



Proprietary stormwater treatment devices  
50% and 80% solids (TSS) removal



1. The City of Murfreesboro's current policy with respect to approvals of manufactured treatment systems is to make use of the New Jersey DEP approvals and Metro Nashville approvals. See our Stormwater Controls Manual, Section 2.2.25, for more information.
2. The following tables were prepared as a quick reference for staff (Murfreesboro). The tables are intended to be a complete, accurate and up-to-date list, but since the approvals are tied to approvals made by [NJDEP](#) and Nashville's [MWS](#), the tables here may miss recent information. Refer to the City's Stormwater Controls Manual, Section 2.2.25 Proprietary Structural Controls, for the method we used to develop this list.
3. The first half of the table is for gravity/hydrodynamic separators recognized at a 50% treatment level. The second half of the table shows devices that achieve an 80% treatment level.
4. If you are a representative of a manufacturer and see errors in these tables, please let us know. This update 8/9/2019.

| <b>Model and Manufacturer</b>  | <b>Model</b> | <b>Max. Treatment CFS (or as noted)</b> | <b>Solids Removal</b> | <b>Notes</b>  | <b>Expiration of approval</b> |
|--|--------------|---|-----------------------|---|-------------------------------|
| <b><a href="#">Aqua-Swirl Stormwater Treatment System</a></b><br><br><i><a href="#">AquaShield, Inc.</a></i>                 | AS-2         | 0.36                                    | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">AquaSwirl Maintenance</a>                                   | --                            |
|  | AS-3         | 0.71                                    |                       |   |                               |
|  | AS-4         | 1.18                                    |                       |   |                               |
|  | AS-5         | 1.46                                    |                       |   |                               |
|  | AS-6         | 2.11                                    |                       |   |                               |
|  | AS-7         | 2.87                                    |                       |   |                               |
|  | AS-8         | 3.74                                    |                       |   |                               |
|  | AS-9         | 4.73                                    |                       |   |                               |
|  | AS-10        | 5.84                                    |                       |   |                               |
|  | AS-11        | 7.07                                    |                       |   |                               |
|  | AS-12        | 8.42                                    |                       |   |                               |
|  | AS-13        | 9.87                                    |                       |   |                               |
| AS-XX  | > 9.87       |   |                       |   |                               |
| <b><a href="#">Aqua-Swirl XCELERATOR Stormwater Treatment System</a></b><br><br><i><a href="#">AquaShield, Inc.</a></i>      | XC-2         | 0.57                                    | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">AquaSwirl XCELERATOR Maintenance</a>                        | --                            |
|  | XC-3         | 1.13                                    |                       |   |                               |
|  | XC-4         | 1.86                                    |                       |   |                               |
|  | XC-5         | 2.3                                     |                       |   |                               |
|  | XC-6         | 3.31                                    |                       |   |                               |
|  | XC-7         | 4.5                                     |                       |   |                               |
|  | XC-8         | 5.88                                    |                       |   |                               |
|  | XC-9         | 7.44                                    |                       |   |                               |
|  | XC-10        | 9.19                                    |                       |   |                               |
|  | XC-XX        | >9.19                                   |                       |   |                               |
| <b><a href="#">BaySaver Barracuda Hydrodynamic Separator</a></b>   | S3           | 0.70                                    | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Barracuda Maintenance</a>                                   | --                            |
|  | S4           | 1.25                                    |                       |   |                               |
|  | S5           | 1.95                                    |                       |   |                               |
|  | S6           | 2.80                                    |                       |   |                               |
|  | S8           | 5.00                                    |                       |   |                               |
|  | S10          | 7.80                                    |                       |   |                               |
| <b><a href="#">Continuous Deflective Separator (CDS) Unit</a></b><br><br><i><a href="#">CONTECH Engineered Solutions</a></i> | CDS-3        | 0.52                                    | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">CDS Maintenance Guide</a>                                   | --                            |
|  | CDS-4        | 0.93                                    |                       |   |                               |
