



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax: 804-698-4019 - TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

April 18, 2017

Mr. Jacob Dorman  
Stormwater Regulatory Manager-Stormwater  
Contech Engineered Solutions LLC  
P.O. Box 960  
Ashland, VA 23005

Re: Updated Filterra Study Superseding Studies supporting the July 3, 2104 Approval

Dear Mr. Dorman,

Thank you for your submittal of the Manufactured Treatment Device (MTD) Registration Form and supporting documentation for the Filterra<sup>®</sup> Bioretention Systems. The MTD information provided (Appendix A) was submitted and reviewed for the purpose of superseding existing performance studies. The review was performed in accordance with the Guidance Memo Number 14-2009 titled "Interim Use of Stormwater Manufactured Treatment Devices (MTDs) to meet the Virginia Stormwater Management Program (VSMP) Technical Criteria, Part IIB Water Quality Design Requirements. The review process included the analysis of the documents submitted.

The documents submitted provided updated performance information about the Filterra<sup>®</sup> Bioretention System. The submitted performance study included data on drainage area size and land cover, storm event and runoff parameters, event mean concentrations (EMC) of selected nutrients, metals, and sediment, and performance results. The performance data received was analyzed by calculating the removal efficiencies for each storm event sampled for TP and then computing the mean of the removal efficiencies for that study period. This method of analysis was applied to all data received in order to achieve a consistent analytical process to aid in the assigning of removal efficiencies. A summary of the results is provided in Appendix B.

Based upon this analysis and consistent with Guidance Memo Number 14-2009 the Filterra<sup>®</sup> Bioretention System event mean concentration TP removal efficiency is 50% and continues unchanged from the July 3, 2014 approval. The studies submitted for the July 3, 2014 approval will be removed from the Virginia Stormwater Clearinghouse website and replaced with the documents listed in Appendix A. If you have any questions regarding this information, please contact Robert E. Cooper, P.E. at (804) 698-4033 or e-mail at [Robert.Cooper@deq.virginia.gov](mailto:Robert.Cooper@deq.virginia.gov).

Sincerely;

A handwritten signature in cursive script that reads "Fred K. Cunningham".

Fred K. Cunningham

Director

Office of Water Permits

Appendix A-Documents

- 1) Manufactured Treatment Device (MTD) Registration
- 2) Filterra® Bioretention System Water Quality and Hydrologic Field-Scale Performance Evaluation-December 1, 2015

Appendix B-Study Results from Report Listed Above

Storm Date	Influent EMC (mg/l)	Effluent EMC (mg/l)	*Discrete Removal Efficiency (%)
02/26/2013	0.074	0.012	84
04/04/2013	0.03	.012	60
04/19/2013	0.11	0.092	16
04/28/2013	0.042	.041	2
05/06/2013	0.0610	0.044	28
06/10/2013	0.034	0.055	-62
06/13/2013	0.21	.0650	69
06/19/2013	0.220	0.035	84
06/26/2013	0.034	0.012	65
07/01/2013	0.045	0.033	27
07/02/2013	0.045	0.038	16
08/13/2013	0.21	0.067	68
09/01/2013	0.10	0.012	88
09/21/2013	0.04	0.012	70
10/13/2013	0.066	0.032	52
11/01/2013	0.052	0.052	0
11/26/2013	0.20	0.036	82
12/09/2013	0.12	0.032	73
01/14/2014	0.12	0.048	60
02/04/2014	0.055	0.029	47
02/19/2014	0.059	0.012	80
03/03/2014	0.59	0.046	92
04/15/2014	0.29	0.14	52
04/18/2014	0.044	0.012	73
06/12/2014	0.30	0.089	70
06/19/2014	0.086	0.042	51
08/11/2014	0.17	0.044	51
10/11/2014	0.27	0.13	52
10/14/2014	0.056	0.012	79
11/24/2014	0.17	0.094	45
12/06/2014	0.12	0.056	53
12/22/2014	0.12	0.025	79
		Mean Efficiency	54

\*Efficiency = 100 x (1-Effluent EMC/Influent EMC)