

**Alberta Onsite Wastewater Management
Association.
2013**



Alf Durnie, Alberta Municipal Affairs

**Managing the effective operation of private
sewage systems**

Topics

- Why would a municipality want to implement such a program
- Where would a municipality start to initiate a program
- Will constituents support such a program?
- Building the program
- Detail of what the program includes and how to manage it.
- Remember the municipality is not trying to control or manage the maintenance of the PSTS, they want to ensure effective operation. That is a big difference

What is a sewage system management and inspection program?

- The inspection of systems to confirm they are operating effectively and are not causing degradation of the receiving environment.
- Managed by municipality, cost born by owner.
- Voluntary, only where municipality sees a need for it.

Why require inspection of existing systems.

- Concern for the long term impact private sewage systems may have on their community, the receiving environment and their water sources.
 - The impact at the density of development the municipality allows.
- Sustainable wastewater management in their community
- Property value

Initiating the Program

- Not all municipalities start the program the same way.
- The methods to initiate are community specific, but typically include:
- Initial recognition of a concern for the impact sewage treatment systems may have.
- Engage community to set out purpose of program and action to take over time.
- Clearly set the purpose and goal of the program

Plan the scope and intensity of the management program

- All areas of the municipality may, or may not, present the same level of risk and concern. Identify where the program is needed to address concerns and achieve the intended purpose.
- Level of intensity of program may vary over the municipality. What is inspected and frequency.
- Suit the intended outcome.

March 6, 2014 AOWMA Conference 2014

- Small systems to large decentralized.

Communicate purpose, objective and scope of plan to the community

- To fully communicate the plan to residents, the scope of the inspections needs to be substantially set out.
- What is everyone getting into.
- There will be a cost.

Select qualified person(s) and develop the inspection process

- Identify persons qualified to do the inspections.
 - Hold some level of certification in PSTS
 - Process to qualify person for that community. Not all installers are equal when it comes to inspection of existing systems.
 - Safety Codes inspection agency not likely best suited – specialized equipment is needed.
 - Have prospective persons submit plan for inspection process.

Establish legislative authority requiring inspections (bylaws)

- Municipalities may make bylaws regarding the inspection of operating systems.
 - Not legislated under the SCA so open to municipal bylaws
 - Municipal Affairs position is that these bylaws are not in conflict with section 66 of the SCA

Focus of the bylaw

- To set out requirements for each property owner to have their sewage system inspected to determine it is working as intended.
- Set out a timeline in which the inspections are carried out and results reported to municipality
- Set out persons/contractors acceptable to the municipality that conduct the inspections.

Purpose of the bylaw

- The purpose is not to simply have the sewage systems inspected.
- The purpose is to achieve safety and minimize the impact on water sources and the receiving environment.
- The inspections are a means to accomplish the community goal and purpose.

The standard against which the system is inspected.

- The bylaw should **not** say it must meet the 2009 standards for private sewage systems.
- Codes and standards are not retroactive.
- Nothing is “grandfathered.” Systems must meet the code in place at time of installation. Do not need to meet today’s standard
- The system must operate within its intended design parameters and effectively treat the wastewater.

The inspection is to assess the system considering its effectiveness

- The system must operate within its intended design parameters and effectively treat the wastewater
- Article 2.1.2.2 sets this out.
- This same goal and objective of a system built to previous standards in place applies. That was the purpose of the standard.

Compliance with the bylaw

- An inspection has been conducted as required and determines the system is operating as intended. It also shows it is structurally safe.
- Cost of inspection goes to Owner
- If an inspection is not completed, it is an infraction of the bylaw
- If the system is not operating as intended by its design, the system must be repaired or replaced. The current private sewage standards will apply.

What is an inspection of an operating sewage system.

- Not simply a walk over the top of the ground to see if there is sewage leaking.
- It includes determining if sufficient unsaturated soil exists below the in ground treatment system.
- It includes determining if the trenches or mound is saturated.
- It includes determining the water tightness of the septic tank or holding tank.

Inspection of operating systems is now occurring in Alberta?

- There are currently 16 municipalities that have some form of this inspection process in place under bylaw
- 4 municipalities have a formal policy in place.
- 3 are in the process of developing bylaws.

Development of details underway by task group

What types of PSSs are included in the inspections?

Once the area of concern is identified, experience has shown that all property systems should be treated the same, or at least until one operational inspection is conducted to verify current system performance:

- Holding tanks
- Soil based treatment systems, e.g., fields, mounds
- Secondary treatment components
- Lagoons and open discharge
- **At-Grade systems (?)**
- Privies

Note: MA has not yet evaluated potential protocols for all PSSs noted.

How frequent should inspections be conducted?

Timelines depend on system age, the receiving environment, and density of development, for example:

- Holding Tanks: a structural evaluation & inspection at the 10th anniversary, and every 10 years thereafter
- Septic tanks, fields, mounds and privies: at least every 5 years after installation
- Sewage lagoons & open discharge (generally on large parcels): may have intervals as long as 20 years
- At-Grade systems (?)
- Secondary treatments systems: to be determined, e.g., may be more frequent if the property owner cannot verify that a maintenance plan is in place

Inspection Protocols *(draft suggestions & open for discussion)*

Objective: To establish a realistic and reasonable PSS inspection program, for example, a staged approach.

