Technical Memorandum No. 8

Regional District of Kitimat-Stikine

Lakelse Lake/Jackpine Flats Stage 2 Liquid Waste Management Plan Management Programs for On-site Wastewater Treatment Systems

September 2006

Table of Contents

TECHNICAL MEMORANDUM NO. 8

Regional District of Kitimat-Stikine
Lakelse Lake/Jackpine Flats
Stage 2 Liquid Waste Management Plant (LWMP)

Management Programs for On-site Wastewater Treatment Systems

Issued: September 1, 2006
Previous Issue: None

1 Introduction

Similar to a car or a truck, an on-site wastewater treatment system requires regular inspection and maintenance to operate safely and effectively. The manner in which an on-site treatment system is taken care of will influence how long the system will last, how well it functions, and how well the environment is protected. In order to avoid the inconvenience and cost associated with repair or replacement of a prematurely failed system, the treatment system should be regularly inspected and maintained to help the system perform well for many years.

The Regional District of Kitimat-Stikine (RDKS) is currently developing Stage 2 of its Liquid Waste Management Plan (LWMP) for the Lakelse Lake/Jackpine Flats area. Almost all of the LWMP area is currently served by septic tank systems. However, there is some concern that some of these systems may have failed or will fail soon, resulting in the pollution of the groundwater which flows into Lakelse Lake or the Lake directly. Therefore, to help prevent these failures from occurring, as part of the Stage 2 work, the RDKS would like to investigate management programs for on-site wastewater treatment systems. Management programs include the following options:

- Privately-Owned and Maintained On-site Systems and Privately-Operated Inspection Program
- Privately-Owned and Maintained On-site Systems and Publicly-Operated Inspection Program
- Publicly-Owned and Maintained On-site Systems and Publicly-Operated Inspection Program

These options will be discussed in greater detail in the following sections.

2 Management Options

2.1 Privately-Owned and Maintained On-site Systems and Privately-Operated Inspection Program

This management program involves renewable operating licences issued by the local health agency or municipality; however, the RDKS could take on this responsibility. Under this management program, the RDKS would issue licences upon proof of performance monitoring,

pumping, or service by a qualified person. The licence would authorize the owner of the system to use the on-site system for a specified period, as long as the conditions on the licence were met.

If the system were not performing properly, the licence would not be issued until the problems are corrected. Property owners would be responsible for contracting and paying a specialist qualified by an industry association, health agency, or the RDKS, for the inspections. In addition, owners would pay a fee for the operating licence and would assume all costs associated with pump-outs, repairs, upgrades, or replacement of systems. At the end of the licensing period, the licence may be renewed based on the property owner paying a renewal fee and submitting an inspection report prepared by a qualified person indicating the system is performing properly.

Under this management program, the RDKS involvement would be enacted under a Regional District bylaw and would include:

- Development of licence conditions and reporting requirements.
- Mailings of licence requirements and application forms (possibly in a phased schedule).
- Receiving payments and maintaining a database and file system.
- Enforcement activities (for failure to obtain licence, spot-checks on inspectors).
- Licence renewals.

A public information program, i.e., educational pamphlets, advertising, and open houses would be used to initiate the program. Letters would be mailed to property owners explaining the program requirements, deadlines, fees, and penalties. The property owner would then be required to retain a qualified person to conduct an inspection of their system and prepare a report detailing the inspection results. The RDKS would be required to determine the degree of the inspection. The inspections could include the following:

- A description of the on-site treatment and disposal system, including age of the system and number of occupants it normally serves.
- Uncovering the septic tank to measure the scum, sludge, and liquid level in the tank.
- Inspection of the general condition of the tank, outlets, distribution box, etc.
- Inspection of all mechanical parts, including pumps, valves, etc.
- A general site evaluation documenting evidence of any malfunction including lush vegetation, saturated ground surface, seepage, etc.
- A dye test, to assess leakage at the discretion of the inspector.

Septic tank pump-outs could be required every three years, and possibly more frequently depending on the occupancy of the residence. The property owner would then submit the inspection report with a licence application. If the property owner's system were non-compliant, there would be provisions for submitting the report with a plan and schedule to bring the system into compliance and a completion report.

Property access issues would not be an issue under this management concept because the property owner would be responsible for contracting the inspector. The RDKS could also enact a bylaw permitting RDKS staff to access private property to conduct spot checks of the inspection reports.

