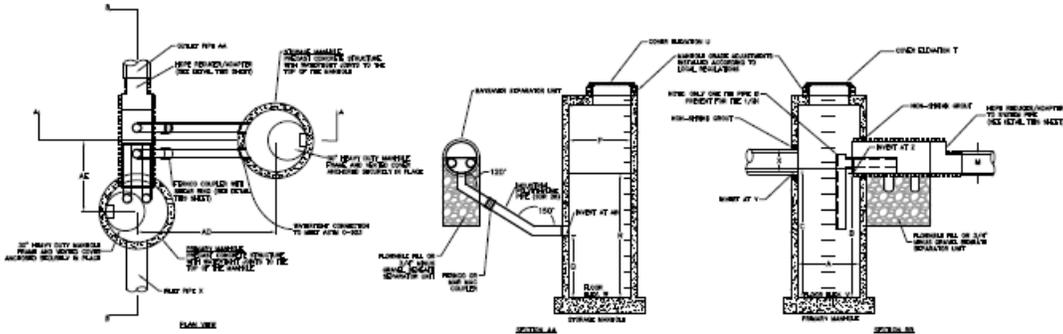


# Attachment 1

## Manufactured Treatment Device (MTD) Registration

### 1. Manufactured Treatment Device Name: *BaySeparator™*



### 2. Company Name: *BaySaver Technologies LLC*

Mailing Address: *1030 Deer Hollow Drive*

City: *Mount Airy*

State: MD Zip: *21771*

### 3. Contact Name (to whom questions should be addressed): *Brian Rustia*

Mailing Address: *5941 Innisvale Drive*

City: *Fairfax Station*

State: VA Zip: *22039*

Phone number: *866-405-9292*

Fax number: *866-397-2505*

E-mail address: *brian.rustia@ads-pipe.com*

Web address: *www.baysaver.com*

### 4. Technology

Specific size/capacity of MTD assessed (include units): BaySeparator™ device is available in five (5) standard sizes and can be customized to handle larger flows are unique site constraints.

| <i>BaySeparator Model</i> | <i>Maximum Treatment Rate (cfs)</i> | <i>Maximum Hydraulic Rate (cfs)</i> |
|---------------------------|-------------------------------------|-------------------------------------|
| <i>½ K</i>                | <i>1.1</i>                          | <i>8.5</i>                          |
| <i>1K</i>                 | <i>2.4</i>                          | <i>10</i>                           |
| <i>3K</i>                 | <i>7.8</i>                          | <i>30</i>                           |
| <i>5K</i>                 | <i>11.1</i>                         | <i>50</i>                           |
| <i>10K</i>                | <i>21.8</i>                         | <i>100</i>                          |
| <i>XK</i>                 | <i>Custom</i>                       | <i>Custom</i>                       |

Range of drainage areas served by MTD (acres): *Sizing of the BaySeparator Unit is dependent on site conditions and flow rates to be treated.*

Include sizing chart or describe sizing criteria: *See above, Rate Based (cfs)*

Intended application: on-line or offline: *Both*

Media used (if applicable): *N/A*

**5. Warranty Information** (describe, or provide web address):

*All Products manufactured by BaySaver Technologies are warranted for a period of one (1) year to be free of any material and manufacturing defects. This applies only to Separators and Filter Cartridges manufactured by BaySaver Technologies and does not include Precast Concrete Components or other Components not manufactured by BaySaver Technologies. This warranty is limited to providing a replacement unit (the same or equivalent) and does not include any installation or other costs associated with its replacement. This warranty does not extend to product defects or system failures due to improper installation, lack of maintenance, or improper system design.*

**6. Treatment Type**

- Hydrodynamic Structure*
- Filtering Structure
- Manufactured Bioretention System
- Provide Infiltration Rate (in/hr):
- Other (describe):

**7. Water Quality Treatment Mechanisms** (check all that apply)

- Sedimentation/settling*
- Infiltration
- Filtration (specify filter media)
- Adsorption/cation exchange
- Chelating/precipitation
- Chemical treatment
- Biological uptake
- Other (describe):

**8. Performance Testing and Certification** (check all that apply):

Performance Claim (include removal efficiencies for treated pollutants, flow criteria, drainage area): *50% TSS and 20% TP for all BaySeparator Configurations/Models*

Specific size/Capacity of MTD assessed: *NJCAT testing for a 1K BaySeparator Unit (laboratory testing), and WDOE TAPE Testing of 5K BaySeparator Unit (field testing).*

Has the MTD been "approved" by an established granting agency, e.g. New Jersey Department of Environmental Protection (NJDEP) , Washington State Department of Ecology, etc.

**No**

**Yes**; For each approval, indicate (1) the granting agency, (2) use level if awarded (3) the protocol version under which performance testing occurred (if applicable), and (4) the date of award, and attach award letter.

