



KERR WOOD LEIDAL  
consulting engineers

## Section 9

# CRD Capacity Allocation and Wastewater Treatment



## 9. CRD Western Communities Wastewater Treatment Plant

### 9.1 Background

Under the CRD's liquid waste management plan (LWMP) wastewater treatment for the City of Colwood is a service to be provided by the CRD. Wastewater treatment and an ocean outfall for the Western Communities has been examined previously for the CRD. We obtained an undated figure (likely 1970s or 1980s) prepared by Willis Cunliffe Tait/Delcan showing a wastewater treatment plant at Albert Head and ocean outfall at this location. This figure outlined trunk sewers to service Colwood, Langford, small portions of Metchosin and View Royal, and an undefined area of the Highlands. This plan did not come to fruition as the CRD's NWT servicing Colwood and Langford to the Macaulay Pump Station and Outfall was completed in 1998.

More recently, examination of a wastewater treatment plant in the western communities has been included in the CRD's Core Area Wastewater Treatment Plant Project. This includes the Assessment of Wastewater Treatment Options 1A, 1B and 1C Report<sup>9</sup>, the Wastewater Treatment Plant Option 1A Report<sup>10</sup> and the Development of Distributed Wastewater Management Strategies Discussion Paper<sup>11</sup>.

The first report examined options for a wastewater treatment plant in the western communities that would service the western communities only (Option 1A) and the western communities plus provide various levels of treatment for Esquimalt, Saanich, Oak Bay and Victoria (Options 1B and 1C). The discussion paper examined three options for the region all of which included a WWTP South Colwood. Option 2 included the addition of a WWTP on the Juan de Fuca Recreation Centre grounds. Option 3 included the Juan de Fuca WWTP plus WWTPs in Langford resulting in reduced flows to the Colwood WWTPs.

The CRD has since selected Option 1A, a centralized wastewater treatment system with a single wastewater treatment plant to be located at McLoughlin Point (Esquimalt). This plant is planned to be operational in 2018. Included in this plan is a single WWTP to be located in the Western Communities. The CRD has stated that the Western Communities WWTP will be required in the future, but no sooner than 2030.

### 9.2 Treatment Plant Locations

The CRD has not finalized a location for the single Western Communities WWTP.

The West Shore Subcommittee (WSSC) has identified a potential site for a WWTP. The location of this facility is at 3300 Wishart Road, immediately to the west of Colwood City Hall. This location is included in the Wastewater Treatment Plant Option 1A Report.

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<sup>9</sup> Capital Regional District, Core Area Wastewater treatment Assessment of Wastewater Treatment, Options 1A, 1B and 1C, Volume 1 – Report, Stantec Consulting Ltd./Brown and Caldwell, September 16, 2009.

<sup>10</sup> Capital Regional District, Core Area Wastewater Treatment Program, Wastewater Treatment Plant, Options 1A, Stantec Consulting Ltd./Brown and Caldwell, December 8, 2009.

<sup>11</sup> Capital Regional District, Core Area Wastewater Management Program, Discussion Paper – Development of Distributed Wastewater Management Strategies, 036-DP-2, CH2M Hill, Associated Engineering, Kerr Wood Leidal Associates, March 9, 2009



Other potential sites as part of the CRD's relatively recent work include the following:

- South Colwood – A Western Communities WWTP was located in South Colwood (near the Metchosin Road and Latoria Road intersection) in the Assessment of Wastewater Treatment Options 1A, 1B and 1C Report.
- Juan de Fuca – As part of options 2 and 3 in the Development of Distributed Wastewater Management Strategies Discussion Paper a WWTP located within Juan de Fuca Recreation Centre properties was identified.

These three WWTP options are illustrated on Figure 9-1. Included on this figure is the infrastructure required to convey the wastewater to these locations, and the infrastructure required to convey the effluent to the marine environment.

