

GUIDANCE FOR CONDUCTING EVALUATION OF FAILED ON-SITE SEWAGE SYSTEM (OSS)

In order to determine an appropriate repair for a failing OSS, it is critical that the location(s) and cause(s) of the failure be identified. Misdiagnosed failures can lead to repairs that are either incorrect and/or excessive given the nature of the initial problem. The following guidance/outline is recommended for diagnosing failures and identifying factors critical to long term operation of OSS.

IDENTIFYING LOCATION(S) IN SYSTEM WHERE FAILURE IS OCCURRING

Symptom - Plumbing Fixture(s) Not Draining

1. If only one plumbing fixture does not drain, then the line is blocked between the fixture and the main sewer line. **Solution - Clear the line.**
2. If all fixtures on one sewer branch do not drain, then the sewer branch line is blocked. **Solution - Clear the line**
3. If all fixtures in the home do not drain, then dig up the septic tank. **What is the liquid level?**
4. If the septic tank liquid level is normal or less, then the problem is between the tank and the house. **Solution - Clear the line**
5. If the septic tank is full then dig up the:
 - ☐ Dosing chamber in a system with a pump. Check the dosing chamber.
 - ☐ If the dosing chamber is empty, clear the line between the septic tank and the dosing chamber.
 - ☐ If the dosing chamber is full, check the operation of the pump and switches.
 - ☐ "D" box (distribution box or inspection box) if present.
 - ☐ If the "D" box is empty then there is a problem in the line between the septic tank and the "D" box. **Solution - Clear the line**
 - ☐ If the "D" box is full, then check each trench for fluid.
 - ☐ If an empty trench is encountered, **Solution - clear the line between it and the "D" box.**
 - ☐ If the trenches are full, **Solution - the drainfield needs to be replaced**

☐ The first “Step Down” in a serial distribution system. Observe the liquid levels in trenches as you proceed from an upper trench to the next succeeding trench and step down.

☐ If a trench is empty and its predecessor is full, **Solution - clear the “Step Down” line between these trenches.**

☐ If all the trenches are full - **Solution - the drainfield needs to be replaced**

TABLE 1 FREQUENT CAUSES OF FAILED GRAVITY OSS

SYMPTOM	POSSIBLE CAUSE	NOTATION
Backup in building plumbing fixtures	The size of the system is inadequate for actual quantity of wastewater strength	OSS Disposal component generally located @ same elevation as septic tank
	Collapsed piping to or from the septic tank	
Sewage effluent on ground surface	Failure at the site of the D box, inspection box or step down (if present)	Part or all of the system becomes unusable.
	Significant change in usage causing the system to become undersized for current quantity and quality of sewage – (i.e. too much organic matter entering the OSS disposal component)	Effluent is frequently observed ponding on top of ground or drainfield.
	Failure to pump tank as needed (i.e. too much organic matter entering the OSS disposal component)	
	Loss of baffle protection at septic tank outlet	

OSS USAGE AND OPERATIONAL FACTORS

1. NUMBER OF OCCUPANTS LIVING IN HOUSE __ ADULTS: __ M __ F ____ CHILDREN / TEENS: __ M __ F

2 LAUNDRY ACTIVITIES:

TOTAL LOADS / WEEK. _____ LOADS/DAY - _____ CONSECUTIVE LOADS: YES / NO

3. BRAND OF LAUNDRY DETERGENTS USED: _____ POWDER / LIQUID

4. BLEACH USED: YES / NO POWDER / LIQUID USE __ CUP/LOAD ____ LOADS / WEEK

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5. HOT OR COLD WATER USED: _____
6. GARBAGE DISPOSAL: YES / NO USE: ____ TIMES/DAY ____ TIMES/WEEK
7. DISHWASHER: YES / NO USE: ____ TIMES/DAY ____ TIMES/WEEK
8. IS A WATER SOFTENER USED: YES / NO SALINE CHLORINATION: YES / NO
9. IS A DRAIN CLEANER USED: YES / NO TYPE: _____ USE: _____
10. NUMBER OF TOILET PAPER ROLLS USED PER WEEK: _____
11. IS ANY RESIDENT USING A (LONG TERM) PRESCRIPTION DRUG OR ANTIBIOTICS: YES / NO
12. HAVE OCCUPANTS EVER LIVED IN A HOME WITH/USING A SEPTIC SYSTEM? YES / NO
13. HOW OLD IS THE SYSTEM: _____ YEARS DATE OF LAST PUMP OUT: _____
14. HAS THE SYSTEM EVER BACKED UP: YES / NO _____
15. HAVE THE BAFFLES EVER BEEN PLUGGED: YES / NO _____
16. HAS EFFLUENT EVER SURFACED: YES / NO _____
17. HAS THE SYSTEM EVER BEEN REPAIRED: YES / NO _____
18. HAS THE SYSTEM ALARM (IF PRESENT) EVER GONE OFF? -YES / NO _____
19. SOIL TYPE – AT DRAINFIELD DEPTH OR LOWER: _____
20. CONTROL SYSTEM: DEMAND / TIMED
21. DESIGN RATE FOR SYSTEM: _____ GPD
22. SEPTIC TANK SIZE: _____ GALLONS PUMP TANK: _____ GALLONS
23. IS THE PUMP WORKING? YES / NO _____
24. SLUDGE LEVELS IN SEPTIC TANK: 1ST COMP. ACCUM.: ____ FLOATING MAT: ____
2ND COMP. ACCUM.: - ____ FLOATING MAT: ____
25. SLUDGE LEVELS IN PUMP TANK: ACCUM: ____ FLOATING MAT: ____
26. DURATION OF PUMP CYCLE: ____ MINUTES PUMP DRAWDOWN: ____
27. ACTUAL WATER USE (GPD): AVERAGE: ____ HIGH: ____ LOW: ____
- DATA FROM: ____ CYCLE COUNTER
____ HOUR METER ON PUMP
____ WATER METER ON WATER
____ OTHER _____
28. LABORATORY EXAMINATION OF SEWAGE EFFLUENT
WASTE STRENGTH ANALYSIS IS WARRANTED WHEN:
- THERE ARE INDICATIONS OF EFFLUENT BEING APPLIED TO SOIL AT WRONG SOIL APPLICATION RATE OR EXCESSIVE MASS LOADING
 - THERE IS EVIDENCE OF CLOGGED ORIFICES
 - THERE IS EVIDENCE OF ABUSE TO THE SYSTEM RESULTING IN THE SEPTIC TANK NOT BIOLOGICALLY OPERATING AS NECESSARY