



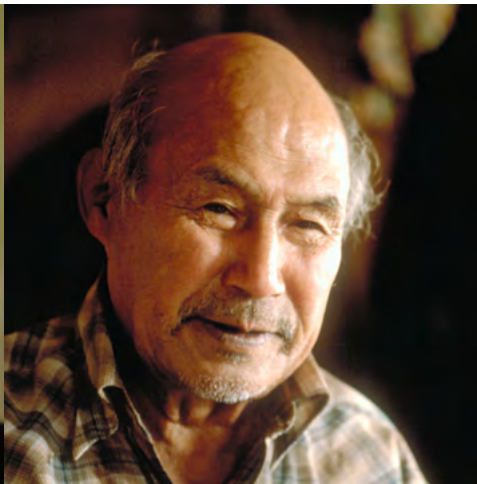
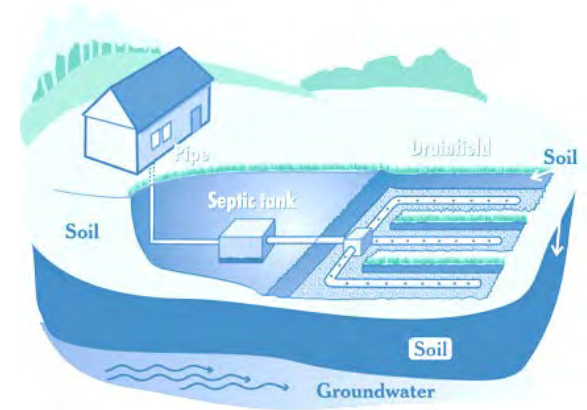
Health  
Canada

Santé  
Canada

Your health and  
safety... our priority.

Votre santé et votre  
sécurité... notre priorité.

# Approval Process for the Design and Installation of On-site Wastewater Systems on First Nation's Lands



Canada

## Role of the EHO

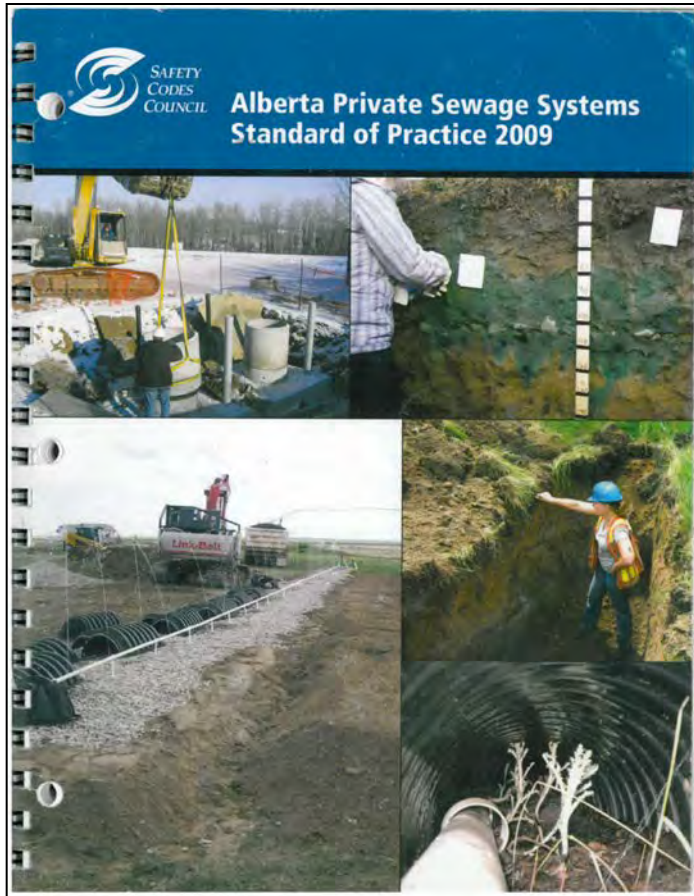
- Health Canada, First Nations and Inuit Health, Environmental Public Health Services provides system design review and inspection services for on-site wastewater systems on First Nation's Lands



# Why do we need Health Canada's Approval?

- This process is essential in protecting public health and the environment in your community.
- Approval is required by funding agencies to ensure the design and installation of the onsite wastewater system complies with the Alberta Private Sewage Systems Standard of Practice (2009) and Alberta Private Sewage Disposal Regulation.





