

Update

Ministry

Environment and Protected Areas

Describe: Basic Job Details

Position

Position ID

Position Name

Senior Manager, Provincial Watershed Monitoring

Current Class

Senior Manager (Zone 1)

Job Focus

Operations/Program

Supervisory Level

01 - Yes Supervisory

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Organizational Structure

Division, Branch/Unit

RSD/Airshed & Watershed Stewardship Branch

Supervisor's Position ID

Supervisor's Position Name

Dir,Prov.AirshedWatershedMonit

Supervisor's Current Class

Senior Manager (Zone 2)

Design: Identify Job Duties and Value

Changes Since Last Reviewed

Date yyyy-mm-dd

2023-03-19

Responsibilities Added:

none

Responsibilities Removed:

none

Job Purpose and Organizational Context

Why the job exists:

The Airshed and Watershed Monitoring Section is accountable for planning and conducting provincial ambient air and water monitoring that informs condition of air and water evaluation and reporting across Alberta. Provincial programs include air quality, atmospheric deposition, hydrometric, meteorological, rivers and streams (lotic) quality and quantity, lakes and reservoirs (lentic) quality and quantity, groundwater quality and quantity, aquatic biota, and wetlands. Airshed and watershed field monitoring programs collect data, record observations, process samples, and enable data and information to be reported publicly and to decision makers at various scales. These programs feature long-term monitoring networks as well as shorter-term monitoring, emergency response monitoring, and gathering of data to inform focused studies. The data collected through diverse monitoring programs underpins the provision of science-informed analysis and advice related to air and water resource management, planning, regulatory decisions, and stewardship. The Section contributes to the Branch's capacity to improve understanding and stewardship of ecosystems by advancing multiple-evidence based approaches (e.g., Indigenous Knowledge, Citizen Science, Community-based Monitoring) that enable stewardship action.

Airshed and watershed monitoring programs also deliver emergency monitoring activities listed as critical, essential services within the Ministry's Business Continuity Plan. Monitoring data is key in the provincial early warning system for emergencies. The Section is constantly on emergency status to maintain the early warning system for the Province.

The Watershed Monitoring Unit stewards and operates the long-term river, stream, and lake Quantity and Quality monitoring networks, manages the joint federal-provincial Hydrometric Networks as well as the Mountain View-Leavitt-Aetna Headworks irrigation flow stations. Monitoring programs collect, measure, assess and report on water quantity and quality across Alberta, much of it in real time, to ensure healthy aquatic ecosystems. Other disciplines and networks include Groundwater Quantity and Quality, and Meteorological services organized into regional teams across the province.

This position provides leadership for province-wide multi-disciplinary water monitoring and auditing programs. The Senior Manager, Provincial Watershed Monitoring, ensures ongoing, open, and transparent access to scientific data and information, which enables informed decision-making by policy makers, regulators, planners, researchers, communities, industries, and the public. The Senior Manager collaborates with other department Units (e.g., Water and Waste Policy; River Forecast Centre), and provincial and federal governments and provides oversight for key regional stakeholders (Watershed Stewardship Groups, Alberta Watershed Planning and Advisory Councils) as well as municipalities, industrial sectors, conservation groups, and Indigenous communities to ensure that watershed monitoring is conducted consistently across the province and in such a manner that the result is high quality, scientifically defensible data. The Senior Manager directs the Unit's role as prime players in any related emergency response plans. This Unit also provides subject matter expertise for the department to provide oversight and technical input/review for monitoring plans and data submitted by both industry and watershed organizations. Collectively, the work for which the Senior Manager is accountable provides a provincial picture of and consistency of water quantity and quality data, which impacts policy, regulatory processes and approvals, and emergency responses.

The Senior Manager is also responsible for planning, and management of the water monitoring operational and capital budgets, and the asset management of new and existing permanent and/or temporary monitoring installations. This includes procurement, calibration, troubleshooting, equipment maintenance and repairs. The provincial water monitoring and audit laboratory infrastructure is also managed by this position.

The incumbent works closely with a diverse range of stakeholders (e.g., watersheds, municipal, provincial, and federal governments, industrial sectors, conservation groups, and Indigenous communities) to ensure credible and relevant watershed monitoring data and information and to develop monitoring strategies for water quantity and quality issues. Responsibility includes requiring internal and external monitoring service providers and partners to implement established standards and protocols for collection, measuring,

analyzing, and reporting of the data / information.

