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SAANICH PENINSULA WASTEWATER COMMISSION

Notice of Meeting on **Thursday, March 17, 2016 at 8:30 am**

Saanich Peninsula Treatment Plant Meeting Room, 9055 Mainwaring Road, North Saanich, BC

M. Williams (Chair)	P. Wainwright (Vice-Chair)	R. Barnhart	M. Doehnel
C. Graham	M. Lougher-Goodey	C. Stock	M. Thompson
M. Weisenberger	R. Windsor		

AGENDA

1. Approval of Agenda
2. Adoption of Minutes of January 21, 2016
3. Chair's Remarks
4. Presentations/Delegations
 - No one has registered to speak
5. District Energy System – Energy Rate Price Update (Report #SPWWC 2016-01)
6. Biosolids Land Application Impact Study Considerations (Report #EPR2016-08)
7. Core Area Wastewater/Saanich Peninsula Wastewater Services – Joint Initiatives Update (Report #SPWWC 2016-02)
8. Request to Waive Saanich Peninsula Water and Wastewater Development Cost Charges (Report #SPWWC 2016-03)
9. New Business
10. Adjournment

Distribution:

Staff/Town Halls, etc.

R. Lapham
L. Hutcheson
R. Sharma
A. Orr
J. Poncelet
G. Harris

T. Robbins
M. Cowley
D. Robson
I. Sander
M. Montague
Commission file

P. Robins, Central Saanich
D. McAllister, Central Saanich
R. Buchan, North Saanich
P. O'Reilly, North Saanich
R. Humble, Sidney
T. Tanton, Sidney
Tsartlip First Nation



Making a difference...together

**Minutes of a Meeting of the Saanich Peninsula Wastewater Commission
Held January 21, 2016 in the Saanich Peninsula Treatment Plant Meeting Room,
9055 Mainwaring Road, North Saanich, BC**

PRESENT

COMMISSIONERS: R. Barnhart, M. Doehnel, C. Graham, M. Lougher-Goodey, C. Stock, M. Thompson, P. Wainwright, M. Weisenberger, M. Williams

STAFF: T. Robbins, General Manager, Integrated Water Services; M. Cowley, Senior Manager, Infrastructure Engineering & Operations; D. Robson, Manager, Saanich Peninsula & Gulf Island Operations; G. Harris, Senior Manager, Environmental Protection; M. Montague (recorder)

T. Robbins called the meeting to order at 9:48 am and welcomed members, staff and guests to the meeting. He extended his thanks to M. Williams for his role as Chair of the Saanich Peninsula Wastewater Commission in 2015 and P. Wainwright for his role as Vice-Chair in 2015.

1. ELECTION OF CHAIR AND VICE-CHAIR

T. Robbins called for nominations for the Chair of the Saanich Peninsula Wastewater Commission for 2016.

- M. Lougher-Goodey nominated M. Williams.

T. Robbins called a second and third time for further nominations and, as there were none, declared M. Williams elected as Chair of the Saanich Peninsula Wastewater Commission for 2016 by acclamation.

M. Williams assumed the Chair and called for nominations for the position of Vice-Chair of the Saanich Peninsula Wastewater Commission for 2016.

- M. Lougher-Goodey nominated P. Wainwright.

M. Williams called a second and third time for further nominations and, as there were none, declared P. Wainwright elected as Vice-Chair of the Saanich Peninsula Wastewater Commission for 2016 by acclamation.

2. APPROVAL OF AGENDA

MOVED by Commissioner Stock, **SECONDED** by Commissioner Wainwright,
That the Saanich Peninsula Wastewater Commission approve the agenda.

CARRIED

3. ADOPTION OF MINUTES

MOVED by Commissioner Graham, **SECONDED** by Commissioner Stock,
That the Saanich Peninsula Water Commission adopt the minutes of the November 19,
2015 meeting.

CARRIED

4. CHAIR'S REMARKS

The Chair had no remarks.

5. PRESENTATIONS/DELEGATIONS

There were no presentations/delegations.

6. RESOLUTIONS AS AMENDED

T. Robbins noted that the motions from the Saanich Peninsula Wastewater Commission were postponed at the December 9, 2015 meeting of the CRD Board. The motions were considered at the January 13, 2016 meeting of the CRD Board and were amended as noted in the attached.

MOVED by Commissioner Stock, **SECONDED** by Commissioner Graham,
That the Saanich Peninsula Wastewater Commission appoint the Chair of the Saanich Peninsula Wastewater Commission as the spokesperson during discussions with Director Helps, as Chair of the Core Area Liquid Waste Management Committee, assisted when necessary by the Vice-Chair.

CARRIED

MOVED by Commissioner Wainwright, **SECONDED** by Commissioner Stock,
That the Saanich Peninsula Wastewater Commission direct staff to develop a Terms of Reference (TOR) for a follow up study on the land application of biosolids from the Peninsula Treatment Plant to determine whether there are residual contaminants present.

CARRIED

T. Robbins noted that the 2016 budget will need to be amended to add a line item in the amount of \$100,000 for a potential pilot study or research project.

MOVED by Commissioner Lougher-Goodey, **SECONDED** by Commissioner Stock,
That the Saanich Peninsula Wastewater Commission direct staff to amend the 2016 budget to include \$100,000 from the reserve fund towards potential pilot studies or research into disposal of solid waste resulting from the Peninsula Treatment Plant.

CARRIED

7. ACTIONS RESULTING FROM BOARD RESOLUTIONS

The Chair noted that if the Saanich Peninsula is to participate in the public consultation process for the Core Area, one of the public open houses should be held at the Commonwealth Pool and advertised on the Peninsula.

Other topics were suggested for discussion with the Chair of the Core Area Liquid Waste Management Committee.

8. NEW BUSINESS

There was no new business.

9. ADJOURNMENT

MOVED by Commissioner Lougher-Goodey, **SECONDED** by Commissioner Stock,
That the Saanich Peninsula Water Commission meeting be adjourned at 10:25 am.

CARRIED

CHAIR

**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, MARCH 17, 2016**

SUBJECT DISTRICT ENERGY SYSTEM – ENERGY RATE PRICE UPDATE

ISSUE

To update the Saanich Peninsula Wastewater Commission (SPWWC) on the District Energy System (DES) energy rate price update based on current market values.

BACKGROUND

At the June 18, 2015 commission meeting, the commission passed the following motion:

“That the Saanich Peninsula Wastewater Commission direct staff:

1. To continue actively considering any opportunities that arise with potential customers for the DES;
2. To meet PRC staff to discuss the requirement to raise the current energy rate from \$12.015/GJ and to negotiate an increase in the energy rate resulting in a financially neutral position for PRC;
3. Review the energy rate annually and adjust as required to reflect market values; and
4. Re-evaluate the financial situation when major equipment fails, and present the Commission with an evaluation report on the viability of continuing with DES operations.”

Since that time, no new customers have come forward for the DES, two meetings have been held with Panorama Recreation Centre (PRC) staff, and the energy rate has been updated by a mechanical engineering consultant, Geoff Orr, to the end of 2015 and projected forward for the next few years.

The consultant’s energy rate update includes a review of natural gas prices, hydro, and DES billing data and compares it with the estimates that were provided in the Phase 2 DES Cost Benefit Analysis report that was attached to the June 18, 2015 staff report. A copy of the consultant’s recent tech memo update dated March 4, 2016 is attached to this report (**Attachment 1**).

From 2014 to 2015, the average annual effective natural gas rate dropped by 29% (from \$13.883/GJ to 9.852/GJ) and hydro rates have increased by 14.5% (\$0.07682/kWh to \$0.08797/kWh). The net result of these changing rates is that costs are increasing to run the DES system and at the same time costs are decreasing to operate the gas boilers at PRC.

Currently, the DES billing rate to PRC has been set at \$12.015/GJ. In previous years, this rate may have provided some financial benefit to PRC, but now with a much lower gas price it is more expensive for PRC to pay for the DES energy versus just using natural gas boilers at an 85% efficiency rate as shown in the table below.

Year	DES Energy (GJ)	Eff Gas Rate (\$/GJ)	Equiv. Gas @ 85% eff. (GJ)	PanRec Benefit	GHG Reduction (tCO ₂ e)	Break Even (\$/GJ)
2011	4,331	13.600	5,095	\$17,260	254.8	16.00
2012	6,141	13.896	7,225	\$27,489	361.3	16.49
2013	6,505	13.787	7,653	\$28,594	382.6	16.41
2014	6,186	13.883	7,278	\$27,477	363.9	16.46
2015	5,622	9.852	6,615	-\$2,788	330.7	11.52
2016*	6,300	9.000	7,412	-\$8,989	370.6	10.59

* Forecast DES GJ and Eff Gas Rate \$/GJ

In discussing the alternatives with PRC staff, the approach that seemed fair was to maintain the current DES rate of \$12.015 for 2016, and adjust the rate for 2017 based on market conditions later this year during the 2017 budget process. However, PRC staff have indicated that this decision is up to the PRC Commission. Therefore, staff will be presenting a report to the PRC Commission on April 28, 2016.

Updated Cost Benefit Analysis for DES

Previously, the Consultant conducted a cost benefit analysis in his Phase 2 report that considered four financial scenarios for the DES based on historical operating costs, PRC energy consumption, repayment of the capital reserve funds (\$291,453) used to supplement the \$2,989,500 Gas Tax grant required to construct the DES, estimated equipment replacement costs, and long-term energy price projections.

The scenarios ranged from recovering the annual DES operating expenses, foregoing the repayment of the funds borrowed from the capital reserve fund (CRF), and decommissioning of the DES at the end of its service life to recovering operating expenses, repayment of the CRF, and ongoing operation of the DES. In order to achieve the various scenario objectives, the DES billing rate would need to increase from \$12.015/GJ to anywhere from \$15.50/GJ to \$21.20/GJ depending on the objective.

Based on current and future forecasts for the effective gas rate, the consultant's recent analysis indicates that the DES operating expenses would have to be reduced by \$10,000 per year to balance the annual budget, and repayment of the funds borrowed from the CRF is not likely. Should the DES system continue to operate at a financial loss each year, consideration should be given to discontinuing the operation of the DES once the 10 year operating condition, (as specified in the Gas Tax Agreement), has been fulfilled. Decommissioning the DES prior to the 10-year condition will result in repayment of the grant funds.

ALTERNATIVES

Alternative 1

That the Saanich Peninsula Wastewater Commission:

1. Recommend to the Panorama Recreation Commission to maintain the current DES rate at \$12.015/GJ for 2016 and adjust the rate for 2017 (based on market conditions) as part of the 2017 budget process, and
2. Direct staff to:
 - a. Review the energy rate annually at each budget cycle and adjust as required to reflect market values;

- b. Explore ways to reduce the DES operating expenses as much as possible;
- c. Consider non-repayment of the funds that were borrowed from the CRF which supplemented the capital cost construction of the DES; and
- d. Re-evaluate the financial situation when major equipment fails or when the 10-year operating condition commitment has been met, and present the Commission with an evaluation report on the viability of continuing with DES operation.

Alternative 2

That the Saanich Peninsula Wastewater Commission direct staff to provide additional information.

IMPLICATIONS

Alternative 1 – The PRC is the only customer for the DES and it was noted by PRC staff that there was an expectation that for the PRC to join and make capital investments towards DES that there would be some financial benefit to PRC. From 2011 to 2014, there had been some initial financial benefit to PRC, but in 2015 and beyond (due to low natural gas prices), this doesn't seem possible at the current DES rate. Therefore, PRC staff have indicated that the PRC Commission may support holding the DES rate at \$12.015/GL for 2016, (since that rate was included in the PRC and SPWW budgets), but there would be an expectation that the rate would be lowered in 2017 (based on market conditions) as part of the 2017 budget process.

Exploring ways to reduce the operating expenses of the DES in 2017 will be key to minimizing potential deficits. However, it is unlikely that the funds borrowed from the CRF can be repaid, but there is still a net environmental benefit from using the DES as it has reduced our GHG emissions by about 370 tCO_{2e} per year.

Even so, the viability of operating the DES after the 10-year operating condition has been met should be evaluated if the DES continues to run deficits.

Alternative 2 – Staff will present a report addressing the request for information in a subsequent staff report.

CONCLUSION

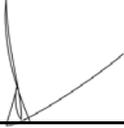
The District Energy System's financial viability with the Panorama Recreation Centre as the only client is very dependent on energy market conditions. Maintaining the Panorama Recreation Centre as a client is crucial so that operation can continue to satisfy the funding grant requirements.

