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## Job Specification

**Position Title:** HYDROGEOLOGIST  
**Job Code:** OPSEU - Scientist 4, 15548  
**Job ID:** 19867

### Purpose of Position:

To provide hydrogeological expertise in support of regional ground water programs, to evaluate existing and anticipated impacts and make recommendations for the protection, conservation and management of groundwater resources. To act as a Provincial Officer and Regional expert on compliance/non compliance issues related to groundwater protection.

### Duties/Responsibilities:

In a Region with multiple locations job requires:

1. Reviewing technical reports and evaluating hydrogeological and ecological impacts of proposed and existing activities (e.g. landfill sites, advising/processing Permits to Take Water) on regional groundwater resources by analyzing and synthesizing submitted information, data and information from own field investigations, file material, technical/scientific studies and literature and providing reports on findings, including recommendations.
2. Designing, carrying out and/or interpreting results of groundwater field investigations (e.g. with respect to environmental risk, exceedances of health-based standards, multi-phase contaminant flow, emerging science/technology) to provide support to district offices, make approvals recommendations, assess spill response compliance with relevant legal instruments and environmental legislation/regulations, and/or to collect evidence for court cases and hearings. Analysing and synthesizing all relevant material (technical reports, submitted scientific information, field survey/sample data, inspection/investigation reports and photographs, file material, scientific literature) and preparing reports defining potential environmental impacts including exceedances of health/environmental-based standards and guidelines and making appropriate recommendations. Assessing aquifer-wide development impacts and participating in the development of aquifer management plans and other groundwater protection initiatives.
3. Responding to and providing scientific advice, as regional expert, in environmental response situations and to parties responsible for spills/restorations, waste disposal (e.g. landfill, mine waste), drinking water supply and groundwater based development (e.g. communal wells and septic systems).
4. Providing hydrogeological expertise, including preparing/presenting scientific reports identifying and providing information on changing legislation and policy requirements, participating in policy development including standards, procedures and overall ministry policy; providing scientific hydrogeological information and advice to Unit and Ministry staff, municipalities, Medical Officer of Health, other provincial and federal ministries, consultants, the public and the media, including presenting at public meetings.
5. Reviewing, assessing and commenting on documents on water issues in the region in support of Ministry approvals and District abatement/enforcement programs, reporting conclusions and recommendations.
6. Preparing reports, briefing notes, media contact reports, drafting ministers correspondence and other documents related to groundwater quality and quantity management.
7. Supporting enforcement actions, including providing expert testimony, at legal proceedings to support the Ministry's ground water program, as a Professional Geoscientist and as a Regional expert. Providing interpretations of legislation/policy/guidelines, explaining and defending Ministry positions, providing opinion evidence and addressing conflicting scientific opinions.
8. Complying with all health and safety legislation, policies and procedures and reporting all unsafe equipment and conditions to the supervisor.
9. Other duties as assigned.

### Knowledge:

Job requires knowledge of:

Hydrogeological methods and techniques, and related knowledge of the theories, principles and practices of geology and/or civil/geotechnical applied science with specialization in Hydrogeology, with courses in related fields such as contaminant hydrogeology or well-mechanics and design, in order to assess

environmental data and information and recommend action to clients to prevent/resolve adverse impacts on regional groundwater due to current or proposed development (e.g. land fill sites and applications for Permits to take Water) and contingencies (e.g. chemical spills) by collecting field information and data, conducting mathematical analysis of the information, determining the scientific validity of the analysis, assessing potential environmental impact and drawing conclusions on compliance with ministry requirements.

Emerging environmental management theories, practices and techniques (cumulative impacts, monitoring theories) within the groundwater specialty in order to provide policy advice to ministry staff based on an integration of this information with research and related ministry precedent and to provide scientific input to ministry policy development or lead development of divisional scientific assessment procedural documents.

Environmental legislation, policies, procedures and guidelines (e.g. Environmental Protection Act, Ontario Water Resources Act) to ensure development proposals and action plans for clean up of contaminated sites, comply with legal and other established ministry requirements by assessing practical viability of proposal, establishing ministry requirements for the specific proposal and determining whether proposal complies with requirements and by providing clients/staff with interpretations of the legislation. Field investigation and water resource management theories, principles and practices to respond to and assess field situations (e.g. chemical spills, fire incidents) by collecting field samples, observations and information, interpreting the information compared, determining potential for environmental and health impact through comparison with water quality standards and providing advice, as a member of a response team with other Ministry staff, to other agencies, municipal staff and the Medical Officer of Health on environmental impacts including mitigation and restoration measures.

Established practices and approaches to environmental management within the ground water specialty to contribute to the application of policy, guidelines and approaches by analyzing and integrating research and related precedent with ministry environmental objectives.

Theory, design and operations of piezometers and other groundwater monitoring equipment and techniques to track the movement of spilled material (e.g. movement of waterborne contamination towards a drinking water source) and to validate and interpret data which is used by the Medical Officer of Health to make decisions (such as shutting down a water plant) and to undertake groundwater surveys, collecting samples, assessing data (e.g. modelling groundwater movement using measurements of hydrostatic head) and developing interpretations to establish the need for abatement to take action such as ordering an industry to construct further controls.

Computer modelling and other software applications to utilize and lead others in the utilization of technologies to support data analysis, evaluation and report preparation activities.

