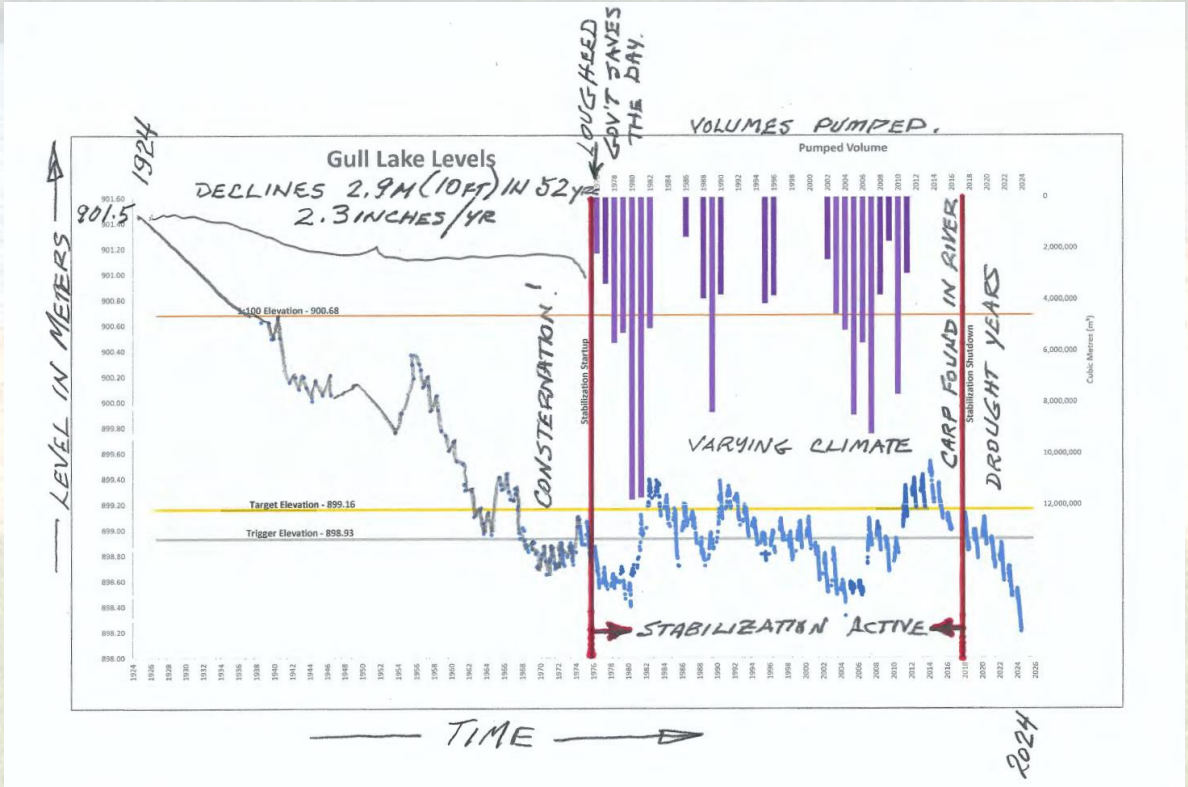
Summer Village of Gull Lake
Gull Lake Water Level Stabilization Update

July 5, 2025

Gull Lake Historical Water Level

- Original Lake elve was 902.2 masl (meters above sea level).
- Gull Lake has been dropping in level since 1910.
- First official notification to Alberta Gov't in 1920
- Lake level monitoring started in 1924
- Average decline 2.3 inches /year (5,000,000 m3/yr)
- Stabilization started in 1976
- 110,000,000 m3 pumped into Gull Lake 1976-2010
- Prussian Carp identified in the Red Deer River system in 2017.
- Blindman River Pumping License suspended
- Current level 898.2 masl

- Testing Gull Lake for Carp
  - AEPP carried out index netting on Gull lake in 2024 and did not find carp.
  - ALMS sampling for invasive species DNA as part of 2025 Lake Watch.

