

November 16, 2020

**REQUEST FOR PROPOSALS “RFP” No. PS20200721
CONSULTANT FOR LANDFILL GAS FIELD MANAGEMENT**

AMENDMENT No. 2

1. RE: CHANGE TO THE PART A - INFORMATION AND INSTRUCTIONS - KEY DATES

Currently reads:

2.0 KEY DATES

2.1 Potential Proponents should note the following key dates:

Event	Time and Date
Deadline for Enquiries	Thursday, November 12, 2020
Closing Time	3:00pm on Thursday, November 19, 2020

2.2 All references to time in the RFP are references to the time in the City of Vancouver, as indicated in the electronic timestamp the Proposal receives upon delivery to the email address specified herein, which is in turn synchronized to Network Time Protocol (NTP) provided by the National Research Council of Canada adjusted to local Pacific Time Zone.

Change to:

2.0 KEY DATES

2.1 Potential Proponents should note the following key dates:

Event	Time and Date
Deadline for Enquiries	Thursday, November 19, 2020
Closing Time	3:00pm on Thursday, November 26, 2020

2.2 All references to time in the RFP are references to the time in the City of Vancouver, as indicated in the electronic timestamp the Proposal receives upon delivery to the email address specified herein, which is in turn synchronized to Network Time Protocol (NTP) provided by the National Research Council of Canada adjusted to local Pacific Time Zone.

2. RE: CHANGE TO PART C - FORM OF PROPOSAL - APPENDIX 3 - COMMERCIAL PROPOSAL

**REQUEST FOR PROPOSALS “RFP” No. PS20200270
CONSULTANT FOR LANDFILL GAS UTILIZATION**

AMENDMENT No. 2

The current version of the Part C - Form of Proposal - Appendix 3 - Commercial Proposal has been replaced on the City’s website with an amended version titled Appendix 3 - Commercial Proposal - AMD 2.

3. RE: CHANGE TO PART B - CITY REQUIREMENTS - SCOPE OF WORK

Part B - City Requirements has been amended to remove the Greenhouse Gas Verification services. The amended Scope of Work is attached to the end of the Amendment No. 2.

1. Introduction

The City requires the professional services of a Consultant to provide the following for the Cities Vancouver Landfill & Recycling Depot (Landfill):

- Conduct the Landfill Gas Migration and Emission Monitoring (LFGMEM) Program;
- Complete and submit the required Provincial and Federal annual greenhouse gas reports;
- Subcontract an accredited third party Greenhouse Gas (GHG) Emission Reporting Verifier to conduct annual GHG reporting verification as required by the Province of BC;
- Research web based data management and interactive mapping systems for storing and analyzing landfill gas field data;
- Perform well field monitoring services at the request of the City; and
- Provide periodic consulting as requested by the City.

2. Background

The Landfill is situated within the City of Delta and serves approximately 70% of the Metro Vancouver region. It has been in operation since 1966. Its existence and operations are authorized under provincial law and under the BC Ministry of Environment and Climate Change Strategy's (MOE) Operational Certificate (OC) and Metro Vancouver's *Integrated Solid Waste and Resource Management Plan* (ISWRMP) (<http://www.metrovancouver.org/services/solid-waste/SolidWastePublications/ISWRMP.pdf>).

The current operating agreements with Metro Vancouver and the City of Delta will expire in 2037. Additional information on the Landfill can be found in the Landfill's annual report at <http://vancouver.ca/home-property-development/annual-reports-for-landfill-and-solid-waste-divisions.aspx>

The City installed the original landfill gas control system (LFGCS) in 1991 to collect the landfill gas (LFG) produced when refuse decomposes in an anaerobic environment. The LFGCS collects LFG by creating a vacuum in the LFG piping system and extraction wells via LFG blowers installed at the Gas Conditioning and Flare Station (GCFS). Part of the collected LFG is conveyed to Village Farms Clean Energy (VFCE) for their use, and a small portion is used to heat the operations and engineering buildings. Excess LFG is currently burned in on-site high destruction efficiency enclosed flares at the GCFS to minimize greenhouse gas emissions. FortisBC is planning the construction of a renewable natural gas (RNG) facility adjacent to the GCFS to make beneficial use of the excess LFG starting in 2023.



