



**To:** Finance Committee  
**From:** Andrew Nazareth  
General Manager, Business and Financial Services

**Date:** December 1, 2011  
**File:** 03-0970-01/2011-Vol 01

Robert Gonzalez, P. Eng., General Manager,  
Engineering & Public Works

**Re:** 2012 Utility Budgets and Rates

**Staff Recommendation**

That the 2012 Utility Expenditure Budgets, as outlined under Options 1 for Water, Sewer, Solid Waste & Recycling, and Option 3 for Drainage & Diking as contained in the staff report dated December 1, 2011 from the General Managers of Business and Financial Services and Engineering & Public Works, be approved as the basis for establishing the 2012 Utility Rates.

Andrew Nazareth  
General Manager, Business and  
Financial Services  
(4365)

Robert Gonzalez, P. Eng.  
General Manager, Engineering  
& Public Works  
(4150)

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<b>ROUTED TO:</b>  Budgets	<b>CONCURRENCE</b>  Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	<b>REVIEWED BY TAG</b>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
		<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>

## Staff Report

### Origin

This report presents the recommended 2012 utility budgets and rates for Water, Sewer, Drainage and Solid Waste & Recycling. The utility rates need to be established by December 31, 2011 in order to facilitate charging from January 1, 2012.

### Analysis

Key factors contributing to changes in the utility budgets in 2012 include:

- GVWD (Greater Vancouver Water District) regional water rates have increased approximately 5.9% for costs relating to various projects including replacement of the Port Mann river crossing, construction of the Seymour/Capilano tunnels and construction of an ultra-violet water treatment system at Metro's Coquitlam plant.
- Reduced revenues associated with declining water consumption from reductions in commercial use and residential transition to metering.
- GVS&DD sewer operating and maintenance costs are increased by approximately 7.7% for costs relating to various projects including the Iona and Lions Gate Treatment Plant upgrades, twinning of the Gilbert/Brighthouse trunk and various pump station and seismic upgrade projects.
- GVS&DD debt costs are reduced 24.8% as a result of debt repayments (\$658,500). As debt costs are recovered through property taxes, utility rates will not be affected. However, these savings will be realized through property taxes.
- Metro Vancouver solid waste tipping fees have increased from \$97 to \$107 per tonne, i.e. 10.3%.

Long-term infrastructure planning to replace ageing/deteriorating municipal infrastructure will continue to impact budgets and rates until we are able to sustain the necessary level of funding required to replace infrastructure in the future. Council has adopted a staged program to increase water, sewer and drainage reserves to support infrastructure replacement. These cost impact rates to a lesser extent than regional costs outside of the City's control and are itemized separately in this report.

As noted in the "Ageing Infrastructure Planning – 2011 Update" report presented to Council on June 27, 2011 (Attachment 1), increases in the annual capital funding contributions for sanitary and drainage are required, whereas the required annual capital replacement funding contribution for water has been met. The annual required contribution for sanitary is \$6.2 million, whereas the current funding level is \$4.3 million. The annual required contribution for drainage is \$9.8 million, whereas the current funding level is \$6.1 million. The annual water reserve contribution is \$7.5 million and is sufficient at this time to meet reserve funding requirements. Therefore, no increase in the annual reserve contribution for water is proposed. The 2012 budget figures outlined represent options for infrastructure replacement increases in drainage only.

Recognizing the challenges of increasing costs outside of the City's control and those associated with maintaining City infrastructure, staff have presented various budget and rate options for 2012. The budgets and rates are presented under three different options. Option 1 presents the minimum increases necessary to meet those demands placed on the City by external or other factors outside of the City's direct control (e.g. regional or other agency increases, contractual obligations, plant growth, fuel, insurance, etc.) Options 2 and 3 present various actions the City can take to either lessen or increase the budget and rates depending on the varying circumstances and needs within each budget area. The various options are presented for each of the utility areas in the following charts:

- |                     |                          |
|---------------------|--------------------------|
| • Water             | • Sewer                  |
| • Drainage & Diking | • Sanitation & Recycling |

The concluding summary of proposed rates for 2012 is shown on pages 16/17.

## Water Services Section Chart

<b>2012 Water Budget – Options</b>				
<i>Key Budget Areas</i>	<i>2011 Base Level Budget</i>	<i>2012: Option 1 Recommended: Non-Discretionary Increases</i>	<i>2012: Option 2 Non-Discretionary Increases With Partial Reduced Allocation for Water Meter Program</i>	<i>2012: Option 3 Option 2 and Increased Contribution from Rate Stabilization Fund</i>
Operating Expenditures	\$7,340,237			
• Salary		\$158,800	\$158,800	\$158,800
• PW Maintenance/ Supplies/Tools/Equipment		\$46,700	\$46,700	\$46,700
• Monthly Vehicles		\$15,500	\$15,500	\$15,500
• Plant Growth/Power Costs		\$41,000	\$41,000	\$41,000
• Postage/Miscellaneous Costs		\$12,200	\$12,200	\$12,200
Toilet Rebate Program	\$50,000	\$50,000	\$50,000	\$50,000
GVRD Water Purchases (MV)	\$20,602,700	\$602,400	\$602,400	\$602,400
Capital Infrastructure Replacement Program	\$7,550,000	\$0	\$0	\$0
Firm Price/Receivable	\$1,748,200	\$0	\$0	\$0
Residential Water Metering Program/Appropriated Surplus	\$1,600,000	\$0	(\$200,000)	(\$200,000)
Overhead Allocation	\$864,900	(\$900)	(\$900)	(\$900)
<b>Total 2011 Base Level Budget</b>	<b>\$39,756,037</b>			
<b>Total Incremental Increase</b>		<b>\$925,700</b>	<b>\$725,700</b>	<b>\$725,700</b>
<i>Revenues:</i>				
<i>Apply Rate Stabilization Fund</i>	<i>(\$750,000)</i>	<i>\$0</i>	<i>\$0</i>	<i>(\$150,000)</i>
<i>Investment Income</i>	<i>(\$450,000)</i>	<i>\$23,000</i>	<i>\$23,000</i>	<i>\$23,000</i>
<i>Firm Price/Receivable Income</i>	<i>(\$1,748,200)</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>
<i>Meter Rental Income</i>	<i>(\$1,134,100)</i>	<i>(\$42,100)</i>	<i>(\$42,100)</i>	<i>(\$42,100)</i>
<i>Miscellaneous Revenue</i>	<i>(\$10,000)</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>
<i>Provision (Toilet Rebate)</i>	<i>(\$50,000)</i>	<i>(\$50,000)</i>	<i>(\$50,000)</i>	<i>(\$50,000)</i>
<b>Net Budget</b>	<b>\$35,613,737</b>			
<b>Net Difference over 2011 Base Level Budget</b>		<b>\$856,600</b>	<b>\$656,600</b>	<b>\$506,600</b>

A description explaining the increases and budget reductions in each of the areas outlined above is outlined below.

### **Operating Expenditures**

Salary costs are increased associated with anticipated wage settlements as well as staffing requirements for maintaining increased plant/infrastructure as part of the non-discretionary Option 1 costs. Public Works maintenance and related costs are increased as a result of external cost factors, such as vendor increases. Vehicle costs are increased associated with fuel, insurance and related costs. Plant growth and

power costs relate to maintenance of additional infrastructure and external supplier increases. Postage and miscellaneous costs are increased for the mail out of the annual utility bill and general related expenses.

### ***Toilet Rebate Program***

There is a \$50,000 increase for the toilet rebate program included due to higher-than-anticipated uptake in this program during 2011, taking the recommended program to \$100,000 annually. This program is one of the key markedly successful water conservation programs for existing apartments, townhomes and single-family homes. Current funding levels are not sufficient to keep pace with demand for the program. This program includes a rebate of \$100 per toilet, with a maximum allowable rebate of \$200 per household replacing a 13 litre per flush toilet with a 6 litre or lower per flush toilet. To date in 2011, approximately 1,045 toilet rebates have been issued, at a cost of approximately \$100,000. As this program is funded from the water provision account, there is no net impact to the water rate charged since there will be a corresponding increase in the amount of money applied from the provision account to fund this program.

### ***GVRD Water Purchases – Metro Vancouver***

Metro Vancouver has advised that water rates increase 5.9% for 2012. Increases in regional charges for water purchases represent the largest increase under all options at \$0.6 million above 2011 costs.

*Benefits of Water Metering & Conservation Initiatives:* The net increase to Richmond is lower than the regional rate increase due to water conservation initiatives in Richmond. These initiatives have resulted in an overall reduction in total water consumption, thereby mitigating the full impact of the regional water rate increases. This is a testament to the initiatives and strategies that have led to reduced residential water consumption.

### ***Capital Infrastructure Replacement Program***

There are no increases proposed under any of the options for contribution to water capital infrastructure replacement. This is due to the fact that the annual capital contribution for water-related infrastructure replacement has reached \$7.55 million, which meets and exceeds recommended funding levels. Per the June, 2011 “Ageing Infrastructure Planning – 2011 Update” report, the minimum required annual funding for Water is \$7 million. A reduction in the annual funding contribution is not recommended due to anticipated growth in water infrastructure over the next few years. Staff will continue to undertake further assessments to determine infrastructure replacement requirements going forward and identify any recommended changes to the annual contribution, if required.

### ***Residential Water Metering Program***

Currently, \$1.6 million is allocated annually to the residential water metering program. Expenses in 2010 were approximately \$1.4 million and to date in 2011 are approximately \$1.2 million. Option 1 maintains the current allocation at \$1.6 million. Options 2 and 3 include an option to reduce the annual allocation to \$1.4 million, or a reduction of \$200,000.

Staff are recommending Option 1 in order to maintain the metering allocation to further expand residential metering to the greatest extent possible. Currently, approximately 60% of single-family households have meters installed. Continued funding at the recommended level will allow for continued expansion of the program.



**Multi-Family Water Metering Program:** The City's multi-family water metering program has been very successful in helping to reduce water consumption. The City has received approval from 68 volunteer complexes (comprising 4,238 multi-family dwelling units) to install water meters. Of these, 40 complexes have been completed to date (2,418 units), including 15 apartment complexes (1,715 units) and 25 townhouse complexes (703 units). These voluntary installations will continue to be funded through the water metering program funding allocation, to a maximum of the funding level approved by Council.

### ***Meter Rate***

From inception, the water meter rate has included an incentive to encourage those on the flat rate to switch to meters. For example, the flat rate charge to residents in single-family homes with no meter reflects nearly double the consumption of a resident on a water meter (566 m<sup>3</sup> vs average 296 m<sup>3</sup>). In other words, the estimates of water consumption for flat rate customers is considerably higher than average metered customers as an incentive to move more residents toward metering. However, as more residents have switched to meters, this results in a higher than relative increase in the flat rate charge to compensate for the lost revenue. The proposed meter rates continue to offer that incentive over flat rate customers. Eventually, as more residents switch to meters and there are fewer flat rate customers, the meter rate will need to increase more substantially to pay for all programs (i.e. capital replacement). The charts presented in this report detail both the impact of the budget increases on meter and flat rate customers in 2012 for clarity and comparison between metered vs. flat rate customers.

### ***Rate Stabilization Contribution***

A rate stabilization fund was established a number of years ago by Council to help build a provision account to offset the significant spikes in regional water purchase costs. These increases were anticipated due to Metro Vancouver infrastructure upgrades associated with water treatment and filtration requirements.

The foresight in creating this fund presents Council the opportunity to apply a funding offset to reduce the overall budget and rates. Under Options 1 and 2, the 2012 base level budget reflects a \$750,000 application offset from the water rate stabilization fund. While this contribution assists in helping to reduce the overall rate, it cannot be continued indefinitely going forward since the water rate stabilization fund will eventually be depleted, leaving no funding to help stabilize rates in the future and lead to an eventual higher increase in rates. Council has the option to draw more from the rate stabilization fund to minimize the rate increase impact to ratepayers. Option 3 includes a further drawdown of \$150,000 (total of \$900,000) from the stabilization fund, should Council wish to use these funds to a greater extent to reduce the overall rate. This is not recommended by staff in order to allow the rate stabilization fund to be sustained for a longer period (approximately 8 years at the current amount) and to avoid the higher rate impact which will occur once the fund is depleted. In addition, Metro Vancouver projections are for an 18.6% increase in water rates in 2013 and it is likely that Council may wish to use the rate stabilization to a larger extent at that time to offset this significant projected increase.

As of October 31, 2011, the water stabilization account has a balance of \$7,638,813 and accumulates any funds that may be left over from water purchases.

### ***Regional Issues***

The Regional District increases are for the drinking water treatment program. There are several capital projects being undertaken by Metro Vancouver, including the Port Mann Main No. 2 Fraser River Crossing, Seymour/Capilano Tunnels construction, the Angus Drive Main and the Annacis Main No. 5 Marine Crossing -- as a few examples. Metro's current 5-year projections for the regional water rate are outlined as follows:

	2012	2013	2014	2015	2016
Projected Metro Vancouver Water Rate/m <sup>3</sup>	\$ .5980	\$ .7093	\$ .7556	\$ .8009	\$ .8453
% Increase over Prior Year	5.9%	18.6%	6.5%	6%	5.5%

### ***Impact on 2012 Water Rates***

The impact of these various budget options on the water rates by customer class is as follows. The first chart shows the various options for meter rate customers. The second chart shows the options for flat rate customers. As noted in the "***Meter Rate***" section above, the impact to metered customers is considerably less overall than flat rate customers due to the incentive built into the meter rate.

