prepared, it will be done so at no additional cost to PTC.

5.3.3 Homogeneity (Microbiology PT only)

5.3.3.1 Testing shall be conducted on each Production Lot of PT Samples to confirm adequate homogeneity.

5.3.3.2 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 PT Samples produced in the Production Lot, with a minimum of 4 PT Samples and a maximum of ten PT Samples. A statistically random selection of PT Samples shall be taken for homogeneity analysis (see 5.3.5).

5.3.3.3 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 PT Sample recover on plate count media.

5.3.4 Stability (Microbiology PT only)

5.3.4.1 Each Production Lot of PT Samples shall be subjected to analysis (a minimum of two PT Samples) on or before the day they are shipped (start) and again after one week of shipping. The testing for the start of the PT Round shall normally be obtained from the homogeneity testing.

5.3.5 Statistically Random Selection

5.3.5.1 PT Samples selected for homogeneity and stability testing shall be selected in a systematic, statistically random fashion. From the sequentially numbered set of PT Samples, determine the total number of PT Samples (N) for each concentration, the number of PT 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 PT Samples from the Production Lun in the order T, T + G, T + 2G, T + 3G, etc.

5.3.6 Annual Specificity Check (Microbiology PT only)

5.3.6.1 For every second PT Round (annually) a PT 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 PTC for review.

5.4 PT SAMPLE PACKAGING AND SHIPPING

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

5.4.2 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;

5.4.3 At or before shipping, the Subcontractor shall send (or arrange to have sent) an email to each Participant, detailing the courier name and tracking number(s) for the Participant's PT Samples.

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

5.5 ELECTRONIC DELIVERABLES FROM SUBCONTRACTOR TO PTC

5.5.1 All electronic deliverables shall be in an electronic format agreed to by PTC. Electronic deliverables and timetables are as follows:

- Proposed Design Values shall be provided to PTC before PT Sample production;
- Results of Characterization Analysis shall be provided to PTC before shipping, with the exception of microbiology, which will be provided shortly after shipping;
- Courier tracking numbers shall be provided to PTC at the time of PT Sample shipping;
- Data that traces the PT Sample serial number to the Participant shall be provided to PTC shortly after shipping. The last three digits of the serial number shall denote the order in which the sample was bottled;
- Results of stability testing, where applicable, shall be provided at the end of the PT Round; 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 SUBCONTRACTOR TO PARTICIPANTS

5.6.1 The only electronic deliverable from the Subcontractor to the PT Participants is an email sent at or before shipping notifying Participants that PT Samples have been shipped and providing the courier tracking number. However, the Subcontractor shall respond to Participant queries with respect to shipping and technical issues related to PT Sample production. PTC shall be copied on all communication between the Subcontractor and the Participant.

5.6.2 The Subcontractor shall not provide any information to Participants that may give them an unfair advantage in the PT evaluation.

5.7 DELIVERABLES FROM PTC TO THE SUBCONTRACTOR

5.7.1 At least two weeks prior to shipping, PTC shall provide the following to the Subcontractor:

- An EXCEL spreadsheet that Includes:
  - Participant account number;
  - Participant name;
  - Participant shipping address;
  - Preferred courier if one is selected;
  - Courier account if one is provided;
  - Participant contact name, email and phone;
  - A flag for shipments to be held until outstanding payment(s) have been made;
  - the PT Samples for each Test Group that each laboratory is to receive.

  This spreadsheet is to be used by the Subcontractor to coordinate shipping of the PT Samples.
- An electronic file containing a unique instruction sheet for each Participant.

6.0 PERIOD OF THE AGREEMENT

6.1 The first PT Round for this Agreement shall be shipped January 2022 or March 2022, depending on the Test Group.

6.2 The term of this agreement shall be from the initial PT Round in 2022 to December 31, 2023, 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 Subcontractor find efficiencies in their process that still conform to this contract.

7.0 CHANGES TO THE WORK

7.1 Any changes to the work shall be negotiated and agreed to by PTC and the Subcontractor. Changes in the Statement of Work shall be made in writing by PTC in the form of a Contract Amendment and signed by both parties before any changes are implemented.

7.2 This agreement may be cancelled by either party with six-month notice. PTC shall only reimburse the Subcontractor for PT Samples shipped prior to the notice.

