



STORM BULLETIN 20

COMPARISON OF HYDRODYNAMIC BMP'S

- **Hydrodynamic Stormwater Best Management Practices (BMP)** are normally used for stormwater pretreatment. The common applications for BMPs are for retrofits of existing storm sewers and upstream treatment of detention systems. Detention systems provide a large pond area where stormwater can be treated for several hours.
- **The primary purpose of a hydrodynamic BMP** is to capture and retain gross pollutants. These pollutants include sand, grit, floating organic debris (leaves, litter), and hydrocarbons (mostly from automobiles and asphalt pavement). Manufactured hydrodynamic BMP's normally operate at low flow rate and pollutant collection can include fine sediments.
- **Manufactured hydrodynamic BMP's** will operate at high flow rate every 2-3 years for a period of several minutes. During these high flow rate events there is increased risk of flushing out the stored pollutants. Semi-annual or annual cleanout reduces the mass of pollutants subject to this risk of flushing.
- **Manufactured hydrodynamic BMP's** can be designed to reduce turbulence during infrequent high flow rates. This is done by reducing the velocity of the treatment flow and by providing internal components that prevent excessive movement of stored pollutants. Some designs have internal components that bypass high flow rates without treatment.
- **The cleanout data indicates** that well designed hydrodynamic BMP's devices collect more pollutants if there is no bypassing of high flows. This data was presented in "Challenging BMP Assumptions" at StormCon 2005. The data points and results of this report are summarized as follows:

Cleaning period was from March 31, 2000 to December 30, 2004

Location of the hydrodynamic BMP's was in the southeastern United States

Number of BMP installations was 154

Average cleaning frequency was 2.2 cleanings/yr

Total number of cleanings was 1,842

Cleanout data was expressed as Pounds removed per Acre per Year (PAY).

Average PAY for all BMP installations was 5,280#

Average PAY for BMP installations without flow bypassing = 6,400#

Average PAY for BMP installations with flow bypassing = 2,400



- **The cleanout data** shows the mass of pollutants that have been prevented from reaching the local watershed. Flow monitoring is limited to only a small fraction of the stormwater flow and is not representative of a BMP performance. To account for the entire stormwater flow the preferred approach is use to Evaluation of Annual Retained Pollutants (EARP).