

Ministry

Environment and Protected Areas

**Describe: Basic Job Details**

**Position**

Position ID

Position Name (200 character maximum)

River Engineer

Current Class

Engineering & Related Level 2

Job Focus

Operations/Program

Supervisory Level

00 - No Supervision

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

**Employee**

Employee Name (or Vacant)

Vacant

**Organizational Structure**

Division, Branch/Unit

Water & Circular Economy, River Eng. & Tech. S erv.

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Supervisor's Current Class

Senior Manager (Zone 1)

**Design: Identify Job Duties and Value**

**Changes Since Last Reviewed**

Date yyyy-mm-dd

2026-02-17

Responsibilities Added:

Updates to the position are mostly editorial, one responsibility added.  
Added: **Support and lead other branch, department and Government of Alberta priorities and initiatives, as required**

Responsibilities Removed:

## Job Purpose and Organizational Context

Why the job exists:

Reporting to the Senior Manager of River Hazard Management team, the River Engineer provides river engineering support to:

- River hazard identification and mitigation
- River-related assessments to inform decisions
- Flood preparation, recovery and response
- Flood-related information and services

## Responsibilities

**River Hazard Identification:** Identify and mitigate river hazards, including related to floods, debris floods and flows, channel migration and other river-related risks. Activities include:

- Assessment, application, and management of data and studies for provincial flood hazard identification programs, applying expertise in hydrology, river hydraulics, surveying, geospatial information, and flood mapping.
- Assessment, application, and management of data and studies for provincial hydrogeomorphic hazard identification programs, applying technical expertise in hydrogeomorphology and fluvial geomorphology related to alluvial fan (debris floods, debris flows) and channel migration hazards.
- Assessment, application, and management of cost-effective LiDAR-based regional flood mapping.
- Evaluation and application of emerging technologies and data-collection methods (e.g., machine learning and artificial intelligence, climate change scenarios, LiDAR, aerial imagery, GIS data analysis and management, survey methods, and field data collection) in river hazard identification initiatives.
- Development of studies, maps and risk mitigation plans, and associated product standards, specifications and guidelines.
- Inform and develop water management policies to manage river hazards.
- Engagement and collaboration with municipalities, Indigenous communities, federal, provincial and territorial governments and agencies, consultants, and the public regarding the implementation of river hazard identification programs. This includes working with other governments to fund project and programs, and associated grant / contract management and financial reporting.

**River-related Assessments to inform decisions:** Support Government of Alberta ministries on river-related matters to inform decisions, and respond to municipalities, Indigenous communities, industry, and the public on questions regarding provincial flood and river-related issues to support awareness and their management actions. Activities include:

- Support Government of Alberta approvals, compliance and other environmental management staff and inform decisions with information related to Alberta's rivers, considering strategy, regulatory and policy frameworks. This includes providing subject matter expertise for regulatory decisions and systems on river-related applications (e.g., development proposals, channel stability and erosion sites, intakes/outfalls, control structures, dykes). This includes advice on flood and river-related matters such as school site assessments, property dispositions.
- Communicate flood and river-related issue management requirements and best practices to various audiences, including briefings of Minister(s) and executive.
- Represent the Department at events, including with other government agencies, local authorities, industry and landowners, as required. This may require travel throughout the province outside of normal working hours.

**Flood Preparation, Recovery and Response:** Support river forecasting operations during high-water and emergency conditions, document flood events, and contribute to provincial hazard identification and risk analyses. Activities include:

- Provide operational support to the River Forecast Centre to ensure high-quality river forecasts. This includes assisting open water and ice forecasters and data quality specialists to meet operational requirements, as well as support flood related events by disseminating communication products

such as high stream flow advisories, flood watches, and flood warnings. Involvement is typically limited to critical periods when primary personnel are overextended. This responsibility may require shift work outside normal working hours and extended hours on short notice.

- Contextualize forecast flood impacts in flood-related mapping products and supporting information application during elevated river conditions. This includes preparing event-specific flood forecast maps for Government of Alberta situation reports and briefings, and communication to external parties.
- Advise provincial emergency management teams, dam safety and operations, municipal governments and others during events, as needed.
- Lead provincial flood-related hazard identification and risk assessment programs and products.
- Conduct and assess data and information to document flood events, including ground surveys and aerial imagery (e.g., high water marks, river ice data). Flights (airplane or helicopter) may be needed to collect river data or evaluate river conditions.
- Manage contracts and grants, overseeing deliverables and finances, as needed.

