Alberta

Public (when completed)

Update

Ministry

Agriculture and Irrigation

Describe: Basic Job Details

Position

Position ID

Position Name (200 character maximum)

Water Management Modelling Engineer

Current Class

Job Focus   Supervisory Level

Cost Centre   Program Code: (enter if required)

Supervisor's Position ID   Supervisor's Position Name (30 characters)   Supervisor's Current Class

Design: Identify Job Duties and Value

Changes Since Last Reviewed

Date yyyy-mm-dd

Job Purpose and Organizational Context

This position reports to the Manager of the Basin Water Management Section. The position provides leadership and direction to 2 technical staff. The position directly supports key goals relating to irrigation management within the Alberta Irrigation Strategy overseen by the Natural Resource Management Branch. The Water Management Modelling Engineer provides leadership in irrigation water modelling, district-scale irrigation data management and analysis, and supports irrigation district-scale water management initiatives in the Section. The position supports management of water in basins closed to new water licences and subject to variability in supply and demand. Major responsibilities include the operation, maintenance, and enhancement of a basin-scale irrigation demand model in support of various projects such as: irrigation district area expansion, future basin water management planning initiatives, sustainable development of water supply infrastructure, and assessment of the effects of climate variability on irrigation water supply and demand. The position supports assessment of new large-scale irrigation projects in Alberta to determine risks and opportunities as related to water needs. This position provides leading edge information and expertise for policy development to support conservation, efficiency, and productivity of Alberta's limited water resources. This position must have a working knowledge of Alberta's water management systems and operations, and ability to assess and analyze current and emerging water management issues facing the agriculture industry. Projects are conducted with the support and collaboration of irrigation districts, consultants, industry associations, private sector companies, and other government agencies. The position is expected to collaborate with modellers, engineers, analysts, agrologists, hydrologists, and information technology specialists.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

1. Provide basin-scale irrigation water modelling expertise to the department, the irrigation sector, and other agencies to assess future water demand and supply requirements.

Lead water modelling projects relating to irrigation demand and supply in irrigated basins I Alberta. The irrigation demand modelling is required by Environment and Protected Areas for its Water Resources Management modelling.

Ensure the Section's irrigation demand model (IDM-3) is operated, maintained, and enhanced in support of assessing existing and future irrigation water uses.

Assess water availability over growing seasons under conditions of varying demand and supply as impacted by irrigation area, weather, reservoir and snowpack conditions, crop and system types.

Source and validate data required for the model.

Plan, manage, and evaluate irrigation infrastructure and water management projects.

Analyze and interpret data and write project reports.

Provide analysis and modelling support of potential new irrigation development and areas outside of the irrigation districts of the province.

Maintain strong alliances with related industry groups to identify knowledge gaps and information requirements.

Determine and analyse impacts of climate change and climate variability on irrigation demand.

2. Ensure irrigation district water management information flows from data collection to the department and to the irrigation sector.

Lead data collection, maintenance, analysis, and enhancement of databases of relevant irrigation

information.

Supervise and coordinate the production and distribution of the annual Alberta Irrigation Information Report.

Provide expert advice to irrigation districts, industry representatives, and other government agencies on advanced technical issues relating to basin water demand and supply.

Prepare, write, and deliver a range of technical materials including reports and recommendations.

Give presentations at stakeholder meetings.

3. Provide support to the irrigation sector in ensuring efficient and effective water management through irrigation water demand analysis.

Maintain and enhance the irrigation water supply forecast and provide monthly estimates to inform the irrigation district water management practices during the irrigation season.

Provide technical expertise and support related to basin-scale irrigation demand.

Maintain awareness of current scientific literature and research findings to identify potential new technologies and techniques that may be suitable for adaptation and use in Alberta.

4. Lead modelling and data unit in support of Section programs and initiatives.

Provide supervision, leadership, and direction to technical staff reporting to this position, ensuring that all activities are conducted according to Departmental and Division business plans and in accordance with Government and Branch policies.

Assist in the development of technical support staff performance agreements and individual development plans.

Collaborate with Section staff on shared initiatives.

Problem Solving

Typical problems solved:

Provide leadership to the modelling and data unit to ensure program responsibilities and project deliverables are met in an accurate and timely manner.

