Session 5

The Road Ahead:
A Facilitated Dialogue on how Municipalities can meet Future Stormwater Challenges

Swarthmore College, January 13, 2009

Session 5 Agenda

1. **The Road Ahead…10 Future Stormwater Predictions by Tommy the Swami**
2. **Geographic Breakout Groups**
3. **Report Outs**
4. **Discussion**

What Lies Ahead?

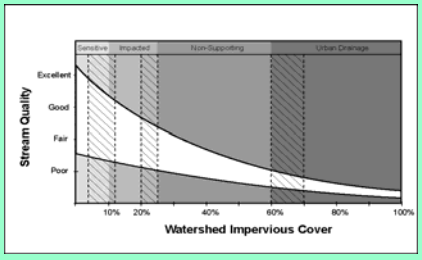
Ten Future Stormwater Predictions
by
Tommy the Swami

New National Research Council Report Released

Findings: Urban Stormwater Management in the United States

- Flow is a pollutant
- Direct relationship land cover and biological degradation
- Current piecemeal permitting system does not work
- Convert to a watershed based permitting system
- Numeric expressions of MEP (Turbidity limits, MAL)
- Integrate construction and industrial permits into MS4s
- More guidance on Source Control Measures (SCMs)
- Urban stream classification and management
- Industrial stormwater monitoring

1. *The Impervious Cover Model will be used for Urban Stream Classification and Management*



The Reformulated ICM

Sensitive: Full Runoff Reduction for all storm events up to the two-year design storm event (3 to 3.5 inches)

Impacted: Full Runoff Reduction for all storm events up to the one year design storm event (2.2 to 2.6 inches).

Non-supporting: Maximize Runoff Reduction up to the 90% or water quality storm (0.8 to 1.4 inches).

Urban Drainage: Maximize Runoff Reduction up to the "first flush" storm (usually about 0.5 inch)

TMDLs and Compliance Monitoring

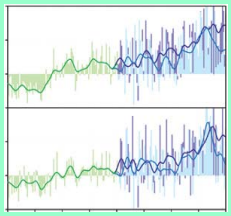
Impacted: Impervious Cover Based TMDLs to set targets for runoff reduction and removal of pollutants of concern
Compliance: Measure IC, IC treated and stream indicators

Non-supporting: Stormwater TMDLs to outline most critical subwatersheds to maximize removal of pollutants of concern.
Compliance: Outfall monitoring to define dirty subwatersheds that exceed 75th percentile of stormwater quality

Urban Drainage: Traditional TMDLs to identify and treat dirtiest urban source areas and discharges to maximize removal to downstream receiving waters
Compliance: Source area sampling and inspections to define dirtiest upland source areas and hotspots

2. Our profession will finally realize that climate changes matters in stormwater design

- Warmer temps
- More intense rainfall
- Longer summer droughts
- Greater evapo-transpiration
- Longer growing season
- Sea level rise



Climate change will really screw things up when it comes to stormwater

- Existing pipes and culverts will be under-capacity
- Need to increase the intensity of the storms we design for
- Loss of cold water habitats
- Need to design practices for greater runoff and seasonal variability
- Need to manage the effects of increased road salting
- Others?

The rainfall statistics we use to define extreme events are more than 50 years old; rainfall intensity expected to double in the next 50 years….Oberts 2007

3. The 2009- 2010 Stormwater Credit Crisis

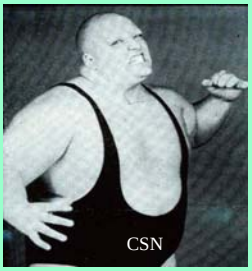
The simultaneous reduction in local revenues from the economic recession and increase in mandated local stormwater expenses will force localities to institute creative funding methods to finance their programs

- Stormwater Utilities
- IC Mitigation Fees
- Subwatershed Trading
- Higher Review Fees
- Bake Sales
- Third-party outsourcing
- Multi MS4 cost sharing

4. MEP Becomes Numeric

- Maximum Extent Practicable (MEP) – "do the best you can"
- New Permits will contain numeric and measurable provisions such as:
  - Maximum turbidity limits for construction sites
  - Municipal Action Limits Tied to Define the Dirty Outfalls (75th percentile of NSQD)
  - Specific pollutant load reductions attached to MS4 permits
  - No net runoff increase for new development
  - Subwatershed based permitting
  - Specific retrofit requirements

5. The Regrettable Emergence of the Stormwater Lawyer



National, regional and local environmental activists will increasingly focus on municipal, industrial and construction stormwater permits… especially compliance, enforcement and on the ground implementation

6. The Compliance Gap for Stormwater Hotspots will be Closed

The States will delegate the inspection and enforcement authority for industrial and other stormwater hotspots to local MS4s

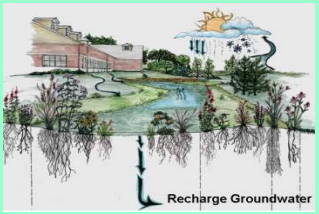
After having to fix their own, MS4s will realize that local hotspot management solves major water quality problems

7 The Rise of the Rain Tank

The popularity of green rooftops will wane, but watch for the arrival of stylish, prefabricated dual use rain tanks in low density residential subdivisions

Super-size the rain-barrel and connect with indoor plumbing and outdoor irrigation

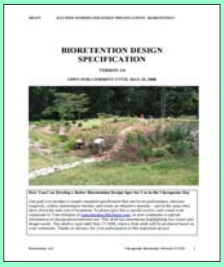
8. Runoff Reduction Will Become the New Design Paradigm



Simple spreadsheets will be created to enable designers and plan reviewers to track progressive increments of runoff reduction across the development site

7. The Stormwater Design Manual Will Constantly Evolve in the Internet

- BMP Wikipedia
- Continuous Updates
- Bioretention 3.2
- Regional Adaptation

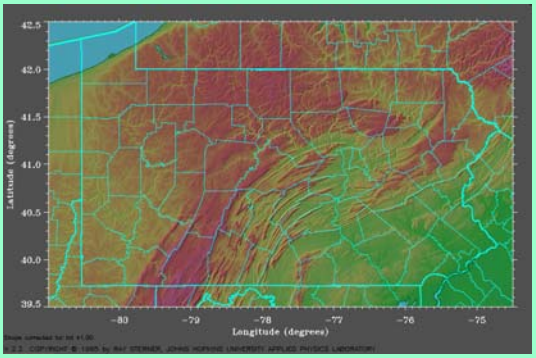


8. New Stormwater Institutions & Leaders Will Emerge

- Stress Coaches for MS4 Program Managers
- Stormwater Pollutant Reduction Estimators
- Private Maintenance Companies
- "Three Water" Utilities
- National Stormwater Society
- Regional Stormwater Certification
- Regional Stormwater Monitoring Consortia

CHESAPEAKE STORMWATER NETWORK

Geographic Breakout Groups



Breakout Group Questions

- Share your MS4 Success Stories
- Discuss Possible Inter-municipal Collaborations
- Assemble your 2009 MS4 Stormwater Needs Wishlist
- What Key Topics Were Missed in this Workshop
- Identify Key Training Needs