



Making a difference...together

**HIGHLAND WATER SERVICE  
FERNWOOD WATER SERVICE  
MALIVIEW SEWER SERVICE  
ANNUAL REPORT  
24 NOVEMBER 2011**

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### **About the Services**

The Capital Regional District (CRD) provides drinking water service to the Highland and Fernwood communities on Salt Spring Island, and also provides sewer service to the Maliview community. Water service to Fernwood is administered by the Fernwood Water Service Commission and water and sewer services to Highland and Maliview are administered by the Highland Water and Sewer Services Commission. The two water services currently have separate treatment and distribution systems but both draw water from St. Mary Lake. The two Commissions will merge to form a single commission following completion in 2012 of a new shared water treatment plant. The Commissions have met together since 2009 and are functioning for practical purposes as a single Commission except where business relates to only one service area.

The Commissions have delegated authority from the CRD Board for provision of the services, including recommending policies and budgets to the Board. Professional CRD staff provide operational, engineering and financial services. The CRD Salt Spring Island Electoral Area Director is an appointed member of each Commission and the other Commission members are residents or land owners in the service areas, elected at Annual General Meetings.

### **Maliview Sewer Operations**

Effluent quality and flow from the Maliview wastewater treatment plant have frequently exceeded the requirements of the BC Ministry of Environment (MOE) waste management permit for the plant since May 2010. The permit limits for total suspended solids (TSS) and flow were both exceeded on several occasions and the limit for Carbonaceous Biochemical Oxygen Demand (CBOD) was exceeded once in May 2010.

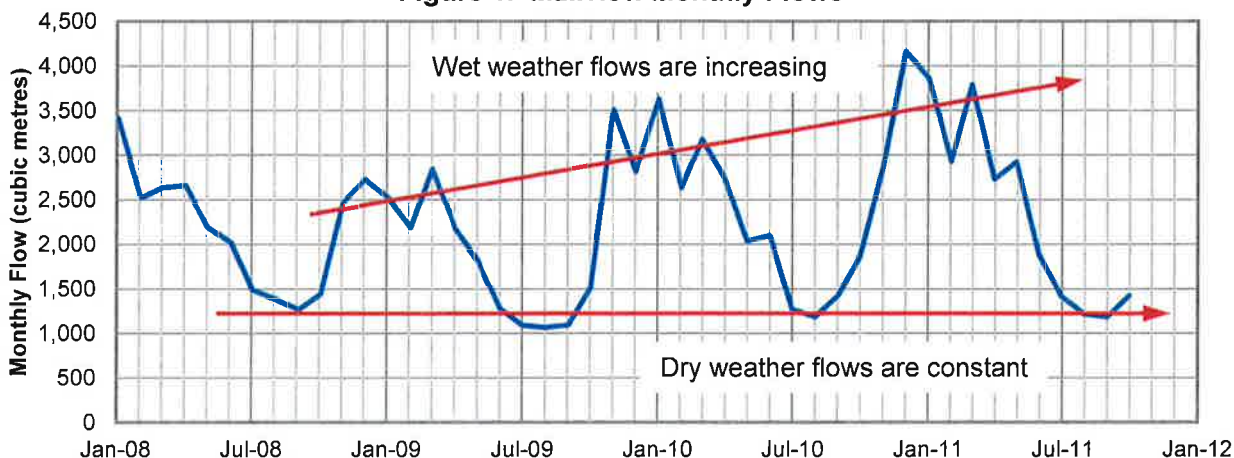
Sludge from the process tanks is removed regularly; however, the biological conditions for stable, effective treatment were not achieved. Stormwater infiltration into the sewer system causes excessive flows through the treatment plant, establishing poor conditions for effective biological treatment. Staff met with MOE in September 2011 to discuss an action plan to achieve compliance with the permit that included making operational and infrastructure improvements as well as addressing longer term issues such as infiltration and increased flow due to densification.

The problem of stormwater infiltration is evident in **Figure 1**. Although dry weather flows between June and September correspond with the highest seasonal water use of the year, they have remained consistently in the range of 1,100 to 1,300 cubic metres per month (380-450 litres per connection per day). In winter, average flows have increased in the past three years from roughly 2,500 cubic metres per month in 2008-09 to roughly 3,500 cubic metres per month in 2010-11. Although differences in weather may account for a portion of this increase, it is likely that the leakage problem has significantly increased in the past three years.