## 9.3 Capital Plans Impacts

The location of the Western Communities WWTP can eliminate the need for upgrades to Colwood's and the CRD's existing wastewater infrastructure to accommodate the future flows. The following sections discuss the require conveyance infrastructure for each of the options and the impacts the three WWTPs could have on the required upgrades and the Capital Plan.

### 9.3.1 City Hall WWTP

The City Hall WWTP would require the following infrastructure to convey Langford and Colwood flows to the WWTP:

- Aldeane Pump Station (CRD) – This pump station would be a CRD pump station as it would convey flow from both Colwood and Langford. As per previous CRD plans for this pump station, the flows downstream of this point would continue in the CRD's NWT. If it was determined that the Western Communities WWTP was to include all of the flows from Colwood, this pump station would move to Sooke Road near the Colwood/View Royal boundary.
- Aldeane Pump Station Forcemain and Gravity Main (CRD) - The forcemain from the Aldeane Pump Stations pump station would end on Wishart Road at the Metchosin Road intersection. From this point, this main could flow by gravity to the WWTP.

As a result of this City Hall WWTP some of the capacity deficiencies in the existing Colwood system (future flow scenario) would be eliminated. The flows from the Metchosin, Hatley, Pelican and Ocean pump stations could be connected to new CRD gravity main to the WWTP. The flows on Wishart Road (from the Triangle Mountain Area) would also be diverted to the WWTP. This would eliminate the capacity deficiency in the 600 mm main on Wishart Road, Jason Lane and Sooke Road. Additionally, the deficient gravity main on Wishart Road (south of Metchosin Road) would not require upgrading.

### 9.3.2 South Colwood WWTP

The South Colwood WWTP would require the following infrastructure to convey Langford and Colwood flows to the WWTP:

- Aldeane Pump Station (CRD) – *See Aldeane Pump Station under City Hall WWTP section above.*
- Aldeane Pump Station Forcemain and Gravity Main (CRD) - The forcemain from the Aldeane Pump Stations pump station would end on Metchosin Road near the Painter Road intersection. From this point, this main could flow by gravity (including a pressurized (inverted siphon) section near the



existing Metchosin Pump Station) to the WWTP. One alternative to this forcemain and gravity main would be to route the main along Painter Road and through the Royal Bay development down to the WWTP. This alternative would require a right-of-way from the Royal bay development.

As a result of this South Colwood WWTP, the majority of the capacity deficiencies in the existing Colwood system (future flow scenario) would be eliminated. The flows from the Metchosin, Hatley, Pelican and Ocean pump stations could be connected to new CRD gravity main to the WWTP. This would eliminate the capacity deficiency in the 600 mm main on Wishart Road, Jason Lane and Sooke Road. Additionally, the total pumping head for the Metchosin Pump Station would be significantly reduced by connecting to the new CRD gravity main. As a result, the upgrades to this Metchosin Pump Station would likely be minor in nature.

### 9.3.3 Juan de Fuca WWTP

The Juan de Fuca WWTP would require a gravity connection between the CRD's NWT on Sooke Road and the WWTP. It should be noted that the previous studies which included the Juan de Fuca WWTP included several other WWTP (as opposed to the CRD selected single WWTP for the Western Communities). As a result, this WWTP servicing the entire Western Communities would have to be significantly larger than previously identified.

As the Juan de Fuca WWTP is at the downstream end of the Colwood wastewater system, none of the capacity deficiencies would be eliminated. Additionally, the portions of the CRD's NWT upstream of this diversion with capacity deficiencies would remain.




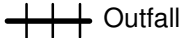
## 9.4 Recommendation

It is recommended that the City continue to work with the CRD regarding a wastewater treatment plant in the Western Communities. Once a WWTP location is selected, Colwood should identify how this plant location will modify the required system upgrades.



