

**REPORT TO REGIONAL WATER SUPPLY COMMISSION  
MEETING OF WEDNESDAY, APRIL 16, 2025**

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**SUBJECT**      **Goldstream Water Treatment Plant Ultraviolet and Controls Upgrade Project Update and Capital Plan Amendment**

**ISSUE SUMMARY**

To provide a status update on the completion of the Goldstream Water Treatment Plant Ultraviolet (UV) and Controls Upgrade Project and to request authorization for a Capital Plan Amendment to utilize remaining project budget on additional improvements at the Goldstream and Sooke Water Treatment Plants.

**BACKGROUND**

The Goldstream Water Treatment Plant (GWTP) treats an average of 130 million litres of water per day for a population of nearly 400,000. Primary treatment is provided by a series of UV reactors, followed by the addition of free chlorine. Further downstream, ammonia is added to form chloramines, which provides secondary (residual) disinfection.

When the existing UV disinfection system was commissioned in 2004, the Capital Regional District (CRD) was considered an early adopter for UV disinfection at this scale, which was the largest of its type in North America. As this technology has become more commonplace, the technology and energy efficiency has also improved. In 2019 and 2020, a series of assessments were conducted that resulted in the recommendation to replace the existing reactors at the end of their 20-year recommended service life and to schedule this work in conjunction with other electrical and controls upgrades at the GWTP. Key design parameters required to meet ongoing demands and compliance with the operating permit are outlined in Table 1.

Table 1 – Design Parameters / Permit Requirements

Parameter	Objective
Design Flowrate (max. instantaneous)	532 Million litres per day
Design Flowrate (min. instantaneous)	25 Million litres per day
UV Transmissivity	85%
UV Reactor Redundancy	N+1
4:3:2:1 Treatment Standard	4-log (99.99%) reduction in viruses 3-log (99.9%) inactivation of viable cysts 2 treatment processes 1 NTU or lower turbidity

The GWTP upgrade was authorized under Regional Water Supply (RWS) *Capital Project #18-07 - Replacement of UV System and Controls Upgrades* which funded the replacement of fifteen (15) existing reactors with eight (8) new, higher capacity reactors. In addition to the improved reliability of the new UV reactors, the increased efficiency is anticipated to result in an annual energy savings of 1,16kWh and was supported by BC Hydro in the form of a \$330,345 Incentive Agreement. The project also provided significant electrical, controls and Supervisory Control and Data Acquisition (SCADA) upgrades that supported the chlorine and ammonia systems at the

GWTP. Given the requirement to maintain ongoing water treatment while actively replace existing UV Reactors, a stipulation of this project was that the entire scope of work needed to be completed during the low demand period of October to March and the facility needed to remain operational at all times.

The project is now substantially complete and the requirements of the contract have been achieved, including meeting the scope, schedule and budget criteria, while maintaining continuous water service. Currently, \$10.93 Million has been expended from the project budget.

Infrastructure upgrade projects at operational sites are uniquely challenging and to be able to complete this work without impact to water supply or water quality is worth acknowledging. This project could not have been a success without the significant contributions and collaborations of the many teams and individuals involved and we would like to acknowledge:

- **CRD Water Infrastructure Operations**, for their expertise, professionalism and flexibility which was paramount to the successful completion of this work;
- **CRD Systems Maintenance**, including the SCADA and Controls staff who provided their early input and guidance and will continue to support with ongoing improvements and support throughout the life of this facility and the many others;
- **CRD Infrastructure Engineering**, who managed the delivery of the capital project and facilitated the contracted supports required;
- **Associated Engineering (B.C.) Ltd.** for the design services and continued support throughout construction and implementation;
- **Trojan Technologies Group ULC**, for the support and support of the UV Equipment.
- **Industra Construction Corp.** as prime contractor and their subcontractors **Fettback & Heesterman Energy Ltd.**, **Western Systems Controls Ltd.** and **QCA Systems Ltd.**, who were able to provide such a strong construction and integration team and work so collaboratively with all of CRD's working groups;
- **CRD Water Quality**, for the guidance, support and facilitation with Island Health;
- **CRD Climate Action** and **BC Hydro** for the Incentive Agreement that provided support funding and validation of the energy efficiency improvements associated with this project;
- **CRD procurement, contracts, legal and the many other support staff** for the support they provide to this project and the many other initiatives at the CRD;
- **CRD senior leadership** for the ongoing commitment and support they provide to their working groups; and,
- **Regional Water Supply Commission**, for your guidance, interest and the trust that you place in the Infrastructure and Water Services department.

