The Future of Urban Watershed Management

Where will we be in the year 2023 ?

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Watershed Forecasts

- Started as a CSN strategic planning exercise to try to forecast where our practice will be five years hence.
- The first rule of forecasting is to make a lot of them so that you can take credit for the few that actually turn out correctly.
- With this in mind, CSN has compiled 1o peerless forecasts
- Caveats: CSN forecasts should never be used for any personal, investment or professional decisions...and the opinions expressed are solely those of a uni-brow

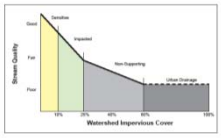
#1 The trajectory for our profession is still upward

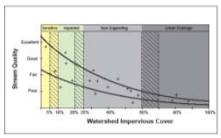
- Despite the recent election, urban watershed management will not disappear from our country
- While we can expect less federal water quality regulations and funding, most of the work is now driven by state and local agencies
- MS4 permits, green buildings, green infrastructure and LID drive BMP demand and are here to stay

#2 Expect less watershed planning, more bean counting and a lot more BMP construction

- Urban watershed planning will continue on its long down-cycle
- Major shift to nutrient "accounting" and BMP asset management
- More focus on BMP delivery through public private partnerships

#3 The Impervious Cover Model (ICM) will <u>not</u> be repealed (or replaced) in the next five years



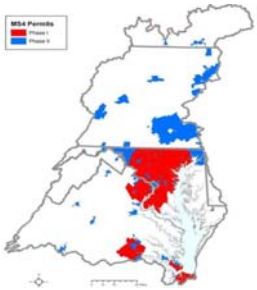


Need to work with our land conservation colleagues to protect or restore high quality URBAN reference habitats

Streams
Forests
Floodplains and Wetlands

#4 The "perfect" MS4 permit will never be issued in the Bay watershed, but the imperfect ones will finally become a major BMP driver

- Don't expect many new permit conditions in the next few years
- Expect more scrutiny from watchdog groups
- Incremental enforcement of local permit compliance

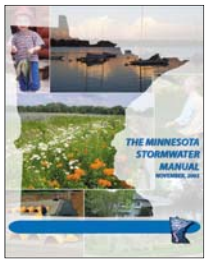


#5 The Bay TMDL may seem like an epic fail, but it will gradually improve water quality across the watershed

- A noble experiment to produce aggressive load reductions from existing land
- Both the ag and urban sectors will be main culprits for missing 2025 targets
- Extend it out for another 15 years?

#6 We will commence a new cycle of state stormwater design manuals

- More prescriptive criteria to maintain water quality function over time
- Enhanced BMP media to improve treatment
- Smart BMPs that use sensors to control hydrology
- Shift from mulch/tree to mowed meadow cover with specific plant species to maximize uptake
- Revival of small wet ponds and constructed wetlands?



#7 Public health fears will trump eutrophication and re-shape our future water quality priorities

- Toxics and pesticides
- Bacteria, especially resistant ones
- Sewage leaks in urban stream corridors
- Disease vectors such as mosquitoes and geese

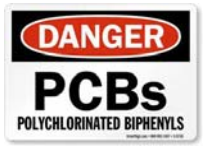

Urban BMPs can effectively remove the "dirty dozen" toxics from urban runoff

- PCBs
- PAH
- TPH
- Mercury
- Cd, Cu, Pb, Zn
- As, Cr, Fe, Ni
- Pyrethroid Pesticides
- Legacy Pesticides: DDT/DDE
- Legacy Pesticides: Diazinon
- Plasticizers
- Flame Retardants
- Dioxins

Urban toxics exert many strong impacts on humans and the environment





#8 The shift from stream walks to urban stormwater selfies

- Most folks will encounter urban streams through smart phones, drones and other gadgets
- Can social media target stewardship behaviors that can make a real difference in local water quality?
- *Best behavior targets?*
  - *Fall leaf litter pickup*
  - *Lawn fertilization*
  - *Pet waste pickup*
  - *Litter reduction*

#9 Stormwater quantity control will matter a lot more than water quality

We need to rethink our engineering assumptions about hydrology and flood control in order to provide even greater urban flood resilience in an era of rapid climate change

10 A new design paradigm will emerge for the restoration of urban streams, floodplains and wetlands

- Many longstanding restoration paradigms will be toppled in the next few years
- Will emphasize legacy sediments, and floodplain and hyporheic connections

Special Bonus Forecast!

- The O's will win the AL East this season by 8 games and play the Cubs in the World Series!

Q & A