IDENTIFICATION

Department	Position Title	
Industry, Tourism and Investment	Surficial Geologist	
Position Number	**Community**	**Division/Region**
14539	Yellowknife	Northwest Territories Geological Survey / HQ

PURPOSE OF THE POSITION

The Surficial Geologist provides authoritative public geoscience by designing and executing surficial geological mapping and terrain analysis programs for the Northwest Territories Geological Survey (NTGS). The incumbent plans and conducts field and analytical programs; generates defensible datasets and interpretations of glacial history, landscape processes, and unconsolidated geological materials; and translates results for internal and external clients to inform mineral exploration and development, geohazard characterization, aggregate resource identification, and the regulatory and land-use planning systems in which the mineral industry and infrastructure development operate. Operating in a context of economic constraint and competing policy objectives, the position aligns scientific work with departmental priorities, ensures scientific integrity, and meets the needs of stakeholders across regulatory, infrastructure, and economic development functions.

SCOPE

Located in Yellowknife and reporting to the Manager, Mapping and Collections, the Surficial Geologist is a professional geoscientist responsible for planning, conducting, and reporting on surficial geology mapping, drift-prospecting and stream sediment studies, and glacial-process research that underpins terrain characterization, granular resource evaluation, and geochemical exploration within the Northwest Territories Geological Survey (NTGS). The position exercises professional autonomy over technical project design and execution within the policies, guidelines, and priorities established by the Manager, the NTGS, and the Government of the Northwest Territories (GNWT).

The resource sector is a foundational contributor to the Northwest Territories' (NWT) economy and socio-economic well-being, with direct and indirect economic impacts that account for up to a third of the territory's Gross Domestic Product. It is essential that these resources are responsibly managed to ensure that northerners receive maximum benefits from the sector

while negative impacts are minimized and effectively mitigated. Geoscience data produced by the NTGS underpins this objective: it drives mineral exploration investment, informs land-use planning, infrastructure routing and design, and environmental assessment, supports Indigenous government processes, and sustains broader public-policy priorities for economic sustainability and responsible resource development.

Surficial geology mapping, terrain characterization, and geohazard identification projects are critical to advancing knowledge of the NWT's mineral potential and the impact of climate change on infrastructure and environmental integrity. Comprehensive surficial geology and terrain characterization — including glacial process knowledge, drift-geochemistry data, terrain suitability assessment, and geohazard identification reduces uncertainty in public and private decision-making and provides a scientific basis upon which governments can plan development projects and industry can plan exploration investments in the NWT. These data also deliver significant economic returns by reducing risk for the private sector and informing the allocation of limited public resources—supporting government decision-making that competes for attention alongside demands for health care, education, and infrastructure. The Surficial Geologist's work contributes directly to these outcomes by improving knowledge of surficial materials, glacial processes, and terrain conditions that inform mineral exploration strategies (particularly drift prospecting for kimberlite and metal deposits), infrastructure planning, granular resource evaluation, environmental stewardship, and public safety.

The Surficial Geologist independently plans and leads one to three concurrent geoscience projects, each typically lasting two to five years. Core responsibilities include co-developing project scopes, timelines, and budgets with the Manager; conducting field-based surficial geology mapping, till sampling, and stratigraphic analysis; applying drift-prospecting techniques and geochemical methods to glacial sediments; characterizing terrain for land-use and infrastructure applications; monitoring risks and hazards related to terrain conditions; producing and quality-controlling geoscience datasets for public release; and preparing peer-reviewed scientific publications, public-facing government reports, maps, and presentations that meet NTGS standards for scientific rigour and client utility. The position contributes to securing external funding and supports collaborative arrangements with academic, industry, and governmental partners, including through, negotiating of contribution agreements and participation in intergovernmental coordination mechanisms such as the Intergovernmental Geoscience Accord and the Pan-Canadian Geoscience Strategy.

The Surficial Geologist supports regulatory functions in three capacities. First, the position provides authoritative geoscientific evaluation of legislated submissions, such as work-assessment, that include surficial geology, terrain, or geochemistry components, evaluating the technical content of surficial-geoscience data, ensuring that industry submissions meet statutory requirements and providing technical recommendations to those with approval authority. Second, as a proponent of field programs, the position ensures that its own field activities comply with applicable legislation governing safety, conduct of scientific activities,

and professional practice accreditation, integrating regulatory compliance and stakeholder engagement into project design, permitting, and execution. Third, the surficial geology products of the position provide expert information to external regulatory boards and agencies — including those operating under the Mackenzie Valley Resource Management Act — supplying terrain and surficial-materials data that supports land-use planning, infrastructure corridor assessment, public safety and environmental stewardship. The position's custodianship of geological materials and associated metadata submitted under the Mineral Resource Act (MRA) provides a regulated interface between industry proponents and the public geoscience record.