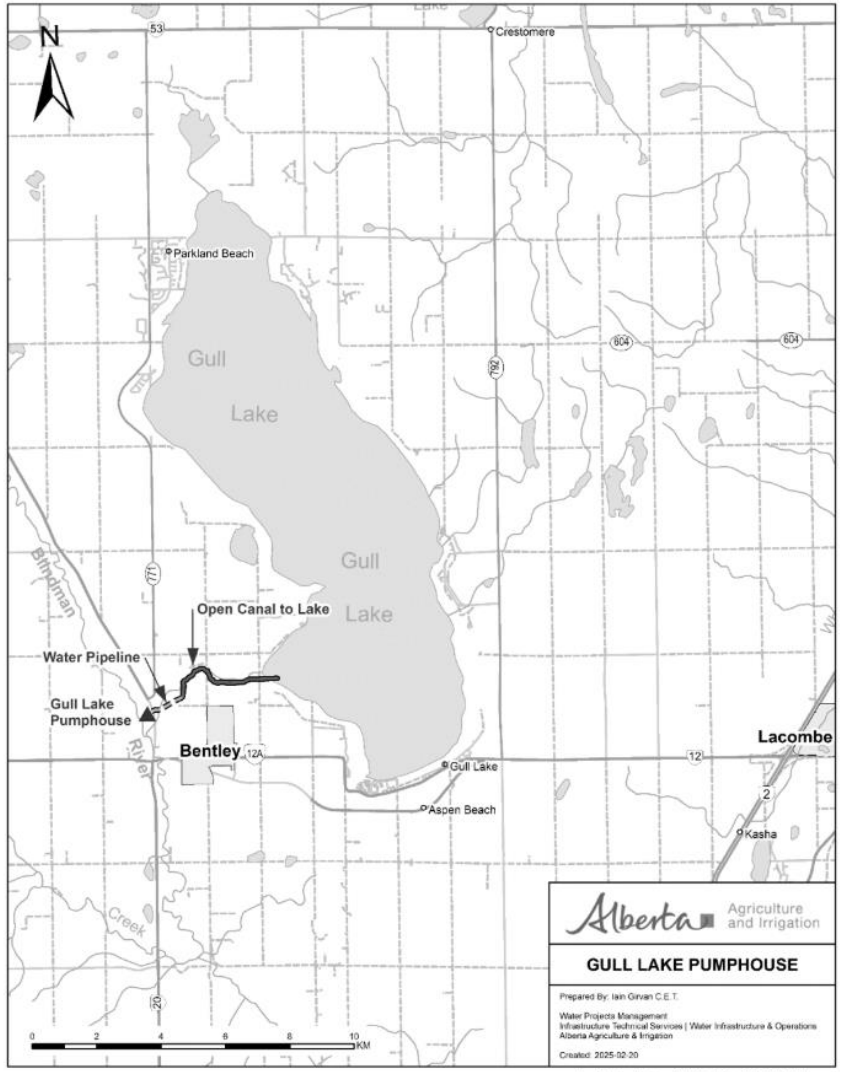


Initiatives for Supplemental Water

1. Blindman River Pumping License Reactivation
2. Deep Ground Water Pumping
3. Water Flow Blockage Study
4. Red Deer River Pumping

Blindman River Water License Re-activation Approval

- License 00044974-00-00 Amendment was approved by Alberta EPA April 30, 2025.
- 5 million m^3 annually.
- License volume adds about 2 ½ inches a year:
  - slightly more than historic rate of loss
  - another source to restore the lake more quickly
- Requires filtration.
- The Alberta Gov't / AGI will pay 100% of the cost.
- Schedule:
  - Planning and filtration facilities requisition Q3 2025
  - Installation in Q4 2025/Q1 2026
  - Target initial pumping Q2 2026 spring flood.
  - Pump and electrical upgrades Q3/Q4 2026



