

2024 to 2025 Groundwater Monitoring Report

HCL

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hydrogeological consultants ltd.

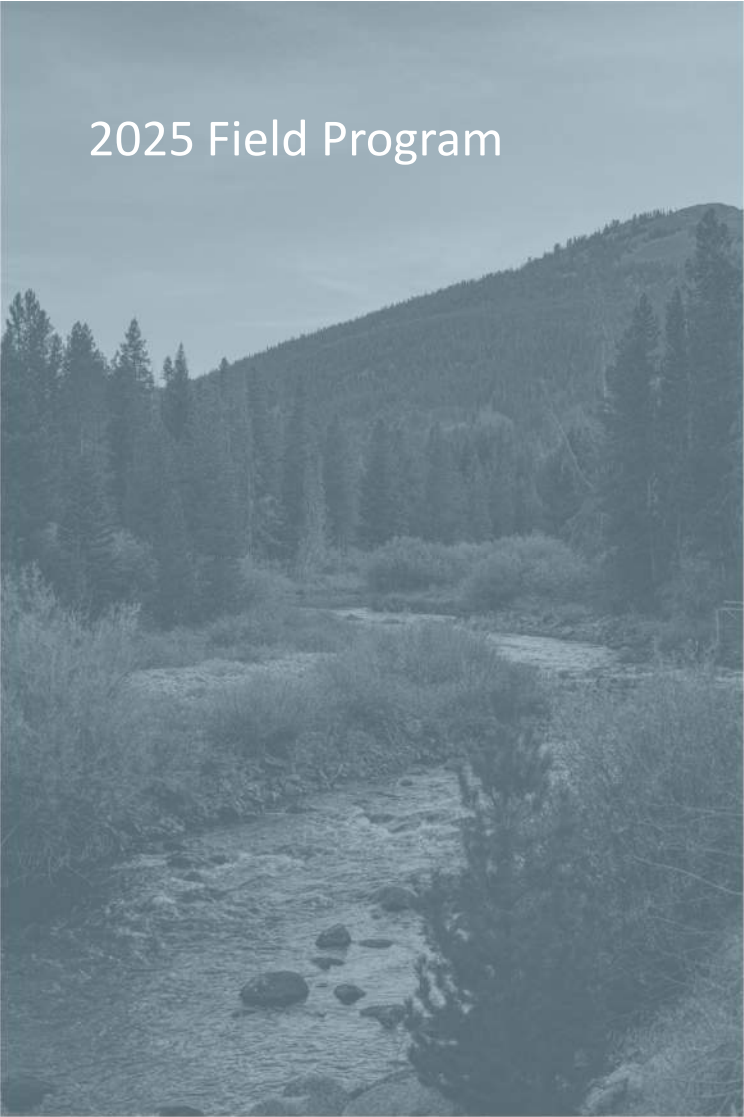
Villeneuve–Calahoo Gravel Extraction Area



The background of the slide is a photograph of a field with dense vegetation. In the center-right of the image, there is a vertical, rectangular metal structure, possibly a water sampling device or a well casing, with a circular opening at the top. The overall image has a blue tint.

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2025 Field Program

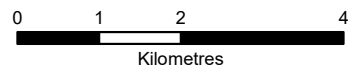
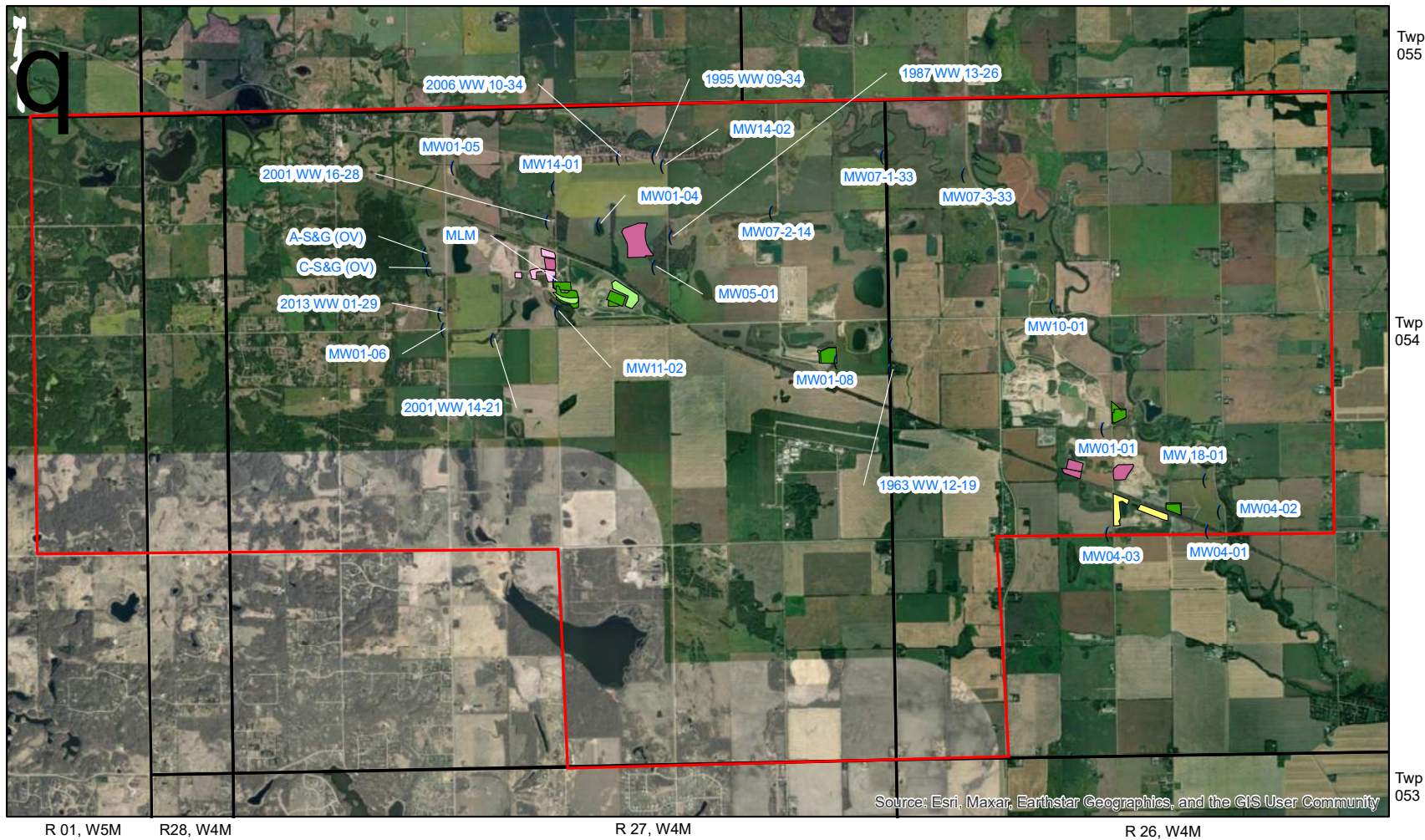
28 Monitoring Wells