The impact of the Water budget options on metered customers is as follows:

<b><i>2012 Water Net Meter Rate Options</i></b>				
		<b><i>2012 Rate Options which Include Increase Identified Below in Italics</i></b>		
<b><i>Customer Class</i></b>	<b><i>2011 Rates</i></b>	<b><i>Recommended: 2012 Option 1 Rate</i></b>	<b><i>2012 Option 2 Rate</i></b>	<b><i>2012 Option 3 Rate</i></b>
Single Family Dwelling (based on avg. 296 m <sup>3</sup> )	\$273.00	\$297.72 <i>\$24.72</i>	\$296.06 <i>\$23.06</i>	\$294.79 <i>\$21.79</i>
Townhouse (based on avg. 265 m <sup>3</sup> )	\$244.41	\$266.54 <i>\$22.13</i>	\$265.05 <i>\$20.64</i>	\$263.91 <i>\$19.50</i>
Apartment (based on avg. 181 m <sup>3</sup> )	\$166.94	\$182.05 <i>\$15.11</i>	\$181.04 <i>\$14.10</i>	\$180.26 <i>\$13.32</i>
Metered Rate (\$/m <sup>3</sup> )	\$0.9223	\$1.0058 <i>\$0.0835</i>	\$1.0002 <i>\$0.0779</i>	\$0.9959 <i>\$0.0736</i>

The impact of the Water budget options on the flat rate customers is as follows:

<b><i>2012 Water Net Flat Rate Options</i></b>				
		<b><i>2012 Rate Options which Include Increase Identified Below in Italics</i></b>		
<b><i>Customer Class</i></b>	<b><i>2011 Rates</i></b>	<b><i>Recommended: 2012 Option 1 Rate</i></b>	<b><i>2012 Option 2 Rate</i></b>	<b><i>2012 Option 3 Rate</i></b>
Single Family Dwelling	\$522.18	\$559.36 <i>\$37.18</i>	\$556.15 <i>\$33.97</i>	\$553.78 <i>\$31.60</i>
Townhouse	\$427.46	\$457.90 <i>\$30.44</i>	\$455.27 <i>\$27.81</i>	\$453.33 <i>\$25.87</i>
Apartment	\$275.45	\$295.06 <i>\$19.61</i>	\$293.37 <i>\$17.92</i>	\$292.12 <i>\$16.67</i>

The rates outlined in the above tables are net rates. Due to the bylaw provisions which provide for a 10% discount if utility bills are paid within a specified timeframe, the net rates shown will be increased by 10% in the supporting bylaws to provide for the discount incentive while ensuring cost recovery for the net budget requirement.

### ***Advantages/Disadvantages of Various Options***

#### **Option 1**

- Represents the minimal increase necessary to sustain operations, while maintaining business as usual.
- Provides for a continued \$1.6 million annual contribution to the residential water metering program to continue expanding this program.

- Maintains the contribution from the rate stabilization fund in the amount of \$750,000 to partially offset the impact of regional water increases.

Option 2

- Represents a \$200,000 reduction in the residential water metering program, reducing the annual funding for this program from the current budget level of \$1.6 million to \$1.4 million. This reduction will reduce the funding available for this program.
- Maintains the contribution from the rate stabilization fund in the amount of \$750,000 to partially offset the impact of regional water increases.

Option 3

- Represents a \$200,000 reduction in the residential water metering program, reducing the annual funding for this program from the current budget level of \$1.6 million to \$1.4 million. This reduction will reduce the funding available for this program.
- Increases the contribution from the rate stabilization fund by \$150,000 (to \$900,000) to further offset the impact of rate increases. This would draw down the rate stabilization fund by this additional amount.

***Recommended Option***

Staff recommend the budgets and rates as outlined under Option 1 for Water Services.

## Sewer Services Section Chart

<b>2012 Sewer Budget – Options</b>				
<i>Key Budget Areas</i>	<i>2011 Base Level Budget</i>	<i>2012: Option 1 Recommended: Non-Discretionary Increases</i>	<i>2012: Option 2 Non-Discretionary with Partial (\$100,000) Draw Down from Rate Stabilization Fund</i>	<i>2012: Option 3 Non-Discretionary with Additional (\$200,000) Draw Down from Rate Stabilization Fund</i>
Operating Expenditures	\$4,479,337			
• Salary		\$64,800	\$64,800	\$64,800
• PW Maintenance/ Materials/ Equipment/Supplies		\$10,800	\$10,800	\$10,800
• Monthly Vehicles		(\$17,800)	(\$17,800)	(\$17,800)
• Power Costs		\$37,900	\$37,900	\$37,900
GVS&DD O&M (MV)	\$14,652,300	\$1,122,100	\$1,122,100	\$1,122,100
GVS&DD Debt (MV)	\$2,657,700	(\$658,500)	(\$658,500)	(\$658,500)
GVS&DD Sewer DCC's (MV)	\$1,000,000	\$0	\$0	\$0
Rate Stabilization Contribution	\$0	\$0	\$0	\$0
Capital Infrastructure Replacement Program	\$4,306,400	\$0	\$0	\$0
Firm Price/Receivable	\$576,400	\$0	\$0	\$0
Overhead Allocation	\$498,800	(\$600)	(\$600)	(\$600)
Operating Debt	\$154,300	\$3,500	\$3,500	\$3,500
<b>Total 2011 Base Level Budget</b>	<b>\$28,325,237</b>			
<b>Total Incremental Increase</b>		<b>\$562,200</b>	<b>\$562,200</b>	<b>\$562,200</b>
<i>Revenues:</i>				
Apply Rate Stabilization Fund	\$0	\$0	(\$100,000)	(\$200,000)
Debt Funding	(\$39,100)	(\$3,500)	(\$3,500)	(\$3,500)
Investment Income	(\$175,000)	\$9,000	\$9,000	\$9,000
Firm Price/Receivable Income	(\$576,400)			
Property Tax for DD Debt (MV)	(\$2,657,700)	\$658,500	\$658,500	\$658,500
GVS&DD Sewer DCC Levy to Developers (MV)	(\$1,000,000)	\$0	\$0	\$0
<b>Net Budget</b>	<b>\$23,877,037</b>			
<b>Net Difference Over 2011 Base Level Budget</b>		<b>\$1,226,200</b>	<b>\$1,126,200</b>	<b>\$1,026,200</b>

A description explaining the increases and budget reductions in each of the areas outlined above is outlined below.

### **Operating Expenditures**

Salary costs are increased associated with anticipated wage settlements as well as staffing requirements for maintaining increased plant/infrastructure. Public Works maintenance and material, etc. costs are increased as a result of external cost factors, such as inflationary increases. Monthly vehicle costs are decreased as a result of lease buy-outs. Increases in power costs are due to hydro increases to operate pump stations, and are outside of the City's control.



***GVS&DD O&M (Greater Vancouver Sewerage and Drainage District Operating and Maintenance Costs) – Metro Vancouver***

Greater Vancouver Sewerage and Drainage District operations and maintenance charges are increased by approximately \$1.12 million, or 7.7%. These costs relate principally to the operation of the Lulu Island Water Treatment Plant, since these costs are borne entirely by Richmond. Other projects of specific interest to Richmond include the Gilbert/Brighthouse Trunk Pressure Sewer twinning project and the Lulu Island Wastewater Treatment Plant Digester.

***GVS&DD Debt (Greater Vancouver Sewerage and Drainage District Debt)***

GVS&DD debt costs are reduced 24.8% per Metro Vancouver in association with debt reduction. These costs are recovered from property taxes and, therefore, do not benefit the sewer utility rates charged. There will, however, be a corresponding reduction in the amount recovered from property taxes (\$658,500) for regional sewer debt.

***Rate Stabilization Contribution***

Option 1 – Non Discretionary - does not include a contribution or draw from rate stabilization funds, which, as of October 31, 2011, has a balance of \$4,977,582.

Option 2 includes an option to draw or apply \$100,000 from the rate stabilization fund to reduce the impact of the rate increase in 2012. Option 3 includes an option to draw \$200,000 from rate stabilization to further offset the rate increase in 2012.

Staff recommend Option 1 in order to maintain the sewer provision account to offset future anticipated increases in regional sewer operating costs.

***Capital Infrastructure Replacement Program***

Under all options outlined above, there is no increase proposed in the annual contribution to the sewer infrastructure capital replacement program. The “Ageing Infrastructure Planning – 2011 Update” report noted that the annual funding contribution for sewer to sustain the current infrastructure is \$6.2 million, a \$1.9 million shortfall. The funding strategy outlined in that report -- to increase the rates by \$10 each year for an additional 10 years -- is being integrated into the utility budgets and rates. In 2012, the increase is reflected in the drainage area (addressed later in this report).

***Operating Debt***

Operating debt relates to the sewer debt sinking fund and is based on costs provided by the Municipal Finance Authority. There is a small increase in 2012, but this has no impact on the rates charged since the amount is offset by a corresponding increase in revenues.

***Regional Issues***

The main budget drivers impacting the projected increase in Metro Vancouver costs include a variety of capital infrastructure projects, such as the Gilbert/Brighthouse trunk pressure sewer and digester at the Lulu Island treatment plant; various treatment plant upgrades (Iona, Lions Gate, etc.); seismic sewer upgrades, and various infrastructure upgrades and capacity improvements. While Metro Vancouver projections indicate a 5% blended overall increase (combined debt reduction and operating cost increase), staff estimate the regional impact on rates to increase at approximately 8% per year in accordance with trends in regional operations and maintenance costs, which are recovered through utility rate charges.

**Impact on 2012 Sewer Rates**

The impact of these various budget options on the sewer rates by customer class is provided in the table which follows. The first chart shows the various options for meter rate customers. The second chart shows the options for flat rate customers. As noted previously in the “*Meter Rate*” discussion within the Water Services portion of this report, the impact to metered customers is considerably less than flat rate customers due in part to the incentive built into the meter rate.

The impact of the Sewer budget options on metered customers is as follows:

<b>2012 Sewer Net <u>Meter</u> Rate Options</b>				
		<b>2012 Rate Options which Include Increase Identified Below in Italics</b>		
<b>Customer Class</b>	<b>2011 Rates</b>	<b>Recommended: 2012 Option 1 Rate</b>	<b>2012 Option 2 Rate</b>	<b>2012 Option 3 Rate</b>
Single Family Dwelling (based on avg. 296 m <sup>3</sup> )	\$225.52	\$246.78 <i>\$21.26</i>	\$245.80 <i>\$20.28</i>	\$244.82 <i>\$19.30</i>
Townhouse (based on avg. 265 m <sup>3</sup> )	\$201.90	\$220.93 <i>\$19.03</i>	\$220.06 <i>\$18.16</i>	\$219.18 <i>\$17.28</i>
Apartment (based on avg. 181 m <sup>3</sup> )	\$137.90	\$150.90 <i>\$13.00</i>	\$150.30 <i>\$12.40</i>	\$149.71 <i>\$11.81</i>
Metered Rate (\$/m <sup>3</sup> )	\$0.7619	\$0.8337 <i>\$0.0718</i>	\$0.8304 <i>\$0.0685</i>	\$0.8271 <i>\$0.0652</i>

The impact of the Sewer budget options on the flat rate customers is as follows:

<b>2012 Sewer Net <u>Flat</u> Rates Options</b>				
		<b>2012 Rate Options which Include Increase Identified Below in Italics</b>		
<b>Customer Class</b>	<b>2011 Rates</b>	<b>Recommended: 2012 Option 1 Rate</b>	<b>2012 Option 2 Rate</b>	<b>2012 Option 3 Rate</b>
Single Family Dwelling	\$335.92	\$360.23 <i>\$24.31</i>	\$358.76 <i>\$22.84</i>	\$357.33 <i>\$21.41</i>
Townhouse	\$307.36	\$329.60 <i>\$22.24</i>	\$328.26 <i>\$20.90</i>	\$326.96 <i>\$19.60</i>
Apartment	\$255.98	\$274.51 <i>\$18.53</i>	\$273.40 <i>\$17.42</i>	\$272.30 <i>\$16.32</i>

The rates outlined in the above tables are net rates. Due to the bylaw provisions which provide for a 10% discount if utility bills are paid within a specified timeframe, the net rates shown will be increased by 10% in the supporting bylaws to provide for the discount incentive while ensuring cost recovery for the net budget requirement.

**Advantages/Disadvantages of Various Options****Option 1**

- Represents the minimal increase necessary to sustain operations, while maintaining business as usual.
- There is no collection of funds to contribute toward rate stabilization for future increases, i.e. the rate stabilization contribution remains at \$0 in 2012.
- Does not meet City’s long-term infrastructure plan to increase the capital program for replacement of aging infrastructure. Capital replacement remains fixed at \$4.3 million for 2012. The objective is to build the annual infrastructure replacement for sewer to \$6.2 million, representing an annual \$1.9 million shortfall.

Option 2

- Represents the minimal increase necessary to sustain operations with \$100,000 being applied or drawn from the rate stabilization fund to reduce the impact of budget and rate increases..
- There is no collection of funds to contribute toward rate stabilization for future increases, i.e. the rate stabilization contribution remains at \$0 in 2012.
- Does not meet City's long-term infrastructure plan to increase the capital program for replacement of aging infrastructure. Capital replacement remains fixed at \$4.3 million for 2011. The objective is to build the annual infrastructure replacement for sewer to \$6.2 million, or an annual \$1.9 million shortfall.

Option 3

- Represents the minimal increase necessary to sustain operations with \$200,000 being applied or drawn from the rate stabilization fund to reduce the impact of budget and rate increases..
- There is no collection of funds to contribute toward rate stabilization for future increases, i.e. the rate stabilization contribution remains at \$0 in 2012.
- Does not meet City's long-term infrastructure plan to increase the capital program for replacement of aging infrastructure. Capital replacement remains fixed at \$4.3 million for 2011. The objective is to build the annual infrastructure replacement for sewer to \$6.2 million, or an annual \$1.9 million shortfall.

***Recommended Option***

Staff recommend the budgets and rates as outlined under Option 1 for Sewer Services.

**Drainage and Diking Section Chart**

<i>2012 Drainage and Diking Net Rate Options</i>				
		<i>2012 Rate Options which Include Increase Identified Below in Italics</i>		
<i>Utility Area</i>	<i>2011 Rates</i>	<i>2012 Option 1 Rate</i>	<i>2012 Option 2 Rate</i>	<i>Recommended: 2012 Option 3 Rate</i>
Drainage	\$90.31	\$90.31	\$95.31	\$100.31
Diking	\$10.00	\$10.00	\$10.00	\$10.00
Total Drainage & Diking	\$100.31	\$100.31	\$105.31	\$110.31
<i>Increase Over 2011</i>		<i>\$0</i>	<i>\$5.00</i>	<i>\$10.00</i>

As noted previously within the water and sewer sections, the above rates are net rates and will be increased by 10% in the rate amending bylaws in accordance with the bylaw early payment discount provisions.