A detailed overview of the progression of this Capital Project is summarized in Appendix A and photos and SCADA Screen shots can be found in Appendix B and Appendix C respectively.

This project carried schedule and financial risk and as such, contingency budget was in place. At current forecast the project is ahead of schedule and approximately \$900,000 under the approved \$11,830,346 budget. While some of this budget will be utilized in general close-out costs related to the project, there is opportunity to allocate some remaining budget to support other timely

improvements and initiatives at our water treatment facilities. Staff are requesting authorization to complete a Capital Plan Amendment to re-purpose \$750,000 to a new “Capital Project #25-24 Water Treatment Plant Improvements Program”, which would be utilized to initiate a continued program for small to mid-sized improvements at the Goldstream and Sooke River Road Water Treatment Plants. The details of this Capital Plan Amendment have been included in Appendix D.

## **ALTERNATIVES**

### *Alternative 1*

That the Regional water Supply Commission recommends to the Capital Regional District Board: That the 2025 Regional Water Supply Five Year Capital Plan be amended to reallocate the \$750,000 of remaining budget from Capital Project #18-07-Replacement of Ultraviolet System and Controls Upgrades to a new Capital Project, #25-24 Water Treatment Plant Improvements Program.

### *Alternative 2*

That the Regional water Supply Commission recommends to the Capital Regional District Board: That Capital Project #18-07-Replacement of Ultraviolet System and Controls Upgrades be closed out after all current scope is completed and that any remaining funds be repurposed on future year Capital Budgets.

### *Alternative 3*

That this report be referred back to staff for additional information.

## **IMPLICATIONS**

### *Financial Implications*

Utilizing the remaining budget from the GWTP UV and Controls Upgrade project will allow staff to initiate a new program to address further small to mid-scale incremental improvements at the GWTP. This budget can be built upon in future years and will allow staff the flexibility to maintain the collaboration and momentum developed during this project and continue with planning and executing improvements, such as those initially outlined in Appendix D.

### *Service Delivery Implications*

Maintaining the momentum and collaboration from this project to continue implementing improvements will allow staff the budget and flexibility to progress additional initiatives, which are not of significant enough scale or fully developed sufficiently for standalone project budgets.

## **CONCLUSION**

The Goldstream Water Treatment Plant Ultraviolet and Controls Upgrade Project has been completed under budget and is progressing into a two-year warranty period. This was a challenging project on an active, critical facility and it would not have been successful without the dedication and collaboration between the Consultants, Contractors, Subcontractors and Capital Regional District contributing groups mentioned earlier. With the remaining budget available from this project, an opportunity exists to develop a new program level budget that will allow staff to

collaborate further among departments and allocate budget to other beneficial improvements at our water treatment facilities.

**RECOMMENDATION**

That the Regional Water Supply Commission recommends to the Capital Regional District Board: That the 2025 Regional Water Supply Five Year Capital Plan be amended to reallocate the \$750,000 of remaining budget from Capital Project #18-07-Replacement of Ultraviolet System and Controls Upgrades to a new Capital Project, #25-24-Water Treatment Plant Improvements Program.

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**ATTACHMENT(S)**

Appendix A: Summary of Regional Water Supply Capital Project #18-07  
Appendix B: Site Photos  
Appendix C: SCADA Screens  
Appendix D: Capital Plan Amendment – Capital Project #18-07 #25-24