- No new monitoring wells from the previous report
- 21 piezometers
- 7 domestic water wells
- 26 data loggers – hourly measurements
- 2 manual measurements

Chemical Analyses

- 28 groundwater samples collected
- Routine and dissolved metals analysis
- Field parameters measured

MLM was mined out in the summer 2025; a replacement monitoring well is not needed as there is sufficient coverage from MW11-02 and the 2001 Water Well 16-28



- | | | | | | |
|---|--------------------------|--|---------------------------------------|--|-------------------------|
| (| Monitoring Well | | Active Mining – Heidelberg Materials | | Active Mining – Amrize |
| | AOI | | Reclaimed Area – Heidelberg Materials | | Reclaimed Area – Amrize |
| | Reclaimed Area – Sureway | | | | |

Groundwater Quality Trends



2025 Groundwater Sampling Water-Quality Exceedances

In general, groundwater-quality parameters for samples collected in 2025 remained within historical ranges.

Maximum Acceptable Concentration – MAC
Aesthetic Objective – AO

Arsenic

MAC = 0.01 mg/L

- Two MAC exceedances in 2025:
 - MW07-2-14 (0.0124 mg/L)
 - MW14-01 (0.0144 mg/L)
- MW07-2-14 and MW14-01 have historically exceeded the arsenic MAC

Iron

AO = 0.1 mg/L

- 18 AO exceedances in 2025
- Iron concentrations have historically been above the AO.

Manganese

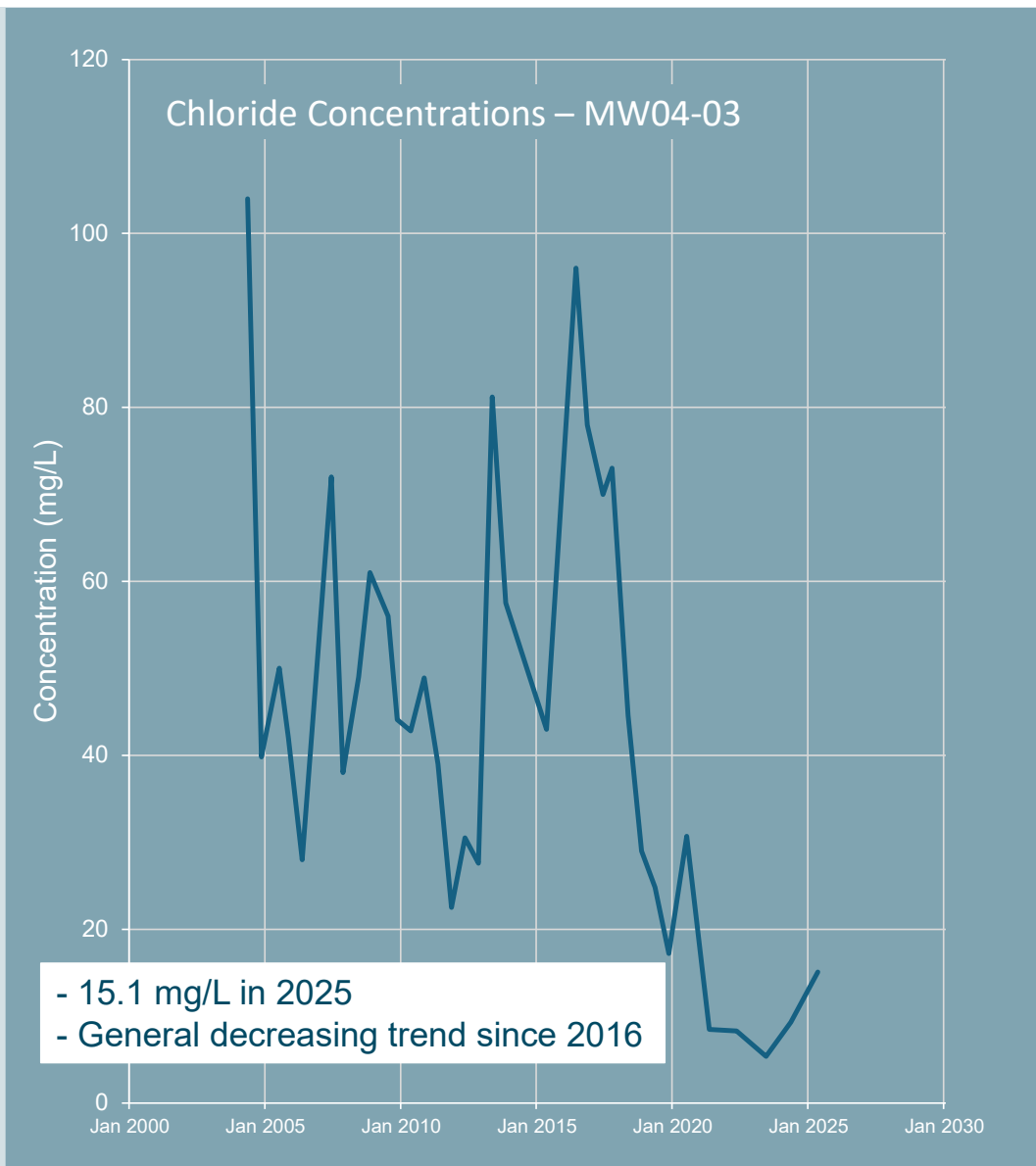
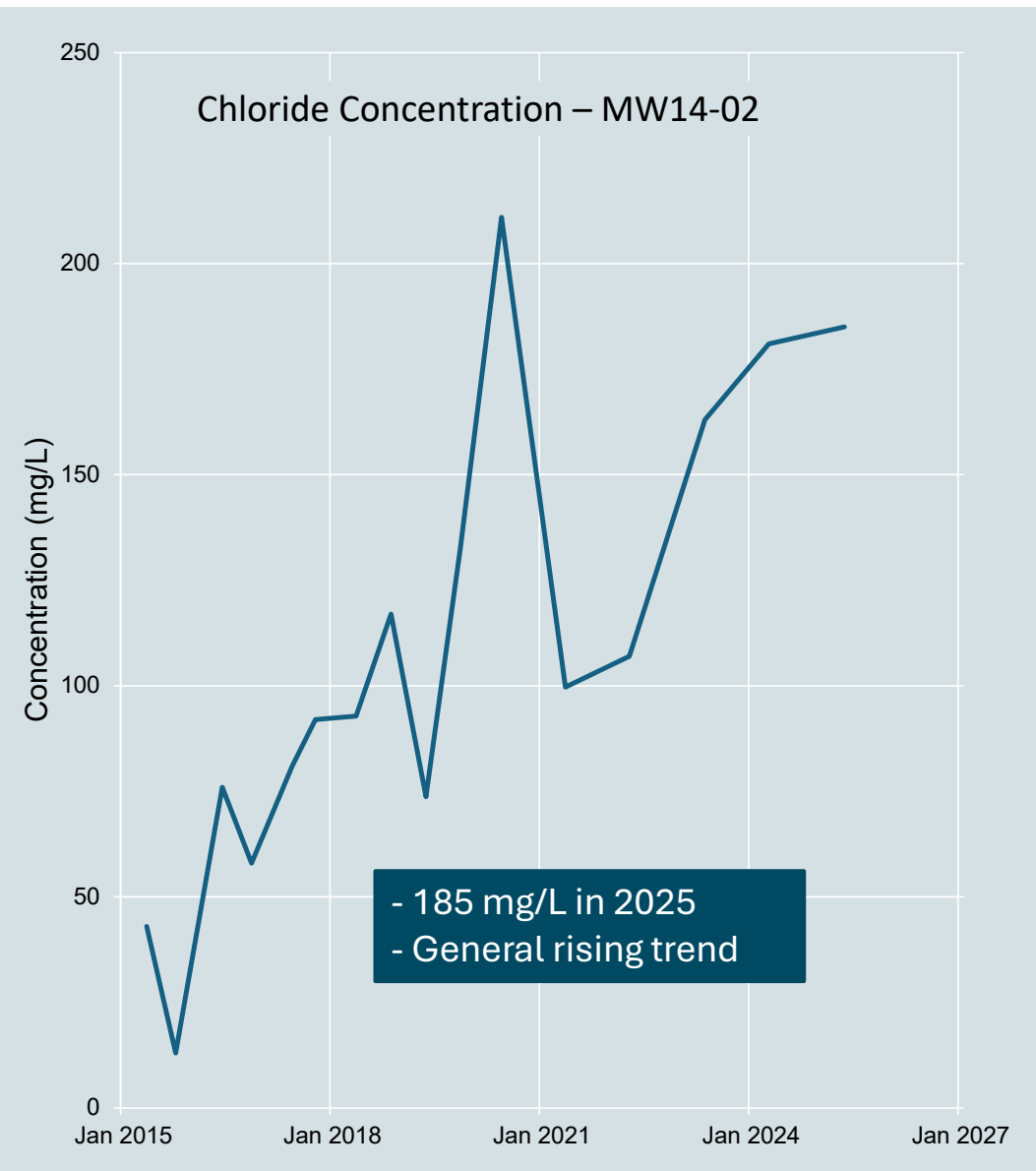
MAC = 0.12 mg/L; AO = 0.02 mg/L

