IDENTIFICATION

Department	Position Title	
Environment and Climate Change	Quality Assurance Officer	
Position Number	**Community**	**Division/Region**
23-14273	Yellowknife	Water Monitoring and Stewardship/HQ

PURPOSE OF THE POSITION

The Quality Assurance Officer (QA Officer) is responsible for planning, monitoring and managing the Quality Management System (QMS), and providing expert advice to laboratory staff and clients. The QA Officer also provides professional laboratory support across all sections within the TEL and quality control and quality assurance (QA and QC) of data produced by each of individual sections in the Taiga Environmental Laboratory (TEL).

SCOPE

Located in Yellowknife and reporting to the Manager, Taiga Environmental Laboratory, the Quality Assurance Officer is accountable to manage the technical aspects of the Quality Management System at the Taiga Environmental Laboratory (TEL).

The Taiga Environmental Laboratory is the only full-service environmental analytical laboratory in northern Canada. The TEL performs a wide range of chemical and molecular and microbiological analysis on water (freshwater, ground water, drinking water, industrial effluents, and sewage). Significantly, TEL is accredited by the Canadian Association for Laboratory Accreditation (CALA), and the scope of accreditation includes 248 individual parameters in four distinct sections: Inorganics, Organics, Trace Metals, and Molecular/Microbiology. In addition to standard services, a variety of special services are also offered, including rush sample services, scientific training, QA/QC plans, and public education.

The TEL provides approximately $1.4 million of environmental testing services each year to the following clients:

- internal Government of Northwest Territories (GNWT) departments including Environment and Climate Change (ECC), Health and Social Services (HSS), and Municipal and Community Affairs (MACA);

- federal government agencies, including Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and Environment and Climate Change Canada (ECCC);
- Indigenous governments and community/municipal governments;
- industry (e.g., mines), consultants, and other local businesses; and
- researchers from academic institutions working in the north.

The TEL performs over 40,000 tests a year; analytical results provided by the TEL are used by its clients to:

- ensure the safety of drinking water in all NWT communities;
- track pathogen levels (e.g., SARS-CoV-2) in wastewater to inform public health actions;
- evaluate trends in environmental contaminant levels in freshwater from across the NWT;
- ensure regulatory compliance of communities and government with the *Public Health Act* and *Water Supply System Regulations*; and
- ensure regulatory compliance of communities, remediation projects, and industries with the conditions of their water licences under the *NWT Waters Act* and *Mackenzie Valley Resources Management Act*.

The QA Officer works within a legislative, regulatory and policy framework that includes: the *Mackenzie Valley Resource Management Act* and its Regulations, the *NWT Waters Act* and its regulations, the NWT *Public Safety Act* and its regulations.

The QA Officer ensures that test results comply with the criteria and standards required to maintain continued certification with the Canadian Association for Laboratory Accreditation and to ensure that the TEL's clients have the test results necessary to manage public health, manage environmental health, and comply with regulatory requirements in the NWT.

The QA Officer has overall responsibility of the technical aspects of the Quality Management System. This includes implementing a Quality Management System that:

- Is understood, accepted and documented, and includes a Quality Assurance Manual, all Procedures, Methods, and Forms.
- Has incorporated adequate review and audit.
- Has appropriate internal quality control.
- Test methods are validated and incorporate adequate quality control.
- Ensures that all equipment, supplies and services are functioning properly and/or meet required specifications.
- Ensures that test results are supported by a traceable system of measurement and are accorded uncertainties appropriate to requirements.

- Ensures sample management that incorporates adequate procedures for the security, recording, calculation, validation, authorization, transmittal, storage and disposal of all test data and related records.

The QA Officer has responsibility for quality of data produced by each of the individual sections of the TEL. This role performs quality audits of the laboratory (and personnel in the sections being audited) for compliance with ISO/IEC 17025, "General requirements for the competence of testing and calibration laboratories". The incumbent is responsible to ensure that the TEL is participating in the required proficiency testing programs. All of this is required to maintain the CALA accreditation. The QA Officer provides advice on analytical methodologies, technologies, sample collection, data analysis, and QA/QC, for environmental monitoring and regulatory activities to clients.

The QA Officer provides policy advice and recommendations about changes to the laboratory program that are required to respond to changing international standards, circumstances and priorities, and the direction of the laboratory program.

The QA Officer is responsible for the review and approval of QA/QC Plans that are part of the water license requirements of the Mackenzie Valley Land and Water Boards. The QA Officer must analyze and evaluate the QA practices of the TEL and other agencies then provide advice on how current practices may be improved or how practices used elsewhere may be adapted to the TEL.

