



<p>RETURN BIDS TO: RETOURNER LES SOUMISSIONS À:</p> <p>Bid Receiving - Environment Canada / Réception des soumissions – Environnement Canada</p> <p>Environment Canada (BIDS)</p> <p>Reg Landry Reg.Landry@canada.ca</p> <p>BID SOLICITATION DEMANDE DE SOUMISSIONS</p> <p>PROPOSAL TO: ENVIRONMENT CANADA</p> <p>We offer to perform or provide to Canada the services detailed in the document including any attachments and annexes, in accordance with the terms and conditions set out or referred to in the document, at the price(s) provided.</p> <p>SOUSSION À: ENVIRONNEMENT CANADA</p> <p>Nous offrons d'effectuer ou de fournir au Canada, aux conditions énoncées ou incluses par référence dans le document incluant toutes pièces jointes et annexes, les services détaillés dans le document, au(x) prix indiqué(s).</p>	<p>Title – Titre: Collaborative Project - Air Sample Analysis</p>	
	<p>EC Bid Solicitation No. /SAP No. – N° de la demande de soumissions EC / N° SAP 5000026063</p>	
	<p>Date of Bid solicitation (YYYY-MM-DD) – Date de la demande de soumissions (AAAA-MM-JJ) 2016-10-20</p>	
	<p>Bid Solicitation Closes (YEAR-MM-DD) - La demande de soumissions prend fin (AAAA-MM-JJ)</p> <p>2016-11-28</p> <p>at – à 2:00 P.M. on – le</p> <p>F.O.B – F.A.B</p>	<p>Time Zone – Fuseau horaire</p> <p><i>EDT</i></p>
	<p>Address Enquiries to - Adresser toutes questions à Reg Landry</p>	
	<p>Telephone No. – N° de téléphone 819-938-3064</p>	<p>Fax No. – N° de Fax 819-938-3064</p>
	<p>Delivery Required (YEAR-MM-DD) – Livraison exigée (AAAA-MM-JJ) 2017-03-31</p>	
	<p>Destination of Services / Destination des services</p> <p>National Capital Region – NCR</p>	
	<p>Security / Sécurité N/A</p>	
	<p>Vendor/Firm Name and Address - Raison sociale et adresse du fournisseur/de l'entrepreneur</p>	
	<p>Telephone No. – N° de téléphone</p>	<p>Fax No. – N° de Fax</p>
	<p>Name and title of person authorized to sign on behalf of Vendor/Firm: (type or print) / Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</p> <p>Signature Date</p>	

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PART 1 – GENERAL INFORMATION

1. Security Requirement

1.1 There is no security requirement associated with this requirement.

2. Statement of Work

The Work to be performed is detailed in Annex A- Statement of Work.

3. Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

PART 2 – BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the PWGSC *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2014-09-25) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

The standard instructions 2003 are modified as follows:

Under “Text” at 02:

Delete: “Procurement Business Number”

Insert: “Deleted”

At Section 02 Procurement Business Number

Delete: In its entirety

Insert: “Deleted”

At Section 05 Submission of Bids, Subsection 05 (2d):

Delete: In its entirety

Insert: “send its bid only to Environment Canada (EC) as specified on page 1 of the bid solicitation or to the address specified in the bid solicitation;”

At Section 06 Late Bids:

Delete: “PWGSC”

Insert: “Environment Canada”

At Section 07 Delayed Bids:

Delete: “PWGSC”

Insert: “Environment Canada”

At Section 08 Transmission by Facsimile, Subsection 08 (1):
Delete: In its entirety
Insert: "Bids may be submitted by facsimile if specified in the bid solicitation."

At Section 12 Rejection of Bid, Subsection 12 (1) a. and b.:
Delete: In their entirety
Insert: "Deleted"

At Section 17 Joint Venture, Subsection 17 (1) b.:
Delete: "the Procurement Business Number of each member of the joint venture,"
Insert: "Deleted"

At Section 20 Further Information, Subsection 20 (2):
Delete: In its entirety
Insert: "Deleted"

At Section 05 Submission of Bids, Subsection 05 (4)
Delete: "sixty (60) days"
Insert: "one hundred and twenty (120) days"

2. Submission of Bids

2.1 Bids must be submitted to Environment Canada (EC) at the address and by the date, time and place indicated on page 1 of the bid solicitation.

3. Former Public Servant – Competitive Bid

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to FPS, bidders must provide the information required below before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

Definitions

For the purposes of this clause, "former public servant" is any former member of a department as defined in the *Financial Administration Act*, R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;
- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of

various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means a pension or annual allowance paid under the *Public Service Superannuation Act* (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the *Supplementary Retirement Benefits Act*, R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the *Canadian Forces Superannuation Act*, R.S., 1985, c.C-17, the *Defence Services Pension Continuation Act*, 1970, c.D-3, the *Royal Canadian Mounted Police Pension Continuation Act*, 1970, c.R-10, and the *Royal Canadian Mounted Police Superannuation Act*, R.S., 1985, c.R-11, the *Members of Parliament Retiring Allowances Act*, R.S., 1985, c.M-5, and that portion of pension payable to the *Canada Pension Plan Act*, R.S., 1985, c.C-8.

Former Public Servant in Receipt of a Pension

As per the above definitions, is the Bidder a FPS in receipt of a pension? **Yes** () **No** ()

If so, the Bidder must provide the following information, for all FPS in receipt of a pension, as applicable:

- a. name of former public servant;
- b. date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? **Yes** () **No** ()

If so, the Bidder must provide the following information:

- a. name of former public servant;
- b. conditions of the lump sum payment incentive;
- c. date of termination of employment;
- d. amount of lump sum payment;
- e. rate of pay on which lump sum payment is based;
- f. period of lump sum payment including start date, end date and number of weeks;
- g. number and amount (professional fees) of other contracts subject to the restrictions of a work force adjustment program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.

4. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

5. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Quebec.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

6. Basis for Canada's Ownership of Intellectual Property

Environment Canada has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, on the following grounds:

The main purpose of the contract, or of the deliverables contracted for, is to generate knowledge and information for public dissemination.

PART 3 – BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (___1___ soft copy)

Section II: Financial Bid (___1_ soft copy)

Section III: Certifications (___1___ soft copies)

Section IV: Additional Information (___1___ soft copies)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Section I: Technical Bid

In their technical bid, bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will carry out the Work

Section II: Financial Bid

1. Bidders must submit their financial bid in accordance with the Basis of Payment in Annex B. The total amount of Applicable Taxes must be shown separately.