*Table of BaySeparator Major National Approvals*

| <i>Agency</i>                             | <i>Level of award</i>                 | <i>Protocol Used</i>          | <i>Date of Award</i>       | <i>Award letter</i>  |
|---|---------------------------------------|-------------------------------|----------------------------|--|
| <i>Maryland Department of Environment</i> | <i>Pretreatment Unit</i>              | <i>TARP-TSS</i>               | <i>May 2000</i>            | <i>See attachment</i>  |
| <i>NJCAT/DEP</i>                          | <i>Interim Certification</i>          | <i>TARP-TSS</i>               | <i>December 2004</i>       | <i>See attachment</i>  |
| <i>WDOE</i>                               | <i>Conditional Use</i>                | <i>TAPE- TSS Pretreatment</i> | <i>April 2011</i>          | <i>See WDOE website at: <a href="http://www.ecy.wa.gov/programs/wq/stormwater/newtech/technologies.html">www.ecy.wa.gov/programs/wq/stormwater/newtech/technologies.html</a></i> |
| <i>WDOE</i>                               | <i>General Use (report submitted)</i> | <i>TAPE- TSS</i>              | <i>TER Report Attached</i> | <i>Pending <sup>*1</sup></i>   |

<sup>\*1</sup> *TAPE Testing for the Bayseparator was done at the Woodinville Site in Washington State.*

Was an established testing protocol followed?

**No**

**Yes**, (1) Provide name of testing protocol followed, (2) list any protocol deviations:

*(1) TARP- TSS, and TAPE Protocols Followed,*

*(2) Protocols were followed without deviation*

Provide the information below and provide a performance report (attach report):

For lab tests:

- i. Summarize the specific settings for each test run (flow rates, run times, loading rates) and performance for each run: *A total of 15 test runs including three (3) tests each at a constant flow rate of 25, 50, 75, 100, and 125 percent of the treatment flow rate. These tests were operated with initial sediment loading of 50% of the unit's capture capacity. Particle Size distribution was noted and ranged from 1 to 1,000 micro in size. Influent concentrations ranged from 100mg/l to 300mg/l for the Saint Anthony's Falls Laboratory (SAFL) testing.*

- ii. If a synthetic sediment product was used, include information about the particle size distribution of the test material: *The testing was performed according to the TARP required PSD equivalent to a silt loam. The PSD is as follows:*

|                       | <i>Micron Size</i> |            | <i>NJDEP</i> |
|-----------------------|--------------------|------------|--------------|
|                       | <i>Max</i>         | <i>Min</i> | <i>PSD</i>   |
| <i>Coarse Sand</i>    | <i>1000</i>        | <i>500</i> | <i>5%</i>    |
| <i>Medium Sand</i>    | <i>500</i>         | <i>250</i> | <i>5%</i>    |
| <i>Fine Sand</i>      | <i>250</i>         | <i>100</i> | <i>30%</i>   |
| <i>Very Fine Sand</i> | <i>100</i>         | <i>50</i>  | <i>15%</i>   |
| <i>Silt (50-8)</i>    | <i>50</i>          | <i>8</i>   | <i>25%</i>   |
| <i>Silt (8-2)</i>     | <i>8</i>           | <i>2</i>   | <i>15%</i>   |
| <i>Clay (1-2)</i>     | <i>2</i>           | <i>1</i>   | <i>5%</i>    |

- iii. If less than full-scale setup was tested, describe the ratio of that tested to the full-scale MTD: *Full Scale Testing was performed.*

For field tests: *Washington State DOE report*

- i. Provide the address, average annual rainfall and characterized rainfall pattern, and the average annual number of storms for the field-test location: *The Field Testing was performed at the Sammamish River outfall project at the intersection of NE 175<sup>th</sup> Street and 131<sup>st</sup> Ave NE. in Woodinville, Washington. Ten (10) events were monitored between November 2013 and May 2014. Average Annual runoff is approximately 35”, with the majority occurring during primarily the “wet season” between October and May of each year.*
- ii. Provide the total contributing drainage area for the test site, percent of impervious area in the drainage area, and percentages of land uses within the drainage area (acres): *The site has a 52 Acre drainage area to it, with approximately 49 acres of impervious area and 3 acres of vegetative cover.*
- iii. Describe pretreatment, bypass conditions, or other special circumstances at the test site: *This installation is on an outfall collecting this large drainage area, there is no pretreatment prior to the BaySeparator.*
- iv. Provide the number of storms monitored and describe the monitored storm events (amount of precipitation, duration, etc.): *This information is contained in the attached TER, and the testing was in accordance with the TAPE Protocols. Ten*

*(10) qualifying storms were collected and reported in this study.*

- v. Describe whether or not monitoring examined seasonal variation in MTD performance: *The monitoring occurred during the wet season, which would be the season of highest amount of runoff.*
- vi. If particle size distribution was determined for monitored runoff and/or sediment collected by the MTD, provide this information: *The PSD was monitored and the particles generally had a  $D_{50}$  of around 50 microns with the  $D_{10}$  and  $D_{90}$ 's of around 10 microns and 250 microns respectively. However since the PSD included organic components and organic components are substantially lighter than sediment particles, the PSD of the sediment particles is likely substantially smaller than those reported which include the organic particles.*

