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**REPORT TO WILDERNESS MOUNTAIN WATER SERVICE COMMISSION  
MEETING OF WEDNESDAY 09 JUNE 2010**

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**SUBJECT      PROPOSED WATER TREATMENT IMPROVEMENTS / CAPITAL PROJECT UPDATE**

**PURPOSE**

To inform the Wilderness Mountain Water Service Commission (WMWSC) of the status of the water treatment improvement project.

**BACKGROUND**

The Capital Regional District (CRD) took on ownership and operations of the Wilderness Mountain Water Service with a plan that would see improvements to the water treatment process to meet the expectations of the Vancouver Island Health Authority (VIHA), since the system simply disinfects raw surface water with chlorine. A grant was obtained for the work and the total budget is \$708,000 with the scope of work to include:

1. A water treatment plant building.
2. Water treatability testing to confirm the suitability of installing the anticipated treatment processes of dissolved air flotation (DAF) solids separation, filtration, ultra violet disinfection and post chlorination.
3. Related updates in mechanical/electrical components, instrumentation alarms and controls.

This has been a challenging assignment for the CRD since there was insufficient historical raw water data to make conclusions regarding water treatment technology and processes, no water usage data existed, and limited operating information was available. The CRD has collected water quality data, water usage data and have made system improvements such as the distribution system leak repair.

In order to collect sufficient data (preferable several successive years) it was proposed to complete the project in two phases. Phase 1 would see the installation of new chlorine disinfection equipment, a flow meter and ultraviolet light disinfection system all of which would be included in the final facility. Phase 2 will result in further water quality data collection and study regarding the appropriate overall treatment process. This approach was approved by the Province and the grant agreement has been revised with a new completion date of March 31, 2012.

The proposed water treatment process concept includes:

1. Clarification (Dissolved Air Flotation (DAF)
2. Filtration (multimedia); and
3. Disinfection (both chlorine and ultraviolet light)

The concept was developed and it includes maintaining the existing reservoir (Wilfred Reservoir) as the raw water source, maintaining the existing pumphouse and raw water supply line to feed a water treatment plant (WTP) site to be located at the intersection of Cains Way and Ambience Place. The WTP building would front Ambience Place and would be one story above grade and one below. The main operating floor would house a prefabricated treatment process train, controls, electrical equipment, and instrumentation. The buried portion would consist of tanks for raw water, filter backwash and rinse water,

clearwell, pumps and chemical storage. This concept considers site access, chemical storage, waste disposal, power supply and vulnerability/security, danger trees, SCADA, land ownership, etc.

The CRD has installed similar processes on the Southern Gulf Islands and the experience has been such that the capital cost for the Wilderness Mountain water service area would be between \$1.2M to \$1.3M, which is approaching double the budget for the service area. Further, the technologies are complex and will need considerable operating budget for labour, consumables, waste disposal, and so on.

Recognizing that the original proposal would not be financially viable to complete, the CRD has not engaged an engineering consultant to design the work. Alternatively, the CRD proposes to follow the phased approach and install Phase 1 and reconsider possible simpler technologies at lesser capital and life cycle operating costs.

Other alternatives considered included an older concept of obtaining water from an adjacent utility, groundwater, lesser cost treatment technology (both capital and operating costs), or Point-of-Use/Point-of-Entry. After exploring these we propose to maintain Wilfred Reservoir and install a centralized water treatment process. In doing so, we had arranged a meeting with the Public Health Engineer from the VIHA and confirmed that VIHA is not mandating the originally proposed treatment technology. Less complex, but similar performing technology would be considered and a phased approach is acceptable to the Public Health Engineer.

The proposed next steps for the capital project will be to supply and install the work related to Phase 1 (UV equipment, flow meter, chlorine injection and related electrical components). Planning for Phase 2 will be conducted as a parallel assignment and will engage a water treatment specialist to provide guidance as to specific treatment solutions for the raw water characteristics of Wilfred Reservoir and be affordable both in terms of capital cost and long-term operating cost. A staff report will be presented at the next regular meeting of the WMWSC, including a recommendation to proceed with the phased approach, with alternatives and financial implications.

**ALTERNATIVES**

There are no alternatives.

**IMPLICATIONS**

There are no implications.

**SUMMARY**


Staff have reviewed available water quality information, and have considered CRD experience with the implementation of treatment upgrade projects for service areas in the Southern Gulf Islands of similar size to Wilderness Mountain. In light of the available information, it is anticipated that a new water treatment plant based on DAF is not a practicable alternative for Wilderness Mountain. A recommendation report will be presented at the next regular meeting of the WMWSC to proceed with a phased approach to treatment upgrades.

**RECOMMENDATION**

That the Wilderness Mountain Water Service Commission receive this report for information.

  
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Concurrence