

W A S T E W A T E R T R E A T M E N T M A D E C L E A R

PROBABILITY THAT ENERGY PRICES WILL RISE IN THE FUTURE.

1000%



CRD

Making a difference... together

See a term you aren't familiar with?

For those items that require a little more explanation, we have provided a list of useful definitions on page four and six of this insert.



DID YOU KNOW? The CRD operates secondary treatment facilities for the Southern Gulf Islands and the Saanich Peninsula? For more information visit www.crd.bc.ca/wastewater/facilities

Then, now and some day soon.

At the Capital Regional District (CRD), we provide wastewater management to 330,000 residential, commercial, and institutional customers in the Core Area and West Shore communities. In recent decades, discussing sewage in our communities has sparked debate on why our region discharges wastewater - with limited treatment - into our marine environment. Our region's wastewater system is operated under a Liquid Waste Management Plan that was originally endorsed by the provincial government back in 2003.

Key features of this governing plan include:

- A source control program
- A program to reduce inflow and infiltration
- Preliminary wastewater treatment
- Effluent disposal to our marine environment through two major outfalls

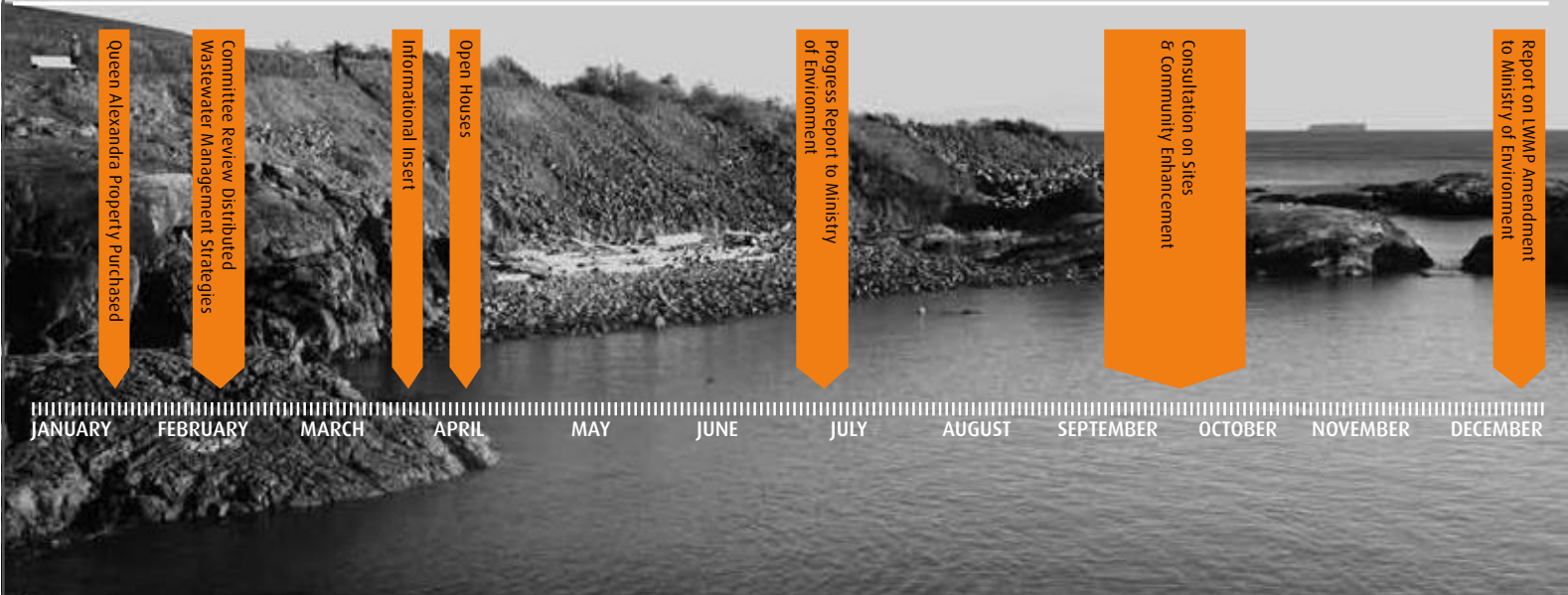
In 2006, the provincial Minister of Environment stipulated that we amend this plan to include the provision of further wastewater treatment. Since then, we have undertaken the development of a wastewater management strategy that will meet the long-term needs of our growing communities. By December 31, 2009 we are responsible for reporting our regional decisions on how we will integrate further treatment into our Liquid Waste Management Plan. These decisions must also be in accordance with the Canada-wide Strategy for the Management of Municipal Wastewater Effluent.

