

4. Each dose delivered to the infiltrative surface of the drainfield should not exceed 20% of the estimated average daily wastewater flow. If the total dose volume is too small, then the pipe network will not become fully pressurized or may not be pressurized for a significant portion of the total dosing cycle and may need to be adjusted.

4.19.3.4 Dosing Chamber

Dosing chambers are tanks that contain a pump or siphon and their associated equipment. The dosing chamber is either a separate septic tank located after the septic tank or may be the last compartment of a multicompartment septic tank. If the dosing chamber is part of a multicompartment septic tank, it must be hydraulically isolated from the compartment(s) of the tank that comprise the septic tank portion of the tank. The construction of a dosing chamber shall meet the requirements of IDAPA 58.01.03.007 except as specified herein. Figure 4-20 provides a dosing chamber diagram with a pump and screen, and Figure 4-21 provides a dosing chamber diagram with a pump vault unit.

1. Dosing chambers must be listed on the approved list of dosing chambers (section 5.3), or must be listed on the approved list of septic tanks (section 5.2).
2. Pump vaults and effluent filters must be listed on the approved list of pump vaults (section 5.8) or must be listed on the approved list of septic tank effluent filters (section 5.9).
3. Any system using a pump located after the septic tank to deliver effluent to the drainfield (pressurized or nonpressurized) or a nonpackaged alternative pretreatment component shall locate the pump in a dosing chamber meeting the minimum requirements herein.
4. Dosing chamber must be watertight, with all joints sealed. Precautions must be made in high ground water areas to prevent the tank from floating.
5. Effluent must be screened or filtered prior to the pump.
 - a. A screen constructed of noncorrosive material must be installed to protect the pump with a minimum of 1/8-inch or slits and have a minimum screening flow area of 4 ft² for non-engineered applications
 - b. Screen placement must not interfere with the floats and should be easily removable for cleaning.
 - c. An effluent screen or filter placed in the septic tank may be used as a suitable alternative to pump screens and must be constructed with 1/8-inch or smaller holes or slits of noncorrosive material and include a flow area appropriate to provide a rated mean-time between screen cleanings of 4 years or more based on system design flow, or have a screening flow area of at least 1 ft² in non-engineered systems unless the filter has a close-off feature that prevents effluent from being discharged to the drainfield when the filter is removed. If placed in the septic tank, a riser to finish grade is needed to provide easy access for cleaning. All screens must be installed according to manufacturer's recommendations.
 - d. The filter flow area for engineered systems should meet screen cleaning interval outlined in the system O&M manual.
 - e. Any effluent filter used in a septic tank in place of conventional outlet piping, shall conform to the liquid draw requirements listed under IDAPA 58.01.03.007.11.d,

- which is 40% of tank liquid volume in vertical-walled tanks and 35% on horizontal cylindrical tanks.
6. The volume of the dosing chamber should be equal to at least two times the system design flow when a single pump is used.
 - a. If duplex pumps are used, the volume of the dosing chamber may be reduced to equal the system design flow. The dosing chamber must come from the approved septic tank or dosing chamber list.
 - b. The volume of the dosing chamber must be sufficient enough to keep the pump covered with effluent, deliver an adequate dose based on the system design, and store 1 day of design flow above the high-level alarm.
 - c. Additional dosing chamber capacity may be necessary if the pressurized system is designed to have surge capacity.
 7. The dosing chamber manhole located above the pump shall be brought to grade using a rise. Access to the pumps, controls, and screen is necessary.
 8. A high-level audio and visual alarm float switch shall be located within the dosing chamber 2–3 inches above the pump-on level to indicate when the level of effluent in the dosing chamber is higher than the height of the volume of one dose.
 9. A low-level shutoff float switch shall be connected to the pump and be set to a height that is 2–3 inches above the top of the pump. This ensures the pump remains submerged.
 10. If a differential control float is used to turn the pump on and off, care must be exercised to ensure the float will effectively deal with the required dose based on the inches of drop in the dosing chamber.
 11. Dosing chamber electrical requirements:
 - a. All electrical system designs and installations must be approved by the Idaho Division of Building Safety, Electrical Division.
 - b. Electrical permits are required for installing all electrical components and the applicant, responsible contractor, and/or the responsible charge engineer are responsible for obtaining the proper electrical permits.
 - c. Installation of all electrical connections is required to be performed by a licensed electrician. The applicant, responsible contractor, and/or the responsible charge engineer are responsible for ensuring that the installation is performed by a properly licensed individual.
 - d. Subsurface sewage disposal installer registration permits are not a substitute for an electrical installer license.
 - e. Visual and audible alarms should be connected to a separate circuit from the pump. It is recommended that a DC battery backup power source be considered for the visual and audible alarm.