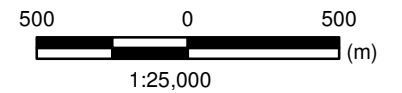
City of Colwood  
Sewer Master Plan

Legend

- South Colwood WWTP Option
- Juan de Fuca WWTP Option
- City Hall WWTP Option
-  Pump Station
-  Gravity Main
-  Forcemain
-  Outfall



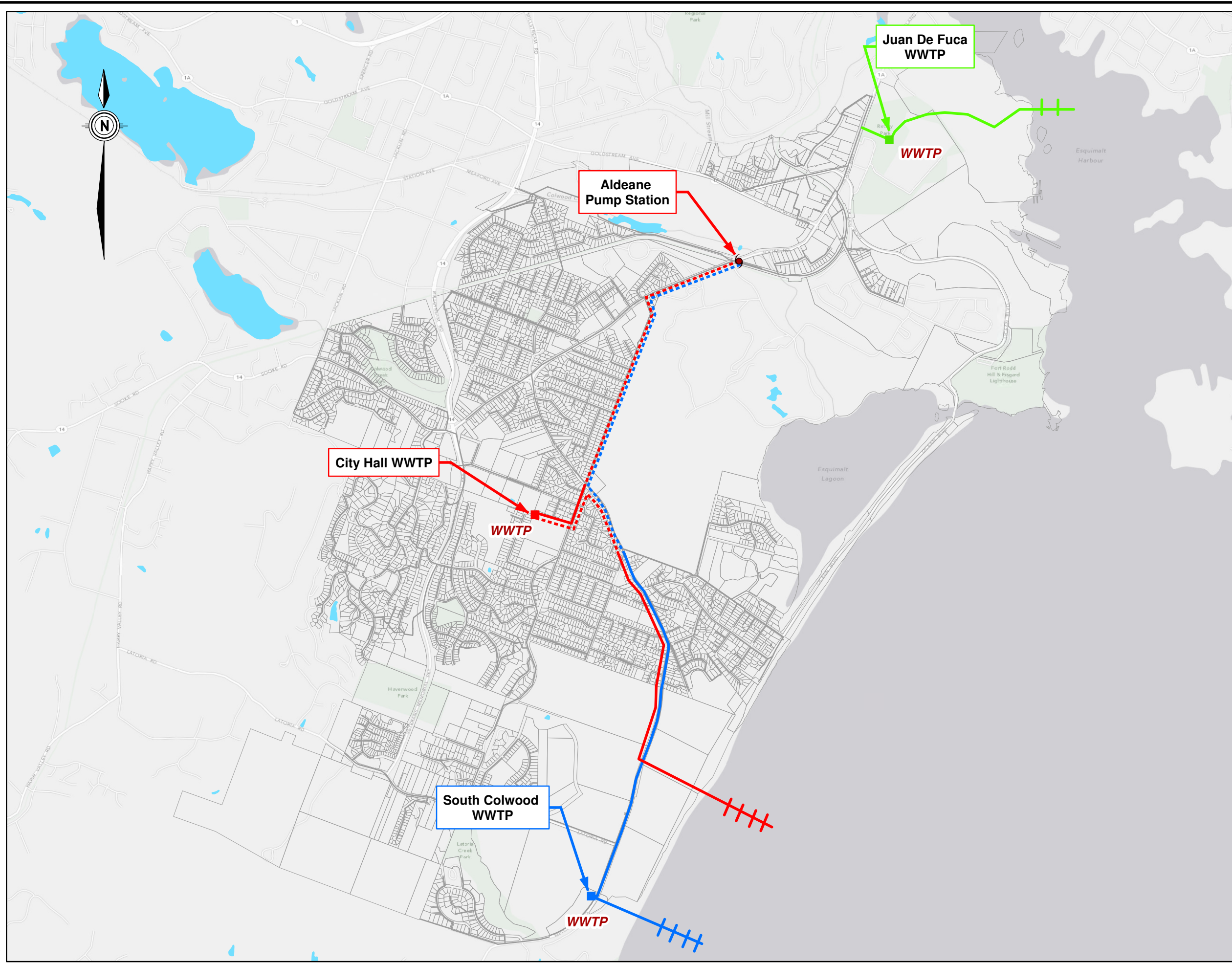
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**Wastewater Treatment  
Plant Options**

**Figure 9-1**



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