- MW14-02 and the 1963 WW 12-19 did not exceed MAC, but did exceed AO in 2025
- Mn concentrations exceeded the MAC in **all** other samples except for samples from MW04-01 and MW04-03 in 2025

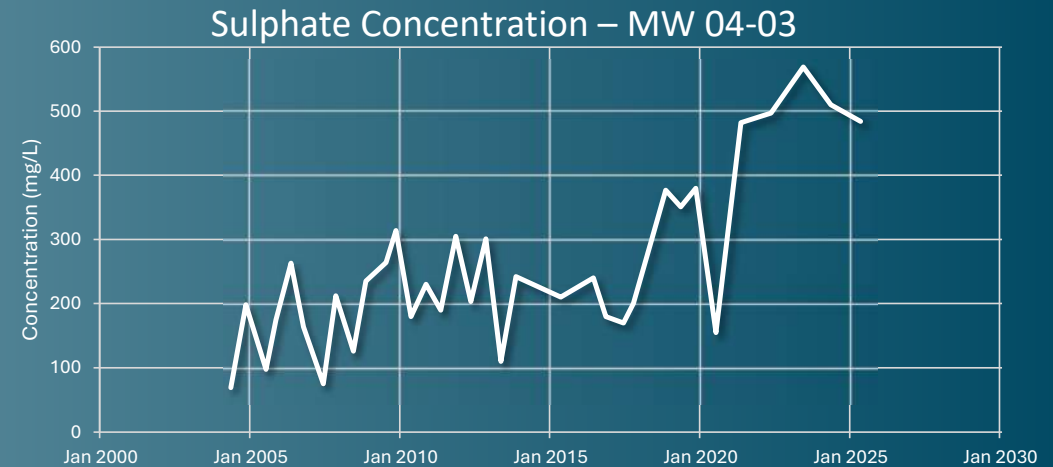
Uranium

MAC = 0.02 mg/L

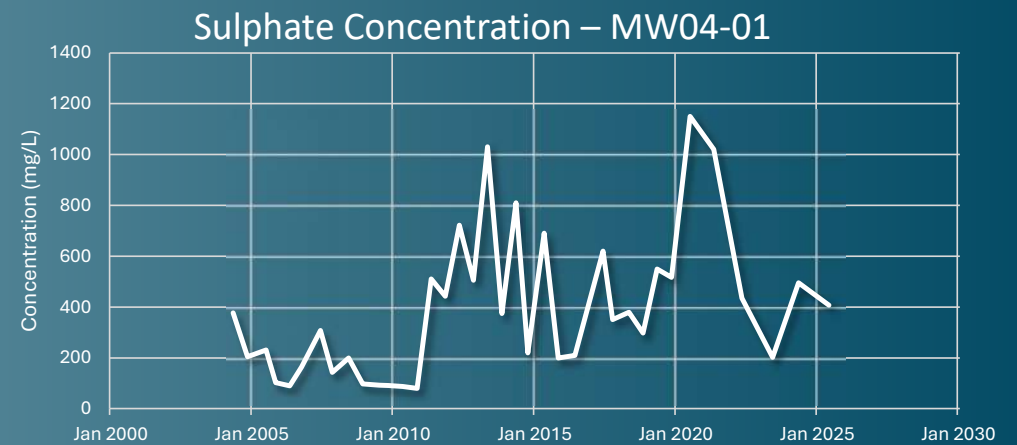
- Two MAC exceedances in 2025:
 - MLM (0.0512 mg/L); first Ur exceedance
 - MW04-03 (0.0329 mg/L); MW04-03 has historically exceeded the MAC



