Attachment 1

Manufactured Treatment Device (MTD) Registration

1. **Manufactured Treatment Device Name: BaySaver Barracuda**

2. **Company Name: BaySaver Technologies**
   Mailing Address: 1030 Deer Hollow Drive
   City: Mt Airy
   State: MD Zip: 21771

3. **Contact Name (**to whom questions should be addressed)**:** Travis Dorman
   Mailing Address: 1030 Deer Hollow Drive
   City: Mount Airy
   State: MD Zip: 21771
   Phone number: 540-526-6045
   Fax number: 866-802-2641
   E-mail address: travis.dorman@ads-pipe.com
   Web address: baysaver.com

4. **Technology**
   Specific size/capacity of MTD assessed (include units): 5 sizes, see chart below.
   Range of drainage areas served by MTD (acres): Varies based on unit size and site specifics.

   Include sizing chart or describe sizing criteria:

Model	MTFR (CFS)	Manhole Diameter (ft)
S3	0.7	36"
S4	1.25	48"
S5	1.95	60"
S6	2.80	72"
S8	5.00	96"
S10	7.80	120"

   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 Barracuda models

Specific size/Capacity of MTD assessed: The S4 (48" manhole) was tested under the NJCAT protocol.

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.

NJCAT Verified and NJDEP Approved

Was an established testing protocol followed?

☐ **No**

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

The Barracuda was tested using the NJCAT protocol with no deviations.

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: Removal efficiency testing was conducted in accordance with Section 5 of the NJDEP Laboratory Protocol for HDS MTDs. A false floor was installed in the clean unit at the 50% sediment storage depth of 10-inches above the device floor. Testing was conducted at five flow rates: 25%, 50%, 75%, 100%, and 125% Maximum Treatment Flow Rate (MTFR) (142 gpm – 720 gpm) and at a target influent sediment concentration of 200 mg/L. Test sediment was introduced to the flow stream via a volumetric screw auger within 10% of the target concentration of 200 mg/L and was sampled six times over the course of each flow rate test. Each sediment sample was collected over an interval timed to the nearest second using a Sportline P176 stopwatch in a 1000 mL plastic container for a sample volume of 100 mL or a collection time of one minute (whichever came first). Sediment feed samples were weighed on a Cole-Parmer Symmetry PR410 analytical balance (under the supervision of BEC). The first effluent grab sample was collected following a minimum of three MTD detention times after flow rate was established and the first sediment sample was collected. Sequential effluent samples were collected every minute. When sediment feed was interrupted for measurement, the next series of sequential effluent samples were collected after three MTD detention times had 8 passed. Fifteen effluent samples were collected during each flow test run, and eight background samples were collected with the odd-numbered effluent samples. Scour testing was also conducted per the NJ protocol and the device is approved for online installation (see attached NJCAT Verification).

ii. If a synthetic sediment product was used, include information about the particle size distribution of the test material:

Table 1 Particle Size Distribution of Removal Efficiency Test Sediment

Particle Size (um)	Test Blend % Finer by Mass				
	NJDEP Target	Sample A	Sample B	Sample C	Average
1000	100	99.0	100.0	100.0	**99.7**
500	95	93.7	94.4	94.4	**94.2**
250	90	89.7	89.8	89.9	**89.8**
150	75	81.1	81.2	81.0	**81.1**
100	60	63.0	62.8	62.8	**62.9**
75	50	54.6	54.5	54.7	**54.6**
50	45	51.8	52.2	52.5	**52.2**
20	35	37.7	37.6	37.5	**37.6**
8	20	20.5	20.4	20.4	**20.4**
5	10	13.4	13.3	13.4	**13.4**
2	5	4.8	4.7	4.7	**4.7**

iii. If less than full-scale setup was tested, describe the ratio of that tested to the full-scale MTD: A full scale, commercially available unit was tested.

For field tests:

i. Provide the address, average annual rainfall and characterized rainfall pattern, and the average annual number of storms for the field-test location: N/A

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): N/A

iii. Describe pretreatment, bypass conditions, or other special circumstances at the test site: N/A

iv. Provide the number of storms monitored and describe the monitored storm events (amount of precipitation, duration, etc.): N/A

v. Describe whether or not monitoring examined seasonal variation in MTD performance: N/A

vi. If particle size distribution was determined for monitored runoff and/or sediment collected by the MTD, provide this information: N/A

9. MTD History:

How long has this specific model/design been on the market? 30 days

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: N/A

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: Rochester, NY.

10. Maintenance:

What is the generic inspection and maintenance plan/procedure? (attach necessary documents): See attached maintenance manual.

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): While there is no specific track record for maintaining the Barracuda, our experience with the BaySeparator and similar devices gives us full confidence in the maintenance information that we have published.

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 Barracuda are a direct function of the pollutant load in the runoff treated by the device. Typically, Barracuda separators will be maintained every 3-5 years.

Total life expectancy of MTD when properly operated in Virginia and, if relevant, life expectancy of media: 100+ years with proper maintenance.

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? N/A, no media is used in the Barracuda.

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)? N/A

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 Vactor Truck
☐ Solids removal and disposal
Specify method: Conventional landfill

Other noteworthy maintenance parameter (describe):

11. Comments

Include any additional explanations or comments: The Barracuda stores sediment and debris in a sump that is accessible through an access hole in the cone assembly. That hole allows for inspection and maintenance from the surface for quick and complete completion.

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: Travis Dorman

Title: Water Quality Regional Manager

Date: 9/22/17

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.