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MASTEP Technology Review

Technology Name: Bioretention Cell – Parking Lot, Charlotte NC

Studies Reviewed: Hunt, W.F., J.T. Smith, S.J. Jadlocki, J.M. Hathaway, P.R.Eubanks. 2008. Pollutant Removal and Peak Flow Mitigation by a Bioretention Cell in Urban Charlotte, N.C. Journal of Environmental Engineering 134(5):403-408.

Date: August 6, 2008

Reviewer: Sarah Titus

Rating: 2

Brief rationale for rating:
This study monitored two years of peak flow changes, nutrient, metal and bacteria removal rates from a parking lot bioretention cell. Samples were collected for TN, NO2-NO3-N, TKN, NH4, TSS, Zn, Cu, Pb, TP, Fe, FC and E.coli. This study was carried out according to accepted stormwater sampling procedures. MASTEP expectations for a study of this rating were met including; amount of rainfall sampled per event and as % of annual average, number of events, antecedent dry conditions, parameters analyzed, use of a certified lab, ER and statistical analysis. Some details were lacking such as the number of samples collected per event, quality control and particle size distribution.

Other comments:

- The study report did not mention a QAPP, QC, PSD analysis, or number of samples taken per event.
- There was very little description of the bioretention cell itself.
- Removal rates calculated here demonstrate that bioretention cells can be good at reducing peak flow rates for small to medium storms (<1.7") as well as provide water quality benefits by removing some common pollutants.