Oldman Watershed Local Reference Group

2025 ENGAGEMENT REPORT

OLDMAN RIVER © LLC PHOTO

As part of the Alberta Groundwater Program co-led by:

Living Lakes CANADA

OLDMAN WATERSHED COUNCIL

ROCKY MOUNTAINS WEST OF PINCHER CREEK © LLC PHOTO

LAND ACKNOWLEDGEMENT

Living Lakes Canada and the Oldman Watershed Council prioritizes Reconciliation with Indigenous Peoples in all of our water stewardship work. We recognize the ongoing practices and relationships that Indigenous Peoples have with their territories and the waters that flow through them. We honour these connections by uplifting Indigenous voices in water stewardship.

This project takes place on Treaty 7 Territory, the traditional territory of the Blackfoot Confederacy, Tsuut'ina Nation, and îethka-Nakoda Nations, as well as the chosen home of the Foothills Métis District 1. Specifically, within the Oldman watershed, we recognize the local Blackfoot communities of Piikani and Kainai First Nations. We acknowledge the role and responsibility that these Indigenous Peoples have to the lands and waters in this watershed, and that we aim to align our stewardship work with their water priorities.

TABLE OF CONTENTS

INTRODUCTION

Communities across the Oldman watershed in southern Alberta are facing growing water scarcity challenges. Climate change, land-use pressures, and increasing water demand are putting strain on already limited freshwater sources. These factors have led to more frequent water restrictions, stressed ecosystems, low lake and river levels, and water supply challenges for crops.

Groundwater is a critical source of freshwater that supports drinking water supplies, industry, agriculture, and healthy ecosystems. Approximately 600,000 rural Albertans already depend on groundwater, meanwhile groundwater levels in parts of Alberta have reached record lows. As surface water becomes increasingly unreliable, an understanding of groundwater systems is essential to ensure future water security in southern Alberta.

GROUNDWATER MONITORING © LLC PHOTO

The Alberta Groundwater Program was created in response to these concerns. Co-led by Living Lakes Canada and the Oldman Watershed Council (OWC), and implemented in partnership with the Piikani Nation Lands Department, this new monitoring initiative combines scientific research and community engagement to build a clearer picture of groundwater in the region. The program aims to raise awareness of groundwater, enhance water management, and ensure sustainable water use for future generations.

Through assembling a Local Reference Group (LRG), the project gathered input from Indigenous and non-Indigenous communities. This feedback identified local priorities and concerns that will help guide the selection of groundwater monitoring sites throughout the Oldman watershed.

LOCAL REFERENCE GROUP OVERVIEW

Spanning over 28,000 square kilometres, the Oldman watershed stretches from the Continental Divide in the Rocky Mountains eastward through the foothills and into prairie regions. It is home to many urban and rural communities including:

- Lethbridge
- Pincher Creek
- Fort Macleod
- Taber
- Municipal Districts of Pincher Creek and Willow Creek
- Cardston County
- Piikani and Kainai Nations
- Claresholm
- Nanton

The Oldman watershed also contains major surface water bodies. This includes:

- Oldman River
- Castle River
- Crowsnest River and Lake
- Beauvais Lake
- Waterton River
- St. Mary River
- Little Bow River

OLDMAN DAM IN PINCHER CREEK © LLC PHOTO

PINCHER CREEK LRG MEETING © LLC PHOTO

Community members across the Oldman watershed were invited to participate in the LRG to help inform site selection for groundwater monitoring wells. LRGs are composed of individuals with interest in or knowledge of the local water systems and hydrologic conditions. This type of public engagement ensures local values, priorities, and concerns are meaningfully incorporated into the design of the groundwater monitoring network.

To support this process, Living Lakes and OWC hosted three public engagement sessions between March and April 2025 in Pincher Creek, Lethbridge, and online. Participants were invited through a combination of social media, newsletters, media releases, and other public outreach efforts. They took part in small group discussions to explore key groundwater topics, pose questions, and share observations. Interactive mapping activities helped identify areas of interest and concern. An online and paper survey gathered additional input from participants and those unable to join the online or in-person meetings. In total, 135 participants attended LRG meetings and 141 individuals completed the survey.

Local First Nations were invited to participate in direct consultations in addition to the broader engagement. In May 2025, Living Lakes and OWC participated in a workshop held in Pincher Creek by Piikani Nation Land Management and The Resilience Institute. This session included presentations and roundtable discussions to further explore concerns and priorities related to groundwater from Piikani Nation members.

Recognizing Indigenous People as the rightful caretakers of their traditional territories, Living Lakes and OWC have worked, and continue to work, to complement their intergenerational work and Indigenous-led water stewardship initiatives.