1.1 Price Breakdown

In their financial bid, the bidders are requested to provide a detailed breakdown of the price for each task to complete the work, as applicable:

- (a) Professional fees: For each individual and (or) labour category to be assigned to the Work, the bidders should indicate: i) the firm hourly rate or the firm daily rate, inclusive of overhead and profit; and ii) the estimated number of hours or days, as applicable. The bidders should indicate the number of hours in one working day.
- (b) Equipment (if applicable): The bidders should specify each item required to complete the Work and provide the pricing basis of each one, Canadian customs duty and excise taxes included, as applicable.
- (c) Materials and Supplies (if applicable): The bidders should identify each category of materials and supplies required to complete the Work and provide the pricing basis. The Bidder should indicate, on a per category basis, whether the items are likely to be consumed during the performance of any resulting contract.
- (d) Travel and Living Expenses (if applicable): The bidders should indicate the number of trips and the number of days for each trip, the cost, destination and purpose of each journey, together with the basis of these costs without exceeding the meal, private vehicle and incidental expenses provided in Appendices B, C and D of the *National Joint Council Travel Directive* and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".
- (e) Subcontracts (if applicable): The bidders should identify all of the proposed subcontractors and provide in their financial bid for each one a price breakdown.
- (f) Other Direct Charges (if applicable): The bidders should identify all of the categories of other direct charges anticipated, such as long distance communications and rentals, providing the pricing basis for each and explaining the relevance to the work described in the resultant contract in Part 6 of the bid solicitation.
- (g) Applicable Taxes: The bidders should indicate the Applicable Taxes separately.

1.2 Bidders should include the following information in their financial bid:

- (a) Their legal name; and
- (b) The name of the contact person (including this person's mailing address, phone and facsimile numbers and email address) authorized by the Bidder to enter into communications with Canada with regards to their bid; and any contract that may result from their bid.

Section III - Certifications

1. Certifications Required Precedent to Contract Award

Bidders must provide the required certifications Part 3.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures

Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

1.1 Technical Evaluation

Except where expressly provided otherwise, the experience described in the bid must be the experience of the Bidder itself (which includes the experience of any companies that formed the Bidder by way of a merger but does not include any experience acquired through a purchase of assets or an assignment of contract). The experience of the Bidder's affiliates (i.e. parent, subsidiary or sister corporations), subcontractors, or suppliers will not be considered.

1.2 Technical Evaluation

Mandatory Technical Criteria

All mandatory requirements must be met. Failure to meet any mandatory requirement will result in the Bidder's proposal regarded as non-responsive and given no further consideration.

Item	Description	Met	Not Met
Project Manager			
MT1	The Project Manager must demonstrate a relevant engineering or science degree such as mechanical engineering, chemical engineering, environmental engineering, civil engineering, electrical engineering, aeronautical engineering, geological engineering, earth science, or environmental science from a recognized university.*The list of recognized assessment organizations can be found under the Canadian Information Centre for International Credentials website, at the following internet link: http://www.cicic.ca/indexe.stm ;		
MT2	The Project Manager must demonstrate 3 projects relevant to the Statement of Work within the past 10 years. Relevant projects are considered to be those that pertain to the oil and gas industry, ambient air monitoring of air pollutants, ambient air monitoring of Volatile Organic Compounds (VOCs).		
MT3	The Project Manager must demonstrate a minimum of 8 years of experience in laboratory analysis of ambient air samples.		
Project Team			
MT4	The project team consisting of proposed resources must have a degree in one of the following areas: mechanical engineering, chemical engineering, environmental engineering, civil engineering, earth science, environmental science, or a certified laboratory technician.		
MT5	One proposed resource must demonstrate a minimum of 3 years post-university experience working at or with facilities dealing with laboratory analysis.		
MT6	One proposed resource must demonstrate a minimum of 5 years experience in laboratory analysis of ambient air VOC samples.		

Point Rated Technical Criteria

The proponent with the highest combined number of points for technical/management components (75%) and price (25%) will be recommended for award of the contract. A proposal must receive at least 65 points out of a possible 100 on the evaluation criteria to be deemed acceptable. An item not covered by the proposal will be considered as not meeting requirements or no points will be awarded in grading the proposal.

Technical Criteria		Max Score
OVERALL UNDERSTANDING OF EPA Method 325 A/B, Method TO-17 and Method TO-14/15		20
<p>The Bidder must demonstrate its overall understanding of EPA Method 325 A/B, Method TO-15 and TO-17. This expert understanding will be evaluated as follows: (Rating guide: 0-unsatisfactory, 1-poor, 2- satisfactory, 3- good, 4- excellent)</p> <p>Excellent: The consultant's qualifications or proposal on this factor are exceptional and should ensure extremely effective performance on this aspect of the contract.</p> <p>Good: The consultant's qualifications or proposal on this factor are above the average needed for satisfactory performance on this aspect of the contract.</p> <p>Satisfactory: The consultant's qualifications or proposal on this factor meet the minimum needed for adequate performance on this aspect of the contract.</p> <p>Poor: The consultant's qualifications or proposal on this factor are inadequate in certain areas and are likely to be ineffective in performing this aspect of the contract.</p> <p>Unsatisfactory: The consultant's qualifications or proposal on this factor are insufficient for the effective performance of this aspect of the contract.</p>		
a.	Prior experience with test Method 325 A/B and TO-17	
b.	List of chemical species that the Bidder can provide analysis using Method 325 B, as stated in Appendix A	
c.	Prior experience with Method TO-14/15	
d.	Recent experience with Method TO-14/15	
e.	List of chemical species that the Bidder can provide analysis using Method as stated in Appendix "canister whole air sampling-VOCs as hydrocarbons" and TO-15	
CAPACITY TO PERFORM ANALYSIS IN A TIMELY MANNER		12
a.	Number of dedicated equipment (Mass Spectrometry, calibration equipment etc.) available for this work (one point for each relevant equipment to a maximum of 3 points)	3
b.	Bidder's capacity to provide adequate holding times for canister sample analysis and canister clean-up (one point for 12 days holding time, two points for 10 days to a maximum of three points for 9 days holding time)	3
c.	Daily sample analysis capacity (number of samples per day) (one point for 14 samples per day, two points for sixteen samples per day to a maximum of three points for twenty or more samples per day)	3
d.	Demonstrated highest daily sample analysis in recent years (within past 3 years) (one point for 16 samples per day, two points for eighteen samples per day to a maximum of three points for twenty or more samples per day)	3
LABORATORY QUALITY ASSURANCE PROGRAM		29
a.	Evaluation of Bidder's data collection tools, sample traceability, sample chain of custody, equipment maintenance and calibration procedures (one point for data collection tool, one point for sample traceability, one point for sample chain of custody, one point for equipment maintenance, and two points for calibration procedure)	6