RECOMMENDATION

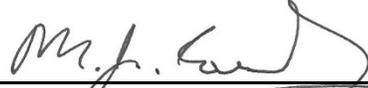
That the Saanich Peninsula Wastewater Commission:

1. Recommend to the Panorama Recreation Commission to maintain the current DES rate at \$12.015/GJ for 2016 and adjust the rate for 2017 (based on market conditions) as part of the 2017 budget process, and
2. Direct staff to:
 - a. Review the energy rate annually at each budget cycle and adjust as required to reflect market values;
 - b. Explore ways to reduce the DES operating expenses as much as possible;
 - c. Consider non-repayment of the funds that were borrowed from the CRF which supplemented the capital cost construction of the DES; and

- d. Re-evaluate the financial situation when major equipment fails or when the 10-year operating condition commitment has been met, and present the Commission with an evaluation report on the viability of continuing with DES operation.



Dale Puskas, P.Eng.
Project Engineer, Infrastructure Engineering



Malcolm Cowley, P.Eng.
A/Senior Manager, Infrastructure Engineering
Concurrence



Ted Robbins B.Sc., C.Tech.
General Manager, Integrated Water Services
Concurrence

DP/MC:mm
Attachment - 1

Memorandum

March 4, 2016

To: Malcolm Cowley, P. Eng.
Acting Senior Manager, Infrastructure Engineering
CRD Integrated Water Services

cc: Dale Puskas, P. Eng., Project Engineer, CRD Integrated Water Services

From: Geoff Orr

Subject: SPWWTP District Energy System Billing Review

Objective

To provide an update for the annual DES energy rate to ensure District Energy System cost recovery while also demonstrating a financial benefit to PanRec. As natural gas prices continue to decline satisfying this objectives becomes increasingly difficult.

Background

The Saanich Peninsula Wastewater Treatment Plant District Energy System (DES) was commissioned in February 2011 and has been in operation for the past 5 years. Heat extracted from the treatment plant effluent stream provides heat to the Panorama Recreation Centre (PanRec) pool building via the Miniplant heat pump located at PanRec.

In June 2014 the Capital Regional District through Integrated Water Services engaged the services of Geoff Orr, Mechanical Engineer to perform a two-phase assessment of the District Energy System. The March 13, 2015 Phase 2 report titled *Cost Benefit Analysis* explored the financial viability and environmental benefit of the District Energy System and a PanRec business-as-usual case.

At the June 15, 2015 Saanich Peninsula Wastewater Commission meeting a staff report titled *District Energy System Project Update – Phase 2 Cost Benefit Analysis* was considered by the Commission. The relevant portions of the resulting resolution are:

That the Saanich Peninsula Wastewater Commission direct staff:

- 2. To meet with PRC staff to discuss the requirement to raise the current energy rate from \$12.015/GJ and to negotiate an increase in the energy rate resulting in a financially neutral position for PRC;*
- 3. Review the energy rate annually and adjust as required to reflect market values;*

This memorandum partially responds to item 2 of the resolution by providing Integrated Water Services with updated analysis for Phase 2 report sections 5.1 Energy Consumption, Pricing and Forecast, 5.3.3 Future Financial Viability - Scenarios and 5.4 PanRec Business-As-Usual Case.

Discussion

The analysis for the Phase 2 report incorporated natural gas, hydro, and DES billing data up until June 2014. This updated analysis will include billing data for the period July 2014 to December 2015.

Energy Pricing and Forecast

Updated Phase 2 report charts for PanRec natural gas consumption and Miniplant hydro consumption are shown below in Figures 1-3. To paraphrase portions of the Phase 2 report the lift between effective gas rate without tax and the CRD effective gas rate is made up of various taxes and fees: Innovative Clean Energy Levy (0.4%), Motor Fuel Tax, Carbon Tax (\$1.4898/GJ), Management Fee (\$0.10/GJ),

Franchise Fee (3.09%), and Provincial Sales Tax (7%). The taxes and fees for the period 2013-2015 ranged from \$1.8/GJ to \$2.1/GJ.

The Motor Fuel Tax and Basic Monthly Charge ended on December 31, 2014 and were replaced with a fixed monthly fee totalling \$210.70.

The gas brokerage supply rate stabilized and decreased during the July 2014 – December 2015 period. Average supply rate was \$4.095/GJ (July – December 2014) and \$3.072 (2015).

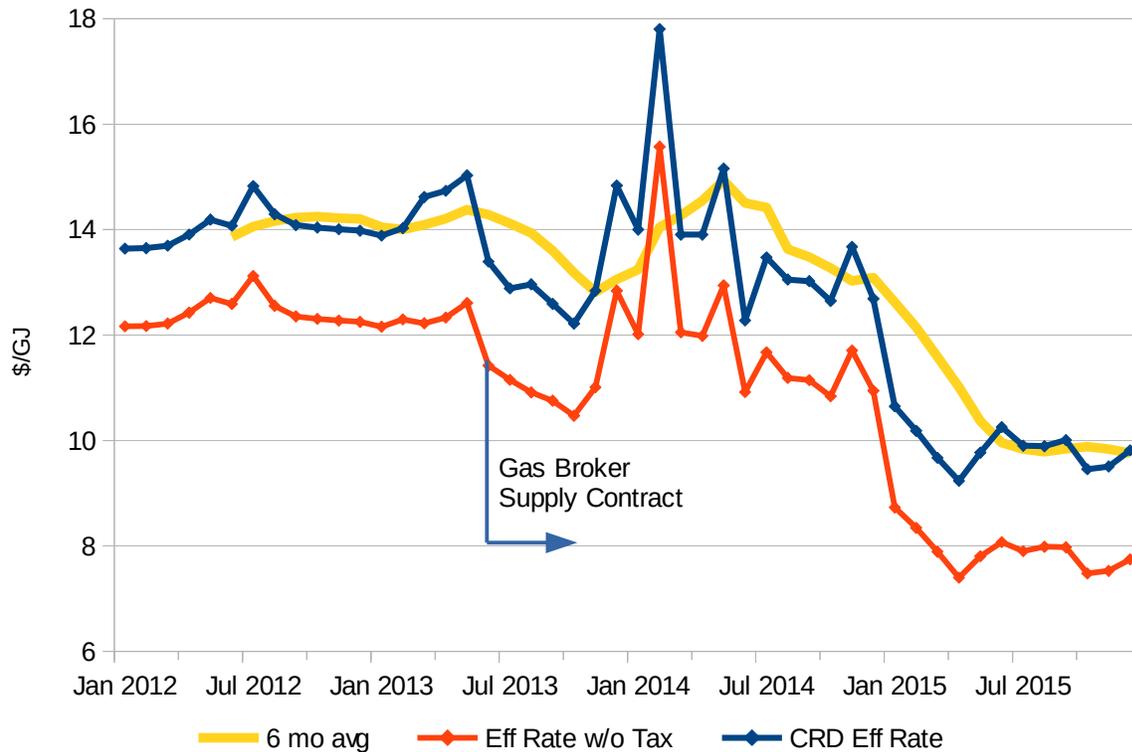


Figure 1. PanRec Monthly Effective Gas Rate

Source: Fortis BC gas bills and gas broker statements

Figure 1. shows that the CRD effective gas rate dropped below \$10/GJ in 2015 with the annual effective rate equalling \$9.852/GJ. The Phase 2 report projected a 2015 effective rate of \$12.98/GJ.

Forecast

The two primary factors responsible for effective gas rate reduction are lower Fortis Vancouver Island (VI) rates as a result of the Common Rate application to BCUC and lower Sumas Hub index prices. The author arrived at the Phase 2 projections for Fortis VI transportation rates for 2015, 2016 and 2017 by using published Fortis information and a followup conversation with a Fortis representative in January 2015. Table 1. shows the difference between the Phase 2 report estimates and the updated figures.

Table 1. Fortis VI Transportation Rate Changes

	2015	2016	2017
Phase 2 Report	16% ↓	6% ↓	6% ↓
Updated Figures	33% ↓	9% ↓	15% ↓

The Phase 2 Natural Gas Price History and Short Term Forecast graph has been revised to reflect price data to the end of 2015 and the updated figures shown in Table 1. The Figure 2. series Fortis VI + Supply represents the effective gas rate without taxes and fees applied.

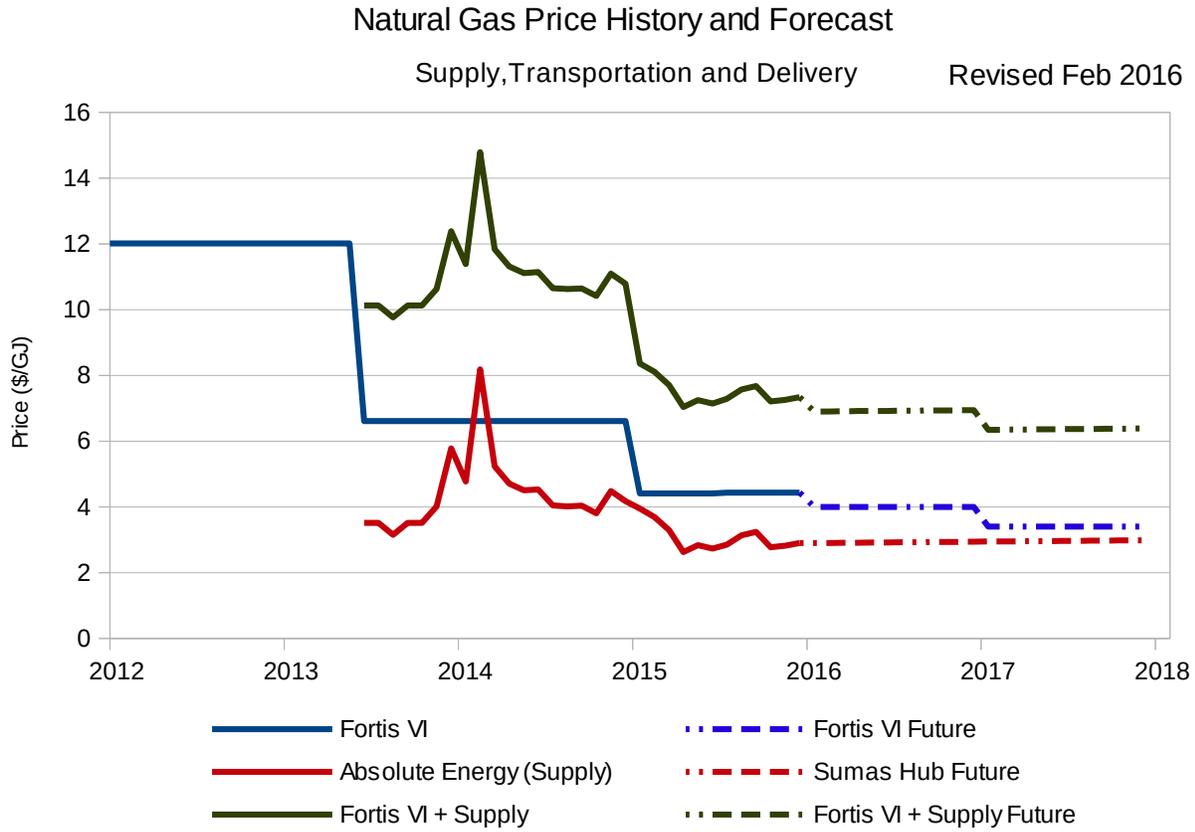


Figure 2. Natural Gas Price History and Short Term Forecast

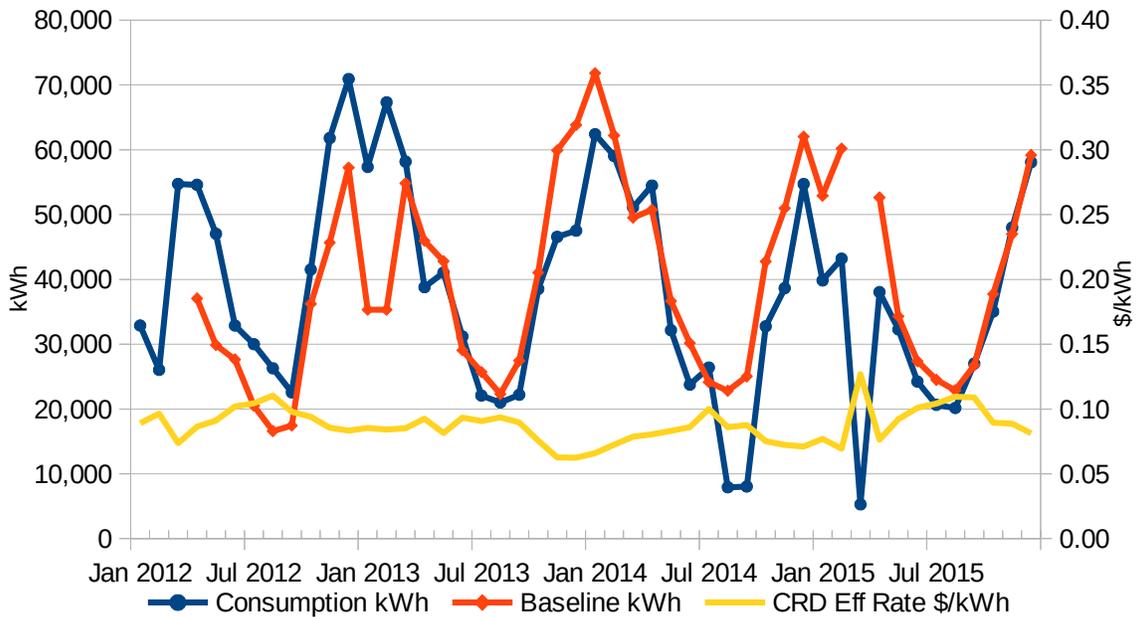


Figure 3. Miniplant Monthly Effective Hydro Rate

Unlike the natural gas scenario Miniplant BC Hydro consumption and price forecast have unfolded largely as projected in the Phase 2 report. Figure 3 shows the updated consumption information.

