

**LOSS RAC Discussion Agenda & Record of Decisions**

<b>Issue Paper for Technical Subcommittee Meeting</b>		<i>Number of Members Present:</i> _____	
<b>Engineering / Design Topics</b>		<b>Topic Number: 12B</b>	50% +1= _____ Two Thirds = _____
<b>Topic Statement</b>	Discuss whether the LOSS rule should include organic loading rates for different soils for sizing drainfields. If the conclusion is reached they should be included, establish them for the different soils.		
<b>Background</b>	When sizing a drainfield, two key features affect how big the infiltrative surface area (trench/bed bottom area) should be. Topic 12A covered the quantity or volume of effluent being discharged to the drainfield. The other characteristic that affects the rates at which effluent moves from the drainfield into the underlying soil is the quality of the effluent. This is typically characterized by the organic strength of the effluent. Effluents with higher BOD and CBOD have greater organic strength. Thus, some states around the country also include organic loading rates in their rules. The organic loading rate will vary depending on the organic strength of the effluent, the actual effluent flow, and the soil type.		
<b>Problem Statement</b>	<ul style="list-style-type: none"> <li>• As the organic strength of an effluent increases, the volume of effluent that moves from the drainfield into the soil will decrease over time.</li> <li>• States that include organic loading rates in their rules will require two different sizing calculations to be done – one using hydraulic loading rates and one using the organic loading rate. The calculation that results in the greatest infiltrative surface area will be the one used to determine the minimum required drainfield size for that system.</li> <li>• The organic loading rate will vary depending on the organic strength of the effluent and the soil type.</li> <li>• The small OSS rule does not contain organic loading rates. Suggestions were made by the small system rule advisory committee that organic loading rates should be considered. Discussion ensued, but the committee decided not to include organic loading rates in the 2005 rule. It would be brought up again during the next rule revision process.</li> <li>• The small OSS rule requires all effluent being discharged to a drainfield be no higher than septic tank effluent quality from a typical residence so drainfields can be sized using just hydraulic loading rates. The design professional must treat the wastewater from sources with higher organic strengths so effluent quality with parameters no higher than anticipated for typical residential septic tank effluent is produced.</li> <li>• Effluent quality must be reliably predicted as part of the design process. This is especially important where non-residential development is the source of at least some of the wastewater.</li> <li>• Mass organic loading (pounds BOD) must be calculated. This calculation requires the daily design flow (gallons/day) and the estimated organic strength (BOD in mg/L) of the effluent.</li> </ul>		

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- The following organic loading rate table includes organic loading rate information excerpted from the 2002 USEPA manual that was modified for how Washington classifies soils using Soil Type.

Soil Type	Soil Textural Classification Description	lb BOD/1000 ft <sup>2</sup> /day (Septic Tank Effluent)	lb BOD/1000 ft <sup>2</sup> /day (CBOD≤25 mg/L TSS≤30 mg/L)
<b>1</b>	Gravelly and very gravelly coarse sands, all extremely gravelly soils excluding Soil types 5 & 6, all soil types with greater than or equal to 90% rock fragments.	1.0	0.4
<b>2</b>	Coarse sands.	1.0	0.4
<b>3</b>	Medium sands, loamy coarse sands, loamy medium sands.	1.0	0.4
<b>4</b>	Fine sands, loamy fine sands, sandy loams, loams.	0.5	0.25
<b>5</b>	Very fine sands, loamy very fine sands; or silt loams, sandy clay loams, clay loams and silty clay loams with a moderate structure or strong structure (excluding a platy structure).	0.5	0.2
<b>6</b>	Other silt loams, sandy clay loams, clay loams, silty clay loams.	0.5	0.15
<b>7</b>	Sandy clay, clay, silty clay and strongly cemented firm soils, soil with a moderate or strong platy structure, any soil with a massive structure, any soil with appreciable amounts of expanding clays.	Not Suitable	Not suitable

Reference / Research

1. Should organic loading rates be noted in the LOSS rule?

**TRS Recommendation: NO.**

<b>Committee Vote</b>		
<b>GRN</b>	<b>YEL</b>	<b>RED</b>

- a. If **YES**:
- Those noted in table in reference section?
  - Other?
- b. If **NO**, should the LOSS rule state the requirement - effluent strength be no greater than anticipated for residential septic tank effluent.

**TRS Recommendation: YES.**

<b>Committee Vote</b>
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Questions

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	<i>GRN</i>	<i>YEL</i>	<i>RED</i>	