

**AN ABSTRACT OF A THESIS**

**HYDRAULIC PERFORMANCE AND SEDIMENT TRAP EFFICIENCY  
FOR THE STORMTECH® SC-740 ISOLATOR™ ROW**

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Testing was conducted to determine the sediment trap efficiency of the StormTech Isolator™ Row, using 110 micron uniform sand as a surrogate for stormwater sediment. Trap efficiencies exceeded 94% at all operating rates tested and 97% at the manufacturer's suggested maximum design hydraulic loading rate of 0.5 cfs per chamber (8.1 gpm/ft<sup>2</sup>). The study employed two methods for determining trap efficiency. The 'direct' method required the collection, removal, and weighing of influent sediments, sediment captured on the bottom fabric and effluent sediments to enable a direct calculation of the trap efficiency by mass balance. The 'indirect' method relied on discrete sampling of the influent and effluent and laboratory suspended sediment concentration (SSC) analysis for calculating trap efficiency. The direct method is the more accurate method; however, the indirect method is required for sediment removal performance verification by many regulatory agencies. The study shows that application of the indirect method results in significantly higher than actual sediment concentrations for the discrete influent and effluent samples. However, these concentrations are over-biased for both the influent and effluent, which, along with the insensitivity trap efficiency at high values, results in reasonable estimates of trap efficiency despite the large errors introduced by the discrete sampling. When compared with other stormwater best management practices (BMPs), the Isolator™ row performs well; however, this is partly due to the low design hydraulic loading rate of the system. Conservatively assuming 100% trap efficiency, it is estimated that an Isolator™ Row four chambers in length would need to be cleaned out every 2-6 years for one acre of paved surface, with an average maintenance interval of 4 years.