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

8.0 PROPOSAL AND PRICING

8.1 GENERAL

8.1.1 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 PT Sample concentrations;
- example of PT Sample labels to be used;
- volume or quantity of PT Sample to be provided;
- type of PT 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 PT Sample preservation or holding times; and,
- accreditation status of the Subcontractor.

8.1.2 The Subcontractor is encouraged to recommend modifications to the tasks identified in this Request for Proposal, or to recommend additional services. However, if the Subcontractor 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.

8.2 EXPERIENCE, FACILITIES AND EQUIPMENT

8.2.1 The Subcontractor 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 PT Sample preparation and characterization;
- A copy of the Subcontractor's current Quality Manual;
- An example of a procedure used for the production and shipping of PT Samples; and,
- Resumes/CVs of key staff involved in PT sample production.

8.3 SUB-CONTRACTING

8.3.1 The Subcontractor shall provide details of any work to be subcontracted and the identity of the Subcontractor.

8.4 PRICE QUOTE

8.4.1 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 PT Samples, unless otherwise indicated) to be shipped to Participants. The unit cost shall include all costs of PT Sample production, analytical characterization, packaging and shipping (within Canada), and that shall accommodate variations of up to 25 percent in the projected number of PT Sample sets.

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

8.4.3 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

9.1 All proposals submitted by the deadline shall be evaluated by the PTC Executive Director based on the following criteria:

- Proposal content;
- Previous PT production experience;
- Previous experience as a PTC (or CALA) Subcontractor;
- Accreditation status; and,
- Price.

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

9.3 PTC shall not necessarily accept the lowest bid, nor any of the bids submitted. PTC may accept one or more different bids to cover all Test Groups listed in Appendix A.

9.4 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
Executive Director
Proficiency Testing Canada Inc.
Suite 102 – 2934 Baseline Road,
Ottawa, ON K2H 1B2
kmiddlebrook@ptcanada.org

Proposals must be received by this office no later than 4 p.m. July 30, 2021.

APPENDIX A PTC PT Test Groups

Test Group Product Code:	**C01A**	
Test Group Name:	**Major ions in Water**	
Analytes 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 CaCO3)	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	
Approximate # Labs	175	
Approximate # Samples sets per round	230	

Test Group Product Code:	**C01B**	
Test Group Name:	**Simple Nutrients in Water**	
Analytes 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 – 10.0mg/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	
Approximate # Labs	160	
Approximate # Samples sets per round	190	

Test Group Product Code:	C02A	
Test Group Name:	**Metals in Water – Full Range**	
Analytes and conc. range	Arsenic	1.0 – 100 µg/L
	Antimony	1.0 – 100 µg/L
	Selenium	1.0 – 100 µg/L
	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
Matrix	Water	
# of Samples/round	4	
# rounds/year	2 (March and October)	
Minimum Volume	250	
Container	Plastic	
Preservative	0.2% Nitric acid	
Approximate # Labs	110	
Approximate # Samples sets per round	120	

Test Group Product Code:	C02B	
Test Group Name:	**Metals in Water – High Range**	
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	
Approximate # Labs	30	
Approximate # Samples sets per round	30	

Test Group Product Code:	C02C	
Test Group Name:	**Metals in Water – Total**	
Analytes and conc. range	Arsenic	1.0 – 100 µg/L
	Antimony	1.0 – 100 µg/L
	Selenium	1.0 – 100 µg/L
	Aluminum	0.25 – 1.60 mg/L
	Barium	0.25 – 1.60 mg/L
	Beryllium	0.001 – 0.100 mg/L
	Boron	0.25 – 1.60 mg/L
	Cadmium	0.001 – 0.100 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
	Silver	0.001 – 0.100 mg/L
	Strontium	0.25 – 1.60 mg/L
	Thallium	0.25 – 1.60 mg/L
	Tin	0.001 – 0.100 mg/L
	Titanium	0.25 – 1.60 mg/L
	Uranium	0.001 – 0.100 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	
Approximate # Labs	75	
Approximate # Samples sets per round	85	
Note: Test Groups C02B and C02C can be the same samples with different labels.		

