



MINING TRANSPARENCY FOR COMMUNITIES

**AQUATIC LIFE PROVIDES PUBLIC DASHBOARD
FOR REAL-TIME GROUNDWATER MONITORING
IN MANITOBA**

Driven by heightened public demand for environmental accountability, modern mining operations are shifting toward radical transparency, utilizing live data dashboards and independent oversight to provide real-time monitoring of sensitive resources like aquifers.

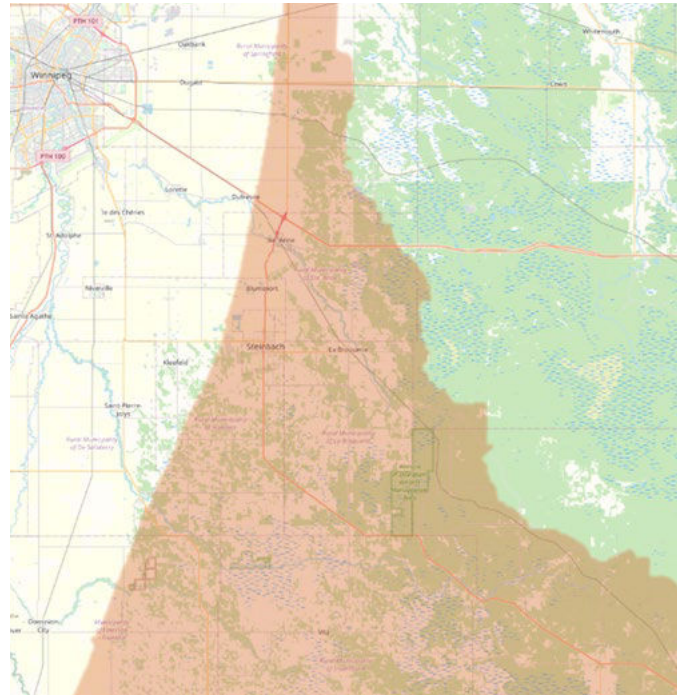
Aquatic Life worked with Sio Silica to meet requests from Indigenous groups, local residents, and regulators to see near-real-time information rather than relying solely on summarized reports.

SIO SILICA PROJECT SEEKS WATER MONITORING SOLUTION

In southeastern Manitoba, the Sandilands aquifer supports drinking water for more than 120,000 households. A silica sand mining project was proposed in the region by Sio Silica. During the public engagement process, communities raised concerns around potential impacts of mining — from water quality to aquifer mixing and long-term groundwater integrity.

Communities sought clear, verifiable assurance that groundwater would be protected and that every reasonable measure would be taken to prevent negative environmental impacts. Transparency was a central expectation — not only through technical reports delivered after the fact, but through access to live factual information that could demonstrate, as conditions evolved, that water remained safe and protected.

Building and maintaining trust in how groundwater conditions would be monitored, interpreted, and communicated emerged as a key consideration.



Sandilands Aquifer

THE CHALLENGE

Traditional groundwater monitoring approaches often rely on manual sampling conducted at fixed intervals. While technically valid, these methods can leave long gaps between measurements and provide limited visibility into short-term changes or emerging trends.

In a project facing high public scrutiny, a traditional approach made it difficult to meet all the requirements.

ENVIRONMENTAL	SOCIAL	GOVERNANCE
<ul style="list-style-type: none"> • Minimize impact on land, water, and air • Prevent contamination • Reduce emissions and resource consumption • Plan and execute effective site reclamation/closure 	<ul style="list-style-type: none"> • Ensure worker health and safety • Engage transparently with local and Indigenous communities • Deliver shared economic benefits (jobs, contracts, infrastructure) • Maintain social license to operate 	<ul style="list-style-type: none"> • Comply with all regulations and permitting requirements • Operate ethically and transparently • Maintain strong oversight and accountability • Report ESG performance clearly to stakeholders

A monitoring solution was needed that could provide near real-time data, operate reliably in remote conditions, and make information easy to share with non-technical audiences.



Digging Deep for Green Future

The Sio Silica project targets deposits of exceptionally pure silica sand intended for high-tech and industrial “green economy” applications such as solar panels, semiconductors and computer chips along with lithium-ion batteries.

