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**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY 10 NOVEMBER 2011**

SUBJECT BIOSOLIDS MANAGEMENT PROGRAM – OPTIONS FOR MOVING FORWARD

ISSUE

To provide information regarding biosolids management options for the Saanich Peninsula wastewater treatment plant (SPWWTP).

BACKGROUND

At their meeting of 13 July 2011, the Capital Regional District (CRD) Board passed the following motions:

1. That the CRD will harmonize current and long-term practices at all CRD-owned regional facilities and parks with the approved policies of the regional treatment strategy, including ending the production, storage and distribution of biosolids for land application at all CRD facilities and parks.
2. That the CRD does not support the application of biosolids on farmland in the CRD under any circumstances and let this policy be reflected in the upcoming Regional Sustainability Strategy.

This terminated the PenGrow residential program for 2011 and possibly the future, unless the Saanich Peninsula Wastewater Commission decides to relocate the PenGrow distribution from Hartland to another site.

In the long term, the Saanich Peninsula Liquid Waste Management Plan (SPLWMP) states that any biosolids management opportunities that become available through the CRD core area wastewater treatment project will be pursued.

As an interim solution, it was proposed that SPWWTP biosolids be beneficially used as a soil enhancement to the landfill capping material at Hartland landfill under a temporary exemption to the above CRD Board directive. Appendices A and B provide the staff reports presented to the Environmental Sustainability Committee (ESC) and to the Board for consideration of this proposal.

In receiving the staff reports at their meeting on 12 October 2011, the CRD Board referred this item back to staff for more information related to cost comparisons, details on monitoring and testing programs, what other municipalities are doing with their waste, what monitoring is being done at the Metro landfill and other environmental implications.

In order to respond to these questions, a Land Application Plan would need to be developed in consultation with the Ministry of Environment (MoE) at an estimated cost of approximately \$25,000. Due to the uncertainty of whether or not ESC and the CRD Board would support the use of biosolids for landfill capping, there is a need to identify what other alternatives may exist.

ALTERNATIVES

The following alternative courses of action have been identified for consideration:

1. Prepare a Land Application Plan for biosolids to be beneficially used as a soil enhancement to the landfill capping material at Hartland landfill for approval by the MoE, ESC and CRD Board.
2. Retain a consultant to develop a revised biosolids management program confirming those partners that are actually viable for using the Saanich Peninsula sludge/biosolids. An RFP would then be issued to selected proponents to determine a preferred proponent to enter into a contract with.
3. Issue an invitation for "Expression of Interest" to identify all potential partners, companies and end users who may be interested in utilizing the sludge/biosolids. A terms of reference would be developed through consultation with the interested parties and an RFP would then be issued to selected proponents to determine a preferred proponent to enter into a contract with.
4. Amend Saanich Peninsula Liquid Waste Management Plan as per the motions passed by the CRD Board at their meeting on 13 July 2011 and harmonize the Saanich Peninsula biosolids management program with that of the Core Area. In the interim, Saanich Peninsula sludge would be landfilled at the Hartland landfill until the Core Area system is in service.

FINANCIAL IMPLICATIONS

The estimated costs and timelines to complete the options are as follows (for details see Appendix C). Option 2 would have significant impact on the 2012 biosolids management budget.

Option	Estimated Cost		Estimated Time to Complete
	Staff	Consultant	
1	\$25,000	--	5 months
2	\$60,000	\$120,000	15 months
3	\$40,000	--	8 months
4	\$5,000	--	1 month

INTERGOVERNMENTAL IMPLICATIONS

The 13 July 2011 motions passed by the CRD Board ended the PenGrow residential program operating out of the Hartland landfill, thereby placing the CRD in non-compliance of its biosolids management commitments to the MoE under the SPLWMP. This requires an MoE approved amendment to the SPLWMP and implementation of an approved alternate use for the biosolids which does not include land application.

CONCLUSION

In consideration of the four options identified, it is uncertain whether the CRD Board will allow Option 1 to proceed even with an MoE approved Land Application Plan. Option 2 requires a significant expenditure and a long timeline to complete. Option 4 represents a deferral strategy which may not be acceptable to the MoE. Option 3 appears to be a reasonable option which adopts a proactive approach to dealing with the problem.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission direct staff to proceed with the invitation for “Expressions of Interest” to identify any potential partners, companies or end users that may be interested in utilizing Saanich Peninsula sludge/biosolids as set out in Option 3.

