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## REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION MEETING OF THURSDAY, JUNE 20, 2013

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**SUBJECT**    **THERMAL ENERGY RECOVERY SYSTEM – SYSTEM IMPROVEMENT UPDATE**

### **ISSUE**

At the meeting of February 21, 2013, Saanich Peninsula Wastewater Commission (SPWWC) directed staff to proceed with the three system improvements identified in the Performance Optimization Plan dated February 21, 2013.

### **BACKGROUND**

The Saanich Peninsula wastewater treatment plant heat recovery system was commissioned in February 2011 and has supplied treatment plant effluent waste heat to the Panorama Recreation Centre (PanRec) for heating its swimming pools since then. In the ongoing piloting and optimization of the heat recovery system performance, six areas were identified in the Performance Optimization Plan as opportunities for operational improvement and data management.

The SPWWC, at their February 21, 2013 meeting, directed staff to proceed with the following three improvements:

- Mini-Plant Energy Cost Reduction (item #1)
- Waste Heat Metering (item #3)
- By-Pass Strainer Corrosion Protection (item #5)

#### **Item #1, Mini-Plant Energy Cost Reduction**

The cost for electricity to run the mini-plant includes power consumption, various soft costs and a power factor charge (charge for inefficient use of energy). This additional charge represents approximately 10% of the billings or approximately \$300 per month. In order to minimize this charge a power factor correction device can be installed at the mini-plant.

The power factor correction device was installed on March 28, 2013 which effectively eliminated the additional charge on the BC Hydro April billing. This improvement should result in an annual saving of about \$3,600.

#### **Item #3, Waste Heat Metering**

The energy billings to PanRec are based on the energy (BTU) meter reading at the mini-plant. In late September 2011, it was determined that the meter should have been located on the outlet side of the heat pump rather than the inlet side, where it is presently located. Due to the significant estimated cost for relocating the BTU meter, it was decided that a compensation calculation could be used to determine the energy supplied to PanRec. The compensation calculation was considered to be a reasonable solution, but did represent a level of uncertainty in the billing amount to PanRec.

With the assistance of PanRec staff, an alternative location was found for installing the new BTU meter at a reduced cost compared to the previously proposed location.

The new BTU meter was installed on May 30, 2013 and is now waiting for the electrical and SCADA connections to be completed by the CRD Industrial Automation Electrical Group. It is anticipated the BTU meter will be commissioned by the end of June 2013.

#### Item 5, By-Pass Strainer Corrosion Protection

In order to reduce operating costs resulting from the fouling of the system's heat exchangers, the effluent extracted from the outfall pipe is filtered by an automatic backwashing fine screen or a by-pass strainer before passing through the heat exchangers. The fine screen elements are automatically backwashed every hour during which the effluent is bypassed through the strainer prior to feeding the heat exchangers. Visual inspection of the by-pass strainer was showing a gradual buildup of corrosion on the inside surface of the strainer's housing. As a result, fine particle and stain are likely to be accumulating on the heat exchangers' surfaces reducing the efficiency of the heat exchangers and requiring more frequent cleaning.

To resolve this issue and reduce cleaning costs, a corrosion protection coating has been applied to the inside surface of the strainer. This task was completed on May 17, 2013.

#### **ECONOMIC IMPLICATIONS**

Items 1, 3 and 5 are being implemented with the revenue generated from 2012.

#### **CONCLUSION**

Implementation of Improvement Items 1, 3 and 5 will reduce operating costs and increase the accuracy of the energy amounts billed to PanRec.

#### **RECOMMENDATIONS**

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



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