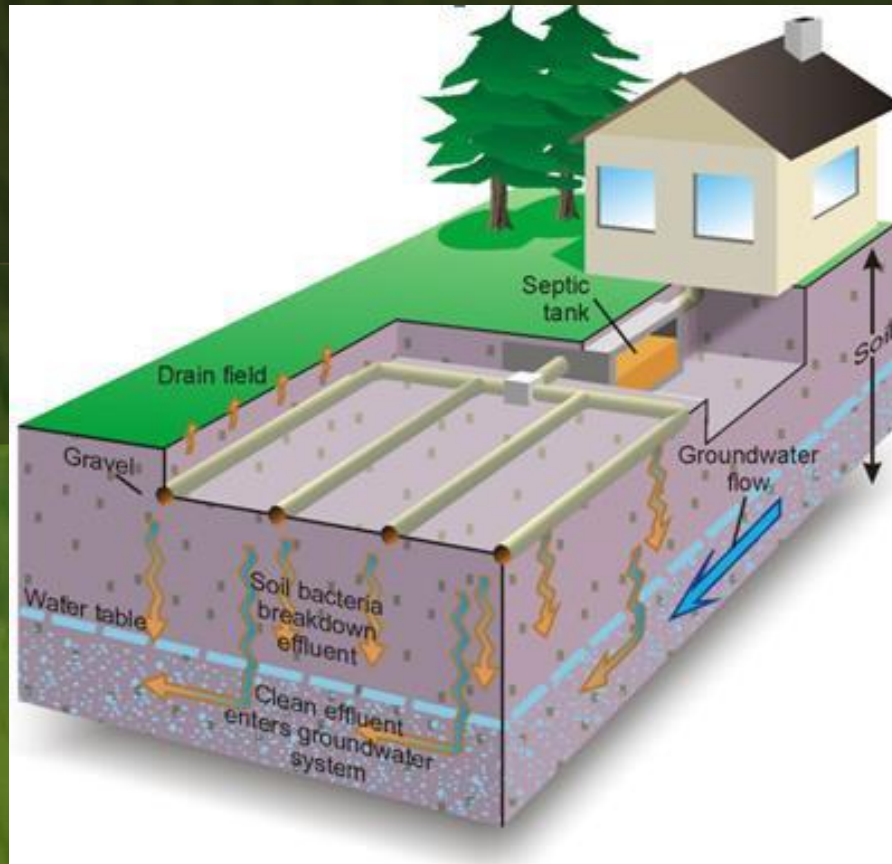


# Home Sewage Treatment Systems:

## Operation and Maintenance



# Background for Operation and Maintenance programs (O&M)

- ❖ Many health department will developing and implementing Operation and Maintenance programs in the next coming years as required by OAC 3701-29-19
- ❖ Health Departments will be phasing in existing systems into the program. This includes all system types, septic tank leach fields, mounds, aerators, peat systems, sand filter / beds, etc.
- ❖ As part of the O&M rules, service providers will be able to perform inspections for O&M programs in lieu of health department staff.
- ❖ We feel it is important that you become familiar with different system types and the Operation and Maintenance of those systems.



# Background for Operation and Maintenance programs (O&M)

- ❖ Purpose of the O&M program:
  - ❖ To inventory all existing septic systems
  - ❖ To identify existing issues and work towards compliance
  - ❖ To bring un-permitted systems up to code
  - ❖ To have comprehensive sewage programs across the State of Ohio to provide meaningful surveillance and consistency

**ORC 3718.011 “a sewage treatment system is causing a public health nuisance if it is not operating properly due to a missing component, incorrect settings, or a mechanical or electrical failure”**

# Objectives

- ❖ Recognize different system types (pre 2007)
- ❖ Identify different kinds of aeration systems (pre 2007) when conducting service work.
- ❖ Know what needs observed and reported to local health district during O&M inspections.
  - ❖ The operational permit will specify how many inspections are needed during the permit period. All servicing should be reported.