Technical Criteria		Max Score
b.	Frequency of all laboratory equipment calibration (two points for poor, four points for good to a maximum of six points for excellent)	6
c.	Documentation and validation of all test methods (EPA 325 B, TO-15) (three points for EPA 325 B and three points for TO-15)	6
d.	Bidder's proficiency test programs, including frequency (two points for passing the proficiency test, two points for annual testing to a maximum of three points for more than annual testing)	5
e.	Bidder's compliance with ISO standards (three points for compliance with ISO 17025)	3
f.	Bidder's procedures to ensure effective packaging and shipment of all sampling equipment (one point for safe packaging of sampling tubes, one point for safe packaging of canisters and one point for effective shipment of sampling equipment)	3
EXPERIENCE OF FIRM The Bidder should identify resources to be assigned to the project, experience in relevant work, relevant company experience for execution of the project.		27
Firm Experience		15
PR1	<i>Projects in the Oil and Gas (O&G) industry</i> – the Bidder should provide a brief description of completed projects by the firm, related to the ambient VOC measurement/analysis in the O&G sector. (one point for each relevant project to a maximum of five points)	5
PR2	<i>Projects related to fenceline monitoring</i> – the Bidder should provide a brief description of completed projects by the firm, related to the fenceline monitoring for VOCs using EPA Method 325B. (one point for each relevant project to a maximum of five points)	5
PR3	<i>Projects related to fenceline monitoring</i> – the Bidder should provide a brief description of completed projects by the firm, related to the fenceline monitoring for VOCs using EPA Method TO-15. (one point for each relevant project to a maximum of five points)	5
Proposed Human Resources' Collective Experience		12
PR4	<i>Experience in the O&G industry</i> – the Bidder should identify relevant experience of proposed human resources for this project related to ambient monitoring of VOCs with emphasis on refinery sector. (one point for each relevant experience to a maximum of four points)	4
PR5	<i>Experience with Method 325B</i> – the Bidder should identify relevant experience of proposed human resources for this project related to fenceline using Method 325B . (one point for each relevant experience to a maximum of four points)	4
PR6	<i>Experience with Method TO-15</i> – the Bidder should identify relevant experience of proposed human resources for this project related to fenceline using Method TO-15. (one point for each relevant experience to a maximum of four points)	4
PR7	WORK BREAKDOWN STRUCTURE The bid will be evaluated upon the work breakdown structure presented. (Rating guide: 0-poor/not addressed, 0.5-acceptable)	4
a.	work plan identified	0.5
b.	proposed resources allocation, role and level of effort	0.5
c.	schedule identified	0.5
d.	major milestones addressed	0.5

Technical Criteria		Max Score
e.	identification of key steps in the project	0.5
f.	identification of key activities	0.5
g.	prioritization of key analytical equipment	0.5
h.	deliverables identified	0.5
Minimum Required Score		65
Maximum Available points		92

1.3 Financial Evaluation

1.3.1 Mandatory Financial Criteria

A maximum of \$300,000.00 (excluding applicable taxes) will be paid for the completion of the project. Total value of contract is not to exceed \$300,000 (excluding applicable taxes).

2. Basis of Selection (75% Technical and 25% Financial)

Financial Evaluation

For each category in which each resource's services are proposed, each resource will be awarded up to 25 points for the price competitiveness of the professional fees that they propose in that category. Points are calculated as an inverse ratio to the lowest fees quoted by all technically compliant resources, multiplied by 25 (see example below)

Example:

General

Bidder A: Rate: \$35,000.00

Bidder B: Rate: \$42,000.00

Bidder C: Rate: \$43,000.00

Lowest rate of all technically compliant resources: \$35,000.00

Points allocated to price competitiveness only for **firms who met** the mandatory and technical criteria.

Resource A: $35,000/35,000 \times 25 = 25$

Resource B: $35,000/42,000 \times 25 = 20.83$

Resource C: $35,000/43,000 \times 25 = 20.35$

Basis of Selection

To be declared responsive, a resource must:

- (a) comply with all the requirements of the RFP;
- (b) meet all mandatory technical evaluation requirements on which they submitted; and
- (c) obtain the minimum passing mark of 70 (70%) for the point rated technical criteria.

Resources not meeting (a), (b) and (c) above will be declared non-compliant.

Formula:

In this formula, the Offeror’s Technical Score is the number of points achieved (maximum 80) in the assessment of the rated requirements.

(SUGGESTED POINTS ONLY FOR CONSIDERATION):

$$\frac{\text{Offeror's Rated Score}}{\text{Highest Rated Score}} \times 75 + \frac{\text{Lowest bid}}{\text{Other Offeror's Rate}} \times 25 =$$

Example: (technical merit **(75%)** and price **(25%)**)

Description	Offeror A	Offeror B	Offeror C
Offeror Technical Points Received	80	70	60
Offeror Proposed Rate	\$35,000	\$42,000	\$43,000

Final Evaluation Score Calculation:

Offeror	Points for Technical Score	Points for Rate	Total Points
Offeror A	$(80 / 80) \times 75\% = 75$	$(35,000/35,000) \times 25\% = 25$	100
Offeror B	$(70 / 80) \times 75\% = 65.63$	$(35,000/42,000) \times 25\% = 20.83$	86.46
Offeror C	$(60 / 80) \times 75\% = 56.25$	$(35,000/43,000) \times 25\% = 20.35$	76.6

In this example, **Offeror A** will be recommended for contract award

In the event of a tie, the proposal receiving the highest score for the technical evaluation will be selected.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications and associated information to be awarded a contract.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default in carrying out any of its obligations under the Contract, if any certification made by the Bidder is found to be untrue whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority may render the bid non-responsive or constitute a default under the Contract.

1. Certifications Required Precedent to Contract Award

1.1 Integrity Provisions - Associated Information

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

1.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from Employment and Social Development Canada (ESDC) - Labour's website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

2. Additional Certifications Required Precedent to Contract Award

The certifications listed below should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to comply with the request of the Contracting Authority and to provide the certifications within the time frame provided will render the bid non-responsive.

2.1 Status and Availability of Resources

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a

written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability. Failure to comply with the request may result in the bid being declared non-responsive.

2.2 Education and Experience

SACC Manual clause A3010T (2010-08-16) Education and Experience.

PART 6 - RESULTING CONTRACT

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation

1. Security Requirement

1.1 There is no security requirement associated with this requirement.

2. Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex A.

3. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the PWGSC *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

3.1 General Conditions

2010B (2016-04-04) General Conditions - Professional Services (Medium Complexity), as modified below, apply to and form part of the Contract.

General conditions 2010B is modified as follows:

At Section 12 Transportation Costs

Delete: In its entirety

Insert: "Deleted"

At Section 13 Transportation Carriers' Liability

Delete: In its entirety.

Insert: "Deleted"

At Section 18, Confidentiality:

Delete: In its entirety

Insert: "Deleted"

Insert Subsection: "35 Liability"

"The Contractor is liable for any damage caused by the Contractor, its employees, subcontractors, or agents to Canada or any third party. Canada is liable for any damage caused by Canada, its employees or agents to the Contractor or any third party. The Parties agree that no limitation of liability or indemnity provision applies to the Contract unless it is specifically incorporated in full text in the Articles of Agreement. Damage includes

any injury to persons (including injury resulting in death) or loss of or damage to property (including real property) caused as a result of or during the performance of the Contract.”

4. Term of Contract

4.1 Period of the Contract

- a. The period of the Contract is the entire period of time during which the Contractor is obliged to perform the Work, which includes :
 - i. The "**Initial Contract Period**", which begins on the date the Contract is awarded and ends March 31, 2017 ; and
 - ii. The follow on period which begins April 1, 2017 and ends March 31, 2018.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Reg Landry
Environment Canada
Procurement Officer
Officier d’approvisionnement
Procurement and Contracting
Acquisitions et marches
Finance Branch
Direction des finances
200 Sacre Coeur
Gatineau, QC
K1A 0H3
Telephone 819 938 3064
E-mail address:reg.landry@canada.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

5.2 Technical Authority (*To be disclosed upon contract award*)

The Technical Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____-____-_____
Facsimile: ____-____-_____
E-mail address: _____

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the

Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.3 Contractor's Representative

Name: _____

Title: _____

Organization: _____

Address: _____

Telephone: ____-____-_____

Facsimile: ____-____-_____

E-mail address: _____

6. Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a Public Service Superannuation Act (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with Contracting Policy Notice: 2012-2 of the Treasury Board Secretariat of Canada.