Figure 1 - City of Vancouver Gas Field Layout as of Dec 2020

3. Summary of Requirement

The City requires professional services of a Consultant to plan and execute the scope summarized in Table 1.

It is important to note that separate bundles of related work will be occurring for the Gas Flare Planning and Maintenance Services - Vancouver Landfill project (Table 2), and Landfill Gas Well Field System Documentation Planning and Management, but the work in Table 2 is not in scope for this project.

Table 1 Gas Field Management - Vancouver Landfill

4.1 Landfill Gas Migration and Emissions Monitoring (LFGMEM)
4.2 Greenhouse Gas Annual Reporting
4.3 Landfill Gas Database and Mapping System
4.4 Periodic Well Field Monitoring
4.5 Periodic Consulting

Table 2 Gas Flare Planning and Maintenance Services and Landfill Gas Well Field System Documentation Planning and Management (OUT OF SCOPE)

Bundle 1 - Gas Flare Planning and Maintenance Services
Flare Station, Air Compressor, Building Gas Pipeline System and Dryer System
Building Methane Monitoring
Periodic Consulting
Bundle 2A - Landfill Gas Well Field System Documentation Planning and Management
Landfill Gas Well Field System Documentation Review and Update
Consolidate Record Drawings
Periodic Consulting

4.0 Work Scope

The Consultant shall have experience or knowledge in the following areas:

- Municipal solid waste landfills;
- Landfill gas collection, flaring and utilization systems;
- Landfill and gas system health and safety;
- Annual reporting and greenhouse gas reporting for large municipal landfills;
- Verification of greenhouse gas reporting at large municipal landfills; and
- Applicable regulations, industry standards, and codes.

Be able to provide staff for periodic well field monitoring who have experience:

- working at active landfills and around heavy equipment;
- using a GEM 5000+ for landfill gas monitoring;
- making LFG field adjustments;
- working with explosive gases;
- following a detailed safety protocol including procedures/PPE to minimize exposure to landfill gas;
- conducting minor repairs (mechanical aptitude); and
- taking direction and/or following standard operating procedures.

4.1 Landfill Gas Migration and Emission Monitoring (LFGMEM)

The Consultant shall review, update and implement the Landfill Gas Migration and Emission Monitoring Program at the Landfill. Prior to implementation of any changes, the Consultant shall obtain approval of the City.

The LFGMEM was put in place at the Landfill in 1999. Markers are set at 100 m intervals around the property boundary of the Landfill buffer zone as the monitoring locations (see Figure 2). The monitoring done at these locations is used to check for odours and landfill gas migration beyond the property boundary.