Test Group Product Code:	C03
Test Group Name:	**Complex Nutrients 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_2SO_4
Approximate # Labs	120
Approximate # Samples sets per round	135
Note: The source of nitrogen and phosphorus used shall be one that requires digestion to bring it into a form that can be measured by standard colorimetric procedures	

Test Group Product Code:	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
Approximate # Labs	215
Approximate # Samples sets per round	250

Test Group Product Code:	C04B
Test Group Name:	**BOD 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
Approximate # Labs	130
Approximate # Samples sets per round	130

Test Group Product Code:	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
Approximate # Labs	100
Approximate # Samples sets per round	115

Test Group Product Code:	C04D
Test Group Name	**COD 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_2SO_4
Approximate # Labs	105
Approximate # Samples sets per round	110

Test Group Product Code:	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
Approximate # Labs	140
Approximate # Samples sets per round	165
Note: Three of the samples shall 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 Product Code:	C05B
Test Group Name:	**Microbiology in Water (Qualitative)**
Parameters	*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
Approximate # Labs	40
Approximate # Samples sets per round 37	40
Note: Each sample will contain either *E. coli*, a non *E. coli* coliform (e.g., *Enterobacter*) or sterile water.	

Test Group Product Code:	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
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	NA	
Approximate # Labs	25	
Approximate # Samples sets per round	30	

Test Group Product Code:	C06B	
Test Group Name:	**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	
Approximate # Labs	35	
Approximate # Samples sets per round	35	
Note: Each sample is spiked with a single aroclor. Each PT round shall contain all four aroclors.		

Test Group Product Code:	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	Sodium bisulphate and ascorbic acid	
Approximate # Labs	50	
Approximate # Samples sets per round	60	

Test Group Product Code:	C08	
Test Group Name:	**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	Transformer Oil	
# of Samples/round	4	
# rounds/year	2 (January and June)	
Minimum Volume	3 mL	
Container	Glass vial	
Preservative	None	
Approximate # Labs	40	
Approximate # Samples sets per round	40	
Note: Each sample is only spiked with a single aroclor. However, all four aroclors will be included in each round.		

Test Group Product Code:	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	
Approximate # Labs	15	
Approximate # Samples sets per round	15	

Test Group Product Code:	C11
Test Group Name:	**Trout LC50**
Parameters and conc. range	Trout LC50 (96 hr) 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
Approximate # Labs	20
Approximate # Samples sets per round	25

Test Group Product Code:	C12
Test Group Name:	**Daphnia LC50**
Parameters and conc. range	Daphnia LC50 (48 hr) 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
Approximate # Labs	25
Approximate # Samples sets per round	25

Test Group Product Code:	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
Approximate # Labs	20
Approximate # Samples sets per round	20

Test Group Product Code:	C14
Test Group Name:	**Cyanide (Strong Acid Dissociable) 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
Approximate # Labs	35
Approximate # Samples sets per round	35
Note: The cyanide compound used shall 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 Product Code:	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
Approximate # Labs	215
Approximate # Samples sets per round	255

Test Group Product Code:	C16	
Test Group Name:	**Volatile Organic Compounds in Water**	
Parameters and conc. range	1,1,1-Trichloroethane	6 – 200 µg/L
	1,1,2,2-Tetrachloroethane	6 – 200 µg/L
	1,1,2-Trichloroethane	6 – 200 µg/L
	1,1-Dichloroethane	6 – 200 µg/L
	1,1-Dichloroethylene	6 – 200 µg/L
	1,2-Dichlorobenzene	6 – 200 µg/L
	1,2-Dichloroethane	6 – 200 µg/L
	1,2-Dichloropropane	6 – 200 µg/L
	1,3-Dichlorobenzene	6– 200 µg/L
	1,4-Dichlorobenzene	6 – 200 µg/L
	Acetone (2-Propanone)	6 – 200 µg/L
	Benzene	2 – 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 – 200 µg/L
	cis-1,3-Dichloropropene	6 – 200 µg/L
	Dichloromethane	6 – 200 µg/L
	Ethylbenzene	2 – 200 µg/L
	Ethylene Dibromide	6 – 200 µg/L
	m/p-xylene	6 –200 µg/L
	Methyl Ethyl Ketone	6 – 200 µg/L
	Methyl t-butyl ether (MTBE)	6 – 200 µg/L
	Methyl isobutyl Ketone (MIBK)	6 – 200 µg/L
	o-xylene	6 – 200 µg/L
	Styrene	6 – 200 µg/L
	Tetrachloroethylene	6 – 200 µg/L
	Toluene	6 – 200 µg/L
	trans-1,2-Dichloroethylene	6 – 200 µg/L
	trans-1,3-Dichloropropene	6 – 200 µg/L
	Trichloroethylene	6 – 200 µg/L
	Trichlorofluoromethane	6 – 200 µg/L
	Vinyl Chloride	6 – 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	$NaHSO_4$	
Approximate # Labs	65	
Approximate # Samples sets per round	85	
Note: Each sample is provided in duplicate.		

