

## Attachment 1

### Manufactured Treatment Device (MTD) Registration

**1. Manufactured Treatment Device Name: Up-Flo Filter with Ribbon**

**2. Company Name: Hydro International**

Mailing Address: 94 Hutchins Drive

City: Portland

State: Maine Zip: 04102

**3. Contact Name (to whom questions should be addressed): David Scott**

Mailing Address: 94 Hutchins Drive

City: Portland

State: Maine Zip: 04102

Phone number: 207 321 3750

Fax number:

E-mail address: dscott@hydro-int.com

Web address: www.hydro-int.com

**4. Technology**

Specific size/capacity of MTD assessed (include units): 6 Filter modules

Range of drainage areas served by MTD (acres): Depends on # of filter modules

Include sizing chart or describe sizing criteria: Peak Water Quality Flow/15gpm per mod

Intended application: on-line or offline: Off-line

Media used (if applicable): Ribbon

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

2-year

**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 (Ribbon)
- 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):

Specific size/Capacity of MTD assessed: 4-ft Diameter with 6-modules sized for 90 gpm

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) WA, DOE (2) GULD – Basic & TP (3) 2011 (4) Feb 2019

Was an established testing protocol followed?

**No**

**Yes**, TAPE 2011 (2) None

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:
- ii. If a synthetic sediment product was used, include information about the particle size distribution of the test material:
- iii. If less than full-scale setup was tested, describe the ratio of that tested to the full-scale MTD:

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: Refer to TER – Table 6
- 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): Flow Controlled to be equivalent to 2.5 acres @ 100% Imp
- iii. Describe pretreatment, bypass conditions, or other special circumstances at the test site: None. The filter includes pretreatment and bypass which was monitored.
  - iv. Provide the number of storms monitored and describe the monitored storm events (amount of precipitation, duration, etc.): 24 events. Refer to Table 7 of the TER.
  - v. Describe whether or not monitoring examined seasonal variation in MTD performance: Storms included winter months.
  - vi. If particle size distribution was determined for monitored runoff and/or sediment collected by the MTD, provide this information: Refer to Figure 9.

**9. MTD History:**

How long has this specific model/design been on the market? 2 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: None

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: New Jersey

**10. Maintenance:**

What is the generic inspection and maintenance plan/procedure? (attach necessary documents): Inspect to determine when to clean out, which can be seen by water elevations in the filter. Replace Ribbons depending on the level of occlusion. Refer to O&M in the TER.

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):

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? 80% annual runoff volume, 80% TSS and 40% TP. Annual media replacement but driven by inspections.

Total life expectancy of MTD when properly operated in Virginia and, if relevant, life expectancy of media: Precast, Stainless and Polypropylene = 30+ years

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?

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)?

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: Vactor Truck

Solids removal and disposal

Specify method: Vactor Truck

Other noteworthy maintenance parameter (describe): Ribbons can be washed and re-used

## 11. Comments

Include any additional explanations or comments:

## 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: David Scott

Title: Product Manager

Date: Feb 11, 2019

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.