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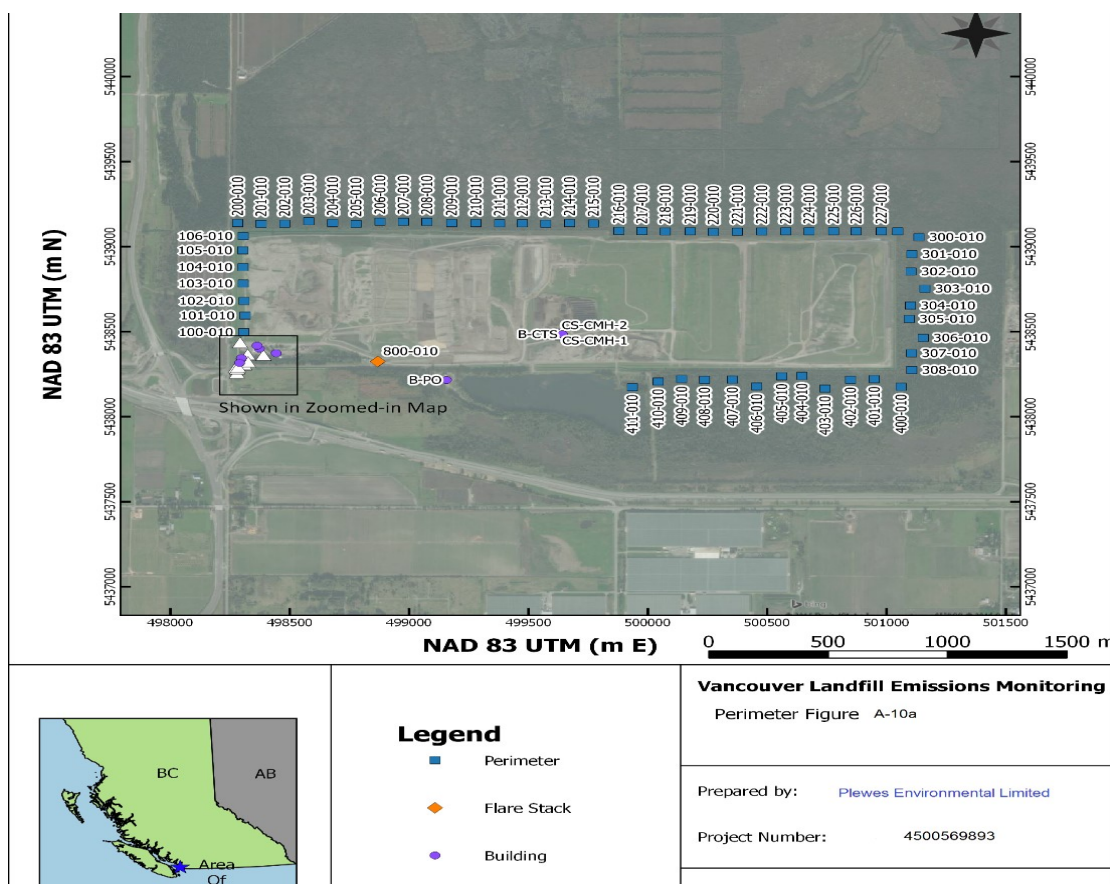


Figure 2 City of Vancouver Perimeter Ambient Air Monitoring Stations

There are four types of gases of primary interest to the City: Methane (CH_4), Oxygen (O_2), Carbon Dioxide (CO_2), and Hydrogen Sulphide (H_2S). Since methane cannot be measured directly, total organic carbon (TOC) concentrations are currently used as an indicator of LFG migration. H_2S is measured as a surrogate for the odorous compounds typically found in municipal solid waste landfills. The human nose can detect H_2S at a concentration of less than 1 ppm with a Recognition Threshold of 0.0047 ppm or 4.7ppb H_2S . The Recognition Threshold is the concentration at which 50% of humans can identify the odourant. The City uses the Recognition Threshold as their limit in an effort to better check for odours.

The scope of work for the LFGMEM program shall include the following items:

4.1.1 Site Specific Safety Plan (SSSP)

The Consultant shall provide a Site-Specific Safety Plan (SSSP) for only Task 4.1 where they are designated as Prime Contractor. The SSSP must include a minimum of the following:

- A list of those responsible parties for implementation of the plan;
- A hazard identification/risk assessment process for work to be completed by the Consultant;
- standard operating procedures (SOPs);
- A pre-task hazard assessment process for quarterly field work completed by the Consultants staff, such as a Field Level Hazard Assessment (FLHA) or similar document outlining the task, hazards and mitigations for the work;
- A procedure for reporting and investigating incidents and near misses, including flash reporting;

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- Details on how first aid coverage will be provided for their staff; and
- A procedure for working alone on site (call in procedure between worker and Consultant).

The City requires an approach that is best industry practice and meets WorkSafeBC standards. The Consultant shall update the SSSP annually and submit it electronically to the City.

4.1.2 Regulatory Scan

The Consultant shall conduct an annual regulatory scan of the current applicable regulations, guidelines, standards and industry best practices to ensure the continuous improvement of the LFGMEM. The Consultant will identify and propose any recommendations to the LFGMEM.

4.1.3 Monitoring

Monitoring Locations and Parameters

The Consultant shall conduct quarterly monitoring and reporting of ambient air quality at the following stations:

- Existing Property Boundary Stations (~57 existing stations at two heights each -10cm and 200cm) - for Total Organic Carbon as CH₄ and H₂S.

Monitoring Equipment

- TOC concentrations will be determined using a Flame Ionization Detector (FID) or equivalent.
- Hydrogen Sulphide concentrations will be determined using an ambient air monitor (e.g. Jerome J631X hydrogen sulphide analyser or equivalent) with a detection limit of 1 ppb.