7. Payment

7.1 Basis of Payment

The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work as determined in accordance with the Basis of Payment at paragraph 8.2, to a limitation of expenditure of \$_____ (*insert the amount at contract award*). Customs duties are included and Applicable Taxes are extra.

7.2 Limitation of Expenditure

- (a) Canada's total liability to the Contractor under the Contract must not exceed \$ _____. Customs duties are included and Applicable Taxes are extra.
- (b) No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
 - (i) when it is 75 percent committed, or
 - (ii) four (4) months before the contract expiry date, or

- (iii) as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work,

whichever comes first.

- (c) If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

7.3 PWGSC SACC Manual clauses

A9117C (2007-11-30) T1204 - Direct Request by Customer Department.

8 Invoicing Instructions

8.1 Milestone Payments

- (a) Canada will make milestone payments in accordance with the Schedule of Milestones detailed below and the payment provisions of the Contract if:
 - (i) an accurate and complete claim for payment and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - (ii) all such documents have been verified by Canada;
 - (iii) all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.

8.2 Schedule and Deliverables

Item	Description of Deliverable	Schedule
1.	Kick-off Meeting via Conference Call	No later than seven (7) business days after award of this contract
2.	Milestone #1: Delivery and installation of all sampling equipment	4 weeks from date of contract award
3.	Milestone #2: Monthly Review of Sampling/Analysis A preliminary short monthly report describing samples acquired during that period for analysis, and any associated QA issues that require corrective action. There will be eleven (11) short monthly reports in total.	No later than ten (10) business days after the completion two (2) 14-day sampling events
4.	Milestone #3: Submission of Quarterly Report A draft report summarizing laboratory analysis of all DST samples and Canister air samples acquired during	No later than two (2) weeks after the completion of each quarter (The year-long project has four (4)

	that quarter. The laboratory analysis data must be submitted in Excel spreadsheet. The report shall highlight any issues/concerns associated with the laboratory analysis data.	quarters).
5.	<p>Milestone #4: Submission of the final report</p> <p>The final report must include all analytical work carried out in an Excel spreadsheet. The final report will be prepared using MS word compatible with ECCC software and distributed in an Adobe Acrobat PDF format. The final report will be clear, straight-forward and complete and must include information as stated under Task 9 "Reporting".</p>	The final report must be submitted within eight (8) weeks after the end of the fourth quarter.

8.3 Schedule of Milestones

The schedule of milestones for which payments will be made in accordance with the Contract is as follows:

Milestone No.	Description / Deliverable	Max. Amount %	Delivery Date
1	<i>Delivery and installation of all sampling equipment</i>	33.3	4 weeks from date of contract award
2	<i>1st Quarter sample analysis and report</i>	16.7	18 weeks from date of contract award
3	<i>2nd Quarter sample analysis and report</i>	16.7	32 weeks from date of contract award
4	<i>3rd Quarter sample analysis and report</i>	16.7	46 weeks from date of contract award
5	<i>4th Quarter sample analysis and submission of the Final report</i>	16.7	60 weeks from data of contract award
	<i>Total</i>	100 %	

9. Certifications

9.1 Compliance

Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

10. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

11. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) Modified 2010B General Conditions -Professional Services (Medium Complexity) (2016-04-04)
- (c) Annex A, Statement of Work;
- (d) the Contractor's bid dated _____, (*insert date of bid*) (*If the bid was clarified or amended, insert at the time of contract award: "as clarified on _____" or "as amended on _____" and insert date(s) of clarification(s) or amendment(s).*)

ANNEX A

STATEMENT OF WORK

Conduct analysis of air samples collected, using diffusive sampling tubes and whole air sampling using specially treated canister methods, for volatile organic compounds (VOCs).

INTRODUCTION

Environment and Climate Change Canada's mandate is to preserve and enhance the quality of the natural environment; conserve Canada's renewable resources; conserve and protect Canada's water resources; forecast weather and environmental change; enforce rules relating to boundary waters; and coordinate environmental policies and programs for the federal government.

BACKGROUND

In June 2013, Environment and Climate Change Canada (ECCC) and Health Canada published a final screening assessment and a risk management approach for petroleum and refinery gases under the Chemicals Management Plan. The screening assessment concluded that some petroleum and refinery atmospheric emissions are toxic to human health, as defined under the Canadian Environmental Protection Act, 1999 (CEPA). Consequently, ECCC, on behalf of the Government of Canada, is required to address Volatile Organic Compounds (VOC) emissions from petroleum refineries, upgraders and certain petro chemical plants. Petroleum and refinery emissions include mixed VOC streams that contain some carcinogenic components (e.g., benzene and 1,3-butadiene). ECCC is currently developing regulations to address VOC emissions from refineries, upgraders and chemical plants.

VOC emissions from these facilities are currently quantified by emission factors based on measurements carried out over the last 40 years. However, it is widely accepted that the use of emission factors significantly underestimate the emissions from these facilities. Several studies, in the USA, Europe and Canada using modern monitoring techniques, have shown that the actual VOC emissions from these facilities could be one or two orders of magnitude higher than when the estimate is solely based on emission factors. One study conducted by the Alberta Research Council at an oil refinery using a Differential Absorption Light Detection and Ranging (DIAL) technique detected 33 times higher VOC levels and 96 times more benzene than the estimates by factors. Similarly, a DIAL study conducted in Sweden found that emissions at a refinery were 20 times higher than what the emission factors predicted.

Although there are numerous technologies that can be used to estimate VOC emissions from these facilities, ambient air monitoring for VOCs is relatively expensive. As a result, most monitoring efforts and/or studies, thus far, have been on a short term basis. The accuracy of these studies may be questionable for estimating seasonal and annual average levels, as well as emissions.

In these facilities the atmospheric VOC releases (e.g., benzene and 1,3-butadiene) are generally deemed to be fugitive emissions from process equipment, that generally occur near ground level. Therefore, the highest VOC concentrations outside the facility will likely occur near the fenceline at ground level. Ambient air monitoring at the fenceline in conjunction with meteorological data, provides the basis for estimating emissions on various timeframes. EPA has carried out assessment of 6 fenceline monitoring methods and found out that the use of passive diffusive tubes (DST) is a suitable and cost-effective method for fenceline monitoring benzene and 1,3 butadiene over extended periods.

Although DSTs have been extensively used in Europe, and more recently in the USA, the application of passive air quality monitors in Canada has been generally limited to inorganic species (SO₂, NO_x, O₃). DSTs are a rather simple technology to install, operate and maintain. Their relatively low capital and analytical costs makes them an ideal candidate for consideration in ECCC's proposed VOC regulations. However, questions have been raised regarding its performance during Canadian winter conditions, and its capabilities to detect emissions of certain VOCs. ECCC is interested in learning whether DST tubes containing Carbopack™ X sorbent, could be used for a much broader array of VOCs.