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Senior Manager, Water Management
Integrated Water Services

Dan Telford, P.Eng.
Senior Manager, Environmental Engineering
Environmental Sustainability

AL/DT:mer

Attachments: 3



**REPORT TO ENVIRONMENTAL SUSTAINABILITY COMMITTEE
MEETING OF WEDNESDAY 21 SEPTEMBER 2011**

SUBJECT **SAANICH PENINSULA WASTEWATER TREATMENT PLANT BIOSOLIDS
MANAGEMENT – BENEFICIAL USE OF BIOSOLIDS AT HARTLAND AS LANDFILL
CAPPING**

ISSUE

To consider the beneficial use of biosolids at Hartland as a soil enhancement to the landfill capping material.

BACKGROUND

Under the Saanich Peninsula Liquid Waste Management Plan (SPLWMP), the Capital Regional District (CRD) and its participating Peninsula municipalities committed to implementing the Biosolids Management Plan, focusing on seeking opportunities to diversify biosolids beneficial use markets.

A home-use biosolids pilot program (PenGrow product) was implemented in 2006 to distribute PenGrow to the public from the Hartland landfill recycling area; however, in July 2011, the CRD Board passed a motion to end the production, storage and distribution of biosolids for land application at all CRD regional facilities and parks. This terminated the PenGrow residential program for 2011 and possibly the future, unless the Saanich Peninsula Wastewater Commission decides to relocate the operation to another site.

In the long term, the SPLWMP states that any biosolids management opportunities that become available through the CRD core area wastewater treatment project will be pursued. The core area project has identified a preferred strategy to use the biosolids as a fuel for a cement kiln and/or to power a waste-to-energy facility.

Over the interim, there is a need to identify alternatives to the management of biosolids produced from the Saanich Peninsula Wastewater Treatment Plant (SPWWTP). One such alternative would be to beneficially use the biosolids as a soil enhancement to the landfill capping material at the Hartland landfill.

ALTERNATIVES

That the Environmental Sustainability Committee recommend to the Board:

1. That the proposed beneficial use of biosolids as part of the landfill capping material be approved as an exemption under the Board's direction to not produce, store or distribute biosolids for land application at all CRD regional facilities and parks.
2. That the proposed beneficial use of biosolids be rejected.

ENVIRONMENTAL IMPLICATIONS

Hartland landfill is in the process of capping the Phase 2, Cell 1 area of approximately 3.5 hectares. This process will take about five years and typically requires soil with nutrients to grow vegetation (grasses) to stabilize the final cover layer on the landfill. A commonly accepted practice is to mix biosolids (as fertilizer) with soil to provide the nutrients required to sustain an agronomic crop of grasses. Metro Vancouver has successfully used its biosolids in this way to stimulate vegetation growth on two of its closed landfill sites.

Environmental Sustainability Committee – 21 September 2011

Re: SPWWTP Biosolids Management – Beneficial Use of Biosolids at Hartland as Landfill Capping

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The capping of the Phase 2, Cell 1 area with a soil/biosolids mixture containing 10% biosolids would result in the beneficial use of approximately 1,400 m³ of biosolids per year.

A land application plan, approved by the Ministry of Environment, would be required prior to implementing the beneficial use of biosolids as part of the landfill capping material at Hartland. The land application plan would include the evaluation of the environmental implications and set monitoring requirements for the operation.

Appendix A provides the proposed table of contents for the Land Application Plan and additional information on two areas of particular interest, worker safety and bio-aerosol control.

INTERGOVERNMENT IMPLICATIONS

The current SPLWMP will need to be amended to include landfill capping as a beneficial use for the biosolids.

CONCLUSION

The PenGrow program ended in 2011 and all untreated sludge generated from the SPWWTP is currently being landfilled at Hartland. Beneficial use of the biosolids is needed to fulfill the SPLWMP commitment and one option would be to mix biosolids (as fertilizer) with soil to provide the nutrients required to sustain an agronomic crop of grasses for capping the Hartland landfill. Allowing the beneficial use of biosolids as part of the capping material would reduce the amount of chemical fertilizer needed and supports the commitment of the SPLWMP.