## 9. MTD History:

How long has this specific model/design been on the market? *17 years*

List no more than three locations where the assessed model size(s) has/have been installed in Virginia. If applicable, provide permitting authority. If known, provide latitude & longitude:

- *Navy Cargo Handling P-034 – Cheatham Annex (York Co) (2010), Approved by NAVFAC, 1k*
- *Cougar Elementary School, Manassas Park, VA (2008); 1K unit*
- *Lansdowne Town Square, Loudoun County, VA (2006); 1K units.*

List no more than three locations where the assessed model size(s) has/have been installed outside of Virginia. If applicable, provide permitting authority. If known, provide latitude & longitude:

- *First Colony, St. Mary's County, MD, 1k*
- *Discount Tire, Lexington, SC, 1k*
- *East Main Bakery, Hartford, CT 1k*

## 10. Maintenance:

What is the generic inspection and maintenance plan/procedure? (attach necessary documents): After installation, suggested inspection to occur 6months after install and then on an annual basis. *See attached O&M procedures.*

Is there a maintenance track record/history that can be documented?

No, no track record.

Yes, track record exists; (provide maintenance track record, location, and sizing of three to five MTDs installed in Virginia [preferred] or elsewhere):

*Maintenance on BaySeparator Units is very easy and done by virtually anyone with a vacuum truck, most often at the direction of the property owner, and quite frequently under maintenance contracts or agreements.*

- *Barret Development, 820 South King street, Leesburg, VA  
Last Maintained 2-16-2013, Previous maintenance 12-15-2010*
- *Clyde's Restaurant Tower Oak Lodge, Preserve Parkway, Rockville, MD 20852  
Last Maintained 05/05/2014, Previous maintenance 5/20/2013*
- *St. Anne's Episcopal Church, 25100 Ridge Road, Damascus, MD 20872  
Last Maintained 05/28/2014, Previous maintenance 05/01/2013*
- *Capitol Drywall, 7871 Beechcraft Avenue, Gaithersburg, MD 20879  
Last Maintained 03/31/2014, previous maintenance 04/08/2013*
- *City of Rockville Public Works Base, East Gude Drive, Rockville, MD  
Last Maintained 12/05/2013, Previous maintenance 11/29/2010*
- *Draiman Properties, 130 Rollins Avenue, Rockville, MD 20852  
Last Maintained 10/30/2013, Previous maintenance 6/21/2010*

Recognizing that maintenance is an integral function of the MTD, provide the following: amount of runoff treated, the water quality of the runoff, and what is the expected maintenance frequency for this MTD in Virginia, per year? *Maintenance requirements of the BaySeparators are a direct function of pollutant load in the runoff treated by the device. Typically the BaySeparators are maintained once every 3-5yrs, but more or less frequently dependent upon the loads generated from the specific site.*

Total life expectancy of MTD when properly operated in Virginia and, if relevant, life expectancy of media: *100+ years when properly maintained and restored to new condition (vacuumed and cleaned primary and secondary structural compartments)*

For media or amendments functioning based on cation exchange or adsorption, how long will the media last before breakthrough (indicator capacity is nearly reached) occurs? *Not applicable for the BaySeparator Unit, as there is no media.*

For media or amendments functioning based on cation exchange or adsorption, how has the longevity of the media or amendments been quantified prior to breakthrough (attach necessary performance data or documents)? *Not applicable for the BaySeparator Unit, as there is no media.*

Is the maintenance procedure and/or are materials/components proprietary?

Yes, proprietary

No, not proprietary

Maintenance complexity (check all that apply):

Confined space training required for maintenance

*Liquid pumping and transportation*  
Specify method: *Standard Vector Truck*

Solids removal and disposal

Specify method: *Conventional landfill*

Other noteworthy maintenance parameter (describe):

## 11. Comments

Include any additional explanations or comments: *The BaySeparator collects the fine sediments and floatable pollutants including trash and debris offline, thereby preventing resuspension of collected pollutants. In addition, with full visibility and access to all pollutants from the surface during maintenance, the BaySeparator provides assurances that maintenance is complete and quick.*

*Baysaver Technologies most often offers the BaySeparator in the dual manhole configuration, but can fabricate a single cell version (XK, SV, and FS versions) upon request.*

## 12. Certification

Signed by the company president or responsible officer of the organization:

“I certify that all information submitted is to the best of my knowledge and belief true, accurate, and complete.”

Signature:



Name: Brian Rustia

Title: Eastern Division Manager

Date: July 10, 2014

NOTE: All information submitted to the department will be made publically accessible to all interested parties. This MTD registration form will be posted on the Virginia Stormwater BMP Clearinghouse website.