The Senior Manager participates and represents the Department on post-secondary, provincial and national committees / working groups related to water monitoring programs. This work informs the implementation of new technology, and evolution of water monitoring standards and best practices. As part of the Section management team, the Senior Manager provides the Unit's input to Section planning and reporting. Recommendations and advice are provided to inform decision-making by senior and executive leaders and government officials to inform strategic and operational planning and decision-making.

Responsibilities

Watershed Monitoring Program Development and Planning

- Lead the development of technical protocols and standard operating procedures for diverse watershed monitoring measures and data validation
- Contribute to the development of watershed audit programs required to assess the performance of monitoring processes and protocols against established regulatory requirements used by external partners and the Provincial Watershed Monitoring Unit
- Participate in the resolution of issues/concerns regarding the development of effective, credible, and trusted watershed monitoring programs
- Lead continuous improvement and ongoing evaluation of watershed monitoring programs to ensure they meet evolving needs and standards
- Provide input into new monitoring program and auditing tools, techniques, standards, and methods and lead related field testing as needed
- Maintain awareness of new instruments or methods and assess to determine their applicability and validity to Alberta

Provincial Watershed Monitoring Operations Leadership

- Lead the implementation of multiple provincial watershed quantity and quality monitoring programs to address data and information needs
- Respond to specific monitoring and/or information requests that come from a variety of sources (e.g., Work with RAD and WIOB to initiate low flow monitoring in streams to manage water allocation decisions, temporary diversion licenses, and instream ecosystem needs)
- Monitor and integrate operations across regions at a provincial level and adjust resources and workflows as needed to maintain provincial coverage
- Provide guidance to Supervisors and staff to address emerging issues and or complex problems to facilitate ongoing program operations
- Ensure adequate and regular training is completed and that all safety protocols are followed
- Lead ongoing awareness of and vigilance to emergency status to maintain the early warning system for the Province
- Develop emergency plans and manage emergency response in accordance with current emergency plans
- Lead procurement and contract management for third-party service contractors
- Develop and implement contingency plans to ensure the continued collection of monitoring data during unplanned outages

Quality Assurance Program Leadership

- Oversee the provincial operations of ongoing field watershed audit programs across multiple monitoring sites and stations operated by watersheds and/or third-party contractors by development of field-audit schedules and ensuring corrective actions are implemented based on audit findings and subsequent third-party responses, which often have regulatory implications
- Lead quality management system audits to ensure consistent, high-quality, and valid processes and outputs completed by the Unit
- Ensure audit findings and recommendations are implemented where required
- Lead the ongoing review and update standard operating procedures (SOPs)
- Ensure SOPs are developed and reviewed for new equipment



Asset and Infrastructure Management (e.g., the stations, instruments, laboratory)

- Develop and implement the asset management plan across the lifecycle of all monitoring program assets, including installation, operation, troubleshooting, equipment maintenance and evergreening
- Plan, build, and manage the capital budget allocation for water monitoring infrastructure and equipment, including multiple laboratories, warehouses, and remote location facilities/stations
- Ensure capital asset information is captured and tracked and available for internal and external stakeholders to inform capital planning - (e.g., lab and field equipment, testing equipment, security cameras, vehicles, trailers, ATVs, snowmobiles, and other specialized watershed monitoring instrumentation and gear)
- Plan and complete all physical audits of assets
- Develop and present reports on the condition and lifecycle planning for assets
- Identify and prioritize evergreening across the lifecycle looking out 5-10 years to plan and budget for new equipment
- Prepare business cases for submissions to Treasury Board for capital and asset management plans for watershed monitoring
- Ensure security of associated stations and labs (e.g., monitoring security cameras, respond to issues such as break ins) which are both used by multiple user groups including Water Monitoring, Fish and Wildlife, Alberta Parks, Water Infrastructure Operations Branch, Transboundary, Aquatic Invasive Species, Alberta Conservation Association, and the Drinking Water branch
- Ensure the lab operations are intact, and maintained for ongoing access (e.g., monitor HVAC and manage related troubleshooting and service management)

