

Successful Municipal Practices: Responding to New Challenges



Tools for Change

MUNICIPAL RESTRUCTURING: New Water Treatment Plant The City of Winkler

Located on the western edge of the Red River Valley, the City of Winkler is known as an industrial and retail hub for south central Manitoba, serving a market of 65,000 people. The City's thriving agriculture, commercial and retail sectors have attracted a significant number of immigrants. Winkler's population now tops 10,000 with residents in the community representing over 50 countries.

Accommodating that rapid growth requires the City to ensure it can provide the necessary infrastructure and essential services, such as water. For many businesses, the cost and availability of water can be a deciding factor as to where to locate.

Winkler gets most of its water from the Winkler Aquifer. Current licensing restrictions, however, limit the amount of freshwater the City can withdraw to ensure the aquifer has a chance to naturally recharge. This means the City is unable to access enough freshwater from the aquifer to meet the growing demand.

To ensure the future needs of residential and commercial users are met, the City began to explore ways it could access more water. One potential option was to purchase water from a regional water co-op to supplement the current supply. However, because the City wanted to maintain flexibility in managing supply and demand, it began to look at other possible solutions.

Brackish water exists in large quantities in the aquifer and Manitoba Water Stewardship was willing to license an additional withdrawal from the brackish zone. Brackish water has more salinity than fresh water and so requires specialized treatment before it can be used. Winkler's aging water treatment plant, however, was not capable of treating brackish water to the required standard.

Given the expected long-term increased demand for water and the costs associated with purchasing water from an outside source, Council decided to explore new technologies that would allow them to tap into the brackish zone to meet their water demands. This meant looking at building a new water treatment plant. A further incentive to investigate this option was that the current plant was near the end of its life expectancy and would need to be replaced eventually.

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A pilot plant study was conducted to test out some of the new technology. In exploring ways to treat brackish water, the City looked for practical and cost effective solutions. For example:

- due to the high iron and manganese content, it was decided to use a greensand filtration, a well-known and established technology;
- given the high conductivity of the brackish water, reverse osmosis membranes were used with calcite conditioning downstream;
- sodium hypochlorite was used for disinfection before the water was discharged to an above ground circular storage tank; and
- an above ground storage tank was chosen instead of an underground rectangular concrete tank because of improved mixing but also due to costs and time constraints.

By accessing new technologies, the City was able to build a treatment plant that allowed it to treat brackish water, helping it to meet current and future demand. The plant also has the ability to function independently during prolonged power outages, meaning customers will continue to be supplied with water during such events. This was accomplished by establishing two new wells near the treatment plant to share in the emergency power supply provided for the plant.

The water treatment plant was completed in the spring of 2011 at a cost of \$4.4 million which included pipelines and two new wells. To manage costs, the City relied on its in-house expertise for much of the engineering and project management. The City was also able to access stimulus money from the provincial and federal governments.

With the new water treatment plant, the City is less reliant on outside sources for its water and is better positioned to meet future demand. By exploring and investing in new technologies, the City was able to find a way to access existing resources, in this case brackish water, allowing the community to continue to grow.

When deciding on some of the technical aspects, the City looked for practical and cost effective solutions.

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