Consumption figures for August & September, 2014 reflect the power surge that disabled the Miniplant and the March 2015 is low due to an operational event.

PanRec Business-As-Usual

Table 2. has been updated and now covers the period 2011-2016. In addition, a boiler efficiency of 80% and 85% has been used to reflect a range of possible break even rates. The original Table 7. in the Phase 2 report used a more conservative 90% boiler efficiency which results in a lower PanRec break even rate.

Table 2. PanRec Benefit, GHG Reduction and Break Even Rate

Year	DES GJ	Eff Gas Rate \$/GJ	Boiler Eff. @ 80%				Boiler Eff. @ 85%			
			Equiv Gas GJ	PanRec Benefit	GHG tCO2e	Break Even \$/GJ	Equiv Gas GJ	PanRec Benefit	GHG tCO2e	Break Even \$/GJ
2011	4,331	13.600	5,414	\$21,591	270.7	\$17.00	5,095	\$17,260	254.8	\$16.00
2012	6,141	13.896	7,677	\$33,819	383.8	\$17.52	7,225	\$27,489	361.3	\$16.49
2013	6,505	13.787	8,131	\$35,266	406.6	\$17.44	7,653	\$28,594	382.6	\$16.41
2014	6,186	13.883	7,733	\$33,840	386.6	\$17.49	7,278	\$27,477	363.9	\$16.46
2015	5,622	9.852	7,028	\$1,260	351.4	\$12.24	6,615	-\$2,788	330.7	\$11.52
2016*	6,300	9.000	7,875	-\$4,820	393.8	\$11.25	7,412	-\$8,989	370.6	\$10.59
Average	5,848	12.336	7,310	\$20,159	365.5	\$15.49	6,880	\$14,841	344.0	\$14.58

* Forecast DES GJ and Eff Gas Rate \$/GJ

Table 2. shows that the average break even rate for 2011 to 2016 ranges from \$15.49/GJ to \$14.58/GJ for 80% and 85% boiler efficiency. Looking at 2016 specifically the break even rate ranges from \$11.25/GJ to \$10.59/GJ. The second graph in Appendix A shows the cumulative PanRec benefit @85% boiler efficiency.

Table 3. DES Revenue and Expenditure Summary

	2011	2012	2013	2014***	2015	Total
Revenue – Actual**	\$70,336	\$118,894	\$120,353	-\$4,672	\$67,554	\$372,465
Revenue – Reconciled*	\$52,039	\$73,789	\$78,156	\$74,328	\$67,554	\$345,866
Expenditures – Actual	\$34,912	\$93,598	\$74,447	\$92,215	\$75,174	\$370,346
Expenditures – Budget	\$50,000	\$51,302	\$70,649	\$89,846	\$101,361	\$363,158
Billing (GJ)	4,331	6,141	6,505	6,186	5,622	28,785
Avg. Eff Hydro Rate (\$/kWh)		\$0.09015	\$0.08062	\$0.07682	\$0.08797	
Expenditures (\$/GJ)	\$8.06	\$15.24	\$11.44	\$14.91	\$13.37	\$12.87

* Reconciled figures represent corrected billing amounts as part of the Phase 1 report analysis

** Actual figures represent billing amounts derived from annual SPWWS TP operations reports

*** The 2014 actual revenue figure reflects the credit of \$79,000 paid to PanRec

In order for the District Energy System revenue to match expenditures in 2015 the DES rate should have been \$13.37/GJ. There was a noticeable drop in DES energy delivered to PanRec in 2015 and this put upward pressure on the break even DES rate.

With effective gas rates projected to decrease again in 2017 the PanRec break even rate is projected to be \$9.94/GJ (2017). (see Appendix B: Scenario #3 Expected Case)

The first graph in Appendix A provides a visual way to estimate the PRC Break Even Rate for a given effective gas rate and boiler efficiency.

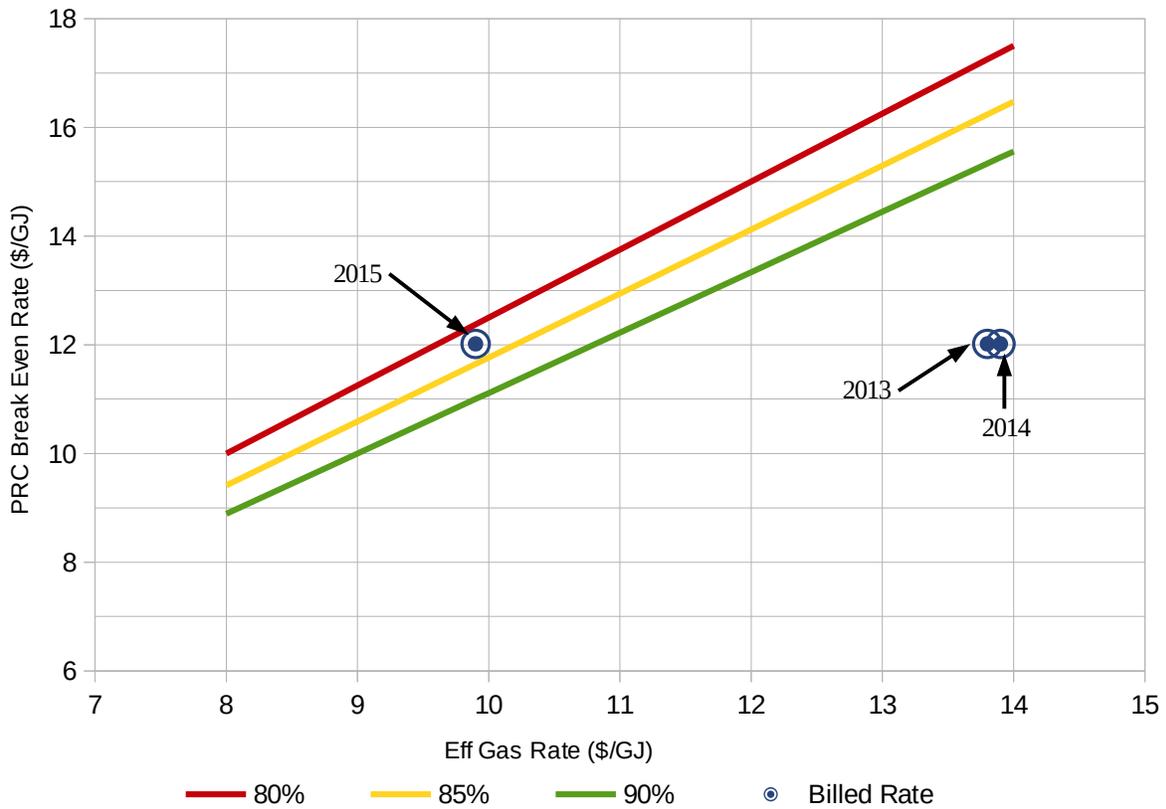
Scenario #3 Update - Decommission and Salvage

The reduced effective gas price has a significant negative effect on the Scenario #3 expected case NPV. Even with O&M reduced by \$10,000 for 2016-2025 and DES energy set at 6,300 GJ the NPV (2025) is **-\$227,442**. If the current loan amount of \$291,453 is foregone the NPV (2025) shifts to \$63,558.

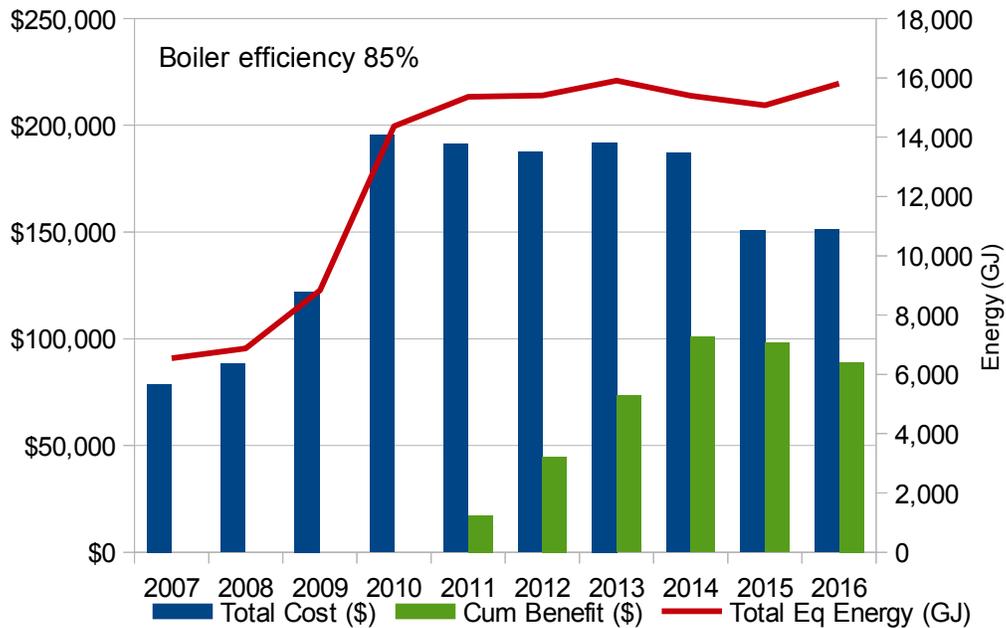
Alternatives

1. Maintain the current DES rate at \$12.015 for 2016 and adjust the rate for 2017 as part of the 2017 budget process.
2. Consider lowering the DES rate to \$10.62/GJ (2016) and \$9.94/GJ (2017), subject to Saanich Peninsula Wastewater Commission approval.
3. Explore ways to reduce DES operating and contract expenses by \$10,000 per annum.
4. Consider non-repayment of the remainder of the \$291,453 loan borrowed by the District Energy System from the SPWWTP reserves.

Appendix A: PanRec Gas Related Charts



PanRec Break Even Rate At Different Boiler Efficiencies



PanRec Natural Gas Consumption and Cost

Appendix B: Scenario #3 – Expected Case

Decommission and Salvage

Natural Gas Escalation	%/yr	1.5	O&M	Labour, Admin, Supplies, Contract Services	Salvage Value							
BC Hydro Escalation	%/yr	2			Minipant Equipment	\$170,000	0.2	\$34,000				
Labour Escalation	%/yr	2	NPV (15)	-\$227,442	GHG	HEX Equipment	\$666,000	0.2	\$133,200			
Gas Boiler Efficiency	%	85			tCO2e							\$167,200
Discount Rate	%	4			Offset							\$10,000
DES Energy	GJ/yr	6300			3,928	\$77,764	O&M reduction					