# Alberta Private Sewage Systems Standard of Practice 2009

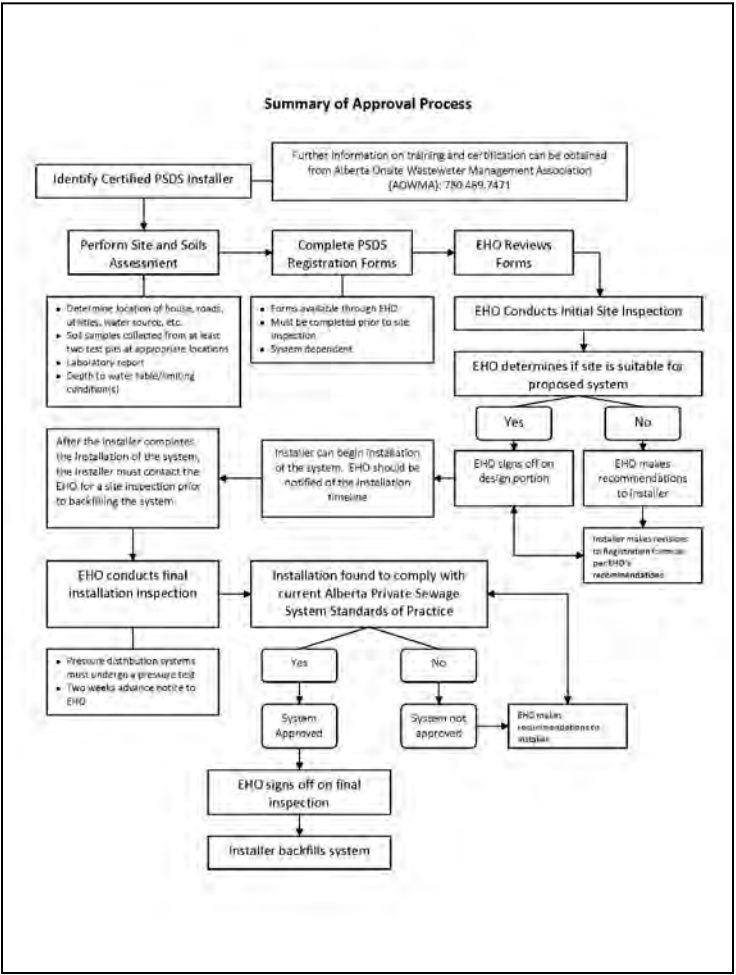


## Why do we need Health Canada's Approval?

- Failure to meet the requirements may lead to funds being delayed or withheld by the funding agency.
- Health Canada does not provide funding for the design or installation of on-site wastewater systems.



# Overview of the Approval Process



## Identify a Certified Installer

- Alberta Onsite Wastewater Management Association

- <http://www.aowma.com/locate-a-pro/>



- Government of Alberta – Municipal Affairs

- [http://www.municipalaffairs.gov.ab.ca/CP\\_PrivateSewageContractorList.cfm](http://www.municipalaffairs.gov.ab.ca/CP_PrivateSewageContractorList.cfm)



## Perform Site and Soils Assessment

- Determine location of house, roads, utilities, water source(s), water course(s), property lines, etc.
- Soil samples collected by the installer from at least two test pits at appropriate locations and depths.
- Identify limiting conditions
- Laboratory analysis and report
- EHO conducts initial site inspection



# Site and Soils Assessment



06/02/2010 17:25 FAX 780 434 8588 EIOVA CANADA 003700

Page 1 of 2  
**EXOVA**

SOils: 7807 Regal (Canada) T: +1 (780) 434-8522  
 1000000 Alberta St. E. Edmonton AB T6A 0K4  
 1000000 Canada W: www.exova.com

Report To: **[Redacted]** Project ID: **[Redacted]**  
 Name: **[Redacted]**  
 Location: **[Redacted]**  
 LSD: **[Redacted]**  
 P.O.: **[Redacted]**  
 Abct code: **[Redacted]**  
 Company: **[Redacted]**

Lot ID: **743745**  
 Control Number: **A119-889**  
 Date Received: **May 26, 2010**  
 Date Reported: **Jun 2, 2010**  
 Report Number: **1328779**

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Reference Number	743745-1	743745-2	743745-3
Sample Date			
Sample Time			
Sample Location			
Sample Description	<b>[Redacted] / 5 l</b>	<b>[Redacted] / 7 l (see [Redacted])</b>	<b>[Redacted] / 7 l</b>