THE AQUATIC LIFE APPROACH

Sio Silica engaged Aquatic Life to see if our unique platform could provide continuous observation of groundwater conditions at key monitoring locations to address the public’s desire for live and transparent monitoring.

Using the Aquahive environmental monitoring platform, data could be collected, stored and shared in real-time providing information about aquifer conditions in a way that could be accessed by the public and discussed openly.

AQUAHIVE ENVIRONMENTAL MONITORING PLATFORM

The Aquahive platform combines rugged field hardware with a cloud-based data platform to support long-term, unattended environmental monitoring.

Aquahive systems:

- collect continuous groundwater level and water quality data from sensors installed in monitoring wells
- transmit data via cellular and satellite communications
- store data on secure servers meeting auditing standards
- provide dashboards on public facing website showing trends, thresholds, and historical records

The platform’s compatibility with a wide range of sensors allowed the monitoring program to be tailored to site-specific groundwater indicators, while its solar power supply provides a method for year-round operation without reliance on grid infrastructure.



IMPLEMENTATION HIGHLIGHTS

1. SENSOR INTEGRATION & FIELD DEPLOYMENT

Aquahive terminals were installed at monitoring wells and connected to environmental sensors measuring:

- groundwater level
- temperature
- conductivity
- additional water quality indicators relevant to aquifer conditions

2. OFF-GRID POWER AND COMMUNICATIONS

Each monitoring system runs autonomously using solar or wind power, though for this deployment, the power configuration was adapted to the site's specific setup using secure enclosures.

Data was transmitted reliably to the cloud using cellular telemetry, ensuring continuity even in the remote locations.

3. DATA ACCESS AND COMMUNITY ENGAGEMENT

Through the Aquahive Data system:

- results were monitored and communicated with clear, easy-to-understand visual dashboards
- alerts were configured to flag changes outside expected ranges
- historical trends supported transparent reporting during community consultations

This approach allowed stakeholders — including Indigenous groups, local residents, and regulators — to access near-real-time information rather than relying solely on summarized reports.



Secure Aquahive monitoring installation on Sio Silica site (Borehole 92-8)

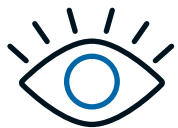


Aquahive supports solar and wind power with cellular and satellite communications



The Sio Silica dashboard presents all data in an easy to view interface

OUTCOMES



LEAD WITH TRANSPARENCY

Open access to environmental data helps build credibility in high-concern projects.

- Continuous data access reduced uncertainty around groundwater conditions and supported informed, constructive discussions between project teams and communities.



CONTINUOUS MONITORING MATTERS

Real-time systems provide context and confidence that periodic sampling cannot.

- Real-time monitoring enabled early identification of changes, improved understanding of aquifer dynamics, and provided a robust data record to support technical review.



ACCESSIBLE DATA SUPPORTS COLLABORATION

When information is easy to understand and share, it becomes a foundation for dialogue rather than conflict.

- Timestamped, auditable data streams strengthened environmental assessments and aligned with regulatory expectations for independent, continuous monitoring.



CONCLUSION

REAL-TIME DASHBOARDS SETTING A NEW STANDARD FOR CANADIAN MINING

Driven by heightened public demand for environmental accountability, modern mining operations are shifting toward radical transparency, utilizing live data dashboards and independent oversight to provide real-time monitoring of sensitive resources like aquifers.

This “open-data” approach aims to secure a social license to operate by replacing traditional, closed-door reporting with accessible digital oversight that allows communities to verify safety and sustainability claims instantly.

The Sio Silica project in southeastern Manitoba is a prime example of this shift. After their initial 2024 application, the company’s revised 2025 proposal explicitly leans on these transparency tools to secure public trust.

This project demonstrates how real-time groundwater monitoring can play a meaningful role in community engagement and environmental stewardship. By providing continuous, accessible insight into aquifer conditions, Aquatic Life helped shift monitoring from a compliance exercise to a shared resource for understanding and trust.

In projects where water resources are central to community well-being, transparent monitoring approaches are not just technical tools, they are essential components of responsible decision-making.