The Surficial Geologist collaborates with colleagues within and between NTGS work units, mentors junior staff and students engaged in field programs, and contributes to a safe, supportive, and inclusive workplace. The position may provide day-to-day technical guidance to field assistants and project students but does not hold formal supervisory authority over professional staff. The position often serves as the project safety officer and ensures that field operations adhere to health-and-safety plans and safe work practices appropriate for remote northern environments.

The position maintains an active professional profile through publication in peer-reviewed journals and geological survey publications, presentation at national and international Quaternary science and surficial-geology conferences, participation in collaborative surficial-mapping and drift-prospecting research networks (including other geological survey organizations and university partners), and professional registration as a geoscientist, contributing to the credibility and reputation of government science in the NWT.

NTGS geoscientists are core contributors to the annual Yellowknife Geoscience Forum and play a central role in shaping the credibility of the conference's technical program. They provide authoritative geoscience knowledge, present current research, and help translate technical findings into information that is directly useful for exploration companies, Indigenous governments, regulators, educators, and northern communities. Their participation ensures the Forum, the NWT's largest annual conference, remains grounded in the realities of northern priorities—supporting responsible resource development, improved land-use decision-making, and a stronger shared understanding of the NWT's mineral potential. The Surficial Geologist may also represent the NTGS at national and international technical and intergovernmental forums relevant to their area of expertise and participates in the broader land and resource management regime grounded in settled land-claim and self-government agreements, particularly as these address land-use planning, environmental assessment, and economic measures under land claims.

Overall, the Surficial Geologist's portfolio combines scientific excellence with applied service delivery, regulatory support, and collaborative partnership to advance responsible resource development, sustain economic opportunity, support land-use decisions, and maintain the long-term credibility of government geoscience in the Northwest Territories.

RESPONSIBILITIES

1. **Conducts surficial geology mapping and associated research and surveys to generate authoritative knowledge of NWT Quaternary history, terrain geohazards, and granular resources.**
   - Under the direction of the manager, co-develops projects and annual work plans by integrating emerging scientific advances, intergovernmental responsibilities, client needs, organizational objectives, and proposing initiatives and resource allocation to maximize scientific relevance and organizational impact.
   - Leads terrain and surficial geology mapping projects and Quaternary geology projects of strategic importance such as research projects, sediment surveys, modelling and monitoring activities to advance knowledge of landscape evolution; till geochemistry; mineral exploration targeting; geohazards; granular resources; and processes related to geotechnical, permafrost, hydrology, and ecology conditions.
   - Manages projects including identifying and managing project budgets, staffing needs, permit requirements, equipment and instrumentation, contracts, and logistical planning.
   - Authors and co-authors the results of surficial geological studies, maps, and data compilations in NTGS publications and external scientific journals.
   - Takes responsibility for the quality, integrity, and release readiness of assigned data, scientific publications, and information products by adhering to standards and timelines, participating in peer-reviews, and ensuring products are defensible, accessible, and fit for public and stakeholder use.
   - Oversees the hiring of seasonal staff and project work duties completed by the project team including NTGS staff, contractors, project partners, and university students.
   - Builds and sustains scientific collaborations with geological surveys, governments, universities, funding agencies, and the private sector by negotiating and administering tasks under MOUs and contribution agreements to achieve shared outcomes.
   - Builds long-term scientific capacity and organizational credibility by mentoring, coaching, guiding professional staff, and supporting collaboration within and between the NTGS work units, co-supervising graduate student research and contributing expert authorship, peer review, and thought leadership.

2. **Provides geology expertise to support the administration of geoscience-related provisions of mineral resource legislation.**
   - Provides expert geological assessment in relation to drill core metadata, submitted in compliance with legislation and communicates technical findings to decision makers.
   - Reviews the surficial geology and scientific adequacy of industry submissions under mineral resource legislation, drawing on expertise to evaluate the quality, completeness and validity of submitted information.

- Identifies and flags geoscience issues in submissions and works with clients on the timely resolution of issues.
- Provides expert technical advice on the application of the Mineral Resources Act to unconsolidated resources.
- Contributes expertise to the development of technical standards, guidelines and procedures for geoscience submissions under the MRA.

