

**REPORT TO SALT SPRING ISLAND LIQUID WASTE DISPOSAL LOCAL SERVICE COMMITTEE
MEETING OF MONDAY, 12 MARCH 2007**

SUBJECT **SEPTAGE FACILITY UPGRADE 2007 – 2008**

PURPOSE

1. To provide information to the committee regarding operating issues and deficiencies with the present septage/sludge processing operation which require attention in 2007;
2. To advise the committee of the need for a longer term upgrade plan which will address the present site issues and incorporate solids composting at the site; and
3. To seek the direction of the committee to amend the 2007 operating budget to provide additional funds to facilitate the commencement of works in 2007.

BACKGROUND

Since assuming the operation of the Burgoyne Bay septage processing facility (Burgoyne) in 2003, the Capital Regional District (CRD) has completed the initial improvements necessary to establish a permanent facility to receive, process, and dispose of domestic septage and sewage sludge. The improvements include acquiring the land for the facility, relocation of the major plant equipment, and upgrades to some minor equipment to improve operational and safety issues. To date, the land and projects have been funded through short term borrowing, the most of which will be repaid by year end 2008.

In order to further improve the facility's performance and work environment, resolve emerging safety concerns, and develop a strategy to design and construct a biosolids composting component at the site, staff have prepared a multi year capital improvement plan for the facility. The plan has been developed around the composting component, which has been contemplated and supported by the committee in the past. With the existing debt nearing retirement, the committee will soon have the ability to borrow additional funds to finance the new projects described in the plan.

ISSUES

The following issues have emerged which prompt the need for a longer term upgrade plan. Details of each of the issues identified are provided in Appendix A, attached.

Issues Include:

1. CRD electrical inspection at the site has identified electrical code violations and potential safety issues, which need to be addressed in 2007.
2. Hartland Landfill staff have identified the need for a more consistent and dryer sludge cake if disposal to the landfill is to continue.
3. The Hartland tipping fee will be raised from \$100/tonne to \$150/tonne in 2008.
4. The waste hauling company has requested an increase in hauling fees in 2007 which will increase the cost of disposal by an estimated \$4,000 per year.
5. The Solid waste division is reviewing options for brush disposal on the island, which could be used as an amendment for composting at Burgoyne.
6. The site is in need of a permanent groundwater supply, however, the cost is well in excess of original estimates owing to the recommended location.
7. Composting at the site, if implemented, should be integrated with the present facility to maximize efficiency.

PROPOSED CAPITAL IMPROVEMENT PLAN

A scope of work for the proposed plan, as outlined in Appendix B, will include the following:

- completion of feasibility and design studies
- installation of a new groundwater source
- construction of a composting building
- construction of an operations building
- establishment of a wood waste transfer facility

A summary of tasks pertinent to the project and a proposed schedule are also detailed in Appendix B.

ALTERNATIVES

If the decision is made not to embark on the major capital program detailed above, the existing facility would require:

1. Expected on-going annual maintenance costs to upgrade and replace ageing and temporary equipment. (\$25,000)
2. Assuming no composting facility is constructed, additional funding will be required in 2008 to cover proposed increased tipping fees, and funds will continue to be expended on bin hauling and rental. Based on current disposal volumes, 2008 disposal costs are estimated at \$95,000 and hauling and bin rental costs are estimated at \$36,000.

FINANCIAL IMPLICATIONS

In order to generate funding for the proposed upgrades in 2007, it is necessary to increase the parcel tax for this year. Additional funds from the core budget will also become increasingly available in 2008 and 2009 as the existing debt nears retirement, and from elimination of disposal costs once the compost facility is operational.

It is proposed that, with the approval of the committee, up to \$300,000 in funds could be borrowed for a five year term to finance works in 2007. The debt charges for 2007 would be recovered from approximately \$30,000 from a parcel tax increase and the balance from contingency funds. For this work to proceed in this manner, the committee will need to increase the parcel tax for 2007 by \$5.60. The additional parcel tax funds would be committed to the contingency until a capital plan is approved by the committee.

SUMMARY

A capital improvement plan is needed for the Burgoyne site which would resolve the operational challenges currently facing the facility and incorporate a biosolids composting component. There is a need to address the electrical requirements at the site and the cake quality, and develop a potable water supply. There is a desire to develop a biosolids composting facility at Burgoyne to compost the biosolids and local wood waste, and eliminate the need to haul the biosolids to the Hartland landfill on Vancouver Island. The proposed composting facility construction would incorporate an operations building that would house composting equipment, septage processing equipment, electrical equipment, office space and washroom facilities. The upgrades would be funded through new borrowing, parcel tax and core budget. For the committee to proceed on this larger initiative at this time, the 2007 budget will need to be reopened and additional funds requisitioned. Staff recommend the committee increasing the 2007 parcel tax by \$5.60 which will generate an estimated additional \$29,500 in contingency funds.