|  | CDS-5        | 1.5                                     |                       |   |                               |
|  | CDS-6        | 2.1                                     |                       |   |                               |
|  | CDS-7        | 2.8                                     |                       |   |                               |
|  | CDS-8        | 3.7                                     |                       |   |                               |
|  | CDS-10       | 5.8                                     |                       |   |                               |
|  | CDS-12       | 8.4                                     |                       |   |                               |
| <b><a href="#">Downstream Defender</a></b><br><br><i><a href="#">Hydro International</a></i>                                 | 4ft          | 1.12                                    | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Maintenance Manual</a><br><a href="#">Maintenance Video</a> | --                            |
|  | 6ft          | 2.52                                    |                       |   |                               |
|  | 8ft          | 4.49                                    |                       |   |                               |
|  | 10ft         | 7.00                                    |                       |   |                               |
|  | 12ft         | 10.08                                   |                       |   |                               |
| <b><a href="#">Dual Vortex Separator</a></b><br><br><i><a href="#">OldCastle Stormwater Solutions</a></i>                    | DVS-36       | 0.56                                    | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Inspection and Maintenance Guide</a>                        | --                            |
|  | DVS-48       | 1.00                                    |                       |   |                               |
|  | DVS-60       | 1.56                                    |                       |   |                               |
|  | DVS-72       | 2.25                                    |                       |   |                               |
|  | DVS-84       | 3.06                                    |                       |   |                               |
|  | DVS-96       | 4.00                                    |                       |   |                               |
|  | DVS-120      | 6.25                                    |                       |   |                               |
|  | DVS-144      | 9.00                                    |                       |   |                               |
| <b><a href="#">First Defense HC</a></b><br><br><i><a href="#">Hydro International</a></i>                                    | 3ft          | 0.85                                    | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Operation and Maintenance Manual</a>                        | --                            |
|  | 4ft          | 1.5                                     |                       |   |                               |
|  | 5ft          | 2.35                                    |                       |   |                               |
|  | 6ft          | 3.38                                    |                       |   |                               |
|  | 7ft          | 4.60                                    |                       |   |                               |

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|--|-----------------------------|---|-----------------------|--|-------------------------------|
|  | 8ft                         | 6.00  |                       |  |                               |
| <b><u>Nutrient Separating Baffle Box (NSBB)</u></b><br><br><u>Suntree Technologies, Inc.</u> | 2-4                         | 0.62  | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Operation and Maintenance Manual</a>   | --                            |
|  | 3-6                         | 1.40  |                       |  |                               |
|  | 3-8                         | 1.87  |                       |  |                               |
|  | 4-8                         | 2.49  |                       |  |                               |
|  | 5-10                        | 3.89  |                       |  |                               |
|  | 6-12                        | 5.60  |                       |  |                               |
|  | 6-13.75                     | 6.42  |                       |  |                               |
|  | 7-14                        | 7.62  |                       |  |                               |
|  | 7-15                        | 8.17  |                       |  |                               |
|  | 8-14                        | 8.71  |                       |  |                               |
|  | 8-16                        | 9.96  |                       |  |                               |
|  | 9-18                        | 12.60                                       |                       |  |                               |
|  | 10-17                       | 13.22                                       |                       |  |                               |
|  | 10-20                       | 15.56                                       |                       |  |                               |
| 12-21  | 19.60                       |   |                       |  |                               |
| 12-24  | 22.40                       |   |                       |  |                               |