Year Past 2011		Year 5					Year 10					Year 15	
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DES Energy Supplied	GJ	6,186	5,622	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300
Gas Price	\$/GJ	13.87	9.78	9.03	8.45	8.58	8.71	8.84	8.97	9.11	9.24	9.38	9.52
Equivalent Gas	GJ	7,278	6,614	7,412	7,412	7,412	7,412	7,412	7,412	7,412	7,412	7,412	7,412
Savings	\$	100,945	64,657	66,903	62,653	63,593	64,547	65,515	66,497	67,495	68,507	69,535	70,578
DES Energy Price	\$/GJ	16.32	11.50	10.62	9.94	10.09	10.25	10.40	10.56	10.71	10.87	11.04	11.20
DES Hydro Consumed	GJ	1,698	1,557	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727	1,727
DES Hydro / DES Energy	%	27.5%	27.7%	27.4%	27.4%	27.4%	27.4%	27.4%	27.4%	27.4%	27.4%	27.4%	27.4%
Hydro Price	\$/kWh	0.0768	0.08797	0.089	0.090	0.091	0.092	0.094	0.096	0.098	0.100	0.102	0.104
	\$/GJ	21.34	24.44	24.68	24.93	25.18	25.68	26.19	26.72	27.25	27.80	28.35	28.92
Hydro Cost	\$	36,240	38,055	42,619	43,045	43,475	44,345	45,232	46,136	47,059	48,000	48,960	49,939
O&M	\$	50,000	37,000	27,740	28,295	28,861	29,438	30,027	30,627	31,240	31,865	32,502	33,152
Total Cost	\$	86,240	75,055	70,359	71,340	72,336	73,783	75,258	76,763	78,299	79,865	81,462	83,091
Net Savings	\$	14,704	-10,398	-3,456	-8,687	-8,743	-9,236	-9,743	-10,266	-10,804	-11,357	-11,927	-12,513
Loan / Equip. Repl.	\$	-291,000											203,816
Net	\$	-276,296	-10,398	-3,456	-8,687	-8,743	-9,236	-9,743	-10,266	-10,804	-11,357	-11,927	191,303
Cumulative Net	\$	-276,296	-286,693	-290,149	-298,835	-307,579	-316,815	-326,558	-336,824	-347,628	-358,985	-370,912	-179,609
Discounted Net	\$	-276,296	-9,998	-3,195	-7,722	-7,474	-7,591	-7,700	-7,801	-7,894	-7,979	-8,057	124,267
Discounted Cum. Net	\$	-276,296	-286,293	-289,488	-297,211	-304,684	-312,276	-319,976	-327,777	-335,671	-343,651	-351,708	-227,442
GHG Reduction	tCO2e	357	324	364	364	364	364	364	364	364	364	364	364
GHG Reduction – @95%	tCO2e	339	308	345	345	345	345	345	345	345	345	345	345
GHG Offset @25\$/t	\$	8,481	7,706	8,637	8,637	8,637	8,637	8,637	8,637	8,637	8,637	8,637	8,637

**REPORT TO THE SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, MARCH 17, 2016**

SUBJECT PROPOSED BIOSOLIDS LAND APPLICATION IMPACT STUDY

ISSUE

To consider options for an impact study to evaluate land application of biosolids generated from the Saanich Peninsula Wastewater Treatment Plant (SPWWTP) or impact of historic land application of biosolids from the SPWWTP and former treatment plants on the Saanich Peninsula. The Saanich Peninsula Wastewater Commission (SPWWC) needs to consider a number of factors before such a project can be scoped.

BACKGROUND

Land application of SPTP and former Peninsula treatment plant biosolids occurred at various sites throughout the region (e.g., Woodwyn Farms, Producer's Pit, PenGrow) until the end of 2011. This land application was authorized under the BC Organic Matter Recycling Regulation (OMRR) which governs the production, quality and land application of biosolids and other organic matter. The OMRR sets limits on the levels of select contaminants (i.e., pathogenic bacteria and metals) in biosolids and prescribes land application frequency and practices to prevent contaminant buildup and runoff, and the potential for adverse environmental impacts. The SPWWTP biosolids that were land applied all met OMRR Class A requirements, the highest quality level prescribed under the regulation, and were applied under an OMRR approved land application plan.

Land application of Saanich Peninsula biosolids ceased in 2011 when the Capital Regional District (CRD) Board adopted a policy prohibiting land application of biosolids. Notwithstanding the Saanich Peninsula Liquid Waste Management Plan's commitment to "seek opportunities to diversify biosolids beneficial use markets to include individual residences, commercial operations and farms", the SPWWTP has sent dewatered sludge to the regional landfill for disposal in alignment with CRD Board policy. Staff presented a detailed summary of SPTP biosolids history and operation at the SPWWC on April 16, 2015.

At the January 21, 2016 SPWWC meeting, the Commission directed staff to develop a Terms of Reference for a follow up study on the land application of biosolids from the Peninsula Treatment Plant to determine whether there are residual contaminants present. Potential project ideas identified at the Commission meeting, and since supplemented by staff, include:

- Revisiting Woodwyn Farm or other sites to determine if any residual contaminants from land application that occurred up until 1999 can still be detected. It is not anticipated that any "emerging" substances will be detectable, but non-emerging legacy contaminants (e.g., PCB, metals) may be detectable. Any more recent activities (e.g., crop rotation schedule, crop composition, additional non-biosolids derived fertilizer applications, etc.), would need to be considered when interpreting results. Characterizing the ingredients of any non-biosolids derived fertilizers that may have been used, and influencing the findings, will be difficult, if not impossible.

- Contacting Sylvis Environmental and revisiting Producer's Pit on the westshore to determine if any residual contaminants can still be detected after SPWWTP biosolids were used in a blended soil product for site cover during the reclamation process. The other blended soil product ingredients would need to be considered when interpreting results; characterizing these ingredients will be difficult, if not impossible.
- Expanding analysis of present-day SPWWTP sludge to assess a broader range of contaminants. The CRD currently has SPWWTP sludge and biosolids data for pathogens, nutrients and metals and sludge data for a subset of approximately 30 pharmaceutical and personal care products (PPCP). This type of study could be started almost immediately and data could be used to inform or supplement any future study.
- Update a literature review to determine impacts of biosolids application elsewhere, with respect to emerging and other contaminants. While biosolids research into emerging substance associated with biosolids is relatively limited, it is increasing. Existing SPWWTP biosolids and sludge chemistry data could be used to undertake a high level environmental risk assessment in addition to the literature review. Either staff or consultants could undertake such a review with additional funding.

ALTERNATIVES

Alternative 1

That the Saanich Peninsula Wastewater Commission receive the staff report for information and defer a biosolids land application impact study until further Capital Regional District Board direction is received regarding regional biosolids management

Alternative 2

That the Saanich Peninsula Wastewater Commission direct staff to develop a Saanich Peninsula Wastewater Treatment Plant biosolids land application impact or research study.

ENVIRONMENTAL IMPLICATIONS

Potential environmental risks of biosolids are primarily associated with co-mingled commercial contaminants. A backgrounder on both emerging, non-emerging and legacy contaminants in biosolids, current international and national biosolids research initiatives and a high level summary of current biosolids risk assessments can be found in Appendix A. The CRD Board policy prohibiting biosolid land application was partially driven by concerns about contaminants contained in the biosolids, particularly those considered emerging, as well as the perceived risk potential to the environment and human health following land application.

Environmental contaminant evaluations generally take two forms: exposure or effects assessments. Exposure assessments simply involve measuring the levels of contaminants. Effects assessments attempt to determine whether the measured contaminants are actually having an environmental and/or human health impact. Undertaking either an exposure or effects assessment study at historic SPWWTP biosolids land application locations would be significantly confounded by any more recent activities on those properties, including additional farming activities and the addition of other soil amendment products.

Researchers require environmental and human health toxicity (or effects) thresholds to develop simple contaminant concentration study ideas risk assessments. However, thresholds for emerging substances (e.g., PPCP, etc.) are largely absent from the current scientific literature and are well beyond the capacity of the CRD, and would require academic or industrial research partnerships and controlled experimentation. Therefore, any CRD biosolids study would likely rely on literature-derived toxicity and effects thresholds to assess environmental risk.

Many of the non-emerging and legacy contaminants (e.g., metals, PCB, etc.) listed in Appendix A have known environmental and human health toxicity thresholds. Biosolids risk assessment to date have not identified any risks of biosolids land application associated with non-emerging and legacy contaminants as long as proper application procedures and plans are followed.

While academic and industrial research into emerging contaminants is ongoing and accelerating, current analytical capability still far exceeds scientific knowledge on toxicity. Therefore, the environmental risk assessment value of any SPWWTP biosolids study would depend upon the specific contaminants of concern to the SPWWC. Some results would only have characterization (i.e., exposure assessment) value until scientific toxicity research catches up. True environmental effects risk of biosolids-borne contaminants cannot yet be determined for the majority of emerging substances.

FINANCIAL IMPLICATIONS

There are a number of financial factors to be considered when designing a biosolids land application impact study or research project. As a frame of reference, the current cost of disposing of the SPWWTP sludge at the Hartland landfill is approximately \$450,000 annually.

If the SPWWC is interested in an environmental contaminant exposure or effects impact study at historic land application locations, the cost of contaminant analyses needs to be considered. To analyze the entire list of potential biosolids contaminants in Appendix A (emerging, non-emerging and legacy) would cost ~\$7,000 per sample in analytical costs. The Environment Canada biosolids contaminant list (i.e., the subset of contaminants highlighted in bold italics in Appendix A) would cost ~ \$5,000 per sample. The full suite of pharmaceuticals and personal care products alone costs ~ \$2,000 per sample. Staff and/or consultant time to collect samples and, interpret and assess results would consume additional budget.

SOCIAL IMPLICATIONS

The CRD Board policy prohibiting land application of biosolids reflects environmental and human health concerns associated with emerging and other contaminants. However, perceptions of risk can be out of step with available risk assessment and/or environmental policy. Provincial and federal policies continue to support and encourage beneficial use of wastewater derived solids, including land application. Regional policy is in contradiction of this higher policy direction, despite the provincial and federal regulatory frameworks including definitions of acceptable risk and practices.

Undertaking the project ideas above would not require additional biosolids land application, and therefore could be done within existing Board policy.

CONCLUSIONS

Biosolids contaminant assessments will not fully determine environmental and human health risk levels due to the relative lack of toxicity thresholds for emerging substances. In addition, contaminant analyses costs can be expensive especially if a comprehensive emerging, non-emerging and legacy contaminant assessment is desired by the SPWWC. Finally, any assessments undertaken on historic SPWWTP land application locations would be significantly confounded by any more recent farming or other activities.

CRD Board direction on regional biosolids management has not yet been determined. Without knowing the ultimate environmental destination of SPWWTP sludge/biosolids, a biosolids project or research study is not recommended at this time.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission receive the staff report for information and defer a biosolids land application impact study until further CRD Board direction is received regarding regional biosolids management.



Glenn Harris, Ph.D., R.P.Bio.
Senior Manager, Environmental Protection



Larisa Hutcheson, P.Eng.
General Manager,
Parks & Environmental Services
Concurrence



Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services
Concurrence

CL:cam:mm

Attachment: 1

- Appendix A – Backgrounder: Contaminants in Biosolids



AUTHOR(S): Chris Lowe Backgrounder #: BG2015-001
 DIVISION: Environmental Protection - Wastewater & Marine Environment Program

DATE CREATED: February 10, 2015
 LAST EDIT: February 16, 2016

SUBJECT: Contaminants in Biosolids

- Municipal wastewater treatment has two primary streams within the process:
 - Liquid stream
 - Solids stream
 - Sludges are the residual solids created at various steps throughout the wastewater treatment process either through screening, filtering, settling, coagulation or other mechanisms
 - Biosolids are sludges that have been treated or processed to facilitate beneficial reuse
 - Biosolids are classified depending on pathogen/contaminant levels
 - Beneficial reuse can include land application, digestion, gas generation, incineration with heat/energy recovery, gasification, nutrient recovery, and other mechanisms.

- Sludge/biosolids are regulated. In British Columbia, this is through:
 - Liquid Waste Management and Biosolids Management plans which must include a commitment and schedule for initiating a program for the beneficial reuse of biosolids¹.
 - The BC Organic Matter Recycling Regulations which determine how biosolids can be beneficially applied to land depending on their pathogen/metal levels (e.g. Class A versus Class B biosolids)².

