The Art of Managing Stormwater

Barry Fagan, PE/PLS, CPESC, CMS4S, CESSWI
ENHANCED BMPs

left-brain candy...

mmmmmmmm...
laudator temporis acti
(praiser of times past)
"...drainage, drainage, drainage..."
...money, money, money, money, mo-ney...
Be helpful, not harmful.
...stormwater is the only pollutant source that is actually getting worse.

Debra Nagle, EPA Water Permits Division Director
...the impacts of stormwater pollution are not static; they usually increase with land development and urbanization.

EPA LID fact sheet
Atlanta's stormwater is more polluted than wastewater effluent.

JoAnn Macrina, City of Atlanta
The Clean Water Act

... to restore and maintain the chemical, physical, and biological integrity of our Nation's waters.

goals:
1) eliminate pollutants to our Nation's waters by 1985
2) restore our Nation's waters by 1983
• think.
• do things in order of importance.

- Dr. John Maxwell
THINK.

Bat + ball = $1.10

how much does the ball cost?

($1.00 + b) + b = $1.10
We respond rationally to a world we understand and recognize, but no longer exists.

- Eddie Obeng
ORDER.

managing sediment

symptom-focused
managing water
cause-focused
managing work
implementation-focused
managing communication

effectiveness-focused
The Five Pillars

- Managing Sediment: Symptom-focused
- Managing Erosion: Source-focused
- Managing Water: Cause-focused
- Managing Work: Implementation-focused
- Managing Communication: Effectiveness-focused

Least effective (left) - Most effective (right)
A = R K L S C P

A = average annual soil loss

(tons/acre/year)
CASE STUDY: CONSTRUCTION STORMWATER
traditional

alternative
A = soil loss (tons/ac/yr)
post-construction stormwater and the candle problem:

functional fixedness
functional fixedness

solution.
functional fixedness
Green Infrastructure
SOIL COMPACTION

Slight resistance increase from traffic
ROOTING: PIEDMONT SITE

Control 3% below 6"

Shallow till 20% below 6"

Deep till 18% below 6"
sustainability:
a set of environmental, economic, and social conditions in which all of society has the capacity and opportunity to maintain and improve its quality of life indefinitely without degrading the quantity, quality, or availability of natural, economic, or social resources.
The availability and the development of stormwater evaluation and design technology can lead to improved systems that sustainably manage the quantity and quality of stormwater runoff...

The challenge of sustainable stormwater management is complex and may require a flexible, comprehensive approach...

- ASCE Policy Statement 441
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