

New

Ministry

Environment and Protected Areas

Describe: Basic Job Details

Position

Position ID

Position Name (30 characters)

Watershed Scientist

Requested Class

Scientific 2

Job Focus

Operations/Program

Supervisory Level

00 - No Supervision

Agency (ministry) code

100023

Cost Centre

606711

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Vacant

Organizational Structure

Division, Branch/Unit

RSD, Airshed and Watershed Stewardship Branch

Current organizational chart attached?

Supervisor's Position ID

50

Supervisor's Position Name (30 characters)

Director, Watershed Sciences

Supervisor's Current Class

Senior Manager (Zone 2)

Design: Identify Job Duties and Value

Job Purpose and Organizational Context

Why the job exists:

This job supports the safe and effective delivery of the Provincial watershed monitoring, evaluation and reporting (MER) program. The focus of the role is hydrology, climatology and hydrogeology, with potential for cross-disciplinary collaboration to support related monitoring, evaluation and reporting programs for surface water quality.

The Watershed Scientist Scientific 2 is positioned within the Watershed Sciences Section (WSS) of the Airshed and Watershed Stewardship (AWS) Branch, which is in Resource Stewardship Division (RSD).

The position is responsible for providing advanced analytical support to deliver the legislated science mandate, "to develop and implement an environmental science program to monitor, evaluate, and report on the condition of Alberta's ambient environment" (Section. 15.1(1) *Environmental Protection and Enhancement Act*, 2016). The Watershed Scientist Scientific 2 is responsible for supporting the development, modernization and implementation of long-term MER programs in the area of watershed sciences. This role ensures that the Government of Alberta receives scientifically credible and relevant information needed to responsibly manage Alberta's watersheds, in the face of increasing pressure from recreational use, climate change, agriculture, industrial development, growing population, and other pressures.

Key outcomes of the Watershed Scientist Scientific 2 will enhance understanding of the condition of Alberta's watersheds and the cumulative impacts of human activity and natural processes. Outcomes include: applying novel scientific ideas and approaches in support of priority departmental issues and scientific knowledge gaps; providing technical support and expertise for large-scale, multi-year provincial MER programs that bridge scientific disciplines;

supporting senior scientists in identifying, designing and executing independent and collaborative research studies; and publishing scientific findings through both government reports and peer-reviewed journals. Based on these activities, the Watershed Scientist Scientific 2 provides information to Government of Alberta leadership to support the responsible stewardship of Alberta's water resources.

Responsibilities

The Watershed Scientist Scientific 2 contributes to four core aspects of watershed monitoring, evaluation and reporting delivered by the Airshed and Watershed Stewardship (AWS) Branch: **Design, Planning, Delivering, Evaluation and Reporting**. The overall monitoring, evaluation and reporting program is described in long-term monitoring, evaluation and reporting plans developed and published by the Watershed Sciences Section.

1. Design: Provide support and expertise in the review, development and continuous improvement of hydrological, meteorological and hydrogeological monitoring, evaluation and reporting programs that address major issues of concern to the Government of Alberta. The end result is an internationally recognized science and monitoring program that supports the government's business mandate. This includes:

- Working with Department colleagues and leadership to identify and prioritize hydrometric and groundwater monitoring, evaluation and reporting that is aligned with Government business needs, and emerging water resource issues identified by the international scientific community.
- Contributing to integration between surface and groundwater monitoring, evaluation and reporting programs and other environmental monitoring and research programs in the branch and department, including provincial lentic, lotic, and wetland monitoring networks and the Canada-Alberta Oil Sands Monitoring Program;
- Supporting a culture of scientific excellence by working with leadership, scientists and relevant EPA staff to ensure innovative, scientifically credible monitoring, evaluation and reporting protocols are conceived and deployed in EPA's water monitoring and science programs;
- Working with branch staff and external collaborators to support braiding of western science and indigenous wisdom in the design and implementation of monitoring, evaluation and reporting programs;
- Addressing recommendations of the Indigenous Wisdom Advisory Panel and Science Advisory Panel.

2. Planning: Contributes to annual and multi-year monitoring, evaluation and reporting planning driven by scientific questions to assess the condition of Alberta's watersheds. Activities include:

- Contributing to all aspects of the development and publication of the long term monitoring, evaluation and reporting plan for provincial hydrometric, climate and groundwater monitoring and science programs.
- Completing annual project plans and budgets for branch watershed monitoring, evaluation and reporting projects that articulate outcomes, activities, schedules and resource requirements;
- Developing and leveraging internal networks and collaborative relationships to understand branch and department business needs to inform the development of monitoring, evaluation and reporting activities;
- Staying up to date with the latest science to understand emerging issues and their relevance for Alberta;
- Ensuring short-term focused studies and research projects contribute to large-scale understanding of water resources and watershed health within Alberta and support branch and/or departmental priorities;
- Leveraging scientific and technical capacity within the Department to build high-functioning teams that ensure projects are credible and relevant;
- Leveraging Divisional budgets for watershed monitoring, evaluation and reporting by supporting the preparation and submission of research grant applications to applicable scientific funding agencies.