- Land application is the primary recommended beneficial reuse of biosolids both in Canada and around the world^{3,4}
 - Sludge/biosolids risk assessments around the world are therefore primarily focused on the potential human health and environmental risks of land application
 - Source control and chemical use restrictions can also substantially reduce contaminant concentrations in biosolids, by preventing them from getting into the wastewater stream in the first place

- Federal sludge/biosolids risk assessment is ongoing, but is currently driven by the implementation of the Wastewater Systems Effluent Regulations which will lead to increased biosolids generation as a

¹ BC LWMP guidance document - http://www2.gov.bc.ca/assets/gov/topic/7BE6D1629C96685698920E29284EBCF4/guide_to_preparing_liquid_waste_mgmt_plans.pdf

² BC OMRR - http://www.bclaws.ca/Recon/document/ID/freeside/18_2002

³ United Nations Environment Program Biosolids Management - <http://www.unep.or.jp/ietc/publications/freshwater/fms1/index.asp>

⁴ Greater Moncton Sewerage Commission and United Nations Human Settlements Programme "Global Atlas of Excreta, Wastewater Sludge and Biosolids Management: Moving Forward the Sustainable and Welcome Uses of a Global Resource." - http://esa.un.org/lvs/docs/san_lib_docs/habitat2008.pdf

result of enforced secondary treatment¹ across the country⁵

- Municipal wastewater treatment effectively removes many contaminants from the liquid stream of the treatment process (90 to >99% removal for 50-80% of the contaminant that the CRD monitors in wastewater depending upon treatment technology, but all the way down to 0% for 2-20% of the contaminants).
 - Wastewater treatment processes thereby partition many contaminants to the sludge/biosolids fraction.
- Sludge/biosolids potentially contain any element or chemical in use by humans.
 - Hydrophobic contaminants predominate in sludge/biosolids.
 - Water soluble contaminants are found at lower concentrations in sludge/biosolids as they tend to partition the liquid fraction of the treatment process.
- “Emerging”, non-emerging and legacy contaminants found in sludge/biosolids include:
 - **Polybrominated diphenyl ethers (PBDEs) and other brominated flame retardants (non-emerging)**
 - **Perfluoroalkyl substances (PFOS, PFOA, etc.) (emerging)**
 - **Bisphenol A (emerging)**
 - **Triclosan (emerging)**
 - **Chlorinated alkanes (non-emerging)**
 - **Metals and organometals (non-emerging)**
 - **Parabens (non-emerging)**
 - **Nonylphenol and ethoxylates (non-emerging)**
 - **Siloxanes (emerging)**
 - **Pharmaceuticals and personal care products (PPCPs) (emerging)**
 - **Polycyclic aromatic hydrocarbons (PAHs) (non-emerging)**
 - Phthalates (non-emerging)
 - Pesticides (non-emerging)
 - Surfactants (emerging/non-emerging)
 - Polychlorinated biphenyls (PCBs) (legacy)
 - Dioxins and furans (legacy)
 - Pathogens (non-emerging)
 - Microplastics (emerging)
 - Nanoparticles (emerging)
 - Nutrients (non-emerging)
 - Many others
- Just because you can detect the above contaminants in biosolids does not automatically mean there is an environmental or health risk associated with them.
 - Analytical capabilities are rapidly improving and our ability to detect contaminants at much lower concentrations (often below known risk levels) is increasing
 - The relative risk of the above classes of contaminants depends upon their propensity to persist, bioaccumulate or have known toxicity effects.
- Environment Canada’s Chemicals Management Plan⁶ and the United States Environmental Protection Agency⁷ are two of the organizations around the world that are characterizing contaminants in sludge/biosolids.

⁵ Canadian Council of Ministers of the Environment Biosolids Assessments - <http://www.cme.ca/en/resources/waste/biosolids.html>

⁶ Environment Canada’s Chemicals Management Plan summary presentation - http://www.cwwa.ca/pdf_files/ISO-10_Smyth.pdf

⁷ United States Environmental Protection Agency biosolids characterization - <http://water.epa.gov/scitech/wastetech/biosolids/tncss-overview.cfm>

- Environment Canada has currently prioritized the contaminants in ***bold italics*** above for sludge/biosolids characterization⁷. Their findings to date indicate that contaminant levels vary:
 - in the different types of sludge (primary sludge vs secondary sludge, etc.) which become the feedstock for biosolids
 - as a result of how the biosolids are treated/generated
 - Some contaminants are broken down/reduced during biosolids treatment/generation (e.g. many organic contaminants), while others are unaffected (e.g. metals).
 - Their findings will be used to inform environmental and human health risk assessments for biosolids reuse.

- High temperature incineration or gasification of sludge/biosolids will significantly reduce or eliminate many contaminants, but not all
 - Metals and some other contaminants are partially or completely resistant to high temperature incineration and will remain concentrated in the ash or smoke stack scrubbers
 - Fly ash from smoke stack or gasification scrubbers and bottom ash must be disposed of as toxic waste

- Environmental and human health risk assessments associated with sludge/biosolids have been ongoing for decades as different contaminants are identified/prioritized⁸. So far, relatively few risks have been identified and these risks have been addressed through biosolids regulations such as the BC OMRR.
 - Most of the associated risks have been associated with pathogens and metals since they are conserved during the biosolids generation process and therefore have the potential to be at concentrations closer to known risk thresholds during land application.
 - Regulations such as OMRR, therefore, have limits in place for pathogens and metals that must be met prior to land application (e.g. OMRR Class A limits must reduce pathogens by >99.9% and Class B by >99%)
 - Biosolids treatment methods typically reduce pathogen levels significantly; contaminant reduction varies, as mentioned previously, depending upon treatment method
 - The CRD's Saanich Peninsula Treatment Plant did produce biosolids that met OMRR Class A limits, which could then be applied to land with an approved land application plan (in bulk) or freely in small quantities
 - So far, sludge/biosolids land application limits for organic/emerging contaminants are relatively uncommon, but research is ongoing as new contaminants are identified/prioritized.
 - In some countries in the European Union, land application limits exist for halogenated organic compounds, linear alkylbenzene sulphonates, di(2-ethylhexyl)phthalate, nonylphenol and nonylphenol ethoxylates, PAHs, PCBs, dioxins and furans
 - In other countries, organic contaminant limits have not been set as risk assessment is ongoing or biosolids contaminant levels have been well below known risk thresholds.
 - So far, most risks associated with organics are averted via the limits set for metals (i.e., by limited biosolids applications based on metal levels, the organics present at much lower concentrations are also kept below known environmental thresholds)⁹

⁸ Summary of US risk assessment of biosolids - http://faculty.washington.edu/slb/docs/basics/Brown_OrganicNB.pdf

⁹ Bright, DA and N Healey. 2003. Contaminant risks from biosolids land application: contemporary organic contaminant levels in digested sewage sludge from five treatment plants in Greater Vancouver, British Columbia. Environmental Pollution 126(1): 39-49 - <http://www.ncbi.nlm.nih.gov/pubmed/12860101>

- Biosolids regulatory limits allow for land application because contaminant concentrations are typically well below the limits or known risk thresholds¹⁰
- A recent study on the antimicrobial triclosan found *de minimis* risk (i.e., effectively no risk) to humans following land application of biosolids¹¹
 - Triclosan is of potential environmental concern due to its' antimicrobial activity and potential to contribute to antibiotic resistance

¹⁰ Summary of biosolids land application rates in the European Union - <http://www.timevansenvironment.com/2012%20Biosolids%20in%20Europe%20-%20Evans%20-%20WEF%20R&B%20Conf.%2002E.pdf>

¹¹ Verslycke, T, DB Mayfield, JA Tabony, M Capdevielle and B Slezak. 2016. Human health risk assessment of triclosan in land-applied biosolids. Environmental Toxicology & Chemistry. Accepted Author Manuscript. doi:10.1002/etc.3370



**REPORT TO THE SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, MARCH 17, 2016**

**SUBJECT CORE AREA WASTEWATER/SAANICH PENINSULA WASTEWATER
SERVICES – JOINT INITIATIVES UPDATE**

ISSUE

To provide the Saanich Peninsula Wastewater Commission with an update on the joint initiatives under consideration between the Core Area Liquid Waste Management Committee and the Saanich Peninsula Wastewater Commission.

BACKGROUND

In response to the January 13, 2016 CRD Board resolution:

That the Saanich Peninsula Wastewater Commission (SPWWC) advise the CRD Board, that they would like to be involved in discussions regarding solids management and direct staff and the Chair of the SPWWC to discuss how this can happen with the Chair of the Core Area Liquid Waste Management Committee (CALWMC) and report back to their respective committees with their recommendations.

and the SPWWC confirmation on January 21, 2016 to have the Chair represent the Commission on this matter, a meeting was held between the Chairs and Capital Regional District (CRD) staff on February 24. The key questions raised by the SPWWC at the meeting were:

- Given the CRD Board policy on land application of biosolids, how does the SPWWC get involved and informed during the process leading to a decision on solids disposal for the Core Area?
- Is the Core Area interested in using the Saanich Peninsula Wastewater Treatment Plant for pilot work to come to a decision on solids disposal?
- Is there an opportunity for the SPWWC to be involved in the choice of the solids disposal system for the Core Area?
- What opportunities are there for the SPWWC to coordinate with the Core Area on the necessary Liquid Waste Management Plan (LWMP) public consultation on the decisions above?
- What does the SPWWC do (with respect to residual solids disposal) for the next 10 years and beyond?
- What will it cost to join the Core Area disposal system and when will the costs be known?
- Should the SPWWC participate in the Core Area system and, if so, would the SPWWC have a say in the system the Core Area chooses to dispose of residual solids?
- If the SPWWC does join the Core Area system how will public consultation be undertaken to meet the LWMP rules?
- Does the SPWWC integrate efforts with the Core Area or go it alone?

At the time, although many of the questions could not be answered given that many of the CALWMC decisions had not been made, it was decided, on the basis that the CALWMC was

going to be considering a recommendation on February 26 “that (as part of a treatment solution set) named Hartland Landfill as the preferred site for biosolids processing with technology to be confirmed by a Request for Statements of Interest (RFSI) process and to proceed with a RFSI process to select a biosolids processing technology”, that staff would prepare a terms of reference for a joint sub-committee of the CALWMC and SPWWC Chairs. The sub-committee would jointly draft and evaluate the RFSI with the intent of including the residuals treatment pilot project option in the RFSI, ensuring both Core Area and Saanich Peninsula treatment plant residuals were included in the capacity and waste stream considerations by the proponents, and coordinating and public consultation work that may result from the process. However, this direction was not pursued by the CALWMC at the meeting, and the preparation of the joint sub-committee terms of reference was stopped.

CALWMC meetings were then held on March 2 and March 9. The outcome of the CALWMC and CRD Board meetings on March 9 was a decision to advance a solution set for treatment that included the following approach for residuals/biosolids treatment/disposal, and direction to staff to prepare a conditional LWMP Amendment No.10 as a basis for approval and submission to the Minister of Environment:

Hartland landfill as the preferred site for biosolids processing with technology to be confirmed by the following process. (Set out) a process under which the CRD would invite submissions of project concepts to achieve goals of the (CALWMC) project charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case, including financial backing. The submissions could demonstrate solutions for...the treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste.

In keeping, with the previous discussions at the Chairs’ meeting, as the above process evolves, staff will ensure the Saanich Peninsula residuals are considered in any treatment solution moving forward and seek the next opportunity to again formalize the role of the Chair in a decision making process with respect to biosolids.

Integrated Resource Management Options

Under a separate process, an Integrated Resource Management (IRM) Task Force, formed by the CRD Board, was created to examine the question of whether an IRM approach to managing waste streams might provide substantial financial and environmental benefits to the region and its residents. In its report out to the CRD Board on March 9 (see **Attachment 1**), the Task Force summarized:

After considerable investigation, the IRM Task Force concludes that IRM approaches to managing regional waste streams are feasible today and could provide substantial financial and environmental benefits to the region as a whole. The Task Force further concludes that appropriate structures to avoid potential jurisdictional conflicts while fully investigating and evaluating IRM approaches need to be established. Finally, the Task force supports establishment of a pilot project for biosolids, kitchen scraps and municipal solid wastes as soon as possible.

The report also identifies the need to establish a select committee to steer the initiative moving forward, with a 'non-voting liaison' from the Saanich Peninsula Wastewater Commission, with respect to establishing a pilot project to test IRM technologies. The SPWWC Chair was asked to participate in the March 4 IRM Task Force meeting. The SPWWC should be aware that the Task Force has contemplated an option of locating the pilot project at the Saanich Peninsula Wastewater Treatment Plant. Depending on how the initiative advances, the SPWWC should consider establishing a position on this matter. One of the next steps in the process following establishment of the select committee would be to establish a Request for Expressions of Interest (RFEI) for a solid waste to resource pilot project, integrating biosolids, kitchen scraps and municipal solid waste that would lead to the selection of a proponent for a pilot project. On March 9, the CRD Board referred the full recommendation to staff, 'inviting comment to inform the Board's consideration of the task force recommendation at the next Board meeting'.

Staff will advise the SPWWC when opportunities arise to participate in the select committee process that is expected to lead into the development of a pilot project through the RFEI process that has yet to be determined.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission receive the staff report for information.



Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services

TR:mm

Attachment: 1

Integrated Resource Management Options for the Capital Regional District

Report from the Integrated Resource Management Task Force – March 9, 2016

Executive Summary

After considerable investigation, the Integrated Resource Management (IRM) task force concludes that IRM approaches to managing regional waste streams are feasible today and could provide substantial financial and environmental benefits to the region as a whole. The task force further concludes that appropriate structures to avoid potential jurisdictional conflicts while fully investigating and evaluating IRM approaches need to be established. Finally, the task force supports establishment of a pilot project for biosolids, kitchen scraps and municipal solid wastes (MSW) as soon as possible.

The CRD Integrated Resource Management (IRM) Task Force was created to examine the question of whether an IRM approach to managing waste streams might provide substantial financial and environmental benefits to the region and its residents. In its terms of reference, the task force has been asked to define the scope and parameters of Integrated Resource Management objectives, to recommend options to the CRD Board and to recommend a process for broadly seeking submissions from the private sector and potentially implementing a recommended solution.

