Northwest Territories

IDENTIFICATION

Department	Position Title	
Industry Tourism and Investment	Surficial Geologist	
Position Number(s)	**Community(s)**	**Division/Region(s)**
63-14539	Yellowknife	NWT Geoscience Office

PURPOSE OF THE POSITION

The Surficial Geologist leads or contributes to surficial geological and geochemical research and data management at the Northwest Territories Geoscience Office. These activities continually improve the public geoscience knowledge of the Northwest Territories surficial geological environment.

SCOPE

Located in Yellowknife, the Northwest Territories Geoscience Office (NTGO) is a Division of the Department of Industry, Tourism and Investment, Government of the Northwest Territories.

NTGO provides expertise on the geology and mineral and petroleum resources of the Northwest Territories (NWT). It carries out mineral- and energy-related studies and non-renewable resource assessments that support resource exploration, land use and conservation planning, and a variety of other initiatives. NTGO researches, compiles, manages, and makes available a variety of geoscientific data about the NWT surface and subsurface. It also provides geomatics and information technology expertise, and public education and outreach services.

The Surficial Geologist reports to the Manager of Mineral Deposits and Bedrock Mapping. The incumbent collaborates with NTGO colleagues, other government departments and agencies, university researchers, industry workers, Aboriginal groups, and community residents. Much of this collaboration focuses on geological research-related topics.

The incumbent is responsible for all aspects of surficial geological studies at the NTGO with a focus on Quaternary geoscience. Increasingly, stakeholders are recognizing the need for enhanced knowledge of NWT Quaternary geology in order to better assess resource potential, locate mineral deposits, identify areas of economically viable borrow

materials, understand permafrost and other environmental changes, and plan for sustainable economic development. The Surficial Geologist's main focus is to contribute geoscience knowledge and data that assists mineral exploration and supports the planning and maintenance of sustainable infrastructure. However the overall priority is to research and communicate surficial geological and geochemical information that contributes to informed decision making by all NTGO clients, who collectively represent a broad range of interests.

RESPONSIBILITIES

1. **Conducts professional geoscience studies of surficial materials through office- and field-based activities.**
   - Develops project proposals, budgets and timelines.
   - Evaluates and pursues opportunities for external research funding.
   - Plans and implements research projects that can vary from small independent studies to large, collaborative multidisciplinary programs.
   - Initiates and leads projects of strategic importance that can intersect a range of topics including Quaternary geology, glacial landforms and processes, till geochemistry, diamond and metallic mineral exploration targeting, geohazards, borrow potential, permafrost, hydrology, ecology, and infrastructure planning.
   - Arranges for the timely acquisition of permits and licences for field-based projects and consults with land managers and communities to share information and obtain required clearances.
   - Assists in preparing service contracts and purchase orders.
   - Organizes and oversees field logistics.
   - Works with NTGO colleagues and external partners to carry out research projects.
   - Formally or informally supervises project personnel who are NTGO employees, summer students, contractors, research partners, and volunteers.
   - Collaborates with GIS technical staff on digital data acquisition strategies.
   - Tracks and accounts for all project-related expenses.
   - Completes research activities on time and within budget.
   - Collaborates with universities to facilitate, and in some cases oversee, the field component of post-doctoral, graduate and undergraduate research.
   - Ensures cost-effective, efficient and safe work practices in the field and office.
   - Monitors the storage and maintenance of field equipment, identifies requirements for equipment acquisition and orders new equipment and supplies.
   - Contributes to multiple projects that may run concurrently.
   - Contributes to strategic decisions on the surficial geological and geochemical data needs and priorities of the NTGO.

2. **Publishes and publicizes the results of surficial geological studies and data compilations in departmental publications and external scientific journals.**
   - Authors or co-authors reports, figures, maps, web pages, books, digital atlases and other materials to meet project goals and deadlines. Products are of high technical quality and suitable for publication by the NTGO or in refereed scientific journals.
   - Assembles and presents research results (both oral and poster presentations) at the Yellowknife Geoscience Forum and other professional scientific meetings and industry conferences.
   - Organizes and conducts technical sessions, workshops and training exercises as required, including activities associated with the annual Yellowknife Geoscience Forum.
   - Maintains regular contact with colleagues and clients to ensure constant critical feedback of work underway and a high technical quality of completed work.
   - Maintains communication with others that help to identify new research and funding opportunities.

3. **Develops long-term goals and projects that address surficial geology information gaps linked to mineral exploration, granular resources, land use planning, environmental geoscience, surface and ground water, and terrain hazards.**

4. **Develops plans to efficiently and effectively acquire surficial geological information, including the development of optimized strategies for data collection, logistical planning, and use of seasonal assistants.**

5. **Maintains scientific liaisons with other researchers and agencies, including co-managing projects with external geoscience collaborators.**

6. **Provides information and advice to a wide range of stakeholders**
   - Provides constructive scientific reviews and advice as part of the NTGO peer-review publication process.
   - Contributes to briefing materials, policy and decision papers, and other government documents and requests for information as required.
   - Responds to client requests for assistance in accessing and interpreting surficial geological data.
   - Prepares non-technical materials that communicate project findings to non-specialists, including promotional and educational materials.
   - Conducts or contributes to community information sessions and other outreach and public education activities.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of the scientific principles and techniques behind surficial geoscience and related disciplines, and the application of this knowledge to mineral exploration, assessment of granular resources and terrain hazards, and other land-based activities.