Insights from the LRG engagement process will be integrated with scientific findings from the aquifer vulnerability assessment and data gap analysis performed by Opus Petroleum. Together, these findings will inform the development of a Priority Monitoring Matrix, a key tool that will guide the selection of long-term groundwater monitoring sites across the watershed.

ENGAGEMENT OUTCOMES

DEMOGRAPHIC BREAKDOWN

Participants represented a broad cross-section of sectors, including local and regional governments, First Nations, academia, environmental consultants, local community groups, and watershed residents.

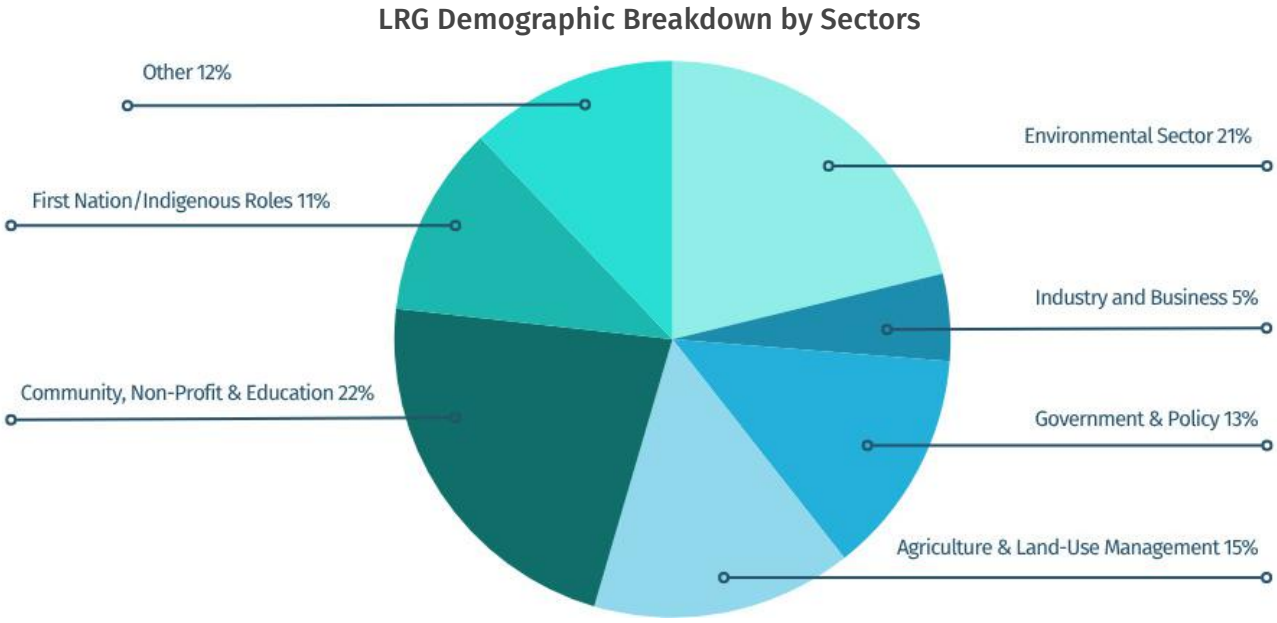


Figure 1. Distribution of participants by sector across both the LRG meetings and survey respondents.

CONCERNS AND QUESTIONS ABOUT GROUNDWATER

The feedback gathered through the meetings and survey revealed strong, region-wide concern about groundwater. Top areas of concern relate to drinking water, agriculture and food security, and ecosystem health.

