

# District of Mackenzie **FACT SHEET**

## Gantahaz Residential Subdivision Community Water System



July 2022

### **FOREWORD**

The District of Mackenzie created this fact sheet in response to ongoing public interest in the Gantahaz residential water quality.

This background document provides basic information about the community water system, the current upgrades and maintenance, and the water quality in the form of Frequently Asked Questions, as well as Next Steps.



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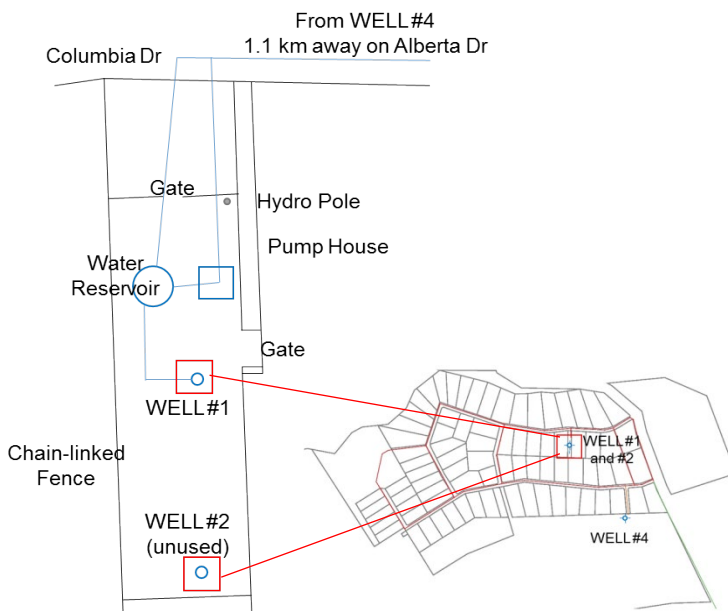
## OVERVIEW

To ensure continued high standards of drinking water quality and delivery for the District of Mackenzie-Gantahaz Residential Subdivision, since 2014, the District has completed numerous assessments, upgrades, repairs, and maintenance projects to the Gantahaz Community Water System. The upgrade projects arose from public concerns regarding water quality and the aging water and sewer infrastructure in the Gantahaz Subdivision. Several phases of assessment and pilot testing have been completed to assess the initial condition of the production wells, reservoir, and complete chemical and biological testing of the water quality amongst residents. In 2019 Health Canada developed a new health based guideline for manganese and lowered the aesthetic guideline. Currently, water quality in the Gantahaz community is highly variable and at times does not meet the new water quality standard. The District has retained groundwater quality specialists Western Water Associates Ltd. and water treatment engineering specialists L&M Engineering to work alongside the District and the Northern Health Authority to address water quality issues in the community.

## FREQUENTLY ASKED QUESTIONS

### *What is the Gantahaz Residential Subdivision Community Water System?*

- The water system consists of two operational water wells (Well #1 and #4), a back-up well (Well #2), a water reservoir, and an underground distribution system to each individual lot.
- Water is pumped from an underground sand aquifer at Production Well #1 and #4, where it is then directed to the reservoir. Water is then distributed on-demand to homeowners through the use of a booster pump.



### *Where does the Gantahaz Residential Subdivision water come from?*

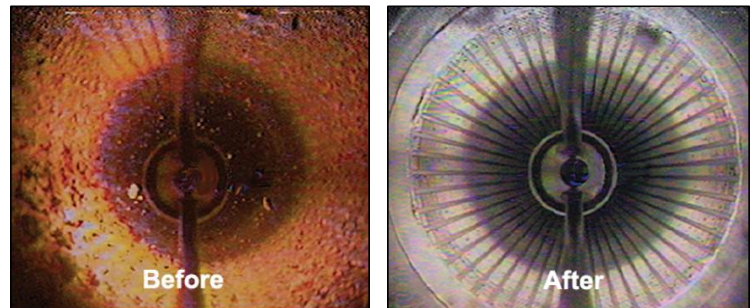
- The wells draw from a confined underground aquifer located in the Morfee Creek Watershed.
- Aquifers of this type are well protected from surface contamination and tend to be more mineralized with metals such as manganese and iron.

### *How does the new standard affect us?*

- Prior to the new standard, water quality met all health-based standards.
- Raw water quality directly from the wells slightly exceeds or is just below the new health-based standard for Manganese.
- Metals such as iron, manganese and occasionally arsenic precipitate and accumulate in random areas of the distribution piping periodically exceeding the standard.