**Background**

*Drainage* - In 2003, a drainage utility was created to begin developing a reserve fund for drainage infrastructure replacement costs. The objective as outlined in the "Ageing Infrastructure Planning – 2011 Update" report is to build the fund to an anticipated annual contribution of approximately \$9.8 million, subject to ongoing review of the drainage infrastructure replacement requirements.

As adopted by Council in 2003, the rate started at \$10.00 (net) per property and is increased an additional \$10.00 each year until such time as the \$9.8 million annual reserve requirement is reached – expected to take approximately 6 more years. The net rate in 2011 was \$90.31 resulting in approximately \$6.1 million being

collected towards drainage services. The options presented above represent no increase under Option 1, approximately one-half of the increase under Option 2, and the full increase of \$10.00 under Option 3 per prior Council approvals. The recommended increase under Option 3 will result in \$6.77 million in annual reserve contributions for drainage. A continued increase in capital contributions for drainage is recommended in light of the importance of drainage infrastructure in Richmond.

*Diking* – An annual budget amount of approximately \$600,000 was established in 2006 to undertake structural upgrades at key locations along the dike, which equated to a \$10.00 charge per property. Continued annual funding is required to facilitate continued studies and upgrades as identified through further seismic assessments of the dikes. No increase in the \$10.00 per property rate is proposed for 2012. This will result in revenues of approximately \$675,000 in 2012, based on total estimated properties.

### ***Recommended Option***

Staff recommend the budgets and rates as outlined under Option 3 for Drainage and Diking Services.



## Solid Waste & Recycling Section Chart

<b>2012 Solid Waste &amp; Recycling Budget - Options</b>				
<i>Key Budget Areas</i>	<i>2011 Base Level Budget</i>	<i>Option 1 Recommended: Non-Discretionary Increases</i>	<i>Option 2 Non-Discretionary Increases</i>	<i>Option 3 Non-Discretionary Increases</i>
Salaries	\$1,957,700	\$43,300	\$43,300	\$43,300
Contracts	\$4,780,900	\$142,000	\$142,000	\$142,000
Equipment/Materials/Vehicles	\$354,400	\$18,100	\$18,100	\$18,100
Metro Disposal Costs (MV)	\$1,756,200	\$59,700	\$59,700	\$59,700
Recycling Materials Processing	\$1,136,500	(\$15,400)	(\$15,400)	(\$15,400)
Container Rental/Collection	\$158,300	\$4,000	* \$4,000	\$4,000
Operating Expenditures	\$136,800	\$4,800	\$4,800	\$4,800
Program Costs:	\$182,600	\$14,500	\$14,500	\$14,500
Agreements	\$163,200	\$4,200	\$4,200	\$4,200
Rate Stabilization	\$0	\$0	\$138,700	\$277,400
<b>Total 2011 Base Level Budget</b>	<b>\$10,626,600</b>			
<b>Total Incremental Increase</b>		<b>\$275,200</b>	<b>\$413,900</b>	<b>\$552,600</b>
<i>Revenues:</i>				
<i>Apply Rate Stabilization Fund</i>	<i>(\$250,000)</i>	<i>\$57,900</i>	<i>\$57,900</i>	<i>\$57,900</i>
<i>Recycling Material</i>	<i>(\$652,000)</i>	<i>(\$134,800)</i>	<i>(\$134,800)</i>	<i>(\$134,800)</i>
<i>Garbage Tags</i>	<i>(\$20,100)</i>	<i>\$2,600</i>	<i>\$2,600</i>	<i>\$2,600</i>
<b>Net Budget</b>	<b>\$9,704,500</b>			
<b>Net Difference Over 2011 Base Level Budget</b>		<b>\$200,900</b>	<b>\$339,600</b>	<b>\$478,300</b>

A description explaining the increases and budget reductions in each of the areas outlined above is outlined below.

### **Salaries**

Salary costs are increased associated with anticipated wage settlements.

### **Contracts**

Contract costs relate to non-discretionary increases for solid waste and recycling collection services as outlined in Council-approved agreements.

### **Equipment/Materials/Vehicles**

Material, equipment and vehicle costs are increased associated with plant growth and increased fuel and insurance costs.

### ***Metro Vancouver Disposal Costs (MV)***

Disposal costs associated with the regional tipping fee increase from \$97 to \$107 per tonne. The City's Green Can program has helped in significantly reducing disposal tonnages, minimizing the impact of tipping fee increases. For example, had the Green Can/organics program not been introduced to divert more waste from garbage, the metro disposal costs noted in the budget table would have been approximately \$300,000 higher.

Regional tipping fees are expected to continue to rise sharply over the next several years to help create greater incentives for recycling alternatives and to meet the objectives as outlined in the new *Integrated Solid Waste and Resource Management Plan* which received provincial approval on July 22, 2011.

	2012	2013	2014	2015	2016
Projected Metro Vancouver Tipping Fee/Tonne	\$107	\$121	\$153	\$182	\$205
% Increase over Prior Year	10.3%	13%	26.4%	19%	12.6%

### ***Recycling Materials Processing***

Recycling materials processing costs are reduced associated with green waste volume adjustment reductions at the Ecowaste Landfill resulting from commercial use restrictions.

### ***Container Rental/Collection & Operating Expenditures***

Container rental and operating expenditures are increased associated with rates from re-tendered service contracts and printing costs.

### ***Program/Internal Costs & Agreements***

Program cost increases relate to increased resident uptake in the City's spring clean up program (garbage disposal voucher program). Agreement costs are increased slightly based on the consumer price index contractual increase with Vancouver Coastal Health Authority for the City's public health protection service agreement.

### ***Rate Stabilization***

Option 1 reflects a \$57,900 reduction in the application of the rate stabilization fund for solid waste and recycling. This reduction reflects the anticipated variance to equal the full offset of costs for the Green Cart Pilot program in accordance with prior approvals, pending an evaluation and report on that program in early 2012 (reference Green Cart Pilot Program section). Option 2 includes a partial contribution of \$138,700 to collect toward building the solid waste stabilization/provision fund, and Option 3 includes a contribution of \$277,400. Option 1 is recommended in light of significant increases in other utility areas. Any increase in the rate stabilization contribution outlined under Options 2 and 3 would allow funding levels to build in order to offset future significant regional tipping fee increases as outlined above. In addition, future funding will be needed to further develop significant recycling programs, such as a potential Eco Centre, introduction of carts for residential curbside collection, pilot initiatives, etc. The current balance in the solid waste provision is \$7,455,315.

### ***Recycling Material Revenues***

Revenues from the sale of recycling commodities are increased approximately 20% in 2012, or from \$652,000 to \$786,800. Under servicing contract terms, the City receives the full benefit of any increases

in the recycling commodity markets above an established base level. Similarly, the City bears the risk of any downturn in commodity markets. The increased revenue projection is based on estimates of market conditions as reflected over the past year. This amount can vary up or down, and is dependent in large part on economic conditions. Therefore, it is an estimate only. Note that revenues from the sale of recycling materials are applied against expenditures to help offset rates.

**Green Cart Pilot Program**

A pilot organics/food scraps recycling pilot program, involving approximately 3,200 townhome units, commenced in April and is currently underway. The pilot is intended to run to the end of 2011 and then be evaluated for potential broader scale implementation to all townhomes. Staff are currently evaluating the program and will present a report with recommendations early in 2012. The cost of this program is offset through the sanitation provision account. The budget/funding identified above allows the pilot program to continue in 2012 under these same funding conditions until such time as a Council decision is made on the future of organics recycling for townhomes.

A report regarding the pilot program is scheduled for the first quarter of 2012.

**Impact on 2012 Rates**

The impact of the budget options to ratepayers is provided in the table which follows.

<b>2012 Solid Waste &amp; Recycling Net Rates Options</b>				
		<b>2012 Rate Options which Include Increase Identified Below in Italics</b>		
<b>Customer Class</b>	<b>2011 Rates</b>	<b>Recommended: 2012 Option 1 Rate</b>	<b>2012 Option 2 Rate</b>	<b>2012 Option 3 Rate</b>
Single Family Dwelling	\$234.81	\$239.61 <i>\$4.80</i>	\$241.96 <i>\$7.15</i>	\$244.50 <i>\$9.69</i>
Townhouse	\$169.46	\$171.10 <i>\$1.64</i>	\$173.44 <i>\$3.98</i>	\$175.99 <i>\$6.53</i>
Apartment	\$52.14	\$51.40 <i>(\$0.74)</i>	\$52.25 <i>\$0.11</i>	\$53.24 <i>\$1.10</i>
Business Metered Rate	\$26.16	\$25.75 <i>(\$0.41)</i>	\$25.86 <i>(\$0.30)</i>	\$25.99 <i>(\$0.17)</i>

As noted previously within the water and sewer sections, the above rates are net rates and will be increased by 10% in the rate amending bylaws in accordance with the bylaw early payment discount provisions.

**Regional Issues**

As previously noted, the regional tipping fee has increased \$10, from \$97/tonne to \$107/tonne. The impact to Richmond is not as great as it would otherwise have been had the City not had the foresight to introduce the Green Can (food scraps/organics recycling) program. Overall, the region is continuing to experience declining waste flows and reduced revenues in light of recycling initiatives and poor economic conditions, which are contributing factors to the tipping fee increase. Costs for regional initiatives identified in the Integrated Solid Waste and Resource Management Plan are other factors driving the tipping fee increase. In addition to the impacts of the tipping fee increases, Richmond will also incur costs to implement the local government actions identified in the Integrated Solid Waste and Resource Management Plan. Council previously endorsed the plan, which establishes a new regional waste diversion target of 70% by 2015 (currently at 50%). These costs could amount to an additional \$4 million annually, depending on the level to which the municipal actions are pursued. These added programs will be brought to Council for approval in advance of incurring any additional expenditures.



**Recommended Option**

Staff recommend the budgets and rates as outlined under Option 1 for Solid Waste and Recycling as it meets the minimum funding requirement necessary to maintain existing programs, while minimizing the overall rate impact -- particularly in light of increases in other utility areas.

**Total Recommended 2012 Utility Rate Option**

In light of the significant challenges associated with the impacts of regional costs and new programs in the City, staff are recommending a combination of various budget and rates options as follows:

- Option 1 is recommended for Water
- Option 1 is recommended for Sewer
- Option 3 is recommended for Drainage & Diking
- Option 1 is recommended for Solid Waste & Recycling

This results in the following 2012 recommended utility rates as summarized in the following tables. The first table provides a summary of the estimated meter rate charge, based on average water and sewer consumption. The second table provides a summary of the flat rate charge.

<b>2012 Total Annual Utility – Estimated Charges to Metered Customers based on Recommended Rates and Average Water/Sewer Consumption by Customer Class (Net Rates)</b>		
<i>Customer Class</i>	<b>2012 Recommended Rate (Increase Identified Below in Italics)</b>	
	<b>2011 Estimated Net Rates</b>	<b>Total 2012 Recommended Option – Estimated Net Rates</b>
Single-Family Dwelling (based on avg. 296 m <sup>3</sup> )	\$833.64	\$894.42 <i>\$60.78</i>
Townhouse (on City garbage service) (based on avg. 265 m <sup>3</sup> )	\$716.08	\$768.88 <i>\$52.80</i>
Townhouse (not on City garbage service) (based on avg. 265 m <sup>3</sup> )	\$609.37	\$659.88 <i>\$50.51</i>
Apartment (based on avg. 181 m <sup>3</sup> )	\$457.29	\$494.66 <i>\$37.37</i>
<b>General – Other/Business</b>		
Metered Water (\$/m <sup>3</sup> )	\$0.9223	\$1.0058 <i>\$0.0835</i>
Metered Sewer (\$/m <sup>3</sup> )	\$0.7619	\$0.8337 <i>\$0.0718</i>
Business: Garbage	\$26.16	\$25.75 <i>(\$0.41)</i>
Business: Drainage & Diking	\$100.31	\$110.31 <i>\$10.00</i>



<b>2012 Total Annual Utility – Recommended Flat Rates (Net Rates)</b>		
<i>Customer Class</i>	<b>2012 Recommended Rate (Increase Identified Below in Italics)</b>	
	<b>2011 Net Rates</b>	<b>Total 2012 Recommended Option – Net Rates</b>
Single-Family Dwelling	\$1,193.22	\$1,269.51 <i>\$76.29</i>
Townhouse (on City garbage service)	\$1,004.59	\$1,068.91 <i>\$64.32</i>
Townhouse (not on City garbage service)	\$897.88	\$959.91 <i>\$62.03</i>
Apartment	\$683.88	\$731.28 <i>\$47.40</i>
<b>General – Other/Business</b>		
Metered Water (\$/m <sup>3</sup> )	\$0.9223	\$1.0058 <i>\$0.0835</i>
Metered Sewer (\$/m <sup>3</sup> )	\$0.7619	\$0.8337 <i>\$0.0718</i>
Business: Garbage	\$26.16	\$25.75 <i>(\$0.41)</i>
Business: Drainage & Diking	\$100.31	\$110.31 <i>\$10.00</i>

As noted previously, the rates highlighted in this report reflect the net rates. This is the actual cost that property owners pay after the 10% discount incentive is applied as outlined in the rate bylaws. It also represents the minimum amount required to recover the net expenditure budgets for each utility area. The discount incentive provided in the bylaws is a very effective strategy in securing utility payments in a timely manner. To ensure full cost recovery while maintaining the payment incentive, the bylaw rates are inflated by the discount amount. The recommended rates outlined above result in the following gross rates to be reflected in the amending bylaws for each utility area, should they be approved by Council:

