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Sandy Mason
VARD
P.O. Box 1164
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RE: Comments Regarding the Water Balance and Process Flow Report for the Wastewater System, Proposed Mahogany Ridge Subdivision, Idaho

Dear Sandy:

After performing a preliminary review of the Water Balance and Process Flow Report for the wastewater system for the proposed Mahogany Ridge project, MSE has the following comments:

1.) The report was prepared by an industry recognized expert in subsurface flow constructed wetlands. The report seems to be somewhat preliminary in nature as it does not account for state regulatory requirements.
2.) Cold weather performance does not appear to be adequately discussed in the report. Calculations were performed to account for cold weather conditions but there wasn't any discussion regarding cold weather performance or discussion of modifications necessary to improve performance (such as incorporation of a mulch cover over the wetland). The performance data included with the report was generally for warmer climates. The most similar example was for a site in Nebraska. Performance of the system in a cold weather climate is important and should be further discussed and evaluated.
3.) The collection, wastewater treatment, and hydraulic disposal systems are required to be permitted by the Idaho Department of Environmental Quality (IDEQ). Specific requirements including buffer zones and system redundancy must be addressed.
4.) MSE is not aware of this technology being used in the state of Idaho for the proposed purposes. Generally introduction of new wastewater treatment technology into the state requires some work and time to get it approved. I would expect some resistance from the state and at a minimum I would expect a requirement to pilot test the system before connections will be allowed.
5.) The economic analysis seems to be biased against mechanical treatment. The largest future cost of the mechanical treatment systems is sludge disposal. The report did not discuss how sludge volume could be reduced (by digesting or dewatering) or how it could be treated and applied onsite to reduce costs.
6.) STEP systems appear to be proposed for the site's collection system. Some of IDEQ regional offices do not allow STEP systems to be installed, this may be an issue for use of these systems at the site.

7.) Further discussion and justification of the selected irrigation efficiency of 62.5% is needed. Discussion of the anticipated fate of the remaining 37.5% of the applied water that is not taken up by vegetation is needed to demonstrate this "excess" water will not percolate to groundwater or run off.
8.) Operation of the proposed system could require substantial operator oversight. Identifying a local maintenance entity with adequate experience and training to sustain operation may be difficult.

MSE recommends that the project owner submit a Preliminary Engineering Report for the wastewater treatment system to the IDEQ for their review and approval prior to further pursuing planning and zoning approval. The PER should be completed by an Idaho professional engineer not affiliated with a particular treatment technology/methodology.

Sincerely,

Troy Riecke, P.E.
Environmental Engineer