

Rotating mulch infiltration trenches (Under Development)

(1) Location

(A) Applicable horizontal setback requirements shall be maintained, except that trees and other vegetation may be intentionally established adjacent to the mulch infiltration area where root growth will not damage system components..

(B) Mulch infiltration trenches shall not be constructed in soils with a percolation rate slower than sixty minutes per inch, or where rapid percolation may result in contamination of water-bearing formations or surface waters.

(C) Mulch infiltration trenches shall be located on the property to maximize the vertical separation distance from the bottom of the infiltration trench to the seasonal high groundwater level, bedrock, or other limiting layer.

(D) Mulch infiltration trenches shall not be constructed in unstabilized fill.

(E) Mulch infiltration trenches shall be located where stormwater runoff will not enter or flow through the trench.

(2) Design

(A) The minimum infiltration area shall be based on the design wastewater flow and the allowable hydraulic loading rate of the receiving soil.

(B) The infiltration area shall be computed using the bottom area of the trench in contact with native soil.

(C) Each rotating mulch infiltration system shall contain a minimum of two independently operable trenches or zones.

(D) One extra (redundant) trench shall be included to allow a trench to be taken offline for resting.

(E) The distribution system shall allow wastewater to be directed between the trenches to allow resting or maintenance.

(F) The maximum length of an individual distribution line should not exceed one hundred feet.

(G) Mulch infiltration trenches should generally be between eighteen and thirty-six inches wide.

(H) The bottom of the trench shall be level across its width.

(I) The wastewater distribution line shall be positioned a minimum of 6 inches below the mulch surface.

(J) The wastewater distribution line shall be positioned a minimum of 12" above the bottom of the trench.

(K) On rolling or sloping land, each mulch infiltration trench shall approximate the land surface contour.

(L) Each trench should include an inspection port near its downstream end to evaluate ponding and drain-down.

(M) A valve box or equivalent flow-control device shall be installed between the treatment unit and the mulch infiltration trenches.

(N) The wastewater distribution line shall use pressure dosing to obtain uniform distribution.

(3) Materials

(A) One inch pipe used for distribution lines shall meet the appropriate ASTM standard for pressure piping or an equivalent standard. Fittings shall be compatible with the distribution piping.

(B) Holes in the low-pressure piping shall be spaced 3-5 feet apart and have a diameter of 1/4" to 3/8".

(C) Mulch shall consist primarily of coarse, untreated woody material, nominal particle size approximately 1/2 inch to 3 inches, substantially free of soil, trash, sawdust, leaves, and excessive fines.

(D) The mulch shall be considered a replaceable treatment and distribution medium rather than permanent aggregate.

(4) Construction

(A) Excavation equipment and unnecessary construction traffic shall be kept off the proposed infiltrative surface to minimize soil compaction.

(B) Construction shall not be performed when soil moisture is sufficiently high to cause smearing or compaction of the infiltrative soil.

(C) Following excavation, the trench bottom and sidewalls shall be raked or scarified to remove smeared soil surfaces.

(D) Coarse woodchip media shall be placed in the trench without excessive mechanical compaction.

(E) The distribution line shall be installed within the mulch layer at the specified elevation and supported so that its position is maintained after settlement of the mulch.

(F) At least six inches, and preferably eight to twelve inches, of woodchip media shall be maintained above the wastewater discharge openings.

(G) The finished mulch surface should be slightly elevated above surrounding grade initially to account for settlement.

(H) Finished grade surrounding the trench shall divert stormwater away from the system.

(5) Operation and maintenance

(A) Rotation frequency between active and inactive trenches shall be adjusted based upon observed ponding, mulch condition, and fertigation needs.

(B) The trench should be periodically inspected for:

- surface wetness or ponding;
- odor;
- mulch settlement;
- preferential flow;
- exposed distribution piping;
- vegetation or root intrusion; and
- accumulated solids.

(C) If persistent ponding occurs, the affected trench shall be removed from service and replaced in a new location.