ATTACHMENT 5



R-TANK TREATMENT ROW INSPECTION AND MAINTENANCE

1.0 OPERATION

The R-Tank Treatment Row is designed to capture the water quality flow or



"first flush" as defined by a regulatory or permitting agency. The treatment row consists of a series of maintenance modules that utilize maintenance plates surrounded with filter fabric and connected to a nearby access manhole. The fabric-wrapped tanks provide filtration and promote settling of pollutants.

A woven geotextile fabric is placed between the stone and bottom of the tank modules and a non-woven fabric is placed over the sides and top of the chambers.

Water typically flows horizontally into the tanks and passes through the fabric wrapped tanks modules (which are perforated on all sides).

2.0 INSPECTION

Both the R-Tank Treatment Row and all stormwater pretreatment features incorporated into your site should be inspected regularly. The inspection frequency for your system is determined based on contributing drainage area and anticipated pollutant loading, and typically should not exceed one year between inspections (six months during the first year of operation).

With the right equipment, your inspection and measurements can be accomplished from the surface without physically entering confined spaces. If your inspection does require confined space entry, you must follow all local/reginal requirements as well as OSHA standards. R-Tank Treatment Rows may incorporate inspection ports, maintenance ports and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the lid removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, all access points should be examined to complete a thorough inspection.

If sediment and debris are observed in the treatment row, one should determine the depth of the material. This is typically accomplished with a stadia rod, but you can determine the best way to obtain the measurement. If the depth of sediment and debris exceeds 3 inches at most of inspection points, clean-out should be performed.

All observations and measurements should be recorded on an inspection log kept on file.

3.0 Maintenance

Maintenance is accomplished with a jet-vac which utilizes a high-pressure water nozzle to propel itself down the Treatment Row while suspending



and flushing sediments back towards a manhole for vacuuming. A sewer and pipe cleaning company should be contacted to perform this maintenance. *Note – this cleaning process should only be performed on the R-Tank Treatment Row and not adjoining tanks or other rows that do not have woven geotextile*



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R-TANK MAINTENANCE

Designing an underground stormwater detention system with future maintenance in mind is a simple process that includes three primary objectives: **PREVENT** debris from entering the system by using good pre-treatment systems, **ISOLATE** debris and sediments that manage to enter the system, and **PROTECT** the body of the system by providing backflush mechanisms to ensure longevity.

1. PREVENT

Keeping debris and sediment out of the system by pre-treating runoff is one of the smartest things an engineer can do when designing underground detention systems. It makes no sense to allow trash and sediments to flow unrestricted into an underground system where removal will be expensive. Instead, capture pollutants simply and inexpensively in the inlets, where removal is easy. There are several ways this can be accomplished with minimal cost impacts to your project.

Trash Guard Plus®

Trash Guard Plus is a patented stormwater pretreatment device that traps debris, sediment and floatables in the inlet. It helps extend maintenance cycles by using the full volume of the inlet structure for sediment capacity. And it is easy to maintain by accessing pollutants through the manhole lid.

Trash Guard Plus works by both screening debris out of the runoff and by slowing the flow of runoff, causing sediments to fall to the bottom of the inlet. Testing at NC State has shown the Trash Guard to be effective at removing trash, sediment, nutrients, and metals.

Gratemaster

To treat a single inlet that serves as a junction for a larger drainage area, consider an insert like the Gratemaster. Ideal for capturing sediment and trash, it makes clean-up a snap by holding all the pollutants right near the surface for easy extraction.

R-Tank Screening

For a more centralized approach, some engineers prefer to create an opening in the inlet structures to allow the R-Tank modules to penetrate the structure to act as a trash screen. This works best with a structure that includes a sump (see drawing below).







Trash Guard Plus®



Gratemaster



R-TANK MAINTENANCE

2. ISOLATE

Some pollutants may elude the pre-treatment systems. Trap these materials inside the maintenance row (see drawing to right). Consolidating sediments in a single location makes them easy to remove. Maintenance rows are formed by using maintenance modules, which have open internal components that are fully accessible by conventional jet-vac systems. These modules are set in a row (or multiple rows) to your desired length. Longer maintenance rows should include an access structure on both ends. Extremely long rows may require access from the middle of the row, as well.

The maintenance row is always wrapped in geotextile independently from the rest of the system. The geotextile retains trash, sediments, and other solids, preventing contamination of the rest of the system.

The maintenance row should be sized to treat the first flush (usually 1") of runoff. Use a bypass structure to divert that flow into the maintenance row, and allow larger flows to continue to a downstream inlet where they can enter the R-Tank outside of the maintenance row.

The maintenance row is only available in LD, HD, and UD modules. For SD and XD modules, consider creating a forebay around the inlet locations to collect sediment. This is done by using a taller module installed at a lower invert. Geotextile baffles between the forebay and the rest of the system can help retain sediments. Concentrate Maintenance Ports (see PROTECT below) in the forebay to ensure access to sediment for removal.



3. PROTECT

Every good system has a fall-back plan. You can ensure a long system life by including maintenance ports throughout the system footprint to remove any pollutants that evade the pretreatment system and maintenance row. Maintenance ports should be specified within 10' of inlet and outlet connections, and roughly 50' on center (see maintenance port detail to right).