Detailed Monitoring Procedure

The Consultant shall:

- Supply, use and maintain the necessary ambient air and personal monitoring equipment/devices;
- Calibrate all instruments used and record/supply record of calibration results;
- Convert log sheet data into specified electronic format, compatible with MS Excel or other as directed by the City;
- Report immediately via email to the Landfill Manager or designate, any elevated monitoring results beyond established limits, and recommend corrective actions;
- Identify any hazardous conditions, work practices, etc., correct where possible and immediately notify via email the Landfill Manager, or the designate, of such issues;
- Property boundary sampling shall be completed under the following conditions whenever possible:

A clear cool day
Normal wind speeds less than 3.2 km/hr
No wind gusts greater than 16 km/hr
Should not be raining

- Sampling at both the 0.1 and 2.0-meter sample markers is required at each station;
- The proposed cost shall be based on routine monitoring of the Existing Property Boundary Stations only; and
- The following additional parameters should be recorded when sampling outdoors:

Wind speed and direction
Temperature

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Barometric pressure
Precipitation events

4.1.4 Reports

The Consultant shall prepare Quarterly Summary Reports which shall summarize the LFGMEM in its current state, report any results over established limits, and detail any changes compared to the previous quarters, methods and results. The Consultant shall attach the calibration certificate for the monitoring devices used to this quarterly report. The reports and all monitoring data shall be submitted electronically to the City in pdf format and the monitoring data also in excel spreadsheet format or as directed by the City. Please see example in the Attachment: "Landfill Gas Migration and Emissions Monitoring Program: 2020 Second Quarter Report".

The Consultant shall prepare one Annual Summary Report which shall summarize the LFGMEM in its current state, present and summarize the year's monitoring results, report any results over established limits, detail any changes compared to the previous year's regulations, methods and results, and recommend changes for the following year's monitoring as necessary. The reports shall be submitted electronically to the City in PDF format and the monitoring data also in excel spreadsheet format or as directed by the City.

The Consultant shall prepare a map showing all of the sample locations around the perimeter of the Landfill. The Consultant shall append the map to all quarterly and annual reports. The City shall provide the GPS coordinates of the sample locations, an air photo for underlay, and the existing AutoCAD drawing of the monitoring locations.

Deliverable for Task 4.1:

Task 4.1.1 SSSP

- i. Draft (Word format) and final (Word and PDF) SSSP submitted electronically to the City for the City's review and acceptance
- ii. Draft (Word format) and final (Word and PDF formats) annual updated SSSP submitted electronically to the City

Task 4.1.2 Regulatory Scan

- iii. Memo submitted electronically to the City in PDF format of the Regulatory Scan

Task 4.1.3 Monitoring

- iv. Four (4) Quarterly site visits to complete monitoring of perimeter stations

Task 4.1.4 Reports

- v. Four (4) Quarterly monitoring Reports submitted electronically to the City in PDF format and data as an excel spreadsheet and
- vi. Draft (MS Word and PDF formats) and final (PDF format) Annual report submitted electronically to the City
- vii. Draft (AutoCAD and PDF formats) final (AutoCAD and PDF formats) map submitted electronically to the City

4.2 Greenhouse Gas Annual Reporting

The Consultant will complete a review of the *City of Vancouver LFG Annual Report*, and fulfill the greenhouse gas reporting requirements for the Provincial and Federal governments, on behalf of City.

The City is currently regulated by and has reporting requirements to:

- BC Landfill Gas Management Regulation, B.C Reg. 391/2008
- BC GHG Emission Reporting Regulation, B.C Reg. 249/2015
- Environment and Climate Change Canada Greenhouse Gas (ECCC GHG)

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- Emissions Reporting Program, Section 46 of Canadian Environmental Protection Act (CEPA 1999)
- National Pollutant Release Inventory (NPRI), Canadian Environmental Protection Act (CEPA 1999)

The key scope of the GHG/NPRI reporting includes:

4.2.1 Kick off Meeting

In the week of January 10 of the given year, the Consultant shall conduct a phone or in person kick off meeting to review and set the dates for the City and Consultant deliverables for the year.