To propel us towards these goals, 2009 will be an important year for engagement with residents, government, First Nations and invested stakeholders. As planning moves ahead for further treatment, we will all have an opportunity to look at wastewater management from a new perspective: not as a waste to dispose of, but as a resource to utilize.

Using a comprehensive and holistic approach, we have examined worldwide trends in wastewater management to find the best options and potential solutions that can be applied locally. We've discovered that instead of the traditional view that wastewater is something to dispose of, it is now globally considered a key element of urban resource management. Based on these findings, we have decided to embrace treatment as an opportunity to integrate wastewater management into our community planning.



LIQUID WASTE MANAGEMENT PLAN TIMELINE (2009)



DID YOU KNOW? The Canada-wide Strategy for the Management of Municipal Wastewater Effluent was endorsed by the Canadian Council of Ministers of the Environment on February 17, 2009. The strategy sets out a harmonized framework to manage discharges from more than 3,500 wastewater facilities in Canada, many of which are currently in need of repair and upgrading.

The strategy includes minimum national performance standards to be achieved by all facilities and a process to develop and manage site-specific effluent discharge objectives. The minimum standards are equivalent to secondary treatment.

Engagement with First Nations

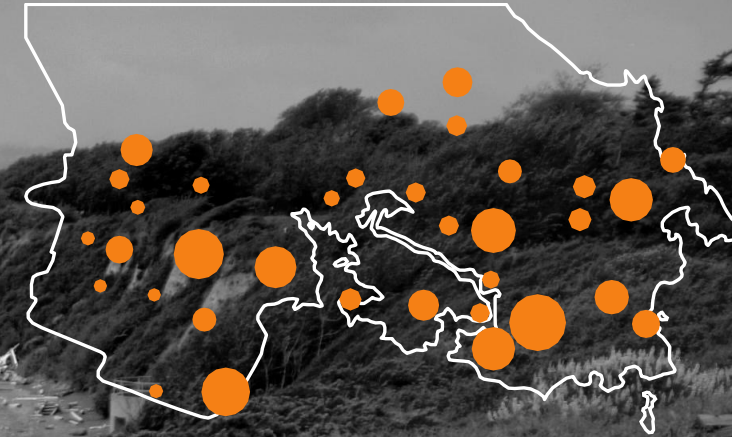
In partnership with the Provincial Government, First Nations engagement is one of our key priorities when planning for wastewater treatment in the Core Area.

We are eager to work with our First Nations neighbours in a meaningful way on the project to seek their input, to apply their input to avoid problems and to seek opportunities to work together. Given the complexities of the wastewater treatment project, the legal requirement and genuine desire to engage and consult with First Nations, and the number of other important endeavors taxing these First Nations' capacity, this pursuit can be expected to be an important element of the wastewater treatment project.

LITRES OF WATER USED ONLY ONCE IN THE FLUSH OF A TOILET OVER ONE YEAR

8,640

CRD CORE MUNICIPALITIES ENERGY RECOVERY OPPORTUNITY AREAS



With heat extraction technologies, the heat recovered has potential to be used as a supplemental heat source in our community. That's why we're looking into ways to source heat through wastewater treatment.

Why we can no longer afford to waste wastewater.

Climate change challenges have added a new dimension to our region's environmental responsibilities. Our natural resources are limited, and we must begin to think of conserving and reusing as a way to preserve the region's resources for future generations. As population grows, resources become more scarce, creating a demand for lowering our overall carbon footprint and developing better efficiencies in community planning. While these are not new concepts, they have taken on more relevance in the wastewater industry over the past few years. By looking at wastewater as a resource, we can concentrate on integration with community planning in three main areas:

- Energy from organic solids
- Wastewater heat energy
- Water reuse

MAKING THE MOST OF A RENEWABLE RESOURCE

Organic solids from the wastewater treatment processes have long been recognized as a source of "green" energy, mainly through the anaerobic digestion of the solids and the production of a biogas. Biogas can be used to generate on site electrical power or as a potential fuel for vehicles. It's also possible to produce higher quality and larger quantities of biogas through the addition of other organic wastes, such as discarded food. A biosolids and organic residuals component is an important part of an overall wastewater treatment strategy as it represents a significant opportunity for energy recovery.