In September 2011, approximately 10 m of sewer main was replaced at a known problem location on Maliview Drive. The pipe was found to be in poorer condition than expected and was improperly bedded

using material including large stones.

Figure 1. Maliview Monthly Flows



### Maliview Engineering Study

An engineering study of the system that was included in the 2011 Capital Plan was awarded to Stantec Inc. and is nearly complete. The study will include recommendations for upgrades to the system to achieve regulatory compliance and reduce stormwater infiltration.

### Highland and Fernwood Drinking Water Quality

In 2010, the analytical results of water samples collected from the Fernwood Water System showed that the quality of drinking water was satisfactory and well within regulatory limits.

In 2010, in the Highland Water System, the quality of drinking water was generally satisfactory except for an occasional exceedence of trihalomethanes being over the Canadian Drinking Water Quality Guideline limit of 100 µg/L.

In January 2011, the source water in St. Mary Lake tested positive for microcystin, a toxin associated with blue-green algae. The Highland treatment system lacked adequate protection against the toxin and therefore, as a precautionary measure, a "Do Not Consume" water quality advisory was posted for the Highland Water System customers and alternate sources of drinking water were provided. The Highland advisory remained in effect until June 2011 when modifications were made to the operation of the Highland treatment process to neutralize the toxin.

Throughout this period, the Fernwood water treatment system is able to effectively and reliably neutralize the toxin through its water treatment process and therefore, the quality of Fernwood drinking water was not adversely impacted by the toxin in St Mary Lake.

In 2011, both Highland and Fernwood Water Systems have shown a number of trihalomethanes results above the Guideline limit of 100 µg/L. The health effects of trihalomethanes are long term (over a lifetime). The new treatment plant will remove the carbon from the source water that is associated with the production of disinfection by-products such as trihalomethanes.

The 2010 and 2011 water quality results for the Highland and Fernwood Water Systems are now being posted on the CRD website at:

<http://www.crd.bc.ca/saltspring/water/highland/water-quality.htm>  
<http://www.crd.bc.ca/saltspring/water/fernwood/water-quality.htm>

### Highland Water Operations

Substantial extra effort was expended in 2011 due to the presence of an algal toxin in St. Mary Lake. Although the chlorine injected at the Highland Water Treatment Plant was effectively neutralizing the toxin during the water quality advisory, the process lacked the ability to protect the community in the event of a problem with chlorine injection by automatically stopping the flow of water into the distribution system. Staff modified the chlorine injection controls at the plant to shut it down in the event of a disinfection failure. This modification enabled the Do Not Consume advisory to be rescinded June 13.

A large water leak was located and repaired on Trincomali Drive in September, after water production roughly doubled over a period of a few days. In order to locate the leak it was necessary to install several new isolation valves on the distribution main, requiring about four days of operator effort.

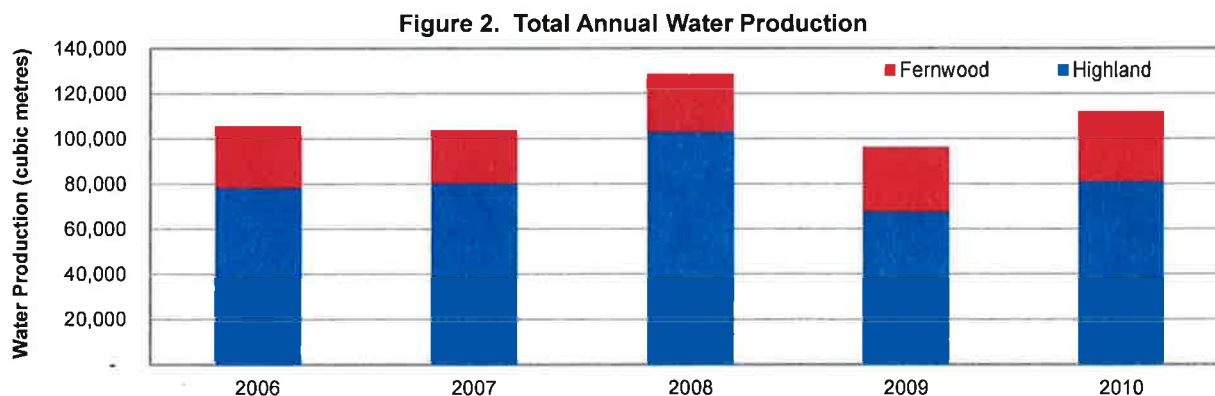
### Fernwood Water Operations

The Fernwood Water Treatment Plant has been able to neutralize the toxin from St. Mary Lake. However, additional effort and expense were incurred for increased frequency of toxin testing.

