



Regional Board Report

TO: Regional Board

FROM: David Komaika
Director of Engineering Services

DATE: July 22, 2019

SUBJECT: Westside Regional Wastewater Treatment Plant – TWAS Design Budget Amendment

Voting Entitlement: *All Directors – Unweighted Corporate Vote – Simple Majority – LGA 208.1*

Purpose: To update the Regional Board prior to consideration of a budget amendment bylaw to amend the 2019 Capital and Operating Budget for the Westside Sewer System (401) to allow detailed design to proceed on the replacement of the Thickened Waste Activated Sludge (TWAS) Vault located at the Westside Regional Waste Water Treatment Plant.

Executive Summary:

AECOM was retained by the Regional District of Central Okanagan (RDCO) to assess three structures at the Westside Regional Wastewater Treatment Plant (WRWWTP) and provide recommendations and cost estimates for these structures. These included:

- The TWAS Vault;
- Secondary Clarifier #1; and
- Secondary Clarifier #2.

These structures are part of the original plant constructed between 1989 and 1995. Over time, the concrete has started to decay, crack and spall leading to concerns regarding the long-term viability of this infrastructure. The report outlines the assessment of these structures to meet current and future operating conditions, and presents several recommendations regarding the repair/replacement of the TWAS Vault and Clarifiers.

Administration wishes to proceed to detailed design for the TWAS Vault replacement in 2019 to allow for its replacement in future budget years. (2020-2021) The detailed design will allow the department to properly plan, fund and execute the complex project and upgrades. Funding for the design costs can be redirected from other operating and capital budgets without impacting the 2019 Budget.

RECOMMENDATION:

THAT the report on the replacement of the Thickened Waste Activated Sludge (TWAS) Vault located at the Westside Regional Waste Water Treatment Plant be received.

Respectfully Submitted:



David Komaika
Director of Engineering Services

Approved for Board's Consideration



Brian Reardon, CAO

Implications of Recommendation:

Strategic Priorities: Supports the Regional Board's efforts to reduce our environmental footprint by ensuring the WWTP infrastructure is properly maintained and sized for future growth.

Financial: Long-term budgeting to ensure stable users fees and adequate reserves to complete needed maintenance, repairs, and upgrades.

Background:**Existing TWAS Vault Structure**

The existing TWAS Vault, constructed in 1989, is a subgrade concrete structure located under the Administration Building. The vault measures 4.2 m x 6.6 m and 2.5 m high with a capacity of 55m³ which provides approximately 24 hours of storage at current flowrates. The vault can be accessed through two 570 mm diameter manholes, one on each side which results in a confined space that is difficult to enter for inspection and repairs.

The Vault was inspected in early 2019 and the concrete was found to be in "fair" condition due to the corrosion through oxidation of hydrogen sulphide (H₂S) and temperature changes causing freeze/thaw cycles. The report concludes that the vault should be decommissioned/rehabilitated within the next five years and provides three options.

Option 1 – Use Existing TWAS Vault and Old Fermenters	\$1,210,000
Option 2 – Maintain Existing Vault and Construct New Cell	\$1,200,000
Option 3 – Construct Two Cell Vault and Abandon Existing	\$1,330,000

Administration supports Option 3 as it has the least impact on the wastewater treatment plant operations, builds in system redundancy and adds TWAS storage capacity needed to meet the ultimate design capacity of the plant.

Existing Secondary Clarifiers #1 and #2 Structures

The Secondary Clarifiers #1 and #2, constructed in 1995, are exhibiting signs of deterioration. There is cracking on the upper portion of the walls of Clarifier #1 and cracking in the 50 mm topping at the bottom of the Clarifier #2. Clarifier #1 also shows discolouration due to rust on the metal cap plate for the mechanism roller. Both clarifiers are showing loss of aggregate at their launders. The WRWWTP currently has sufficient secondary capacity to remove both clarifiers from the service during the winter, and one from service during the summer.

The repairs to Clarifier #1 would require cutting 600 mm from the top of the wall and replacing the entire structure with new concrete complete with heat tracing to prevent ice buildup. Additional concrete work involving chipping of loose material and rebuilding of localized failures would also be required.

The repairs to Clarifier #2 would be much more localized in nature as the structure is more sound than Clarifier #1. Repairs would be limited to chipping and masonry repairs.

The report concludes that the Clarifier #1 and #2 rehabilitated should be complete within the next 10-15 years and provides two cost estimates. The repairs can be incorporated into other plant upgrades, which should reduce the capital and engineering costs associated with the repairs.

Clarifier #1 – Estimated Cost of Repairs	\$390,000
Clarifier #2 – Estimated Cost of Repairs	\$190,000

Financial Considerations:

The replacement of the TWAS Vault and the repairs to Clarifiers #1 and #2 are not currently included in the Capital Budget or 20-year Capital Plan for the wastewater treatment plant. The goal of the study was to determine the expected life remaining in these important and critical components of the facility and allow for proper timely and planned repairs which maximize the life of the assets.

Funding for the TWAS Vault replacement would likely be derived from a combination of user fees, Development Cost Charges and available grants. The existing infrastructure is not only at capacity but is nearing the end of its useful service life. Future upgrading of the TWAS Vault will be required to allow the system to reach its ultimate design capacity (Stage 4 & 5).

The repairs of the Clarifiers are considered maintenance to existing infrastructure, and as such, could be funded via user fees or grants, if available. The timing of the repairs will allow staff the opportunity to adjust the Capital Budgets and build reserve funds for the capital works.

The draft AECOM report was presented to the Westside Wastewater Treatment Service Stakeholder Select Committee Meeting on June 5, 2019. The WWTSSS Committee supported the recommendations of the study.