RECOMMENDATION

That the Environmental Sustainability Committee recommend to the Board:

That the proposed beneficial use of biosolids as part of the landfill capping material be approved as an exemption under the Board's direction to not produce, store or distribute biosolids for land application at all CRD regional facilities and parks.

Dan Telford, PEng
Senior Manager, Environmental Engineering

Larisa Hutcheson, PEng
General Manager, Environmental Sustainability
Concurrence

Kelly Daniels
CAO Concurrence

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**INFORMATION ON PROPOSED LAND APPLICATION PLAN FOR USING BIOSOLIDS
AS LANDFILL CAPPING MATERIAL AT HARTLAND**

Proposed Table of Contents

The proposed Table of Contents would include, but not be limited to, the following:

1. Introduction
2. Land Application Objectives
3. Site Characteristics
4. Amendment Material Characteristics
5. Amendment Rate
6. Management Considerations
7. Environmental Considerations
 - neighbours, site access and signage
 - wildlife and animal grazing
 - odour management
 - weather limitations
 - vegetation establishment
 - worker safety
 - bio-aerosols control
8. Monitoring
9. Contingency
10. Reporting

Two areas of particular interest relate to worker safety and bio-aerosol control. Preliminary consideration of these two areas of interest are as follows:

Worker Safety

Workers and contractors will be made aware of any potential risks associated with handling Class A biosolids. Appropriate protective equipment, hygiene stations and training will be provided.

To ensure that the safety practice is designed to meet the most stringent requirements, the *Guidance for Controlling Potential Risk to Workers Exposed to Class B Biosolids*, prepared by the Department of Health and Human Services, Centres for Disease Control and Prevention, National Institute for Occupational Safety and Health, will be followed.

Bio-aerosols Control

The biosolids from the SPWWTP are treated at a high temperature to produce a Class A pasteurized, lime stabilized material. These biosolids contain no fecal coliforms (pathogenic indicator) and have a solids content of over 45% which is similar to most soils. Unlike untreated liquid or semi-liquid sludge, which can be a source of bio-aerosols containing fecal coliforms, the Saanich Peninsula material is unlikely to be susceptible to aerosolization.

Any dust generated during mixing and handling of material will be controlled with the following strategies:

1. Mixing and handling activities will be limited to times when wind speed is less than 10 km/hr., based on the Hartland weather station which tracks wind speed and direction.
2. The current Hartland Operations dust control procedures will be used.
3. The final surface layer on the application area will consist of biosolids-free material.
4. The application area will be hydro-seeded within one week of the final application.



**REPORT TO CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY 12 OCTOBER 2011**

**SUBJECT SAANICH PENINSULA WASTEWATER TREATMENT PLANT BIOSOLIDS
MANAGEMENT – SUPPLEMENTARY INFORMATION ON BIOSOLIDS USE FOR
LANDFILL CAPPING AT HARTLAND**

ISSUE

To provide supplementary information regarding the proposed beneficial use of Saanich Peninsula wastewater treatment plant (SPWWTP) biosolids as a soil enhancement to the landfill capping material used at the Hartland landfill.

BACKGROUND

At its meeting of 21 September 2011, the Environmental Sustainability Committee requested that answers to the following questions be provided as supplementary information to the Board on 12 October 2011:

Q1: How much PenGrow biosolids product would be used in the capping material?

Approximately 1,400 m³ of biosolids would be used annually; 700 m³ each in the spring and fall seasons. This would be about half of the annual amount produced at the plant. The biosolids would be mixed at a ratio of 1:10 with soil and compost.

Q2: What is the volume that will be produced by the core area plant?

The core area plant's annual production will be approximately 23,360 m³ of raw sludge, as compared to the SPWWTP annual production of approximately 3,000 m³.

Q3: How long will biosolids be used in the landfill capping process?

The biosolids would be used in the capping of Phase 2 Cell 1, which should take approximately five years.

Q4: What is the long-term plan for Saanich Peninsula biosolids?