Stakeholder Relationships and Initiatives

- Serve as Coordinator on the National Hydrometric Program Coordinator Committee, working with the Environment and Climate Change Canada counterpart in the oversight of a Hydrometric Agreement contract in Alberta
- Develop and maintain relationships with multiple and diverse external stakeholders (e.g., industry, the scientific community, agencies, citizens networks, regulatory bodies, federal government, municipalities) to leverage and share leading edge practices and methodologies related to watershed monitoring
- Manage relationships with third-party service contractors to foster collaboration within the watershed quantity and quality monitoring programs and ensure compliance with program standards, methods, and timelines
- Lead and/or participate in working groups and committees to establish standards and protocols for water monitoring and data collection, measurement, analysis, and reporting
- Provide subject-matter-expertise to inform policy and regulation development, broader stewardship program design
- Engage with partners and stakeholders to provide technical information on monitoring methods and technology (e.g., liaise or teach communities about monitoring; respond to technical queries)
- Share knowledge regarding best practices, tools, methodologies, and research

Unit Leadership

- Develop and monitor the implementation of operational plans and projects, adjusting priorities as needed
- Provide leadership, guidance, training, and mentoring to staff
- Coach and guide Supervisors in the identification and management of emergent issues and complex problems
- Manage human resources including performance management, recruitment of wage, temporary and permanent positions, onboarding etc.
- Support staff and contracted-service providers to develop technical and scientific expertise needed to deliver monitoring and audit programs
- Reinforce a strong safety culture, implementing OHS programs for field staff and contracted service providers working in hazardous working conditions (e.g., remote locations, working alone, emergency spill response and flood event monitoring, all types of weather conditions, water and/or air borne contaminants) and using a variety of transportation methods
- Ensure Facility Emergency Response Plans are in place for staff in all locations, with staff aware of and

participating in the plans and exercises

- Ensure the OH&S program is implemented at the Unit level including ensuring that adequate and regular training is completed and that all safety protocols are followed
- Contribute to various reports and responses (e.g., Action Requests, Briefing Notes, Budgets) and review as part of the approval process

Section Leadership

- Proactively collaborate with other Section, Branch and Division leaders and staff to leverage and integrate resources and knowledge
- Participate in Section planning and reporting, working collaboratively with the Section and branch leaders and Supervisors
- Provide the Director with strategic advice and recommendations for emerging issues, opportunities, and challenges
- Provide input and recommendations to senior and executive decision-makers for the ongoing enhancement of the Division's and department's policies and monitoring, evaluation, and reporting programs
- Represent the Branch, Division, and Ministry perspectives and objectives to working groups and committees made up of ministry, cross-ministry, cross-jurisdictional members
- Serve as Acting Director as needed



Problem Solving

Typical problems solved:

- Balancing watershed monitoring program delivery resources and seasonal limitations in line with ministry program requirements, needs and objective and with the business plan. Data and information produced by regional teams are inputs into other branch functions. This work is very technical, and accuracy is essential.
- Balancing new methodologies with costs, effectiveness, timelines, and accuracy
- Responding to environmental emergencies and informing emergency plans and responses (e.g., floods, industrial incidents). These situations are fluid; the Senior Manager musters and reallocates staff and equipment resources and balances this response while maintaining ongoing operations in other areas of the province.
- Navigating the scientific and political implications of findings from audit programs to various stakeholders and assessing and implementing remedial actions and agreements related to audit findings
- Planning and developing new partnerships and projects to enhance and/or innovate monitoring programs (e.g., integrating and providing quality assurance and oversight for new partners that provide services under the umbrella of provincial monitoring programs)
- The incumbent leads a team of field staff with significant technical experience and on-the-ground insight into practical realities of delivering the program and must navigate debates and evolution of monitoring equipment and methodologies with insights and proposals coming from academic researchers as well as the needs of diverse policy analyses and government decision makers in various jurisdictions.
- Decisions made to send staff into potentially hazardous situations, during emergencies or into remote locations, working with equipment, long hours on the road and in helicopters, on ice covers or in open water working with potentially toxic substances, are made in accordance with OHS policies and directives. This work is among the highest risk in the department, and highest consequence should the control systems fail.

Types of guidance available for problem solving:

A broad view of risks and opportunities must be taken to identify effective solutions at this management level. The ability to weigh multiple factors is applied to problem-solving (e.g., resource allocation, staff safety and availability; quality assurance; asset management; impact to other monitoring network partners; impact to broader resource stewardship). The Director and executive leaders rely on the Senior Manager to demonstrate confidence in the validity, accuracy, and rigour of the evidence that supports advice and recommendations to build a path forward when problems arise. Accuracy and strategic thinking

must be applied to consider projects holistically and to consider costs and benefits over the lifecycle service delivered to Albertans. Problem solving is guided by direction from the Director, the overarching watershed monitoring standards and protocols, best practices, professional knowledge and experience, and consultation with peers and other stakeholders. The incumbent works independently to coordinate, monitor, and supervise multiple water monitoring teams and manages contracted service providers. The Senior Manager honours the science so that there is trust in the data and information produced through watershed monitoring.