### *What upgrades and repairs were completed since 2014?*

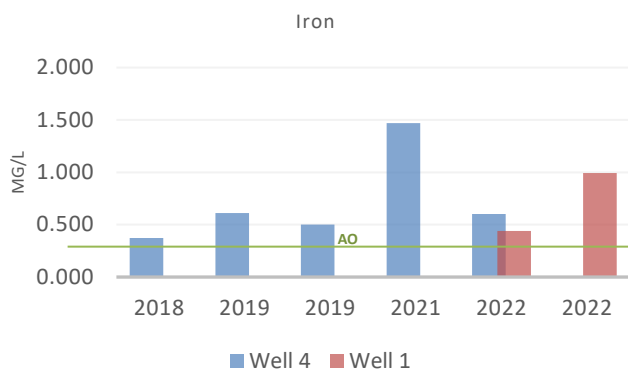
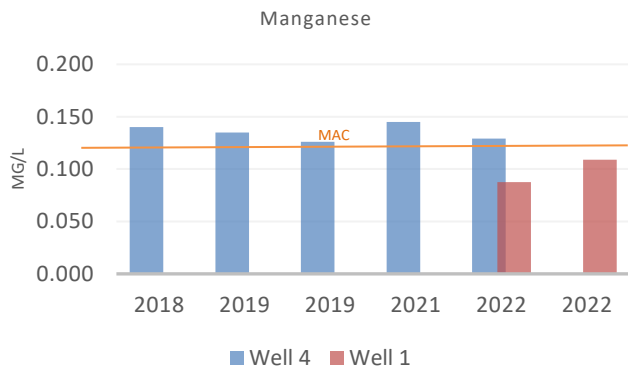
- Water well testing and chemical/physical cleaning;



- Leak detection and pressure distribution evaluation program;
- Assessment of water system improvement options;
- Pilot testing of in-house water treatment systems;
- Cleaning and integrity testing of the Gantahaz Residential Subdivision stand pipe reservoir;
- Distribution piping flushing program;
- Significant increase to water quality sample collection.

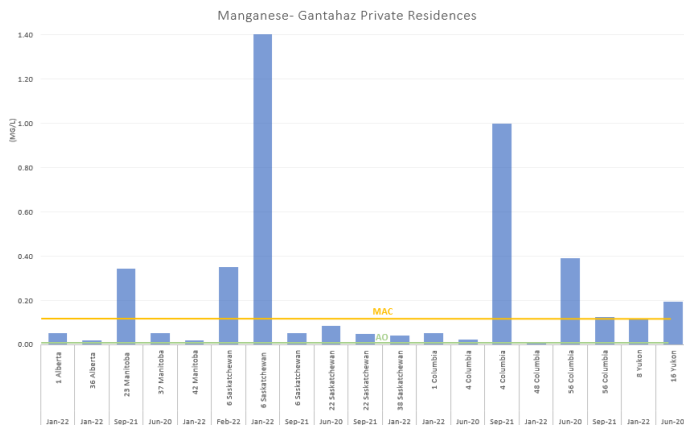
### *Water Quality in the Wells*

- Water from Well 1 is slightly below the new Maximum Allowable Concentration (MAC) for manganese.
- Water from Well 4 is slightly above the MAC for manganese.
- Both wells have iron well above the Aesthetic Objective (AO). There is no health-based MAC for iron.
- Arsenic is below the MAC in water from both wells.



### Water quality in the Distribution system

- Metals (manganese, iron, arsenic) precipitate and accumulate in piping where stagnant water is present.
- Manganese, and iron concentrations are highly variable in the distribution network.
- Arsenic exceeded health-based standards in 4 out of 19 samples (2018-2022) relatively inconsistently.



### Why is the water quality so variable in the distribution network?

- Low water use allows stagnant water to sit in piping and metals to build up in certain areas. This causes better water quality in some areas and worse in others.

- Due to the geology of the aquifer, the water will continue to have this issue without significant filtration of these metals prior to entering the distribution network.

### Is the water safe to drink?

- Some studies in humans have suggested an association between manganese in drinking water and neurological effects in children.

For more information on Manganese in drinking water:

<https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-manganese.html>

- Although only sporadically detected above the recommended concentrations, Health Canada considers arsenic a carcinogen.

For more information on arsenic in drinking water:

<https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-arsenic.html>

- There is no Health Canada Maximum Allowable Concentration (MAC) for iron.

For more information on iron in drinking water:

<https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-iron.html>

### Why is my water red or black in colour?

- Your water may be red in colour due to the level of iron in the water and it may be black in colour due to the level of manganese in the water.
- Iron and Manganese are both heavy metals found naturally within the ground. Low levels of these minerals are not toxic for human consumption.
- Due to the geology of the aquifer from which the water is being collected, this discoloration is likely.

***What steps will the District take to ensure high standards of water quality in the future?***

- The District has implemented a regular flushing program to flush stagnant water from the main lines.
- The District is currently completing additional testing and maintenance for the water system including regular chemical testing and cleaning the wells annually. Lastly cleaning the reservoir every three years will be undertaken.
- Recent water quality testing has indicated that Well 1 has better water quality and the District has switched to using Well 1 as the water system’s primary source.
- On February 8, 2022, Council approved the District Public Works department to actively pursue funding opportunities to add treatment to the Gantahaz water system.

**WHAT COMES NEXT IN THE PROCESS?**

**Continued Maintenance**

The District is committed to continually monitoring the quality of water and integrity of the Gantahaz Community Water System. The District is actively working with the Northern Health Authority and it’s consultants to improve water quality in the system’s current configuration.

**Funding Search**

The District will continually search for Federal and Provincial funding opportunities to implement these long term solutions to water quality without having to rely heavily on tax payers.

If you would like further information, please contact the District of Mackenzie at:  
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