- Increasing trend since 2019
- 484 mg/L in 2025



- No apparent sulphate trend
- Fluctuated between 87 mg/L and 1,150 mg/L.
- 407 mg/L in 2025





Other Sulphate Trends

Sulfate concentrations are also slightly elevated in the groundwaters from the:

- 2001 Water Well 16-28 (289 mg/L in 2025)
- 1995 Water Well 09-34 (343 mg/L in 2025)

The sulphate concentrations at these monitoring sites are not trending upward.

Groundwater Quality

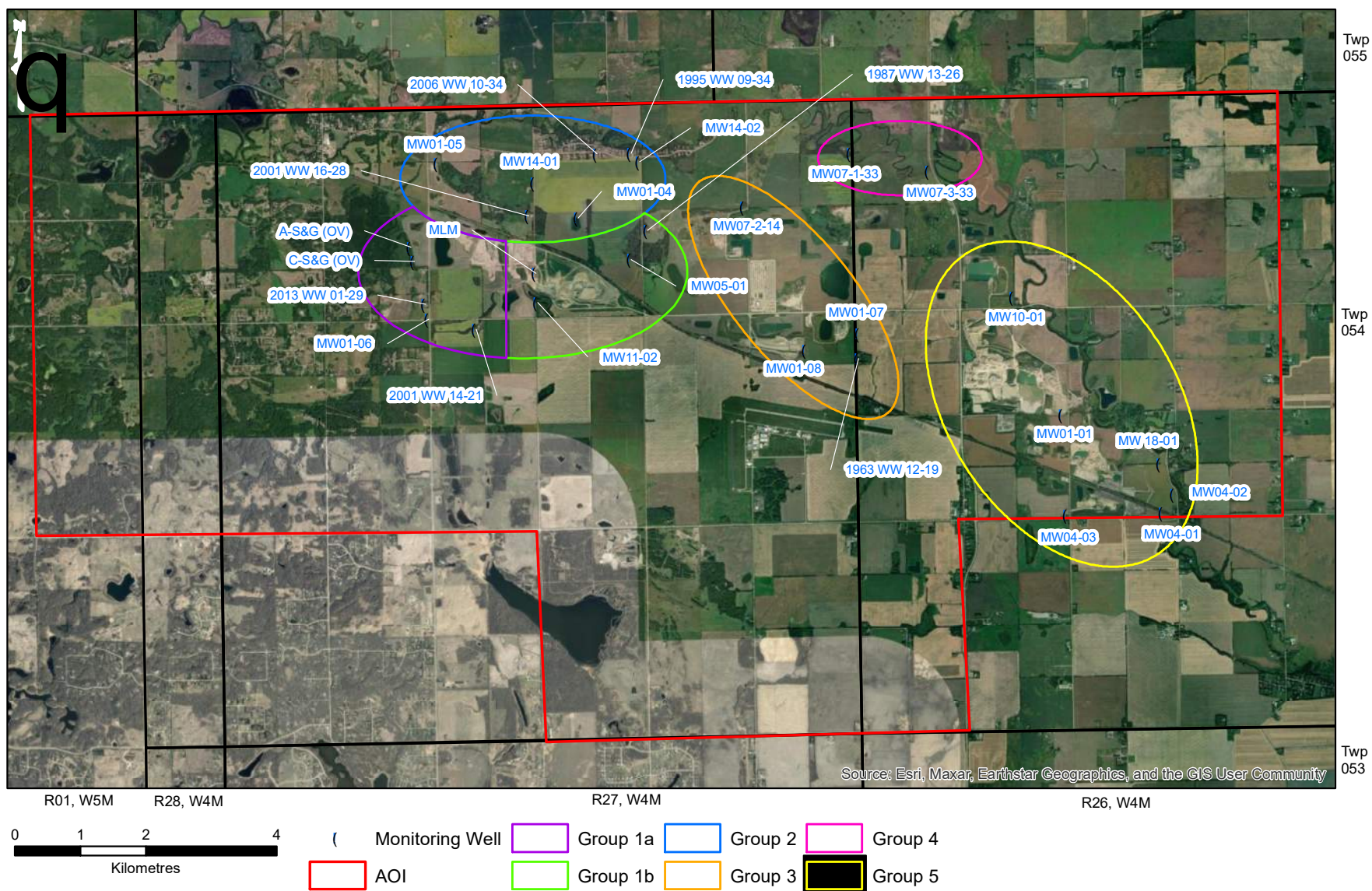
Further investigation is required to determine the possible causes for the elevated sulfate and chloride concentrations, which may be associated with road salt, flocculant, water softeners, septic systems etc.

Dewatering and aggregate extraction activities are not expected to cause of any groundwater-quality changes.



A blue-tinted photograph of a grassy field. In the background, there are several trees. In the foreground, on the left, there is a small, dark, rectangular structure, possibly a water level gauge or a small shed. The text "Water-Level Trends" is overlaid in the center of the image.