Initially, the task force has been concerned with proof of concept and has examined the question of whether IRM approaches are feasible today or remain a desired outcome for the future. To answer this question, the task force entertained presentations from four potential providers. Each provider was given a list of questions to be answered and the opportunity to provide additional information. Presentations lasted 50 – 70 minutes followed by 20 – 25 minutes for questions. The task force also received presentations from Dr. Jon O’Riordan, an IRM consultant and former British Columbia Deputy Minister of the Environment, and from Rudy Kilian of Carolo Engineers, a consulting firm used by the Core Area Liquid Waste committee (See Appendix 1 for a detailed description of these presentations.)

Based on the investigation carried out, the IRM task force concludes it is very likely IRM approaches to waste stream management exist and are feasible today. The task force also concludes that IRM approaches could provide financial and environmental benefits so substantial that a compelling case for IRM likely exists. On the financial side, capital costs for a completed IRM project have been projected to be in the \$250 - \$400 million range. In addition, lifecycle costs are generally proposed to be revenue positive with at least one provider suggesting revenues would be sufficient to cover all capital costs. Without question, these cost estimates need further substantiation. Nevertheless, they are much lower than could be accomplished with current waste practices and waste projects being planned at the CRD. Similarly, estimates for GHG reduction are much greater than what could be expected from current practices and projects being planned. GHG reduction will become increasingly critical and is likely a very important consideration for federal and provincial funding partners. To summarize, the task force is of the opinion that IRM approaches could offer very considerable benefits to the region as a whole.

The task force also concludes that current and future regional waste management decisions should take place in an environment that **fully investigates and evaluates IRM approaches**. To do this, appropriate structures must be established. Currently at the CRD, a variety of initiatives for processing waste streams have been proposed. The Core Area Liquid Waste Committee, for example, is planning to treat liquid wastes and is considering using a Request for Expression of Interests (RFEI) to solicit innovative liquid treatment designs and compare them against a base case. Furthermore, the core area committee has agreed, in principle at least, to another RFEI intended to establish whether current biosolids processing estimates can be improved. In respect to this biosolids RFEI, the core committee's Technical Oversight Panel (TOP) has recommended gasification or similar technology as the best choice for processing and has recommended mixing biosolids with solid waste streams such as kitchen scraps and municipal solid wastes (MSW). The IRM task force has confirmed the desirability of mixing biosolids and other solid wastes through an interview with Mr. Rudy Kilian of Carollo Engineering. An "IRM initiative" involving mixed waste streams is very likely desirable but could run into problems of jurisdiction. Solid waste is a regional function and is the responsibility of the full board. In turn, the Environment Committee has been given responsibility for oversight of solid wastes and making recommendations to the board. It is unclear, therefore, who should be managing any RFEI involving biosolids **and** solid waste streams. Further complicating this situation is the Peninsula Wastewater Commission's interest in establishing a pilot to process peninsula biosolids, currently being landfilled at Hartland, with MSW.

The task force, through its chair, has worked with staff to create a structure that would fully investigate and evaluate IRM approaches while respecting initiatives put forward by CRD committees and commissions (Please see Appendix 2 for a schematic representation of the proposed structure). Within the proposed structure oversight for the CRD Board would be provided by a select committee comprised of the Board Chair and chairs of the Core Area Liquid Waste Committee, the Environment Committee and the Finance Committee. An expert Evaluation Team tasked with managing RFEI processes and evaluating responses would be central to the proposed structure. This Evaluation Committee would forward reports and conclusions to staff, who would make recommendations to the select committee. The select committee in turn would consider staff reports and make recommendations to the board.

The IRM task force also supports establishing a pilot program, as soon as possible, to use gasification, or other appropriate technology, for processing biosolids, kitchen scraps and MSW. The pilot could provide further proof of concept for an IRM approach and valuable baseline data for any future IRM solution to managing waste streams. As with other initiatives, an RFEI for the pilot would be managed by the Evaluation Team with the reporting stream going through staff to the select committee and ultimately the board. Appendix 3 contains task force suggestions re questions for respondents to such an RFEI. Finally, the task force recommends that during the process for establishing a pilot a non-voting liaison from the Peninsula Wastewater Commission should be added to the select committee.

Recommendations:

1. That, subject to future approval of costs involved, the Board authorize the establishment of an appropriate structure to attract, evaluate and potentially help procure IRM approaches to managing CRD waste streams including:

- a. A select committee comprised of the Board Chair, the Chair of the Environment Committee, the Chair of the Core Area Liquid Waste Committee, the Chair of the Finance Committee and, during the process of establishing a pilot, a non-voting liaison from the Peninsula Wastewater Commission.
 - b. That the committee would provide political oversight on behalf of the CRD board. Specifically this would include recommending appointments to the Evaluation Team, providing oversight, along with staff, to the creation of RFEI documents and directing recommendations to the board.
 - c. An Evaluation Team comprised of a Project Lead and members with expertise in: procurement of Innovation, liquid waste (innovative design and implementation), solid waste to resource technologies, financial analysis of complex business cases, analysis of greenhouse gas (GHG) reduction claims and legal advice.
 - d. That the Evaluation Team would be mandated to provide advice on creation and implementation of high level requests for expressions of interest (RFEI). On the solid waste side the team would also evaluate RFEI submissions, provide a recommended short list and, through a process of competitive dialogue, work with those on the short list to shape a final proposed project. On the liquid side, the team would also evaluate RFEI submissions, provide a recommended short list and evaluate submissions on the short list against a base case provided by the Core Area Liquid Waste committee. The team would also manage an RFEI for a solid waste to resource pilot project, would recommend a short list of respondents to be evaluated in greater detail and would recommend a provider for the pilot program. All Evaluation Team reports would be directed to staff who would make recommendations to the select committee and through that committee to the board.
2. That the board authorize the creation of RFEI documents for: a) a pilot waste to resource program for biosolids, kitchen scraps and municipal solid waste (MSW), b) a full region wide waste to resource program for biosolids, kitchen scraps and MSW and c) submission of conceptual designs for liquid waste treatment designed to be evaluated against a base case established by the Core Area Liquid Waste Management committee.

Submitted by:

Director Vic Derman, Chair, IRM Task Force

Appendix 1 – Report to the Core Area Liquid Waste Committee

Report From The CRD Integrated Resource Management Task Force

February 24, 2016

Purpose of the Task Force

The CRD Integrated Resource Management (IRM) Task Force was created to examine the question of whether an IRM approach to managing waste streams might provide substantial financial benefit and substantially improved environmental outcomes to the region and its residents. In its terms of reference, the task force has been asked to define the scope and parameters of Integrated Resource Management objectives, to recommend options to the CRD Board for endorsement and to recommend to the board a process for broadly seeking submissions from the private sector for implementing the recommended initiative.

Phase 1 – Proof of Concept

Initially, the task force has examined the question of whether IRM approaches exist and are feasible today or remain a desired outcome for the future. To answer this question the task force has entertained presentations from four potential providers. Each provider was given a list of questions to be answered and the opportunity to provide additional information. Presentations lasted 50 – 70 minutes followed by 20 – 25 minutes for questions from task force members.

*It should be noted that none of the information in this report represents any attempt by the task force to suggest a preferred provider. Instead, information provided aims to establish “proof of concept”.

Providers, in order of appearance, included:

- 1. Pivotal IRM**

This potential provider offers a distributed approach to dealing with all of the region’s waste streams. Wastewater treatment would utilize Membrane Bioreactor technology while Advanced Gasification would be used for biosolids, municipal solid waste (MSW) and kitchen scraps. Both technologies are well established and have operated successfully for at least 10 years. In the case of Advanced Gasification, commercial experience with biosolids in the mix is limited to six months’ continuous operation. According to Pivotal, testing has indicated that with the right mix of sludge and wood, biosolids can be successfully and beneficially gasified. A distributed solution is the preferred approach, however, a 1 ½ acre site for processing and pelletizing solid wastes prior to gasification would be required.

Beneficial use of resources would include heat, cooling and potential water re-use on the liquid side along with production of syngas(electricity), heat, biochar and water on the solid side.

Pivotal has already developed a complete application for managing waste streams in the capital region. While much of this is proprietary and has not been disclosed to the Task Force, the

company expects total project capital costs would be in the \$250 - \$400 million range. Optimal procurement, infrastructure and design choices would move the final capital cost closer to the \$250 million figure. The company has also indicated that with optimization, life cycle costs could be revenue positive given the multiplicity of revenue streams involved. Pivotal has expressed a willingness to be flexible in determining contractual arrangements with the CRD and has suggested that a profit sharing partnership is a possibility.

On the environmental side, wastewater treatment would be to a level of tertiary disinfected. This “very clean” effluent could initially be used to recharge aquifers and streams and would offer the ability to develop extensive water re-use around distributed plants over time. Greenhouse gas (GHG) mitigation is projected to be the equivalent of removing 24,000 cars from regional roads.

The principles in Pivotal IRM are local, however, the company has partnered with large and well established Canadian and US infrastructure and construction companies. According to Pivotal, these companies are able to guarantee and fund the project, in accordance with CRD's procurement and risk management preferences.

Pivotal has indicated a willingness and ability to insure performance and structure a project so that the CRD would be insulated from financial risk. Finally, given Pivotal was the first presenter, the task force has considered a “high level” evaluation of the viability of the wastewater treatment, the gasification technologies and the feasibility of projections for GHG mitigation. If this evaluation is carried out, results are expected to be available in the near future.

2. Ark Power Dynamics

Rather than presenting a complete solution to dealing with the region’s waste streams, Ark Power Dynamics showcased a specific technology called “The Ark Reformer”. This technology appears to be a unique, patented adaptation of plasma arc technology and is described by the company as follows:

*“an **internally generated** high-energy sustained reaction zone converting ‘feed stocks’ into their simplest molecules - hydrogen, carbon monoxide, and other compounds forming a synthetic gaseous mixture used to generate electricity or produce valuable fuel and chemical by-products.”*

While the company has not presented a solution for treating waste water, Ark has indicated that the reformer is able to deal with all carbon based materials including biosolids, kitchen scraps and MSW. The company indicates the reformer offers advantages of a small footprint, the ability to treat waste that has up to 75% moisture content, thus eliminating the need for drying, and the ability to produce substantial amounts of Sulphur free crude oil, substantial amounts of syngas and residual “fertilizer” material. Furthermore, Ark indicates that the reformer creates no emissions and completely destroys pathogens and emerging chemicals of concern.

At present, Ark has no completed projects in operation. However, a pilot plant has operated successfully in Arkansas and has tested a variety of feed stocks. As such, the reformer is probably the least tested of the technologies presented to the task force. This does not mean it

is without considerable potential. Ark would utilize one central, 100 ton per day processing plant requiring a site of approximately 10 acres. A substantial part of that site would be taken up by a small “tank farm” necessary to store the synthetic crude produced while waiting transport to nearby refineries. Cost for the hundred ton per day facility is estimated to be approximately \$50 million. The company indicated that Hartland Landfill would provide a suitable location. GHG mitigation would be considerable over the lifespan of any project given the substantial renewable resources that would be created.

Finally, Ark has indicated an ability to insure the CRD against risk and has indicated a willingness to enter into a profit sharing relationship.

3. **Hydra Renewable Resources**

Hydra would provide a complete solution encompassing all waste streams. Primarily, this would be through a distributed system with waste water being treated by Salsnes Filters and “CBUM” modules. Effluent produced would be “very clean”. Solid wastes would be handled by “Bio-Green Pyrolytic Reactors” along with final stage distillation columns for renewable diesel fuel production. Again, the technologies chosen appear to be well established with at least 10 years of successful operation. It is unclear, however, whether sewage sludge has been utilized in the mix of solids being processed. While the approach suggested is distributed, Hydra would include a 4 acre central site for pre-processing solid wastes prior to utilizing the pyrolytic reactors.

Beneficial use of resources would include heat and water re-use on the liquid side along with production of renewable diesel fuel, syngas (electricity), heat and biochar on the solid side. Hydra also promotes the possibility of substantial food production in a “coolhouse greenhouse” and indicates their model for treating wastes produces no residuals requiring disposal.

Hydra suggests a financial model that would require no upfront capital investment by the CRD. Instead the company would seek a 30 year lease on existing CRD infrastructure. In return, Hydra would build and operate all new infrastructure, maintain existing CRD infrastructure and provide the CRD with a substantial annual lease payment. Sale of renewable resources would pay for the company’s investment and operating costs as well as provide for profit margins. At the end of the lease, the company would return all infrastructure to the CRD with a remaining life expectancy of at least 10 years for plants the company built. Hydra describes this model as “BOOT” (build, own, operate and transfer) and is ready to guarantee no job or benefit loss in the transition to a lease system. Again, GHG mitigation would be significant over the lifespan of the project given the substantial renewable resources that would be created. At present, Hydra has no completed projects on the ground. However, a project for Kingston, Jamaica is ready to proceed while several other projects are at various stages of planning.