# Common System Types (pre-2007)

- ❖ Most common system types installed prior to 2007.
  - ❖ Septic tank and leaching
  - ❖ Septic tank, leaching, with curtain or perimeter drain
  - ❖ Discharging aeration treatment systems
  - ❖ Aeration treatment systems with leaching components
  - ❖ Peat Filter pretreatment systems with leaching components
  - ❖ Mounds, ETA's (evaporation, transpiration, and absorption)
  - ❖ Septic tank with raised leach bed.
  - ❖ Septic tank and surface sand filters
  - ❖ Septic tank or aeration tank to dry wells.

# Septic Tank and Leaching

Consists of a 1 or 2 compartment tank

Should have baffles, risers, effluent filter

Should have a diverter box

May have vent pipes or observation ports on leaching

Very little maintenance other than cleaning effluent filter, pumping tanks, switching leach fields/leach lines.





# Outlets





# Outlets





# Mounds and ETA's





# Mounds and ETA's

- ❖ May have aeration units or septic tanks prior to mound component.
- ❖ Usually have a lift pump with high water alarm or may have gravity flow to mound if downslope from home.
- ❖ ETA's have trees planted on them (arborvitae)
- ❖ They have inspection ports for observation and pressure checks.
- ❖ Sample ports on many ETA's and should be sampled annually.
- ❖ Also may have curtain or perimeter drains



# Septic tank, peat filters, leaching





# Peat filter systems





# Peat Filter Systems





# Peat filter systems – lift station





# Oldham Aerators (pre 2007)





# Oldham Aerators first chamber

## Solids chamber





# Oldham Aerators 2<sup>nd</sup> chamber, aeration chamber





# Oldham Aerators 3 chamber or filtration (upflow gravel or Sand filter)





# Oldham aerators – used with leaching or off-lot discharge





# Jet aerators (pre 2007)

- ❖ 3 chambers,
- ❖ No effluent filter, uses BAT media in 2<sup>nd</sup> compartment
- ❖ Goes to off-lot discharge or on-lot leaching



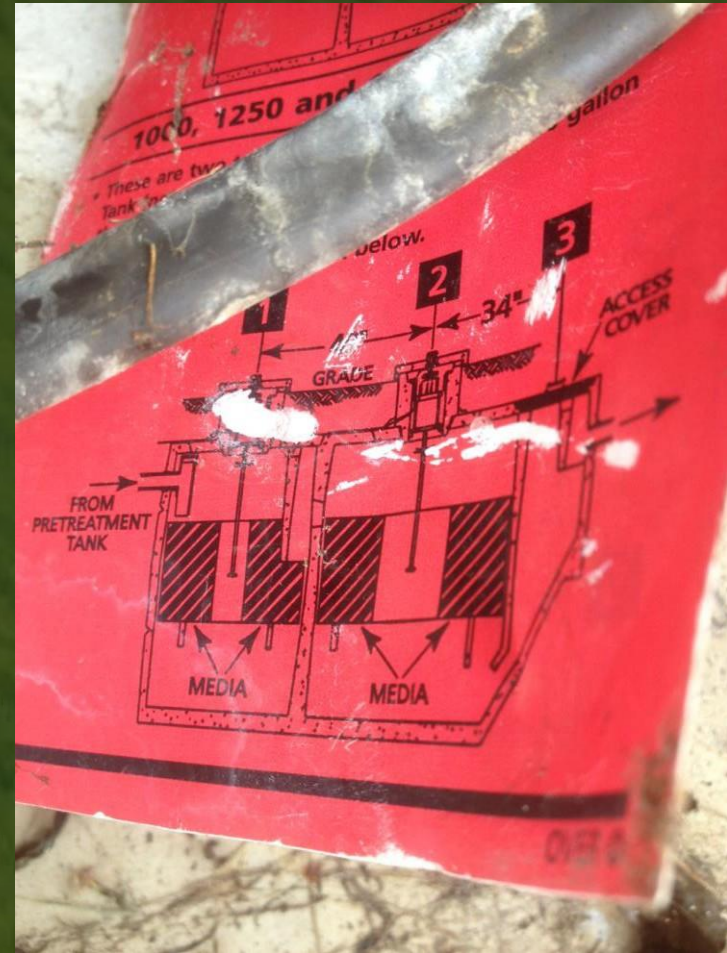


# Jet aeration - control panel





# Jet aerator – aeration chamber





# Jet aerator

If pumping a jet aerator, be careful of the filter media in 2<sup>nd</sup> compartment