Test Group Product Code:	C17	
Test Group Name:	**Metals in Soil**	
Parameters and conc. range	Aluminum	1000 – 100000 µg/g
	Antimony	0.5 – 4.0 µg/g
	Arsenic	5 – 35 µg/g
	Barium	5 0 – 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	
# of Samples/round	4	
# rounds/year	2 (January and June)	
Minimum Volume	25 - 40 g	
Container	Plastic or glass	
Preservative	None	
Approximate # Labs	65	
Approximate # Samples sets per round	70	

Test Group Product Code:	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	
# of Samples/round	4	
# rounds/year	2 (January and June)	
Minimum Volume	25 – 40 g	
Container	Glass	
Preservative	None	
Approximate # Labs	45	
Approximate # Samples sets per round	50	

Test Group Product Code:	C19	
Test Group Name:	**Mercury in Water**	
Parameters and conc. range	Mercury	0.5 – 5 µg/L
Matrix	Water	
# of Samples/round 4	4	
# rounds/year 2 (March and October)	2 (March and October)	
Minimum Volume 125 mL	125 mL	
Container Glass	Glass	
Preservative 0.5% Bromine monochloride	0.5% Bromine monochloride	
Approximate # Labs 72	75	
Approximate # Samples sets per round 73	75	
Note: The mercury used shall be a non-organic mercury, and one that can be readily released by the cold-vapour technique.		

Test Group Product Code:	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	
Approximate # Labs	25	
Approximate # Samples sets per round	40	

Test Group Product Code:	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_2SO_4	
Approximate # Labs	25	
Approximate # Samples sets per round	25	

Test Group Product Code:	C25	
Test Group Name:	**Phenolic Compounds in Water**	
Parameters and conc. range	2,4,6-Ttrichlorophenol	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_2SO_4	
Approximate # Labs	25	
Approximate # Samples sets per round	30	

Test Group Product Code:	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
Approximate # Labs	20
Approximate # Samples sets per round	20

Test Group Product Code:	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
Approximate # Labs	15
Approximate # Samples sets per round	15

Test Group Product Code:	C31A
Test Group Name:	**Petroleum Hydrocarbons 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
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	8 g
Container	40 mL VOC vial
Preservative	20 mL methanol
Approximate # Labs	50
Approximate # Samples sets per round	55

Test Group Product Code:	C31B
Test Group Name:	**Petroleum Hydrocarbons 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
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	40 g
Container	Amber glass jars
Preservative	Frozen
Approximate # Labs	50
Approximate # Samples sets per round	60

Test Group Product Code:	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
Approximate # Labs	65
Approximate # Samples sets per round	90

Test Group Product Code:	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_2SO_4
Approximate # Labs	30
Approximate # Samples sets per round	30

Test Group Product Code:	C34
Test Group Name:	**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
Approximate # Labs	60
Approximate # Samples sets per round	65

Test Group Product Code:	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	None
Approximate # Labs	30
Approximate # Samples sets per round	35
Note: Each sample is only spiked with a single aroclor. However, all four aroclors will be included in each round.	

Test Group Product Code:	C36	
Test Group Name:	**Volatile Organic Compounds 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	
# of Samples/round	4 x 2	
# Rounds/year	2 (January and June)	
Minimum Volume	8 g VOC free soil	
Container	40 mL amber VOA vial with teflon-lined septum	
Preservative	Methanol (20 mL) spiked with VOCs	
Application # Labs	40	
Application # Samples sets per round	45	

Test Group Product Code:	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	None	
Approximate # Labs	55	
Approximate # Samples sets per round	65	
Note: The chemical used shall be the cobalt/platinum materials described in Standard Methods.		

