
PRODUCTS
RECIPES
REVIEWS
SHOP
MID'S
Homestyle Pasta Sauce
COMPANY
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Capturing the sweet taste of Stormwater
A recipe that spans seventy years and the Atlantic Ocean. A gourmet sauce as authentic as the fresh ingredients that go into it. A taste that reminds you why homemade cooking can bring the family together.
All of Mid's pasta sauces are ma
finest California tomato products, specia
and spices and a touch of olive oil imported from Italy. They are versatile enough to work with spaghetti, lasagna and all pastas, as a marinade for meat and fish or even as dipping sauces for bread.
MID'S
Homestyle Pasta Sauce
Meatless
MY RECIPES
submit your favorite recipe!
What have you tried lately with Mid's sauces? Send us your creative concoction, and we might just tell everyone about it on our site.

MIDS Work Group Meeting
March 18, 2010

"Credits" Review (and a few other topics)

Today's Topics

- Keep legislation and next meeting goal in mind
- Review restrictions for BMPs
- Review credits
  - How some BMPs treat runoff
  - Volume, TP, and TSS calculation methods
  - Discuss data, gaps, research needs

Legislation Review

The agency shall develop performance standards, design standards, or other tools to enable and promote the implementation of low-impact development and other storm water management techniques. For the purposes of this section, "low-impact development" means an approach to storm water management that mimic's a site's natural hydrology as the landscape is developed. Using low-impact development approach, storm water is managed on-site and the rate and volume of predevelopment storm water reaching receiving waters is unchanged. The calculation of predevelopment hydrology is based on native soil and vegetation.

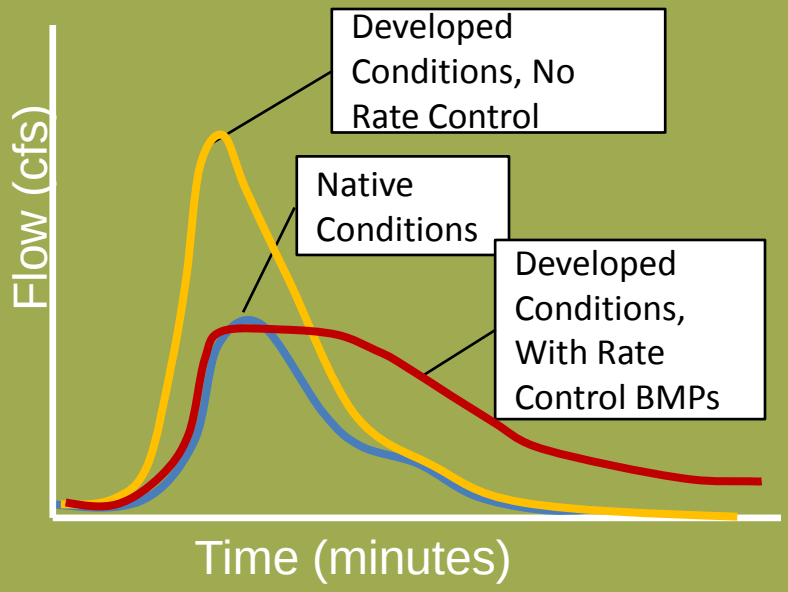
Next Meeting Goal

- Select a performance goal method for new, non-linear developments on areas without restrictions (no hotspots, high groundwater, poor soils, karst, etc.) to manage stormwater on-site so that the stormwater rate and volume reaching receiving waters mimics natural hydrology.

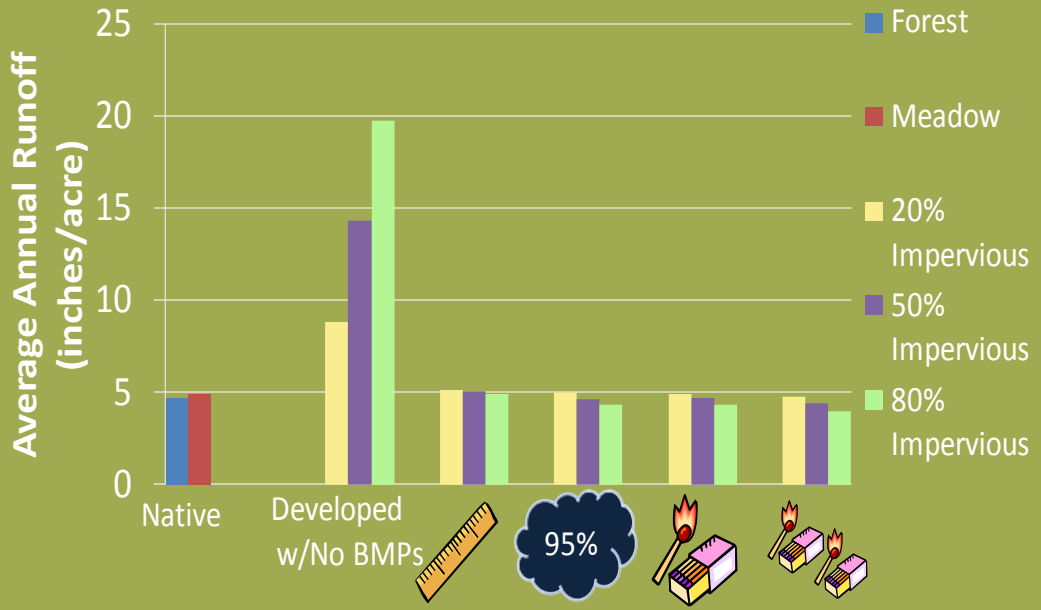
Need for BMPs and Restrictions

BMPs are needed to "mimic" natural hydrology

Rate control is needed



Volume control is needed



Volume controls are feasible on many new sites

Volume controls are not feasible on all sites or in all parts of MN

- Karst topography
- Shallow bedrock
- High groundwater
- Poor soils
- “Potential Stormwater Hotspots”