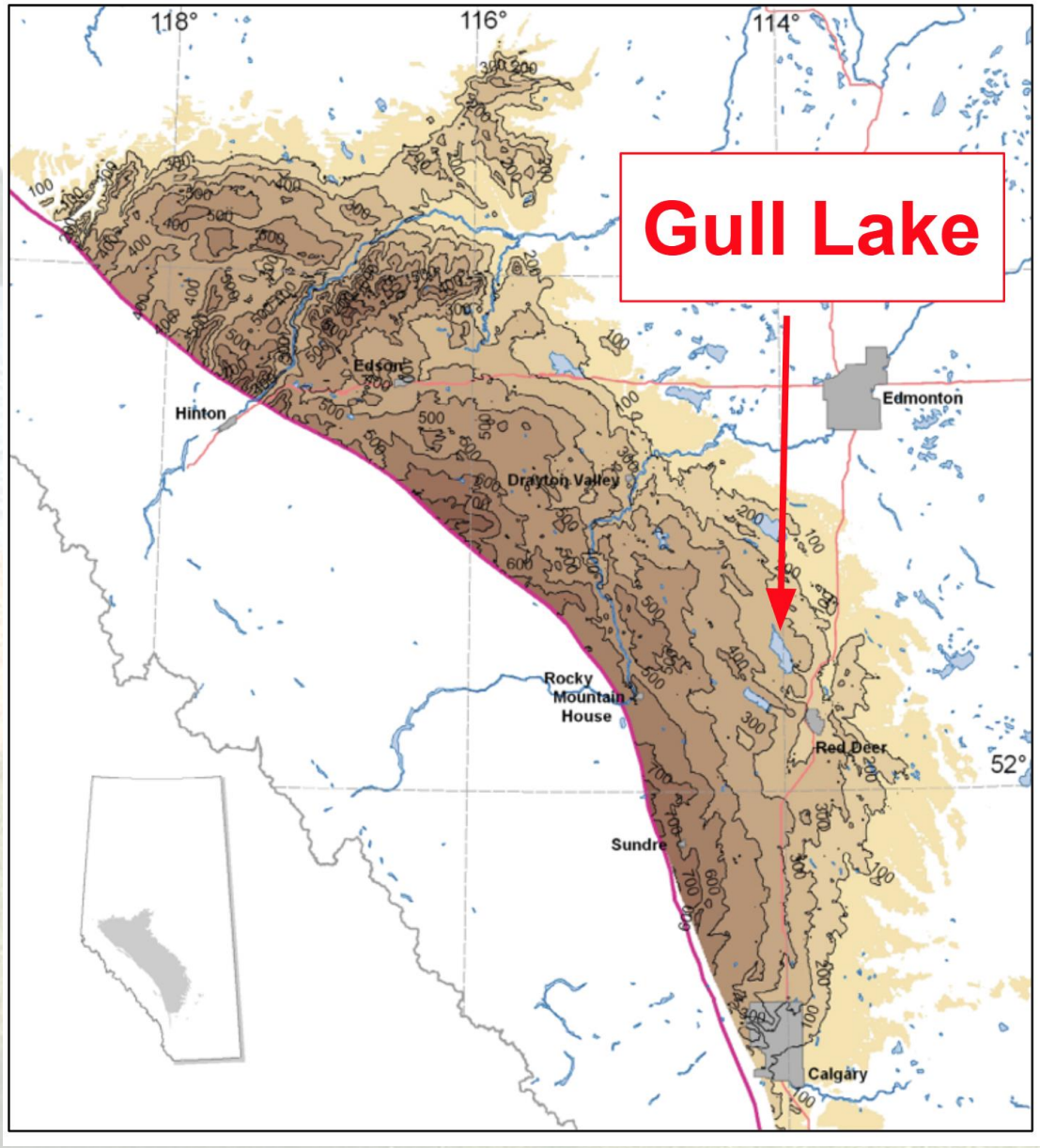
Paskapoo Formation

Paskapoo formation

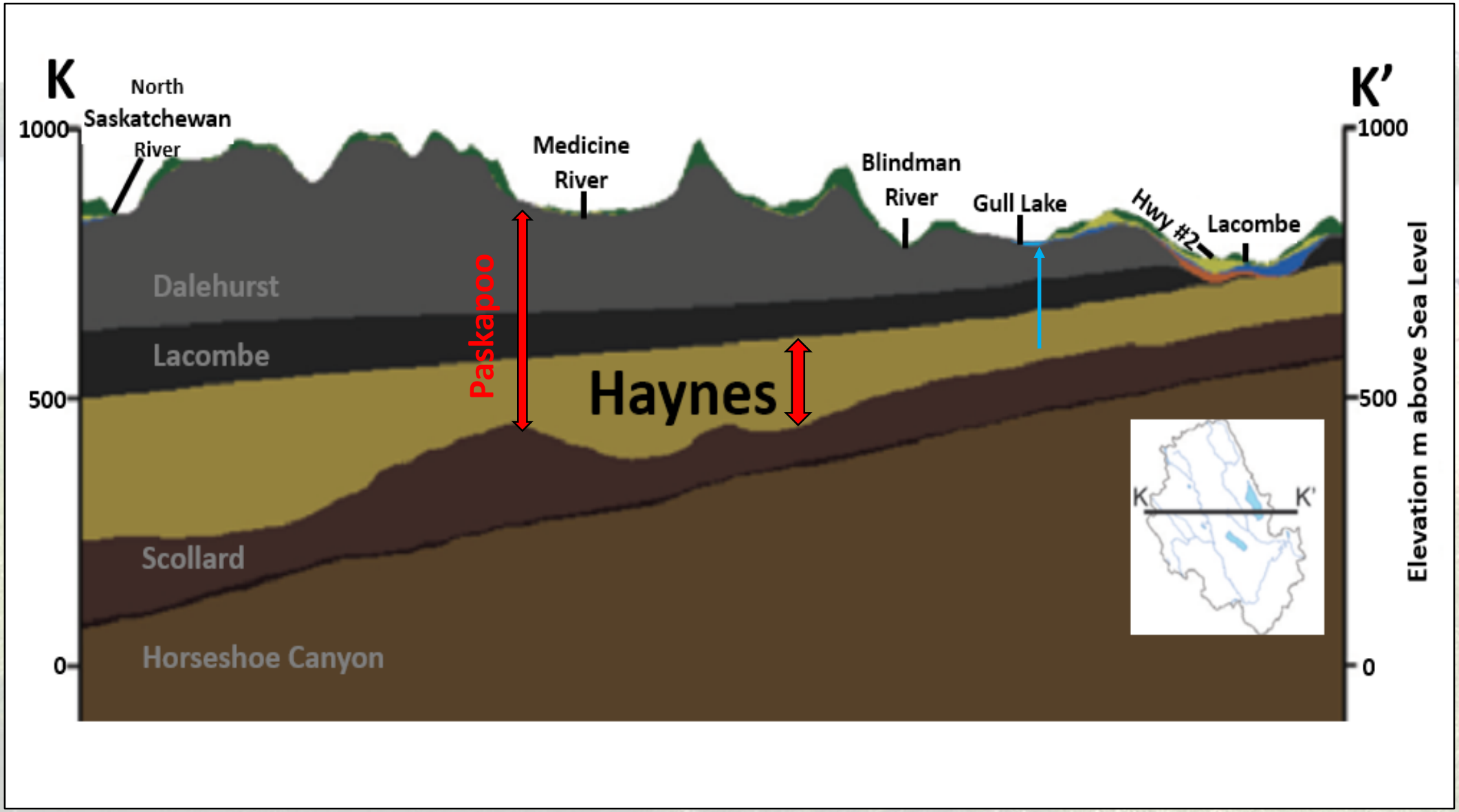
- ~65,000 km^2
- ~5 Trillion m^3 water
- Lake Superior ~3 trillion m^3 water

Haynes aquifer

- 400 billion - 1 trillion m^3 water
- Undeveloped freshwater source
- Renewable freshwater source
- Hydraulically separate from the upper Paskapoo (water wells)
- Pristine water