The long-term plan is to pursue harmonizing Saanich Peninsula biosolids management with that of the core area once the sewage treatment project has been put into operation.

Q5: What would be done to ensure contaminants don't reach the clean water system?

If the landfill capping option is exempted from the Board directive, the Land Application Plan will be prepared following Ministry of Environment (MOE) land application guidance. The Land Application Plan and an amendment to the Saanich Peninsula Liquid Waste Management Plan will then be submitted to the MOE for final approval before any implementation.

The surface water drainage system at Hartland operates separately from the solid waste leachate system, which collects leachate from the garbage and conveys it via pipeline to Macaulay Point for discharge out the outfall to the marine environment. The stormwater runoff from Phase 2 Cell 1 is

collected by the surface drainage system and conveyed via surface ditches to a collection/sedimentation pond which flows into a second sedimentation pond before being discharged into Heal Creek. The surface water discharged to Heal Creek is tested six times a year to meet the BC Approved Water Quality Guidelines and A Compendium of Working Water Quality Guidelines for British Columbia.

Q6: What are the effects of burying versus capping at Hartland?

The comprehensive identification and evaluation of any potential impacts on the receiving environment associated with the landfill capping option, including stormwater runoff to Heal Creek, would be done as part of the preparation of the Land Application Plan for review and approval by MOE.

Q7: What other alternatives are available for management of the biosolids produced by the Saanich Peninsula treatment plant?

Appendix A provides the Capital Regional District's commitments for biosolids management under the Saanich Peninsula Liquid Waste Management Plan.

Appendix B provides the motion approved by the Board at the 13 July 2011 meeting.

Appendix C identifies all other biosolids management alternatives (short and long term) available to the Saanich Peninsula with comments on their associated viability.

RECOMMENDATION

That the Board receive this report for information.

Dan Telford, PEng
Senior Manager, Environmental Engineering

Larisa Hutcheson, PEng
General Manager, Environmental Sustainability
Concurrence

Kelly Daniels
CAO Concurrence

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**SAANICH PENINSULA LIQUID WASTE MANAGEMENT PLAN
AMENDMENT NO. 3**

4.4.3 Residuals Management:

The Capital Regional District (CRD) and its participating member municipalities commit to implementing the following Biosolids Management Plan:

Commitments

- pursue an effective and diversified program for the beneficial use of Class A biosolids that incorporates economically viable and long-term solutions
- mitigate nuisances associated with the production and application of biosolids including odour, noise, truck traffic and dust
- manage biosolids to ensure that detrimental effects to public health and the environment are avoided.

Biosolids Management Plan

The CRD has developed a "PenGrow" soil enhancer program that began as a pilot in 2008 at Hartland Landfill. Based on the success of this pilot program, it is planned to initially process about 300 tonnes of cured Class A biosolids and distribute it to the public at Hartland in bagged or bulk form. The plan is to then expand the "PenGrow" program to include processing and distributing the biosolids at the three Peninsula municipal public works yards.

The CRD plans to continue to seek opportunities to diversify biosolids beneficial use markets to include individual residences, commercial operations and farms.

In the long term, the CRD will ensure that the Saanich Peninsula biosolids management program will pursue any biosolids management opportunities that become available through the CRD's Core Area wastewater treatment project. There may be economies of scale savings to be achieved by managing the Core Area and Peninsula biosolids together.

As an interim plan, the CRD will continue to haul a portion of the sludge to Hartland landfill. The CRD's Solid Waste Management Plan allows for the disposal of raw sludge at this site as a controlled waste.

**EXCERPT – CRD BOARD MINUTES
JULY 13, 2011**

5.3 ENVIRONMENTAL SUSTAINABILITY COMMITTEE – May 25, 2011

1. Motion to Protect Local Farmland and to Harmonize Sewage Treatment Strategies within the CRD – Director Lucas

MOVED by Director Lucas, **SECONDED** by Director Derman,

Whereas the CRD is committed to developing regional sewage treatment strategies that have the lowest impact on both the environment and public health, and the highest resource recovery potential;

And Whereas the Core Area Liquid Waste Management Committee has passed a motion banning the land application of biosolids in order to address legitimate public health and environmental concerns about the accumulation and dispersal of Polycyclic Aromatic Hydrocarbons, heavy metals, pharmaceuticals, and other Emerging Compounds of Concern (ECCs) on our land, in our food, and in the regional water table;

