



**REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, 23 APRIL 2008**

SUBJECT SAANICH PENINSULA TREATMENT PLANT ENERGY RECOVERY REVIEW

PURPOSE

To inform the Core Area Liquid Waste Management committee of the results of a review of the feasibility of using energy recovered from the Saanich Peninsula treatment plant effluent to provide heat to a number of publicly-owned facilities near the treatment plant.

BACKGROUND

The Saanich Peninsula Wastewater commission (the "commission"), at its meeting of 15 November 2007, approved proceeding with the review referred to above. Four facilities were considered as potential customers for the recovered energy: the Saanich Peninsula wastewater treatment plant, the Panorama Recreation Centre, the Centre for Plant Health and a new elementary school being constructed nearby. The review has now been completed and was presented to the commission on 17 April 2008. The report's executive summary is attached.

A resolution supporting a proposed grant application for the project was passed by the Capital Regional District Board on 09 April 2008.

Mr. Will Wawrychuk and Mr. Pertti Laitinen from Earth Tech (Canada) Inc. will attend the committee meeting to present their report and respond to questions.

RECOMMENDATION

That this report be received for information.

Seamus McDonnell, PEng
Senior Manager, Engineering Services

Dwayne Kalynchuk, PEng
General Manager, Environmental Services
Concurrence

COMMENTS

SBM:dv
Attachment: 1

SAANICH PENINSULA WWTP ENERGY RECOVERY FEASIBILITY STUDY

Wastewater heat has been proven to be a reliable thermal energy source in district heating projects. An evaluation of several energy recovery options has shown that it is technically feasible to recover thermal energy from the Saanich Peninsula wastewater treatment plant (WWTP) for use in adjacent facilities with a simple payback period estimated at 20 years.

The four facilities evaluated as potential customers for the recovered energy are the WWTP itself, the Panorama Recreation Centre (PRC), the Centre for Plant Health (CPH), and a new elementary school being constructed nearby.

A more detailed evaluation of the preferred alternatives known as Option 3 and Option 4 has now been completed. Option 3 would provide enough energy to meet the current demands of the four proposed energy users with only enough transmission piping in the ground to meet those initial demands. Option 4 sizes the transmission piping to enable maximum energy capture from the WWTP effluent. Option 4 will also provide capacity for future expansion at each facility and for the addition of new energy users. The evaluation revealed that a district heating system encompassing all four potential customers would result in expenditures in the range of \$1,632,000 for Option 3 to \$3,491,000 for Option 4 and would initially save \$57,300 to \$107,600 per year in energy costs. This system would also result in an annual reduction in GHG of 237 and 443 tons per year, for Option 3 and Option 4 respectively.

The percentage of GHG emissions reductions are estimated at 6.8% or 20.2% for Option 3 and 14.5% or 37.9% for Option 4 based on the Earth Tech (ET) or the Ministry of Community Services (MCS) method of calculating GHG emissions reductions respectively.

Table 1 below summarizes the most viable options; system capacity in tons of refrigeration; capital cost of the system; annual energy saving; simple payback period on capital cost; GHG reductions in tones of CO₂ equivalents; and GHG reduction as a percentage calculated using two methods. Figure 1 on the following page shows the proposed energy recovery system routing.

Table 1: Most feasible options

Option	System Capacity (tons)	Capital Cost (\$)	Annual Energy Savings (\$)	Payback Period (years)	GHG Reduction CO ₂ e (tons)	GHG Reduction MCS (ET)* (%)
3	127	1,632,000	57,300	19	237	20.2 (6.8)
4	443	3,491,000	107,600	20	443	37.9 (14.5)

The Capital Regional District is applying for Gas Tax Agreement funding in April 2008 for the design and construction of the Option 4 system for energy recovery from the Saanich Peninsula WWTP effluent to assist in overcoming the marginal 20 year payback period for this project.

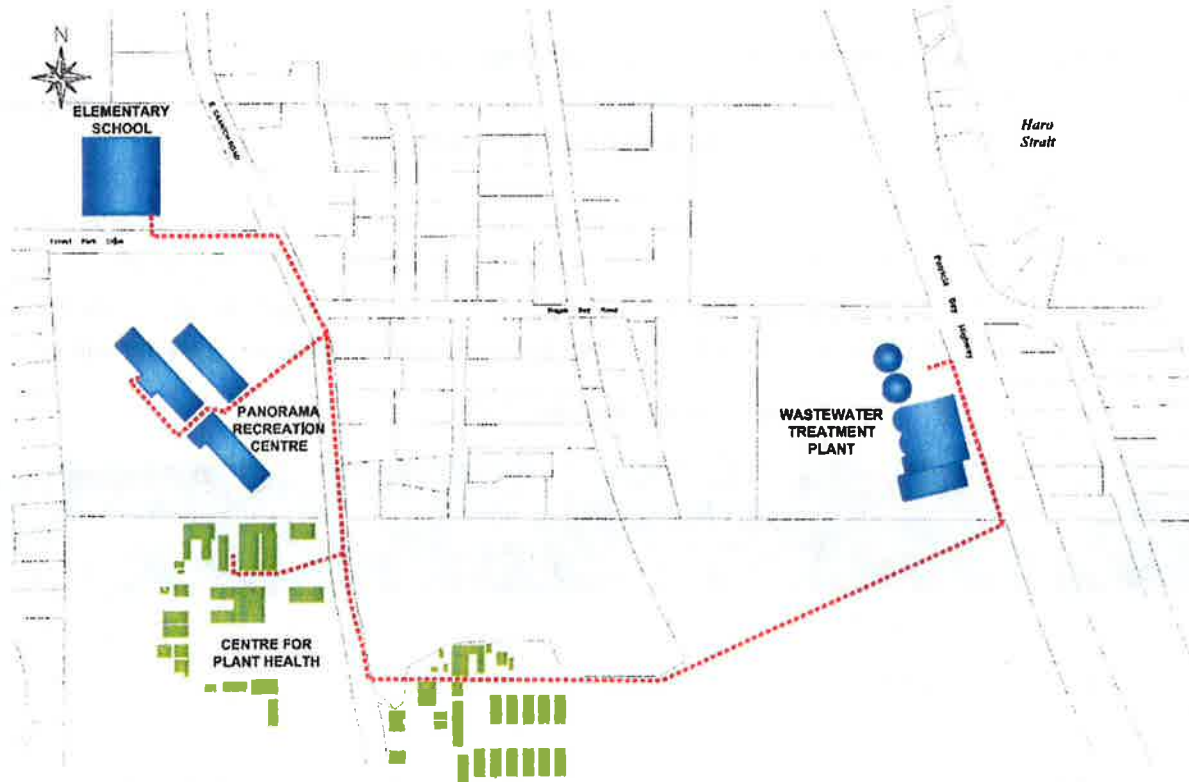


Fig 1: Aerial photo and relief map of study proponents and routing