



COUNCIL REPORT

To: Mayor and Council

Date: February 11, 2025

From: Ron Bowles, Chief Administrative Officer

Subject: **Rose Valley Reservoir – Source Water Improvements Project Update**

Report Prepared by: Rob Hillis, Acting Director of Engineering & Operations

INFORMATION SUMMARY

This report provides an update on the ongoing efforts to improve the source water quality of the Rose Valley Reservoir. The project, which was approved by the Council on November 26, 2024, with a budget of \$2,500,000, aims to address issues such as manganese, algae, and other source water concerns. The document highlights the project's progress, risk assessments, and the city's commitment to maintaining high water quality standard.

RECOMMENDATION to Consider and Resolve:

THAT the report titled "Rose Valley Reservoir - Source Water Improvements Project Update" from the Acting Director of Engineering & Operations, date February 11, 2025, be received for information.

STRATEGIC AREA(S) OF FOCUS

Invest in Infrastructure – We will invest in building, improving and maintaining infrastructure to meet the needs of, and to provide a high quality of life for, current and future generations.

BACKGROUND

Project Update

On November 26, 2024, Council approved \$2,500,000 for source water improvements for the Rose Valley Reservoir. The reservoir has had increasingly challenging source water conditions since West Kelowna was transferred the water system in 2011. The improvements will help mitigate manganese, algae and various source water concerns that have been affecting the reservoir.

The project consists of the installation of a potassium permanganate treatment system, intake improvements, and aeration improvements. The highest priority item of the project is installing the potassium permanganate treatment prior to the summer when dissolved manganese levels in the source water are expected to rise. This will oxidize the dissolved manganese and ensure that the Rose Valley Water Treatment Plant will be able to remove it from the source water.

Staff are working with the consultant, AECOM Canada Limited on procuring items with long lead times to maintain the project schedule. Some key items that are being procured include an in-line manganese reading instrument and chemicals for the new potassium permanganate dosing system. The system will use the instrument to measure dissolved manganese levels, have dosing pumps that will adjust the dose based on the readings and will communicate with the plant where operators can review and adjust the dosing levels. The system is expected to be ready prior to summer when dissolved manganese levels typically rise in the reservoir.

City staff, AECOM and Larratt Aquatic are developing a preliminary design for aeration improvements to the reservoir. Aeration improvements should help contribute to reduced algae and dissolved manganese levels in the reservoir. These improvements will also improve taste and odors in the drinking water. Taste and odor concerns are still expected to fluctuate in the long term. These improvements are planned to be designed in 2025 and installed in spring 2026. The existing intake screen needs replacement and no longer functions correctly. The screen is damaged and no longer provides the appropriate protection from small items entering the treatment plant.

Project Risk Assessment

Project risks are monitored through an ongoing Risk Log prepared in collaboration with the City and the project team. The following provides a summary of identified risks for the project.

Risk	Description	Assessment
Dissolved Manganese Levels During Ice Melt	Larratt Consulting Ltd. has indicated that dissolved manganese levels could rise when the lake surface thaws in early spring.	Staff will continue to monitor manganese levels as the ice melts and pre-dose with chlorine as required.
Lead times for Equipment and Chemicals	There are long lead times for the manganese analyzer and chemicals used for the potassium permanganate treatment system.	Manganese analyzer and chemicals have been ordered. Chlorine dosing system will be used if the system is not completed when manganese levels rise.
Dissolved Manganese Levels During the Summer	Historically dissolved manganese rises during the summer months in the reservoir.	Installing the potassium permanganate system prior to summer would allow the plant to remove manganese. If the system is not functional when levels rise, staff will pre-dose with chlorine prior to treatment.
Communication infrastructure	There is no fiber connection from the plant to the reservoir. Adding fiber to the existing poles may take time for BC Hydro to design, approve and install.	An alternative connection via a cellular phone, or satellite, or radio network is planned, while still investigating bringing fiber to the reservoir.