And Whereas protecting the “integrity of rural communities” and “regional green and blue spaces”, and managing “natural resources and environmental sustainability” are important and explicit goals and responsibilities of the CRD as outlined in the Regional Growth Strategy (<http://tinyurl.com/65wdd8p>), and “improving population health and regional food security” are noted as Priority Actions in the Capital Region Food and Health Action Plan (<http://tinyurl.com/4xetqbz>);

Be it so moved that the CRD will harmonize current and long-term practices at all CRD-owned regional facilities and parks with the approved policies of the regional treatment strategy, including ending the production, storage and distribution of biosolids for land application at all CRD facilities and parks; and

Be it further moved that the CRD does not support the application of biosolids on farmland in the CRD under any circumstances, and let this policy be reflected in the upcoming Regional Sustainability Strategy.

MOVED by Director Hendren, **SECONDED** by Director Hancock,

That the motion **be amended** by adding the following:

“That it be further moved that the pasteurized, lime-stabilized Class A biosolids material produced at the Saanich Peninsula Wastewater Treatment Plant may be beneficially used by Hartland Landfill operations to replace chemical fertilizers as the soil amendment blended with soil and compost for use as the final cover material in the closure of Phase 2 Cell 1, in full compliance with all environmental and health regulations.”

Concerns were raised that the amendment creates an exception and that other exemptions may need to be considered.

MOVED by Director Evans, **SECONDED** by Director Hill,

That the **amendment be referred** to the Environmental Sustainability Committee for consideration. **CARRIED**

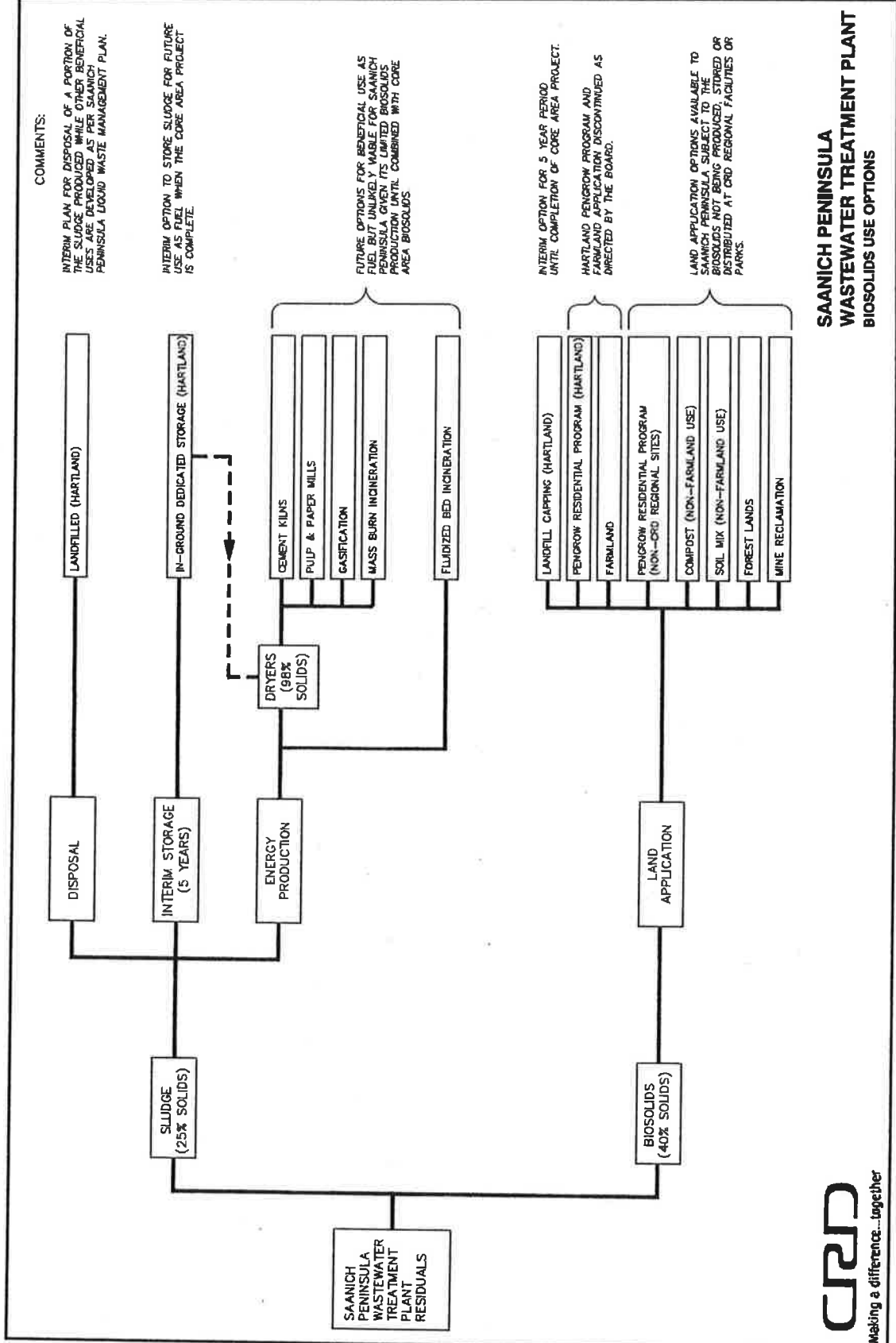
MOVED by Director Hendren, **SECONDED** by Director Hill,