- Knowledge of Quaternary geoscience in Canada.
- Knowledge of surficial mapping techniques and practices and drift prospecting methods including surficial geochemical studies.
- Understanding of government strategic priorities and the role of surficial geoscience in contributing to government objectives.
- Knowledge of the roles and surficial geoscience needs of other government departments and agencies.
- Knowledge of desktop computer equipment and software including GIS software.
- Knowledge of basic techniques of wilderness survival, first aid, aircraft safety, water craft and land vehicle operation and firearms operation in order to ensure safety and well-being of field crews and successful conduct of field activities in remote areas.
- Knowledge of scientific research methods and statistical analysis techniques.
- Knowledge of the legal and ethical obligations of the geological profession.
- Familiarity with the *NWT Scientists Act*, the *Mackenzie Valley Resource Management Act*, the *Firearms Act*, and the *Mine Health and Safety Act* in order to permit field-based research and ensure safe field operations.

Skills:

- Project management, organizational, and logistical skills to effectively manage and participate in independent and collaborative research projects both in the field and office.
- Analytical skills to assess scientific data and incorporate it in new research.
- Skills in scientific writing, critical peer review, editing of scientific reports, and speaking in an appropriate, professional manner to colleagues and the public.
- Supervisory skills to oversee contractors, other staff, and field assistants.
- Field skills that are grounded in best practices in surficial geoscience research and mapping.
- Presentation skills that result in effective communication both with scientific peers and laypersons.

Abilities:

- Ability to work effectively both independently and in collaboration with other professionals in a team situation.
- Ability to develop new interpretations and test hypotheses by compiling, synthesizing and integrating diverse geoscience datasets.
- Ability to conceptualize, design, carry out, and report on surficial geoscience research.
- Ability to complete projects on time and within budget, often in conjunction with the performance of other duties.
- Ability to produce scientific reports of high technical quality suitable for publishing in external journals or through the NTGO publication process.
- Ability to efficiently use computer hardware and software for data collection, research, and presentation purposes (e.g. Microsoft Word, Excel, PowerPoint, CorelDRAW, Illustrator, ArcGIS, specialized modelling software).

- Ability to clearly and effectively communicate scientific information in visual, oral, and written formats and at an appropriate level.
- Ability to listen and to exercise tact and diplomacy that are appropriate to the situation.

Typically, the above qualifications would be attained by:

These knowledge, skills, and abilities are typically obtained by completion of a Master of Science degree with a specialization in surficial geological or geochemical studies of formerly glaciated landscapes, and a minimum of three years' work experience in industry, academia, or a government geoscience agency.

The incumbent must be eligible for registration in the NWT and Nunavut Association of Professional Engineers and Geoscientists (NAPEG) as a Professional Geologist.

WORKING CONDITIONS

(Working Conditions identify the ***unusual and unavoidable***, externally imposed conditions under which the work must be performed and which create hardship for the incumbent.)

Physical Demands

Normal office environment for most of the time.

Fieldwork is physically taxing and the logistics of accommodation in the field (sleeping arrangements, travel arrangements, meals, etc.) can be demanding.

Field activities may be conducted from isolated camps. Camp quality is variable but can include overcrowding, dirty, dusty or wet conditions, exposure to insects, and extreme weather conditions.

Travel by fixed-wing or rotary aircraft, road vehicles, and boats results in noise, confinement, fatigue, risk to life, and may take place in poor weather conditions.

Field activities present the risk of slips and falls, transportation-related accidents, animal attacks, drowning, burns, impacts, equipment failure, and environmental hazards associated with bad weather and rough terrain. Injury can result from the actions and decisions of other workers. Insect bites, fatigue, and minor injuries (cuts, abrasions, sore muscles) are common. Serious incidents are rare but unpredictable and can result in illness, serious injury, or death.

Environmental Conditions

Normal office environment for most of the time.

Field activities may be conducted from isolated camps. Camp quality is variable but can include overcrowding, dirty, dusty or wet conditions, exposure to insects, and extreme weather conditions.

Travel by fixed-wing or rotary aircraft, road vehicles, and boats results in noise, confinement, fatigue, risk to life, and may take place in poor weather conditions.

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Sensory Demands

Normal office environment outside of field season.

Field work requires a state of heightened alertness to ensure a safe working environment.

Mental Demands

Multiple concurrent and conflicting tasks, leading to conflicting work priorities and time pressures. Field activities can include periods of prolonged isolation with one or more individuals, which may lead to mild or moderate psychological discomfort.

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