Water-Level Trends

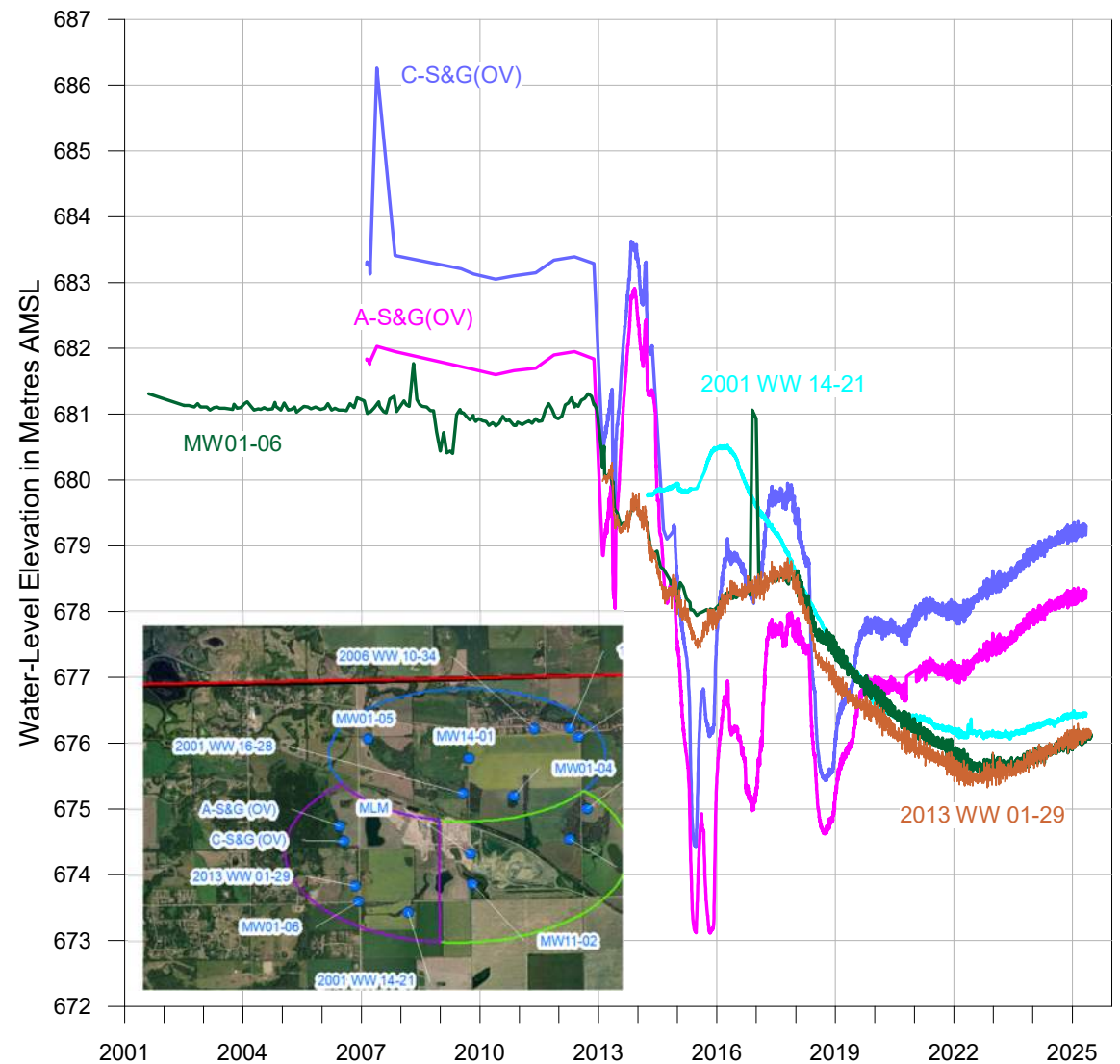


Water Levels Group 1a

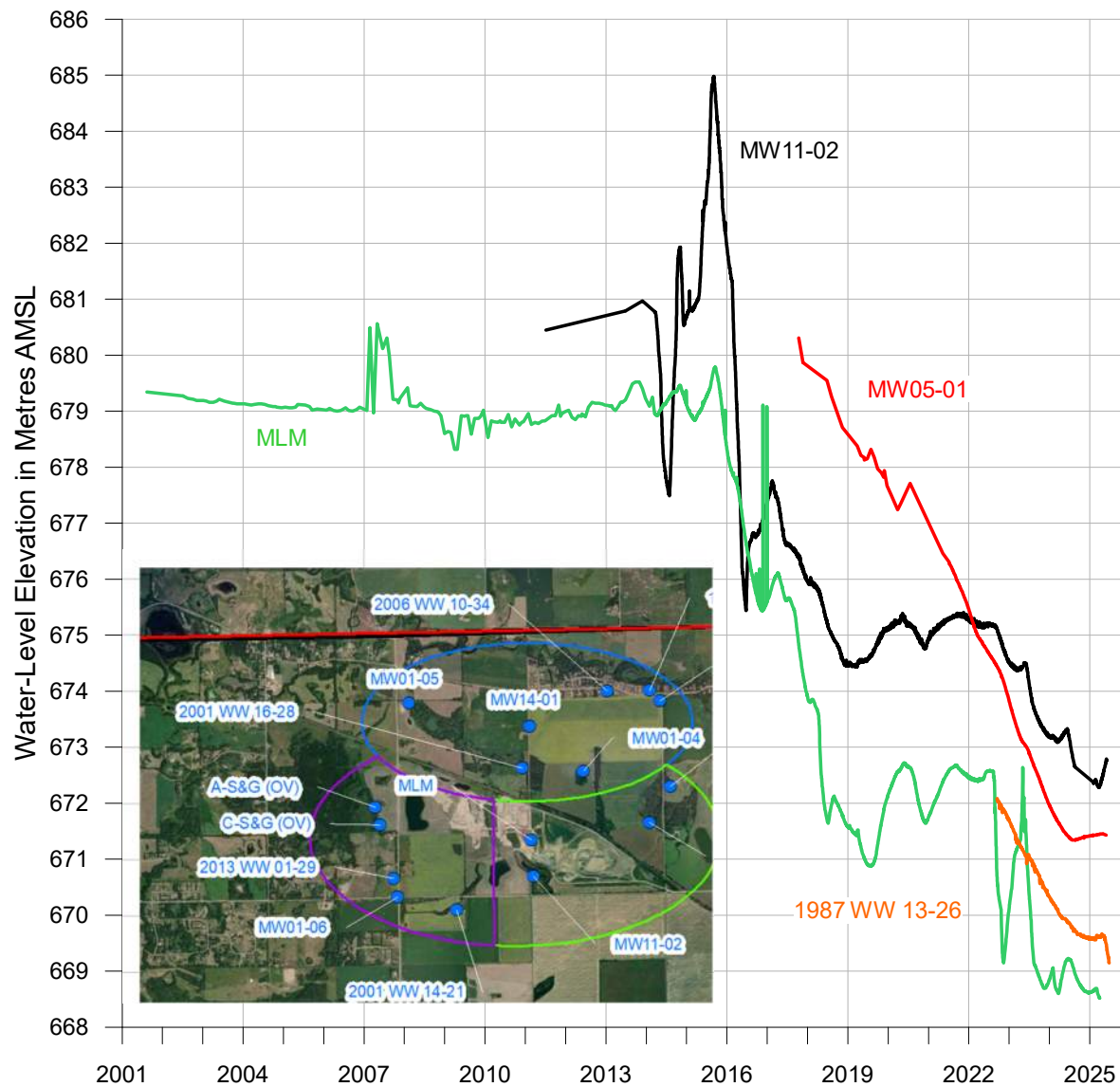
Rising water-level trend in Group 1a monitoring wells beginning in 2019:

- A-S&G (OV)
- C-S&G (OV)
- MW01-06
- 2001 WW 14-21
- 2013 WW 01-29

The rise is attributed to this area being the farthest upgradient from recently dewatered sites



Water Levels Group 1B



Monitoring wells in Group 1b continue to show a declining trend:

- MLM
- MW05-01
- MW11-02
- 1987 WW 13-26

These monitoring wells are closest to recently dewatered sites.