3. **Translates, communicates, and applies surficial geology and terrain expertise to support regulatory, land use planning, infrastructure, and public decision-making**
   - Provides trusted technical advice that integrates scientific evidence with an understanding of government mandates and decision-making processes relevant to mineral exploration, terrain geohazards, community and territorial infrastructure development, and the broader regulatory regime (land-use planning, land and water regulation, conservation planning, and environmental assessment).
   - Responds to requests for geological information and interpretation from the mineral industry, Indigenous Organizations, co-management bodies, GNWT departments, Non-Government Organizations and the public.
   - Prepares and delivers authoritative scientific briefings and exchanges using appropriate communication vehicles to clearly convey concepts, uncertainty, and implications; demonstrates NTGS' ability to deliver relevant, timely, and cost-effective geoscience projects for NWT residents, businesses, and governments.
   - Represents and advances NTGS science by promoting coherent messages, products, and services in strategic forums; identifies and pursues partnering opportunities; positions the organization as a credible, collaborative contributor to science, policy, and regulatory initiatives.

4. **Manages project-level resources and field operations to support safe and effective field program delivery**
   - Plans and tracks personal and project resources—time, logistics, and expenditures—to ensure timely, efficient delivery of services and outputs aligned with approved work plans and priorities.
   - Maintains a current inventory of NTGS field equipment and coordinates allocation across multiple field programs in consultation with project leads and the Manager.
   - Ensures field work is effective and safe by assessing equipment condition, organizing and maintaining field equipment. Arranges maintenance and repair of field equipment and ensures equipment is ready in advance of each field season.
   - Supports a diverse, inclusive, and supportive scientific workforce by mentoring colleagues, providing constructive feedback to peers, and fostering a culture of mutual support, teamwork, knowledge-sharing, and professional development.
   - Ensures safe and respectful workplaces and field environments by preparing and following health and safety plans for remote activities, maintaining training and

competencies, monitoring workloads, and demonstrating shared responsibility for physical and psychological safety and well-being.
- Assists with financial, contractual, and funding activities by preparing estimates and forecasts for assigned tasks, supporting the administration of external funding, and contributing to procurement, contract management, and contribution agreements in compliance with financial and administrative requirements.
- Oversees management, curation and collection of geological materials and samples to support overall activities of the NTGS.

5. **Contributes surficial geology expertise to NTGS, departmental, and intergovernmental initiatives to support alignment of programs with policy objectives and collaborative management frameworks**
   - Participates in NTGS coordination by working with peer scientists and managers to adopt common approaches, shared standards, and mutual accountability for geoscience programs and regulatory functions within an integrated framework.
   - Represents NTGS in interdepartmental and intergovernmental technical forums related to geoscience programs to coordinate roles, align priorities, and enable collaboration across jurisdictions and levels of government.
   - Maintains awareness of evolving policy priorities, land claim obligations and governance frameworks that affect NTGS mapping and collection programs and incorporates this awareness into project planning and stakeholder engagement.
   - Contributes to strategic planning by highlighting emerging geoscience issues, client and partner needs, and interjurisdictional trends, and by helping translate long-term organizational vision into coherent, achievable priorities across business units.

WORKING CONDITIONS

Physical Demands

Office work involves minimal physical demands.

Fieldwork involves sustained physical exertion over extended periods, including hiking over rough and uneven terrain for full workdays while carrying field equipment and geological samples (with individual loads up to 25 kg) for 8 hours a day. Field operations also require participation in physically demanding logistical activities typical of remote camps, such as equipment handling, camp setup, loading and unloading vehicles, boats and aircraft. The physical demands are experienced daily during field deployments, which may extend several consecutive weeks.

Environmental Conditions

Normal office environment for most of the year, with periodic extended field deployments of up to approximately eight weeks annually in remote locations.

During fieldwork, the incumbent is regularly exposed to uncontrolled outdoor environments and occupational hazards inherent to remote operations including: rapid and adverse changing weather; uneven terrain; aviation-supported, off-road and/or marine travel; wildlife and other safety risks. These conditions are experienced daily during field deployments.

Sensory Demands
Normal office environment outside of the field season.

Field work requires sustained vigilance, situational awareness, and a heightened state of alertness to the safety of the team and operations in dynamic, potentially hazardous environments. Workdays may be extended requiring continues monitoring of environmental and operational conditions. The incumbent is subject to impacts associated with long hours of field work (e.g. fatigue). These demands are present throughout field assignments.

Mental Demands
Ongoing management of multiple concurrent responsibilities including scientific leadership, regulatory oversight, human and financial resource management and stakeholder engagement, often under time constraints.