3. Delivering: Supports safe and effective delivery of long-term watershed monitoring programs and shorter term focus studies. The end result is safe and timely completion of deliverables within the available budget. Activities include:

- Collaborating with scientific and technical staff in the Branch to anticipate and troubleshoot scientific and technical challenges encountered during program delivery
- Providing ongoing validation of surface and groundwater data for Department data publication;
- Supporting the development and management of grants and contracts with delivery partners and vendors, e.g., laboratory contracts for biological or chemical analysis;
- Coordinating the involvement of indigenous community members and volunteers;
- Considering and incorporating Occupational Health and Safety in all aspects of program delivery.

4. Evaluation and Reporting - Under the supervision of senior scientists in the Branch, develops, conducts and leads scientifically credible environmental data evaluation and reporting that meet project plan commitments, objectives from the long term monitoring, evaluation and reporting plan, and/or legislated reporting requirements. Activities include:

- Developing and implementing robust analytical approaches to evaluate hydrometric, climate and groundwater data, including integration across disciplines including wetlands, lentic and lotic systems;
- Leading and/or participating in the communication of major observations and conclusions of long-term monitoring and focused research activities on the condition and trends of Alberta's watersheds including, but not limited to, primary or collaboratively authored peer-reviewed scientific papers, technical and state of the environment reports, major scientific synthesis reports, and plain-language summary documents;
- May collaborate with external scientific experts on the evaluation and reporting of Provincial and/or other data, ensuring scientific linkages with programs and interpretations employed elsewhere in Canada and internationally;
- Contributing to the development of credible and defensible scientific content for meetings, workshops, conferences, web pages, and briefing packages for departmental leadership;
- Participating at the regional or provincial level in scientific committees and task forces requiring Alberta water resource expertise;
- Effectively communicating complex scientific issues/results to a wide range of expert and non-expert audiences, thereby ensuring government, industry, and public stakeholders can best employ or apply the information resulting from EPA's monitoring, evaluation and reporting programs.

Leveraging the knowledge and expertise garnered from the above activities, the Watershed Scientist Scientific 2 serves as a department expert to support internal and external initiatives that require knowledge of Alberta's surface water quantity and groundwater issues and related provincial monitoring, evaluation and reporting programs.

Problem Solving

Typical problems solved:

- Participates in diverse watershed monitoring, evaluating and reporting programs generating new knowledge that enables creative solutions to current and anticipated environmental issues;
- Supports research initiatives, including novel methods/techniques, to assess the condition of Alberta's watersheds and the impact of human activities and natural processes; works with senior scientists to determine how research projects are done once the research priorities and needs are determined and approved by business objectives;
- Considers challenges related to scientific uncertainty with respect to conceptual models and analytical methods;
- Requires scientific expertise, knowledge and understanding in order to interpret and provide input on scientific issues to various internal and external stakeholders;
- Participates in research programs that incorporate multiple disciplines including: hydrogeology, surface-groundwater interactions, water chemistry, hydrology, aquatic ecology, statistics, (bio)geochemistry, wetland science, geospatial science, modeling and limnology;
- Collaborates with monitoring staff and scientific collaborators in all phases of monitoring, evaluation and reporting, from conception to delivery and reporting; collaborators may include government, academia, industry, and indigenous community members.
- Supports and trouble shoots technical issues in the execution of monitoring activities, working closely with field staff
- Interacts with external stakeholders to communicate scientific findings and their implications;
- Contributes to development of most efficient and effective monitoring, evaluation and reporting program within existing financial and resource constraints

Types of guidance available for problem solving:

Guidance for solving watershed-related science problems is provided by multiple complex standard operating procedures, scientific literature, advice from colleagues including technologists, scientists and external experts/collaborators, and advice and direction from senior managers. Considerable judgment is required to ensure scientific (and operational) decisions with relatively small risks are made independently, while decisions with relatively larger risks are made after appropriate consultation with peers and input or direction from senior managers. In many cases, there may be inadequate guidelines or scientific standards to guide research and significant scientific or technological innovations are required.

Direct or indirect impacts of decisions:

This position provides scientific input and expertise in hydrology, climatology and hydrogeology at the provincial level, which shape surface and groundwater monitoring, evaluating and reporting programming throughout the province. The position may also provide scientific support to provincial-scale surface water quality (lentic, lotic and wetland) monitoring, evaluation and reporting programs with applications to understanding and mitigating the impacts of human

and natural pressures on these systems.