Hydra has partnered with established larger firms including amongst others: the Mace Group (project and construction management), Hyder Consulting (wastewater design), the Ramboll Group (mechanical, electrical and sustainability design) and DLA Design (architectural design). Finally, Hydra has indicated a willingness and ability to insure performance and structure a project in a manner that would remove financial risk from the CRD.

4. **Highbury Energy**

Rather than presenting a complete solution to dealing with the region’s waste streams, Highbury Energy would provide a dual bed fluid dynamic gasification system to deal with

biosolids and, potentially, other solid wastes. High value syngas would be produced from the gasification process and could produce a variety of energy products for heating, cooling and electrical generation. Additional processing, could produce renewable liquid fuels such as diesel.

Highbury indicates that their gasification process provides a number of advantages in comparison to earlier generations of gasification including: conversion of low grade biomass, lowered capital costs through a patent-pending tar removal process, lower operating costs with a system that continuously runs on its own energy, production of high BTU syngas and production of syngas that is relatively clean.

Highbury Energy appears to be a company that has emerged in 2009 from the workings of a gasification research group at the University of British Columbia. The company is able to point to a body of research which includes gasification tests of a variety of materials including biosolids. These tests have taken place at a “lab scale” and involve smaller batches of material (kilograms per day) than would be expected with a demonstration level pilot. While demonstration level or larger installations do not appear to currently exist, the company points out that its process is scalable and expresses interest in establishing a demonstration level (tons per day) pilot.

Highbury has partnered with a number of established larger companies including the Eaton Group, MGX Minerals and Noram.

Summary of Benefits Suggested for a IRM Approach

The four presentations to the task force resulted in many situations where at least two of the potential providers suggested similar beneficial outcomes including:

Potential cost advantages

- Reduced, or nearly eliminated, need for new liquid waste conveyancing infrastructure. In the case of Rock Bay, this could be \$250 million or more (distributed system in particular)
- Reduced, or nearly eliminated, property acquisition costs (distributed system)
- Opportunity to utilize a “just on time” approach to infrastructure needs (distributed system)
- Avoidance of future infrastructure costs through the ability of the selected technology to handle multiple waste streams. e.g. no separate facility for kitchen scraps
- Increased revenue through the creation of additional marketable resources (crude oil, biodiesel, syngas, biochar, heat and potentially water)
- Opportunity, through siting of distributed plants, to “set the stage” for increased future water re-use. Purple pipe system could be expanded on an “as needed” basis
- Opportunity to lower costs to taxpayers by transferring existing tipping fee revenues
- Ability to substantially extend the life of the Hartland Landfill
- Creation of value in the region through technology and/or job growth.
- Avoided costs to construct new outfalls
- Substantially reduced capital costs and virtually eliminated life cycle costs through transfer of existing revenue and creation of new revenue (Contractual agreements could transfer revenues to the CRD annually)

Potential environmental advantages

- Very substantially increased GHG mitigation

- Elimination of the need to handle residual “treated” biosolids. In all cases, very little or no residual material is created
- Opportunity, if so chosen, to increase levels of recycling through “pre-sorting”
- Production of very clean tertiary disinfected level effluent suitable for supplementing streams and aquifers and/or for future water re-use
- Near elimination of emerging chemicals from both liquid wastes and biosolids
- Ability to meet and exceed all current legislative requirements for discharge and emission regulations

Potential process advantages

- For distributed approaches on the liquid side, an opportunity to substantially avoid re-zoning if publicly owned and zoned sites are utilized e.g. existing pump stations. Liquid treatment technology could be underground

It should be noted, however, that several presenters emphasized orally, or in their literature, that maximum benefit will be achieved not just by technology but by a process of overall system design developed **from the outcomes desired**. In other words, cost reduction and environmental gain must become the goals around which a proposed system is designed and built. This allows the marriage of technology, sites and opportunities for resource recovery to be optimized in a manner that an “add-on approach” is unlikely to obtain.

Presentation from Dr. Jon O’Riordan

The task force also received a presentation from Dr. Jon O’Riordan. Dr. O’Riordan is a former British Columbia Deputy Minister of the Environment. Currently, he is a consultant dealing with IRM approaches to waste streams. In his presentation, Dr. O’Riordan indicated that an IRM approach can provide lower net costs and increased environmental benefits in current circumstances. He strongly emphasized the need to frame decisions in the context of an emerging “world of climate change” and other ecological issues. He is of the belief that traditional approaches, not centered around the need to meet these challenges, can no longer be considered appropriate. Dr. Riordan went on to explain how many proposed IRM approaches could meet existing provincial regulation and accomplish permitting without any requirement for legislative change. Finally, he expressed doubt about the ability of “standard” procurement processes to encourage innovation and suggested the need to consider new procurement paradigms that would promote and accommodate innovative solutions

Conclusions

Based on the considerable investigation carried out to date, the IRM task force concludes it is very likely that IRM approaches to dealing with waste streams exist and are feasible today. Several of the presentations feature proven technologies. In addition, potential providers indicate they have partnered with substantial firms well recognized in the construction and wastewater industries. Presenters have indicated that these partnerships create a willingness and ability to fund a project, guarantee performance and insulate CRD residents from financial risk. The task force does not wish to question the

potential provider's credibility. Nevertheless, additional research will need to be carried out to insure that appropriate contractual arrangements do in fact exist.

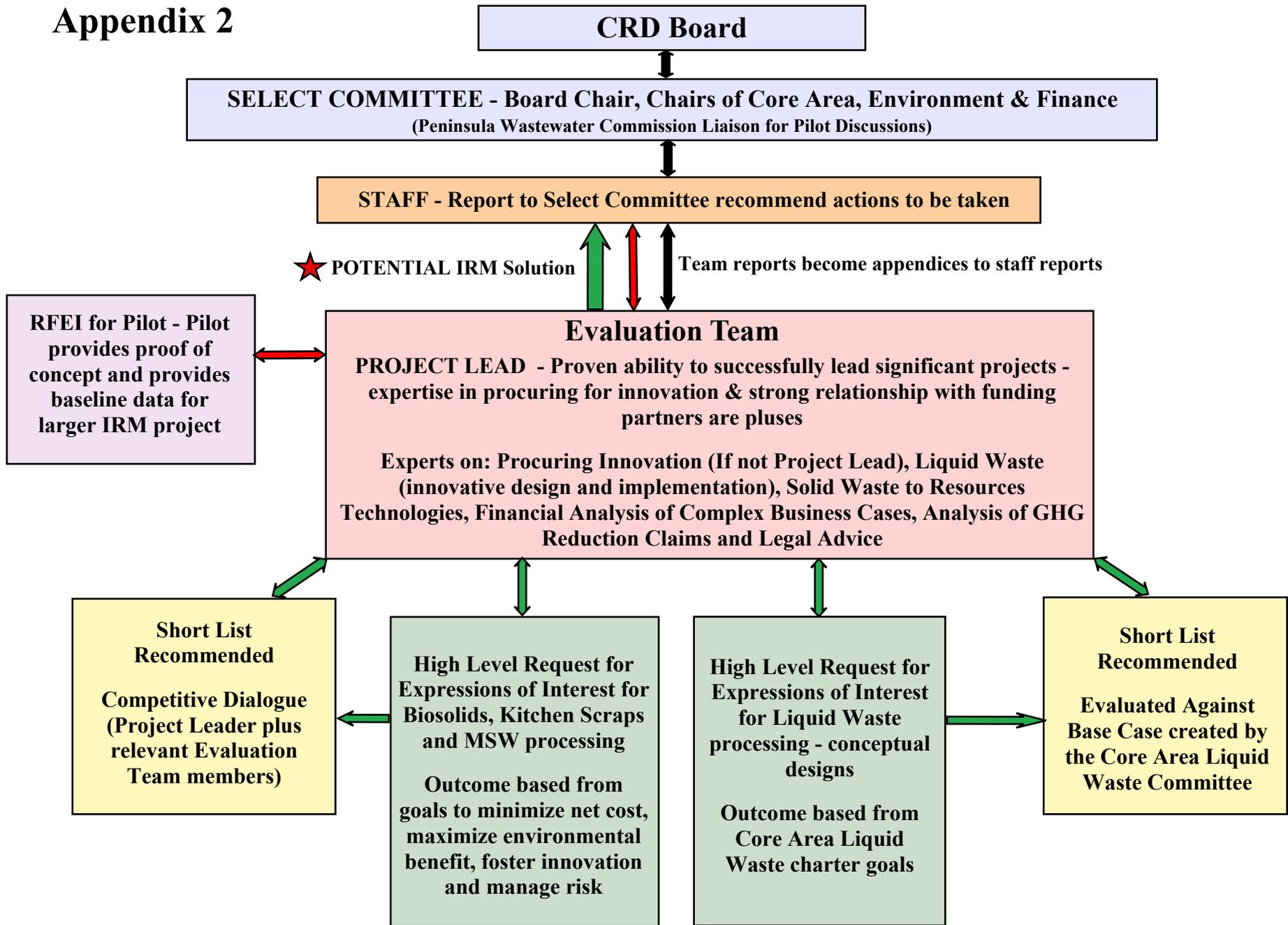
The task force also concludes that IRM approaches could provide financial and environmental benefits so substantial that a compelling case for IRM likely exists. Capital costs for a completed project dealing with all waste streams have been projected to be in the \$250 - \$400 million range. In addition, lifecycle costs are generally proposed to be revenue positive with at least one provider suggesting revenues would be sufficient to cover all capital costs. Without question, these cost estimates need further substantiation. Nevertheless, they are much lower than could be accomplished with current waste practices and waste projects being planned at the CRD. Similarly, estimates for GHG reduction are much greater than what could be expected from current practices and projects being planned. GHG reduction is increasingly critical in today's world and is likely a very important consideration for federal and provincial funding partners. Given these possibilities, it is likely IRM approaches could offer considerable benefits for the Core Area Liquid Waste Committee and the region as a whole. The task force recommends that current and future regional waste management decisions must take place in an environment that **fully investigates and appropriately evaluates IRM approaches**.

The task force agrees with Dr. O'Riordan's contention that all significant infrastructure projects now, and in the future, must aim to optimally address the emerging world of climate change and other significant ecological issues. Solution sets for infrastructure projects must be **designed around** this outcome and other desired outcomes such as lowered net costs and value for money. The task force further agrees that current "standard" procurement processes are likely unsuitable for encouraging innovation and optimally reaching desired outcomes. Consequently, other more appropriate procurement paradigms need to be investigated and potentially engaged. It is clear that a robust and competitive environment is emerging for IRM approaches to waste stream management. With a lack of existing treatment infrastructure, the CRD is well placed to take advantage of this environment, but must establish mechanisms to broadly engage the widespread ingenuity emerging in the private sector.

Finally, the task force recognizes that the various technologies for treating solid wastes proposed in the four presentations generally do not have an extensive track record of including biosolids in the process mix. The task force recommends that a "demonstration level" pilot of at least one of the proposed solid waste technologies should be conducted in the region as soon as possible. The task force will provide an updated report to the CRD Board at its March, 2016 meeting. In this report, the task force will recommend a path to accomplishing such a pilot and describe next steps the task force intends to carry out including:

- further investigation of possible technologies and solution providers
- additional research into the viability of technologies presented
- investigation into potential obstacles presented by current provincial regulation
- analysis and recommendation as to how any regulatory obstacles might be overcome
- examination of procurement methods best suited to attracting comprehensive, innovative IRM applications
- Examination of processes necessary to appropriately evaluate applications and select from amongst them

Appendix 2



***Potential Providers may respond to both requests as one integrated and optimized design or may respond individually to either of the requests**

Appendix 3

IRM Task Force Discussion Re Initiating a Pilot

1. Rationale for a “demonstration” level pilot

- a. To determine if a mixture of regional wastes including biosolids, kitchen scraps and municipal solid wastes (MSW) can be successfully processed by the selected technology(s) and to determine the optimal mixture of these wastes.
- b. If the answer to “a” is positive, to determine if results are consistent with projected goals of minimizing costs, maximizing revenues and maximizing environmental benefit.
- c. To provide baseline data for a larger, region wide IRM project

2. Options to procure a pilot

- a. A high level Request for Expressions of Interest (RFEI) open broadly to the private sector could be used. This would certainly be seen as objective but would be lengthy in comparison to other approaches. Also, the fact that multiple “requests” have already been initiated by the CRD could result in fewer applications.
- b. A request for responses could be sent directly to providers of technology already identified by presentations to: Innovation days at Westside Committee, Technical Oversight Panel (TOP) and the IRM task force. This would possibly meet the test of objectivity since technologies and providers have already been broadly canvassed. Also, this approach is likely to be considerably more efficient and timely.
- c. A note could be sent to providers already identified indicating that a pilot is being procured and asking them to answer swiftly as to whether or not they wished to participate. At the same time, traditional RFEI advertisements could be run seeking new responses. Already identified potential providers could provide information and be evaluated while the time for new responses was open. Any new responses would be evaluated as they came in.