Test Group Product Code:	C38	
Test Group Name	**Volatile Organic Compounds 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	
Approximate # Labs	30	
Approximate # Samples sets per round	30	
Note: The concentration range is the concentration range after leaching the sample as per EPA 1311		

Test Group Product Code:	C39	
Test Group Name	**Inorganics 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	
Approximate # Labs	40	
Approximate # Samples sets per round	40	
Note: The concentration range is the concentration range after leaching the sample as per EPA 1311		

Test Group Product Code:	C40A	
Test Group Name:	**Petroleum Hydrocarbons 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	
# of Samples/round	4 (2 vials per sample)	
# rounds/year	2 (January and June)	
Default Minimum Volume	40 mL	
Container	Glass VOC vial	
Preservative	NaHSO4	
Approximate # Labs	40	
Approximate # Samples sets per round	45	

Test Group Product Code:	C40B
Test Group Name:	**Petroleum Hydrocarbons 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	None
Approximate # Labs	45
Approximate # Samples sets per round	50

Test Group Product Code:	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
Approximate # Labs	30
Approximate # Samples sets per round	30

Test Group Product Code:	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
Approximate # Labs	30
Approximate # Samples sets per round	30

Test Group Product Code:	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	4	
# rounds/year	2 (January and June)	
Minimum Volume	40 g	
Container	Glass or HDPE wide mouth jar	
Preservative	None	
Approximate # Labs	35	
Approximate # Samples sets per round	60	

Test Group Product Code:	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	4	
# rounds/year	2 (January and June)	
Minimum Volume	40 g	
Container	Glass or HDPE wide mouth jar	
Preservative	None	
Approximate # Labs	25	
Approximate # Samples sets per round	25	
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 Product Code:	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	4	
# rounds/year	2 (January and June)	
Minimum Volume	40 g	
Container	Glass or HDPE wide mouth jar	
Preservative	None	
Approximate # Labs	30	
Approximate # Samples sets per round	35	
Note: If the Subcontractor is bidding on C17, the formulation of C17 may be augmented to include these analytes but separately labeled after bottling.		

Test Group Product Code:	C46
Test Group Name:	**Acidity in Water**
Parameters and conc. range	Total Acidity 500 - 2000 mg/L as $CaCO_3$
Matrix	Water
# of Samples/round	4
# rounds/year	2 (January and June)
Minimum Volume	250 mL
Container	Plastic
Preservative	None
Approximate # Labs	25
Approximate # Samples sets per round	25

Test Group Product Code:	C47	
Test Group Name:	**Haloacetic Acids in Water**	
Parameters and conc. range	Bromochloroacetic acid	5 – 50 ug/L
	Dibromoacetic acid	5 – 50 ug/L
	Dichloroacetic acid	5 – 50 ug/L
	Monobromoacetic acid	5 – 50 ug/L
	Monochloroacetic acid	5 – 50 ug/L
	Trichloroacetic acid	5 – 50 ug/L
Matrix	Water	
# of Samples/round	2 x 4	
# rounds/year	2 (January/June)	
Minimum Volume	40 mL	
Container	VOC vial	
Preservative	100 mg/L ammonium chloride	
Approximate # Labs	25	
Approximate # Samples sets per round	25	
Note: Samples are provided in duplicate.		

Test Group Product Code:	C70	
Test Group Name:	**Potency in Cannabis**	
Parameters and conc. range	Tetrahydrocannabinol (THC)	0.1 – 25 %
	Tetrahydrocannabinolic Acid	0.1 – 25 %
	Cannabidiol (CBD)	0.1 – 25 %
	Cannabidiolic Acid (CBDA)	0.1 – 25 %
Matrix	Cannabis flower	
# of Samples/round	2 x 2	
# rounds/year	2 (March/October)	
Minimum Volume	1 g	
Container	Vial	
Preservative	None	
Approximate # Labs	25	
Approximate # Samples sets per round	25	
Note: Samples are provided in duplicate.		