Analyte	Matrix	Unit	Results	Results	Results	Notes/Discrep (LSD)
<b>Physical and Aggregate Properties</b>						
Texture						
Sand	60 µm - 2 mm	% by weight	45.4	51.0	48.4	
Silt	2 µm - 60 µm	% by weight	38.6	39.0	39.6	
Clay	<2 µm	% by weight	15.0	10.0	12.0	
<b>Particle Size Analysis - Wet Sieve</b>						
2.0 mm sieve	% Retained	% by weight	0.2	0.1	<0.1	
1.0 mm sieve	% Retained	% by weight	<0.1	<0.1	<0.1	
500 micron sieve	% Retained	% by weight	<0.1	<0.1	0.2	
250 micron sieve	% Retained	% by weight	0.0	0.3	0.8	
100 micron sieve	% Retained	% by weight	30.0	0.7	22.8	
50 micron sieve	% Retained	% by weight	30.7	4.1	13.6	

Approved by: *Anthony Neumann*  
 Anthony Neumann, M.Sc.  
 Laboratory Operations Manager



## Complete Registration Forms

- Forms are available through your Environmental Health Officer.
- Registration Forms are system dependent
- EHO will review the registration forms and determine if the site is suitable for the proposed system.



## Registration Forms

- Registration Forms have been developed by Environmental Public Health Services
- Changes have been made in 2009 to the Standard of Practice
- New registration forms have been developed to reflect these changes





# Alberta Municipal Affairs Design Tools

### Pressure Distribution, Orifice, Pipe & Pump Sizing

This design worksheet was developed by Alberta Municipal Affairs and Alberta Onsite Wastewater Management Association. The completed installation is to comply with Alberta Private Sewerage Standard of Practice 2009.

This worksheet is for use in Alberta to: size the orifices in distribution lateral pipes, size effluent delivery piping, and to calculate the required capacity and pressure head capability of the effluent pump. It can be used for: calculating delivery of effluent to laterals in disposal fields, mounds and sand filters. This worksheet does NOT consider all of the mandatory requirements of the Standard. It is intended for use by persons having training in the private sewerage discipline.

Note: Page numbers refer to the Private Sewerage Systems Standard of Practice 2009.

Use only Imperial units of measurement throughout (feet, inches, Imperial gallons, etc.).

**Step 1) Select the pressure head to be maintained at the orifices:**  
 Minimum pressure at the orifice:  
 3"ID or less orifice = 5 ft. Minimum = 2.0 x 5 (1) (p.48)  
 Larger than 3"ID orifice = 2 ft. Minimum = 2.6 x 5 (1) (p.48)

Design pressure at lateral orifices:  ft. #1

Note: Worksheet not provided for disposal of laterals are of different diameters. Differing diameters will result in a different pressure head and volume of discharge at the orifice in each lateral. Additional considerations must be made for lateral of differing elevations.

**Step 2) Select the size of orifice in the laterals:**

Minimum size: 2.8, 1.5, (1/8) (p. 48) 1/8" Orifice Diameter selected:  in. #2

Note: Larger sizes are listed in Table 2.1.2.2.

**Step 3) Select the spacing of orifices and determine the number of orifices to be installed in distribution laterals:**

Length of Distribution Lateral (From system design drawings)	Spacing of Orifices selected for design	Resulting number of orifices per lateral
<input type="text"/> ft.	+ <input type="text"/> ft.	= <input type="text"/> #3a

Select a spacing of orifices to obtain even distribution over the treatment area:  
 Maximum spacings are determined by:  
 - 9 ft. Primary treated effluent (p. 46 - 47)  
 - 3 ft. Secondary treated effluent (p. 1-4 & 2-6 2 (c) (iii) 98 & 47 - 48)  
 - 3 ft. On sandy textured soils (p. 7-1 & 9, 93)

ft. X  Number of Orifices =  Total Number of Orifices in Lateral #3b

Note: Length of orifice length, connection, connection size and diameter at junctions.

Revision Date: May 17, 2010 NO-112-02

### SITE INFORMATION DETAILS

Location: \_\_\_\_\_ Job Number: \_\_\_\_\_  
 District: \_\_\_\_\_ Installer Company: \_\_\_\_\_

### PSDS Design - Mound Worksheet

#### Treatment Mound Dimensions Summary

This summary page is to be filled in with the final dimensions and flow variables for this installation.

Level Site

Sloping Site

Lateral Length (ft.):  #1  
 Lateral Length (ft.):  #2  
 Time to Top (min):  #3  
 Upgrade Mound Height (ft.):  #4  
 Diameter Length of Mound (ft.):  #5  
 Slope (ft.):  #6

Note: All dimensions need to be marked on actual site plan.