<b>2012 Total Annual Utility – Recommended Gross (Before Discount) Estimated Meter &amp; Actual Flat Rates per Bylaw (By Utility Area)</b>					
	<b>Water</b>	<b>Sewer</b>	<b>Drainage/ Diking</b>	<b>Garbage/ Recycling</b>	<b>Total</b>
<b>Meter (Based on Estimated Consumption–Water &amp; Sewer Rates will Vary According to Actual Consumption)</b>					
Single-Family Dwelling	\$330.78	\$274.18	\$122.57	\$266.23	\$993.76
Townhouse (on City garbage)	\$296.14	\$245.47	\$122.57	\$190.11	\$854.29
Townhouse (no City garbage)	\$296.14	\$245.47	\$122.57	\$69.00	\$733.18
Apartment	\$202.27	\$167.66	\$122.57	\$57.11	\$549.61
<b>Flat Rate (Actual)</b>					
Single-Family Dwelling	\$621.51	\$400.25	\$122.57	\$266.23	\$1,410.56
Townhouse (on City garbage)	\$508.77	\$366.22	\$122.57	\$190.11	\$1,187.67
Townhouse (no City garbage)	\$508.77	\$366.22	\$122.57	\$69.00	\$1,066.56
Apartment	\$327.85	\$305.01	\$122.57	\$57.11	\$812.54
<b>General – Other/Business</b>					
Metered Water (\$/m <sup>3</sup> )	\$1.1175				
Metered Sewer (\$/m <sup>3</sup> )		\$0.9263			
Business: Garbage				\$28.61	
Business: Drainage & Diking			\$122.57		

The number of units by customer class, including those on meters, is shown below for Council's information. The number of units will vary to some degree based on the type of service (e.g. some units are not on sewer service), therefore, the following is based on the water services unit count:

<i>Residential Unit Counts – Flat Rate and Metered Customers</i>		
Single-Family Residential	Flat Rate	10,635
	Metered	17,816
Townhouse	Flat Rate	14,308
	Metered	703
Apartment	Flat Rate	20,109
	Metered	1,715
Total Residential Units		65,286
Commercial Units	Metered	3,467
Farms	Metered	49

## Comparison of Recommended 2012 Utility Rate Option to Major Household Expenses

In relation to other common household expenses, City utility expenses represent good value when compared with other daily major household expenses such as telephone, cable, internet, electricity, transit and others. Water, sewer, garbage and drainage utility services are fundamental to a quality lifestyle for residents as well as necessary infrastructure to support the local economy. The following chart demonstrates the value of these services when compared to other common household expenses.

**Daily Cost Comparison of Major Household Expenses for a Single Family Dwelling**

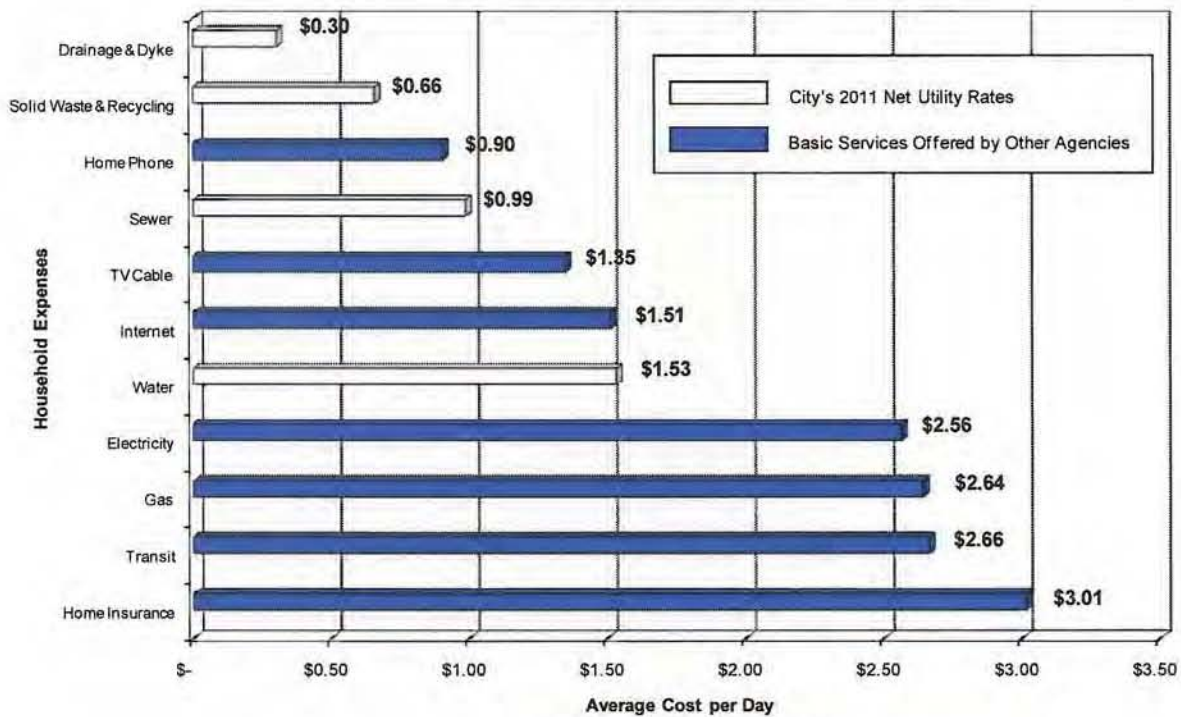


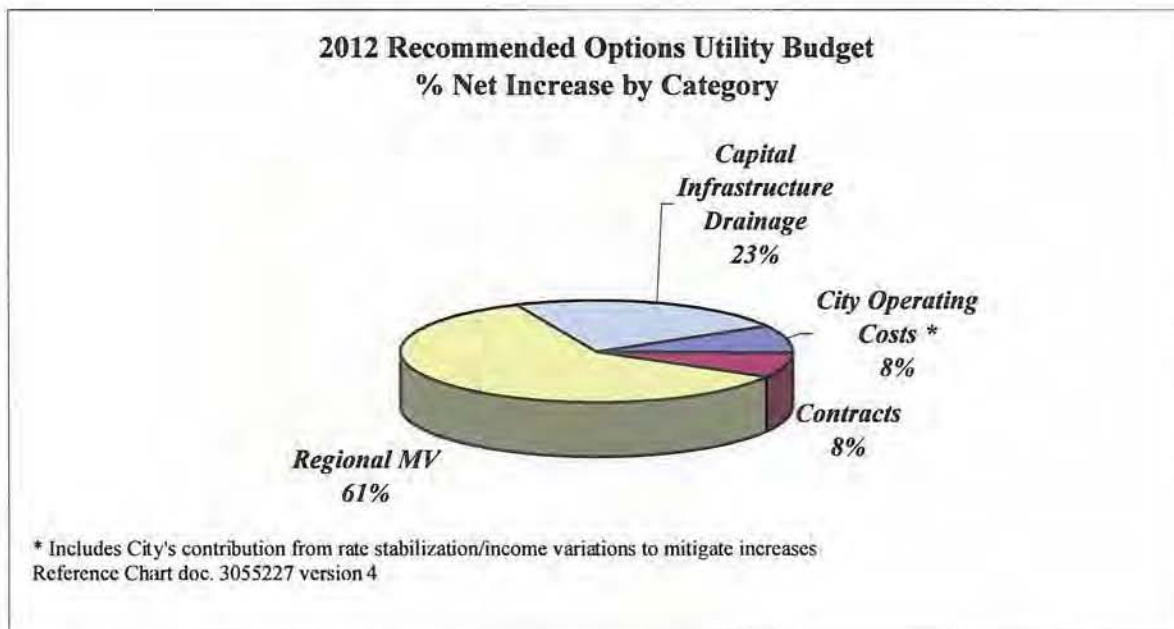
Chart REDMS Ref.. 3054483

### Financial Impact

The budgetary and rate impacts associated with each option are outlined in detail in this report. In all options, the budgets and rates represent full cost recovery for each respective area.

The key impacts to the recommended 2012 utility budgets and rates stem from increases in regional water purchases, sewer treatment and disposal costs. Contractual increases for tendered services and other external costs is also a factor, although to a much lesser degree. Option 1 is recommended for the Water, Sewer and Solid Waste/Recycling budgets and rates; whereas Option 3 is recommended for Drainage as per the strategy outlined in the “Ageing Infrastructure Planning – 2011 Update” report.

Considerable effort has been made to minimize City costs and other costs within our ability to influence in order to minimize the impact to property owners. The following graph demonstrates the principal factors in the 2012 budget in the area of regional costs, contract costs, net capital infrastructure contribution (drainage) and other City operating costs.



### Conclusion

The utility rate strategy represents a comprehensive approach to addressing current increases in regional charges for water purchases, water filtration, sewer treatment and disposal costs. City costs have been minimized as much as possible to reduce the impact to budgets and rates. Regional increases continue to represent a significant portion of the increases in utility rates. This trend will continue for the foreseeable future as the challenges associated with addressing growth and new demands for water and sewer treatment are managed.



Staff recommend that the budgets and rates as outlined in this report be approved and that the appropriate amending bylaws be brought forward to Council to bring these rates into effect.



Suzanne Bycraft  
Manager, Fleet & Environmental Programs  
(3338)



City of Richmond

Report to Committee

To: Public Works and Transportation Committee      Date: June 7, 2011  
 From: John Irving, MPA, P.Eng.                              File: 10-6060-01/2011-Vol 01  
        Director, Engineering  
 Re: Ageing Infrastructure Planning – 2011 Update

Staff Recommendation

That staff review the report dated June 7, 2011 from the Director, Engineering in conjunction with the Long Term Financial Management Strategy and bring forward recommendations to Finance Committee.

John Irving, MPA, P.Eng.  
Director, Engineering  
(4140)

Att. 6

FOR ORIGINATING DEPARTMENT USE ONLY					
ROUTED TO:		CONCURRENCE		CONCURRENCE OF GENERAL MANAGER	
Budgets		Y	<input type="checkbox"/>	N	<input type="checkbox"/>
Roads and Construction		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
Sewerage and Drainage		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
Water Services		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
Transportation		Y	<input checked="" type="checkbox"/>	N	<input type="checkbox"/>
<b>REVIEWED BY TAG</b>		YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>
				<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>

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**Staff Report**

**Origin**

In July 2001 and March 2006 the Engineering Department reported to Council the estimated long term capital requirements for age-related infrastructure renewal. This report updates those estimates to reflect current inventory, new thoughts on infrastructure service life and changing infrastructure replacement pricing. It also extends the report to comment on dikes and climate change.

**Background**

Council Term Goals

One of the strategic focus areas outlined in the currently adopted Council Term Goals is Financial Management. The goal is to ensure the City has the capacity to meet the financial challenges of today and the future, while maintaining current levels of service. This report outlines the current and long term financial requirements for maintaining and replacing the City's ageing infrastructure.

Existing Infrastructure

*Table 1* is a summary of the City's inventory of water, sanitary, drainage, and roads infrastructure. The replacement value assumes that infrastructure will be replaced "size-on-size"<sup>1</sup>.

**Table 1: Infrastructure Inventory**

Infrastructure	Total Length of Pipe or Road	Other Features	Funding Source	Replacement Value (2011 dollars)
Water	624 km	13 PRV Chambers 8 Sponge Vaults 60 Valve Chambers	Water Utility	\$514 M
Sanitary	562 km	151 Pump Stations	Sanitary Utility	\$436 M
Drainage	617 km	39 Pump Stations	Drainage Utility	\$933 M
Dike	49 km	-	Drainage Utility	\$200 M
Road Pavement (non-MRN)	1285 lane km	212,000 sq. m of Parking lot	General Revenue	\$561 M
<b>Total Replacement Value</b>				<b>\$2,644 M</b>

<sup>1</sup> Each asset will be replaced using the existing size.

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Previous Staff Reports

Staff completed the City's first ageing infrastructure assessment and reported the results to Council in 2001. The assessment was based on the limited information available at that time. An updated ageing infrastructure report was presented to the Public Works and Transportation Committee (PWTC) in March 2006. Both reports identified that infrastructure replacement funding levels were insufficient and the 2006 report proposed several preliminary strategies to address the shortfalls that included the following:

1. Implement an immediate one-time increase to the rates to close the funding shortfall.
2. Implement a gradual increase to rates over a specified period to close the funding shortfall.
3. Borrow money to fund the necessary improvements.
4. Combination of the above strategies.

From the above strategies, the City implemented a variation of strategy 2 that did not include a specific date to close identified funding gaps. *Table 2* catalogues and compares 2006 capital infrastructure annual funding to that in 2011. It also tabulates current reserve levels.

**Table 2: Annual Capital Infrastructure Funding and Reserves**

Infrastructure Type	2006 Funding (2006 dollars)	2011 Funding (2011 dollars)	Funding Source	% Funding Increase	Reserve Balance (Dec 31, 2006)	Reserve Balance (Dec 31, 2010)
Water	\$6.5 M	\$7.5 M	Water Utility	15%	\$34.1 M	\$46.4 M
Sanitary	\$2.5 M	\$4.3 M	Sanitary Utility	75%	\$16.4 M	\$27.7 M
Drainage	\$3.1 M	\$6.1 M	Drainage Utility	97%	\$7.3 M	\$18.2 M
Road Paving (non MRN)	\$2.6 M	\$3.0 M	General Revenue	15%	N/A	N/A
<b>Total</b>	<b>\$14.7 M</b>	<b>\$20.9 M</b>		<b>42%</b>	<b>\$57.8</b>	<b>\$92.3 M</b>

As can be seen in *Table 2*, the City has substantially increased funding for infrastructure replacement over the last five years. Increases to the water, sewer and drainage capital funding were achieved through the annual utility rates review process where infrastructure replacement funding gaps were considered when establishing utility rates. The roadways are not part of a utility and the re-paving budget is included in the Roads operating budget. Road repaving increases were accomplished through the operating budgeting process.