RECOMMENDATIONS

That the Salt Spring Island Liquid Waste Disposal Local Service committee:

1. accept this report for information for a proposed work plan for 2007 and 2008 to optimize the processing of material at Burgoyne in preparation for the establishment of a sludge and septage composting facility on Salt Spring Island;
2. recommend to the CRD Board, an increase in the parcel tax to \$5.60 for the 2007 budget; and
3. amend the 2007 budget to identify the increase in contingency generated by the parcel tax.



Ted Robbins, CTech, BSc.
Local Services Engineering Technician

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ISSUES

More details of the emerging issues facing the committee regarding the continued operation of the site are presented following.

Site Electrical

There have been several extensions to the electrical system at the site in the past. The approach taken, to keep costs down, was to integrate the previous contractor's work, rather than to replace the work as part of the ongoing upgrades. A condition report for the facility was recently prepared by a CRD electrical inspector. The report identified several Canadian Electrical Code (CEC) violations at the site, and can be summarized as follows:

- Many of the buildings from the original operation are still in use and although considered portable, are no longer used as such. There are permanent electrical installations in portable buildings that do not meet CEC standards.
- There are electrical distribution panels and controllers located in corrosive environments (sewage processing/ chemical storage) which have suffered badly over time.
- Many of the structures are not electrically bonded and motor disconnects are not equipped with lockable disconnects.

The inspection concludes that it is time to upgrade the electrical systems at the facility to meet CEC standards to ensure there are no safety risks and to eliminate the potential for the facility to be forced into closure by a provincial order while compliance issues are resolved.

Potable Water

The committee is well aware of the need for a potable water source and supply system at the site to provide water for equipment wash down, process water, and operator hygiene. A well site has been located but is considerably distant from the facility. As there were insufficient funds to complete a new well in 2006, a temporary holding tank for potable water was installed at the site to provide temporary water through a garden hose, but the system has a limited capacity.

Cake Quality

The Hartland Landfill receives the cake produced at Burgoyne. The cake is produced by dewatering the sludge with a Fournier rotary press. Cake dryness has been variable over the past few years. The operator of the landfill has agreed in the past, to receive the cake providing it is consistently dewatered to achieve a solids content greater than 20%. Wetter material, as has been produced at Burgoyne, would normally be unacceptable as it is difficult to handle at the landfill, however, the material is currently being accepted while operational issues with the press are being resolved. In order to meet the moisture content criteria, there are three options with the current rotary press operation at Burgoyne. One option is to slow down the press to produce a drier cake, however, this would require additional labour. The second option is to purchase an additional press wheel for the existing unit to increase production. A third option may be to consider a different type of press that may be better suited to dewatering the MBR sludge and septage. There is a need to produce a cake acceptable to the landfill by the end of 2007.

Operational Costs

There are several cost increases anticipated with the disposal of material off-island. These include:

Waste Management, who provides the sealed transport bins and hauling service to Hartland, has advised CRD that hauling rates will increase in 2007 to account for increased ferry and fuel costs, from \$360/bin/haul to \$408.43/bin/haul (the current rate has been unchanged since 2002). This will translate to an annual increase in operating costs of approximately \$4000. The bin rental rate will remain the same at \$300/bin/month, which equates to \$7200/year.

The Hartland landfill has advised CRD Operations that the tipping fee for controlled waste will increase from \$100/metric ton to \$150/metric ton in 2008. Base on current cake production, this will translate to an annual increase in operating costs of approximately \$32000.

The press operation, to produce a cake concentration consistent with the landfill requirements, may involve additional operating time and costs. Staff are working at trying to resolve this problem within the current budget.

Biosolids Composting

While not an immediate issue, the implementation of a biosolids composting operation at the site would eliminate many of the disposal issues raised by this document. The incorporation of composting into the integrated plan will enable the most cost effective facility to be constructed in the shortest possible time.

Staff have determined in concept, that a cost effective, sustainable biosolids composting facility could be constructed at Burgoyne that would eliminate the need to haul the biosolids off-island, thus eliminating the costs for transport bin rental, hauling and tipping. The composting program would also likely incorporate an on-island strategy to manage wood waste and brush, that would ultimately provide the bulking agent for the compost process. The finished compost material could be used as soil amendment for parks planters, available to the public for flower gardens or for site reclamation. Optimization of the press performance is much less critical when the cake is being used in the compost mix.

Staff recently toured the District of Kent, BC wastewater treatment plant and composting facility, to view the process that has been in operation there since 2003. This biosolids composting component was of interest to CRD as it processes approximately the same volume of biosolids each year as Burgoyne, and it was designed by a local consultant who worked with Kent operations staff to implement the facility. The tour reaffirmed that the opportunity exists at Burgoyne, to develop a similar facility.

