

LOSS RAC Discussion Agenda & Record of Decisions

Issue Paper for 9/30/2008 LOSS RAC Meeting		<i>Number of Members Present:</i> _____	
Engineering / Design Topics	Topic Number: 7	<i>50% +1=</i> _____	<i>Two Thirds =</i> _____
Topic Statement	Determine whether any changes in the current three-foot vertical separation requirement are appropriate.		
Problem Statement	<p>Vertical separation in original, undisturbed, unsaturated soil is the key determinant in the level of pathogen removal provided by the soil. Vertical separation is defined in both the small OSS (Chapter 246-272A WAC) and LOSS rule (both are noted in the reference section).</p> <p>The current requirement in the LOSS rule is a minimum of three feet. The small OSS rule allows reduced vertical separations down to as little as one foot, but higher levels of treatment before discharge to the soil are required because the soil depth is insufficient to provide adequate removal. Also, with small OSS, the flows and flow density over a specific area are less than would be expected with a LOSS, especially a LOSS with daily design flows up to 100,000 gpd. Should vertical separations for LOSS be more stringent than for small OSS? Also, if higher quality effluent (low fecal coliform counts) is provided, is the same vertical separation required for septic tank effluent still required?</p>		
Background	<ul style="list-style-type: none"> • The primary function of vertical separation is to remove pathogens. Also, most soils can remove some chemicals. Vertical separation can play a role in that. While it also allows for a depth of soil through which water and effluent can move without surfacing, vertical separation is not expected to impact the removal of other chemicals, such as nitrogen. • A LOSS drainfield is discharging significant volumes of treated effluent into the soil, resulting in higher “flow-densities” than typically occur with smaller OSS. This volume may result in ground water mounding which may impact the actual available vertical separation on a site. This may impact the treatment expected to be afforded by the soil. • If the effluent has been treated by processes so that very low numbers of fecal coliform are present, vertical separation below a LOSS drainfield’s bottom is not as vital. Unless there are concerns with ground water mounding or down gradient surfacing of effluent, theoretically this should require a smaller vertical separation. 		

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WAC 246-272A-0010 (Definitions)

Vertical separation" means the depth of unsaturated, original, undisturbed soil of soil types 1-6 between the bottom infiltrative surface of a soil dispersal component and the highest seasonal water table, a restrictive layer, or soil type 7...

WAC 246-272A-0230 (Table VI)

Vertical Separation in inches	Soil Type		
	1	2	3-6
12 < 18	A - pressure with timed dosing	B - pressure with timed dosing	B - pressure with timed dosing
≥ 18 < 24	B - pressure with timed dosing	B - pressure with timed dosing	B - pressure with timed dosing
≥ 24 < 36	B - pressure with timed dosing	C - pressure	E - pressure
≥ 36 < 60	B - pressure with timed dosing	E - pressure	E - gravity
≥ 60	C - pressure	E - gravity	E - gravity

WAC 246-272B-01001 (Definitions)

Vertical separation" means the depth of unsaturated, original, undisturbed soil of soil types 1B-6 between the bottom of a disposal component and the highest seasonal water table, a restrictive layer, or soil type 1A...

WAC 246-272B-08001(2)(b)(i)

Requires complete plans and specifications for the LOSS "Showing a conventional pressure distribution system with three feet of vertical separation;"

LOSS Rule Foundation Document

- 1) Vertical separation of 3 feet
- 2) Vertical separation of 2-3 feet if:
 - a) At least 2 ft. of vertical separation exist throughout proposed primary and reserve areas
 - b) Design engineer is on site during construction to verify at least 2 feet of vertical separation is maintained
 - c) DOH may impose more stringent design/management requirements
 - d) Treatment Level C or better
 - e) Hydrogeologic report verifies 2 feet is sufficient to protect *and the design will assure that ground water mounding will not cause surfacing or reductions in vertical separation less than 2 feet anywhere in the primary and reserve areas(added to foundation document language).*

Reference /
Research

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Questions	1) Is a vertical separation of three feet an appropriate requirement for LOSS, at least as the initial vertical separation? a) If YES , go to question #2.		
	TRS Recommendation: YES.		
	b) If NO , what is an appropriate vertical separation for the LOSS rule? Then go to question #2.		
	2) Should reductions in vertical separations be permitted, like they are for small OSS, even though the flows and flow densities are greater for a LOSS?		
	TRS Recommendation: YES.		
	a) If YES , what is the appropriate level of treatment that would allow reductions in vertical separation? TRS Recommendation: Treatment Level C – 25 mg/L CBOD₅, 30 mg/L TSS, 50,000 fecal coliform.		
b) If YES , what reduction should be allowed? TRS Recommendation: Down to 2 feet.			
c) If YES , should there be requirements other than a higher level of treatment? • TRS Recommendation: Verify via groundwater mounding analysis that there will be at least two feet of VS and that effluent stays below the soil surface.			
d) If NO , that's it.			

Committee Vote		
GRN	YEL	RED