The QA Officer regularly works with colleagues within the TEL, within the Department, other GNWT Departments (e.g., Municipal and Community Affairs, Health and Social Services, Infrastructure, NT Geological Service), Federal Departments (e.g., Environment and Climate Change Canada, Crown-Indigenous Relations and Northern Affairs), Indigenous Governments, and the private sector (e.g., resource industries, consultants).

The QA Officer will be designated as an Analyst under the *NWT Waters Act* in order to certify and analyze legal samples. This may require the incumbent to testify in court.

The QA Officer has significant latitude provided that best practices in quality management and scientific methodology are compiled with and meets the requirements of the TEL, CALA and ISO/IEC 17025.

RESPONSIBILITIES

1. **Develops, plans, maintains, and audits all laboratory related quality assurance activities to ensure that TEL maintains continuous certification with the CALA.**
   - Develops, documents and maintains TEL's Quality Management System (QMS).
   - Conducts audits of existing analytical procedures.

- Develops quality control practices for new and modified analytical procedures.
- Ensures TEL staff are familiar with and implement the Quality Management System.
- Ensures TEL staff perform the proficiency tests required by CALA and reports the results on the schedule required by CALA.
- Works with TEL staff to obtain CALA certification for new analytical methods.
- Reviews and approves the Quality Assurance Manual as well as all TEL methods and procedures.
- Coordinates the biennial CALA audit, ensuring TEL staff are fully prepared and that all the required documentation is current.
- Provides advice and recommendations to the Manager about changes to laboratory operations that are required to respond to changing national or international standards and best practices.

2. **Reviews and approves analytical results generated by TEL staff to ensure that TEL clients have the accurate results required to make decisions about public health, regulatory compliance, and environmental contamination levels.**
   - Reviews and verifies sample result worksheets submitted by staff to ensure quality control data meets TEL standards.
   - Authorizes the release of test results to clients.
   - Monitors for trends in quality control data and, when necessary, works with staff to develop and implement corrective actions.
   - Ensures staff have the appropriate skills to carry out assigned activities; this includes training or mentoring laboratory technologists as needed.
   - Ensures that quality control data in the Laboratory Information Management System is current.

3. **Provides scientific and professional advice to clients as well as to external parties, including the Land and Water Boards of the Mackenzie Valley, the Inuvialuit Water Board, and to proponents seeking regulatory permits under the *NWT Waters Act* and *Regulations*.**
   - Evaluates and approves or rejects QA/QC plans required by water licences under the *NWT Waters Act*.
   - Provides specific advice on the most appropriate analytical methods to require in the Surveillance Network Programs prescribed in water licences granted under the *NWT Waters Act*.
   - Provides professional advice on water and soil sampling, related to data analysis, quality assurance/quality control, sample collection, and analytical methodologies, to departmental staff, scientists, regulatory officers, and clients.
   - Responds to requests and questions from clients to ensure lab results will be interpreted correctly and used appropriately in decision-making.

- Acts at a designated Analyst under the *NWT Waters Act*; this includes processing legal samples submitted as part of the GNWT's enforcement of water licences issued under the Act.

4. **Assists the Manager in developing and implementing TEL workplans, budgets, capital expenditures, and human resources plans.**
   - Provides information and advice to the Manager on operational and capital expenditures needed to ensure TEL maintains its CALA certification.
   - Suggests improvements to workplans, processes, or staff assignments to ensure the objectives of the Quality Management System are met.
   - Investigates complaints from clients and provides an acceptable resolution or proposed a plan of action towards and acceptable resolution.
   - Works with staff and the Manager to implement complaint resolutions.
   - Revises the Quality Management System, if necessary, to avoid similar complaints in future.

5. **Provides support for all sections of the lab on an as-needed basis to ensure standard or rush turnaround times can be met during the peak summer season or whenever there are staff shortages.**
   - Participates in cross-training opportunities to assist with sample reception and for analysis of trace metals, inorganics, microbiology, molecular biology and/or organics.
   - At the direction of the Manager, analyzes samples or provides other support to analysts in other sections.
   - Acts as a supervisor in the context of the *NWT Safety Act*.

WORKING CONDITIONS

Physical Demands

Approximately 70% of the time, the incumbent is performing work in an office environment; the other 30% of the time is spent in a laboratory environment.

When working in the laboratory, the position is required to stand for long periods when performing lab work (i.e., up to 2.5 hours per day with standard breaks), typically four to five days per week or more when overtime is required; on average, the incumbent will be either standing or walking for 30% of each working day. As well, the position moves and/or lifts heavy cylinders (up to 25 kg), coolers, and carts daily.

Environmental Conditions

Approximately 70% of the time, the incumbent is performing work in an office environment; the other 30% of the time is spent in a laboratory environment.

When working in the laboratory, the work is performed in an environment where there is constant exposure to dust, noise and vibrations from freezers, fans, lab instruments and equipment, and daily exposure to substances that require special handling (e.g., using WHMIS) including noxious odors, toxic and corrosive chemicals (including known carcinogens), pathogens (human and animal excrement) and various forms of radiation.