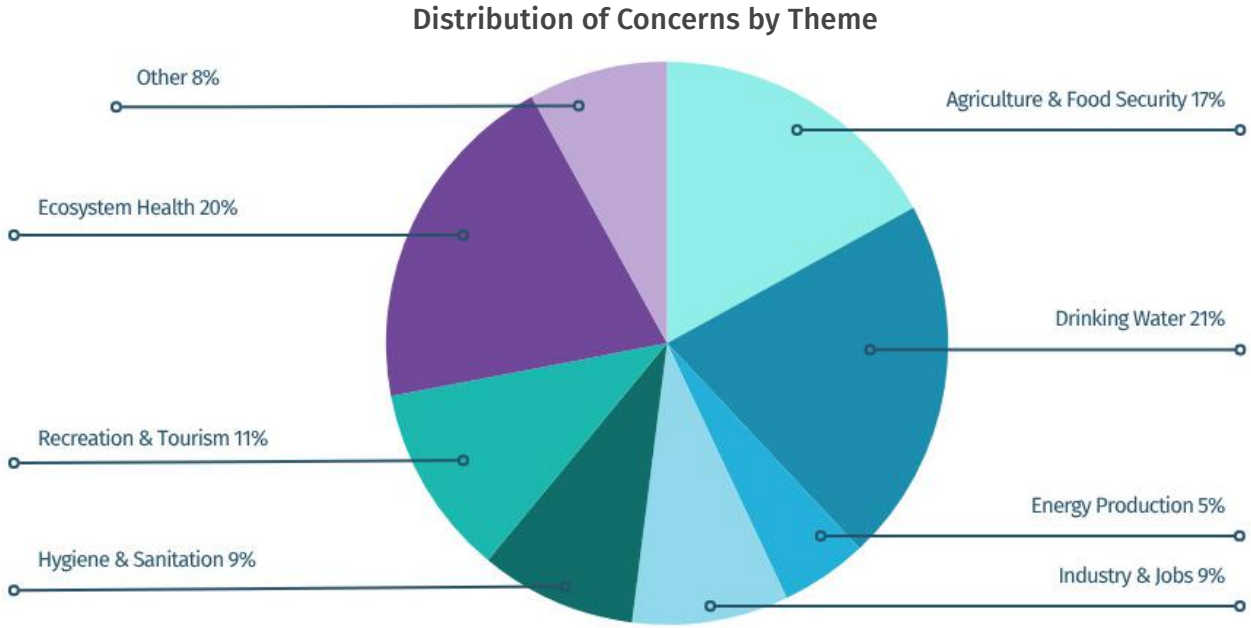
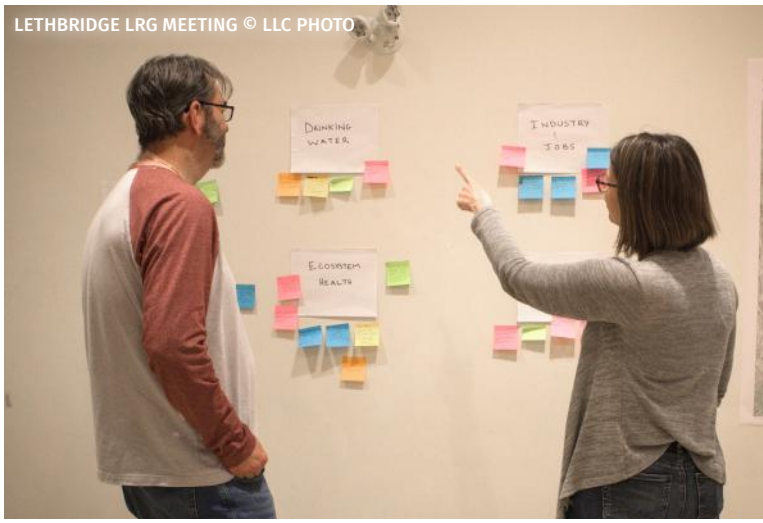


Figure 2. Key areas of concern related to groundwater, based on combined feedback from LRG meetings and the survey.


PINCHER CREEK LRG MEETING © LLC PHOTO

Summary of key community concerns by theme:

Drinking Water: Contamination risks from industrial activities such as oil and gas, mining, and agriculture were widely cited. Many participants are concerned about the long-term safety and reliability of their drinking water sources.



LETHBRIDGE LRG MEETING © LLC PHOTO

Agriculture and Food Security: Groundwater use for irrigation, livestock production, and food cultivation was a commonly expressed concern. Specifically as it relates to the excessive use of groundwater for crop irrigation and the widespread issue of overgrazing.

Ecosystem Health: A key concern within this theme is the dynamic interactions between surface water and groundwater systems, and how these are influenced by climatic variables, like precipitation, and human activities, such as industrial operations.

Recreation and Tourism: Concerns were raised about a potential decline in recreational opportunities and capacity, particularly fishing, as reduced groundwater contributions to streams could lead to higher water temperatures, threatening habitat for sensitive fish species.

Hygiene and Sanitation: Participants expressed concern that contaminated groundwater may pose significant risks to hygiene and sanitation, especially when used for drinking, cooking, or bathing. Poorly maintained wells and nearby pollution sources, such as septic systems or agricultural runoff, were identified as potential contributors to the spread of waterborne illnesses.

LETHBRIDGE LRG MEETING © LLC PHOTO

Industry and Jobs: Participants expressed concerns about the resource and significant water demand of a potential artificial intelligence centre being proposed near Pincher Creek, AB.

Energy Production: Coal mining in the Oldman watershed emerged as one of the most prominent concerns. Participants highlighted the potential for these activities to contaminate groundwater and impact water quality.

Other: Additional common concerns included questions around how data from the program will be used and stored, the role of the Government of Alberta in the initiative, and the availability of groundwater studies within the province.