Ageing Infrastructure Replaced From 2006 to 2010

Since March 2006 the City has replaced over 28 km of ageing watermain (approximately 4% of the system) and repaved 141 km of road lanes (approximately 11% of the non-MRN roadways) through its annual capital works programs. Various sanitary and drainage pump stations were



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also rebuilt or improved during this time due to both ageing infrastructure and capacity based upgrade needs. These replacements and upgrades are planned utilizing water, sanitary, drainage and pavement management and capacity models developed for Richmond's infrastructure. Given the large catalogue of infrastructure assets within the City and the significant population increases predicted for Richmond, these models are essential for short and long term capital planning and for supporting broader City objectives such as the Official Community Plan. *Attachment 6* is a summary of infrastructure projects completed between 2006 and 2010 as part of the ongoing infrastructure replacement and upgrade program.

The replacement work to date has put Richmond in a much better position than the majority of Canadian municipalities. A report titled "Danger Ahead: The Coming Collapse of Canada's Municipal Infrastructure" was published by the Federation of Canadian Municipalities (FCM) in November 2007. The report stated that, across Canada, municipal infrastructure has reached the breaking point. The report recommended that long-term investment plans be created to manage infrastructure funding. Richmond has been pro-active in this regard and had long-term ageing infrastructure replacement strategy and reserve funding in place prior to the FCM report. As such, the City's infrastructure is in better condition than the average Canadian municipality and is far from the breaking point. However, the FCM report illustrates what can happen if the City's municipal infrastructure becomes a lower priority and funding levels do not continue to increase to close identified funding gaps.

### Analysis

#### Total Replacement Value and Schedule

*Charts 1 to 4* (attached) show estimated infrastructure replacement costs for the City's water, sanitary, drainage, and road infrastructure over the next 75 years. The charts also identify the estimated long term average annual funding levels that are required to perpetually replace assets and the current 2011 funding levels. The Funding Requirement Range represents the estimated level of uncertainty or variability in the long term annual funding levels. This uncertainty is due to a number of variables including:

- potential overlap between capacity based improvements due to development or climate change;
- uncertainty in the potential service life of the infrastructure;
- variability in the economy and the cost of infrastructure replacement; and
- unanticipated or emergency events that initiate early infrastructure replacement or repairs in excess of operating budget provisions.

#### Water

*Chart 1* predicts a long term annual water infrastructure funding requirement of \$7.0 million, which is \$0.5 million lower than previously estimated and currently funded. Over the past five years Engineering has gathered data that indicates asbestos cement pipelines last longer than the original analysis indicated. Asbestos cement pipelines are approximately 50% of the City's watermain inventory, therefore, this increase in expected asbestos cement pipeline service life has a significant effect on long term funding requirements and translates into the lower funding

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requirement. However, staff recommends maintaining water utility funding at \$7.5 million noting that:

- there is a significant backlog of watermain replacement projects;
- there is significant variability in water infrastructure pricing; and
- inflation will consume this positive funding gap in the near to medium term.

As noted previously, approximately 50% of the City's watermains are asbestos cement and are predicted to require replacement within the next 30 years. During this period replacement costs will exceed the long term required funding level for a number of years, which will require utilization of reserves and borrowing. In the long term (75 year horizon), the required funding level will repay debts incurred and allow for continued water infrastructure renewal.

Engineering staff are currently reviewing new technologies to determine the condition of asbestos cement watermains in an effort to refine the watermain replacement schedule. Additionally, Engineering staff will review pressure management as a tool to increase the service life of the asbestos cement watermain inventory, which has potential to attenuate the predicted spike in watermain replacement between 2031 and 2041.

#### Sanitary

*Chart 2* predicts a long term annual funding requirements of \$5.4 million for the sanitary utility with no identified backlog of replacement needs. However, the fat, oil and grease (FOG) blockage in the Lansdowne forcemain this year is a prime example of an unanticipated event with significant capital cost that creates uncertainty or variability in the estimation of long term capital requirements. The Lansdowne forcemain emergency activities and replacement will total over \$1.3 million by project completion that was not anticipated but must be accommodated by the sanitary sewer utility.

#### Drainage

*Chart 3* predicts a long term annual funding requirement of \$9.8 million for the drainage utility. As indicated by the chart, large scale ageing drainage infrastructure replacement is estimated to be 30 years in the future with much smaller near term needs. One option to fund these future replacements is to build an adequate reserve during this period of lower needs, to avoid unnecessarily burdening future generations.

Modeling work is currently being performed to determine the impact of climate change on the drainage system. Capacity improvements due to climate change are not included in the present analysis and will be reported to Council when the information becomes available.

#### Roads

*Chart 4* predicts a non-MRN long term annual re-paving funding requirement of \$4.6 million. Higher uncertainty exists in this value than those for the utilities as road re-paving is heavily influenced by oil price, which has fluctuated widely in the past five years. *Chart 5* (attached) documents the fluctuating cost of asphalt paving between 2006 and 2010 demonstrating the high

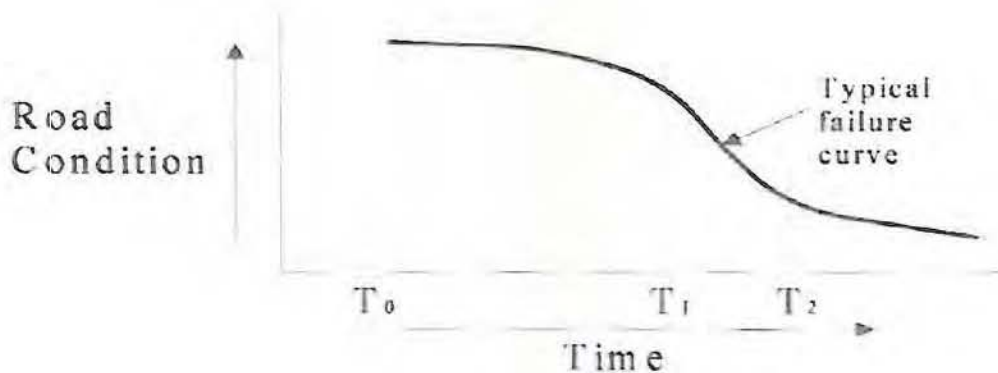


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variability in pricing. Based on paving prices over the last five years, re-paving annual funding requirements range between \$4.0 M and \$5.3 M. For long term planning purposes, we have assumed that the ebb and flow of asphalt pricing will average out in the long term and have utilized the average value of \$4.6 M as the long term funding requirement for re-paving.

As reported to Council in 1998, road structures fail according to the curve represented in *Figure 1*.



**Figure 1**

The time between  $T_0$  and  $T_1$  reflects period when roads structures perform well. At  $T_1$  the road structure begins to deteriorate and lose strength.  $T_2$  represents failure of the road structure. Once  $T_1$  is reached, failure occurs rapidly.

Road rehabilitation work performed at  $T_1$  can effectively restore the road structure to a "like new" condition represented by  $T_0$ . Failure to perform this rehabilitation work leads to the rapid deterioration and failure of the roadway. At  $T_2$ , a complete rebuild of the road structure is required. The cost of rebuilding a roadway at  $T_2$  is approximately 3 to 4 times the cost of rehabilitation at  $T_1$ , therefore, it is to the City's financial advantage to perform the rehabilitation at  $T_1$ .

For the purpose of estimating the long term re-paving funding requirement, it has been assumed that all roads are repaved at  $T_1$ . If this can not be achieved, the costs associated with road repair will increase due to more expensive road reconstruction being required.

### Dikes

The 2008-2031 Richmond Flood Protection Strategy identifies climate change induced sea level rise as a future threat to the City and requires further investigation. As presented to Council on January 10, 2011, long term funding for raising dikes to meet rising sea levels and upgrades to address seismic concerns will be in the order of \$100 million. Engineering staff are exploring options to initiate a Dike Master Plan that will identify upgrade timing and funding requirements.

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Required Funding Levels

**Table 3** summarizes current and required annual infrastructure replacement funding levels, in 2011 dollars, as well as the current ageing infrastructure funding gaps.

**Table 3: Infrastructure Funding Levels**

Infrastructure Type	2011 Actual Annual Funding Level	Required Annual Funding Level	Funding Source	Estimated Additional Funding Required Based on Future Needs
Water	\$7.5 M	\$7.0	Water Utility	(\$0.5 M)
Sanitary	\$4.3 M	\$6.2 M	Sanitary Utility	\$1.9 M
Drainage	\$6.1 M	\$9.8 M	Drainage Utility	\$3.7 M
Road Paving (non MRN)	\$3.0 M	\$4.6 M	General Revenue	\$1.6 M
<b>Totals</b>	<b>\$20.9 M</b>	<b>\$27.6 M</b>		<b>\$6.7 M</b>

While the City has made significant increases to infrastructure funding since 2006, infrastructure funding gaps remain.

Funding Strategies

Adequate annual funding levels will allow the City to implement a proactive and sustainable infrastructure replacement program. The proactive replacement of infrastructure enables the City to smart sequence utility replacement and use competitive bidding to ensure the best value for money. Replacing infrastructure at its time of failure has proven to be considerably more expensive than proactive replacement and is more disruptive to residents, City services and programs.

Closing the current \$6.7 million funding gap<sup>2</sup> is achievable within the next decade or sooner. Putting this amount into rate payer terms, Richmond has approximately 70,000 businesses or households that pay utility rates. An annual increase of \$10 to the total utility rate<sup>3</sup> for each residence or business would generate an additional \$7 million by the 10<sup>th</sup> year and would close the gap if inflation is ignored. Similarly, a \$20 increase would close this gap in five years. To put these potential increases in perspective, \$10 is 0.85% of a typical residential utility bill and \$20 is 1.7%.

<sup>2</sup> This does not include future dike improvement funding which will be determined through the proposed dike master planning process.

<sup>3</sup> The comparison of utility rate increases is for illustrative purposes. Road paving is not funded through the utility rate, therefore, increases to accommodate the road paving funding gap will not be applied through the utility rate.



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Staff have pursued available federal and provincial grants from programs such as the Building Canada Plan and BC's Flood Protection Program and will continue to do so. While grant funding has been helpful over the last year, as a funding source grants will always be unpredictable and therefore non-sustainable.

Staff will evaluate funding options and make a recommendation to Council as part of the annual utility rate review. Through the annual utility rate review, staff will continue to recommend that the foregoing gap be closed over an appropriate period of time. However, the strategy and annual amount will vary due to the implication of non-discretionary costs resulting from Metro Vancouver's Regional Solid and Liquid Waste Management Plans.

**Financial Impact**

None at this time.

**Conclusion**

Staff will continue to gather information to better predict infrastructure replacement schedules and funding peaks and will continue to explore new technologies and best. Staff will also continue to recommend that the utility funding gaps between current and required funding levels be closed over time through the annual budgeting process. The rate of increase and timeframe to close the funding gaps will be impacted by Metro Vancouver's regional Solid and Liquid Waste Management plans, which are a non-discretionary costs imposed on the City. The funding shortfalls outlined in this report should be considered in conjunction with the City's Long Term Financial Strategy.



Lloyd Bie, P.Eng  
Manager, Engineering Planning  
(4075)

LB:ab

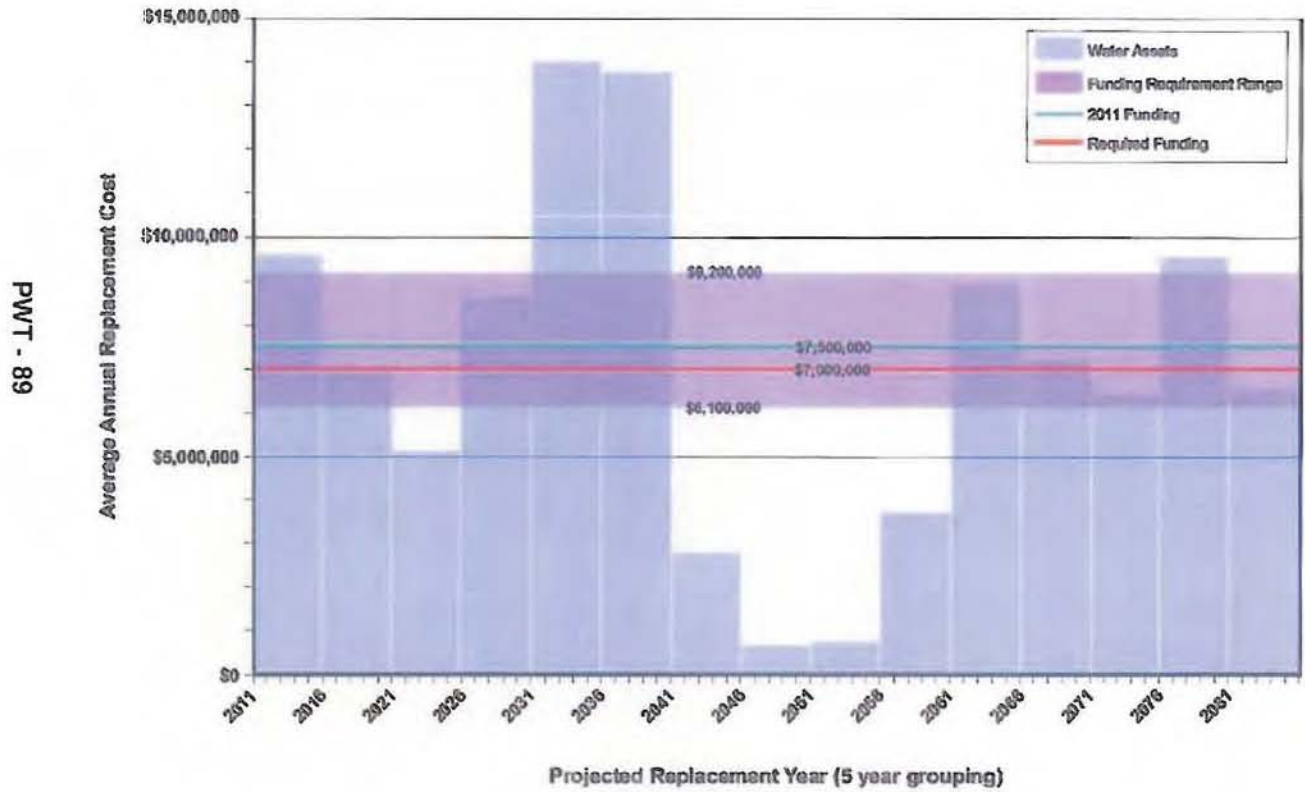


Andy Bell, P.Eng  
Project Engineer, Roads & Drainage  
(4656)