Haynes Aquifer: Massive, Re-newable, Sustainable



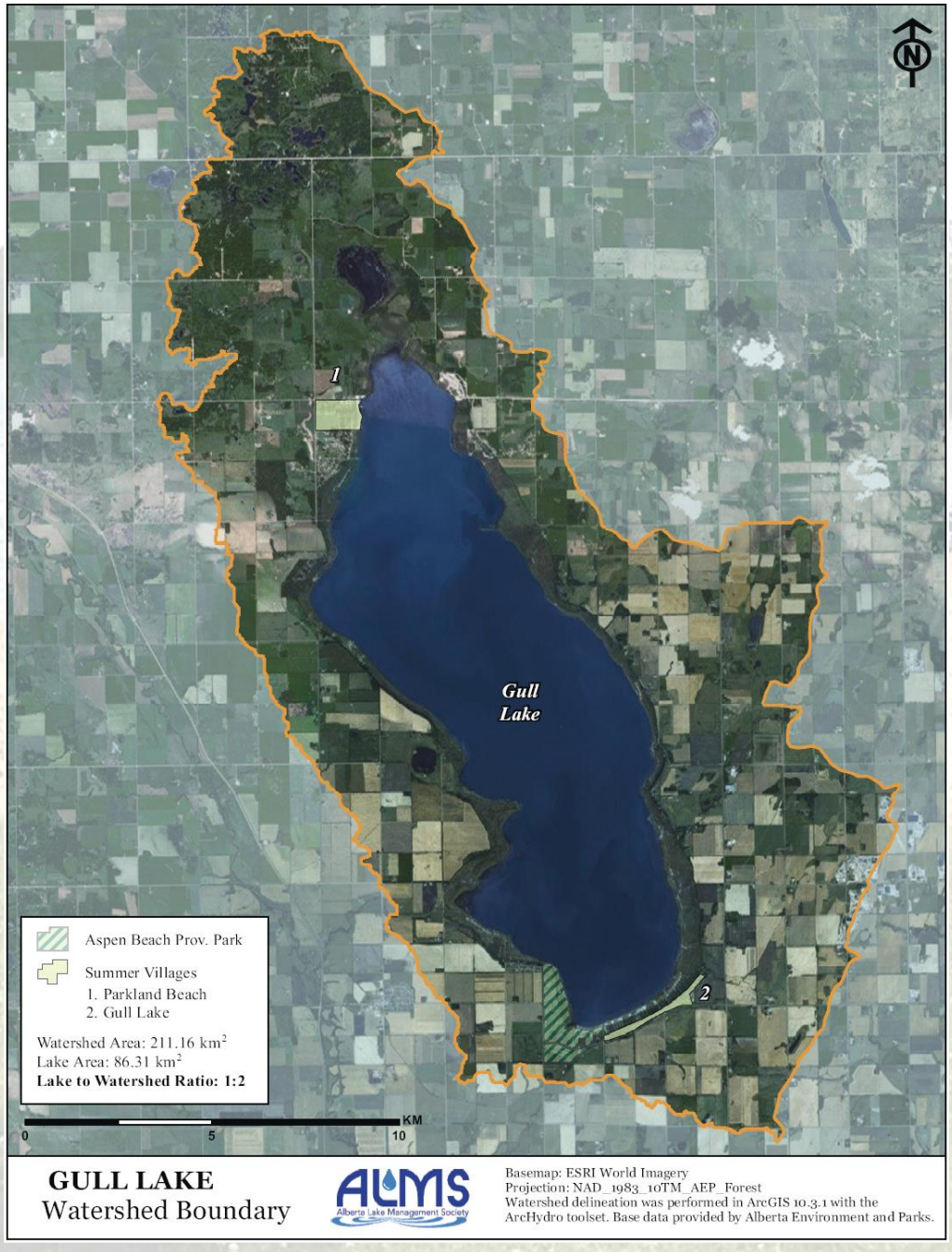
Gull Lake Data

Gull Lake Perimeter

- ~81 km^2
- Lake volume ~400 million m^3 water.
- Dropping ~6 cm annually (5,000,000 m^3)

Gull Lake Capture Basin

- ~300 km^2
- Haynes Volume +4 Billion m^3 water
- 10 Gull Lakes beneath Gull Lake basin



Hydrogeological Information

- HCL commissioned by GLWS for Haynes Ground Water Evaluation in 2024.
- Minimal data available near Gull Lake.

- Haynes top ~200 meters below surface.
- Impermeable shale barrier (Lacombe aquitard) between upper Paskapoo water well zone.
- Haynes sand thickness 40 meters to +100 meters.

- Nearest Haynes well to Gull Lake 5 km.
- Nearest producing Haynes well 10km.