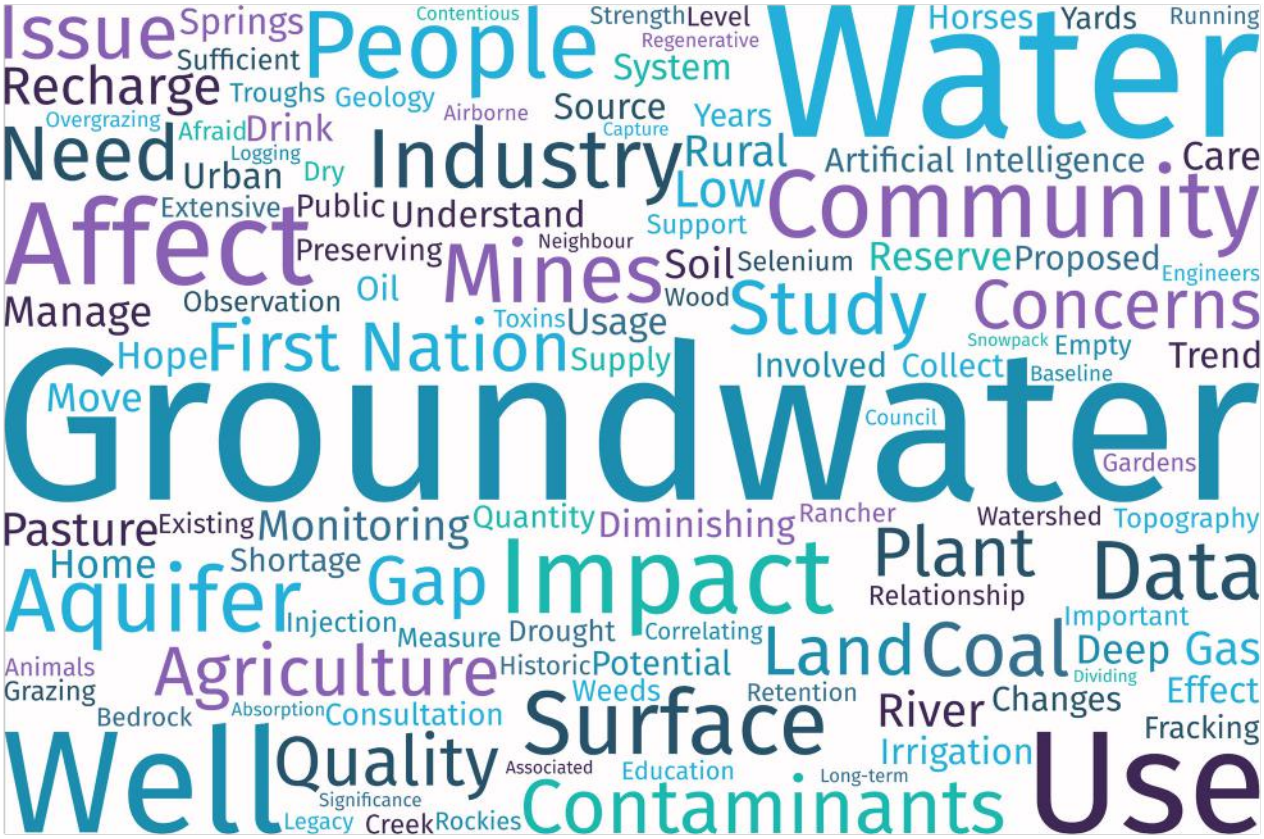


Figure 3. The most frequently mentioned keywords related to groundwater concerns in southern Alberta, based on input from LRG meetings and the survey. Word size corresponds to how often each term was referenced.

Select participant quotes about their groundwater concerns:

"I am concerned that disturbing the geology of the area will contaminate the groundwater."

"A new AI center near Yarrow Creek will potentially contaminate the groundwater from Twin Butte to Lethbridge and possibly beyond and cause a water shortage. Yarrow Creek is home to 100 species of wildlife, over 20 of which are endangered."

"We are in a drought cycle. There is very little snowpack in the mountains to recharge the ground water, possibly affecting our only water source. As a primary producer, water is essential for our animals, household and gardens."

"Our community has minimal information on groundwater availability to support our long-term community needs."

"Several years of drought, reduction in snowpack, questionable water allocations and the returning threat of coal mining in the headwaters of the Oldman River amplifies the concern of water quantity and water quality within the watershed."

"The threat of coal mining in the Eastern Slopes is more than concerning. The proposed mining threatens our water and our food."

"I am concerned about septic systems and agrochemical impacts on groundwater quality and human health in areas where groundwater is used as domestic supply."