WARMING UP TO THE IDEA OF RESOURCE RECOVERY

The typical average temperature of wastewater is about 15°C. Heat exchange technologies are rapidly advancing to allow a portion of this heat to be extracted from the treated wastewater. This is possible whether the end product is reused for irrigation or ultimately returned to our marine environment. The heat recovered is typically used as a supplemental heat source in a centralized community heating system.

WHY WATER CAN NO LONGER BE A SINGLE USE COMMODITY

Water extracted and treated during processing can be used in a number of ways to benefit our communities. This water has potential to be redirected to increase the flow in watercourses, utilized in irrigation applications or even employed in non-potable urban uses such as toilet flushing. Water recycling, often with the integration of rainwater capture, is used to reduce overall water use in a community and to decrease the amount of outgoing wastewater into the receiving marine environment. By using water twice, we can conserve our watershed supplies, ensuring an adequate supply for everyone.

TYPICAL AVERAGE TEMPERATURE OF WASTEWATER

15°C

TYPICAL AVERAGE TEMPERATURE OF VICTORIA IN WINTER

4°C

Helpful Definitions

For those items that require a little more explanation, we have provided a list of useful definitions here and on the next page.

ANAEROBIC DIGESTION

Digestion of organic materials in the absence of oxygen. Anaerobic digestion produces biogas.

BIOGAS

Biogas is gas produced by the biological breakdown of organic matter. It can be used to fuel vehicles, as an alternative to electricity or to power energy producing plants.

BIOSOLIDS

Biosolids are a by-product of the wastewater process. Biosolids are treated sewage sludge which, depending on its composition, can be reused in a variety of ways, including agricultural application or in waste to energy processes.

CARBON FOOTPRINT

A carbon footprint is the sum of all carbon dioxide (greenhouse gas) emissions that are directly and indirectly associated with one's activities.

CENTRALIZED COMMUNITY HEATING SYSTEM

A centralized heating system provides warmth to an entire building from a central, singular source. This type of heating is most common in our region in large buildings, such as recreation centres or larger institutions.

CENTRALIZED WASTEWATER TREATMENT

Centralized treatment generally means fewer, larger wastewater plants, which service a larger area.

CORE AREA

The CRD's Core Area municipalities include Colwood, Esquimalt, Langford, Oak Bay, Saanich, View Royal and Victoria.

DECENTRALIZED WASTEWATER TREATMENT

Decentralized treatment provides a more flexible treatment strategy, as it includes smaller, more strategically located plants, which can offer greater opportunities for water reuse and heat recovery.

EFFLUENT

Effluent is wastewater which has been separated from solids or sludge.

INFLOW & INFILTRATION (I&I)

I&I is rainwater and ground water that enters the sanitary sewer system. When I&I amounts increase during storm events, sewer capacity is consumed and sanitary sewer overflows may result.

ORGANIC RESIDUALS

Compostable food products which are left over from residential and commercial food production. Organic residuals include fruits, vegetables, grains, fish, animal by-products and paper products.

OUTFALL

An outfall is a pipe, located either at shoreline or underwater, out from shore, where wastewater exits the sewer system and joins marine waters.

Thinking locally. Treatment options for our region.

Helpful Definitions

For those items that require a little more explanation, we have provided a list of useful definitions here and on the previous page.

POTABLE (AND NON-POTABLE)

Potable water is synonymous with drinkable water. Non-potable water is not suitable for consumption.

PRELIMINARY WASTEWATER TREATMENT

Preliminary treatment screens out coarse solids (rocks, rags, plastics, etc.) and grit (sand and gravel) which are normally sent to landfill. Wastewater is screened down to 6mm sized particles at the CRD's Clover Point and Macaulay Point Facilities, where preliminary treatment is currently in effect.

URBAN RESOURCE MANAGEMENT

Urban resource management includes elements of urban planning which pertain to a region's energy resources and waste products.

SECONDARY WASTEWATER TREATMENT

Secondary (or biological) treatment removes dissolved oxygen-demanding organic substances by using bacteria to convert degradable organic matter into bacterial cells. Wastewater is then clarified by separating treated liquid from grown bacterial cells using gravity. Bacteria and sludge are then either processed on site or sent to a separate solids treatment facility.