| <u>SciClone Hydrodynamic Separator</u><br><br><u>BioClean Environmental Services, Inc.</u>   | SC-3                        | 0.39  | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Operation and Maintenance Manual</a>   | --                            |
|  | SC-4                        | 0.70  |                       |  |                               |
|  | SC-5                        | 1.09  |                       |  |                               |
|  | SC-6                        | 1.57  |                       |  |                               |
|  | SC-7                        | 2.14  |                       |  |                               |
|  | SC-8                        | 2.80  |                       |  |                               |
|  | SC-9                        | 3.54  |                       |  |                               |
|  | SC-10                       | 4.37  |                       |  |                               |
| SC-XX  | > 4.37                      |   |                       |  |                               |
| <u>StormTrap SiteSaver</u><br><br><u>Fresh Creek Technologies, Inc.</u>                      | StormTrap SiteSaver STSS -4 | 4.32  | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Maintenance Plan</a>   | --                            |
| <u>StormPro</u><br><br><u>Environment 21, LLC</u>  | V48                         | 1.29  | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">StormPro system maintenance</a>  | --                            |
|  | V510                        | 2.02  |                       |  |                               |
|  | V612                        | 2.91  |                       |  |                               |
|  | V816                        | 5.17  |                       |  |                               |
|  | V1020                       | 8.08  |                       |  |                               |
| <u>Terre Kleen Hydrodynamic Separator</u><br><br><u>Terre Hill Stormwater Systems</u>        | TK09                        | 1.27  | 50%                   | See <a href="#">NJDEP web page</a> for more information.<br><br><a href="#">Maintenance Procedures</a>   | --                            |
|  | TK18                        | 2.31  |                       |  |                               |
|  | TK27                        | 3.34  |                       |  |                               |
|  | TK36                        | 4.37  |                       |  |                               |
|  | TK45                        | 5.40  |                       |  |                               |
|  | TK54                        | 6.43  |                       |  |                               |
|  | TK63                        | 7.46  |                       |  |                               |
| <u>AquaFilter Stormwater Filtration System</u><br><br><u>AquaShield, Inc</u>                 | AF-3.48                     | 0.25  | 80%                   | See <a href="#">NJDEP web page</a> for more information.<br><br>System includes an Aqua Swirl Concentrator as pre-treatment, followed by filtration chambers based on inflow rate of 21.1 gpm/ ft <sup>2</sup> and a maximum drainage area of 0.033 acres/ft <sup>2</sup> .<br><br><a href="#">Aqua-Filter Maintenance</a>                               | --                            |
|  | AF-5.2                      | 0.50  |                       |  |                               |
|  | AF-6.3                      | 0.74  |                       |  |                               |
|  | AF-7.4                      | 0.99  |                       |  |                               |
|  | AF-8.5                      | 1.24  |                       |  |                               |
|  | AF-9.6                      | 1.49  |                       |  |                               |
|  | AF-9.7                      | 1.74  |                       |  |                               |
|  | AF-10.8                     | 1.98  |                       |  |                               |
|  | AF-11.9                     | 2.23  |                       |  |                               |
|  | AF-11.10                    | 2.48  |                       |  |                               |
|  | AF-12.11                    | 2.73  |                       |  |                               |
|  | AF-12.12                    | 2.98  |                       |  |                               |
|  | AF-13.13                    | 3.22  |                       |  |                               |
|  | AF-13.14                    | 3.47  |                       |  |                               |
| AF-13.15   | 3.72                        |   |                       |  |                               |
| <u>BayFilter Enhanced Media Cartridge (EMC)</u><br><br><u>BaySaver Technologies, LLC</u>     | Configuration               | BayFilter 545 EMC MTRF gallons/minute (gpm) | 80%                   | See <a href="#">NJDEP web page</a> for more information.<br>Note the sizing procedure, which involves checking a maximum drainage area and a peak flow.<br>MTRF = max. treatment flow rate.<br><br>A low-profile 545 EMC configuration treats flow rates ½ these listed for standard configuration.<br><br><a href="#">Maintenance and Design Manual</a> | --                            |
|  | 4ft manhole                 | 45  |                       |  |                               |
|  | 4x6 vault                   | 90  |                       |  |                               |
|  | 5ft manhole                 | 135   |                       |  |                               |
|  | 6ft manhole                 | 180   |                       |  |                               |