4.2.2 Regulations Review

The Consultant shall review all of the regulations listed above to make sure there have been no changes, no new or additional requirements in the existing regulations, and that the City does not fall under any new regulations with reporting requirements.

An electronic letter report shall be submitted to the City by January 31 of the year, or as set in the kick off meeting, summarizing what is needed for reporting compliance for these regulations. The letter report shall outline the reporting requirements for each of the above regulations:

- Advising the City of any changes to the regulations or reporting requirements;
- Outlining what information the City is required to submit;
- Requesting any further information required from the City to comply with any changes to the legislation or any new legislation;
- Confirming the calculations for emission factors and/or methods to estimate emissions; and
- Confirming other requirements such as uncontrolled gas released to atmosphere, leachate analysis requirements, road dust estimation, aggregate handling, pollution prevention etc.

4.2.3 LFG Annual Report Review

In March of the given year, on the dates set in the January meeting, the Consultant shall review the City's Landfill Gas Annual Report (LFG Annual Report). The Consultant shall ensure that the LFG Annual Report meets all of the reporting requirements as set out in the regulations listed as well as the following:

- Requirements under the *Landfill Gas Generation Assessment Procedure Guidance*
- Waste categorization calculations
- Landfill gas generation calculations
- Landfill gas collection efficiency calculations based on the Ministry of Environment and Climate Change Strategy model and the Landfill's site specific model

The Consultant shall advise the City if the LFG Annual Report is or is not meeting regulatory requirements, and work with the City to rectify. A one page letter is to be submitted electronically to the City electronically at the date as set in the January meeting. This letter shall state what was reviewed by the Consultant and if/that the LFG Annual Report complies with all of the requirements. This letter will be appended to the LFG Annual Report which will

be submitted by the City to the Ministry of Environment and Climate Change Strategy on or before March 31.

4.2.4 Preliminary Single Window Information Management Report

Environment and Climate Change Canada's Single Window Information Management (SWIM) system integrates data collected through provincial and federal programs into one streamlined system.

For information on this program, how to report using this program and what data is required, please check the government website at the link below:

<https://www.canada.ca/en/environment-climate-change/services/reporting-through-single-window.html>

The Consultant is required to use the data provided by the City to complete a preliminary SWIM Report, completing all calculations and categorizations of the data as required.

At the beginning of April of the given year, the City will send the Consultant all of the data/documents requested by the Consultant in Task 0. These documents have in the past included:

- GHG/NPRI reports from all onsite contractors on a City template. There are typically 5 (five) onsite contractors who submit these reports monthly to the City;
- Diesel usage from City vehicles on site;
- Propane usage by City on site;
- Landfill gas used for building heat;
- Traffic over the scale and types of material carried;
- Leachate sample results (excel spreadsheet);
- Landfill gas sample analysis lab report;
- Estimates of distance travelled by onsite traffic;
- All annual report data;
- Calibration certificates for hand held landfill gas quality and flow measurement devices; and
- Calibration certificates for all flow meters used for landfill gas volume numbers.

An accredited third party Verification Body (the "Verifier") shall be subcontracted by the Consultant. Refer to Task **Error! Reference source not found.** below.

4.2.5 GHG and NPRI Report Submission

The Consultant shall submit all of the reports on behalf of the City following review by the Verifier on or before their due dates as determined by the regulations, including:

- Single Window Information Manager (SWIM) Report;
- BC Greenhouse Gas Emissions Report (BC GHG) Emissions Report Submission;
- Environment and Climate Change Canada Greenhouse Gas Emissions Reporting Program (ECCC GHG) Emissions Report Submission; and
- Environment and Climate Change Canada National Pollutant Release Inventory (ECCC NPRI) Report Submissions.