**Flood-related Information and Services:** Effectively communicate flood hazard and risk mitigation initiatives and information with various external stakeholders, with varying technical backgrounds.

Activities include:

- Manage email and applications for parties to ask and receive information on flood-related risk, including the provincial flood information mailbox and flood portal.
- Coordinate access to flood-related data such as maps, LiDAR, etc.
- Respond to inquiries for information from elected officials, executives, other departments and external parties, in a timely and clear manner.
- Contribute to branch and department business planning and reporting.

**Support and lead other branch, department and Government of Alberta priorities and initiatives, as required.** Activities include:

- Support other works with water, environment and natural resource management, or engineering work of the government.

## Problem Solving

Typical problems solved:

- Reviewing, integrating and applying various information to identify provincial flood hazards, risk mitigations and studies/maps, including surveying, hydrologic and hydrogeomorphic analysis, hydraulic modelling, sediment transport modeling, geospatial analyses (e.g., flood mapping, debris mapping, channel migration zone mapping), and LiDAR.
- Supporting approval, compliance, and environmental management decisions by providing expertise and information related to Alberta's rivers and to Alberta's legislation, regulations, codes of practice, directives, strategies, guidelines, and other Government of Alberta policies. This includes various applications related to development (siting of buildings, infrastructure, etc.).
- Supporting the Alberta government's river forecasting services, including contextualizing forecasted flood impacts by producing flood related mapping products and providing related supporting information during elevated river conditions.
- Responding to technical and public queries.

Types of guidance available for problem solving:

The position is expected to identify and resolve problems independently by applying expertise and guidelines and using the best available data. For more complex or ambiguous issues, the position may seek input from peers within the team and across the department to support effective problem solving.

Direct or indirect impacts of decisions:

Technical decisions made in this position directly influence the quality and reliability of flood hazard products, which in turn contribute to public safety.

## Key Relationships

Major stakeholders and purpose of interactions:

On a daily basis, this position communicates with other subject matter experts in the section on matters related to provincial flood and river-based programs and initiatives. Regular communication with management—including the Senior Manager of the River Hazard Management Team and higher levels—is required to provide project updates, identify challenges, offer strategic insight, and align shared team resources to address emerging priorities.

There is considerable interaction with department staff (e.g., River Forecast Centre, Water and Circular Economy Division, Regulatory Assurance Division, Resource Stewardship Division, Provincial Geo-spatial Centre) and other Government of Alberta ministries (e.g., Public Safety and Emergency Services, Municipal Affairs, Transportation and Economic Corridors, Infrastructure, Agriculture and Irrigation).

Significant contact is expected with local government decision-makers involved in implementing river hazard identification products. The position also engages extensively with representatives from municipalities, Indigenous communities, federal, provincial and territorial governments and agencies, consultants, subject matter experts, provincial committees and working groups, and the public on topics related to river hazards and river engineering.

## Required Education, Experience and Technical Competencies

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

If other, specify:

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

### Job-Specific Experience

- In-depth knowledge of Alberta's rivers and river systems, hydrology, hydraulics, fluvial geomorphology and river processes.
- In-depth knowledge of Alberta's river hazard identification programs, including the Flood Hazard Identification Program (FHIP) and the Hydrogeomorphic Hazard Identification Program (HHIP).
- Knowledge of cost-effective, LiDAR-based regional flood mapping initiatives.
- Experience in managing river hazard identification projects.
- Knowledge of jurisdictional (e.g., federal government, other provincial and territorial governments; international governments) initiatives and programs related to river hazard identification, and related legislation and policies.
- Knowledge of Alberta's hydrometric data network and monitoring program, including river ice.
- Excellent interpersonal skills, including the ability to work effectively both independently and as part of a team.
- Excellent written and verbal communication skills, including the ability to represent the department and the province in both departmental and public venues, with technical audiences (e.g., conferences, workshops) as well as non-technical audiences (e.g., elected officials, emergency response personnel, media and the public).
- Ability to exercise sound professional judgment in situations involving high stress and limited time.
- Ability to negotiate tasks and responsibilities within a team environment and present a unified position to external clients.
- Ability to respond directly to client needs by providing expert advice while clearly communicating the limits of one's knowledge and role capacity.
- Ability to work extended hours and remain on standby during operationally critical periods, including weekends and holidays during flood events. Additionally, vacation may be limited during certain times of the year due to operational considerations.