The composting facility would require the construction of an enclosed building, that would house concrete bins for aerated composting, storing bulking agent, and curing the finished product, as well as provide area for initial compost mixing and final screening equipment. To resolve a number of long standing site issues, there remains a need for a permanent building on-site to provide space for an operations office, washroom facility, dedicated electrical room, chemical storage, permanent filter press room, and odour control. It is anticipated that the proposed compost facility and some or all of these requirements could be integrated into one or two enclosures.

PROPOSED IMPLEMENTATION PLAN 2007 – 2009

Scope

The proposed plan includes the following components:

1. Completion of feasibility and design studies to finalize the concepts and cost estimates for capital upgrades and facility operation. These would include market studies for compost usage and provision of amendment and preparation of detailed design drawings for the compost system and site optimization.
2. Installation of a water source and supply system on the site including well development, water treatment and storage and piping for building and process water.
3. Construction of a composting building that would include concrete bins for initial composting, mixing, curing, amendment storage and screening. A new room is also envisioned for the rotary press (with integral filtrate well and pump and cake discharge system), sludge pumps, polymer pump and polymer mixing. This room could become part of the composting building which would put the press cake near the composting process and allow for inclusion of the press room in the ventilation and odour control system.
4. Construction of a new operations building that would house an office, washroom and first aid room, electrical distribution and control room, chemical storage room, mechanical room for water system, MBR equipment (air compressor, effluent pump and membrane backwash) and work shop. Having all of these functions in one building would resolve the electrical issues at the site, improve site health and safety, improve operational efficiency of the facility and secure the site.

Completion of items 3 and 4 would allow for the elimination of the four temporary buildings that currently house the press, site office, compressor and effluent pump and water system, and incorporate three tanks that currently are used for polymer storage, polymer mixing and filtrate collection and pumping.

5. Establishment of a wood waste transfer and processing station that would provide an amenity to the community, and the necessary compost amendment.

Tasks / Timing

The improvements would require the completion of the following tasks during each year 2007-2008. Conceptual costs for each task have been attached. More accurate cost estimates will be prepared upon completion of detailed design drawings.

2007

1. Proceed with drilling and developing the water well based on the information prepared by Thurber Engineering in 2003. Complete the construction of a road access and power installation to the well site, and complete the well head and site water distribution system. (\$50,000)
2. Work with CRD Solid Waste and Transform Compost Systems to develop a concept for the composting facility site works at Burgoyne including building and equipment requirements and material flow. (\$5,000)
3. CRD Solid Waste Division to implement a marketing study for use and demand for the final compost product and establish end users. (\$2,500)

4. CRD Solid Waste Division to implement a study for the development of a wood waste collection program and transfer/processing station, with the intent of using the material in the composting process. (\$2,500)
5. Correspond with the Ministry of Environment to seek approval for the development of a biosolids composting facility.
6. Complete operations building design including preparation of structural, mechanical and electrical drawings (Item 1 above – General Scope), and compost facility design (Item 2 above – General Scope). (\$30,000)
7. Begin construction of compost facility and operations building. (\$190,000)
8. Complete electrical and operational improvements necessary to resolve immediate safety concerns. The works have been identified by staff as follows: pump station electrical kiosk upgrade, deadman switch installation for cake conveyor, electrical bonding of all structures, main site electrical feed switch maintenance, change in method of loading and distributing cake in transport bins. (\$25,000)

2008

1. Tender and purchase major equipment required for compost facility, including mixer, screen, conveyors, temperature and blower control equipment, skid steer. (\$125,000)
2. Tender major equipment required for operations building upgrade including press equipment, polymer handling equipment, electrical panels and systems controls(\$125,000)
3. Complete construction of composting facility and installation of major equipment, and commission the biosolids composting process. (\$25,000)
4. Complete construction of wood waste transfer and processing station and commission collection and processing.
5. Complete the well head and water distribution system construction, including interim facilities necessary until the operation building is completed. (\$10,000)
6. Complete construction of operations building and complete installation/relocation of major equipment into new building. (\$20,000)

2009 and Beyond

In the longer term, it would also be desirable to plan improvements to the receiving equipment, effluent storage and mixing tanks and MBR tank and equipment. It is expected that these projects would be planned for construction after 2012, upon retirement of the two proposed 5 year borrowing terms. It is expected that Burgoyne will continue to receive increasing volumes of septage and sludge in the near future, as more building development occurs on Salt Spring Island. The timing of future improvements may become more critical in order to handle increased volumes. Increased volume and new lot creation will also result in increased revenue, offsetting additional operating costs.