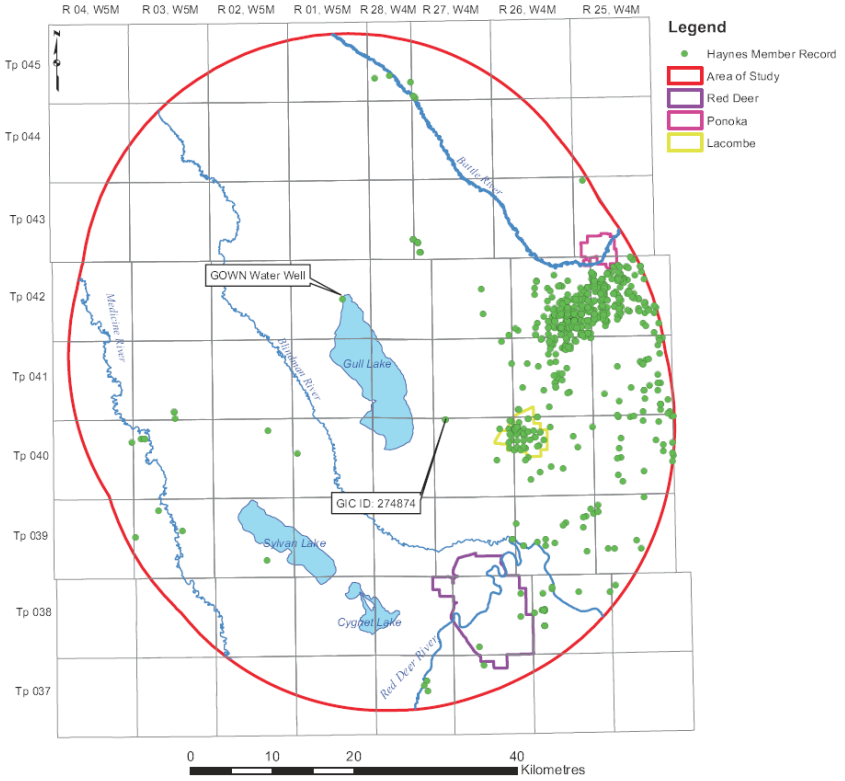


Figure 4. Haynes Water Wells

3.5. Area Groundwater Authorizations

Within the AOS, there are 1,434 water wells that are licensed and 1,969 water wells that are associated with registrations. The total authorized groundwater diversion in the AOS is 14,925,019 cubic metres per year (m^3/year). Within the AOS, there are 79 licensed water wells and 54 registered water wells that are completed in the Haynes Member. The total authorized groundwater diversion from the Haynes Member in the AOS is 2,078,235 m^3/year. The locations of the licensed and registered water wells that indicate at least a partial completion in the Haynes Member are shown in Figure 5 on the following page.

Haynes Groundwater Sourcing

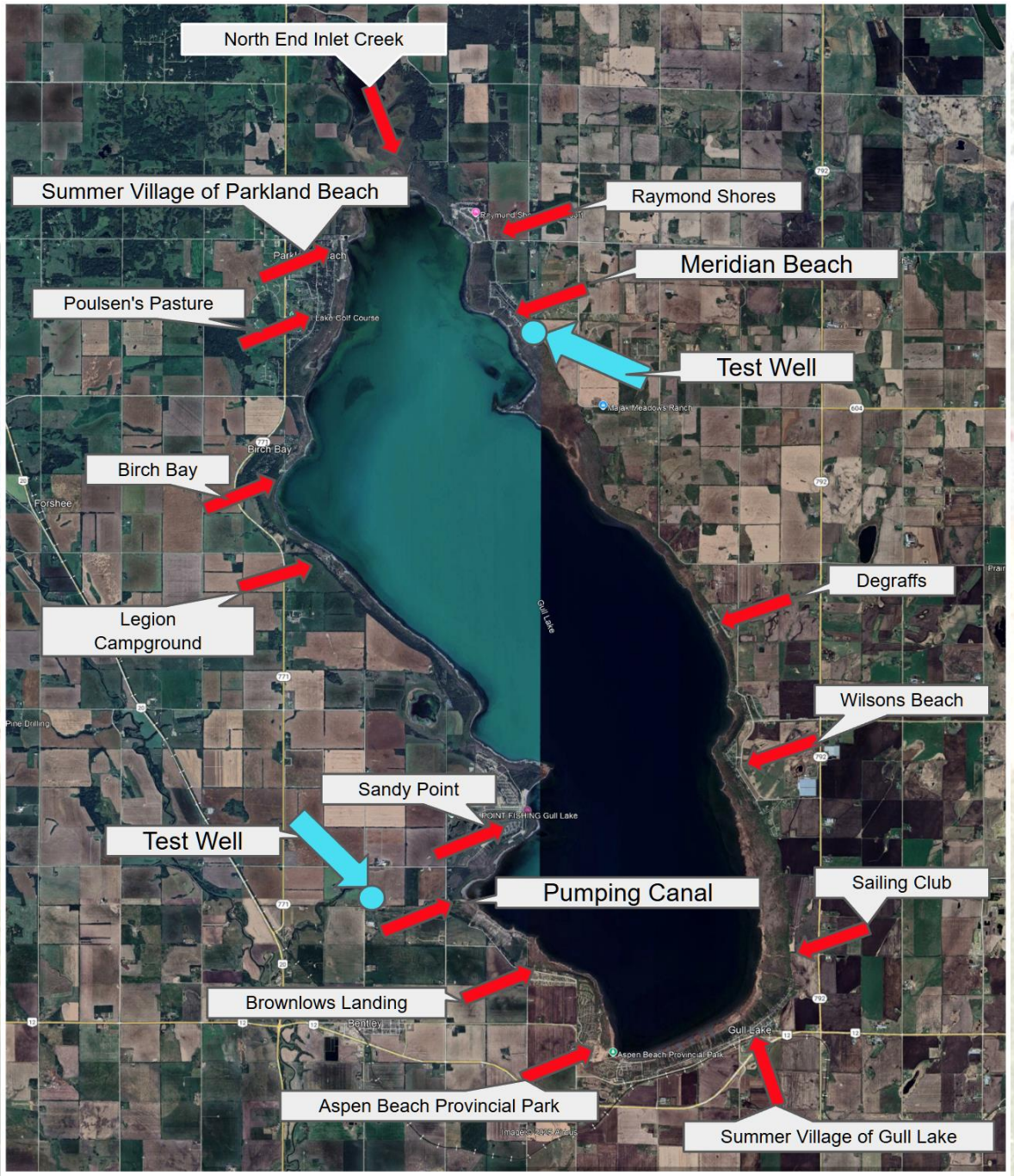
GULL LAKE
WATERSHED SOCIETY

Proposal:

- Tap into deep, undeveloped Haynes aquifer
- Place multi-use wells in communities around Gull Lake
- Staged Vertical well development
- Horizontal development if required
- Goal: 5-10 million m^3 annually

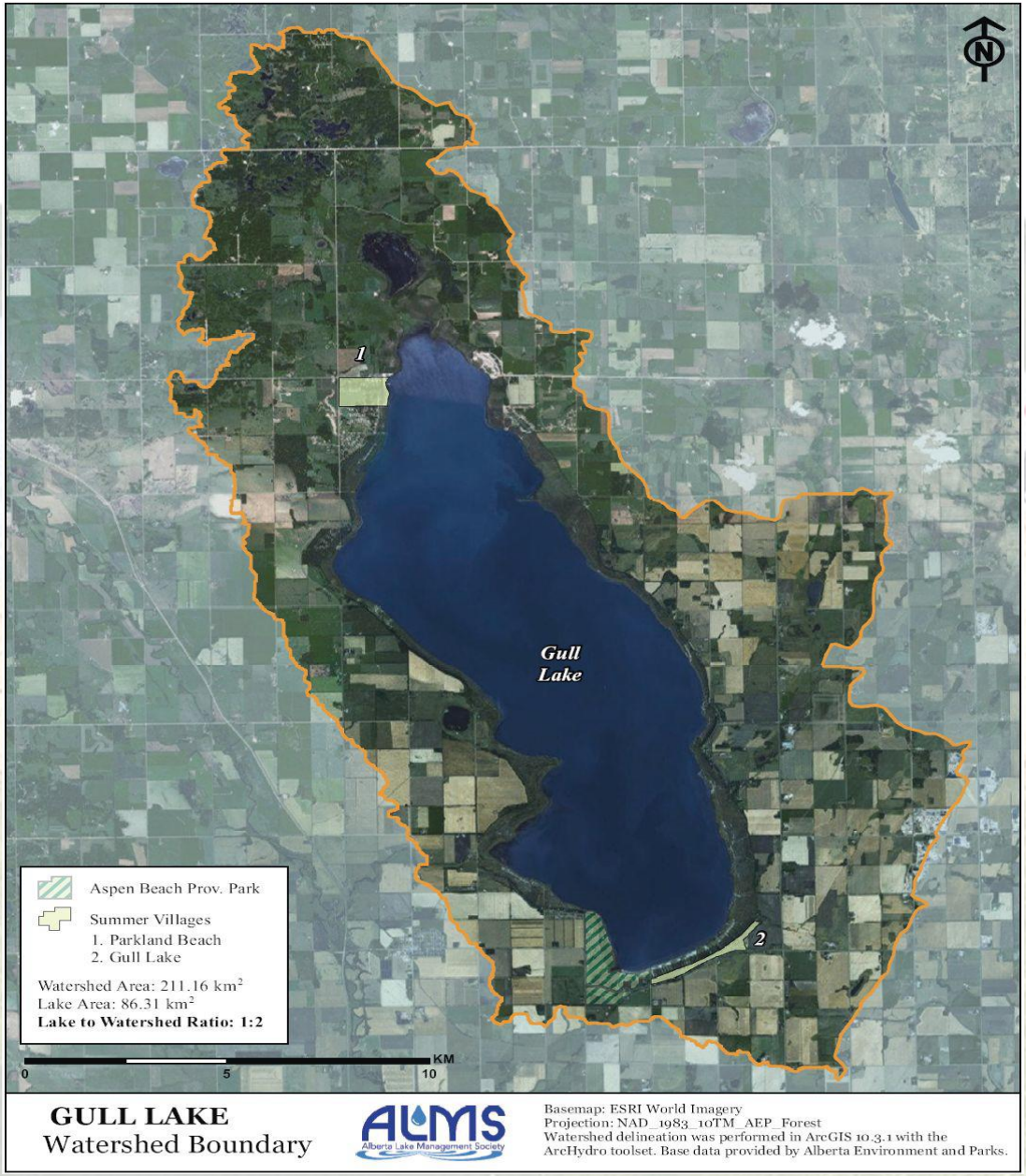
Aquifer Development Costs

- **Test Wells**
  - 2 well pairs
    - One observation well, one producer.
  - Total cost $1,000,000
- **Community Well Locations**
  - 15 - 20 well pairs
  - Total cost $8MM - $12MM