During field deployments, the incumbent assumes continuous responsibility for scientific decision-making, logistical coordination, and staff safety, requiring real-time judgment under conditions of uncertainty and risk. The incumbent is also subject to substantial disruption of family life. These demands are experienced daily during field assignments, which may extend for a couple of months.

The incumbent is also responsible for the timely delivery of reports and results, presenting research or work plans to scientific peers, collaborators, community groups, etc. and attending geoscience meetings in Southern Canada two to four times per year.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of the scientific principles and techniques relevant to surficial geology and related topics including Quaternary Geology, geohazard and terrain characterization, and granular resources.
- Knowledge of the primary terrain indicators of surficial deposits and the geological, geomorphic, permafrost, climate, and ecological conditions that influence geohazards across the NWT.
- Knowledge of the surficial geology mapping techniques including remote sensing methods – such as Landsat image analysis and light detection and ranging (LiDAR) – and near-surface geophysical tools.
- Knowledge of the methods, techniques, and practices of spatial information management, including manipulation, interpretation, digitization, retrieval, and storage of data.

- Knowledge of mineral exploration techniques and resulting geoscience data including drill core data and metadata and documentation practices.
- Expert knowledge of modern geoscience data systems, GIS, databases, analytical tools, and digital information delivery platforms sufficient to support data stewardship and dissemination.
- Knowledge of the NWT's surficial geology to guide scientific activities, to serve as a subject matter resource for clients, academia and senior management, and to represent the organization within national and international geoscience communities.
- Knowledge of the legal, ethical, and professional obligations of a registered professional geoscientist (P.Geo.), including standards of independence, impartiality, and evidence-based decision making.
- Knowledge of federal and territorial legislation, regulations, and policy frameworks governing mineral exploration, mining, and field-based research and operations, and the role of geoscience within regulatory systems.
- Knowledge of how scientific evidence informs government policy, regulatory decision-making, and public interest outcomes.
- Knowledge of the balance between scientific independence and the organizational mandate of public geoscience dissemination.
- Knowledge of intergovernmental roles, responsibilities, and collaboration mechanisms under geoscience accords and related agreements.
- Working knowledge of human resource and financial frameworks sufficient to support compliant procurement, contracting, and reporting for assigned activities.
- Knowledge of health, safety, and risk management principles related to remote field operations, including ensuring appropriate training, planning, and mitigation measures.
- Knowledge of standard office and project management tools required to deliver complex programs and reporting obligations.
- Data management skills to organize, archive, and disseminate large volumes of surficial geology, geohazard, terrain, permafrost, and geotechnical information.
- Field skills grounded in best practices in safety management, geoscience research and mapping.
- Skills in scientific writing, peer review, and quality assurance to ensure authoritative, defensible public-sector geoscience outputs.
- Interpersonal and relationship-building skills to establish and maintain effective working relationships with Indigenous Governments and Organizations, industry, academia, other governments, and internal stakeholders.
- Demonstrated skills in conducting fieldwork, writing and reviewing geoscience technical reports and publications, collaborating effectively with research teams, and presenting the results of their original scientific work to colleagues and stakeholders.

- Analytical and synthesis skills to integrate a variety of data from multiple sources, identify trends, and translate scientific results into scientific publications and usable public-sector information products.
- Ability to develop sound geological interpretations of surficial geology, permafrost, and geohazard landforms by incorporating geological knowledge, field and laboratory data, and reference materials.
- Ability to co-develop, execute, and report on geoscience projects within budget and on schedule.
- Ability to anticipate emerging issues, opportunities, and risks affecting geoscience programs and to adapt strategies accordingly.
- Ability to mentor and develop junior scientists and students, including coaching in field methods, data management, and scientific communication and writing techniques.
- Ability to work independently and in collaboration with others in a team.
- Ability to foster a collaborative, respectful, and inclusive workplace that values teamwork, and knowledge sharing, while maintaining high scientific and ethical standards.
- Ability to facilitate and participate in solution-focused meetings and workshops.
- Ability to leverage external and intergovernmental partnerships and funding sources to deliver cost-effective geoscience programs.
- Ability to communicate complex scientific concepts, evidence, and uncertainty clearly and credibly to a range of audiences, including senior decision-makers, regulators, scientific peers, Indigenous Organizations, and non-technical audiences.
- Ability to translate scientific programs and results into information, tools, and practices applicable across disciplines and policy domains.
- 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 Master of Science degree with a specialization relevant to surficial geology, and three years of work experience in industry, academia, or a government agency in a related capacity.

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

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