ALBERTA INNOVATES

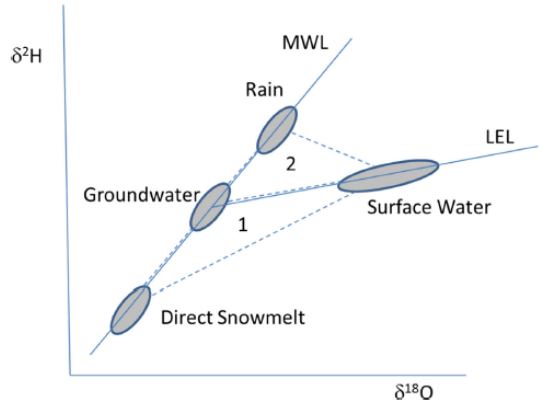
AGRICULTURE & ENVIRONMENT

ENVIRONMENTAL INNOVATION

WATER INNOVATION

Sheep River and Highwood River Watersheds – Alpine Hydrology and Surface Water and Groundwater Interaction Investigation

This project will help to better inform ongoing water and land use planning and to target required stewardship actions for source water protection and drought/flood management being carried out by the Highwood Management Plan Public Advisory Committee (HMP-PAC) and its municipal partners. InnoTech will identify interconnectivity between groundwater flows by means of a baseline isotopic hydrology characterization in the Sheep and Highwood River watersheds. This baseline will help to address the existing knowledge gaps related to groundwater surface water interactions in the alpine and non-alpine portions of these watersheds which in turn may contribute to an adequate water management.



FUNDING DETAILS

RECIPIENT:

Innotech Alberta

PARTNERS:

Foothills County, Town of Okotoks, Town of Diamond Valley, Town of High River

TOTAL BUDGET:

$191,000

AI FUNDING:

$115,000

PROJECT DATES:

JUL 2022 – AUG 2024

APPLICATION

Very few groundwater and surface water interaction studies have been conducted in watersheds in southern Alberta. Wider regional watershed studies should incorporate surface water and groundwater investigations in alpine and non-alpine hydrology components on watersheds draining from the Canadian Rocky Mountains into the boreal and prairie physiographical regions of Alberta. Municipalities, farmers, watershed associations, irrigation districts are potential users of the knowledge generated with this project.

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PROJECT GOALS

- Evaluating groundwater and surface water interactions along the Highwood River and Sheep River.
- Providing knowledge to improve hydrologic and hydrogeologic modelling to support increased resiliency in the watersheds.
- Understanding changes in precipitation/flows and increased temperatures in alpine areas of the target watersheds, and
- Understanding groundwater storage and the role of aquifers in alpine headwaters tipping points and resiliency in Alberta watersheds.

BENEFITS TO ALBERTA

- An improved understanding of groundwater and surface water interactions on these watersheds will bring the following benefits to Alberta:
- Improvements in the watershed water supply availability and opportunities for water conservation and increased understanding of the seasonal fluctuations in surface water and groundwater quality, quantity, and risk.
- Policy development based on identified areas for protection, measures to mitigate flooding and drought, improved surface water and groundwater modelling inputs, prioritized areas for residential development, water allocations for industrial use, commercial or mixed-use developments, supporting decisions related to integrated water management, and improving protection of aquatic habitats for angling and other outdoor activities within the watersheds.

1 Publication

CURRENT STATUS

AUG 2024

Project completed. Key outcomes include a conceptual understanding of the geological and hydrogeological pathways of alpine and non-alpine areas of the Highwood River – Sheep River watersheds. This project provides a start towards understanding the resiliency of these watersheds to climate change and future growth and the learnings to consider while building water-management strategies.