Ensure the Section's databases, applications, and technical expertise are integrated and optimized to provide accurate technical analysis and useful recommendations on complex issues.

Promote collaboration through relationship building with diverse stakeholders.

Types of guidance available for problem solving:

Support from Manager, Director, and peers in the Section.

Input from other departments such as Environment and Protected Areas and Innovation and Technology, and from external stakeholders.

Direct or indirect impacts of decisions:

Need to assess unique and complex challenges that will lead to socially and environmentally acceptable solutions which will allow the agriculture industry to prosper.

Indirect impacts to stakeholders through modelling inputs, technical advice, and irrigation related data.

Direct impacts to irrigation producers and districts through technical analysis of irrigation expansion risks

and opportunities, and irrigation water management initiatives.

Key Relationships

Major stakeholders and purpose of interactions:

Interact daily with direct reports to coordinate activities, provide direction, and resolve issues.

Interact daily with Section Manager and colleagues to coordinate activities, provide updates, and seek direction.

Interact weekly with Section Director to provide updates and seek direction.

Interact monthly with Irrigation Districts, other industry stakeholders, and consultants to gather data and provide technical support and advice.

Interact weekly to monthly with other GOA departments to collaborate on shared initiatives including modelling, infrastructure operations, and data gathering.

Interact monthly with GOA IT personnel for business application updates, troubleshooting, and support.

Interact as needed with others on various irrigation water management-related matters.

Required Education, Experience and Technical Competencies

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

If other, specify:

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

Minimum of five years' experience with demonstrated expertise in a relevant area of water resources management such as civil engineering, hydrology, or physical geography.

Good understanding of the Alberta Irrigation Strategy as it relates to irrigation district water management targets and associated outcomes.

Expertise in irrigation water demand modelling, water quantity modelling or related modelling.

Experience with irrigated agriculture and irrigation conveyance infrastructure as applicable to Alberta is an asset.

Knowledge and understanding of the irrigation sector in Alberta and the legislation, programs and policies affecting the management of water.

Eligible for membership with APEGA as a Professional Member.

Specific skills required include:

Strong communication skills.

Analytical and problem-solving skills.

Database management and geospatial data skills.

Project management, time management, and organization skills.

Teamwork and relationship building with industry, government, and other agencies.

Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level A B C D E	Level Definition	Examples of how this level best represents the job
Systems Thinking	○ ○ ◉ ○ ○	Takes a long-term view towards organization's objectives and how to achieve them: • Takes holistic long-term view of challenges and opportunities • Anticipates outcomes and potential impacts, seeks stakeholder perspectives • Works towards actions and plans aligned with APS values • Works with others to identify areas for collaboration	
Creative Problem Solving	○ ○ ◉ ○ ○	Engages the community and resources at hand to address issues: • Engages perspective to seek root causes • Finds ways to improve complex systems • Employs resources from other areas to solve problems • Engages others and encourages debate and idea generation to solve problems while addressing risks	
Drive for Results	○ ○ ◉ ○ ○	Takes and delegates responsibility for outcomes: • Uses variety of resources to monitor own performance standards • Acknowledges even indirect responsibility • Commits to what is good for Albertans even if not immediately accepted • Reaches goals consistent with APS direction	
Develop Networks	○ ◉ ○ ○ ○	Works on maintaining close relations with all stakeholders: • Identifies key	

		stakeholder relationships • Has contact with range of interested parties • Actively incorporates needs of a broader group • Influences others through communication techniques	
Build Collaborative Environments	○ ◉ ○ ○ ○	Facilitates open communication and leverages team skill: • Leverages skills and knowledge of others • Genuinely values and learns from others • Facilitates open and respectful conflict resolution • Recognizes and appreciates others	

Assign

The signatures below indicate that all parties have read and agree that the job description accurately reflects the work assigned and required in the organization.

_____

Date yyyy-mm-dd   Employee Signature

_____

Date yyyy-mm-dd   Supervisor / Manager Signature

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Date yyyy-mm-dd   Director / Executive Director Signature

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Date yyyy-mm-dd   ADM Signature

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Date yyyy-mm-dd   DM Signature