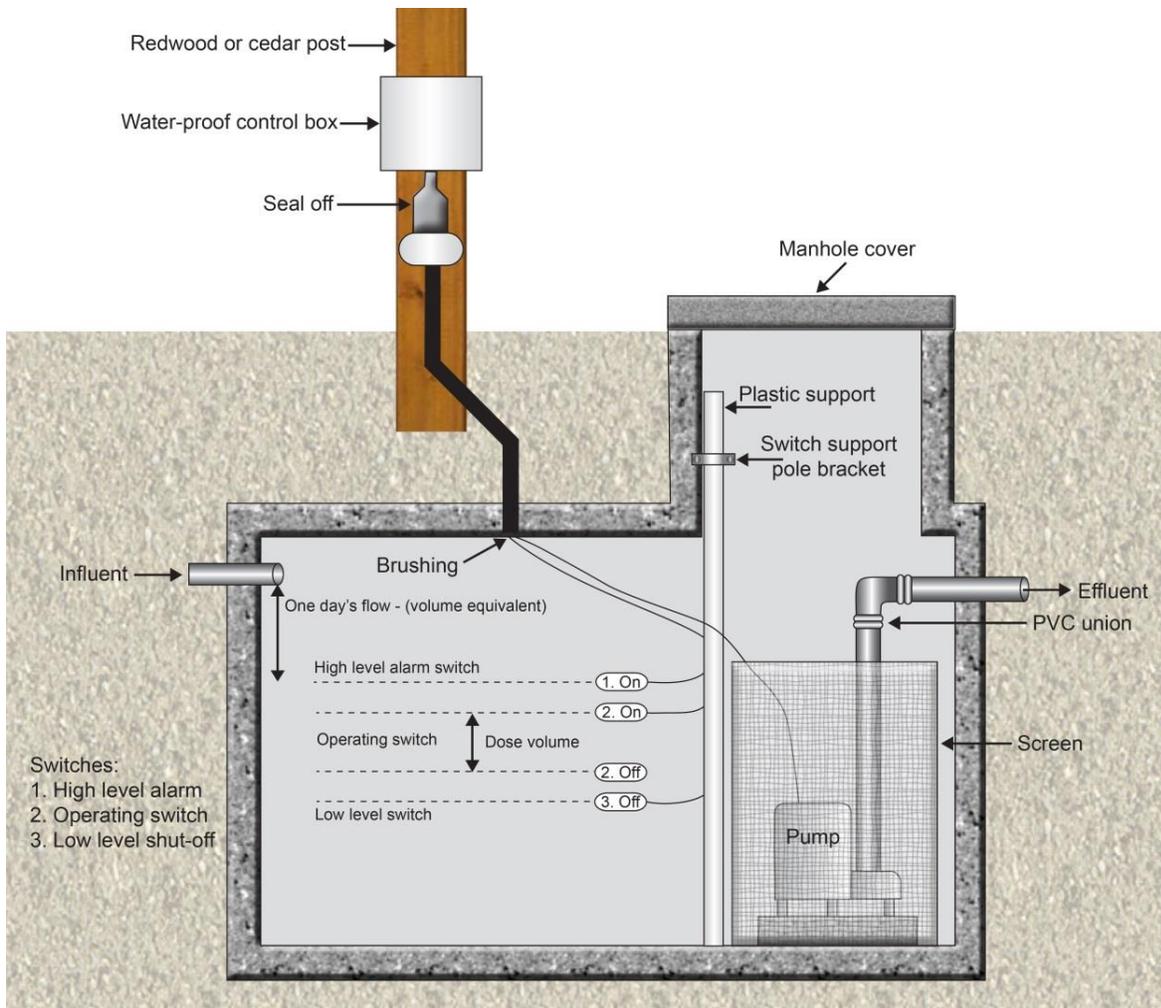


Figure 4-20. Dosing chamber with a pump and screen.