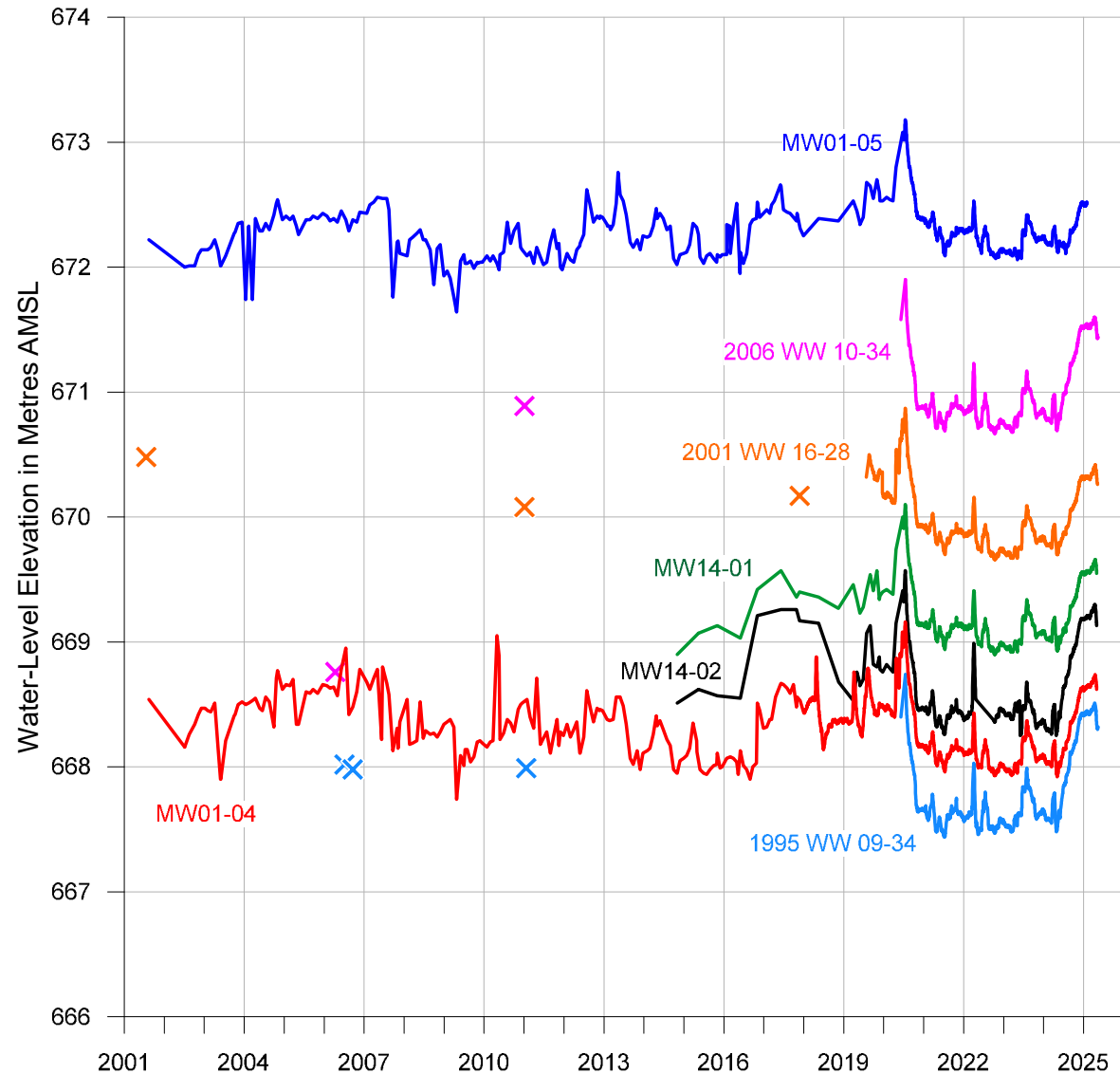
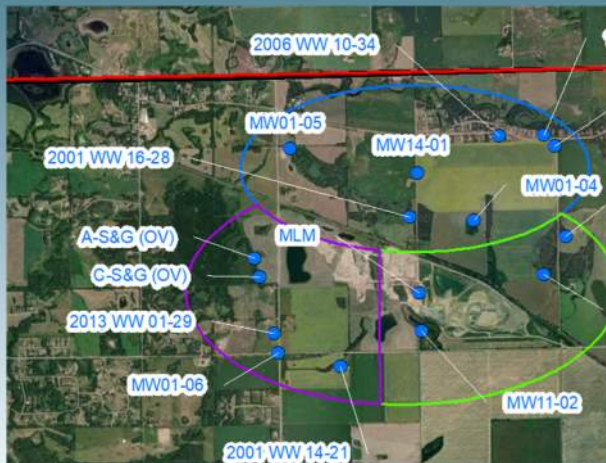
Water Levels

Group 2

Minimal changes since monitoring began.

Not likely affected by mining activities, as the active pits and reclamation sites are more than 300 metres south of the Group 2 monitoring wells.

This group may see declining trends in the future due to dewatering in the NE 27-054-27 W4M.



Water Levels

Group 3

The Group 3 area contains mainly reclaimed pits.