Working with senior scientists from the branch, the position conceives, plans and conducts research which could have considerable influence on scientific knowledge and management of Alberta's water resources. Knowledge and recommendations from this research inform the development and implementation of surface and groundwater and related policies and regulations under the *Water Act*, the *Environmental Protection and Enhancement Act*, the *Alberta Land Stewardship Act* and through the Water for Life strategy.

Key Relationships

Major stakeholders and purpose of interactions:

Director, Watershed Sciences Section

- Daily to weekly interaction to discuss strategic and operational issues related to scientific priorities and work of the position and/or section; develop and monitor performance agreements; prioritize and support operational and strategic planning.

Department Leadership Team (Directors, Executive Directors, Chief Scientist)

- Monthly to quarterly interactions to provide scientific input on surface and groundwater issues of importance to the Department and Government as a whole; includes identifying and advancing organizational priorities to support monitoring, evaluation and reporting activities.

WSS Scientists and other Branch Staff

Provision of relevant scientific information to key AWS Branch contacts including daily to weekly interactions with:

- **Watershed Sciences Section:** collaboration and consultation with other Section Scientists, including groundwater, lentic, lotic, wetland, hydroclimate and geospatial experts, to advance individual and shared work plans and section priorities;
- **Air and Watershed Monitoring Section:** scientific oversight/advice on data collection and surface and groundwater-related field work conducted by Technologists, including data management and providing ongoing data validation.
- **Resource Management Section:** scientific advice/environmental information needs supporting regional resource management activities; information sharing and coordination for identification and advancement of shared priorities.
- **Community-Based Monitoring and Knowledge Section:** advancing understanding, thinking and approaches for the braiding of Indigenous wisdom and western science and knowledge; providing western science perspectives on community-based monitoring initiatives in AWS.

Scientists and other staff in the Department and other Government of Alberta Departments including permanent staff, wage staff, co-op students, and interns

- Participate in the provision of relevant scientific information to key Department contacts through ad hoc interactions or more formal short term project team or working group participation.
- Key Department contacts outside the Department may include the Alberta Geological Survey, the Alberta Energy Regulator, and departments of Health, Forestry and Parks, Agriculture and Irrigation and Energy and Minerals.
- Weekly or monthly interactions to provide scientific input on surface or groundwater monitoring and research programs and to facilitate the access to, and application of, scientific findings in the Government of Alberta, among relevant stakeholders and in the broader scientific community.

Indigenous community members and their representatives

- Interactions to co-design watershed monitoring and research programs that are relevant to the information needs of indigenous community members, consistent with the recommendations of the Indigenous Wisdom Advisory Panel; programs may also directly involve community members in program delivery.

Provincial, national and international committees, task forces and boards

- Quarterly, annual, or occasional participation in multi-organizational and multi-jurisdictional teams to provide scientific input, and to represent the Government of Alberta on surface or groundwater-related matters.

Graduate students and post-doctoral researchers

- Monthly or more frequent interaction as collaborator.

External scientists, including academia, industry, partner monitoring organizations, Government of Canada (e.g., Environment and Climate Change Canada, Department of Fisheries and Oceans), other provincial or

territorial governments, and US Agencies including Environmental Protection Agency and Geological Survey)

- Interactions to collaborate on water monitoring and research programs and projects. May include review of scientific literature, and reviewing draft manuscripts for journal articles and other reports; co-author publications with other organizations, etc.

Required Education, Experience and Technical Competencies

| Education Level | Focus/Major | 2nd Major/Minor if applicable | Designation |
|-----------------|-------------|-------------------------------|-------------|
| Master's Degree | Science | | |

If other, specify:

Job-specific experience, technical competencies, certification and/or training:

The incumbent will have expertise in physical attributes of groundwater and/or surface water systems, and the influence of natural and anthropogenic drivers such as land disturbance and climate change that may impact water availability. Ideally, the incumbent will also have capacity and experience in the application of this expertise to broader disciplines within watershed sciences related to surface and groundwater quality.

The position requires a MSc in a relevant scientific discipline related to one or more of the following areas: hydrology, hydrogeology, geochemistry, climatology, limnology, numerical analysis/statistics, water resources engineering. The position requires a minimum of 2 years work experience. Equivalent credentials include a PhD degree with no post-doctorate work experience, or a BSc degree with 4 years of work experience.