No filter on outlet in 3<sup>rd</sup> chamber





# Jet aerators

## Outlet to leaching



## Off lot discharge

- ❖ May have chlorination, sandfilter, or other tertiary treatment device





# Norweco Aerators Pre 2007

- ❖ Have 3 chambers
- ❖ Biokinetic Filter, surface sandfilters, or other filters
- ❖ May be on-lot with leaching or off-lot discharge





# Norweco Motor





# Norweco pre 2007

## ❖ Older Norweco Motor





SINGULAIR®



**norweco®**  
Engineering the future of water  
and wastewater treatment



# Norweco Pre 2007

Newer model motor

Usually runs on timer 30 minutes on, 30 minutes off





# Norweco pre 2007 - biokenetic filter

Biokenetic to leaching



Off lot Biokenetic Filter With Chlorinator





# Multi-Flo & Nayadic



**MULTI-FLO**





# Inspection reports or service records

- ❖ Need submitted to health department within 60 days
- ❖ Should capture the current operational status of system at time of inspection – the basics:
  - ❖ Is it working? Is it working optimally?
  - ❖ What service does it need?



# Contractors - Allowable Activities



**Ohio Department of Health**  
Bureau of Environmental Health  
Residential Water and Sewage Program

## Sewage Treatment System Contractors' Allowable Activities by Category of Registration

This document has been prepared to provide some guidance on the activities that a contractor is allowed to perform under each category of registration. The list of activities for each category of registration is intended to provide a general idea and contractors are not necessarily limited to only the activities list here. If you have questions about activities that are not listed, you may contact the Residential Sewage Program for additional guidance at 614-644-7551.

<b>Installer</b> – activity of installing, or altering STS or GWRS [OAC 3701-29-01 (FFF)]	<b>Service Provider</b> – activity of servicing, monitoring, evaluating or sampling STS or GWRS [OAC 3701-29-01 (OOOO)]	<b>Septage Hauler</b> – collection, transportation, disposal and/or land application of domestic septage, and evaluate and report on the condition of the tank(s) they are pumping. [OAC 3701-29-01 (JJJJ)]
Installation or alteration work in accordance with a valid installation/permit issued by the board of health	Routine service and maintenance required for product approval and/or operation permit (e.g. service contracts) for STS or GWRS, including in-place correction, cleaning, or replacement of damaged or worn out devices with approved devices	Evaluate and report on: <ul style="list-style-type: none"> <li>condition of the tank</li> <li>presence/absence of baffles or tees</li> <li>conditions of risers</li> <li>evidence of high water or water intrusion</li> <li>tank deterioration</li> </ul>
Inspection for trouble-shooting STS issues if installed or altered by same installer	Replacement of mechanical devices (agitators, compressors, and pumps), and broken, worn-out, or damaged parts	Conduct and report any minor repairs limited to structure of the tank(s) being pumped, including: <ul style="list-style-type: none"> <li>Installation/replacement of lids or risers on the tank</li> <li>Installation, repair, or replacement of tank baffles</li> <li>Installation, cleaning, or repair of effluent filter at outlet of tank</li> </ul>
Installation or replacement of lids, risers, distribution boxes, drop boxes, tank baffles, effluent filters, etc.	Replacement or cleaning of STS filter media	
Installation of sampling ports	Installation of sampling ports	Maintain records and manifest of septage or sewage pumped from each STS as required in OAC 3701-29-20 (C).
	Installation or replacement lids, risers, baffles	
	Installation or cleaning of outlet filters	
	Monitoring of STS or component for verification of performance requirements, including dye tests	
	Evaluation of STS (i.e. real estate/point-of-sale inspections)	
	Sample collection from STS for lab analysis	



# Service Visit

## ❖ Motor:

- ❖ Is the motor running? Is it running properly? Is it set on a timer? Set on manufacturer recommendation
- ❖ What does it smell like: musty, septic, strange
- ❖ What does it sound like, are the bearings going out



- ❖ Does it need cleaned? Cut off excess hair wrapped around shaft. Spray with hose. Put dowel rod through the center to clear out debris.