*The IRM Task Force supports option 3 as the process for an RFEI concerning a pilot

3. Some suggested evaluation criteria for responses – should be included in RFEI

- a. What technology(s) is proposed?
- b. Does the response deal sufficiently with the waste streams identified?
- c. Does the technology(s) and/or applicant have an established track record? E.G. has at least one commercial scale plant been operated successfully? If so, for how long has the plant operated continuously?
- d. Has this technology(s) been tested with a mix of the specified wastes? If so, at what scale and for what duration?
- e. What are the environmental benefits that might reasonably be expected from the response provided? – order of magnitude of the these benefits
- f. Does the response provide means for generating revenues? – order of magnitude
- g. Has a suitable testing program been proposed to provide the desired data (see #1)?

- h. How long would it take to begin the pilot?
- i. How long would it take to produce the necessary information?
- j. What would the net cost of the pilot be to the CRD?
- k. Does the response provide for guarantees or warranting of performance?
- l. Could the pilot infrastructure be incorporated into a larger region wide project

*The select committee should work with the Evaluation Team to tailor and add to the above questions

4. Evaluating responses and creating a short list

- a. The Evaluation Team would evaluate responses based on the criteria in #4 above plus other questions considered to be germane and recommend a short list of 2 or 3 preferred respondents to the task force.
- b. The Evaluation team would work further with these respondents to ultimately recommend a single preferred respondent.

**REPORT TO THE SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY, MARCH 17, 2016**

**SUBJECT REQUEST TO WAIVE SAANICH PENINSULA WATER AND WASTEWATER
DEVELOPMENT COST CHARGES**

ISSUE

The Greater Victoria Rental Development Society has requested that the Saanich Peninsula water and wastewater development cost charges be waived for their affordable rental housing development in the Town of Sidney.

BACKGROUND

The Saanich Peninsula Water and Wastewater Development Cost Charge (DCC) Bylaw No. 3208 (Bylaw) was created to allow for the imposition of development cost charges to support the funding of growth and capacity related water and wastewater system improvements in the municipalities of Central Saanich, North Saanich and Sidney. The Saanich Peninsula Water and Wastewater Commissions received a DCC Bylaw update report at their meetings of September 17, 2015.

The Capital Regional District (CRD) recently received a request (**Attachment 1**) from the Greater Victoria Rental Development Society (GVRDS) to waive the DCCs for their proposed multi-use residential and commercial development at 9818 Fourth Street in the Town of Sidney, which includes 56 affordable rental housing units. The letter indicates that the Town of Sidney has agreed to waive municipal building and development fees associated with the project and that the project is seeking grants from the CRD Housing Trust and Canada Mortgage and Housing Corporation (CMHC). The letter also indicates that GVRDS and the Town of Sidney will enter into a Housing Agreement in perpetuity to ensure the housing units in the project remains as affordable rental housing units.

Further to CRD DCC Bylaw No. 3208, the *Local Government Act* (Act) Sections 561, 562 and 563 set out conditions under which DCCs may be waived or reduced. Specifically, Section 563 defines 'eligible development' as 'not-for-profit rental housing' and 'for-profit affordable rental housing', where a local government may waive or reduce a DCC for an eligible development. However, to do so, a local government must, by bylaw, establish what constitutes an 'eligible development' and what the rates of reduction are for different types of development. Therefore, the Saanich Peninsula DCC Bylaw would require amendments to this effect if the Saanich Peninsula Water and Wastewater Commissions wish to consider waiving the DCCs.

The current water DCC for 'Apartment Residential' land use is \$957 per unit and the current wastewater DCC for 'Apartment Residential' land use is \$869 per unit. Based on the proposed 56 affordable rental housing units, the DCC fees that would be payable at the building permit stage would be \$53,592 for water and \$48,664 for wastewater. Any other use designations in the proposed multi-use residential and commercial development, including non-affordable rental housing units (as defined by CMHC) and commercial units would be subject to water and wastewater DCCs.

ALTERNATIVES

Alternative 1 –

That the Saanich Peninsula Water and Wastewater Commissions:

- a) direct staff to prepare draft amendments to the Saanich Peninsula Water and Wastewater Development Cost Charge Bylaw No. 3208 for the Commissions' review, that would allow for the Commissions to waive the development cost charges payable under the Bylaw for the following eligible development types: 'not-for-profit rental housing, including supportive living housing' and 'for-profit affordable rental housing'; and
- b) subject to Commission approval and CRD Board adoption of the amended Bylaw, support in principle waiving the Development Cost Charges for 56 affordable rental housing units proposed by the Greater Victoria Rental Development Society (GVRDS) project at 9818 Fourth Street in the Town of Sidney and direct staff to advise the GVRDS and the Town of Sidney accordingly.

Alternative 2 – That the Saanich Peninsula Water and Wastewater Commissions not direct staff to prepare amendments to the Saanich Peninsula Water and Wastewater Development Cost Charge Bylaw No. 3208 that would allow waiving the development cost charges payable under types of eligible developments.

IMPLICATIONS

Alternative 1

Under this alternative, subject to DCC Bylaw amendments, the GVRDS would receive the financial benefit of not paying the DCCs for the affordable rental housing units in the proposed development, but water and wastewater DCCs would be payable for the non-affordable rental housing units (as defined by CMHC) and commercial units. A comprehensive review of the water and wastewater DCC project plans and bylaw is being conducted this year; the DCC reserve fund balances are approximately \$1.15M for water and \$1.50M for wastewater.

Alternative 2

Under this alternative the GVRDS would be required to pay the applicable DCCs for the entire project.

CONCLUSION

The CRD recently received a request from the GVRDS to waive the DCCs for their proposed multi-use residential and commercial development at 9818 Fourth Street in the Town of Sidney, which includes 56 affordable rental housing units. Further to CRD DCC Bylaw No. 3208, the *Local Government Act* sets out conditions under which DCCs may be waived or reduced for affordable rental housing units however, to do so, Bylaw amendments would be required. Then, the Saanich Peninsula Water and Wastewater Commissions could consider waiving the DCCs for the proposed 56 affordable rental housing units in the development.

RECOMMENDATION

That the Saanich Peninsula Water and Wastewater Commissions:

- a) direct staff to prepare draft amendments to the Saanich Peninsula Water and Wastewater Development Cost Charge Bylaw No. 3208 for the Commissions' review, that would allow for the Commissions to waive the development cost charges payable under the Bylaw for the following eligible development types: 'not-for-profit rental housing, including supportive living housing' and 'for-profit affordable rental housing'; and
- b) subject to Commission approval and CRD Board adoption of the amended Bylaw, support in principle waiving the Development Cost Charges for 56 affordable rental housing units proposed by the Greater Victoria Rental Development Society (GVRDS) project at 9818 Fourth Street in the Town of Sidney and direct staff to advise the GVRDS and the Town of Sidney accordingly.



Ted Robbins, B.Sc., C.Tech.
General Manager, Integrated Water Services



Robert Lapham, MCIP, RPP
Chief Administrative Officer
Concurrence

TR:mm
Attachment: 1



Greater Victoria Rental Development Society
c/o 204-655 Tyee Rd, Victoria, BC V9A 6X5
GVRDS.com

Attention: Ted Robbins
General Manager for the Integrated Water Services
479 Island Highway
Victoria, BC V9B 1H7

Subject: Request for the forgiveness of the Regional fees from the Saanich Peninsula Wastewater Commission for the new non-subsidized Affordable Workforce Housing Apartment project at 9818-9830 Fourth Street, Sidney BC.

Dear Mr. Robbins and the Saanich Peninsula Waste Water Commission members,

Thank you for taking the time to discuss our new project located at 9818-9830 Fourth Street Sidney BC. Specifically our ask of the Commission to waive all associated fees attached to this project. Sidney has gone above and beyond in waiving all of the associated rezoning, dcc and building permit fees plus Sidney has awarded us a ten-year tax exemption. The Township of Sidney has also passed the needed variances and bonus density that we required to make this project viable. The CRD Housing Trust has approved a grant toward the project (at this time the CRD is still deciding on the grant amount), CMHC has awarded the society \$120,000 in grants and forgivable loan for project development costs and BC Housing is currently processing the project financing for approval after tendering (scheduled April 15). Our Society, GVRDS donates all of the development costs and office and staff costs to the project saving the project a further \$331,000. This is a low estimate as a typical project this size would need to hire all of the required design and development consultants at an estimated further \$860,000.00. These costs are not part of the project as the work is solely done by GVRDS.

Since 2010 GVRDS has been successful in the acquisition, design, construction and completion of three past projects, and one under construction for a total of \$43 million dollars in costs (land, soft and hard construction) to provide 185 new affordable workforce housing units and 5 townhomes. The townhomes were built to sell to provide much need capital to the project located at 35 Gorge Rd East with 68 units of mixed studio, one and two bedrooms. Again with no associated costs from GVRDS.

This project located at 9818 Fourth Street, is a five storey multi use residential commercial complex. There is an underground parkade with a first floor of commercial of concrete construction, floors two thru five are of wood construction

and consist of 56 affordable rental housing units with a mix of small and large one bedrooms and large two bedrooms. The unit mix reflects the desperate need for non-subsidized affordable work force housing in Sidney and the Peninsula area. We have spent the last four years looking for the site that best suits this purpose within the Peninsula. This project targets a generation that wants to walk and bike to work, walk to buy groceries, access businesses and become part of a community. This generation cannot afford the use of a car and actually choose not to own one. We will be providing a car share memberships to every unit and have two dedicated cars on site. We will internally self promote the use of the car share memberships by reimbursing the tenant for the use of the cars for the first two years paid thru a car share pool. We have designed the corridors to allow bikes to be stored inside the suites to promote bike use and have tenants feel safe storing their bikes

This specific design and site has integrated a day care into the commercial area. The first floor is dedicated to the establishment of a daycare that has committed to a fifteen-year lease. The daycare offers spaces from four month old to 60 months. Our intention was to purpose build and design a project with the space both interior and exterior required for a day care for up to 150 children. In our past projects we have tried to incorporate a daycare as this is asked of us all of the time. We could not provide daycare space on the first two because of zoning and we could not provide daycare for our third build, Blanshard, due to the limited lot size.

It was extremely important to try with this project, to prove it can and should be done. The daycare also plays an extremely important role in providing long term revenue to the affordable workforce rental units The business plan has the lease on the commercial internally stabilizing the lower rents on the apartment units for years to come.

Our business model has at least 50 % plus one unit hitting the current CMHC affordability level one-rental rates for the area. The CMHC rental rates are set to reflect that an average renter in the area should not be spending more then 30% of their household income on rent. The assistance that Sidney, the CRD, CMHC and the low interest construction loan from BC Housing allow us to hit a higher percentage of units. On our first project The Loreen, opened in March 2012, we have 44 out of 52 units at or below affordability level one, two and three.

Our ability to build for less is solely due to the support and contributions from the many levels of Government that see the need and ability to build these projects. We could not do it if it were not for the generosity of the Township of Sidney, the grant from the CRD housing trust fund, the low interest loan, no development fees, and the commitment from our amazing construction and consultant team. All of this work allows for this project to be viable however we also ask that the Commission please consider the waiving of the fees associated with this project. It is all part of the viable business plan to stabilize and allow for the rents to be as low as we can set them at occupancy, and still qualify for financing.

As with our other projects the Township of Sidney registers a Housing Agreement against the property, the agreement sits in perpetuity to ensure the project stays affordable. The CRD registers a non-interest bearing loan against the property for their contribution and BC Housing registers a restrictive covenant.

GVRDS has an excellent track record and we are a financially stable society with a mandate to build quality new build affordable work force housing. Our development team for the last six years has been the same group of dedicated professionals. They are Knappett Projects Inc., LowHammondRowe Architects, RJC, AES, AME, Ryzuk, Alan Powell Surveyors, Keith Grant Landscape, MorrisonHershfield, JEA, Stantec, Cushman Wakefield and for the past year our experienced and excellent managers Randall North are a contingency of like minded individuals that want to contribute to the well being of generations to come.

Please consider this request to waive the associated fees that apply to this project. Any cost to the project greatly affects the viability of financing. Let me know if you need any more information.

Thank you

Alanna Holroyd
Executive Director, Development Manager
GVRDS