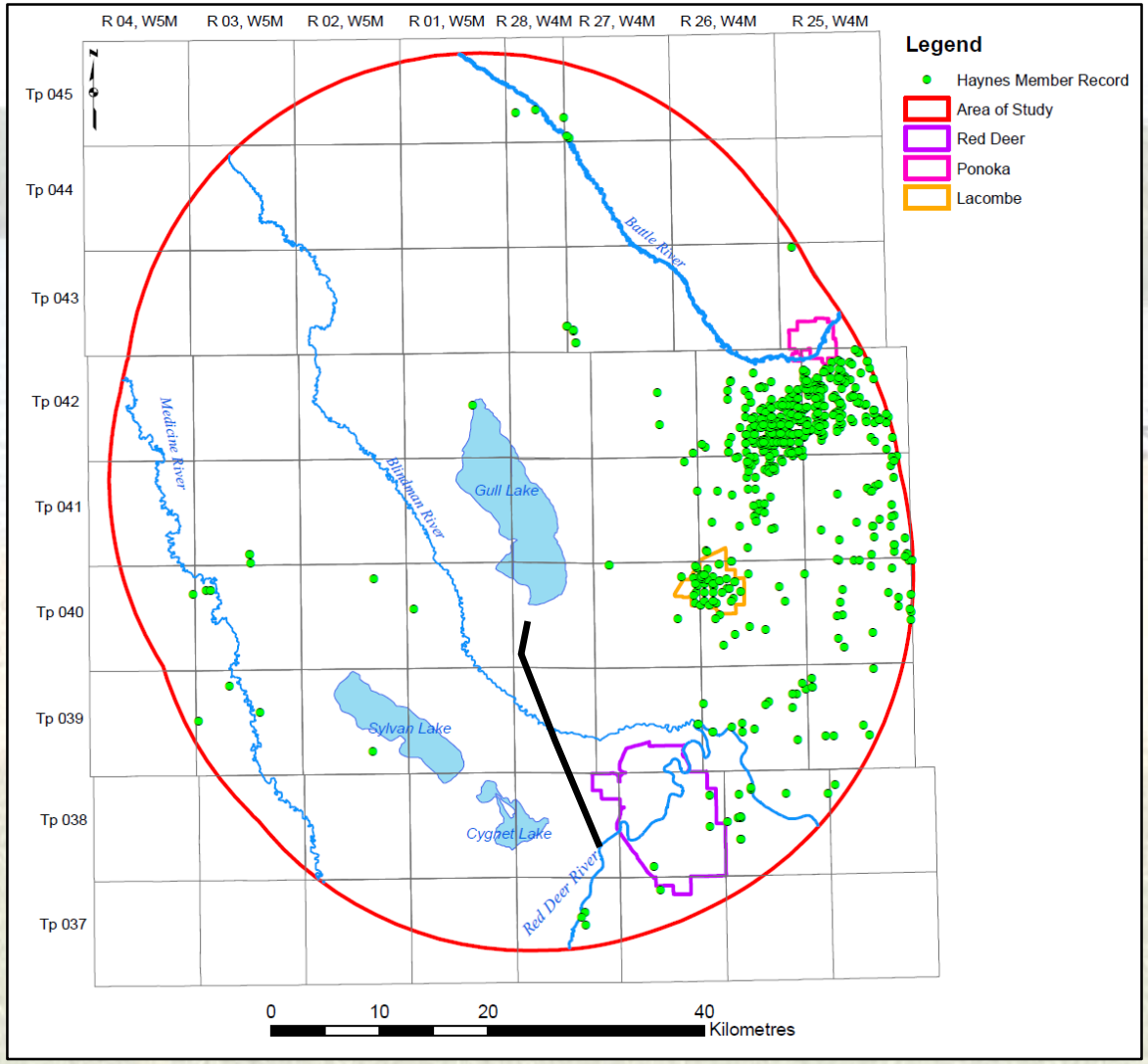
Water Flow Blockage

- Engineering Study to investigate natural water flow blockages at the north end of Gull Lake Drainage Basin
- County of Ponoka managing the project
- $200,000 grant applied for and received in 2025



Red Deer River Pumping

- Initiative of interest
- Water License owned by an oil company
- License issued in 1993 for oil pool waterflood
- Active license 800,000 m^3 annually
- Operation suspended in 2014
- Pipeline terminates 3 km south of Gull Lake
- Three water wells completed in riverbed gravel (natural filtration)



Gull Lake Photos

Gull Lake Photo

Birch Bay Marina – November 2024