- Att.1: Chart 1: Ageing Infrastructure Report – Water Assets
- Att.2: Chart 2: Ageing Infrastructure Report – Sanitary Assets
- Att.3: Chart 3: Ageing Infrastructure Report – Drainage Assets
- Att.4: Chart 4: Ageing Infrastructure Report – Non MRN Road Assets
- Att.5: Chart 5: Historical Costs for Capital Paving Program (2006 – 2010)
- Att.6: Capital Infrastructure Projects Completed Since 2006

June 7, 2011

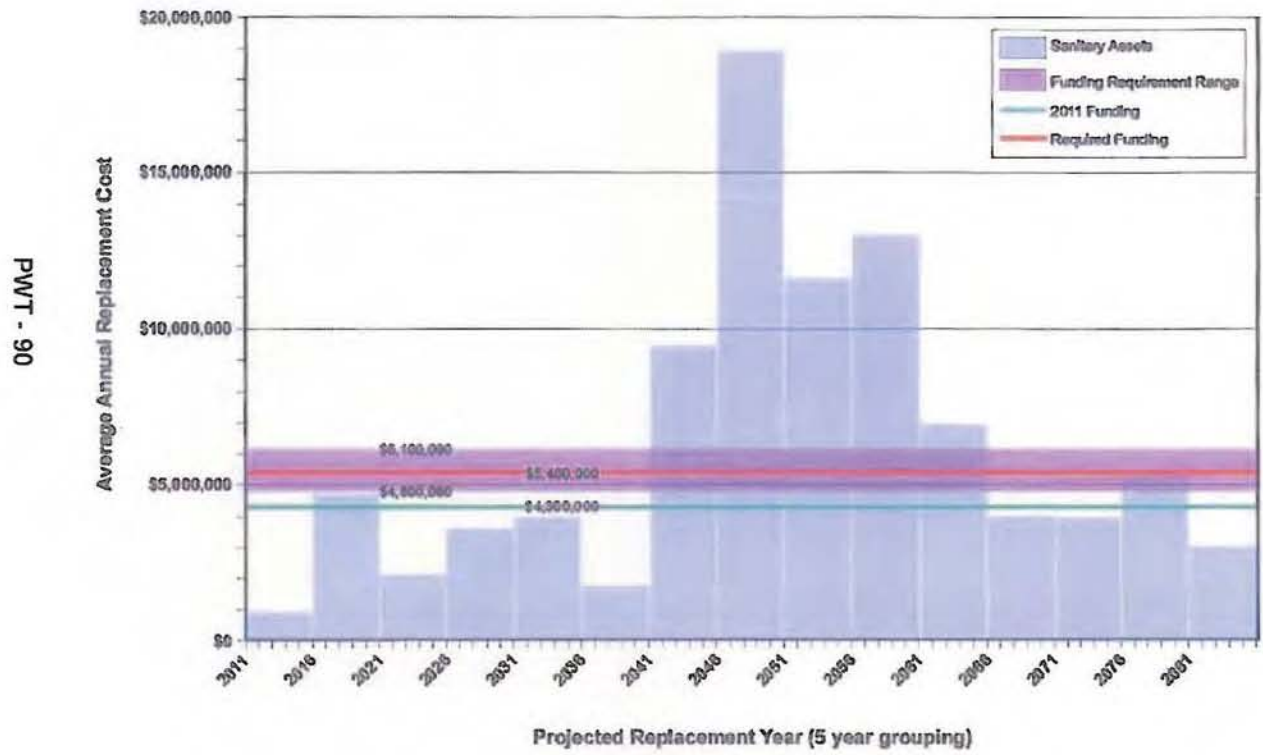
Chart 1  
2011 Ageing Infrastructure Report - Water Assets



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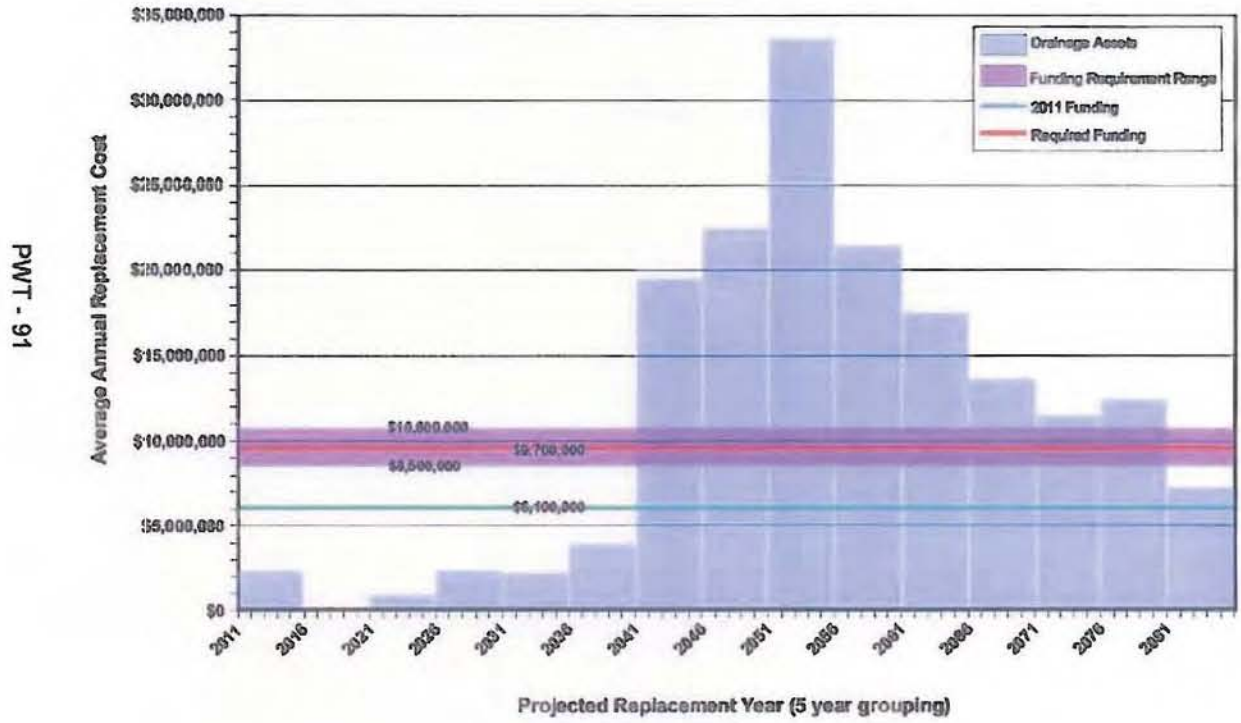
June 7, 2011

**Chart 2**  
**2011 Ageing Infrastructure Report - Sanitary Assets**



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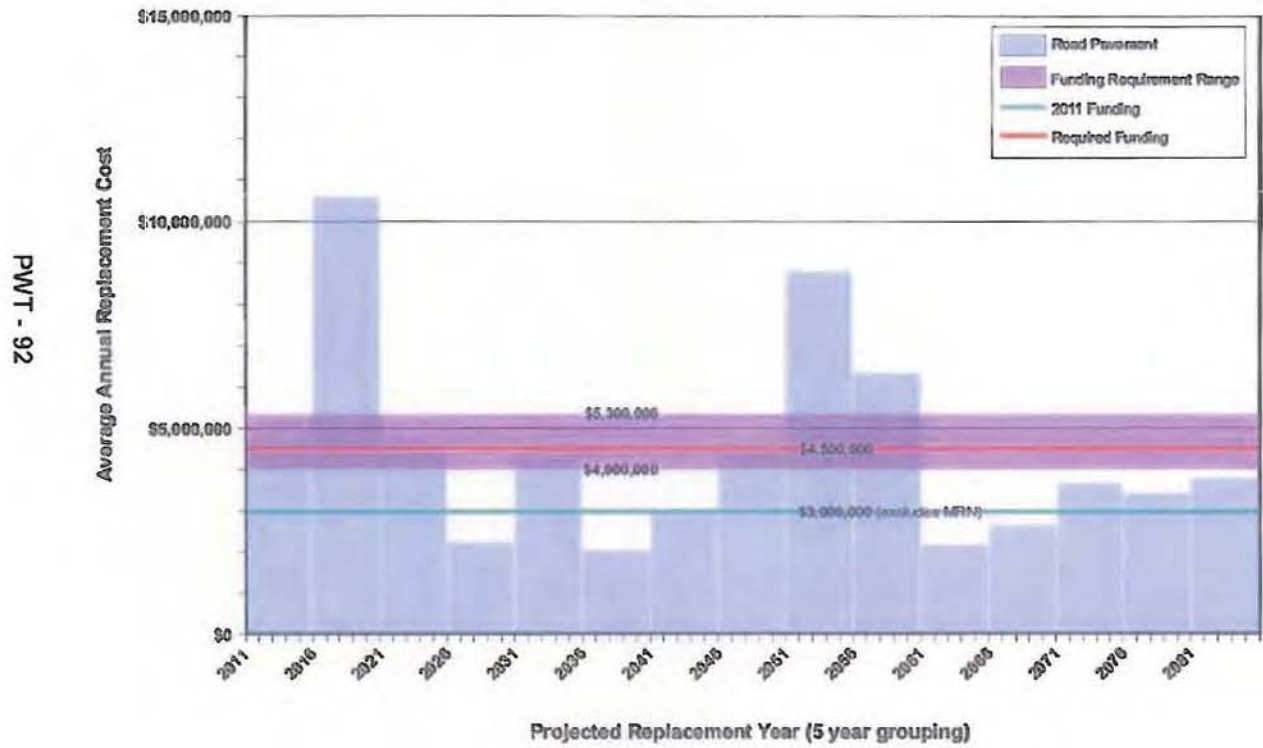
**Chart 3**  
**2011 Ageing Infrastructure Report - Drainage Assets**





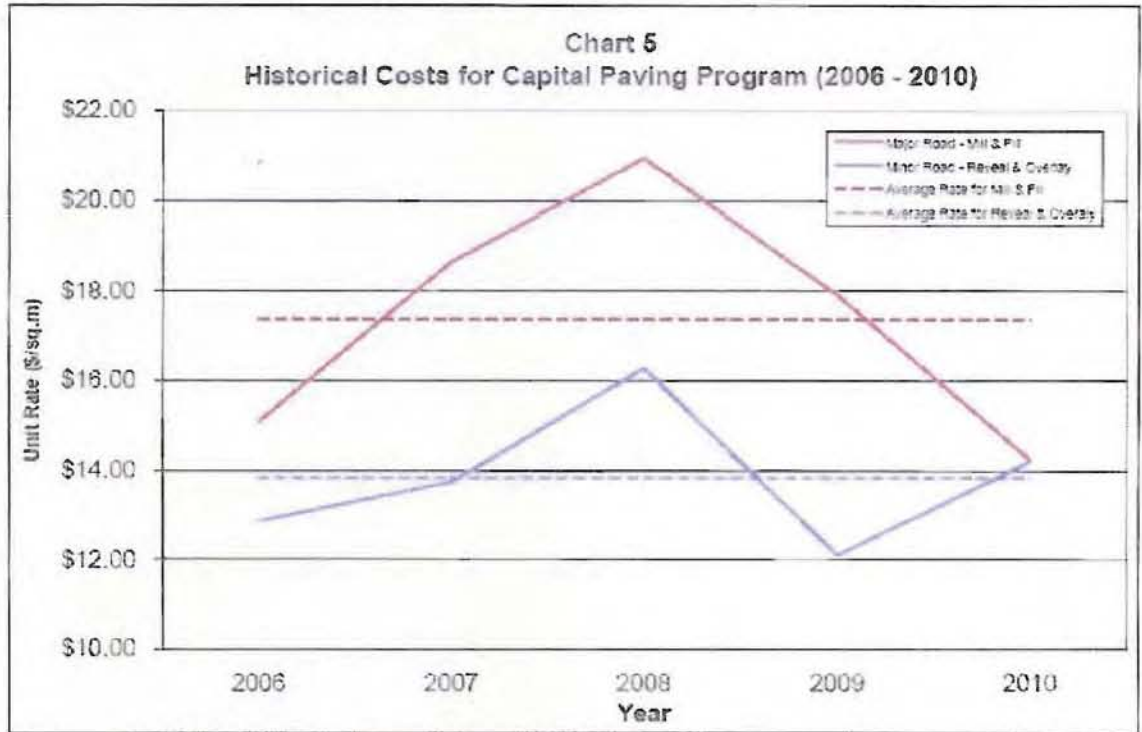
June 7, 2011

Chart 4  
2011 Aging Infrastructure Report - Non-MRN Assets



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Attachment 1 (Cont'd)