Disadvantages of this type of program include the following:

- Difficulty issuing permits if there are incomplete records of the system.
- Property owner has to take the responsibility to get an inspection done and submit an application.

Cost estimates for this management program, based on the number of lots served are provided in Table 1. These costs are from a year 2000 report by Giles Environmental Engineering titled, *Core Area Liquid Waste Management Plan Planning Study for Maintenance Management of On-site Sewage Systems*. Annual costs vary from $61.15 to $185.75 per lot depending on the number of total lots served.

Table 1
Example Program Costs for Licensing with Private Inspection

	View Royal	Saanich	Colwood	Langford	Study Area
Number of Lots	163	2500	4000	5000	11663
Annual Cost	$30,276	$157,688	$249,554	$313,004	$713,219
Cost per Lot	$185.75*	$63.08*	$62.39*	$62.60*	$61.15*

Note:
**Cost does not include $100 to $150 paid by Property Owner for contracting an inspector.*

2.2 Privately-Owned and Maintained On-site Systems and Publicly-Operated Inspection Program

This management program involves the systematic inspection of on-site systems conducted by either RDKS staff or an inspection company contracted by the RDKS. System deficiencies would be noted and the property owner would be responsible for hiring a qualified person to complete any required maintenance or repairs. The property owners would be charged a service fee for the inspection and would assume all costs associated with required repairs, upgrades, or system replacement.

The RDKS would be involved in:

- Developing the permit conditions and reporting requirements.
- Carrying out or contracting out inspections.

- Mailing licences, or development of correction orders.
- Receiving payments and maintaining files and a database.
- Enforcing compliance.
- Renewing permits.

The RDKS or its contracted representatives would routinely inspect on-site systems. The frequency of inspections would have to be determined by the RDKS but would range from once per year to once every three years. For this management option, the property owner is not responsible for retaining a qualified person to conduct the inspection. The initial inspection would include gathering information regarding the system. This inspection would result in a maintenance report completed by a qualified person retained by and at the expense of the property owner, and the time period provided to achieve total compliance. Property owners would be required to present proof of work completed to avoid incurring penalties.

A drawback with this management program includes opposition from residents toward program inspectors entering private property. This may be resolved by enacting a bylaw providing inspectors with the right to access private property for the sole purpose of conducting an inspection of the on-site wastewater treatment system.

Another drawback with this type of management scenario pertains to the timing of fee collection for the licence. For this option, there is no obvious trigger, such as the submission of a licence application. This issue could be addressed by sending an invoice after an inspection takes place. However, if the system is in non-compliance, the property owner may be disgruntled and less likely to pay the inspection fee. A better way to resolve this issue would likely be to put the inspection fee directly on the property tax notice.

Cost estimates for this management program, based on the number of lots served are provided in Table 2. These costs are from a year 2000 report by Giles Environmental Engineering titled, *Core Area Liquid Waste Management Plan Planning Study for Maintenance Management of On-site Sewage Systems*. Annual costs vary from $148.09 to $295.90 per lot depending on the number of total lots served.

Table 2
Program Costs for Licensing with Public Inspection

	View Royal	Saanich	Colwood	Langford	Study Area
Number of Lots	163	2500	4000	5000	11663
Annual Cost	$48,232	$387,875	$618,964	$761,125	$1,727,125
Cost per Lot	$295.90	$155.15	$154.74	$152.23	$148.09

2.3 Publicly-Owned and Maintained On-site Systems and Publicly-Operated Inspection Program

Under this management program, the RDKS would be regarded as the "owner". As "owner" the RDKS would be responsible for the installation, upgrading, and management of all on-site systems within the Regional District by agreement to operate and maintain systems with access by easement. The RDKS would pay for all inspections, repairs, upgrades, and scheduled maintenance. To recover costs, the RDKS would charge user fees. The property owner would pay fees to cover the cost of the treatment and disposal system and an annual operation fee.

The drawback of this type of management program is the overall risk and high cost associated with transferring responsibility of inspecting, maintaining, and upgrading on-site systems from individual property owners, to the RDKS.