"I am concerned about springs being impacted - Quantity and quality."

"Quality, sustainability, and skewed representation of data are concerns."

"Industrial development in the Eastern Slopes has consequences for ground water capture as the natural biomass that allows absorption of moisture into the ground water system is disrupted. The groundwater is nature's reservoir, discharged as required when the surface moisture is depleted in hot months. With climate change increasing, I worry about water availability and the disruption of the hydrological system."

"I am concerned about the density of feedlots and what potential impacts these might have to groundwater quality and quantity."

"I am concerned that water licenses have been sold to mining companies that will take water away from Southern Alberta. The water is needed for human consumption, agriculture and livestock production. Water should not be sold."

Select participant quotes about their groundwater questions:

"What's the relationship between regenerative agriculture and groundwater retention?"

"How do we manage groundwater use so that it is protected and managed for future use?"

"I would like to understand the significance and impact groundwater has at an urban level i.e. smaller properties, gardens, yards and 'strength' of soil."

"What impacts do roads and other disturbances have for groundwater?"

"How are orphan oil & gas wells affecting groundwater?"

"How do different groundwater wells and aquifers impact each other over a defined period of time?"

"How does the diminishing snow fall impact groundwater?"

"Where can we learn more about groundwater in the region? Especially regarding monitoring, regulation, and trends."

"Can water move between aquifers?"

"Is groundwater recharge declining across the Oldman watershed?"

"How do coal mines in the Crowsnest Pass affect groundwater in the area?"

"Does agriculture water needs affect the community's drinking water?"

"Will there be a sufficient supply of groundwater to expand agricultural production and add value to agricultural businesses?"

"How is the data that will be collected be used?"

"Is there sufficient supply of groundwater to increase the availability of potable water to Indigenous communities that are presently underserviced?"

"How does fracking affect groundwater?"

LOCATIONS OF CONCERN

Participants were invited to identify locations of concern via maps during both the in-person and online meetings, as well as through the survey. Each point reflects a general area of concern and may relate to various groundwater issues.

Select examples of location-specific groundwater concerns shared by participants include:

Crowsnest Pass: Concerns about coal mining activity and the potential impacts on water in headwater regions.

Twin Butte: Participants raised concerns about a proposed artificial intelligence centre near Yarrow Creek, citing potential groundwater contamination and added pressure on already limited local water supplies.

Pincher Creek, Crowsnest Pass, Waterton Foothills: Participants expressed general concerns about groundwater quantity and quality across these areas.

Lethbridge: Worries about industrial water use for irrigation and its impact on water security within the city.

Cardston: Questions were raised about the regulatory oversight, particularly in relation to potable water use by RV parks in the area.