Direct or indirect impacts of decisions:

Externally, the work of this position impacts:

- effective implementation of multiple provincial watershed monitoring programs on an ongoing basis that contribute to Alberta's resource stewardship.
- fulfilment of the ministry mandate regarding water quality and quantity across the province. The data and information impact the development of policy, emergency response, scientific programs and projects, regulatory assessments, and decisions. The provincial water quantity and quality monitoring programs contribute to the provision of information to the government, stakeholders, and the public that is used to protect human health and the environment. For example, watershed monitoring networks provide the data through EPA data portals, required to understand baseline conditions, natural variability, and quantify cumulative effects within Alberta's lakes, streams, rivers, and groundwater. Scientists, decision makers and the public use this information to understand if Alberta's water resources are safe for recreational, domestic, and traditional use, can meet the needs of the economy, and are able to support the diversity and health of plants and animals in Alberta's ecosystems.
- rigour, accuracy, and completeness of data that stands public scrutiny through the leadership of audit programs.
- establishment and evolution of watershed monitoring standards and methods through participation on committees as a representative of Alberta.
- assurance that watershed monitoring is ongoing across the province and that site specific, ambient, and/or regional or provincial issues are promptly identified. If the data is wrong then negative impacts could be experienced in the province, other provinces and territories, or the United States (via the International Joint Commission to the US).
- emergency monitoring to alert government emergency response agencies and teams, municipalities, Indigenous communities, industry, Albertans, and down-stream or down-wind jurisdictions of changes in environmental condition that could significantly affect human health, critical infrastructure, or significant economic impact.
- emergency plans and responses.

Internally, the work of this position impacts:

- effective allocation and utilization of watershed monitoring resources through asset management and human resources management.
- data that is core to the work of other branch units to support and inform resource stewardship in Alberta.
- the plans and achievements of the Watershed Monitoring Unit, which this position manages.
- recommendations and advise to senior and executive leaders to inform their decision-making and to shape branch plans.
- collaboration across regional teams, the branch, division and with other divisions and client-ministries.

Key Relationships

Major stakeholders and purpose of interactions:

Internal

- Director and Executive Director - provide status updates and reports on water monitoring and audit programs on projects; advise senior leaders on relevant topics
- Regional Water Monitoring Teams - plan unit operations and priorities in line with branch and department goals; promote consistency in practice across regional teams; support professional development, guide complex problem-solving; adjust workflows and resources to respond to emerging

issues; ensure OH&S is implemented along with required technical training; foster positive and collaborative team culture

- Senior and executive leaders across the branch, division, and department - provide advice and recommendations on issues and consider impacts to water quality and quantity monitoring and data quality assurance; collaborate on projects; share intelligence; respond to queries
- Corporate Services (HR, finance, capital planning, procurement, IT; facilities management) - engage processes needed to lead the Team; obtain advice and service on issues
- Other ministries and regulators (e.g., Alberta Health, Forestry Parks and Tourism, Public Safety and Emergency Services, Alberta Energy Regulator, Alberta Health Services, ASERT) - share information and provide advice in water monitoring topics; provide early warning for and respond to water quality and quantity emergency events; respond to queries and provide technical expertise as needed

External

- Watershed Planning and Advisory Councils, Watershed Stewardship Groups, Environment and Climate Change Canada, Indigenous communities, Municipalities other provinces and territories, United States Geological Survey - Partnerships for collaboration on monitoring activities and in response to water quality or quantity emergency events or issues relating to Alberta's transboundary agreements; provide early warning for and respond to emergency events
- Committees and Advisory Boards - collaborate on or lead initiatives; provide Alberta's input
- Other jurisdictions and industry - research leading practices; share Alberta's perspectives related to common data services
- Contracted resources - manage contracted services and projects; allocate budgets and project plans for contracted services
- Property managers - respond to issues such as alarms, identify and work together to resolve facility issues. etc.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Bachelor's Degree (4 year)	Science	Other	

If other, specify:

Related field. Equivalencies will be considered.