As a consequence, ECCC and a Canadian petroleum refining facility (Facility) are interested in pursuing a joint collaborative demonstration project to assess the effectiveness of the DST technology and compare its performance against the whole air sampling technology using specially treated canisters (Canister). The whole air sampling, using Canister is a technique which has widely been used in North America, and elsewhere, to measure accurately ambient VOC levels. Generally, Canister technology is used for collecting air samples on a 24-hr sampling period. However, the

sampling periods of some Canisters can be extended to intervals of 72-hours or more when provided with a suitable sample flow restrictor.

For the purpose of this work, large Canisters will be used for collecting air samples, continuously, on a 14-day sampling event. To extend the capability of the Canister technology to collect air samples continuously for 14 days, a special flow controller and the use of large multiple Canister system, at each sampling station, may be required.

In this study, EPA Method 325 A/B and EPA Compendium Method TO-15 will be used as a reference documents. A special emphasis on the quality assurance and quality control (QA/QC) activities, both during the collection and analysis of all air sampling, will be placed during the course of the project.

The Facility produces a range of fuels for transportation (low sulphur gasoline, low sulphur diesel, jet fuel) and combustion applications (home heating oil, kerosene, Bunker C). Other fuels produced for use in more specialized combustion and transportation applications include butane and propane. The heaviest components of crude oil are used in asphalt, which is sold for paving.

The refinery consists of units for distillation, cracking, reforming (molecular rearrangement), product treating, steam and hydrogen production, sulphur recovery, and tanks for blending and product storage.

OBJECTIVE:

The objectives of this study are to demonstrate the capabilities of passive diffusive tubes to measure effectively wide arrays of VOCs, in all weather conditions, and how well the measured data from two technologies (diffusive sampling tubes and Canister methods) compare against each other. The following is a list of expected outcomes from this project:

- 1) Ascertain the relative performances of the DST air sampling method (EPA Method 325 A/B) and the Canister method (EPA Method TO-15).
- 2) Quantify the comparability of the DST method (EPA Method 325 A/B) to the current reference method (Canister EPA Method TO-15) for certain VOCs of concern (e.g., 1,3-butadiene and BTEX) under different seasonal conditions.
- 3) Gather information on the capability of DSTs to retain light VOC compounds of interest and compare against VOCs collected by Canister technology (VOC speciation).
- 4) Gather information on the relative performance of VOC laboratories in Canada (by analyzing duplicate and/or triplicate samples at various laboratories).

SCOPE OF WORK

For the purpose of this work, the request for proposal (RFP) is to provide analytical services and equipment for a field study to be conducted at the Facility at two (2) monitoring stations for a one year period starting in late 2016. The primary field deployment activities will be conducted by a consultant retained by the facility (CRBF). The Bidder for these analytical and equipment services shall coordinate with the CRBF to execute and report on the entire effort. The responsibilities of the CRBF include the following and shall not be considered in the Bidder's response to RFP:

- a) The CRBF will develop the quality assurance project plan (QAPP) for the effort describing the study, deployment locations and procedures, and all quality assurance aspects of the effort, including duplicate and field blank sampling, in-field sampling diagnostics, chain of custody documentation, sample shipping considerations, and QA/QC report generation. The QAPP developed by CRBF shall include appropriate reference to laboratory analytical procedures and quality assurance checks, developed in collaboration with successful Bidder.
- b) The CRBF shall deploy, retrieve samples, package and ship samples to the successful Bidder for analysis. The CRBF shall pay for shipping of all materials to and from the laboratory during the course of this work. The CRBF shall perform and document all field QA/QC for the effort.

For the purpose of this work, the Bidder may assume that both monitoring stations are secure from vandalism and theft; have weather protection; and 110 VAC electric services. However, the Bidder may consider as an option the absence of electric service on site when designing the field study and cost estimation for the required field sampling equipment (e.g., utilizing electronic sample flow controller vs. mechanical sample flow controller). The Bidder is expected to provide separate cost estimates for both types of flow controllers.

The Bidder is responsible for describing the most technically feasible approach to successfully acquire extended time duration of evacuated Canister samples that can be directly compared to the 14-day passive sampler deployments.

Task 1- Project management and Client Liaison

Management of this project will reside with the ECCC Technical Authority (TA), who will coordinate with a Project Steering Committee (PSC) comprised of representatives of the federal government (ECCC), the Facility and the associated Provincial government representative. This will allow for the exchange of ideas and information as the project unfolds, and provide a practical mechanism for ensuring that all specific concerns are being addressed. Open communication will be maintained with the TA throughout the project, with progress or review meetings with the TA and PSC and informal consultation as needed.

Furthermore, the TA will schedule a meeting to be conducted at the start of the contract and following submission of the full draft analysis report. The initial meeting will address any initial issues or concerns, and identify specific assistance the PSC may be able to offer.

Task 2 – Equipment and Sampler Deployment (EPA Method 325A and TO-15)

The Bidder should note that the Facility may have an existing fenceline network of passive diffusive tube sampling stations.

The Bidder shall consider the following in their response to this RFP:

1. The Bidder shall provide all necessary field equipment, prepared sample material, Canisters and laboratory analytical services for one (1) year continuous field air sampling of VOCs. The field samples and associated laboratory analysis shall consist of two sampling technologies (1) Carbopack™-X based DST as per EPA Method 325 A with nominal 14-day exposure and (2) long duration evacuated Canister (passivated Canisters) to be analyzed in accordance with EPA Method TO-15.

The passive samplers are primary field components and shall produce 26 discrete sample sets (one set every two weeks) over a one (1) year period. The Bidder shall be responsible for supplying all sampling tubes, shelters, and mounting fixtures to the CRBF. The Bidder is responsible for ensuring that the tubes are conditioned with residual benzene levels below 0.2 ppbdv prior to deployment. The sampling shall be continuous so new samplers are deployed at the time the previous samplers are picked up. There shall be no significant time gap in sampling, so the Bidder must provide the appropriate amount of sampling equipment to ensure continuity of the sampling events. The Bidder shall assume to supply a minimum of ten (10) passive sampler tubes for each of the 26 sampling periods (260 in total). This total does not include duplicate and field blank samples. The Bidder shall provide itemized cost estimates for this component of the project.

2. The secondary field component for the deployment shall be the evacuated whole air Canisters (passivated canisters) set up for a 14-day duration sampling event. Each site may require more than one Canister to sample concurrently or consecutively at a constant rate during the 14 days sampling interval. There shall be no significant gap in sampling so the Bidder must provide the appropriate sampling equipment to ensure continuity of the sampling events (26 sampling periods). The purpose of the Canister sampling is to provide a comparison measure to passive samplers and to extend the speciation range for the study. The Canister samples shall be deployed at the same time and shall be co-located with the passive samplers by the CRBF as per the QAPP. The Bidder shall provide appropriate flow controller (electronic and/or mechanical) along with connectors (e.g. to join two Canisters in parallel, if required) and pressure gauges. The Bidder may also consider a weather shield and/or heated pad to ensure that the Canister system is capable of drawing samples, at a constant flow rate, in adverse weather conditions. The Bidder shall assume a minimum quantity twenty (20) Canisters for each of the 26 sampling events.