### Technical Competencies

- BSc in engineering or science with a focus on hydrotechnical engineering/science. A related graduate degree(s) is considered an asset.
- Advanced technical knowledge in the field of hydrology, hydrogeomorphology, river hydraulics and

fluvial geomorphology.

- Expertise in 1-D and 2-D river hydraulic and sediment transport models, including HEC-RAS.
- Knowledge of emerging technologies, such as machine learning and artificial intelligence, in river hazard identification initiatives.
- Knowledge of observed and anticipated climate impacts in Alberta as they relate to river hazard identification products.
- River hazard identification analyses using ArcGIS, including spatial analysis, map projections, coordinate systems conversions, GIS data/file management.
- Remote sensing and field data collection methods for the purposes of flood event documentation, river hazard studies and fluvial geomorphological investigations (LiDAR, aerial imagery, terrestrial and bathymetric surveys, hydrometric observations, highwater marks).

**Certification and/or Training**

- Eligibility for membership is required with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).
- Valid driver's licence is required as occasional travel is expected.

**Behavioral Competencies**

Competency	Level					Level Definition	Examples of how this level best represents the job
	A	B	C	D	E		
Develop Self and Others	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Plans according to career goals and regular development: <ul style="list-style-type: none"> <li>• Aligns personal goals with career goals</li> <li>• Leverages strengths; attempts stretch goals</li> <li>• Provides feedback and openly discusses team performance</li> <li>• Values team diversity, and supports personal development</li> </ul>	The position is required to communicate with colleagues in the River Hazard Management Team and the River Forecast Centre who are responsible for supporting the provincial river hazard assessment program. This includes providing subject-matter expertise, mentorship, and coordination to ensure effective program delivery.
Build Collaborative Environments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Involves a wide group of stakeholders when working on outcomes: <ul style="list-style-type: none"> <li>• Involves stakeholders and shares resources</li> <li>• Positively resolves conflict through coaching and facilitated discussion</li> <li>• Uses enthusiasm to motivate and guide others</li> <li>• Acknowledges and works with diverse perspectives for achieving outcomes</li> </ul>	All levels of government must work collaboratively to ensure coordinated and effective river and flood risk management initiatives that enhance long-term river and flood resiliency in Alberta. This position is responsible for fostering and maintaining relationships with municipalities, Indigenous communities, federal government partners to ensure that provincial programs, products and guidance align with those of others, as appropriate.

Systems Thinking	○ ○ ● ○ ○	<p>Takes a long-term view towards organization's objectives and how to achieve them:</p> <ul style="list-style-type: none"> <li>• Takes holistic long-term view of challenges and opportunities</li> <li>• Anticipates outcomes and potential impacts, seeks stakeholder perspectives</li> <li>• Works towards actions and plans aligned with APS values</li> <li>• Works with others to identify areas for collaboration</li> </ul>	<p>A holistic analytical approach is required, emphasizing how a system's components interrelate, how conditions evolve over time, and how river systems function within broader environmental and operational contexts. The position applies systems-thinking principles to provide technical oversight, operational design, and coordination for current and emerging river hazard assessment programs.</p>
Agility	○ ○ ○ ● ○	<p>Proactively incorporates change into processes:</p> <ul style="list-style-type: none"> <li>• Creates opportunities for improvement</li> <li>• Is aware of and adapts to changing priorities</li> <li>• Remains objective under pressure and supports others to manage their emotions</li> <li>• Proactively explains impact of change on roles, and integrates change in existing work</li> <li>• Readily adapts plans and practices</li> </ul>	<p>Ability to anticipate, assess, and readily adapt to changing priorities, maintain resilience during periods of uncertainty, and work effectively in a dynamic and evolving environment.</p>
Drive for Results	○ ○ ○ ● ○	<p>Works to remove barriers to outcomes, sticking to principles:</p> <ul style="list-style-type: none"> <li>• Forecasts and proactively addresses project challenges</li> <li>• Removes barriers to collaboration and achievement of outcomes</li> <li>• Upholds principles and confronts problems directly</li> <li>• Considers complex factors and aligns solutions with broader organization mission</li> </ul>	<p>Strong project management and organizational skills, with the ability to manage multiple issues simultaneously while delivering results. This position is responsible for managing river hazard identification projects from procurement through the technical and engagement phases, leading to finalization.</p>