In January 2011, a significant distribution leak was found at a service connection near the intersection of Fernwood Road and Walker's Hook Road. The leak was temporarily repaired to stop the leakage; however, the service will need to be relocated in the future to resolve a problem with flooding in wet weather, and potential contamination from a nearby septic field.

Also early in 2011, the outlet pipe in the Fernwood Water Treatment Plant was found to be severely corroded at the point where it penetrated the floor slab. As a precaution against flooding the plant in the event of failure of the pipe, the plant was operated only when an operator was on site until the damaged pipe was bypassed in May.

### Drinking Water Supply and Demand

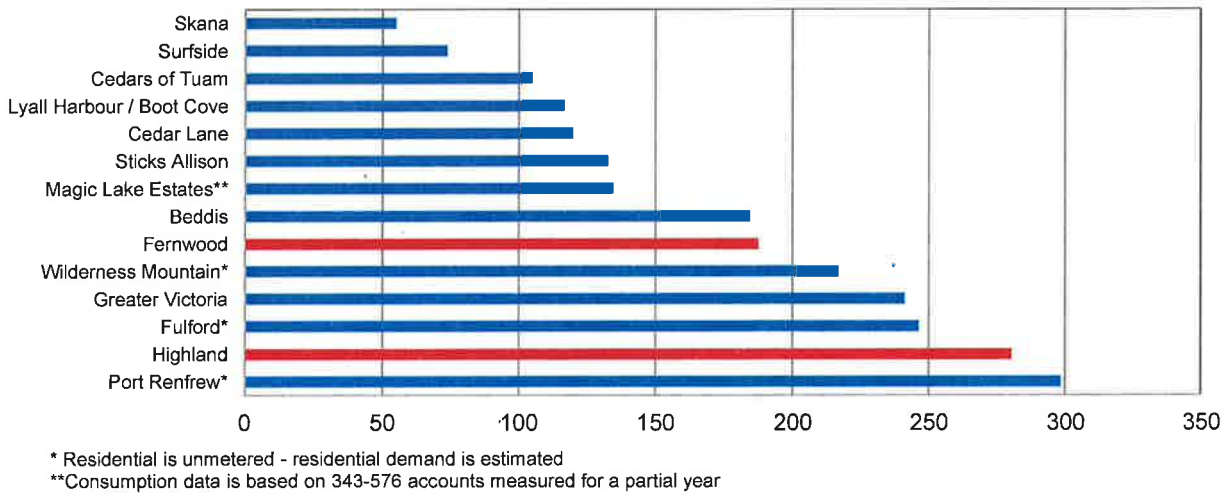


In total, 81,212 and 30,896 cubic metres (m<sup>3</sup>) of water were drawn from St. Mary Lake in 2010 for the Highland and Fernwood services, respectively. Production was higher for both services than in 2009 due to increased customer usage in the Highland system and increased distribution losses in the Fernwood system. The average water service connection in the Highland and Fernwood areas used 280 m<sup>3</sup> and 187 m<sup>3</sup> respectively in 2010. This represents a significant reduction in the Fernwood area, and a large increase in the Highland area.

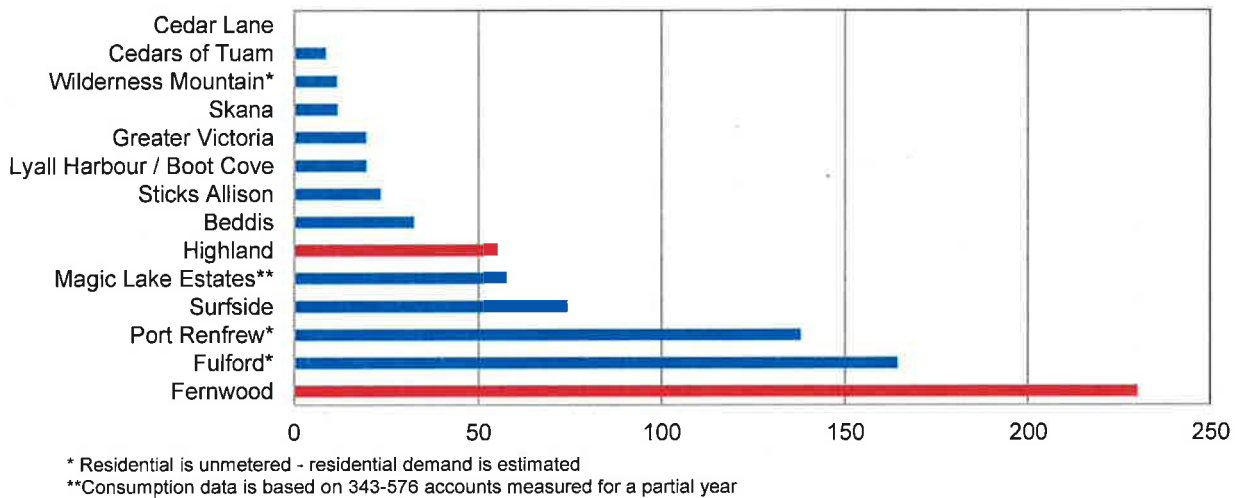
Both systems are fully metered and are read quarterly. Meter data enables water production and consumption to be compared, to estimate leakage losses throughout the system. The difference between production and total metered consumption is called non-revenue water and can be attributable to meter error, fire hydrant use, or flushing of the system and is not strictly due to distribution leaks. Non-revenue