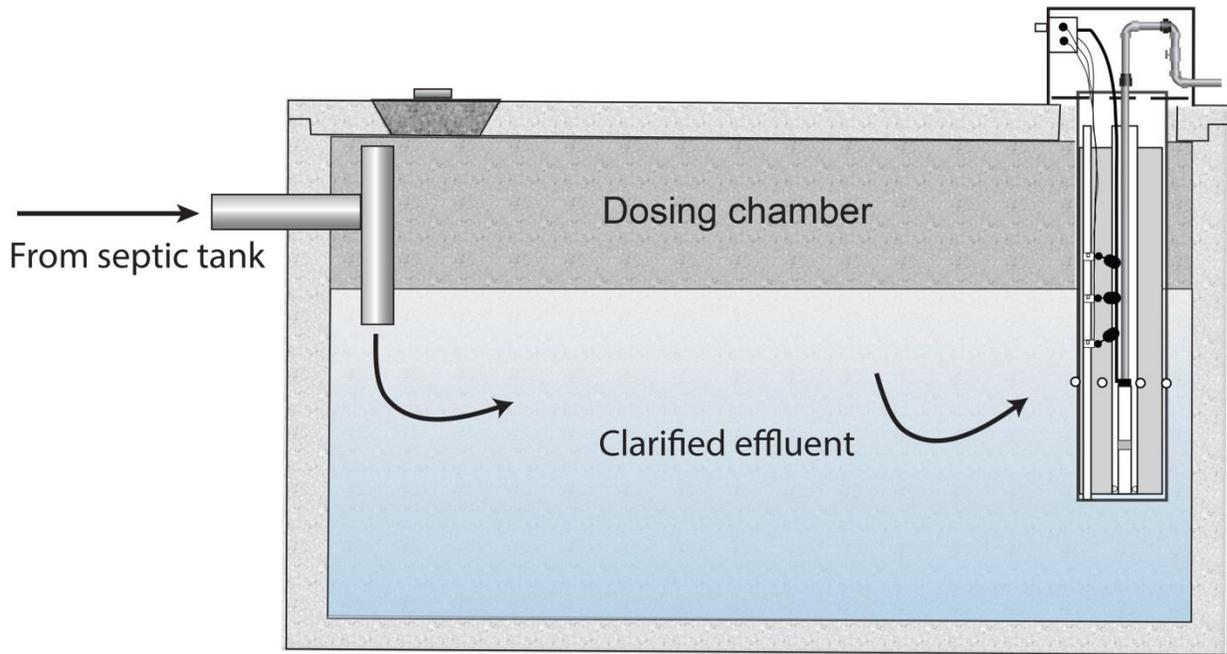


Figure 4-21. Dosing chamber with a pump vault unit.

4.19.3.5 In-Tank Pumps

Placement of sewage effluent pumps in a septic tank is an acceptable practice under the following conditions:

1. The site is too small for the installation of a dosing chamber or a septic tank with a segregated dosing chamber compartment, or the flows are less than 100 GPD.
2. Sewage effluent pumps must be placed in an approved pump vault (section 5.8).
3. Effluent drawdown from the septic tank is limited to a maximum 120 gallons per dose with a maximum pump rate of 30 GPM.
4. Septic tanks must be sized to allow for 1-day flow above the high-water alarm, unless a duplex pump is used.
5. Pump vault inlets must be set at 50% of the liquid volume.
6. Pump vault placement inside the septic tank shall be in accordance with the manufacturer's recommendations.
7. Pump vault screens shall be 1/8-inch holes, or slits (or smaller); constructed of noncorrosive material; and have a minimum area of 12 ft².
8. Pump vault and pump placement must not interfere with the floats or alarm, and the pump vault should be easy to remove for cleaning (Figure 4-22).
9. The same electrical requirements that apply to both pumps and dosing chambers apply to in-tank pumps.

