Quality Assurance/Quality Control Plan for the Long Term Monitoring Program (2018)

Summary
As part of its commitment to stakeholders and consistent with Step 10 of the 10-step approach for management of contaminated sites, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has committed to implement a long term monitoring (LTM) plan for each remediated site for which permanent structures remain (i.e., landfills, tailings, etc.). The LTM program is developed in accordance with the Abandoned Military Site Remediation Protocol (AMSRP) (INAC, 2009), and is divided into 3 phases: Phase I (Years 1, 3, and 5); Phase II (Years 7, 10, 15, and 25); and Phase III (beyond Year 25). LTM activities include visual monitoring of the waste facility and surrounding areas; natural environment monitoring (as detailed in the site-specific LTM Plans); soil sampling (limited to locations where vegetation stress, seepage or staining has been identified), water samples (groundwater and/or surface water), and ground temperature (where permafrost aggradation is required).

Purpose

The purpose of LTM at these sites is to minimize potential impacts to human and environmental health. The purpose of this Quality Assurance/Quality Control (QA/QC) plan is to fulfill water licence requirements and to validate the reliability of the LTM data collected, which is being used to draw conclusions about the potential impact of these structures on environmental and/or human health.

LTM Sites

This plan is prepared for remediated sites currently in the LTM program. The LTM sites and corresponding water licences are as follows:

1. CAM-F Sarcpa Lake (1BR-SAR1727)
2. FOX-C Ekalugad Fjord (1BR-EKA1734)
3. Roberts Bay (1BR-ROB1536)
4. Cape Christian (1BR-LOR1727)
5. PIN-B Clifton Point (1BR-CLI1727)
6. CAM-D Simpson Lake (1BR-SIM1520)
7. PIN-D Ross Point (1BR-ROS1727)
8. Ennadai Lake (1BR-ELR1829)

Site descriptions for the above LTM sites can be found in their water licence and site-specific LTM Plans.

QA/QC Measures

The QA program is a system of documented checks called QC procedures that validate the reliability of the data collected under the LTM program. These include:

- Proper documentation of all aspects of the sampling program, which could potentially cause sampling bias
- Monitoring equipment is decontaminated prior to initial use and between samples with a laboratory grade detergent

- Disposable tubing (and bailers if applicable) is dedicated to individual monitoring wells
- Disposable nitrile gloves are worn during all sampling procedures and discarded between sampling points to reduce the potential for cross-contamination
- Samples are collected, preserved, transported, and stored using well documented procedures and in accordance with methods prescribed in the current addition of "Standard Methods for the Examination of Water and Wastewater"
- Sample analysis is performed in a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory
- QA/QC is consistent with CALA regulations and guidelines
- The Third Party retained by CIRNAC to conduct LTM has well-defined QA/QC protocols, including documented Standing Operating Procedures (SOPs) for soil sampling, groundwater sampling, sample storage, shipping and handling as well as the collection of duplicates, field blanks, and travel blanks.
- Personnel are properly trained and well acquainted with the procedures
- A minimum of 20% of the collected soil and groundwater samples submitted to the laboratory will be field duplicates and the relative percent difference (RPD) of duplicates will be calculated to evaluate the sample result variability
- Additional standard QA/QC procedures routinely used by the laboratory include method banks, certified reference materials, method spikes, duplicates, surrogates, and laboratory control samples
- Field blind duplicates are collected and analyzed to verify the precision of the results
- Field blanks are used to evaluate for contamination resulting from exposure to the environment
- Travel blanks help identify the presence of container or preservative contamination and could be potentially used if there is concern about the integrity of the samples
- To meet the sample holding time requirements, all samples are shipped to the laboratory as soon as possible following the sampling. Samples are immediately transferred and stored in coolers with ice packs to hold the sample temperature at approximately 4°C
- Site-specific QA/QC plans are prepared for each LTM event, as procedures could vary by site and the SOPs of the Third Party conducting the site visit. A summary of the QA/QC measures used for each LTM event can be found in LTM monitoring reports submitted with the respective annual reports, as required under their respective water licence.