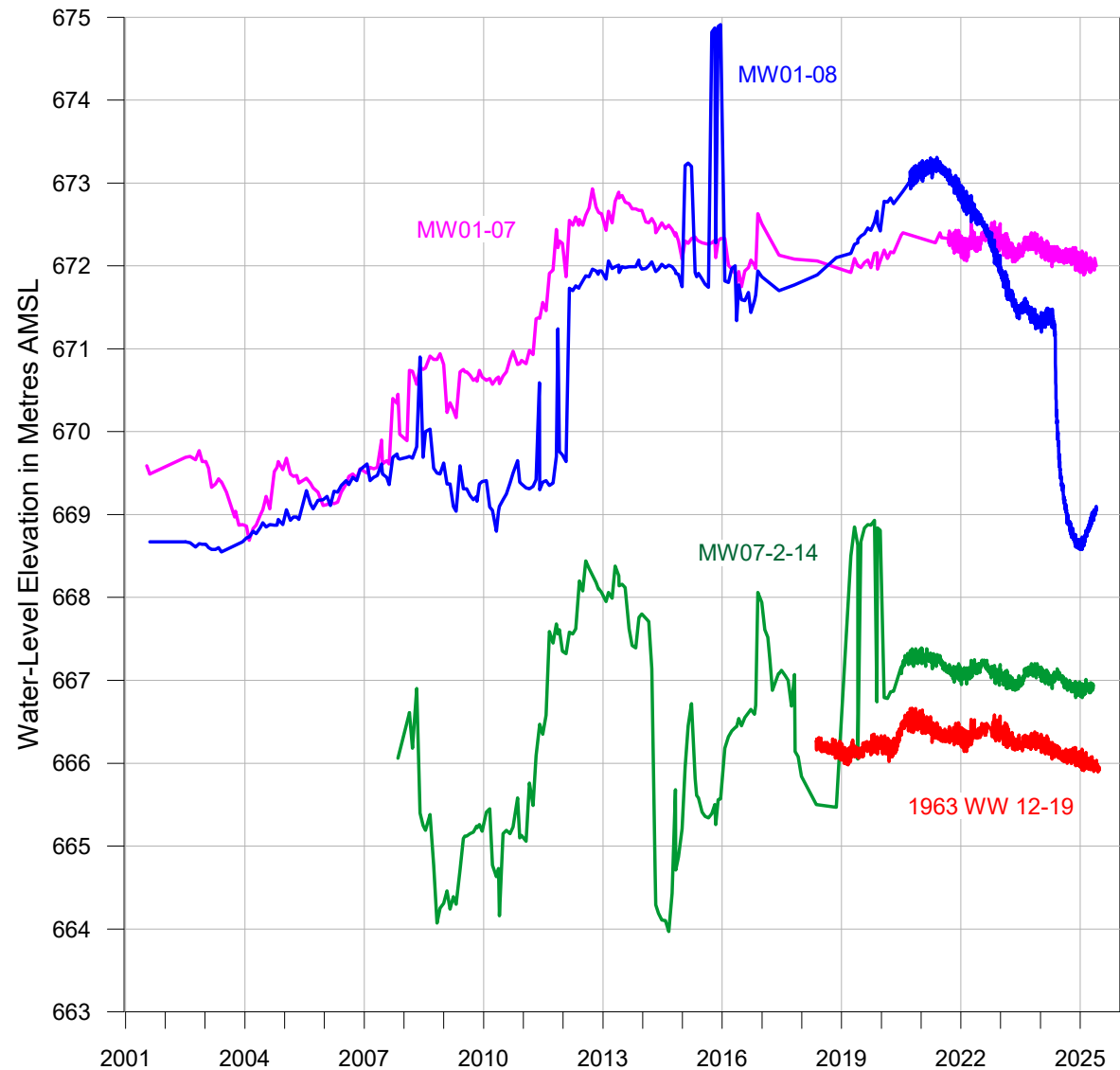
Declining water-level trend:

- MW01-08

Slight rise in water levels is likely due to reduced dewatering in the Schafers 240 Pit

Stable water levels:

- MW01-07
- MW07-2-14
- 1963 WW 12-19



Water Levels

Group 4

Slight declining trend:

