



P.O. Box 321161 Flowood, MS 39232 Telephone (877) 836-8476 www.enviro-flo.com

Memorandum to Designers and Specifiers

01/06/2016

Re: Additional trash tanks ahead of the NuWater BNR-Series Aerobic Treatment Units as related to addressing waste flow volume peaks.

Recommendation: The manufacturer recommends addition of a pre-trash or clarifier tank on systems 3 bedrooms and larger without projectable flows, and also where a projected average waste flow exceeds 70% of the treatment capacity of sites with projectable flows.

Design Flow: It is necessary to determine the anticipated waste usage from a house as part of the system design. Part of this is guided by our state-mandated minimum flows per bedroom. However, on sites that have large families with multiple persons per bedroom, it is advisable to consider the anticipated average flow and size the system to accommodate. Typically the average water usage should not exceed 70% of the design flow.

Effects of Higher Flows: Larger households typically not only have higher average flows, but also are more likely to have intervals where the flows “surge”, such as laundry day, bath time, etc.. What a surge can do is push treated waste from the digester of the NuWater BNR system through the clarifier more quickly, not allowing enough separation time. In several cases we have seen this with the BNR-series units, the suspended solids tend to carry through to the pump chamber and carry with them higher fecal coliform counts.

Solutions: There are two ways of addressing sites where it is anticipated to have peaks in water usage or strength: (1) Reduce the suspended solids in the waste stream and buffer the incoming flows with tank capacity ahead of the treatment unit, and (2) Add Clarifier capacity after the treatment unit for additional separation time.

(1) The NuWater BNR-Series ATUs have a built-on trash tank which work well for typical residential applications. However, when peaks in waste flow and strength are anticipated (families with 5 people or more, etc.), additional tank capacity is recommended in the form of a “Pre-Trash” tank. This tank should be limited to one-compartment, and should be between 500 and 1000 gallons. Typical inlet and outlet baffle tees are advisable. There is always a concern that reducing solids in the waste stream will negatively affect (starve) the bacteria and result in higher CBOD₅. However, our testing of installed treatment units has indicated that the bacterial colonies do not suffer adversely from additional trash tanks.



(2) Additional clarifier capacity can be used as an alternative to a pre-trash tank. Additional clarification can be done by adding a separate tank, with the inlet baffle extending down to within 18" of the bottom of the tank. A good alternative is to use a two compartment 1500 gallon tank in reverse, using the 500 gallon compartment as the additional clarifier and the 1000 gallon tank as the pump chamber.

Summary: The manufacturer initially was concerned that addition of pre-trash tanks may negatively affect the treatment performance. As a result of several systems without a pre-trash tank in Thurston County with unstable performance under higher flows, a series of sampling and testing was performed. This testing included comparing performance of systems without trash tanks to those with trash tanks. The results indicate that systems containing pre-trash tanks overall show an improvement in effluent quality, including CBOD₅, TSS, and Fecal Coliform removal. This improvement is especially evident on sites with higher peak flows. Little or no negative impact from additional trash capacity has been found.

Pre-Trash Options: A simple single compartment tank can be used as a trash tank. Access must be available at the inlet as well as the outlet. A more desirable option may be to use the dose-trash combo optional tank configuration widely used in several counties. This utilizes a 2-compartment, 1500 gallon tank, with the 500 gallon compartment used as the pre-trash tank. The waste then exits the side of the tank and enters the treatment unit. Upon leaving the treatment unit, the waste re-enters the 1000 gallon compartment of the 1500 tank, used as a pump chamber. See addendum sheet for details. More drawings are available on request.

Phasing: Due to the nature of permitting processes, this recommendation is intended to apply to design applications submitted after September 20, 2014.

Addendum:

Top view of dose-trash combo tank option

Contact:

Nathan Ek

NuWater Authorized Manufacturer's Representative

(360) 687-7668

nathan@ekengineering.net

