**SWMM Hydrology and Non-Point Source Pollution Removal Model**

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An US EPA SWMM based model was developed to predict total suspended solids (TSS) removal from urban runoff in the Stormceptor, an oil/sediment separator. The model is based on several non-proprietary elements that take into account local hydrology, fundamental settling principals, dynamic pollutant loadings and site parameters based on variations in rainfall and inter-event periods. This model's first version was released in 1999 as a predictive tool to help determine the required unit size to meet the desired stormwater quality objective, based on site specific parameters. The program has since been updated to include updated rainfall data, additional rainfall records, more options for particle size distributions to define TSS, and the ability to further analyze the hydrology. Key parameters accounted for within this modeling tool, such as total drainage area, % imperviousness, particle size distribution, rainfall data and other standardized or customized site parameter inputs, are required by the user to properly size and design BMPs. The model accounts for the hydrology of both pervious and impervious areas in addition to analyzing hourly or 15-minute historical rainfall data sets obtained from NOAA within the SWMM rain and runoff modules to run the continuous simulation program for hydrological processes. The suspended solids loading is a dynamic process, and is determined using build-up and wash-off equations and rainfall volume. To allow for use across North America, alternate particle size distributions which define TSS, can be evaluated by the user. Sediment capture is determined by use of Stokes law, corrected for drag and SWMM hydrology over a long-term period, focusing on the annual average TSS removal. This program has been effective in properly sizing devices analyzing extensive rainfall data, as opposed to one specific peak flow rate or design storm, to properly predict performance under a variety of conditions to achieve the desired long-term average annual TSS removal. Additionally, the program has been validated against multiple field monitoring studies conducted, resulting in a very high correlation between the actual test results versus the predicted results.