The small community of Port Maitland, Nova Scotia, demonstrates an example of this type of management program. Port Maitland uses a publicly owned and publicly managed program to manage the wastewater generated by 135 households and several businesses. The community voted to establish a Wastewater Management District (WWMD). The WWMD installed four cluster systems and some private systems, as well as upgraded 31 individual systems. The fee was initially estimated to be $35 per year per owner. However, the actual fee increased to $270 per year per owner, not including the $350 capital charge. Port Maitland has experienced the following problems with this management program:

- General population believes that they can manage their own systems at a less expensive cost.
- Port Maitland must remediate contaminated properties.
- Even though there was a resident education program, improper disposal of wastes is a common occurrence. This has resulted in expensive repairs, which are charged back to the user through higher taxes.
- Port Maitland is responsible for the disposal of waste they have no control over, i.e., pump-out and disposal of contaminated waste.

3 Management in Other British Columbia Regional Districts

The use of management programs for on-site treatment systems is a relatively new phenomenon in British Columbia. However, still some municipalities and regional districts are currently developing and implementing management programs. For example, the Capital Regional District (CRD) has incorporated a management program in their LWMP for areas not serviced by a municipal collection system. The CRD hopes their management program will assist in addressing 90% of the problems associated with failing systems.

To help set up this program, the CRD established an Onsite Management Advisory Committee (OMAC) to provide recommendations for the on-site program to the CRD Environment Committee.

Recommendations made by OMAC pertained to the following: program cost and cost recovery, pump-out frequency, communication plans, program review process, and means of obtaining authority.

Under the CRD's program, the homeowner is responsible for owning and maintaining their on-site system, including regular pump-outs. The CRD requires qualified personnel to inspect and install on-site systems. It is the homeowner's responsibility to hire a qualified private inspector to perform the inspection. Residents are also required to pay an annual fee for the operation of the CRD's management program.

The CRD has an annual budget of approximately $53,000 to spend towards a public education program for 30,000 households. Approximately 60 percent of the budget is allocated for labour. Staff are required to design educational material such as ads, brochures, displays, and workshops; program evaluations; workshop presentations; website management, and hotline staff. The remaining 40% of the budget is used for printing and distributing educational material, room rentals for workshops, newspaper advertisements, etc.

4 Summary of Management Programs

In order to ensure that septic tank and other on-site treatment systems are functioning properly in the Jackpine Flats/Lakelse Lake LWMP study area, the RDKS may want to have an on-site treatment management program. Three different management programs for on-site wastewater treatment systems were discussed in this technical memorandum. The fundamental differences between the management programs are the delegation of responsibilities for inspection and maintenance; ownership of the systems (i.e., the property owner or the RDKS); and whom the on-site system inspector is employed by (i.e., the property owner or the RDKS). If the RDKS were to take over ownership, and therefore, inspection and maintenance of on-site systems, legal consideration for access and liability would need to be addressed.

No matter what program is selected, the following are required to ensure the management program is successful:

- An education program for on-site system users.
- Inspection and maintenance of on-site systems at regular intervals.
- A record of each on-site system, in a database and its condition, pump-out history, etc.

All programs will require an inspection program and some way to manage the inspection program. A privately run inspection program would be licensed by the governing agency. A publicly run inspection program would provide RDKS staff or its contracted agents for inspection services. Ideally, the inspection program should be managed by a governing agency that would also oversee the permitting process. Even if the RDKS contracted out the inspection aspect to an outside agency, it would ultimately be involved in the designation of design and inspection criteria.

To assist the RDKS in deciding what management program would most ideally serve their needs, the RDKS needs to first think about the following aspects, which make up a program:

- Permitting criteria,
- Inspection process and how detailed it will be,
- Responsibilities of homeowners, installers, RDKS, maintenance personnel, and inspectors,
- Maintenance requirements,
- Monitoring requirements,
- Responsibility for repair and other associated costs,
- Implementation schedule,
- Educational programs,
- Compliance requirements,
- Compliance and enforcement responsibilities,
- Notification process (for inspection, monitoring, maintenance, repair orders, non-compliance issues),
- Incentives for homeowners to ensure systems are operating properly,
- Effective duration of permit,
- Record keeping of inspection, operation, maintenance and monitoring records,
- Recourse for non-compliance,
- Costs, and
- Cost recovery.

5 References

Environment Canada. *Toolkit for the Development of Management Programs for On-Site Sewage Systems*. April 2003

Giles Environmental Engineering. *Core Area Liquid Waste Management Plan Planning Study for Maintenance Management of On-site Sewage Systems*. 2000.

Prepared by:

DRAFT

Manjit Herar, M.S., EIT (WA)
Environmental Engineer

Reviewed by:

DRAFT

D.J.L. Forgie, Ph.D., P.Eng.
Project Manager

MH/DF/lp