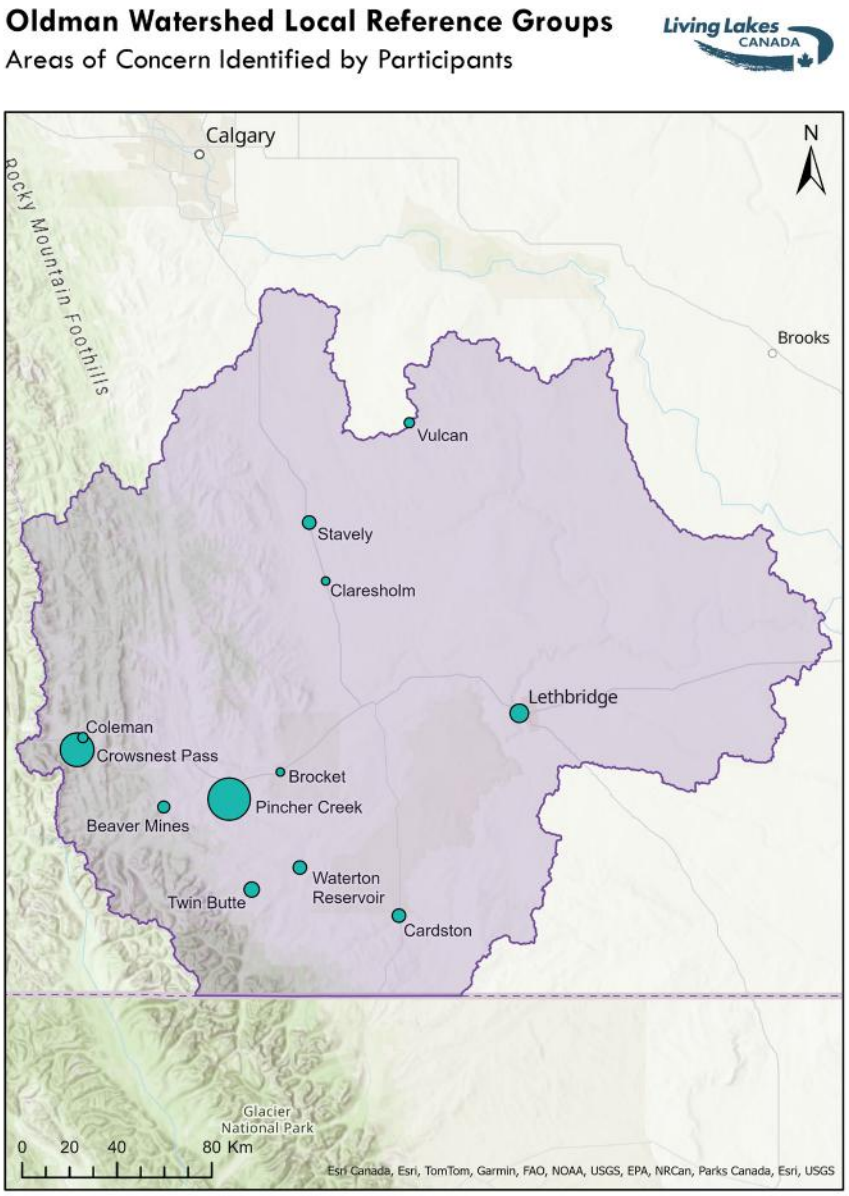


Figure 4. Density map showing how frequently specific towns and regions were identified by LRG participants. Dot size corresponds with frequency of mention.

Claresholm: Concerns were shared about the impacts of large-scale feedlots on groundwater.

FEATURED SURVEY RESULTS

To ensure broad and inclusive participation, the survey was made available online for those unable to attend the in-person or online community meetings. Printed copies were also provided during in-person sessions. LRG participants were invited to take part in both the meetings and the survey.

The following section highlights selected results from key survey questions. *This summary is not comprehensive of the entire survey.

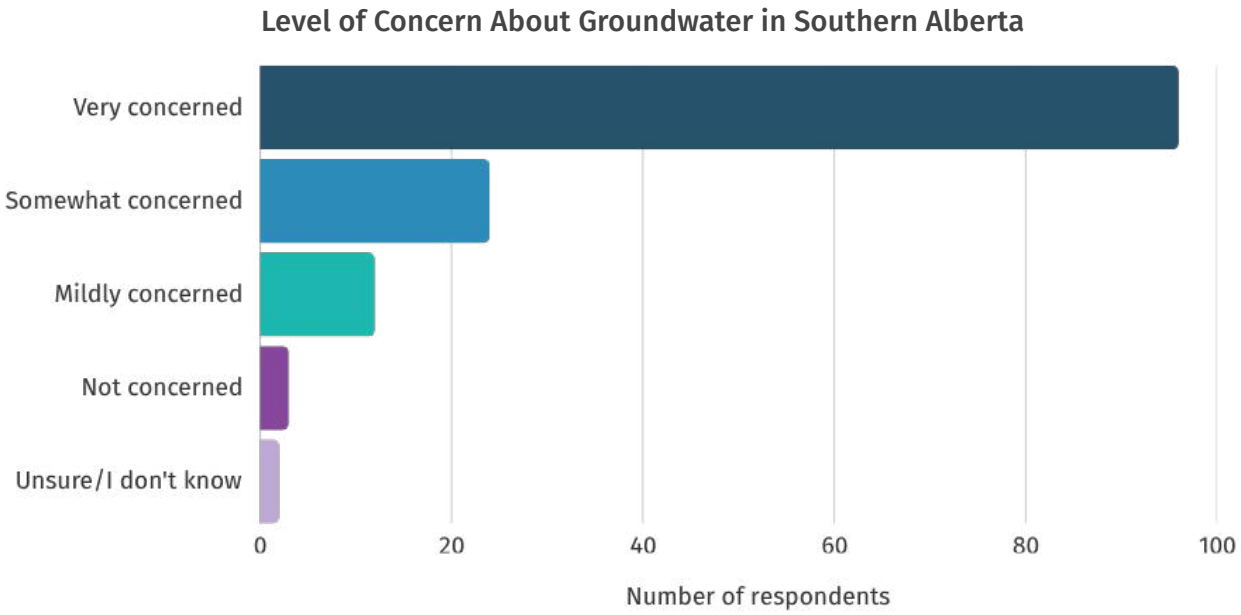


Figure 5. Survey responses to the survey question assessing concern about groundwater in southern Alberta.

More than 70 percent of respondents indicated they were “very concerned” about groundwater in southern Alberta. The diversity of participants from various sectors including government, industry, and community organizations, highlights that concern about groundwater is widespread and broadly shared across the region.