SOURCE CONTROL

The CRD's Source Control program is a pollution prevention initiative aimed at reducing the amount of contaminants that industry, businesses, institutions and households discharge into the district's sanitary sewer systems.

WASTEWATER

The water which leaves a building after being used in bathrooms, kitchens or industrial uses.

WATERCOURSES

A watercourse is a natural or artificial channel through which water flows.

WET WEATHER FLOW

Wet weather flow is rainfall and snowmelt which flows through a land area and enters the storm drain system.

In spring 2007, we developed a series of options that spanned from a traditional centralized wastewater management approach to a more decentralized model, which would see a greater number of treatment facilities throughout the region. After an extensive analysis that incorporated economic, environmental and social considerations, we opted for a distributed approach to long-term wastewater management.

A distributed approach reduces the size of the central downstream plant, as the decentralized upstream plants reduce the overall flow reaching that plant. Also, by strategically locating these decentralized plants, opportunity is created for local water reuse and heat recovery from the wastewater treatment process. In addition, by reducing the overall flows into the lower sections of the sewerage system, capacity is freed up to handle a greater portion of our region's wet weather flow. This reduces the frequency and volume of potential sewer overflows.

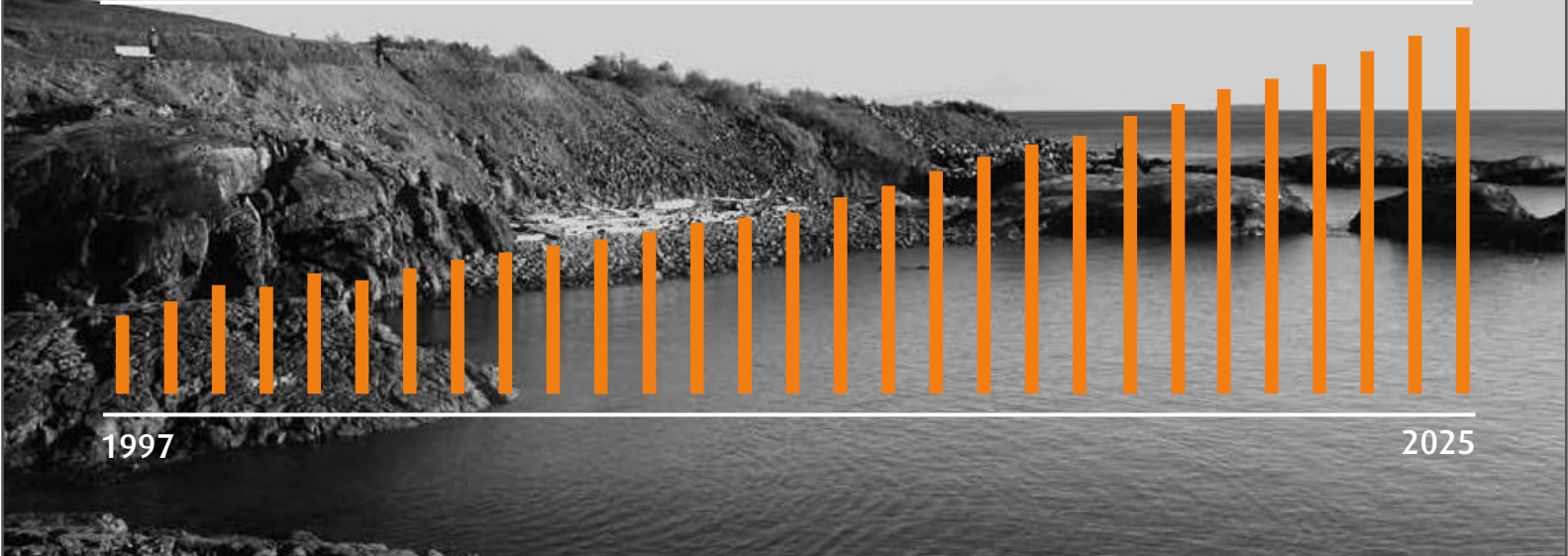
Some elements of resource recovery, such as energy recovery from organic solids, benefit from a centralized model. Other elements such as heat recovery or water reuse can be better achieved on a local, decentralized basis. Combining the benefits of both a centralized approach with decentralized elements can lead to a distributed or "hybrid" approach to wastewater management. This hybrid approach has brought us to an exciting time in the wastewater project, allowing us to develop three options for wastewater treatment, including resource recovery, for our region.