Power Supply to the Reservoir	There is only single-phase power available at the reservoir, which limits the amount of aeration that can be installed.	The aeration system will be designed in phases that can use single-phase power for this project. As part of a future project, the system can be expanded with three-phase power.
Algae growth in the Reservoir	City staff receive more taste and odor concerns during times when algae blooms are occurring in the reservoir.	Treating the water with Potassium permanganate will improve taste and odor. Further improvements will be made with the new aeration system and the regeneration of the forest that was burnt during the McDougall Creek Wildfire.

Water Systems Update

Since the last update to Council on November 26th, 2024, the City has consistently delivered water from the Rose Valley Water Treatment Plant that meets and exceeds drinking water guidelines. The City has not had to issue a Water Quality Advisory (WQA) based on drinking water quality. Water Quality Advisories have been issued for flushing, which is routine maintenance for a water system. Like flushing activities, unanticipated changes in water velocity in water mains can cause short periods of turbidity in localized areas. This is an ongoing normal occurrence for a water system, but flushing efforts (over time) will help mitigate significant disturbances.

Since November 26th, two instances of water quality concerns were noted by residents and investigated by Operations staff in the Rose Valley Water Service Area. On January 2nd, Operations staff completed a repair on Concord Road. Staff received concerns in the Guidi Road, Ourtoland Road, and Trevor Drive areas following repairing the main. Water quality resumed to normal levels once the turbid water was flushed from the system. On January 8th staff received concerns over discolored water in the Teal Road and Stevenson Road areas. Staff were able to test the water during the turbidity event and afterwards. The water cleared up within 10 minutes of running a tap on cold. Test results during the turbidity event indicated manganese was present in the water while it was turbid, but not in the samples once the water ran clear. When dissolved manganese interacts with chlorine disinfectant, it oxidizes. This shows up as turbid water, but also causes manganese to settle in the distribution system and accumulate with other sediment and metals that are in the water system, such as iron or sand. A sudden, typically unanticipated, change in velocity will stir up this accumulated material until it resettles or is flushed from the system.

A flushing program will help remove this material from the system and reduce the risks of turbidity events when velocities change in the distribution system. Utilities staff are planning on resuming flushing work in the Rose Valley Water System in the spring. The flushing work is expected to be an ongoing program in both water systems going forward to reduce sediment in the distribution mains of both the Powers Creek and the Rose Valley Water Service Areas.

Members of the public have reached out to the City and Interior Health reporting gastrointestinal and stomach sicknesses. These concerns are not linked to the drinking

water as the Rose Valley system has not had any tests results that indicate that there is a risk of the public getting sick from the drinking water. If there is a positive test, the City will work with Interior Health to notify the public, typically through a Water Quality Advisory. There has not been a WQA on the Rose Valley Water Service Area since the plant began operating in November, only localized WQAs for watermain flushing.

Staff are working hard to investigate all water quality concerns, if they are provided address and contact information. Staff are continuing to improve the way we communicate concerns to the public and ensuring transparency. Test results for 2023 and 2024 have been added to the website. Future results and historical manganese testing data are planned to be added as well. The City’s water team has provided a high-quality product and service since this past summer and is making continuous improvements to its water operations.

FINANCIAL IMPLICATIONS

Funding for the project is \$2,500,000 and was approved at the November 26, 2024 Council Meeting. The project budget is expected to be completed within the allocated funding.

COUNCIL REPORT / RESOLUTION HISTORY

Date	Report Topic / Resolution	Resolution No.
November 26, 2024	THAT Council direct staff to amend the 2024 Budget to include an \$2,500,000 (two million five hundred thousand dollars) for Rose Valley Reservoir - Source Water Improvements funded from Rose Valley Water Reserves;	C289/24

REVIEWED BY

Warren Everton, Director of Finance/CFO
 Trevor Seibel, Deputy CAO/Deputy Corporate Officer

APPROVED FOR THE AGENDA BY

Ron Bowles, Chief Administrative Officer

PowerPoint: Yes No