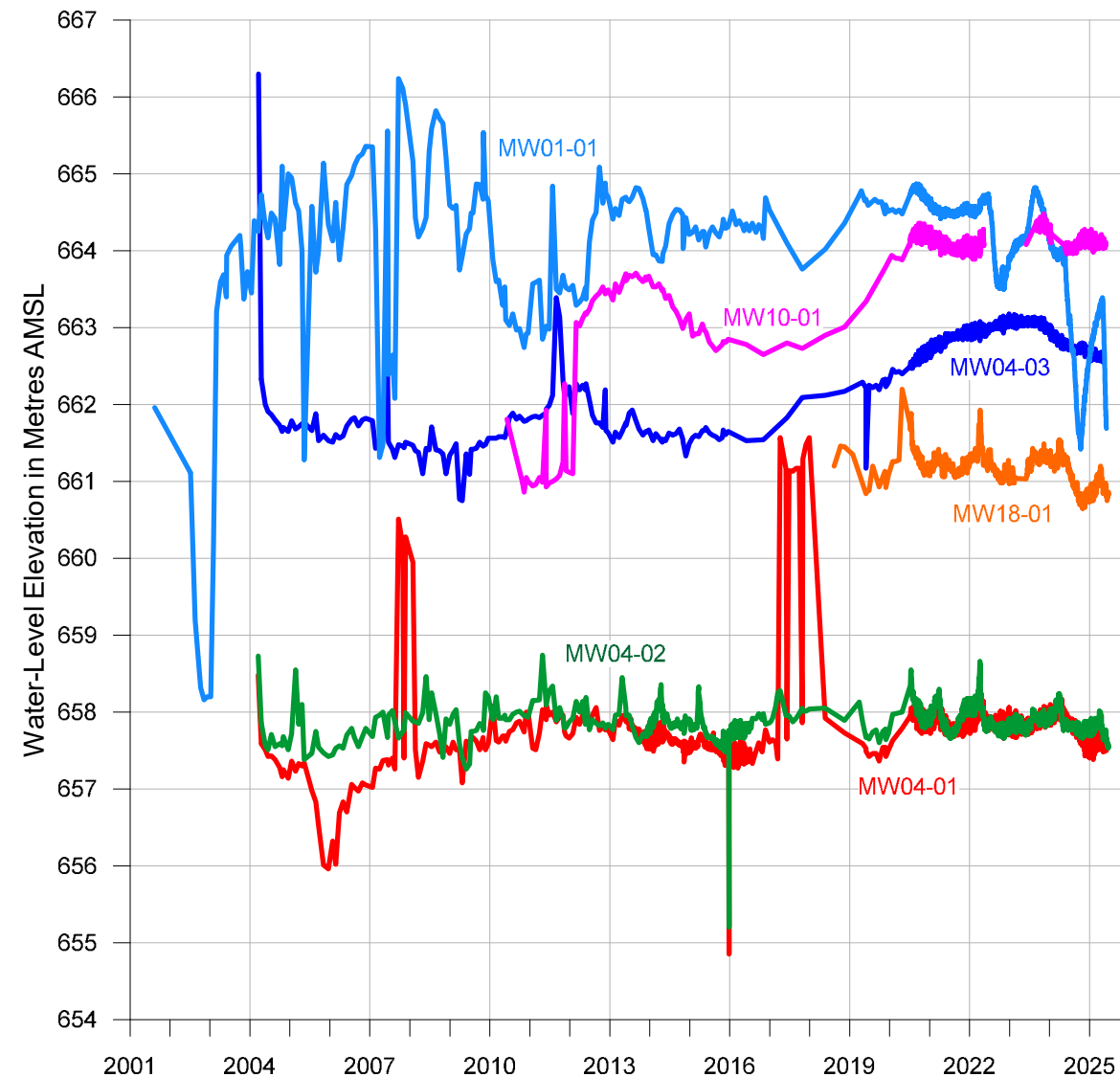
- MW07-3-33
- MW07-1-33

Water levels may be influenced by flow fluctuations in the Sturgeon River.

These monitoring wells are the farthest monitored sites downgradient from the mining activities, which likely accounts for these two sites showing the slowest water-level recovery.



Water Levels Group 5

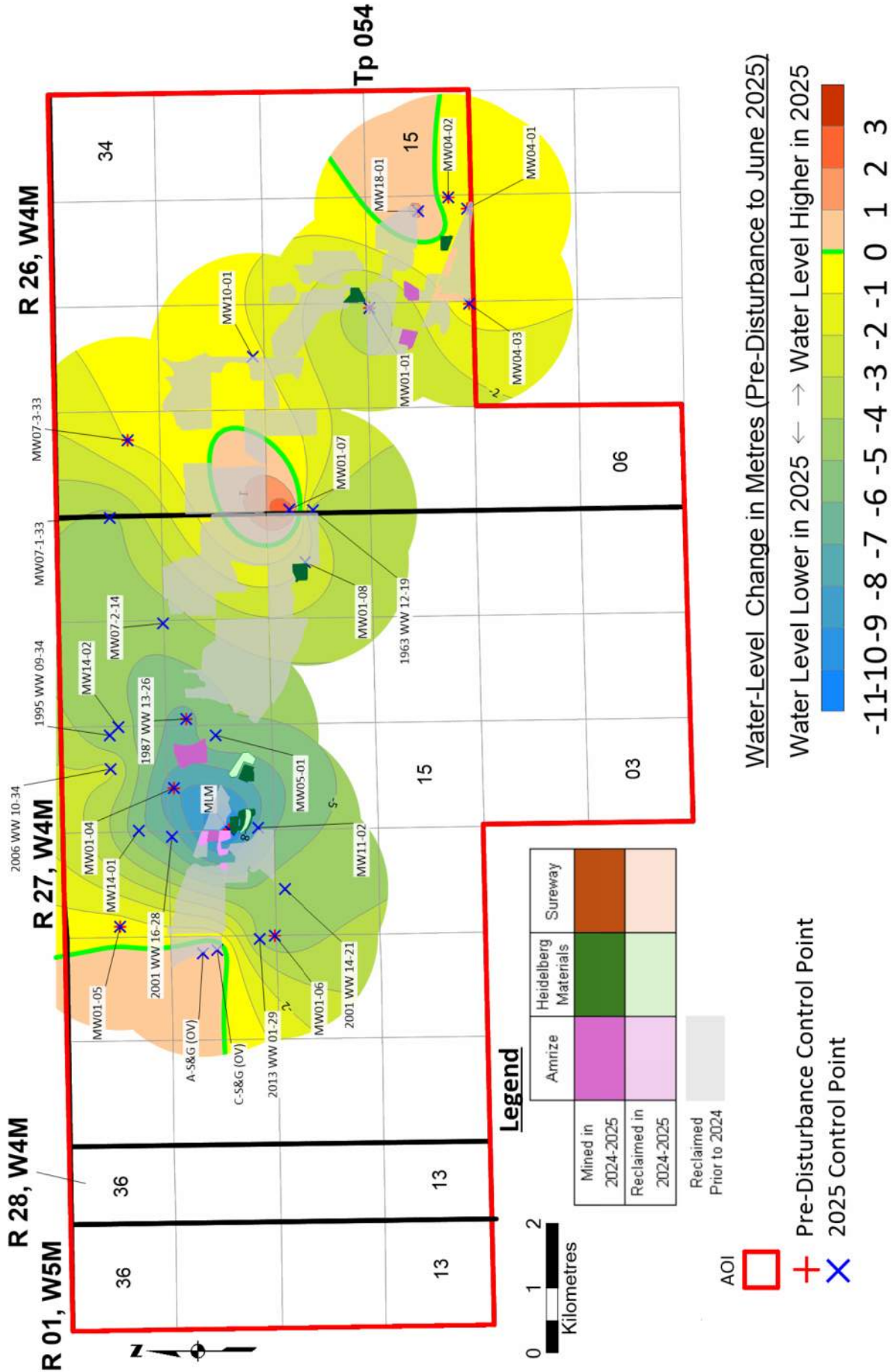


Water levels in Group 5 stable, except for **MW01-01**

Water levels are from natural fluctuations.

Fluctuating water levels in **MW01-01** are due to dewatering in the SW 21-054-026 W4M.







Water Level Trends

- Water-level decline is centered on active pits in the western part of the AOI.
- Mounding may result from the replacement of aggregate with less permeable material.
- Drawdown near active dewatering pits is approximately 4 to 9 metres.
- Water levels are expected to recover after dewatering.
- Full recovery may take several years.
- Not expected to adversely affect local groundwater users unless they are in close proximity to dewatering.
- Only shallow water wells are at risk of adverse effects.



Recommendations

Data Collaboration

Active operators to ensure that all mining activities are accounted for within the AOI.

Operators to share future mining plans to allow for installation of new monitoring wells in advance of mining operations.

Monitoring Wells

Monitoring wells should be established near the Turfside and Hanson's subdivisions

Sturgeon River

Add water-level elevation of the Sturgeon River to the monitoring program

Ongoing Monitoring

Annual data-logger downloads

Annual groundwater sampling



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Questions

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