3. The Bidder shall have gas chromatograph and mass spectrometry instrumentation, calibration equipment, tube regeneration and preparation facilities and cleaned Canisters in place four (4) weeks prior to first monitoring event at the site.

The Bidder is expected to provide an overview of its sampling equipment inventory management process. This may include: minimum number of sampling equipment (passive tubes and Canisters), flow controllers, required connectors for Canisters, sample identification, tracking and sampling equipment manufacturers (including sorbent materials to be used for this work). The Bidder must also provide details on sample collection and custody transfer process for this work. The Bidder is responsible for providing appropriate containers for sampling equipment and shipment. The Bidder shall also identify sample retention capability and the proposed approach.

Task 3 - Study design

Two (2) sampling sites, out of 12 existing fenceline monitoring sites, will be chosen for this work. The sampling site selection will be based on the meteorological data, easy access and the security of site. Each of these designated sites will consist of four (4) DST sampler systems and four (4) Canister sampling systems (the passive tube sampling stations and Canister sampling systems will be co-sited). The inlets for the Canisters need to be placed directly side-by-side with the diffusive sampling tube. In this work, the Bidder should note that two (2) additional sampling stations (off-site) may be installed for monitoring background VOC levels. These two sites will be selected based on local meteorological conditions. A total of 26 consecutive two-week sampling periods will be carried out for this study. At 100% data completeness, this will provide a total of 104 Canister data points at each station (site) for comparison to the 14-day passive sampler deployments over the year-long study. This number does not include the two off-site stations, duplicates and field blanks (passive tubes and Canisters) necessary to satisfy QA/QC requirements. The Bidder must describe the QA/QC procedures and specify the total number of Canisters to be analyzed in order to produce the 104 data point Canister set. The sampling shall be continuous so new Canister sets and passive tubes are deployed at the same time the previous Canister sets and passive tubes are picked up. There shall be no significant gap in sampling, so the Bidder must provide the appropriate amount of sampling equipment to ensure continuity of the sampling events. The Bidder shall explicitly describe the technical approach, siting requirements (such as with and without electricity etc.) and provide an itemized cost breakdown.

Task 4 – Field Blanks, Duplicate Sampling

For the purpose of this study, only two air sampling sites will be chosen, out of possible 12 monitoring sites, around the facility fenceline. Each site will consist of four (4) passive tubes and four (4) Canisters sampling stations, all sampling stations will be co-located. The Bidder should identify the total number of field-blanks and duplicate samples required (for both passive tubes and Canisters) to ensure all elements of a robust QA/QC activities would be in place for a successful field sampling and analysis project. The Bidder may use EPA Method 325 A/B and EPA Method TO-15 as a reference guide.

For passive tube monitoring sites, field blanks are deployed in the same manner as samples except that long-term storage caps remain on both ends of the tube. Field blanks are placed in the shelter alongside the field sample.

Regarding Canister air sampling, the Bidder should note that one of the two Canisters (assuming two Canisters are used per station, a total of eight per site) can be used as a duplicate sample.

Task 5 - Contingency Plan

The Bidder shall include a minimum of 10% equipment replacement contingency in the event of field malfunction.

Task 6 – Sample Analysis

As part of the Bidder's response to this RFP, the Bidder shall provide laboratory procedures for the execution of the required analysis and evidence of capability for the required analysis. In the response, the Bidder shall provide a

technical plan for execution of the required two-week sampling plan with emphasis on a description of the two-week Canister acquisition approach including QA/QC checks (in field and laboratory) that ensure robust operations. The Bidder shall provide an itemized cost estimate for all project components including redeployment QA consultation with the CRBF, all equipment costs, and sampling.

The Bidder should note that passive tubes must be analyzed to determine detectable levels of VOCs retained by the Carboxpack™ X sorbent. The primary reference for conducting laboratory analysis of passive tube is EPA Test Method 325B – Volatile Organic Compounds from Fugitive and Area Sources: Sampler Preparation and Analysis. This method provides the methodology for thermal desorption and GC/MS analysis of volatile organic compounds collected onto sorbent tubes using passive sampling.

The Bidder shall analyze air samples, collected in the Canister, to determine detectable levels of VOCs as per the EPA compendium Method TO-15. The Bidder must meet the detection limits, as specified in Table 4 “Method Detection Limits (MDL)” of the EPA compendium Method TO-15.

For the purpose of this work, the Bidder must perform the following analysis:

For passive tube: Benzene, 1,3-butadiene, quantify each VOC retained by the Carboxpack™ X sorbent and quantify total VOCs. An expected list of speciated VOCs that can be quantified is presented in Appendix A. The Bidder shall identify additional VOCs that can be detected and analysed beyond the VOC compound list as presented in Appendix A. For passive tube analysis, the list of VOCs must be those that the Bidder has defined uptake rate.

For Canister: Benzene, 1,3-butadiene, quantify each VOC and quantify total VOCs, as listed in Appendix B “Canister whole air sampling-VOCs as Hydrocarbons”. The Bidder shall also provide a separate analytical cost for EPA TO-15 VOC target list and quantify total VOCs, as listed in Appendix B. The Bidder should note that if the sample is “not detected”, the detection limit value should be reported in the analysis report.

The Bidder should note that all reported VOC concentrations (DST and TO-15) must be reported as per ECCC reference conditions.

The Bidder should note that an on-site meteorological station is being maintained by the facility. The meteorological data along with DST exposure time and initial and final pressure readings of Canister air samplers will be made available to the Bidder by the CRBF..

The Bidder must specify typical analysis turnaround time, in days, upon receipt of the samples.

The Bidder must provide organizational chart of the project team and must include most up-to-date curriculum vitae of identified individuals on the project team, including their phone numbers.

Task 7- Inter laboratory comparison

The purpose of this task is to compare relative performance of analytical laboratories by performing analysis of duplicate samples. The field duplicate samples will be sent to two additional external laboratories. The Bidder should note that analysis of field duplicates must be maintained at a rate of at least 10% of the collected samples. For the purpose of inter laboratory comparison, additional duplicate samples must be collected (this may apply to only DST because canister sampling may have enough samples in two parallel canister system). The Bidder will propose a list of external laboratories to the PA. The PA will review and approve two additional laboratories for this task. All external laboratories, as listed in the Bidder’s proposal, must have accreditation, either from the government and/or industry, for conducting EPA Method 325B, TO-15 and EPA Method TO-17.

The Bidder is responsible for sending at least ten percent (10%) of the duplicate samples collected during the 26 sampling events (14-day sampling per event). The Bidder shall provide a separate table for this task (Excel spreadsheet).

Task 8 – QA/QC

For the purpose of this work, the Bidder shall describe procedures for sample thermal desorption, analysis and QC of VOCs in DST. As a reference, the Bidder shall, as a minimum, meet all required calibration and QC/QC procedures as listed in Appendix C

The Bidder shall describe the procedures for sample preparation, analysis and QC of VOCs in air samples. For the purpose of this work, air samples will be collected in Canisters below atmospheric pressure. The Bidder, as a minimum, must follow section QA/QC procedures as stated in section 4.1 of the US EPA "Technical assistance Document for the National Air Toxics Trends Stations Program", April 1, 2009. For the purpose of determining method detection limits (MDLs) the Bidder shall refer to Table 4 (SIM column MDLs) of the EPA Compendium Method TO-15. It is expected that Bidder should be able to produce much lower MDLs than what are listed in the Table 4.