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Deliverables for 4.2

Task 4.2.1 Kickoff Meeting:

- i. Hold kickoff Meeting with Consultant and City Staff
- ii. Minutes of the kick-off meeting submitted electronically to the City in PDF format
- iii. Schedule of deliverable dates for the given year submitted electronically to the City in an email

Task 4.2.2 Regulations Review:

- iv. Letter report submitted electronically to the City in PDF format

Task 4.2.3 LFG Annual Report Certification:

- v. One-page signed certification document submitted electrically to the City in PDF format

Task 4.2.4 Preliminary SWIM Report:

- vi. Preliminary SWIM report to be submitted electronically to the City and GHG/NPRI verifier in PDF or excel format, and/or as requested by the verifier, on date agreed upon in the January meeting
- vii. Participate in Verifier Review process as needed (City and Consultant)

Task 4.2.5 Report Submission:

- viii. Submit all of the following required GHG and NPRI reports on or before the due date (currently May 30) in the format required by the regulator (Provincial and Federal) using the SWIM interface (access to be organized between the City and the Consultant):
 - BC Greenhouse Gas Emissions Report (BC GHG) Emissions Report Submission
 - Environment and Climate Change Canada Greenhouse Gas Emissions Reporting Program (ECCC GHG) Emissions Report Submission
 - Environment and Climate Change Canada National Pollutant Release Inventory (ECCC NPRI) Report Submission
 - Any other new reports that are required as identified in the annual scan

4.3 Landfill Gas Database and Mapping System

4.3.1 Detailed Requirements

The Consultant shall set up a meeting with the City (through videoconference or in person at the Landfill) to review the pros and cons of the current LFGMS database system being used by City staff.

The Consultant shall research all/any other database management systems available that they feel would meet the requirements of the City. The City understands that no one system may meet all their requirements. The Consultant, Landfill staff, and staff from the City's Supply Chain Management department will develop market sounding questions, and engage LFGMS database system providers to set up info/demonstration sessions. The City will use the information gathered as a result of the market soundings to develop a scope of work for a separate procurement of a LFGMS database system which is outside the scope of Services.

Ideally, the City would like the LFGMS to meet the following performance requirements:

- Well name/identification (e.g. P03-V111, P04H213E);
- Installation date and removal/decommission date;
- Location (northing and easting);
- Current device model (e.g. QED, Flowing, Landtec);
- Current device size (e.g. 1.25", 2", 3");
- Current orifice plate size (e.g. 0.95", 0.40", 2.10");

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- Dates of past orifice plate or device size/model changes (e.g. from 2"QED, 1.40" orifice plate, to 3"Flowing, 2.10" orifice plate, on March 5, 2019);
- Length of installed perforated screen (entered once from as-built drawings);
- Ability to upload GAM file from Landtec to update current device size and orifice plate;
- Well condition including fouling, flooding, well collapse;
- Available perforated screen, i.e. the part of the screen that is not flooded or below a well collapse or impacted by fouling, to be adjusted yearly after filming of the wells;
- Deployed pump;
- Deployed permanent temperature sensors;
- Deployed permanent water level sensor (bubbler);
- City specified limits for all parameters to cause a rescan, i.e. different parameters are used than NSPS guidelines/the system should be customizable for the City specific standards (e.g. wells above 125°F high temperature flagged automatically);
- Line graphs showing trends over time for all collected parameters and customizable to highlight/show only those selected;
- Contours of water level elevations above sea level with customizable intervals;
- GIS-based mapping structure so more than one parameter can be displayed at a time on one map;
- Ability to import .csv files to update well heights or other parameters as a group;
- On the map, at-a-click customizable binning changes, (e.g. wells below 45% methane red, wells 45-49% methane orange, wells above 50% methane green, etc.);
- Customizable PDF printing area (the Landfill is 3 km long by 800 m wide, which makes it difficult to print while still being legible), movable location of title block, parameters legend, north arrow;
- Customizable reports/work sheets by month and Landfill phase;
- Ability to integrate components inventory/maintenance spreadsheet. The spreadsheet will be provided by the City after award of the contract. These sheets list all the bits and parts on the wells and is used for reordering/keeping things in stock. (e.g. P03-V111: 4" system side riser, 4x2 fernco, 2" plug, yellow hose, 2x yellow hose clamps, 2" QED device, 1.40 orifice plate, 3 white quick connects, 1 temperature port labcock, 2" hose clamp to support post, 6x2 metal 5 port well head adaptor);
- Photo of and/or drawing associated with well ID;
- Ability to remove decommissioned wells from maps, but retain location data and ability to print historical location and parameters;
- Ability to have some categories of monitoring points displayed or not. For example, pressure relief (PR) wells, condensate traps (CTs) etc. are not generally monitored so they don't need to be displayed. However, when they are monitored, this layer of the map can be turned on;
- Ideally a map with the option to hover the cursor over a well, an info box pops up showing data like: components, install date, photo or drawing, and graph of 1 year chosen parameters;
- Drop down menu for map to show not only parameters (CH₄, balance gas etc.) but also components (e.g. fernco size, well head adaptor type) or history (when orifice/device changes were done); and
- Ability to electronically transfer all City owned data to the City at the end of the Contract. The data shall be transferred in an acceptable format to the City.

