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City of Saskatoon: Options for Groundwater Protection Groundwater Resources and Risks in Saskatoon

The City of Saskatoon's Water Supply

The South Saskatchewan River has provided a reliable and safe source of fresh water for the community of Saskatoon since 1906. City water is treated and tested regularly, with over 21,000 tests performed annually, and consistently meets or exceeds all federal-provincial drinking water quality objectives. To learn more about the City waterworks system [please see the following website](#).

With a reliable and high-quality surface water source, there is no current municipal need to use groundwater. However, the City recognizes the value of groundwater as a resource and the need to protect it for current and future users.

Groundwater Resources in the Saskatoon Area

Groundwater resources in the Saskatoon area have been [mapped](#) at a regional scale by the Water Security Agency¹ and include both shallow and deep aquifers. Significant groundwater resources, listed from deepest to shallowest, include the Tyner Valley Aquifer, Forestry Farm/Dalmeny Aquifers, and surficial aquifers. Groundwater from these aquifers is used currently for domestic, municipal and other purposes.

Shallow aquifers tend to provide the freshest water and are most targeted for groundwater use. These wells are also the most vulnerable to contamination from surface sources and fluctuations in water availability linked to climate and water use. Deeper aquifers have more water availability, but the water tends to be mineralized and it is costly to drill and install deep wells.

Risks of Using Groundwater in Saskatoon

Untreated groundwater from private wells is not always safe for drinking water purposes. Testing is required to guarantee its safety and treatment is sometimes also needed to meet federal-provincial drinking water quality objectives. The City provides safe drinking water sourced from the South Saskatchewan River and is not responsible for ensuring that groundwater from private wells is tested nor treated.

Groundwater can sometimes be used for irrigation without treatment, however minerals dissolved in groundwater tend to accumulate in irrigation equipment over time may necessitate frequent maintenance or replacement. Irrigation with groundwater can also negatively impact soil quality and plant health.

In addition, bacteria from sanitary sewer line leaks, nitrates from lawn fertilizers or agricultural sources, and chemicals from spills are all contamination risks to groundwater. The number of potential contaminant sources are greater in Saskatoon

¹ The Water Security Agency provides public information on groundwater and regulates groundwater investigations and withdrawals for non-domestic purposes through approvals and licences.



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when compared to rural areas due to the higher population density and more variable land use within city limits. Contaminants can reach aquifers either by infiltrating through soil and migrating through groundwater or by entering poorly maintained or abandoned groundwater wells.

Regulation of Groundwater in Saskatoon

The Water Security Agency currently regulates groundwater used for non-domestic purposes in Saskatchewan. These purposes include: municipal, irrigation, industrial, and other uses. The agency also monitors groundwater levels, allocations, and use from aquifers in the southern half of the province, thereby administering and managing groundwater resources at a regional scale. A water rights licence is required to use groundwater in Saskatchewan, except for domestic purposes.

The Ministry of Energy and Resources regulates oil and gas wells, geothermal wells, and disposal wells within Saskatchewan. These activities require a licence obtained through an application and review process.

While City Administration does not expect there to be many residents using domestic wells on properties where City water service is available, the number of active wells in use is currently unknown. The installation and operation of private groundwater wells for domestic purposes is not addressed by current bylaws in Saskatoon. Because these wells do not require approvals or licencing by the Water Security Agency, up-to-date records are unavailable.





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Key Terms

Abandoned well: a well that is no longer used (as defined by the Water Security Agency²).

Aquifer: any geological formation from which groundwater can be withdrawn in usable quantities to suit a given need (adapted from *The Ground Water Regulations*³).

City water: water supplied from the City of Saskatoon water works system.

City water works system: any City of Saskatoon asset or facility for the collection, transmission and treatment of water including the main lines of the system (as defined in the Private Sewer and Water Service Connection Bylaw).

Decommissioned well: a well that has been properly sealed to prevent the vertical movement of water within it (after section 28(1) of *The Groundwater Regulations*).

Domestic purposes: household and sanitary purposes, the watering of stock, the spraying of crops, the watering of noncommercial lawns and gardens adjoining private residences, but does not include the sale or barter of water for such purposes (as defined in *The Ground Water Regulations*).

Groundwater: water beneath the surface of land (as defined in *The Ground Water Regulations*).

Industrial purposes: any purposes for which water is used in the production of goods and services and includes the use of water for cooling purposes (as defined in *The Ground Water Regulations*).

Irrigation purposes: the controlled application of water to soil for the purpose of supplying moisture essential to plant growth (as defined in *The Ground Water Regulations*).

Monitoring well: a well used for measuring, testing, or sampling groundwater.

Municipal purposes: household and sanitary purposes, the watering of streets, walks, paths, boulevards, lawns and gardens, fire protection and the flushing of sewers, and includes the construction of buildings and of civic works, and other purposes usually served by water within a city, town, or village and such other purposes as are approved by the commission (as defined in *The Ground Water Regulations*).

Pumping well: a well used for withdrawing groundwater for domestic or non-domestic purposes other than testing or sampling.

Well: an opening made by drilling into the ground for the purpose of obtaining groundwater or scientific data on groundwater, whether water is obtained or not (as defined in *The Water Security Agency Act*⁴).

² [Decommissioning Abandoned Water Wells Fact Sheet](#) FS-309. 2013. Water Security Agency.

³ [The Ground Water Regulations](#). Saskatchewan Regulation 172/66. Last amended 2006.

⁴ [The Water Security Agency Act](#). Chapter W-8.1 of the Statutes of Saskatchewan. Last amended 2019.