The Bidder may provide Standard Operating Procedure (SOP) documents for the determination of VOCs by EPA Method 325B and EPA Method TO-15. Any SOP documents, if provided, will only be used to evaluate Bidder's proposal.

Task 9- Reporting

The Bidder shall provide a short monthly report summarizing sampling sets acquired during the period and any QA corrective actions were required to the project authority.

The Bidder shall immediately communicate any QA issues to both the project authority and the CRBF so corrective action can be taken as soon as possible. As an example, if the in-lab pressure check on the Canister shows degradation in the flow provided by the special flow controllers, a spare flow controller will be put into service.

The Bidder shall provide three (3) quarterly reports, within 4 weeks at the completion of the quarter. The final report must be submitted within four (4) weeks after the end of the fourth quarter. All analytical data must be in an Excel spreadsheet.

The Bidder shall ensure that laboratory reports must include, as a minimum, the following key information:

- Date of sample collected;
- Date of sample received;
- Tube code number;
- Canister code number;
- Summary of QC analysis (lab blanks, CCVs recoveries including mid ending CCVs);
- Detection limit;
- Limit of Quantification;
- Sample results (units); and
- A copy of the chain-of-custody document.

All reports will be prepared using a version of MS Word compatible with ECCC software and distributed in an Adobe Acrobat PDF format. All graphs, spreadsheet and database objects must be embedded directly in the word-processing document whenever practical to do so. This will allow easy distribution and use of the document by e-mail. Source files for all graphs and tables will also be supplied. The final report will be clear, straight-forward and complete.

APPENDIX A

Target Compounds list for Method 325B*

- Freon 114
- 1,3-butadiene
- Freon 11
- 1,1-Dichloroethene
- Freon 113
- cis-1,2-Dichloroethene
- 1,2-Dichloroethane
- 1,1,1-Trichloroethane
- Benzene
- Carbon Tetrachloride
- 1,2-Dichloropropane
- Trichloroethene
- Toluene
- Tetrachloroethene
- Chlorobenzene
- Ethylbenzene
- m,p-Xylene
- Styrene
- o-Xylene
- 4-Ethyltoluene
- 1,3,5-Trimethylbenzene
- m-Dichlorobenzene
- p-Dichlorobenzene
- o-Dichlorobenzene

* McClenny, W.A., K.D. Oliver, H.H. Jacumin, Jr., E.H. Daughtrey, Jr., D.A. Whitaker. (2005). 24 h diffusive sampling of toxic VOCs in air onto Carbopack X solid adsorbent followed by thermal desorption/GC/MS analysis—laboratory studies. *Journal of Environmental Monitoring*, 7 (3), 248-256.

APPENDIX B

The Bidder shall provide a separate cost estimate for a list of VOCs, as shown below. The Bidder is expected to achieve lower DL values than those presented in the table below.

Canister whole air sampling – VOCs as Hydrocarbons	
Compound	DL ($\mu\text{g}/\text{m}^3$)
1,2,4-Trimethylbenzene	2.5
1,3-Butadiene	1
1,3,5-Trimethylbenzene	2.5
2,2,4-Trimethylpentane	0.9
4-ethyltoluene	7
Aliphatic >C5-C6	5
Aliphatic >C6-C8	5
Aliphatic >C8-C10	5
Aliphatic >C10-C12	5
Aliphatic >C12-C16	5
Aromatic >C7C8 (TEX Excluded)	5
Aromatic >C8-C10	5
Aromatic >C10-C12	5
Aromatic >C12-C16	5
Benzene	0.6
Ethylbenzene	0.9
Heptane	1
Hexane	2
Naphthalene	2
o-Xylene	0.9
p+m-Xylene	1.6
Propene	3
Styrene	0.9
Toluene	1
Xylenes (Total)	2.6

U.S. EPA TO-15 Target List of VOCs

Parameter	Synonym	LOR SCAN	
		Units ppb(v)	Units µg/m ³
ACETONE	2-propanone	0.5	1.19
ALLYL CHLORIDE	3-chloropropene	0.2	0.63
BENZENE	benzene	0.2	0.64
BENZYL CHLORIDE	chloromethylbenzene	0.2	1
BROMODICHLOROMETHANE	Bromodichloromethane	0.2	1.3
BROMOFORM	tribromomethane	0.2	2.1
BROMOMETHANE	Bromomethane	0.2	0.78
1,3-BUTADIENE	1,3-Butadiene	0.2	0.44
CARBON DISULFIDE	Carbon Disulfide	0.2	0.62
CARBON TETRACHLORIDE	tetrachloromethane	0.2	1.3
CHLOROBENZENE	Chlorobenzene	0.2	0.92
CHLORODIBROMOMETHANE	Dibromochloromethane	0.2	1.7
CHLOROETHANE	ethyl chloride	0.2	0.53
CHLOROFORM	trichloromethane	0.2	0.98
CHLOROMETHANE	methyl chloride	0.2	0.41
CYCLOHEXANE	Cyclohexane	0.2	0.69
1,2-DIBROMOETHANE	ethylene dibromide	0.2	1.5
1,2-DICHLOROENZENE	1,2-Dichlorobenzene	0.2	1.2
1,3-DICHLOROENZENE	1,3-Dichlorobenzene	0.2	1.2
1,4-DICHLOROENZENE	1,4-Dichlorobenzene	0.2	1.2
DICHLORODIFLUOROMETHANE	Freon 12	0.2	0.99
1,1-DICHLOROETHANE	1,1-Dichloroethane	0.2	0.81
1,2-DICHLOROETHANE	1,2-Dichloroethane	0.2	0.81
1,1-DICHLOROETHENE	1,1-Dichloroethene	0.2	0.79
CIS-1,2-DICHLOROETHENE	cis-1,2-Dichloroethylene	0.2	0.79
TRANS-1,2-DICHLOROETHENE	trans-1,2-Dichloroethylene	0.2	0.79
DICHLOROMETHANE	methylene chloride	0.2	0.69
1,2-DICHLOROPROPANE	propylene dichloride	0.2	0.92
CIS-1,3-DICHLOROPROPENE	cis-1,3-Dichloropropene	0.2	0.91
TRANS-1,3-DICHLOROPROPENE	trans-1,3-Dichloropropene	0.2	0.91
1,4-DIOXANE	1,4-Dioxane	0.2	0.72
ETHYL ACETATE	Ethyl acetate	0.2	0.72
ETHYLBENZENE	Ethyl benzene	0.2	0.87
4-ETHYLTOLUENE	1-ethyl-4-methylbenzene	0.2	0.98
HEPTANE	n-Heptane	0.2	0.82
HEXACHLOROBUTADIENE	Hexachlorobutadiene	0.2	2.1
HEXANE	n-Hexane	0.2	0.7
2-HEXANONE	methyl butyl ketone	1	4.1
ISOCTANE	2,2,4-trimethylpentane	0.2	0.93
ISOPROPYL ALCOHOL	2-propanol / isopropanol	1	2.46
METHYL ETHYL KETONE	2-butanone	0.2	0.59
METHYL ISOBUTYL KETONE	4-methyl-2-pentanone	0.2	0.82
METHYL-TERT-BUTYL ETHER	MTBE	0.2	0.72
PROPYLENE	propene	0.2	0.34
STYRENE	Styrene	0.2	0.85
1,1,2,2-TETRACHLOROETHANE	1,1,2,2-Tetrachloroethane	0.2	1.4
TETRACHLOROETHENE	perchloroethylene	0.2	1.4
TETRAHYDROFURAN	1,4-epoxybutane	0.2	0.59
TOLUENE	Toluene	0.2	0.75
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	Freon 113	0.2	1.5
1,2,4-TRICHLOROENZENE	1,2,4-Trichlorobenzene	0.2	1.5
1,1,1-TRICHLOROETHANE	1,1,1-Trichloroethane	0.2	1.1
1,1,2-TRICHLOROETHANE	1,1,2-Trichloroethane	0.2	1.1
TRICHLOROETHENE	Trichloroethylene	0.2	1.1
TRICHLOROFLUOROMETHANE	Freon 11	0.2	1.1
1,1,2,2-TETRAFLUORO-1,2,-DICHLOROETHANE	Freon 114	0.2	1.4
1,2,4-TRIMETHYLBENZENE	1,2,4-Trimethylbenzene	0.2	0.98
1,3,5-TRIMETHYLBENZENE	1,3,5-Trimethylbenzene	0.2	0.98
VINYL ACETATE	Vinyl acetate	0.5	1.8
VINYL BROMIDE	Vinyl bromide	0.2	0.87