water in 2010 was 13,349m<sup>3</sup> and 17,024 m<sup>3</sup> for the Highland and Fernwood systems respectively. Non-revenue water significantly decreased in the Highland system from 2009, but greatly increased in the Fernwood system. The increase in Fernwood may have resulted from the leak that was located and repaired in January 2011.

**Figure 3. Average Annual Water Use per Connection (cubic metres)**  
 CRD Water Systems



**Figure 4. Non-Revenue Water per Connection (cubic metres)**  
 CRD Water Local Services



### Highland - Fernwood Water Treatment Upgrade Project

The Highland Water and Sewer Local Services Committee (HWLSLC) initiated a capital project in 2006 to replace its aging water treatment plant with a new plant that meets current Vancouver Island Health Authority (VIHA) drinking water quality standards. In 2009, the project was expanded to include the Fernwood Water System, with a pipeline under St. Mary Lake to connect the two distribution systems to a shared intake and water treatment plant. The Highland and Fernwood electors authorized new borrowing in March 2009 to undertake the expanded project.

Design proceeded through 2009, and in 2010 a contract was awarded for general construction. Before the contractor mobilized, a dispute arose regarding certain construction details, which led to termination of the contract and a negotiated settlement between the CRD, the contractor and the engineering consultant. This dispute and a resulting budget shortfall delayed construction by about 18 months. In

March 2011, the electors authorized additional borrowing to enable a redesigned project to proceed to construction, and the work was retendered in July 2011. The contract was awarded to Brunnell Construction Ltd. in October 2011. Construction will proceed on an accelerated schedule, with the objective of substantial completion by March 31, 2011.

As the Highland and Fernwood water systems will operate as a single system after the upgrades are completed, a new Highland and Fernwood Water Service has been established, by authorization of the electors of both existing service areas in the March 2011 referendum. It is proposed to recover operating costs for the system through this new service upon completion of the project. The existing water services will continue for 15 years, for the sole purpose of retiring the debt authorized in the 2009 referenda.

### **Financial Reports**

Attached are copies of the *Statement of Financial Activities* as prepared by the CRD Finance and Corporate Services for 2010, for the Highland (Attachment 1), Fernwood (Attachment 2) and Maliview (Attachment 3) services. Revenues are generated primarily through parcel taxation and user fees (fixed and variable based on water use), and small amounts for interest on savings and miscellaneous revenues such as late payment charges. Expenditures include all costs to administer and operate the service. General government services are charges levied by CRD Corporate Services for the financial processing of the budget and collection of fees and charges.

Other costs include CRD service personnel who perform maintenance and repairs to the systems, and associated costs for chemicals, electricity, water testing costs, rental of equipment as necessary and allowances for technical staff support to the committee, and for the payment of debt.

Any difference between revenue and expense is added to any surplus or deficit carry forward from the prior year. Significant funds are usually transferred to a capital project or reserve account. The surplus or deficit after any transfers, are carried to the following year. CRD services are not permitted to carry forward a deficit, so a deficit in any given year usually requires a tax or fee increase in the following year to recover costs and prevent a subsequent deficit.

#### *Highland Water Service*

2010 revenue of \$198,298 includes \$116,250 parcel tax and \$80,244 user fees and charges. Total expenditure for 2010 was \$142,597. The difference between revenue and expense in 2010 was a net revenue of \$55,701, which was added to the \$43,674 surplus carried forward from 2009, resulting in a surplus of \$99,395 carried forward to 2011. The Highland Water Service held no capital reserves at December 31, 2010.