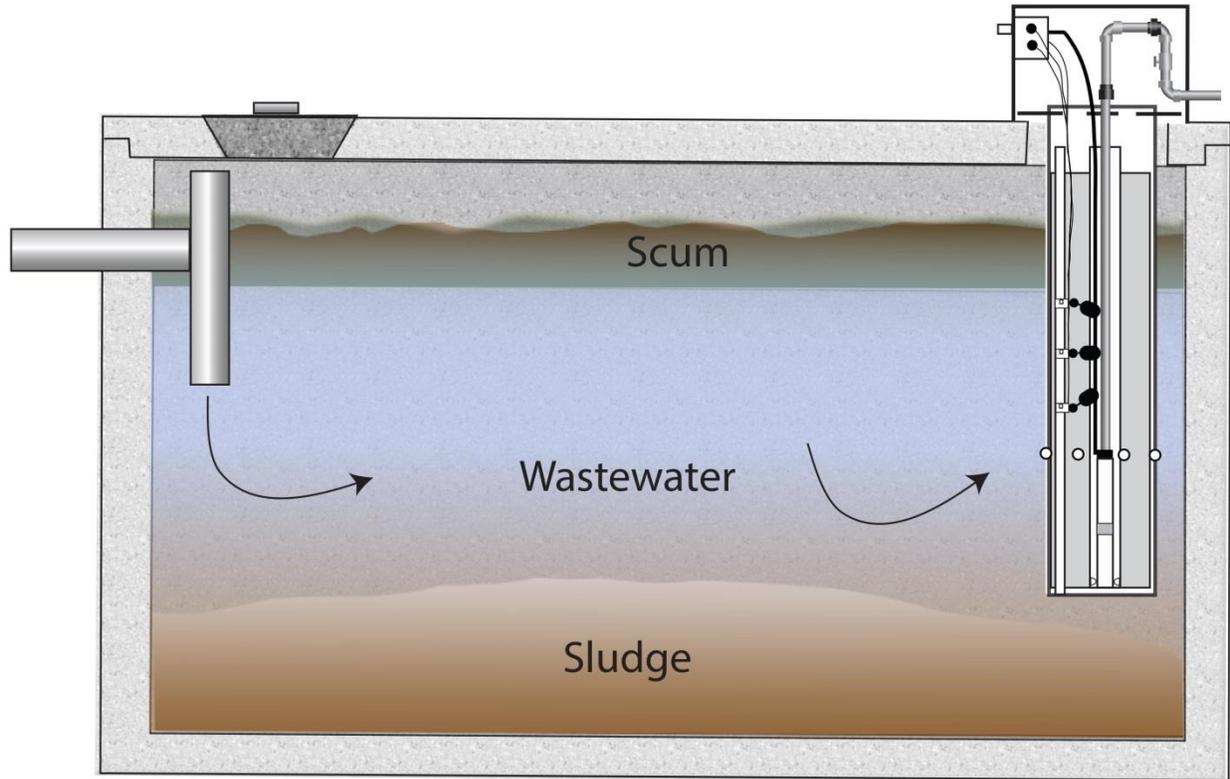


Figure 4-22. Example of effluent pump installed into single-compartment septic tank using a pump vault unit.

4.19.3.6 Pump to Gravity Distribution

A pump to drop box system may be used when an area for drainfield placement cannot be reached by standard gravity flow from the wastewater generating structure. Standard drainfields located at higher elevations than the septic tank are not required to be designed as a pressure distribution system unless the square footage of the disposal area exceeds 1,500 ft². When the drainfield is not pressurized, wastewater is conveyed by a pump through a transport (pressure) line to a drop box where effluent pressurization breaks to gravity distribution into the drainfield (Figure 4-23). For a description of a drop box, see section 3.2.6.2. Distribution boxes may be substituted as a drop box for the purpose of a pump to gravity distribution system. Alternating to larger diameter pipe to break pressurization and achieve gravity flow should not be used as a substitute for a drop box.

1. Pump selection, transport (pressure) line design, dosage, and dosing chamber or in-tank pump design shall follow the procedures in Section 4.19, "Pressure Distribution System."
2. A drop box should be installed that allows gravity distribution to all drainfield trenches.
3. Upon entry into the drop box, the effluent line should be angled to the bottom of the box with the effluent line terminating above the high water level of the drop box.
A 0.25-inch hole may need to be drilled in the top of the angle connection to prevent a potential siphon.
4. A complex installer's permit shall be required for installation.