Advantages of a staged approach:

- Property owners have options for the starting phase
- May eliminate follow-up inspections, and unnecessary costs
- Systems compliant, or clearly non-compliant or failing, are identified at the first stage
- Property owners have options should they dispute the initial inspection results
- If a field is considered non-compliant, considerations could be made to convert the septic tank to a holding tank

PSS Preliminary Assessment or Inventory

Some communities have found it beneficial to conduct a PSS inventory before implementing an inspection program:

- An inventory would determine what type of systems are “out there”, and where they are
- Any installation or permitting records could be collected at this stage, e.g., this may form a base for inspections:
 - When was the system installed
 - Was a permit issued, are design specifications available, and was the system approved
 - Was the system “self-installed”
 - Was a post-installation inspection completed & approved
- Discussions with, or surveying, property owners could take place at this time, e.g., system usage & possible changes since installation, maintenance since installation, etc.

Summary of the Goals for Inspection Stages

Stage One: Designed to determine system compliance and operational reliability.

- Location of system and review of system permitting/design (if available)
- Evaluate any tanks and other components
- Visual assessment of the system and surrounding ground
- Discussions with property owners (e.g., interview or questionnaire)
- Simple systems may have only one stage (e.g., holding tanks, privies)

Stage Two: Conducted if stage one produces any “red flags” that need to be verified.

- Intrusive investigation
- Excavate for condition of unsaturated soil layers
- Determine depth to groundwater & confining soil layers

Stage Three: Conducted should a property owner challenge the findings.

- Effluent samples
- Microbial soil testing and/or other soil parameters
- Evaluate for possible groundwater mounding & other hydrogeological data

Holding Tanks: Example Protocol

- An acceptable holding tank will have no liquid/groundwater leakage (in or out, no cracks)
- Tank is emptied, most solids pumped out
- Visual evaluation to ensure structural integrity & water tightness
- Manway covers assessed for structural suitability/safety
- Setback distances & proximity to sensitive areas noted
- Visual observations of the area, e.g., stressed vegetation
- Some form of discussion with the property owner (or questionnaire) on water use & changes since installation, additives that may be detrimental, pump-outs, etc.
- Reporting: includes inspection procedure, shape & size of the tank, condition of the tank, and comment on whether alarms or electricity is present

Septic Tanks and Fields: Example Protocols

- An acceptable septic tank and field will have:
 - Tank with no liquid/groundwater leakage, and the dividing walls & piping will be in good condition
 - Lateral trenches are at the appropriate depth and gravel above & below the piping
 - Minimal ponding of effluent trenches
 - Soil around & below the trenches is not saturated
 - Separation from the water table as specified by the SoP

Stage One:

- Tank access manway cover is removed to observe/evaluate:
 - Liquid levels in chambers
 - Condition of chamber dividing walls and piping
 - Sludge depth & surface scum noted
 - Water tightness & structural integrity
 - Manway cover(s) assessed

Septic Tanks and Fields (Continued)

Stage One (continued):

- Pump cycled to ensure proper working condition, e.g., float settings & operation (if possible)
- Bell & siphon visually inspected, e.g., mounting, proper effluent level, no slow discharging
- Lateral trenches identified & hand auguring could test for:
 - Depth of soil cover over lateral, total depth of the trench
 - Construction material
 - Effluent ponding level
 - Soil saturation around & below the trench, soil conditions in general
- Setback distances noted, e.g., water sources or water courses
- Visual observations of the field & area, e.g., stressed vegetation
- Discussion with the property owner (or questionnaire) on water use & changes since installation, additives that may be detrimental, maintenance since installation, etc.
- Reporting: includes inspection procedure and other relevant information

Septic Tanks and Fields (Continued)

Stage Two:

- All steps in Stage One
- Intrusive investigation of fields, e.g., boreholes
- Soil samples, e.g., coliform, dissolved solids, biological oxygen demand
- Excavate for condition of the unsaturated soil layer
- Determine depth to groundwater & confining soil layers

Stage Three:

- All steps in Stages One & Two
- Effluent samples, e.g., to verify that the expected levels meet the criteria set out in the SoP
- Additional microbial soil testing, other parameters may be considered
- Hydrogeological information which may include groundwater test wells
- Evaluate for possible groundwater mounding
- Identify wastewater plume, e.g., if in a sensitive receiving environment

Privies: Example Protocol

- If a municipal requirement, privies will have a compliant holding tank or be lined to prevent contact between wastewater and the ground. If no restriction, the hole should be at the appropriate depth & have correct separation distances.
- Proximity to water wells & sensitive areas noted
- Privies visually inspected to determine:
 - Pit privy, or if a holding tank or liner is in place
 - Surface water is not intruding
- Verify that any abandoned privies had the hole properly filled and the structure was refitted for another use
- Reporting: includes inspection procedure and other relevant information

Challenges

- Property owner education & understanding that this initiative is important; open communication & keeping them informed on the objectives is the key
- Inspection protocols may not work for all locations, such as:
 - Evaluating potential tank leakage by visual inspection alone
 - Questioning initial evaluation of the soil characteristics that was used to determine system design
 - Potential for a tank “heaving up & out” of the ground if fully emptied (??)
 - Operation of the system may not be possible during the inspection process

Related Framework Guidance Under Development

- Reporting and records management: If taking on this initiative, the municipality will need to be prepared for the administrative work involved; MA plans to offer some advise in this area if needed
- Managing costs: The expectation is that the property owner will absorb the costs for inspections, e.g., direct billing or by way of property taxes
- Property owner education, input and acceptance: Without a doubt, this is considered vital to the success of this initiative

Questions Comments