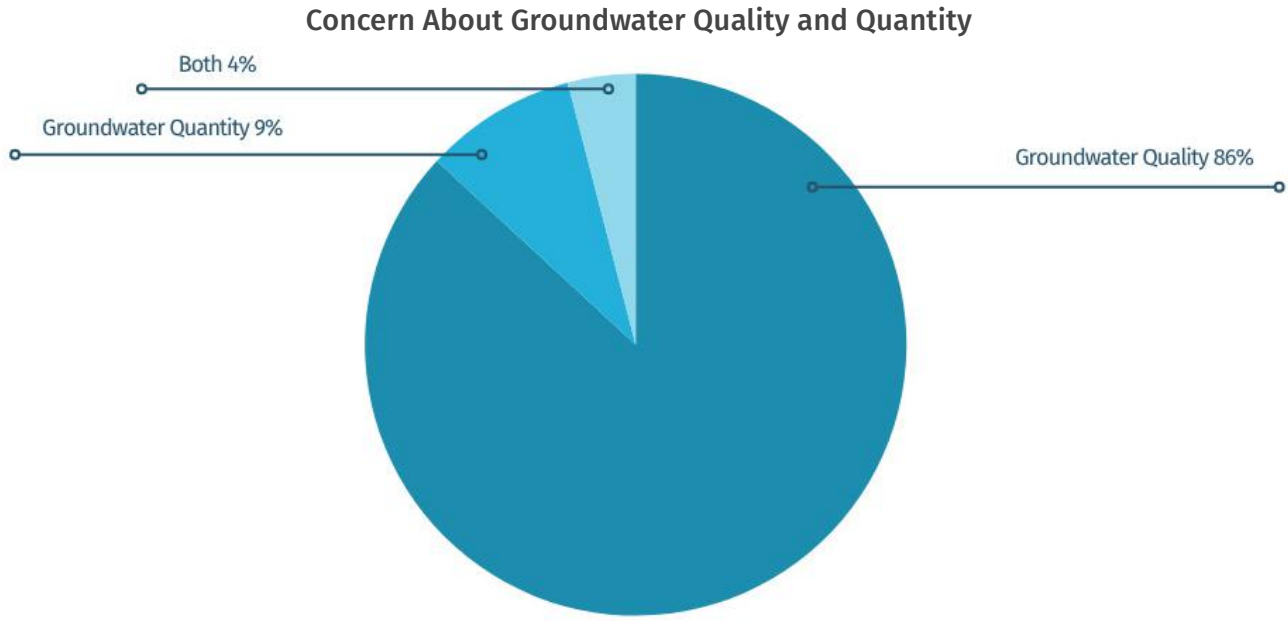


Figure 6. Survey responses to the question about concerns around groundwater quality, quantity, or both.

The majority of respondents (over 86%) expressed concerns about groundwater quality. An additional 9% were concerned only about quantity, while 4% reported concerns about both quality and quantity.

