

Options for Groundwater Protection

ISSUE

There are gaps in the regulation of groundwater wells within city limits that contribute to risk of aquifer contamination, drinking water cross-contamination, public health issues, and associated liabilities. There are two types of wells that are of concern: residential pumping wells used as a source of domestic water; and monitoring wells that are used to measure, test, or sample groundwater.

BACKGROUND

History

Bylaw No. 9700, The Official Community Plan Bylaw, supports water protection initiatives that include the protection of ground and surface water. The City of Saskatoon (City) has implemented several initiatives to protect surface water, however there is no current policy to protect groundwater.

Current Status

The City's Water Supply

Since 1906, water has been pumped from the South Saskatchewan River to provide a safe and reliable source of fresh drinking water for Saskatoon. City water is routinely treated and tested and consistently meets or exceeds all federal-provincial drinking water quality objectives. With a reliable and high-quality surface water source, there is no current municipal need to use groundwater. However, some residents and businesses within city limits do have wells for various uses, and wells are routinely used for monitoring groundwater during development and construction.

Groundwater Background

Groundwater is an important natural resource that requires protection to ensure its viability is sustained for present and future users. Appendix 1 - Groundwater Information contains background information about local groundwater resources, risks of using groundwater, regulation of groundwater wells, and key terms.

The Water Security Agency (WSA) regulates the use of groundwater for non-domestic (industrial and commercial) purposes in Saskatchewan. The use of groundwater for domestic purposes, which includes residential pumping wells, is not regulated by WSA. Monitoring wells are also not regulated by the province.

Pumping Wells

Domestic purpose pumping wells are typically installed to extract groundwater for household, sanitary and irrigation use. The Administration receives an average of five inquiries about residential pumping wells each year. Based on provincial records there could be 350 pumping wells within Saskatoon city limits; however, their precise location and status (active/inactive) is not documented.

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Monitoring Wells

Monitoring wells are used to measure groundwater levels or groundwater quality. They are typically used during land development and construction or for environmental monitoring.

Public Engagement

The Administration engaged subject matter experts, consultants that design wells, well drillers and installers, and land developers. A total of 85 participants took part in the engagement activities, including stakeholder meetings and public surveys, held from August 2021 to October 2021.

Approaches in Other Jurisdictions

Provincial governments in Canada have the primary role in regulating and protecting groundwater. Some provinces, including Saskatchewan, exempt domestic purpose wells from regulation.

Calgary, Kamloops, Langley, and Lloydminster have bylaws prohibiting private water connections when a property is connected to municipal service. Yorkton, which relies solely on groundwater for its municipal supply, prohibits groundwater pumping wells within its city limits.

Alberta, British Columbia, Manitoba, and Ontario have guidelines, standard operating procedures, and technical bulletins for well decommissioning. Saskatchewan has guidelines for installing, operating, and decommissioning wells, but does not regulate or require reporting on decommissioning.

OPTIONS

The Administration has developed three policy options for pumping wells and two policy options for monitoring wells to address gaps in regulation and protect groundwater.

Pumping Wells

The following options were investigated for domestic purpose pumping wells:

A1: Do not regulate domestic purpose pumping wells (maintain status quo)

The installation, operation, and decommissioning of pumping wells for domestic purposes would remain unregulated in Saskatoon.

A2: Allow new domestic purpose pumping wells for irrigation only

The Administration would create a bylaw for City Council consideration to regulate the installation, operation, and decommissioning of new domestic purpose pumping wells for the sole purpose of irrigation for private residences. The use of groundwater for drinking or washing would be prohibited. Existing domestic purpose pumping wells would be unaffected until they are no longer in use, at which time proper decommissioning would be required.

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A3: Prohibit new domestic purpose pumping wells

No resident would be allowed to install or operate a new domestic purpose pumping well within city limits where municipal water service is available. Existing domestic purpose pumping wells would be unaffected until they are no longer in use, at which time proper decommissioning would be required.

The Administration also investigated the potential for a bylaw to allow and fully regulate all domestic purpose pumping wells. However, full regulation would require the development of specialized skill sets, processes, and risk/liability management measures within the municipality that would overlap those already present within the provincial WSA. Implementation would be expensive and impractical in relation to the number of requests received. This option is therefore not being presented for consideration in this report.

Monitoring Wells

Several policy options were investigated for monitoring wells. The Administration is committed to creating internal guidelines and processes for the maintenance and decommissioning of monitoring wells on City property and rights-of-way. In addition, the Administration could pursue the following options for wells on private property:

B1: New Development Standards

New standards and specifications would be created for monitoring wells installed, maintained, or decommissioned during the land development process. These standards would also apply to abandoned wells.

B2: New City-wide Standard

New standards and specifications would be created for all monitoring wells installed, maintained, or decommissioned within city limits.

RECOMMENDATION

That the Standing Policy Committee on Environment, Utilities and Corporate Services recommend to City Council that:

1. A bylaw be created to prohibit new domestic-purpose pumping wells within city limits (Option A3); and
2. A new development standard be created for monitoring wells installed, maintained, and decommissioned during the land development process (Option B1).

RATIONALE

Appendix 2 - Options Analysis, contains a full analysis and comparison of the options presented in this report. The proposed options were compared based on:

- addressing risk to groundwater and public safety;
- feedback from stakeholder engagement;
- Triple Bottom Line (TBL) implications;

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- budget and time requirements; and
- ease of implementation.

Pumping Wells

The recommended option (A3) to prohibit new domestic-purpose pumping wells, achieves greatest management of risks to groundwater quality and quantity as well as risks to public safety. Option A3 was also the most supported during stakeholder engagement and by TBL implications. This option requires the least amount of time and budget to implement.

Monitoring Wells

The recommended option (B1) to create new development standards for monitoring wells during land development, partially achieves management of risks to groundwater quality as well as risks to public safety. Option B2: Create a New City-wide Standard was the most supported during engagement and the TBL analysis and achieves greatest management of risks. However, additional engagement would be required to fully evaluate Option B2 with the general public, and additional budget would be required for implementation. The Administration is therefore recommending Option B1: New Development Standards for monitoring wells during land development as an initial step with the potential to revisit Option B2 in future.

Appendix 3 contains the Stakeholder Engagement summary. Appendix 4 contains a summary of the Triple Bottom Line implications identified for these options.

FINANCIAL IMPLICATIONS

For the recommended Options A3 and B1, no additional resources or budgets are required for implementation.

COMMUNICATION IMPLICATIONS

All stakeholders that the City consulted with will be informed of the outcome of this report and information will be posted to the City's website.

ADDITIONAL IMPLICATIONS/CONSIDERATIONS

The recommended options have been selected considering existing conditions and demand. Should future demand for groundwater use change due to impacts such as climate change, the City's approach can be amended or updated.

NEXT STEPS

If the recommended options are supported, development of a bylaw for pumping wells and new development standards/specifications for monitoring wells will take approximately one year. Development of programs and process to support implementation can occur in parallel within the same time frame. It is anticipated that an approval report with a recommended effective date for the bylaw and standards/specifications can be brought forward in Q4 2022.

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If City Council chooses options other than those recommended, budget requests for implementation of these options will be submitted for the 2024-2025 budget cycle with work planned to proceed in 2024.

APPENDICES

1. Appendix 1: Groundwater Information
2. Appendix 2: Options Analysis
3. Appendix 3: Engagement Summary
4. Appendix 4: Triple Bottom Line Implications

Report Approval

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