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

Education and Experience

- Degree in environmental management, environmental science, or related field, plus six years' related experience; equivalencies considered (diploma plus additional experience)
- Extensive experience with environmental watershed monitoring systems, techniques, technologies, and methodologies
- Experience with source effluent monitoring methods, technologies, and legislated reporting requirements, ambient water quality monitoring instrumentation, data acquisition tools, laboratory assessment / analysis protocols
- Experience with audit / quality assurance programs and principles
- Supervisory experience
- Experience with occupational health and safety legislation and training requirements to meet the needs of the monitoring field staff

Technical Competencies, certification and/or training

- Comprehensive knowledge of the subject matter associated with a wide range of water quality and quantity data collection methods, real time monitoring data collection methods, hydrometric and meteorological monitoring methods and discharge computations, groundwater monitoring methods and snow survey methodologies, validation and reporting methods including the provision of data during emergencies
- Emergency planning and management skills including ability to apply emergency response and incident command system (ICS) processes

- Well-developed operational leadership and management competence for multi-faceted programs
- Knowledge of departmental direction as a policy driven, science-informed and systems-oriented organization and the role of monitoring, evaluation, and reporting in achieving and tracking environmental outcomes
- Knowledge of and ability to apply Ministry and Division direction and intent regarding cumulative effects management outcomes, integrated resources management system, regional/sub-regional planning, management frameworks, approvals, and compliance
- Program development and planning skills
- Political acumen and sensitivity to read and navigate sensitive situations
- Strong analytical and evaluation skills
- Leadership skills for both direct-reporting staff and contract-service providers
- Keen attention to detail so that data is quality-assured and scientifically defensible
- Project management skills
- Business management skills (e.g., HR, budgeting and capital planning, asset management, facilities management, procurement, and contract management) in line with GOA requirements and policy
- Advanced relationship building and management skills across diverse stakeholder groups
- Well-developed problem-solving skills to analyze complex or quickly emerging issues and identify solutions, even when all information is not available
- Ability to anticipate potential issues and proactively mitigate risk
- Ability to apply knowledge of international, national, and provincial environmental issues
- Ability to motivate and influence action within the team and by other stakeholders

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 type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Integrates broader context into planning: <ul style="list-style-type: none"> • Plans for how current situation is affected by broader trends • Integrates issues, political environment and risks when considering possible actions • Supports organization vision and goals through strategy • Addresses behaviours that challenge progress 	Aligns the implementation of monitoring programs to strategic priorities and expected outcomes; identifies impacts and interdependencies that might impact specific program outputs or outcomes or broader watershed monitoring outcomes. Integrates technical expertise with management acumen to lead the Unit.
Creative Problem Solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Works in open teams to share ideas and process issues: <ul style="list-style-type: none"> • Uses wide range of techniques to break down problems • Allows others to think creatively and voice ideas • Brings the right people together to solve issues • Identifies new solutions for the organization 	Promotes proactive identification of risks and issues to mitigate negative program-level impacts (e.g., address risks to staff working in dangerous environments; address need for proactively managing equipment); considers and integrates broader issues to specific

			problems; brings together the right people to problem-solve.
Drive for Results	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	<p>Works to remove barriers to outcomes, sticking to principles:</p> <ul style="list-style-type: none"> • Forecasts and proactively addresses project challenges • Removes barriers to collaboration and achievement of outcomes • Upholds principles and confronts problems directly • Considers complex factors and aligns solutions with broader organization mission 	Clarifies objectives, ensuring that staff roles and contributions are clear; sets performance standards and monitors processes to achieve business goals and priorities and comply with existing standards and methods; builds and implements operational plans to deliver on outcomes in alignment with ministry and Government priorities.
Develop Networks	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	<p>Makes working with a wide range of parties an imperative:</p> <ul style="list-style-type: none"> • Creates impactful relationships with the right people • Ensures needs of varying groups are represented <ul style="list-style-type: none"> • Goes beyond to meet stakeholder needs • Ensures all needs are heard and understood 	Sustains internal and external relationships to contribute to a sound watershed monitoring network across Alberta and enable early warning for and response to emergency events.
Develop Self and Others	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	<p>Encourages development and integration of emerging methods:</p> <ul style="list-style-type: none"> • Shapes group learning for team development • Employs emerging methods towards goals • Creates a shared learning environment • Works with individuals to develop personal development plans 	Leads a safety-based culture and ensures staff have the technical and safety training required; engages staff in performance management; creates an environment where learning is considered a shared experience.