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Deliverables for Task 4.3:

Task 4.4.1 Detailed Requirement

- i. Meeting with City to review current LFGMS
- ii. Meeting(s)/ Info or Demo sessions with proposed LFGMS providers
- iii. Minutes from the Meetings and Demo sessions submitted electronically to the City in PDF format

4.4 Periodic Well Field Monitoring

The Consultant shall supply a field technician to assist City LFG field staff, as and when needed, to perform monthly well field monitoring and to aid in other monthly duties for a set hourly rate (Task 4.4.1). The field technician will be required to work ONLY during regular working hours 7:00 AM to 3:00 PM Monday to Friday. The City of Vancouver shall remain Prime Contractor for this work. Other monthly duties (Task 4.4.2) may include: minor well repairs, part replacements in the field, well water level monitoring, pump maintenance and gas well filming.

The Consultant's field staff will be required to complete the City's Site Safety Orientation before beginning work at the site and participate with City Staff in completing the FLHA on a daily basis. The Consultant is required to provide a cell phone for communication on site and vehicle for transportation to/from and on site.

The Consultant shall provide an hourly rate for the field technician for the periodic field monitoring.

The City will provide the following to the Consultant's field staff:

4.4.1 Main Task - LFG Field Monitoring

- Daily FLHA to exchange hazards of the Consultant's work and any work the City or its subcontractors are performing nearby.
- Maps showing well locations with well identifications.
- GEM5000+ Portable LFG Analyzer.
- Draeger personal gas detector.
- Well adjustment guidelines.
- Standard Operating Procedure for monitoring.
- Parameter 'red flags' that require immediate notification by cell phone.
- On the job training to familiarize the field staff with the overall layout of the Landfill and observe/aid them with monitoring the wells to meet City standards.
- Training in GEM5000+ calibration at the City calibration station, which the field staff will do at the start of each day they will be monitoring.
- Phone numbers so that whenever they are on site there will be someone available to answer questions as they arise.

4.4.2 Other Tasks

Other monthly duties may include: minor well repairs, part replacements in the field, well water level monitoring, pump maintenance and gas well filming.

- Standard Operating Procedures for the other tasks for pre-reading before coming to site.
- Daily FLHA (City template) to exchange hazards of the Consultant's work and any work the City or its subcontractors are performing nearby.
- On the job training in how to complete the tasks and phone numbers so that whenever the field staff is on site there will be someone available to answer questions as they arise.

- This work is provisional and will be based on the hourly rates.

Deliverables for Task 4.4:

- i. The Consultant field staff shall provide a field report for work performed and any recommendations for improvement.

4.5 Periodic Consulting

From time to time and upon written request from the City, the Consultant shall provide periodic consulting services over the contract period to address:

- a) Any issues arising from landfill gas field data;
- b) recommendations associated with or related to other project work;
- c) unplanned events; or
- d) other related questions.

At the completion of the task, the Consultant shall submit a technical memo electronically to the City. The Consultant will circulate (electronically) the draft technical memo. On receipt of the City's feedback, the Consultant will finalize the memo.

For the purposes of this RFP, Proponents are to assume 50 hours of periodic consulting annually.

Deliverables for Task 4.5:

- i. Draft (MS Word format) and final (MS Word and PDF formats) technical memo

City Provided

Following the execution of any Agreement, the City will provide all the documentation listed in the sections above which are not already included by reference in the City's Requirements. On request, the City will provide site access, data and electronic templates as necessary to complete the Services.

- FLHA (City template)
- Field Report (City template)

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Deliverables and Schedule

The following Table 3 provides a summary of the deliverables for the contract.