2010 Capital Construction Program Update  
Engineering Design and Construction

Project No	Project Name	Scope of Work	Capital Funding(\$1000)	Proposed Tender Date	Scheduled Contract Start	Scheduled Contract Completion
P.08403	Lulu West Waterworks Area	Ash St, Glenscres Dr, Pendlebury Rd, Palmer Rd	\$1,377	City Forces	Completed	Completed
P.08306	Cambie Road Drainage Pump Station Upgrade	Replace Cambie Road PS to improve reliability and pumping capacity. Construct 55m box culvert on Cambie Road	\$2,847	Completed	Completed	Completed
P.08602	Bridgeport Sanitary Sewer Area	Van Horne, Brighthouse, Jones and Richmond Centre Upgrades	\$1,000	City Forces	Completed	Completed
P.06603	City Centre Sanitary Sewer Area	Upgrade Elmbridge Sanitary Pump Station	\$600	City Forces	Completed	Completed
P.08407	Lulu North Waterworks Area	No. 3 Road Water Main Replacement - Westminster Highway to Granville Avenue	\$1,850	February, 2011	March, 2011	June, 2011
P.07802	City Centre Sanitary Sewer Area	Upgrade Eckersly A, Construct Forcemain and Gravity Sewer on Anderson Rd. St. Albans Forcemain	\$3,407	Completed	Completed	March, 2011
P.10231	2010 Paving Program	Various Locations - City Wide	\$3,245	Completed	Completed	Completed
P.08334	Peace Arch Area Drainage Upgrades	Seahurst Lane Drainage Upgrades	\$575	City Forces	Completed	Completed
P.08307	No. 4 Road Drainage Pump Station Upgrade	Upgrade No. 4 Road Pump Station	\$4,810	Completed	Completed	February, 2011
P.07401	Sea Island Waterworks Area	Airport Road	\$700	City Forces	Completed	January, 2011
P.10402	Lulu West Waterworks Area	Mortfield Gate & Cooper Road	\$380	City Forces	Completed	Completed
P.08302	West Cambie Drainage Upgrades	Garden City Road - Alderbridge Way to Cambie Road	\$1,191	Completed	Completed	Completed
P.09402	Hamilton Waterworks Area	Gilley Road - Westminster Hwy to East end	\$600			
P.09405	Lulu West Waterworks Area	Seaham Crescent	\$336	Completed	Completed	January, 2011
P.09405	Hamilton Waterworks Area	6220 No. 8 Road to 460m South of Westminster Highway	\$336			
P.09207	Minoru Bicycle Lanes	Provide bicycle lane from Granville Avenue to Alderbridge Way	\$190	City Forces	Completed	Completed
P.10402	Lulu West Waterworks Area	St. Albans Area Watermain Replacement & Drainage Upgrades	\$3,851	Completed	Completed	March, 2011
P.10301	East Richmond Irrigation Improvements and Drainage Upgrades	Phase IV :Sidaway - Stundell Rd to Francis Rd, Francis - Sidaway to No. 6, Granville - Sidaway to No. 6	\$750	Completed	Completed	Completed
P.10404	Lulu West Waterworks Area	Lucas, Lunen, Lucano, Lurgan & Lundy Watermain Replacement	\$689	Completed	Completed	February, 2011
P.10601	Fraser Sanitary Sewer Area	Hamilton Pump Station and Sewers	\$1,316	Completed	Completed	March, 2011

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Attachment 1 (Cont'd)

2010 Capital Construction Program Update  
Engineering Design and Construction

Project No.	Project Name	Scope of Work	Capital Funding (\$1000)	Proposed Tender Date	Scheduled Contract Start	Scheduled Contract Completion
P.10302	Canal Stabilization Program	No 3 Road and No. 8 Road Canal Stabilization Program	\$80	City Forces	June, 2011	August, 2011
P.10304	No. 7 Road South Drainage Area	No. 7 Road South Pump Station Outfall Upgrade	\$40	City Forces	January, 2011	July, 2011
P.10303	Woodward Slough Drainage Area	No. 3 Road South Pump Station Intake Screen Upgrade	\$400	Completed	Completed	February, 2011
P.10603	Terra Nova Sanitary Sewer Area	Sanitary Sewer Rehabilitation Phase	\$800	August, 2011	September, 2010	December, 2011
P.10401	Lulu West Waterworks Area	Bonavista Area Watermain Replacement & Drainage Upgrades	\$3,730	Completed	Completed	March, 2011
P.10403	Hamilton Waterworks Area	23,000 Block Dyke Road Watermain	\$120	City Forces	April, 2011	June, 2011
P.10602	City Centre Sanitary Sewer Area	Van Home Sanitary Sewer Upgrade	\$998	February, 2011	March, 2011	June, 2011
P.08310	Hamilton Drainage Area	20800 River Road Ditch Upgrades	\$75	City Forces	June, 2011	July, 2011
P.10201	No. 4 Road Rehabilitation	Rehabilitate No. 4 Road between Westminster Highway and Granville Avenue	\$574	Completed	Completed	Completed
P.10501	South Dike Seismic Upgrade	No. 4 Road to No. 5 Road	\$631	Pending subject to grant funding		
<b>TOTAL</b>			<b>\$30,683</b>			

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2009 Capital Construction Program Update  
Engineering Design and Construction

Project No.	Project Name	Scope of Work	Capital Funding(\$1000)	Proposed Tender Date	Scheduled Contract Start	Scheduled Contract Completion
P 05204	Lansdowne Road Undergrounding	Hydro, Teus, Shaw Undergrounding on Lansdowne Rd - No. 3 Rd to Cooney Rd	\$1,500	Completed	Completed	Completed
P 08402	Montrose Area Watermain Replacement	Rosevale Rd, Rosehill Dr., Roselma Cr & Pl, Rosebrook Rd, Rosemary Ave, Rosebank Cr, Rosecroft Cr, Rosedene Cr & Cr, Rosewell Ave, Ruskin Rd & Pl, Leonard Rd & Pl	\$2,225	Completed	Completed	Completed
P 04301	Horseshoe Slough Drainage Upgrade	Shell & Steveston Irrigation Screens & Pump Removal, Intake Screen Upgrade at Horseshoe Slough Pump Station	\$500	Completed	Completed	Completed
P 07302	Gilbert North Drainage Area Assessment and Upgrade	Garden City Road - Westminster Highway to Lansdowne Rd	\$955	Completed	Completed	Completed
P 09202	2009 Paving Program	Various Locations - City Wide	\$3,250	Completed	In Progress	Completed
P 09301	East Richmond Irrigation Improvements and Drainage Upgrades	Phase 3 - Granville Ave from No. 7 Road to Nelson Road	\$2,000	Completed	Completed	Completed
F 05203	Transportation Bicycle Lane Program	Shell Road Bike Lanes & Parks Trail - Steveston Highway to Athabasca Drive	\$721	City Forces	Completed	Completed
P 06607	Terra Nova Sanitary Sewer Area	Blundell Road - 225m of 450mm Forcemain from No. 1 Road to Frnbisher Drive	\$695	Completed	Completed	Completed
P 09205	Lansdowne Road Extension	Lansdowne Road Extensions complete with Utility Upgrades from Gilbert Road to Hollybridge Way	\$3,005	Completed	Completed	Completed
P 08204	Van Horne Pedestrian and Bicycle Path	Van Horne Way From Great Canadian Way to River Drive	\$255	Completed	Completed	Completed
P 08308	Gilbert North Drainage Area Assessment and Upgrade	Drainage Upgrades - Westminster Highway and No. 3 Road Intersection	\$250	City Forces	Completed	Completed
P 09201	4th Avenue Walkway	Steveston Highway to Chatham Street	\$110	City Forces	Completed	Completed
P 08303	Terra Nova Drainage Area Upgrades	Linfield Gate	\$111	Completed	Completed	Completed
P 08605	Shellmont Sanitary Sewer Area	Shell Road - 100m of 400mm Forcemain	\$140	Completed	Deferred	
P 06603	City Centre Sanitary Sewer Area	Upgrade Elmbridge Sanitary Pump Station	\$600	City Forces	In Progress	March, 2010
P 08401	Lulu East Waterworks Area	Old Westminster Highway, East of Overpass	\$650	Completed	Completed	Completed
P 08306	Cambie Road Drainage Pump Station Upgrade	Replace Cambie Road PS to improve reliability and pumping capacity. Construct 55m box culvert on Cambie Road	\$2,847	Completed	In Progress	January, 2010
P 08602	Bridgeport Sanitary Sewer Area	Van Horne, Brighthouse, Jones and Richmond Centre Upgrades	\$1,000	City Forces	In Progress	March, 2010
P 08401	Lulu East Waterworks Area	No. 8 Road	\$187	Completed	Completed	Completed
P 09404	Lulu North Waterworks Area	Sparwood Pl., Tuttle Ave, Patterson Rd., Bergen Dr.	\$725	Completed	In Progress	January, 2010
P 09403	Lulu North Waterworks Area	Cambie Road & No. 6 Road	\$1,530	Completed	Completed	Completed

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2009 Capital Construction Program Update  
Engineering Design and Construction

Project No.	Project Name	Scope of Work	Capital Funding(x1000)	Proposed Tender Date	Scheduled Contract Start	Scheduled Contract Completion
P.09403	Lulu North Waterworks Area	Garden City from Westminster Hwy to Alberta Road	\$200	Completed	Completed	Completed
P.08403	Lulu West Waterworks Area	Barnberton Dr, Goldstream Dr, Malahat Ave, Manning Crl, Bromley PL, Forillon Pl, Waterloo Dr.	\$1,295	Completed	Completed	Completed
P.08407	Lulu North Waterworks Area	No. 3 Road - Westminster Highway to Granville Avenue	\$4,550	In Progress	In Progress	July, 2010
P.08403	Lulu West Waterworks Area	Ash St, Glenacres Dr, Pendlebury Rd, Palmer Rd	\$1,377	City Forces	In Progress	January, 2010
P.07602	City Centre Sanitary Sewer Area	Upgrade Eckersly A, Construct Forcemain and Gravity Sewer on Anderson Rd. St. Albans Forcemain	\$3,407	Completed	March, 2010	August, 2010
P.08302	West Cambie Drainage Upgrades	Garden City Road - Alderbridge Way to Cambie Road	\$1,191	In Progress	June, 2010	September, 2010
P.08307	No. 4 Road Drainage Pump Station Upgrade	Upgrade No. 4 Road Pump Station	\$4,810	In Progress	In Progress	September, 2010
P.09406	Lulu North Waterworks Area	Minoru Park Watermain Replacement	\$250	City Forces	Completed	Completed
	Canada Line Restoration Project	No. 3 Road from Bridgeport Road to Granville Avenue	\$25,000	Completed	Completed	Completed
P.09207	Minoru Bicycle Lanes	Provide bicycle lane from Granville Avenue to Alderbridge Way	\$113	City Forces	April, 2010	May, 2010
P.08304	Peace Arch Area Drainage Upgrades	Seahurst Lane Drainage Upgrades	\$675	City Forces	April, 2010	June, 2010
P.09203	NIC Lane Improvements	North of Williams Road - No. 4 Rd to Shell Rd	\$1,311	January, 2010	March, 2010	July, 2010
P.09402	Hamilton Waterworks Area	Gilley Road - Westminster Hwy to East end	\$601	April, 2010	May, 2010	September, 2010
P.07401	Sea Island Waterworks Area	Airport Road	\$785			
P.09204	Park Road Extension	Park Road Extension from Cooney Road to Eckersly Road	\$1,900		Development Driven	
P.08606	City Centre Sanitary Sewer Area	Construction new Sanitary Pump Station c/w forcemain and gravity Sewers north of existing Elmbridge PS	\$3,300		Development Driven	
		<b>TOTAL</b>	<b>\$73,963</b>			

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Attachment 1 (Cont'd)

2008 Capital Construction Program Update  
Engineering Design and Construction

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Project No.	Project Name	Scope of Work	Eng.	Budget (x1000)	Projected Cost to Complete (x1000)	Proposed Tender Date	Scheduled Contract Start	Scheduled Contract Completion
P.07504	South Dike Upgrades	No. 7 Road to 970m East	JY	\$1,371	\$1,371	Completed	Completed	Completed
P.06601	City Centre/Bridgport Sanitary Sewer Rehab	Trenchless and External Sewer Repairs	JY	\$600	\$600	Completed	Completed	Completed
P.07301	East Richmond Drainage Area Assessment and Upgrade (2007)	Drainage Sewer Assessment and Upgrade	JY	\$1,000	\$1,000	Completed	Completed	Completed
P.06402	Aztec Area Drainage and Watermain Upgrades	Watermain Replacement & Drainage Improvements - Dallyn Road	JY	\$1,700	\$1,700	Completed	Completed	Completed
P.07402	Lulu East Waterworks Area	Kartner Road & Fedaruk Road	JY	\$453	\$453	City Forces	Completed	Completed
P.08301	Aragon Lane Drainage	Install New Lane Drainage	JY	\$175	\$175	City Forces	Completed	Completed
P.07204	Elmbridge/Holybridge/Gilbert Rd Intersection Improvements	Intersection Improvements & Signalization	JY	\$425	\$425	City Forces	Completed	Completed
P.07405	Lulu West Waterworks Area	Lancing Subdivision Miscellaneous Roads	JY	\$2,117	\$2,117	Completed	Completed	Completed
P.06405	Lulu West Waterworks Area	Mersey Drive, Rochdale Drive, Southport Road, Dennis Crescent, Swinton Crescent	JY	\$804	\$804	Completed	Completed	Completed
P.05405	2006 Maddocks Subdivision	Watermain Replacement	JY	\$473	\$473			
P.07306	Gilbert North Area Drainage Upgrades	Comstock Drainage PS	JY	\$150	\$150	City Forces	Completed	Completed
P.06604	Achroyd Road Sanitary Pump Station Upgrade	Sanitary Pump Station Reconstruction	JY	\$1,530	\$1,530	Completed	Completed	Completed
P.08201	2005 Asphalt Flaying Program	Various Locations	JY	\$3,200	\$3,200	Completed	Completed	Completed
P.08309	Mid-Island Dike Study	Mid-Island Dike Study	JY	\$150	\$150	Completed	Study In Progress	
P.05204	Lansdowne Rd - No. 3 to Cooney	Hydro, Telus, Shaw Undergrounding/Beautification	JY	\$1,186	\$1,186		In Progress - Development Driven	
P.08202	Intersection Improvements	Garden City/Ferndale Intersection - Southbound to Eastbound left turn bay	JY	\$93	\$93	City Forces	Completed	Completed
P.08305	East Richmond Drainage Upgrades & Irrigation Improvements - Phase 2	Granville & Francis, Sideway - No. 5 Rd & Blundell Rd, No. 6 Rd - No. 7 Rd	JY	\$592	\$592	Completed	Completed	Completed
P.08402	Montrose Area Watermain Replacement	Rosevale Rd, Rosehill Dr., Roselea Cr & Pl, Rosebrook Rd, Rosemary Ave, Rosebank Cr, Rosacroft Cr, Rosedene Cr & Cr, Rosewall Ave, Ruskin Rd & Pl, Leonard Rd & Pl	JY	\$2,225	\$2,225	Completed	In Progress, November 2008	March, 2009
P.08312	No. 2 Road Box Culvert Replacement	South of Steveston Highway	JY	\$950	\$950	Completed	In Progress, November 2008	January, 2009
P.04301	Horseshoe Slough Drainage Upgrade	Shell & Steveston Irrigation Screens & Pump Removal	JY	\$500	\$500	Completed	February, 2009	June, 2009
P.08607	Terra Nova Sanitary Sewer Area	Blundell Road - 225m of 450mm Forcemain from No. 1 Road in Frobisher Drive	JY	\$425	\$425	In Progress	March, 2009	August, 2009
P.07302	Gilbert North Drainage Area Assessment and Upgrade	Garden City Road - Westminster to Lansdowne Rd	JY	\$2,189	\$2,189	Completed	March, 2009	August, 2009