#### *Fernwood Water Service*

2010 revenue of \$80,103 includes \$24,760 parcel tax and \$54,550 user fees and charges. The total expenditure for 2010 was \$83,742. The difference between revenue and expense in 2009 was a net expense of \$3,639, which was deducted from the \$20,317 carried forward from 2009, resulting in a surplus of \$16,678 carried forward to 2011. The Fernwood Water Service held no capital reserves at December 31, 2010.

#### *Maliview Sewer Service*

2010 revenue of \$75,795 includes \$28,835 parcel tax and \$45,824 user fees and charges. Total expenditure for 2010 was \$57,782. The difference between revenue and expense in 2009 was a net revenue of \$17,413, of which \$11,647 was transferred to the capital reserve fund. The balance of \$5,766 was added to the \$2,802 surplus carried forward from 2009, resulting in a surplus of \$8,568 carried forward to 2011. The capital reserve fund held a balance of \$12,044 at December 31, 2010.



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Ted Robbins, B.Sc., CTech  
Senior Manager, Water Management



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J.A. (Jack) Hull, MBA, PEng  
General Manager, Integrated Water Services  
Concurrence

TR:CS:ls

Attachments: 3

ATTACHMENT 1

**CAPITAL REGIONAL DISTRICT**

**WATER REVENUE FUND**  
**Statement of Financial Activities**  
**For the Year Ended December 31, 2010**

		Salt Spring Island (Highland) Water Supply
<b>Revenue</b>		
Transfers from government	\$	116,250
Sale of services		80,244
Other revenue from own sources:		
Other licenses and permits		-
Interest earnings		1,167
Other revenue		637
Grants in lieu of taxes		-
		<b>198,298</b>
<b>Expenditure</b>		
General government services		5,840
Other		136,681
Other fiscal services		76
		<b>142,597</b>
<b>Net revenue (expenditure)</b>		<b>55,701</b>
Transfers to own funds:		
Water Capital Fund		-
Reserve Funds		-
Equipment Replacement Fund		-
Transfers from own funds:		
Reserve Funds		-
<b>Change in fund balance</b>		<b>55,701</b>
Opening balance		43,674
<b>Closing balance</b>	<b>\$</b>	<b>99,375</b>



ATTACHMENT 2

**CAPITAL REGIONAL DISTRICT**

**WATER REVENUE FUND**  
**Statement of Financial Activities**  
**For the Year Ended December 31, 2010**

	Fernwood Water Supply
<b>Revenue</b>	
Transfers from government	\$ 24,760
Sale of services	54,550
Other revenue from own sources:	
Other licenses and permits	-
Interest earnings	194
Other revenue	599
Grants in lieu of taxes	-
	<b>80,103</b>
<b>Expenditure</b>	
General government services	3,780
Other	78,892
Other fiscal services	1,070
	<b>83,742</b>
<b>Net revenue (expenditure)</b>	<b>(3,639)</b>
Transfers to own funds:	
Water Capital Fund	-
Reserve Funds	-
Equipment Replacement Fund	-
Transfers from own funds:	
Reserve Funds	-
<b>Change in fund balance</b>	<b>(3,639)</b>
Opening balance	20,317
<b>Closing balance</b>	<b>\$ 16,678</b>



**CAPITAL REGIONAL DISTRICT**

**Sewer Revenue Fund  
 Statement of Financial Activities  
 For the Year Ended December 31, 2010**

	Maliview Estates Sewerage System
<b>Revenue</b>	
Transfers from government	\$ 28,835
Sale of services	45,824
Other revenue from own sources:	
Permits	-
Interest earnings	99
Other revenue	437
Grants in lieu of taxes	-
	<b>75,195</b>
<b>Expenditure</b>	
General government services	2,310
Other	55,376
Salaries and wages	-
Other fiscal services	96
Recovery	-
	<b>57,782</b>
<b>Net revenue (expenditure)</b>	<b>17,413</b>
Transfers to own funds:	
Sewer Capital Fund	-
Reserve Funds	11,647
Equipment Replacement Fund	-
Transfers from own funds:	
Sewer Capital Fund	-
Revenue Funds	-
Reserve Funds	-
<b>Change in fund balance</b>	<b>5,766</b>
Opening balance	2,802
<b>Closing balance</b>	<b>\$ 8,568</b>