Test Group Product Code:	C71	
Test Group Name:	**Pesticides in Cannabis**	
Parameters and conc. range	Acephate	0.1 – 1 ug/g
	Aldicarb	5 – 20 ug/g
	Azoxystrobin	0.1 – 1 ug/g
	Bifenazate	0.1 – 1 ug/g
	Boscalid	0.1 – 1 ug/g
	Carbaryl	0.25 – 5 ug/g
	Carbofuran	0.1 – 1 ug/g
	Diazinon	0.1 – 1 ug/g
	Dichlorvos (DDVP)	0.5 – 10 ug/g
	Dimethoate	0.1 – 1 ug/g
	Ethoprophos	0.1 – 1 ug/g
	Etoxazole	0.1 – 1 ug/g
	Fipronil	0.3 – 1.2 ug/g
	Fludioxonil	0.1 – 1 ug/g
	Imidacloprid	0.1 – 1 ug/g
	Malathion	0.1 – 1 ug/g
	Metalaxyl	0.1 – 1 ug/g
	Methiocarb	0.1 – 1 ug/g
	Methomyl	0.25 – 1 ug/g
	Myclobutanil	0.1 – 1 ug/g
	Oxamyl	15 – 60 ug/g
	Paclobutrazol	0.1 – 1 ug/g
	Propoxur (Baygon)	0.1 – 1 ug/g
	Spiromesifen	15 – 60 ug/g
	Spirotetramat	0.1 – 1 ug/g
	Thiamethoxam	0.1 – 1 ug/g
	Trifloxystrobin	0.1 – 1 ug/g
Matrix	Pesticide free Cannabis flower	
# of Samples/round	2 spiking solutions	
# rounds/year	2 (March/October)	
Minimum Volume	6 x 1 g	
Container	Vial	
Preservative	None	
Approximate # Labs	25	
Approximate # Samples sets per round	25	
Note: Samples provided as two spiked ampoules. Participant spikes from the ampoule to one of the blank vials.		

Test Group Product Code:	C72	
Test Group Name:	**Metals in Hemp**	
Parameters and conc. range	Cadmium	0.1 – 50 ug/g
	Chromium	0.1 – 10 ug/g
	Lead	0.1 – 10 ug/g
	Mercury	0.05 – 2 ug/g
	Arsenic	0.1 – 10 ug/g
Matrix	Hemp	
# of Samples/round	2	
# rounds/year	2 (March/October)	
Minimum Volume	2 g	
Container	Vial	
Preservative	None	
Approximate # Labs	20	
Approximate # Samples sets per round	20	

Test Group Product Code:	C73	
Test Group Name:	**Residual Solvents in Oil**	
Parameters and conc. range	Acetone	500 – 7000 ug/g
	Anisole	500 – 7000 ug/g
	1-Butanol	500 – 7000 ug/g
	2-Butanol	500 – 7000 ug/g
	Butane	500 – 7000 ug/g
	Butyl acetate	500 – 7000 ug/g
	Dimethyl sulfoxide	500 – 7000 ug/g
	Ethanol	500 – 7000 ug/g
	Ethyl acetate	500 – 7000 ug/g
	Ethyl ether	500 – 7000 ug/g
	Heptane	500 – 7000 ug/g
	Isobutyl acetate	500 – 7000 ug/g
	Isopropyl acetate	500 – 7000 ug/g
	Methyl acetate	500 – 7000 ug/g
	3-Methyl-1-butanol	500 – 7000 ug/g
	Methylethyl ketone	500 – 7000 ug/g
	2-Methyl-1-propanol	500 – 7000 ug/g
	Pentane	500 – 7000 ug/g
	1-Pentanol	500 – 7000 ug/g
	1-Propanol	500 – 7000 ug/g
	2-Propanol	500 – 7000 ug/g
	Propane	500 – 7000 ug/g
	Propyl-acetate	500 – 7000 ug/g
	Triethylamine	500 – 7000 ug/g
Matrix	Solvent free Hemp seed oil	
# of Samples/round	2 spiking solutions per sample	
# rounds/year	2 (March/October)	

Test Group Product Code:	C73
Test Group Name:	**Residual Solvents in Oil**
Minimum Volume	5 g
Container	Vial
Preservative	None
Approximate # Labs	15
Approximate # Samples sets per round	15

Test Group Product Code:	C74	
Test Group Name:	**Hexavalent Chromium in Soil**	
Parameters and conc. range	Hexavalent Chromium	40 – 300 ug/g
Matrix	Soil	
# of Samples/round	4	
# rounds/year	2 (January/June)	
Minimum Volume	40 g	
Container	Wide mouth jar	
Preservative	None	
# Labs	20	
# Samples sets per round	20	