The position requires knowledge and experience in the following areas:

- Watershed and ecosystem science with a focus on hydrology, climatology, limnology and/or hydrogeology;
- Numerical analyses, including statistical methods, of large environmental data sets using software such as *R*;

The following skills and abilities are required:

- Strong data analysis and interpretation skills;
- Demonstrated leadership skills, innovative and creative thinking, problem solving, and strategic thinking skills;
- Strong scientific writing skills;
- Strong communication skills to develop and deliver scientific information to key stakeholders, the scientific community, public audiences, and government peers and leadership;
- Ability to build and maintain effective collaborative relationships
- Strong project management and program planning skills, with the ability to manage multiple projects in required timelines;
- Ability to identify, anticipate, and analyze complex issues;
- Ability to synthesize findings to identify risks, possible actions and where possible, solutions.

The following attributes are considered an asset:

- Application of analytical methods (e.g. appropriate models, geospatial science approaches or other means) to assess and/or predict local, regional and cumulative impacts of human activities and/or natural processes on environmental conditions;
- Experience in the design and implementation of surface or groundwater research and monitoring programs.
- Knowledge of current and emerging water management issues and priorities in Alberta
- Experience working with provincial water-related datasets (e.g. long-term river monitoring network, Water Survey of Canada datasets) for Alberta, and with high-frequency data;
- Demonstrated record of primary and/or collaboratively authored publications in peer-reviewed scientific journals commensurate with established peers with a similar level of experience
- Familiarity with Department business plan, goals, strategic priorities, and accountability processes;
- Familiarity with Alberta's acts, regulations and policies and frameworks related to management and protection of water resources.
- Relevant partnerships/networks with academic and industrial research communities, relevant government and non-government agencies, etc.;
- Experience with new and emerging methods related to assessing the status and trends in watershed health;
- Experience working in and applying expertise in an interdisciplinary setting (i.e. across various disciplines within watershed sciences);

Behavioral Competencies

| Competency | Level | | | | | Level Definition | Examples of how this level best represents the job |
|--------------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|---|--|
| | A | B | C | D | E | | |
| Systems Thinking | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <p>Considers inter-relationships and emerging trends to attain goals:</p> <ul style="list-style-type: none"> • Seeks insight on implications of different options • Analyzes long-term outcomes, focus on goals and values • Identifies unintended consequences | <ul style="list-style-type: none"> - provides key support for development of long terms provincial monitoring, evaluation and reporting programs and short term focus studies, aligned with department/branch commitments and priorities - contributes to integration of science program across watershed disciplines by supporting the identification of complex science questions and approaches to address them |
| Creative Problem Solving | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <p>Focuses on continuous improvement and increasing breadth of insight:</p> <ul style="list-style-type: none"> • Asks questions to understand a problem • Looks for new ways to improve results and activities • Explores different work methods and what made projects successful; shares learning • Collects breadth of data and perspectives to make choices | <ul style="list-style-type: none"> - uses expertise, scientific literature, and peer input to help identify relevant scientific questions and develop and employ novel analytical approaches to answer them - generates ideas for the optimization of monitoring activities to accommodate resource and time constraints and competing priorities - contributes to the development of analytical tools/approaches to support efficient and transparent evaluation of data, for use by self and others |
| Drive for Results | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <p>Works to exceed goals and partner with others to achieve objectives:</p> <ul style="list-style-type: none"> • Plans based on past experience • Holds self and others responsible for results • Partners with groups to achieve outcomes • Aims to exceed expectations | <ul style="list-style-type: none"> - takes on key tasks to support delivery of monitoring, evaluation and reporting program - contributes to primary and collaborative writing of reporting products communicating observations and conclusions of monitoring and evaluation activities, including government and peer-reviewed publications. |

| | | | |
|----------------------------------|--|---|---|
| Build Collaborative Environments | <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | Facilitates open communication and leverages team skill: <ul style="list-style-type: none"> • Leverages skills and knowledge of others • Genuinely values and learns from others • Facilitates open and respectful conflict resolution • Recognizes and appreciates others | <ul style="list-style-type: none"> - engages in regular formal and informal discussion within Watershed Sciences Section to brain-storm, problem solve and share information - engagement with field staff for delivery key aspects of monitoring activities - engages with colleagues across section, branch & department to provide expertise or advance shared areas of work, ensuring awareness and looking for synergy and collaboration - participates in working groups and committees across branch/ department |
| Develop Self and Others | <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> | Seeks out learning and knowledge-sharing opportunities: <ul style="list-style-type: none"> • Reflects on performance and identifies development opportunities • Takes initiative to stay current • Shares with the team even when not asked • Actively coaches and mentors direct reports | <ul style="list-style-type: none"> - supports a culture of scientific excellence in research and monitoring design - shares knowledge with others and acquires new expertise by engaging in collaborative multi-disciplinary research with WSS and/or other partners - may serve as Acting Director and support strategic/management needs as required |
