CAM-2, Gladman Point DEW Line Site

Quality Assurance / Quality Control Procedures for Analysis

Nunavut Water Board issued Licence:
1BR-GLA0308
Pursuant to Condition Part K, Item 8
July 2015

Quality Assurance/Quality Control Procedures for Analyses

1. General: The consultant will ensure that sampling data and analytical results are interpretable and meaningful through a rigorous conformance to analytical Quality Assurance and Quality Control (QA/QC). As a minimum, the Consultant shall ensure that the analytical QA/QC procedures outlined in this Annex are followed.

1.1 Laboratories must have achieved proficiency certification for ISO 17025 certification, which is typically consistent with the Canadian Association for Laboratory Accreditation (CALA) or Programme d'Accréditation des Laboratoires d'Analyse (PALA) in Quebec for the analyses to be conducted.

1.2 The consultant must incorporate a series of external checks in the order to assess the performance of the analytical laboratory. As a minimum, these shall include:

1.2.1 Use of an appropriate coding system for submitting samples to the analytical laboratory to ensure that information concerning location or expected concentration is unavailable to the analyst. A chain of custody will be established to trace the movement and handling of samples from the field to their final destinations.

1.2.2 Submission of blind field duplicates for at least 10% of samples to the Consultant's Laboratory. The field duplicate shall be collected from a relatively homogeneous substrate such that the expected composition of the sample and its duplicate are the same. When analyte concentrations vary more than 30%, the Consultant must justify or rationalize each exceedance on a case-by-case basis.

1.2.3 Submission of blind field duplicates for an additional 10% of soil samples to a second Consultant's Laboratory for an inter-laboratory comparison. The field duplicate shall be collected from a relatively homogeneous substrate such that the expected composition of the sample and its duplicate are the same.

1.3 The analytical laboratory must incorporate and report the results of internal checks used to assess the reliability, accuracy and reproducibility of the data. As a minimum the checks shall include:

1.4.1 Analyses of samples in batches of no more than eight to ten samples for organic substances, or nor more than 15 to 18 samples for inorganic elements.

1.4.2 Each batch will include the analyses of one sample of standard or certified reference material, or spiked standards where these are not available.

.1 Each batch will include at least one analytical (lab) duplicate; and

.2 Each batch will include at least one analytical blank.

1.4.3 Acceptable QA performances are as follows:

.1 For organic analyses, all analytical duplicates are to exhibit less than 20% relative standard deviation on average, and no more than 30% for a specific set.

.2 For inorganic elements, all analytical duplicates must exhibit less than 15% relative standard deviation on average, and no more than 20% for a specific set

.3 Analytical results for all reference materials or spiked standards must be within 10% of certified values for inorganic elements or 30% of certified values for organic compounds

.4 All analytical blanks should be below the detection limits used for the analyses.

1.5 Review of the analytical data shall take place in concert with external QA checks (field duplicates) and internal checks (analytical duplicates, reference materials, spiked standards, analytical

blanks) and shall be reported in the Monitoring Report. Internal laboratory QA data must also be included within the Monitoring Report.