That consideration of the main motion be postponed until the Environmental Sustainability Committee reports on exemptions. **DEFEATED**

Hicks, Ranns, Evans, Seaton, Young, Brice, Causton and Wergeland IN FAVOUR

The question on the main motion was called.

CARRIED
Evans, Seaton, Causton OPPOSED



COMMENTS:

INTERIM PLAN FOR DISPOSAL OF A PORTION OF THE SLUDGE PRODUCED WHILE OTHER BENEFICIAL USES ARE DEVELOPED AS PER SAANICH PENINSULA LIQUID WASTE MANAGEMENT PLAN.

INTERIM OPTION TO STORE SLUDGE FOR FUTURE USE AS FUEL WHEN THE CORE AREA PROJECT IS COMPLETE.

FUTURE OPTIONS FOR BENEFICIAL USE AS FUEL BUT UNLIKELY WABLE FOR SAANICH PENINSULA GIVEN ITS LIMITED BIOSOLIDS PRODUCTION UNTIL COMBINED WITH CORE AREA BIOSOLIDS

INTERIM OPTION FOR 5 YEAR PERIOD UNTIL COMPLETION OF CORE AREA PROJECT. HARTLAND PENGROW PROGRAM AND FARMLAND APPLICATION DISCONTINUED AS DIRECTED BY THE BOARD.

LAND APPLICATION OPTIONS AVAILABLE TO SAANICH PENINSULA SUBJECT TO THE BIOSOLIDS NOT BEING PRODUCED, STORED OR DISTRIBUTED AT CRD REGIONAL FACILITIES OR PARKS.

SAANICH PENINSULA WASTEWATER TREATMENT PLANT BIOSOLIDS USE OPTIONS



		2012												2013							
		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR		
OPTION 1 - LAND APPLICATION PLAN																					
LAND APPLICATION PLAN FOR HARTLAND		STAFF \$25,000																			
OPTION 2 - CONSULTANT STUDY																					
RETAIN CONSULTANT		STAFF \$15,000																			
PREPARATION OF REVISED PLAN						STAFF \$25,000		CONSULTANT \$100,000													
RETAIN CONTRACTOR BY RFP																	STAFF \$20,000	CONSULTANT \$20,000			
OPTION 3 - EXPRESSION OF INTEREST																					
INVITATION FOR EXPRESSIONS OF INTEREST		STAFF \$15,000																			
RETAIN CONTRACTOR BY RFP								STAFF \$25,000													
OPTION 4 - SP LWMP AMENDMENT																					
LETTER TO MINISTRY OF ENVIRONMENT		STAFF																			
		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR		
		2011												2012				2013			



BIOSOLIDS MANAGEMENT PLAN
OPTIONS FOR MOVING FORWARD
BUDGET & TIMELINE