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MASTEP Technology Review

Technology Name: Villanova Bio-infiltration Traffic Island

Studies Reviewed: Ermilio, Jordan R. 2005. Characterization Study of a Bio-Infiltration Stormwater BMP. M.S. Thesis. Villanova University Dept of Civil and Environmental Engineering

Date: May 5, 2008

Reviewer: Sarah Titus

Rating: 3

Brief rationale for rating:

This study monitored the water quality and quantity changes that occurred after retrofitting an existing traffic island into a bio-infiltration BMP. Many TARP criteria were met including rainfall requirements, number of events, presence of snowmelt sampling, and statistical analysis. Although 28 events were sampled many data points had to be excluded due to quality control issues. The author cited low sample volume, poor instrument detection limits and/or instrumentation maintenance as possible reasons for excluding data. From the first flush data set they acknowledge that points had to be removed due to human or instrument error or because they were outliers. This led to some removal rate calculations being based on only a few samples.

The QAQC plan was not created until December 2003; several months after sampling had begun. It was then modified several times during the study to make the water quality results more accurate. Procedures for monitoring water quantity data remained unchanged.

While laboratory QC procedures were in place, the method for TN and TP was not EPA certified. There was no documentation that the lab was certified.

TARP Requirements Not Met:

- TSS influent higher than recommended range.
- Flow calculated with model, not measured directly
- Too few samples per event (4 surface, 3 sub-surface)
- Lab is not reported to be certified
- PSD not discussed