The requirement to use chemical auto-analyzers, hot plates, block digesters, fume hoods, atomic absorption spectrometers, and inductively-coupled argon plasma spectrometers presents exposure to heat, ultraviolet, radio frequency and electromagnetic radiation during normal operation approximately five days a week (or more often during staff shortages).

Due to the work environment, protective clothing (e.g., lab coats, safety eye wear, gloves) and proper use of protective equipment (e.g. fume hood) are required for work in the laboratory at all times. Some sections of the laboratory are not air-conditioned and, because of the presence of running laboratory equipment, can reach temperatures of up to 28^{o}C between the months of April and October.

Sensory Demands

Approximately 70% of the time, the incumbent is performing work in an office environment; the other 30% of the time is spent in a laboratory environment.

The work requires visual acuity as well as precise manual dexterity and hand-eye coordination to prepare samples for testing, to handle fragile laboratory equipment parts and glassware, and to calibrate and operate a variety of laboratory equipment. The preparation of samples also requires the ability to make the appropriate motor responses at the appropriate time, and with speed to maximize efficiency.

Visual acuity and tactile sensitivity are needed to assess very subtle sample conditions based on overall visual appearance (colour, shade, intensity, clarity) and temperature.

Sensory demands occur approximately 75% of the time.

Mental Demands

The position is subject to tight timelines, fast work pace, and competing priorities, with seasonal increases in volume of work, particularly May to October, when the lab receives at least 80% of its annual sample load; during this time, staff are frequently required to work overtime (nights and weekends) to meet demands.

There is a requirement to maintain constant mental vigilance with respect to safety protocols around corrosive, damaging toxins and pathogens.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of the principles, theories, methods, techniques and practices of microbiology, molecular biology, chemistry, and environmental science.
- Knowledge of the concepts, methods, and techniques of health and safety practices and process related to working with, transporting, and storing toxic/corrosive chemicals and bio-hazardous materials.
- Knowledge of chemicals or materials should include toxicology, safe transportation, spillage, disposal, environmental hazards and mitigations, personal protection equipment, routes of exposure, and effects of short- and long-term or repeated exposure.
- Knowledge of International Standards Organization and Canadian Association for Laboratory Accreditation guidelines, standards and quality assurance/quality control theories and principles.
- Knowledge of the use, care and maintenance of analytical equipment.
- Knowledge in sterility practices, good hygiene, and ultra-cleaning techniques.
- Knowledge of and ability to comply with legislation that governs labour code safety requirements, occupational health and safety requirements and Workplace Hazardous Materials Information Systems.
- Knowledge of legislation applicable to public health and the protection of water quality and quantity.
- Technical writing skills for the creating and editing of laboratory methods and procedures.
- Interpersonal skills to effectively communicate both verbally and in writing.
- Organizational and time management skills, including the ability to plan, coordinate, prioritize activities, and meet deadlines.
- Ability to use manual and modern instrumentation methods in water analysis.
- Ability to organize and conduct chemical analysis of environmental samples according to set procedure.
- Ability to safely handle pathogenic or carcinogenic material, compressed gas, and organic solvents.
- Ability to develop and implement new analytical testing methods or processes.
- Ability to quickly recognize atypical laboratory findings and initiate the appropriate actions.
- Ability to solve problems through independent conceptual thinking.
- Ability to work cooperatively as a team member with the ability to motivate staff and get them to work together as a team.
- Ability to commit to actively upholding and consistently practicing personal diversity, inclusion and cultural awareness, as well as safety and sensitivity approaches in the workplace.

Typically, the above qualifications would be attained by:

A Bachelor's degree in a relevant field of science such as chemistry, biology, or environmental science. Applicants must also have at least five (5) years of laboratory experience analyzing water and wastewater samples in addition to experience obtained during a degree or diploma program. Experience must include at least two (2) years of supervisory experience.

The incumbent must be able to obtain and maintain valid certifications for First Aid, Supervisor Safety, Workplace Hazardous Materials Information Systems, fire extinguisher use, and any other certifications specific to quality control/quality assurance.

Equivalent combinations of education and experience will be considered.

ADDITIONAL REQUIREMENTS

Position Security (check one)
☒ No criminal records check required
☐ Position of Trust – criminal records check required
☐ Highly sensitive position – requires verification of identity and a criminal records check

French language (check one if applicable)

☐ French required (must identify required level below)

Level required for this Designated Position is:

ORAL EXPRESSION AND COMPREHENSION
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
READING COMPREHENSION:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
WRITING SKILLS:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐

☐ French preferred

Indigenous language: Select language
☐ Required
☐ Preferred