|  | 6x6 vault                   | 180   |                       |  |                               |
|  | 7ft manhole                 | 225   |                       |  |                               |
|  | 8ft manhole                 | 315   |                       |  |                               |
|  | 8x10 vault                  | 450   |                       |  |                               |
|  | 8x12 vault                  | 585   |                       |  |                               |
|  | 8x14 vault                  | 675   |                       |  |                               |
|  | 8x16 vault                  | 810   |                       |  |                               |
|  | 10x16 vault                 | 945   |                       |  |                               |

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|---|-------------------|---|-----------------------|---|-------------------------------|
|   | 10x20 vault       | 1215                                    |                       |   |                               |
| <b><u>Filterra Bioretention System</u></b><br><br><i><u>CONTECH Engineered Solutions</u></i>      | 4x4               | 0.052                                   | 80%                   | MTFR is 140 inches per hour per square foot; = 1.45 gpm/sqft; = 23 gpm for 4' x 4' unit. Mass loading capacity approx.. 24 lbs/square foot.<br><br>See <a href="#">NJDEP web page</a> and <a href="#">NJCAT report</a> for more information.<br><br><a href="#">Filterra Operations and Maintenance</a> | --                            |
|   | 4x6 or 6x4        | 0.078                                   |                       |   |                               |
|   | 4x8 or 8x4        | 0.104                                   |                       |   |                               |
|   | 6x6               | 0.117                                   |                       |   |                               |
|   | 6x8 or 4x12       | 0.156                                   |                       |   |                               |
|   | 6x10 or 10x6      | 0.194                                   |                       |   |                               |
|   | 6x12 or 12x6      | 0.233                                   |                       |   |                               |
|   | 7x13 or 13x7      | 0.295                                   |                       |   |                               |
| <b><u>Kraken Stormwater Filtration System</u></b><br><br><i><u>BioClean</u></i>                   | KF-2.5-4          | 0.152                                   | 80%                   | See <a href="#">NJDEP web page</a> for more information.<br><br>Note the sizing procedure as described in the NJDEP certification letter, which involves checking a maximum drainage area and a peak flow.<br><br><a href="#">Operations and Maintenance Manual</a>                                     | --                            |
|   | KF-4-4            | 0.303                                   |                       |   |                               |
|   | KF-4-6            | 0.455                                   |                       |   |                               |
|   | KF-4-8            | 0.606                                   |                       |   |                               |
|   | KF-8-8            | 0.909                                   |                       |   |                               |
|   | KF-8-10           | 1.250                                   |                       |   |                               |
|   | KF-8-12           | 1.477                                   |                       |   |                               |
|   | KF-8-14           | 1.818                                   |                       |   |                               |
|   | KF-8-16           | 2.159                                   |                       |   |                               |
|   | KF-10-16          | 2.879                                   |                       |   |                               |
| <b><u>Stormwater Management StormFilter</u></b><br><br><i><u>CONTECH Engineered Solutions</u></i> | Low Drop (12 in.) | 10 gpm                                  | 80%                   | See <a href="#">NJDEP web page</a> for more information.<br><br>Note sizing procedure described in the NJDEP certification letter, which involves checking a maximum drainage area and a peak flow.<br><br><a href="#">StormFilter Inspection and Maintenance</a>                                       | --                            |
|   | 18 in.            | 15 gpm                                  |                       |   |                               |
|   | 27 in.            | 22.5 gpm                                |                       |   |                               |
| <b><u>Up-Flo Filter</u></b><br><br><i><u>Hydro International</u></i>                              | UFF-MH-285R       | 90 gpm                                  | 80%                   | See <a href="#">NJDEP web page</a> for more information.<br><br>Note sizing procedure described in the NJDEP certification letter, which involves checking a maximum drainage area and a peak flow.<br><br><a href="#">Operation and Maintenance Manual</a>   | --                            |
|   | UFF-ZV-19-285R    | 285 gpm                                 |                       |   |                               |
|   | UFF-ZV-38-285R    | 570 gpm                                 |                       |   |                               |
|   | UF-ZV-57-285R     | 855 gpm                                 |                       |   |                               |

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