Principles of surface water management to refer ground water issues which will affect surface water to appropriate staff to ensure that water management decisions will not adversely impact the resource (e.g. draining a quarry which is the source for recharging a stream).

Divisional initiatives and the Ministry Business Plan to meet unit priorities to reflect Regional Work Plan initiatives.

Rules of evidence and court procedures to support legal proceedings by preparing legal documents and providing expert testimony.

Occupational Health and Safety Act and regulations that apply to the work; knowledge of any potential or actual danger to health and safety in the workplace to ensure compliance.

Environmental Bill of Rights posting requirements and procedures for Permits to take Water to ensure conformance with legal posting of applications and decisions.

**Staffing and Licensing Requirements:**

Job requires a degree with specialization in a disciplines such as Geology, Hydrogeology, or Earth Sciences.

Job requires registration as a practising member of the Association of Geoscientists of Ontario or as a Geoscientist -in-training.

Job requires a valid Class G Ontario Driver`s licence.

**Skills:**

Job requires:

Applied research , investigative and project management skills to: design field investigation approaches for unprecedented situations to assess and evaluate environmental issues; determine compliance, lead/conduct the collection of data during field studies; investigate complaints, spills and other contingencies which are complicated by factors such as size, nature of impact on soil/water resources, closeness to urban centers and services/industry; identify/assess social and financial factors relating to proposed and/or ground water contamination issues and problems, and situations not previously encountered due to differing geological formation (e.g. costs of various clean up methods, impact of proposed developments on water quality and quantity available to local communities).

As regional expert, analytical and problem solving skills to study, evaluate and recommend to group leader/supervisor policy/scientific approaches for addressing issues arising from field studies outside

established precedent.

Analytical and problem solving skills to define objectives within a policy/scientific context for divisional guidance documents, evaluate alternatives, consolidate research and information, develop options and recommendations and report on findings.

Reasoning skills to lead discussions involving conflicting approaches or scientific opinion in order to develop consensus.

Analytical skills to: analyze data collected utilizing computer modelling programs; draw inferences on impacts from results; evaluate hydrogeological data and other findings from investigative work; evaluate impact of development proposals on regional ground water; assess applications for approval of developments which are complicated by location, size, nature and public scrutiny or proposed development; and evaluate policy proposals to assess their impact on the existing regional ground water management program.

Problem solving skills to: prepare terms and conditions for approval of remediation plans and development proposals, as basis for negotiation with consultants, development proponents, responsible parties (in the case of spills) and other government agencies; and recommend environmental controls necessary for proposed developments; and methods of clean up to be used in remediation activities.

Applied research, investigative and project management skills to: design and review field investigation approaches for unprecedented situations to assess and evaluate environmental issues, determine compliance, lead/conduct the collection of data during field studies; perform scientific/technical investigations to support the resolution of issues concerning complaints, spills and other contingencies which are complicated by factors such as size, nature of impact on soil/water resources, proximity to urban centers and services/industry; identify/assess social and financial factors relating to proposals and/or ground water contamination issues and problems, and situations not previously encountered due to differing geological formation (e.g. costs of various clean up methods, impact of proposed developments on water quality and quantity available to local communities).

Written and verbal communications skills to prepare and present technical assessments/recommendations and scientific reports and to present Ministry position which may be in conflict with arguments presented by development proponents, consultants, parties responsible for spills and others. Writing skills to prepare Ministers correspondence, briefing notes, other documents and input to legal instruments. Oral communication and presentation skills to present scientific and opinion information as expert testimony before the courts or at quasi-judicial hearings or to municipal councils or public meetings or to other staff.

Interpersonal skills to persuade and influence diverse interests (e.g. municipalities, consultants, environmental groups) to accept the Ministry's position (e.g. modifications to developmental proposals, remedial action plans), finalize conditions of approval relating to development, and resolve potential risks to groundwater resulting from contingencies (e.g. fuel or chemical spills).

Computer skills to use a variety of software applications.

**Freedom of Action:**

Job requires freedom to:

Lead projects and make independent decisions (approach and scientific requirements) while the assignment is in progress.

Design field investigative procedures and approaches relating to the scientific area for unit and regional projects, to set priorities and work assignments within the scientific/technical investigation framework and to use judgement in bringing the project to a conclusion.

Exercise sound judgement to prevent irreparable damage to the environment or human health, significant monetary loss to private individuals, the ministry, other levels of government and industries or detrimental impacts to the ministry's credibility

Work within environmental legislation, regulations and guidelines governing water resources management in the region, and within applicable scientific/technical methods, procedures and principles and the requirements established under the professional Geoscientists Act of Ontario.

Determine the scope of field investigative work and analysis required to effectively assess potential water quality impacts and the level of restoration required to resolve potential or existing problems; also recommends modifications to development proposals to protect water quality.

Job makes decisions on the validity of data and is responsible for ensuring that suspect data is not released to the public or used for scientific purposes to draw conclusions.

Job is accountable for the accuracy and scientific validity of work and recommendations.

Job requires keeping the group leader apprised of progress/conflicting priorities and contentious issues.

Job requires referring issues such as recommendations with socio economic impacts (e.g. possible facility closure) and situations involving conflicting policy or legal actions to group leader/supervisor.