### Primary Effluent Treatment Field

#### Trench Bottom Surface Area & Length Sizing

This design worksheet was developed by Alberta Municipal Affairs and Alberta Onsite Wastewater Management Association. The completed system is to comply with Alberta Private Sewerage Standard of Practice 2009. This worksheet does NOT consider all of the requirements of the Standard. Use only Imperial units of measurement throughout (feet, inches, Imperial gallons, etc.).

**Step 1) Determine the expected volume of sewage per day:**

Note: See Table 2.1.2.2 (p. 30) & 2.2.2.2 (p. 11) for a guide to determine expected volume of sewage per day. Provide records for seasonal flow rates as defined in Table 2.1.2.2 (p. 30)

Expected Volume of Sewage per Day:  #1

**Step 2) Determine the design soil effluent loading rate:**

Soil Effluent Loading Rate (Write 150 - 150 mg/L column)  #2  
 (mg/L column)  #2

#3a &  #3b &  #3c =  #3d  
 Factor Structure & Pipe

Note: Effluent loading rate MUST be determined from soil texture, structure, and grade characteristics according to Figure 4.1.1.1 (p. 15).  
 Note: Structure infiltration loading rate chosen (use not exceed loading rate set out in 9.1.2.2 (p. 10)).

**Step 3) Calculate the required infiltration surface area for the soil BEFORE any reduction factors:**

Expected Volume of Sewage per day:  #4a  
 Soil Effluent Loading Rate:  #4b  
 Inp. gal/day:  #4c  
 Inp. gal/m<sup>2</sup>/day:  #4d  
 Soil Infiltration Area Required:  #4e sq. ft.

Note: At no time shall primary treated effluent loading rates exceed the loading rates for secondary treated effluent.

**Step 4) Type and width of trench bottom used:**

Actual Pipe & Rock Trench Width in inches:  #5a  
 inches + 12 =  #5b feet.

Actual Chamber Width in inches:  #6a  
 inches + 12 =  #6b feet.



## System Design

- The EHO will sign off on the design portion of the registration form once the EHO is satisfied with the design based on the site and soils evaluation.
- The installer can begin installation of the system. The EHO should be notified of the installation timeline.
- An interim inspection may be conducted during installation of the system.



## System Installation

- The installer must contact the EHO for a final installation inspection prior to backfilling the system.
  - Pressure Distribution systems undergo a squirt test
  - Two weeks advanced notice to the EHO is requested.



## System Installation

- If the EHO is satisfied that the final installation complies with the Alberta Private Sewage System Standards of Practice the system will be approved.
  - If the system is not found to comply with the SOP recommendations will be made to the installer.
- EHO will sign off on the final inspection portion of the registration form.
- Installer can backfill the system.



## Timing is everything...

- Late spring, summer, and early fall are the most suitable times of the year for site evaluation and installation of onsite wastewater systems.



## System Maintenance

- On-site wastewater systems require regular maintenance or they will fail
- System failures are costly to repair
- System replacements are even more costly
- Installer should provide a maintenance plan



## Examples of System Maintenance

- Periodic pumping of septic tank
- Fields should be maintained to keep grass short and prevent compaction by vehicles and livestock
- Precautions should be taken to prevent planting over fields
- Cleaning filters, resetting controls/floats, accessing and cleaning orifices
- Use water efficiently
- Identify and repair leaks in a timely manner



## As a reminder...

Because of the risks to health and the environment, open discharge sewage systems will not be recommended or approved by Health Canada, effective July 1, 2002, due to the following reasons:

- Sewage effluent disposed on the ground surface is accessible to children, pets and pests. This presents serious health hazards because sewage contains disease causing germs such as bacteria, viruses and parasites.
- In a number of disease outbreak investigations, open discharge sewage disposal systems have been associated with the spread of diseases such as Shigellosis and Hepatitis A. Infants, children and elderly are especially vulnerable to these illnesses as their immune systems are weak.
- The sewage effluent discharged onto the ground can destroy the surrounding environment and contaminate drinking water supplies and natural resources such as fish.



# Partner with your EHO

- Your Environmental Health Officer (EHO) is here to help you.
- Consult your EHO as a resource in addressing on-site wastewater issues you may encounter.



## What if we have more questions?

- Contact your Environmental Health Officer for your community if you have any questions or require further information.
- 780.495.2712 – Edmonton Office
- 403.299.3939 – Calgary Office