DID YOU KNOW? All three of the options we are considering have the potential to: fully use available heat energy, use the energy from organic biosolids and provide opportunity for reuse of wastewater. The only difference is how each option achieves these ends. See the chart on the next page to compare these options.



PROJECTED INCREASE IN RESIDENTIAL TOTAL ENERGY DEMAND



All things considered.

RESOURCE RECOVERY OPTIONS

	OPTION 1 Resource Recovery on a Regional Basis	OPTION 2 Resource Recovery on a Regional/Local Basis	OPTION 3 Resource Recovery on a Local Scale
NUMBER OF PLANTS	3	5	10
TYPE OF PLANTS	<i>One wet weather flow plant; heat energy recovery using effluent from all three plants; wet weather flow at Clover Point and organic energy and phosphorus recovery at two plants.</i>	<i>One wet weather flow plant; heat energy recovery using effluent from all five plants; modification of sewerage area boundaries; wet weather flow at Clover Point and Macaulay/McLaughlin Point and organic energy and phosphorus recovery at one plant.</i>	<i>One wet weather flow plant; aggressive water recycling at individual buildings; heat energy recovery using effluent from all ten plants; wet weather flow at Clover Point and Macaulay/McLaughlin Point and organic Energy and phosphorus recovery at two plants.</i>
ESTIMATED CAPITAL COSTS (\$)	1.2 BILLION	1.6 BILLION	2 BILLION
ESTIMATED ANNUAL RESOURCE RECOVERY REVENUES (\$)	3.6 MILLION	7.3 MILLION	8.3 MILLION
ESTIMATED ANNUAL OPERATING & MAINTENANCE COSTS (\$)	23.5 MILLION	29 MILLION	33.4 MILLION



In practical terms, triple bottom line analysis expands traditional accounting methods of financial evaluation to include social and environmental impacts.

Why we factor triple bottom line into every plan for wastewater management.

Public Open Houses

MARCH TO APRIL 2009

Monday, March 30, 2009 - 2 pm to 7 pm
West Shore Parks & Recreation, Lookout Lounge

Tuesday, March 31, 2009 - 2 pm to 7 pm
Archie Browning Sports Centre, Esquimalt
Crowsnest Room

Wednesday, April 1, 2009 - 4 pm to 9 pm
Fairfield Activity Centre / New Horizons

Thursday, April 2, 2009 - 2 pm to 7 pm
University of Victoria, Michelle Pujol Room
Student Union Building

Monday, April 6, 2009 - 2 pm to 7 pm
Burnside Gorge Community Centre

Tuesday, April 7, 2009 - 2 pm to 7 pm
Oak Bay Windsor Pavilion

Wednesday, April 8, 2009 - 2 pm to 7 pm
Station House Pub, Langford

Coming soon.

Following the open houses, watch for more information on the next stages of the wastewater project. This will include community dialogues and community based workshops in the coming months that will help in guiding the decision making process. We will be initiating interactive and intensive engagement with neighbourhoods where treatment plants may be located, highlighting community enhancement and seeking input on how best to integrate these future facilities.

Next steps for a renewable future.

It's important to remember that these options are meant to demonstrate an approach to wastewater treatment, rather than finalized options. Using these options as possibilities will allow us, with your help, to develop the best strategy for treatment in the Core Area. Whether we choose an option from these three strategies or another solution, what's most important is that we build a solution that works for all of us: for the future of our environment, for sound economics and for the social benefit of all. This is our triple bottom line strategy, and we'll use it to guide us through the complexities of issues as we move towards the regional decisions for presentation to the province at the end of this year. This entire process centres around the intentional goal of creating a mutually preferred and beneficial distributed wastewater management system for our region.

We'd like to hear from you.

Tell us what you value most.

Go online to www.wastewatermadeclear.ca/survey to answer a series of questions that will guide our triple bottom line analysis of wastewater treatment options. **Can't make it online?** Drop in at any of our community open houses listed on the left hand side of this page.

Want more information on this project?

In person, drop by our open houses.

Online, visit www.wastewatermadeclear.ca

By phone, call us at 250.360.3001.



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