Table 3 - Deliverables, Milestones and Target Date

Task	Item	Deliverables and Milestones	Target Date
		Agreement Execution	December or January, 2021
		Kick-Off Meeting	January, 2021
4.1 Landfill Gas Migration and Emission Monitoring (LFGMEM)			
Task 4.1.1 SSSP	i.	Draft (Word format) and final (Word and PDF) SSSP submitted electronically to the City for the City's review and acceptance	During First Quarter 2021 before the First Site Visit
	ii.	Draft (Word format) and final (Word and PDF formats) annual updated SSSP submitted electronically to the City	Annually, Week of January 31 and February 28
Task 4.1.2 Regulatory Scan	iii.	Memo submitted electronically to the City in PDF format of the Regulatory Scan	Annually (starting January 2021)
Task 4.1.3 Monitoring	iv.	Four (4) Quarterly site visits to complete monitoring of perimeter stations	Quarterly, Last Month of each Quarter
Task 4.1.4 Reports	v.	Four (4) Quarterly monitoring Reports submitted electronically to the City in PDF format and data as an excel spreadsheet and	10 Business Days following Quarterly Site Visit
	vi.	Draft (MS Word and PDF formats) and final (PDF format) Annual Report submitted electronically to the City	Annually, Week of January 31 and February 28
	vii.	Draft (AutoCAD and PDF formats) and final (AutoCAD and PDF formats) map submitted electronically to the City	During First Quarter 2021 before the First Site Visit
4.2 Greenhouse Gas Annual Reporting			
Task 4.2.1 Kickoff Meeting	i.	Hold kickoff Meeting with Consultant and City Staff	Annually, Week of January 10

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	ii.	Minutes of the kick-off meeting submitted electronically to the City in PDF format	Annually (starting January 2021) - Last business day in January
	iii.	Schedule of deliverable dates for the given year submitted electronically to the City in an email	Annually - Last business day in January
Task 4.2.2 Regulations Review	iv.	Memo submitted electronically to the City in PDF format	Annually - Last business day in January
Task 4.2.3 LFG Annual Report Certification	v.	One-page signed certification document submitted electrically to the City in PDF format	Annually - on date as determined in kickoff meeting, no later than March 30th
Task 4.2.4 Preliminary Swim Report	vi.	Preliminary SWIM report to be submitted electronically to the City and GHG/NPRI verifier in PDF or excel format, and/or as requested by the verifier, on date agreed upon in the January meeting	Annually - By end of first week in April
	vii.	Participate in Verifier Review process as needed (City and Consultant)	Annually - First business day in May
Task 4.2.5 Report Submission	viii.	Submit all of the following required GHG and NPRI reports on or before the due date (currently May 30) in the format required by the regulator (Provincial and Federal) using the SWIM interface (access to be organized between the City and the Consultant): <ul style="list-style-type: none"> ▪ BC Greenhouse Gas Emissions Report (BC GHG) Emissions Report Submission ▪ Environment and Climate Change Canada Greenhouse Gas Emissions Reporting Program (ECCC GHG) Emissions Report Submission ▪ Environment and Climate Change Canada National Pollutant Release Inventory (ECCC NPRI) Report Submissions ▪ Any other new reports that are required as identified in the annual scan 	Annually - Beginning of April to mid of May
4.3 Landfill Gas Database and Mapping System			
Task 4.3.1 Detailed Requirement	i.	Meeting with City to review current LFGMS	Once at the start of the contract, before April 1, 2021
	ii.	Meeting(s)/ Info Sessions	Before April 1, 2021

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	iii.	Minutes from the Meetings	Five Business Days following Meetings
4.4 Periodic Well Field Monitoring			
4.4 Periodic Well Field Monitoring	i.	The Consultant field staff shall provide a field report for work performed and any recommendations for improvement.	Five Business Days following completion of tasks.
4.5 Periodic Consulting			
4.5 Periodic Consulting	i.	Draft (MS Word format) and final (MS Word and PDF formats) technical memo	On an as needed basis, assume 50/hours per year for Proposal.

Attachments:

- Vancouver Landfill Site Safety Orientation/Agreement
- Transfer & Landfill Operations (TLO) Contractor Safety Absolutes
- Owner's List of Known Workplace Hazards
- Landfill Gas Migration and Emissions Monitoring Program: 2020 Second Quarter Report