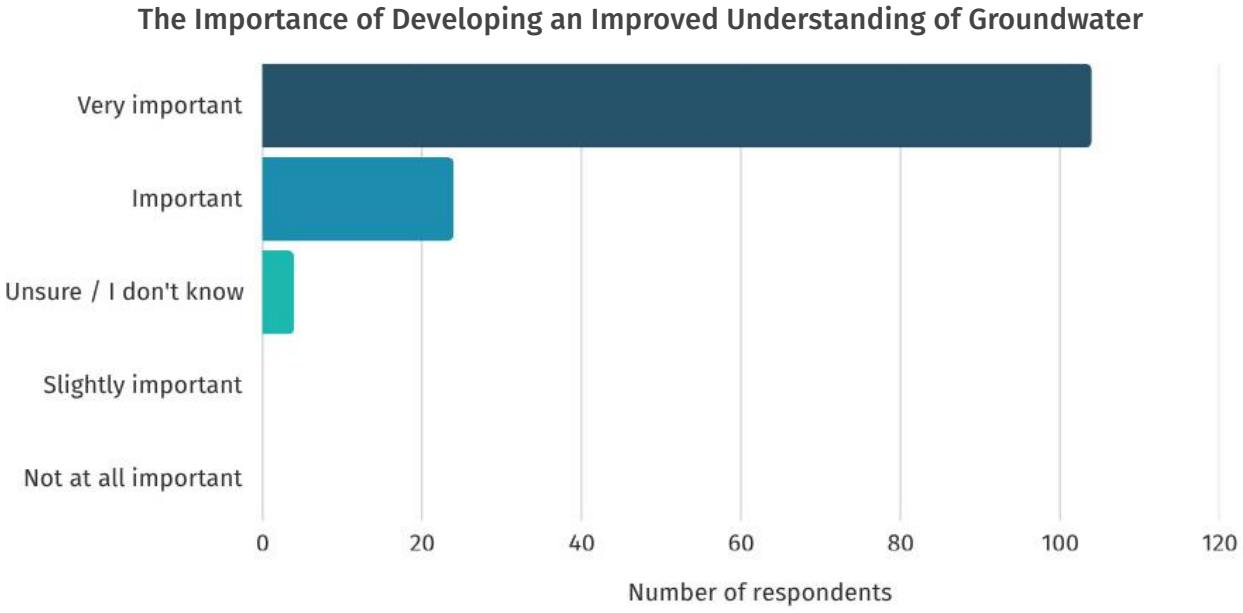


Figure 7. Survey responses regarding the importance of developing an improved understanding of groundwater.

Out of all respondents, 104 rated the issue as “very important,” 24 considered it “important,” and four selected “unsure/I don’t know.” Notably, no respondents indicated that the issue was only “slightly important” or “not important at all.” These findings reaffirm the strong and widespread recognition of the critical needs to deepen our understanding of groundwater across the region.

PRESENTATION WITH PIIKANI NATION AND THE RESILIENCE INSTITUTE

On May 27, 2025, Living Lakes delivered a presentation at a workshop hosted by The Resilience Institute in collaboration with Piikani Nation Land Management. The presentation was followed by a facilitated group discussion and collaborative knowledge exchange focused on community groundwater concerns and priorities. Fourteen participants and seven subject matter experts attended the workshop.

Key themes that emerged from the discussions included:

- Interest in implementing a youth engagement and education program with a component that would allow youth to learn about groundwater systems, including monitoring techniques.
- Interest in expanding local water monitoring and groundwater mapping initiatives.
- Food security and self-sufficiency is of great importance, including sustainable and healthy water supply and food systems. There should be continued investment in water and food security through sustainable agriculture projects.
- Consultation and reconciliation with First Nations is a complex issue, and there is a need for First Nations to be legally and policy-prepared to address current and future impacts on water quality and quantity and associated impacts on the well-being of Indigenous communities.

VISIT TO PIIKANI LANDS WITH PIIKANI NATION LANDS DEPARTMENT AND BGC ENGINEERING © LLC PHOTO

WHAT'S NEXT?

⇨**Priority Monitoring Matrix Development:** Living Lakes is currently developing a Priority Monitoring Matrix, which collates the LRG feedback and the results of the aquifer vulnerability assessment and data gap analysis to guide monitoring site selection.

⇨ **Monitoring Site Selection:** Based on the LRG feedback and scientific assessments, priority areas will be identified and compiled. Field reconnaissance will take place over the summer to ensure sites align with community-identified criteria, and the findings from the data gap analysis and aquifer vulnerability assessment. Final site selection is anticipated for late summer to early fall 2025.

⇨ **Monitoring Implementation:** Monitoring implementation will be phased, with some monitoring being initiated in Fall 2025. Further monitoring will be implemented in the subsequent years.

⇨ **Community Engagement:** Workshops about groundwater monitoring will be held in Fall 2025 for volunteer groundwater well owners, community volunteers and interested residents.

⇨ **Data Storage:** A primary objective of the project is to ensure that the data is accessible and reusable to support evidence-based and sustainable freshwater resource management. Living Lakes will host the data on the Columbia Basin Water Hub while continuing to identify an open data platform within Alberta to ensure the data is easily findable to those who need it most.

⇨ **Ongoing Reporting:** Living Lakes will continue to maintain this network of wells within the Oldman watershed, authoring reports on preliminary data findings and lessons learned as the project progresses.

Multi-year data records are required for statistical analysis and subsequent application of data for decision making. As such, this project is an investment in long-term benefits to water stewardship and climate resilience. Applications of the project outputs will continue to develop as the monitoring network is implemented.

CONTACT

If you have any questions, please contact **abgroundwater@livinglakescanada.ca**.

For updates and resources about the Alberta Groundwater Program,
visit the project page: **www.LivingLakesCanada.ca/abgroundwater**

We gratefully acknowledge the financial support of the funders who made this project possible.

Alberta

ALBERTA INNOVATES

CALGARY FOUNDATION
FOR COMMUNITY, FOREVER

ALBERTA ecotrust

Capital Power

Land Stewardship Centre

WOLSELEY

The Chawkers Foundation

We also extend our sincere thanks to the project partners whose collaboration and knowledge are essential to the success of this work.

MacHydro

BGC

OPUS

Livingstone LANDOWNERS GROUP

UNIVERSITY OF CALGARY

Bow River Basin Council