# Service Visit

- ❖ Effluent and/or Filter, 3<sup>rd</sup> chamber:
  - ❖ Is the filter in good condition. If you observe solids, can you clean it yourself? If not, call a professional.
  - ❖ What does the effluent look like going into the filter chamber? Brown, black, grey, clear, foamy, bubbly
  - ❖ What does it smell like?
  - ❖ Where does it go? Sand filter, Leach bed, stream, ditch, my neighbors backyard.



# Service Visit – Dbox looks like this – what needs done?





# Service Visit

- ❖ Soil Absorption (Leaching)
  - ❖ Surfacing or seepage on any of the lines?
  - ❖ Soft?
  - ❖ Settling?
  - ❖ Grass growing? Weeds? What can be grown on my leach bed?





# Service Visit

- ❖ Discharging effluent (to river, creek, ditch):
  - ❖ Where is it? Find it!
  - ❖ What color is it?
  - ❖ What color is the material the effluent flows over?
  - ❖ What does it smell like?
  - ❖ Enough fall?
  - ❖ Animal guard?
  - ❖ Are samples required
    - ❖ NPDES system?









# Service Visit

- ❖ Perimeter/Curtain Drain:
  - ❖ Unblocked
  - ❖ Animal guard
  - ❖ Appropriate amount of fall
  - ❖ Smell/Color





# Service Visit: Reporting

- ❖ Report your inspection findings, at minimum, once a year
- ❖ Include:
  - ❖ pumping reports (septage hauler is required to provide form to health department)
  - ❖ Repair/or replacement documentation (New/rebuilt motor, replaced damaged distribution box, replaced broken tile)



# Service Visit

- ❖ Service activities that require a permit:
  - ❖ Alterations and replacement of whole components (new tank, added component, new leach lines)
  - ❖ Check with local health department to determine if a soil evaluation is required.
  - ❖ Check with local health department to see if funding is available to help the homeowner pay for repairs.



# Service Visit – Tips for the homeowner

- ❖ Divert sources of water, like roof drains, footer drains, and sump pumps away from the system. Excess water saturates the soil leading to system failure.
- ❖ Promote water conservation to avoid overloading the system. Urge prompt repair leaky faucets or toilets, and installation of water saving devices.



# Service Visit - Tips for the homeowner

- ❖ Keep grass cover over the system in order to help remove excess water and prevent erosion.
- ❖ If you notice signs of depression or sinking of leach lines, use topsoil to bring up to grade so that water is diverted off of the lines and does not allow for surface water to lay on the lines.



# Service Visit – Tips for the homeowner

- ❖ We do not recommend septic tank additives. These products usually do not help and be harmful to the operation of the system. Comments?
- ❖ Eliminate or reduce the use of a garbage disposal. The additional waste produced by a garbage disposal will lead to extra maintenance requirements.



# Service Visit – Tips for the homeowner

- ❖ The septic tank is not a trash can. These items should stay out of the system:
  - ❖ Coffee grounds
  - ❖ Dental floss
  - ❖ Disposable diapers
  - ❖ Kitty litter
  - ❖ Sanitary napkins
  - ❖ Tampons
  - ❖ Cigarette butts
  - ❖ Condoms
  - ❖ Fat, oil, and grease (FOG)
  - ❖ Automotive fluids
  - ❖ Paper towels



# Service Visit - Tips for the homeowner

Do not pour chemicals or cleaners such as:

- ❖ Paints
  - ❖ Varnishes
  - ❖ Thinners
  - ❖ Pesticides
- 
- ❖ Harsh Chemicals can kill beneficial bacteria that treat wastewater.



# Thanks for listening! Contact Us

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