Attachment 1

Manufactured Treatment Device (MTD) Registration

1. **Manufactured Treatment Device Name:** Jellyfish® Filter

2. **Company Name:** Contech Engineered Solutions LLC

   Corporate headquarters

   Mailing Address: 9025 Centre Pointe Drive
   City: West Chester
   State: Ohio Zip: 45069

3. **Contact Name** (to whom questions should be addressed):
   For technical matters: Derek Berg

   Mailing Address: 71 US Route 1, Suite F
   City: Scarborough
   State: Maine Zip: 04074
   Phone number: 207-885-6174
   Fax number: 207-885-9825
   E-mail address: dberg@conteches.com
   Web address: http://www.conteches.com/

   For Project Specific Questions Please Contact Contech's Baltimore Maryland Office:
   605 Global Way, Suite 113
   Linthicum, MD 21090
   Ph.: 410-740-8490

4. **Technology**
   Specific size/capacity of MTD assessed (include units): *TARP Field test was conducted on a Jellyfish model JF4-2-1, which is a 4ft diameter manhole unit with two 54-inch hi-flo cartridges and one 54-inch draindown cartridge*

   Range of drainage areas served by MTD (acres): *The Jellyfish can be scaled to treat a wide range of drainage areas by adding cartridges/increasing the size of the manhole or vault structure as needed to ensure there is sufficient treatment capacity for the water quality volume/flow.*

   Include sizing chart or describe sizing criteria: *Sizing chart included as separate document. Sizing is based on maintaining/not exceeding the proven hydraulic loading rate of 0.21gpm/ft^2 of filter membrane surface area. This is equivalent to 1.48gpm/inch of filter tentacle length and 80gpm/54-inch long filter cartridge.*

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

Media used (if applicable): *Filter membrane*

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

http://www.conteches.com/products/stormwater-management/treatment/jellyfish-filter.aspx

6. Treatment Type

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

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

X Sedimentation/settling
☐ Infiltration
X 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): *The Jellyfish was tested in accordance with the nationally recognized TARP protocol at a parking lot site at the University of Florida in Gainesville, FL. The project was overseen by Dr. John Sansalone from the University of Florida and several members of his research team. During the study, which spanned more than a year, 25 qualifying storm events were sampled and the Jellyfish Filter achieved median TSS removal of 89%, median SSC removal of 99%, median total phosphorus removal of 59% and median total nitrogen removal of 51%.*

Specific size/Capacity of MTD assessed: A *TARP Field test was conducted on a Jellyfish model JF4-2-1, which is a 4ft diameter manhole unit with two 54-inch hi-flo cartridges and one 54-inch draindown cartridge.*

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**

X **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.

1. *NJDEP, Field Certification, TARP, May 2012. Link to Letter: http://www.njstormwater.org/pdf/jellyfish_final.pdf*
2. *MDE, Standalone Use Approval, TARP, March 2012,*

Was an established testing protocol followed?

☐ **No**

X **Yes**, (1) Provide name of testing protocol followed, (2) list any protocol deviations: *Testing was in full compliance with TARP Tier II Field Protocol and also followed draft VTAP guidelines*

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

See NJCAT Verification report for all details and results of field test.

For field tests: *All details included in attached report.*

i. Provide the address, average annual rainfall and characterized rainfall pattern, and the average annual number of storms for the field-test location: *See report*

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): See Report

iii. Describe pretreatment, bypass conditions, or other special circumstances at the test site: *No pretreatment provided*

iv. Provide the number of storms monitored and describe the monitored storm events (amount of precipitation, duration, etc.): *25 qualifying events monitored*

v. Describe whether or not monitoring examined seasonal variation in MTD performance: *Monitoring lasted more than a year.*

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

9. MTD History:

How long has this specific model/design been on the market? *~4 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:

1. Henrico Fire Station, Jellyfish Model JF6-4-1, Highland Springs, VA
2. NFCU Winchester, Jellyfish Model JF6-5-1, Winchester, VA
3. Yusufi Property, Jellyfish Model JFC6-3-1, Rock Hill, VA

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:

1. Princeton University Arts & Transit Neighborhood Enabling Project, Jellyfish Model JF12-18-4, Princeton, NJ
2. Texas Acceptance - Baltimore County, Jellyfish Model JF8-10-2, Cokeysville, MD
3. Fairway Fairview, Jellyfish Model JF12-20-5, Lake Tahoe, NV

10. Maintenance:

What is the generic inspection and maintenance plan/procedure? (attach necessary documents): http://www.conteches.com/products/stormwater-management/treatment/jellyfish-filter.aspx#4244497-description

Is there a maintenance track record/history that can be documented?
☐ No, no track record.
X Yes, track record exists; (provide maintenance track record, location, and sizing of three to five MTDs installed in Virginia [preferred] or elsewhere): *Long term maintenance records are generally kept by the property owner, but this information is not typically sent to Contech.*

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? *The Jellyfish is designed to operate for a year or more between maintenance events. Occasionally, sites with very high pollutant loadings may require more frequent maintenance. Regular inspection is the best means to establish the maintenance frequency for a given site.*

Total life expectancy of MTD when properly operated in Virginia and, if relevant, life expectancy of media: *The Jellyfish is expected to remain viable for the life of its concrete housing as long as it is regularly inspected and maintained as needed. The Jellyfish cartridges will need to be rinsed/restored or replaced periodically to maintain performance.*

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? *NA*

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)? *NA*

Is the maintenance procedure and/or are materials/components proprietary?
X Yes, proprietary: *Membrane cartridges are proprietary*
☐ No, not proprietary

Maintenance complexity (check all that apply):
X Confined space training required for maintenance
X Liquid pumping and transportation
Specify method:
X Solids removal and disposal
Specify method:
Other noteworthy maintenance parameter (describe):

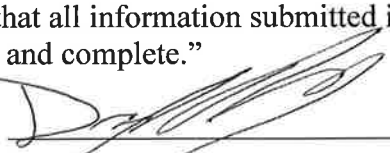
11. Comments

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: Derek Berg

Title: Regional Regulatory Manager

Date: 5/19/2014

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.