Attachment 1(Cont'd)

P.05203	Shell Rd - Athabasca to Horseshoe Slough	Bike Lanes & Parks Trail	JY	\$1,109	\$1,109	January, 2009	March, 2009	October, 20
P.05404	Lulu North Waterworks Area	Spanwood Pl., Tuttle Ave, Paterson Rd., Bergen Dr.	JY	\$725	\$725	January, 2009	March, 2009	October, 20
P.06204	Van Horne Pedestrian and Bicycle Path	Van Horne Way From Great Canadian Way to River Drive	JY	\$255	\$255	February, 2009	April, 2009	August, 20
P.06306	Cambie Road Drainage Pump Station Upgrade	Replace Cambie Road PS to 4.2 cms. Construct 55m box culvert on Cambie Road	JY	\$2,847	\$2,847	March, 2009	May, 2009	March, 20
P.06403	Lulu West Waterworks Area	Ash St., Glenaces Dr, Pendlebury Rd., Palmer Rd.,	JY	\$1,283	\$1,283	City Forces	May, 2009	October, 20
P.07602	City Centre Sanitary Sewer Area	Upgrade Eckersty A. Construct Forcemain and Gravity Sewer on Anderson Rd.	JY	\$2,090	\$2,090	May, 2009	June, 2009	March, 20
P.07602	Bennett West Sanitary Pump Station	Forcemain Upgrade	JY	\$700	\$700			
P.08307	No. 4 Road Drainage Pump Station Upgrade	Replace No. 4 Road PS to 7.0 cms.	JY	\$4,810	\$4,810	September, 2009	February, 2009	July, 201
P.06602	West Cambie Sanitary Sewer Area	Replace Van Horne Sanitary PS	JY	\$1,000	\$1,000	October, 2009	March, 2010	December, 2
P.08306	Gibart North Drainage Area Assessment and Upgrade	Westminster Highway - No. 3 Road to Cooney Road	JY	\$1,700	\$1,700	Deferred until 2010		
P.07401	Sea Island Waterworks Area	Airport Road	JY	\$785	\$785	Deferred until Canada Line Construction is complete in this area		
<b>TOTAL</b>				<b>\$39,612</b>	<b>\$39,612</b>			

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Project No	Project Location	Scope of Work	Eng.	Budget (\$'000)	Projected Cost to Complete	Proposed Tender Date	Scheduled Contract Start	Scheduled Contract Completion
P-05605	Sanitary Sewer P.5. at Cook/Burwell	Pump Station, Sanitary Sewer and Forcemain Rehabilitation	JY	\$1,481	\$1,200	Completed	Completed	Completed
P-05603	Constance Ave Watermain Replacement	Watermain Replacement at Various Locations	JY	\$1,131	9850	Completed	Completed	Completed
P-05302	Steeleson Highway Box Culvert	Box Culvert Installation	JY	\$406	300	Completed	Completed	Completed
P-07504	Dike Upgrade	Dike Upgrade Between No. 7 and No. 8 Roads	JY	\$1,371	\$1,371	Completed	Completed	Completed
P-54209	Westminster Hwy - Hwy 91 Interchange to McMillan	Road widening to 4 Lanes	JY	\$6,525	\$6,525	Completed	Completed	Completed
P-07403	Linn West Waterworks Area	Pinewell Crescent, Ash Street, Fairholt Crescent, Fairholt Place, Fairfax Place	JY	\$1,237	\$1,237	City Forces	Completed	Completed
P-07484	Alderbridge water main replacement	Replacement of Asbestos Cement Water Main	JY	\$100	\$100	City Forces	Completed	Completed
P-07201	Westminster Hwy Bicycle Lanes - No. 8 Road to Nelson Road	Bicycle Lanes Construction	JY	\$232	\$200	Completed	Completed	Completed
P-07403	Pease Arch Drainage Area Assessment and Upgrade	Seabrook Crescent Drainage Upgrade	JY	\$125	\$125	Completed	Completed	Completed
P-05305	No. 1 Road Linnway - Firths to Williams	Linnway Construction	JY	\$1,200	\$1,200	Completed	Completed	Completed
P-07305	Regent Street Drainage LASP	Ditch Infill - 3640 to 3640 Regent Street, 11333 2nd Avenue	JY	\$84	\$84	Completed	Completed	Completed
P-07301	City Centre/Bridgport Sanitary Sewer Rehab	Trenchless and External Sewer Repairs	JY	\$600	\$600	Completed	In Progress April, 2007	May, 2008
P-07304	Regent Street Drainage LASP	Ditch Infill - 3231 to 3251 Regent Street	JY	\$185	\$185	Completed	Completed	Completed
P-07301	2007 Asphalt Paving Program	Asphalt Paving	JY	\$2,590	\$2,590	Completed	Completed	Completed
P-05303	Francis Road Drainage Pump Station	Pump Station Renovation	JY	\$1,855	\$1,855	Completed	Completed	Completed
P-05302	Lucas Road Drainage Upgrade	Watermain replacement & Drainage Improvements	JY	\$600	\$600	Completed	Completed	Completed
P-07301	East Richmond Drainage Area Assessment and Upgrade	Drainage Sewer Assessment and Upgrade	JY	\$1,000	\$1,000	Completed	In Progress December, 2007	March, 2008
P-04301	Horseshoe Slough Drainage Upgrade	Irrigation Screens & Pump Removal	JY	\$579	\$579	City Forces	In Progress December, 2007	February, 2008
P-06405	Linn West Waterworks Area	Mersey Drive, Rochdale Drive, Southport Road, Dennis Crescent, Swinton Crescent	JY	\$804	\$904	Completed	In Progress January, 2008	July, 2008
P-05405	2000 Madsacks Subdivision	Watermain Replacement	JY	\$473	\$473	Completed	In Progress January, 2008	July, 2008
P-07302	Gilbert North Drainage Area Assessment and Upgrade	Westminster Hwy - No. 3 Road to Cooney Road - Garden City Road - Westminster to Lansdowne, Comstock Area	JY	\$2,469	\$2,480	In Progress	February, 2008	June, 2008
P-05402	Active Area Drainage and Watermain Upgrades	Watermain Replacement & Drainage Improvements - Dailyn Road	JY	\$1,400	\$1,400	Completed	In Progress September, 2007	April, 2008
P-06604	Ackroyd Road Sanitary Pump Station Upgrade	Sanitary Pump Station Reconstruction	JY	\$1,400	\$1,400	Completed	In Progress January, 2007	April, 2008
P-07204	Elmhurst/Hwy 91/Gilbert Rd Intersection Improvements	Intersection Improvements & Signalization (3 Phases)	JY	\$425	\$425	City Forces	In Progress November, 2007	May, 2008
P-07405	Linn West Waterworks Area	Lansing Subdivision Miscellaneous Roads	JY	\$2,117	\$2,117	December, 2007	February, 2008	July, 2008
P-07402	Linn East Waterworks Area	Karber Road & Felouk Road	JY	\$453	\$453	City Forces	February, 2008	May, 2008
P-05204	Lansdowne Rd - No. 3 to Cooney	Hydro, Tels, Show Undergrounding/Rehabilitation	JY	\$1,148	\$1,148	December, 2007	February, 2008	May, 2008
P-07501	Dike Upgrades	Various Locations	JY	\$250	\$250	June, 2008	July, 2008	September, 2008
P-07401	Sea Island Waterworks Area	Airport Road	JY	\$786	\$786	TBD	Inferred until Canada Line Construction is completed in this area.	
P-05203	Ship Rd - Alvarados to Horseshoe Slough	Dike Lanes, Parks Trail, Canal Bounding	JY	\$1,300	\$1,300	TBD	TBD	CN Property being Sold
	<b>TOTAL</b>			<b>\$54,111</b>	<b>\$53,577</b>			

2006 Construction Program Year End Summary										
Engineering Design and Construction										
Project No.	Project Location	Scope of Work	Engr.	Budget (existing)	Projected Cost to Complete	Proposed Tender Date	Scheduled Construction Start	Scheduled Construction Completion		
P.05301	Dyke Road Rip-Rap Upgrade	Dyke Upgrade South End of Gilbert	JY	\$130	\$130	Completed	Complete	Complete		
P.05251	Garden City Bike Lanes	Capstan to Cambie	JY	\$230	\$230	City Forces	Complete	Complete		
P.04301	Horseshoe Slough	Drainage Improvements	JY	\$2,776	\$2,776	Completed	Complete	Complete		
P.04465	Maddocks Subdivision (Phase I)	Watermain Replacement	JY	\$811	\$811		Complete	Complete		
P.05405	Maddocks Subdivision (Phase II)	Watermain Replacement	JY	\$1,061	\$1,061		Complete	Complete		
P.05602	Kwantlen Sanitary Foremain	Foremain Replacement	JY	\$100	\$89	Completed	Complete	Complete		
P.05602	Ash Sanitary Pump Station Rehabilitation	Watermain Replacement	JY	\$240	\$250	City Forces	Complete	Complete		
P.05406	No. 2 Rd Watermain	Watermain Replacement	JY	\$880	\$460	Completed	Complete	Complete		
P.05210	No. 3 Rd Walkway	Gravel Sidewalk, Stoveston Hwy to Dyke Rd	JY	\$200	\$200	City Forces	Complete	Complete		
P.05201	2006 Paving Program	Asphalt Paving	JY	\$2,086	\$2,086	Completed	Complete	Complete		
P.05401	Broadmoor Phase III Watermain Replacement	Watermain Replacement at Various Locations	JY	\$812	\$912	City Forces	Complete	Complete		
P.05004	Arcadia Sanitary Pump Station Rehabilitation	Sanitary	JY	\$250	\$250	City Forces	In Progress August 22, 2006	December, 2006		
P.05601	City Centre/Bridgport Sanitary Sewer Rehab	Trenchless and External Sewer Repairs	JY	\$600	\$600	Completed	In Progress April 15, 2006	March, 2007		
P.04406	Westminster Hwy - No. 3 Rd to Garden City	Watermain Replacement	JY	\$1,456	\$3,100	Completed	Complete	Complete		
P.04408	Westminster Hwy - No. 4 Rd to Shell Rd	Watermain Replacement	JY	\$1,481	\$1,481	Completed	In Progress July, 2006	December, 2006		
P.05605	Sanitary Sewer P.S. at Cook/Bugwell	Pump Station, Sanitary Sewer and Foremain Rehabilitation	JY	\$1,481	\$1,481	Completed	In Progress July, 2006	February, 2007		
P.04301	Horseshoe Slough Drainage Upgrade	Screens, Irrigation Control and Pipe Installation	JY	\$579	\$579	Completed	In Progress August, 2006	May, 2007		
P.04205	Westminster Hwy - Hwy 91 Interchange to McMillan	Road widening to 4 Lanes	JY	\$6,525	\$5,928	Completed	In Progress September, 2006	February, 2007		
P.05302	Stevenson Highway Box Culvert	Box Culvert Installation	JY	\$400	\$400	Completed	In Progress September, 2006	March, 2007		
P.05403	Cemastock Area Watermain Replacement	Watermain Replacement at Various Locations	JY	\$1,131	\$1,131	Completed	November, 2005	December, 2005		
P.05205	No. 1 Road Laneway - Francis to Williams	Laneway Construction	JY	\$1,200	\$1,200	Completed	December, 2005	May, 2007		
P.05405	2006 Maddocks Subdivision	Watermain Replacement	JY	\$473	\$473	December, 2006	January, 2007	July, 2007		
P.05204	Landsdowne Rd - No. 3 to Cooney	Hydro, Teles, Straw Undergrouting/Soilification	JY	\$1,148	\$1,148	February, 2007	April, 2007	September, 2007		
P.05203	Shell Rd - Aldrich to Horseshoe Slough	Box Lanes, Parks Trail, Canal Batching	JY	\$1,300	\$1,300	February, 2007	April, 2007	September, 2007		
P.05604	Aukroyl Road Sanitary Pump Station Upgrade	Sanitary Pump Station Reconstruction	JY	\$1,000	\$1,000	December, 2006	February, 2007	October, 2007		
P.05302	Lucas Road Drainage Upgrade	Drainage Improvements	JY	\$600	\$600	January, 2007	March, 2007	June, 2007		
P.05402	Ashby Area Drainage and Watermain Upgrade	Drainage Improvements	JY	\$500	\$500	February, 2007	March, 2007	July, 2007		
P.05303	Francis Road Drainage Pump Station	Pump Station Renovation	JY	\$800	\$800	January, 2007	February, 2007	September, 2007		
P.05003	Embridge Sanitary PS Upgrade	Upgrade of Existing Pump Station	JY	\$440	\$440	Await completion of City Centre West Gateway Servicing Requirements				
P.05004	No. 3 Road - Westminster Hwy to Crombie Ave	Watermain Replacement	JY	\$700	\$700	Deferred due to Canada Line				
P.04604	Sanitary Sewer (Francis/Embridge) Pump station	Sanitary Pump Station Construction	JY	\$600	\$600	Development driven				
	<b>TOTAL</b>			<b>\$32,401</b>	<b>\$31,117</b>					

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