Test Group Product Code:	C75	
Test Group Name:	**Particle Size in Soil**	
Parameters and conc. range	% Sand	1 – 99%
	% Silt	1 – 99%
	% Clay	1 – 99%
Matrix	Soil	
# of Samples/round	4	
# rounds/year	2 (January/June)	
Minimum Volume	100 g	
Container	Wide mouth jar	
Preservative	None	
# Labs	20	
# Samples sets per round	20	

Test Group Product Code:	C76	
Test Group Name:	**Oil and Grease in Soil**	
Parameters and conc. range	Total Oil and Grease	300 – 3000 ug/g
	Mineral Oil and Grease	300 – 3000 ug/g
Matrix	Soil	
# of Samples/round	4	
# rounds/year	2 (January/June)	
Minimum Volume	40 g	
Container	Wide mouth jar	
Preservative	None	
# Labs	15	
# Samples sets per round	15	

Test Group Product Code:	C77	
Test Group Name:	**Pesticides in Soil**	
Parameters and conc. range	p,p'-DDT	50 – 500 ug/g
	Aldrin	50 – 500 ug/g
	alpha-BHC	50 – 500 ug/g
	alpha-Chlordane	50 – 500 ug/g
	beta-BHC	50 – 500 ug/g
	Dieldrin	50 – 500 ug/g
	Endosulfan I	50 – 500 ug/g
	Endosulfan II	50 – 500 ug/g
	Endrin	50 – 500 ug/g
	Lindane	50 – 500 ug/g
	gamma-Chlordane	50 – 500 ug/g
	Heptachlor	50 – 500 ug/g
	Heptachlor epoxide	50 – 500 ug/g
	Methoxychlor	50 – 500 ug/g
Matrix	Soil	
# of Samples/round	4	
# rounds/year	2 (January/June)	
Minimum Volume	30 g	
Container	Wide mouth jar	
Preservative	None	
# Labs	10	
# Samples sets per round	15	

Test Group Product Code:	**C78**
Test Group Name:	**Water Activity/Moisture in Oil**
Parameters and conc. range	Water Activity Moisture
Matrix	Soil
# of Samples/round	4
# rounds/year	2 (January/June)
Minimum Volume	40 g
Container	Wide mouth jar
Preservative	None
# Labs	15
# Samples sets per round	15

APPENDIX B Price Quote

Test Group	Unit Cost per Test Group CAD
C01A Major Ions in Water	
C01B Simple Nutrients in Water	
C02A Metals in Water – Full Range	
C02B metals in Water – High Range	
C02C Metals in Water - Total	
C03 Complex Nutrients in Water	
C04A Solids in Water	
C04B BOD in Water	
C04C Turbidity in Water	
C04D COD in Water	
C05A Microbiology in Water - Quantified	
C05B Microbiology in Water – Presence/Absence	
C06A OC Pesticides in Water	
C06B PCBs in Water	
C07 PAHs in Water	
C08 PCBs in Oil	
C09 Metals on Filters	
C11 Trout Toxicity	
C12 Daphnia Toxicity	
C13 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 Chlorophenols in Water	
C27 Glyphosate in Water	
C29 Aldicarb in Water	
C31A Petroleum Hydrocarbons in Soil	

Test Group	Unit Cost per Test Group CAD
C31B Petroleum Hydrocarbons in Soil	
C32 Chlorine in Water	
C33 4AAP 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	
C39 Inorganics by TCLP	
C40A Petroleum Hydrocarbons in Water	
C40B Petroleum Hydrocarbons in Water	
C41 Hexavalent Chromium in Water	
C42 Sulphide in Water	
C43 Solids in Soil	
C44 Nutrients in Soil	
C45 Anions in Soil	
C46 Acidity in Water	
C47 Haloacetic Acids in Water	
C70 Potency in Cannabis	
C71 Pesticides in Cannabis	
C72 Metals in Hemp	
C73 Residual Solvents in Hemp Oil	
C74 Hexavalent Chromium in Soil	
C75 Particle Size in Soil	
C76 Oil and Grease in Soil	
C77 Pesticides in Soil	
C78 Water Activity/Moisture in Hemp	