VINYL CHLORIDE	Vinyl chloride	0.2	0.51
ORTHO-XYLENE	o-Xylene	0.2	0.87
M+P-XYLENES	m&p-Xylene	0.4	1.7
4-BROMOFLUOROBENZENE (surrogate)	4-Bromofluorobenzene	1	n/a

All MDL values as shown in this list are very high. Bidder is expected to achieve much lower MDLs.

APPENDIX C

Required Calibration and QA/QC Procedures

Table 1- Summary of Required Calibration and QA/QC Procedures

Parameter	Minimum Frequency	Acceptance Criteria	Corrective Actions
BFB Tune Check	Every 24 hours	EPA 325B Tune Criteria	Correct problem and repeat tune check. Clean source and/or retune MS if needed.
5-point Calibration	Prior to sample analysis and following any significant instrument maintenance or change. ICAL would be invalid prior to 3 months if analytical instrument drifts out of control.	%RSD<30	Correct problem and repeat initial calibration curve.
Desorption Efficiency Check	After each initial calibration curve	>95% Desorption Efficiency	Evaluate Thermal desorption parameters, and adjust as needed. Recalibrate after parameter changes.
Initial Calibration Verification (ICV)	After each initial calibration curve.	70-130% recovery	Verify accuracy of standard. Re-prepare ICV or primary calibration standard if necessary. If calibration curve and/or system are identified as the problem, re-calibrate.
Initial Continuing Calibration Verification (CCV)	After the tune check at the start of each sequence. The RRF of the initial daily CCV is used for sample quantitation.	70-130%	If the beginning CCV does not meet criterion, re-prepare CCV and re-analyze. If still fails, than re-calibrate. If the mid-check or end check fails, re-analyze samples analyzed after the last passing check unless the recovery was high and no detections were measured. If re-analysis is not possible, then flag and narrate affected samples.
CCV-Recollection (CCV-R) OPTIONAL – we could leave out it's good practice but not 325 required	After each initial calibration curve and daily after the CCV to insure re-collection feature is working.	< 20% RPD	Evaluate analytical unit and re-collection feature. Re-prepare CCV and CCV-R to verify after evaluation.
Mid and Ending CCV	Every 10 field samples after the initial daily CCV and at the end of the batch.	70-130%	If the mid-check or end check fails, re-analyze samples analyzed after the last passing check unless the recovery was high and no detections were measured. If re-analysis is not possible, then flag and narrate affected samples.
Laboratory Blank	After the beginning CCV and prior to the end check.	Beginning lab blank < Reporting Limit (RL)* *per method, criterion should be <0.2 ppbv or <3 times the LOD, whichever is greater	Re-analyze the lab blank. If still above criterion, flag data accordingly.
Field Blanks	Per method, a frequency of	Less than 1/3 the	Flag and narrate all sample results

Parameter	Minimum Frequency	Acceptance Criteria	Corrective Actions
	10% or minimum of 2 whichever is greater, run with field samples.	measured sample target analyte or compliance limit.	noting that the associated results are estimated with a high bias due to field blank background.
Field Duplicates	Per method, a frequency of 10%, run with field samples.	<30%RPD	Apply flag to data set and narrate discrepancy.
Internal Standard (IS)	Added to each sample and QC sample at the time of desorption.	Blanks, samples and mid-and end checks: IS areas must be + 40% of the initial CCV IS areas. RT within +0.33 min as compared to the daily CCV.	Blanks: inspect the system and re-analyze the blank. Samples: Re-analyze the samples. If the IS is still out, flag the associated data and narrate.

Source: Ministry of the Environment and Climate Change, Property line Monitoring Implementation Plan, July 2016.

APPENDIX D

RELEVANT INFORMATION

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[US EPA] U.S. Environmental Protection Agency. (2015). Method 325A-Volatile Organic Compounds from Fugitive and Area Sources.

[US EPA] U.S. Environmental Protection Agency. (2015). Method 325B-Volatile Organic Compounds from Fugitive and Area Sources.

Annex B

Basis of Payment

The Contractor will be paid in accordance with the following Basis of Payment for work performed pursuant to the resulting Contract.

Item	Description of Deliverable	Schedule	Cost
1.	Kick-off Meeting via Conference Call	No later than seven (7) business days after award of this contract	
2.	Milestone #1: Delivery and installation of all sampling equipment	4 weeks from date of contract award	
3.	<p>Milestone #2: Monthly Review of Sampling/Analysis</p> <p>A preliminary short monthly report describing samples acquired during that period for analysis, and any associated QA issues that required corrective action. There will be eleven (11) short monthly reports in total.</p>	No later than ten (10) business days after the completion two (2) 14-day sampling events	
4.	<p>Milestone #3: Submission of Quarterly Report</p> <p>A draft report summarizing laboratory analysis of all DST samples and Canister air samples acquired during that quarter. The laboratory analysis data must be submitted in Excel spreadsheet. The report shall highlight any issues/concerns associated with the laboratory analysis data.</p>	No later than two (2) weeks after the completion of each quarter (The year-long project has four (4) quarters).	
5.	<p>Milestone #4: Submission of the final report</p> <p>The final report must include all analytical work carried out in an Excel spreadsheet. The final report will be prepared using MS word compatible with ECCC software and distributed in an Adobe Acrobat PDF format. The final report will be clear, straight-forward and complete and must include information as stated under Task 9 "Reporting".</p>	The final report must be submitted within eight (8) weeks after the end of the fourth quarter.	
Grand total			\$