Definitions and Problems
Karst

- Landscape with highly soluble rocks/sinkholes
- Direct path to groundwater
- BMPs could cause sinkholes

Minnesota's Known Karst Features, Source: MPCA 2008

Definitions and Problems
Shallow Bedrock

- Bedrock within six feet of ground surface
- Lack of soil cover depth might not allow enough treatment of pollutants before reaching groundwater
- Lack of depth might not physically allow BMPs

Minnesota Bedrock Outcrops, Source: MPCA 2008

Definitions and Problems
Shallow Groundwater

- Water less than 3 feet from land surface
- Most notably problem: Pollutant reaches groundwater before adequate treatment

Definitions and Problems
"Potential Stormwater Hotspots"

- Land uses which may produce high levels of contaminates
  - Some examples:
    - maintenance, repair, fueling sites
    - salt and sand storage sites
    - dumpsters and landfills
- Merely a reminder that more careful consideration of a site is necessary

Definitions and Problems
Poor Soils

- Soils with too high of infiltration rates (>8.3 inches/hour) to treat stormwater

- Soils with too slow of infiltration rates (< 0.2 inches/hour) to drain dry within 48 hours

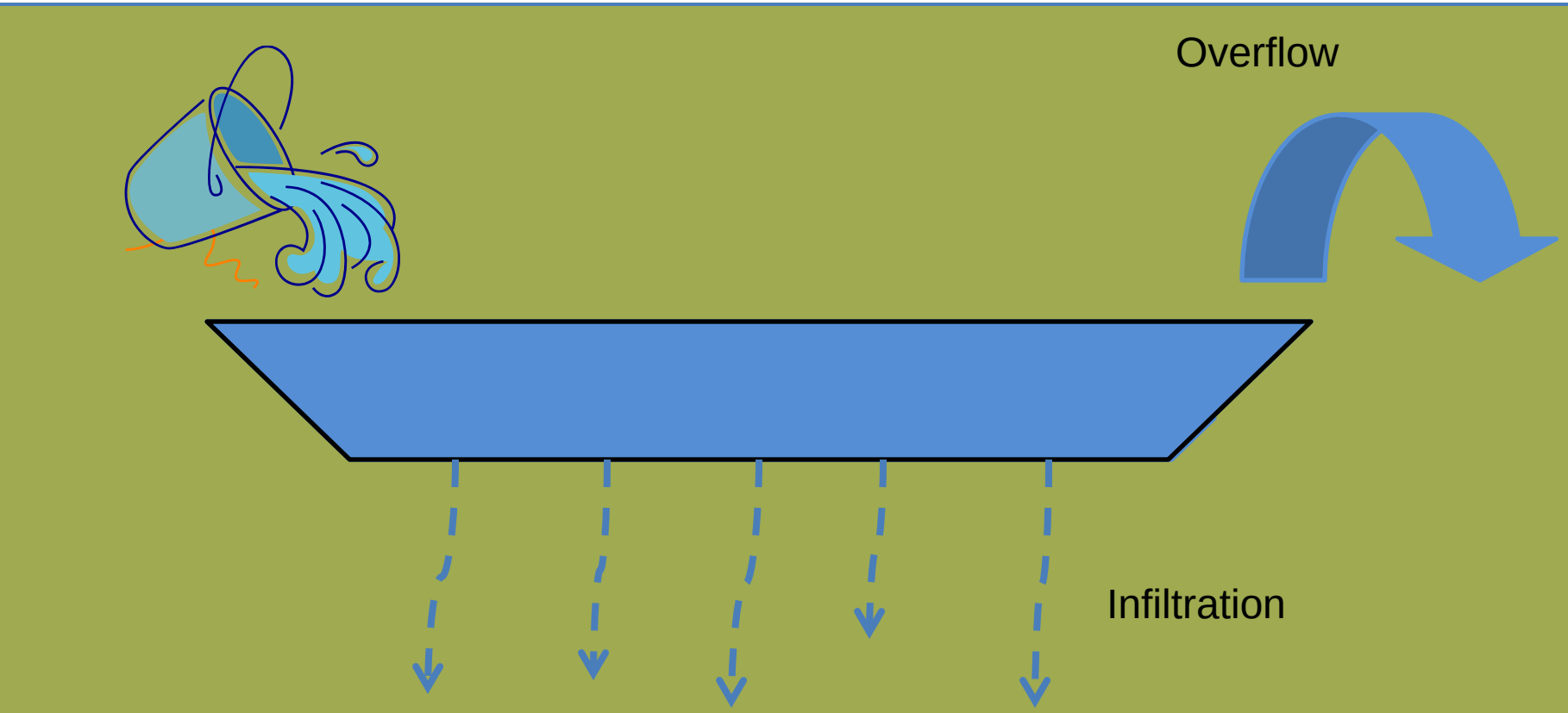
Draft Flowcharts

How some BMPs work

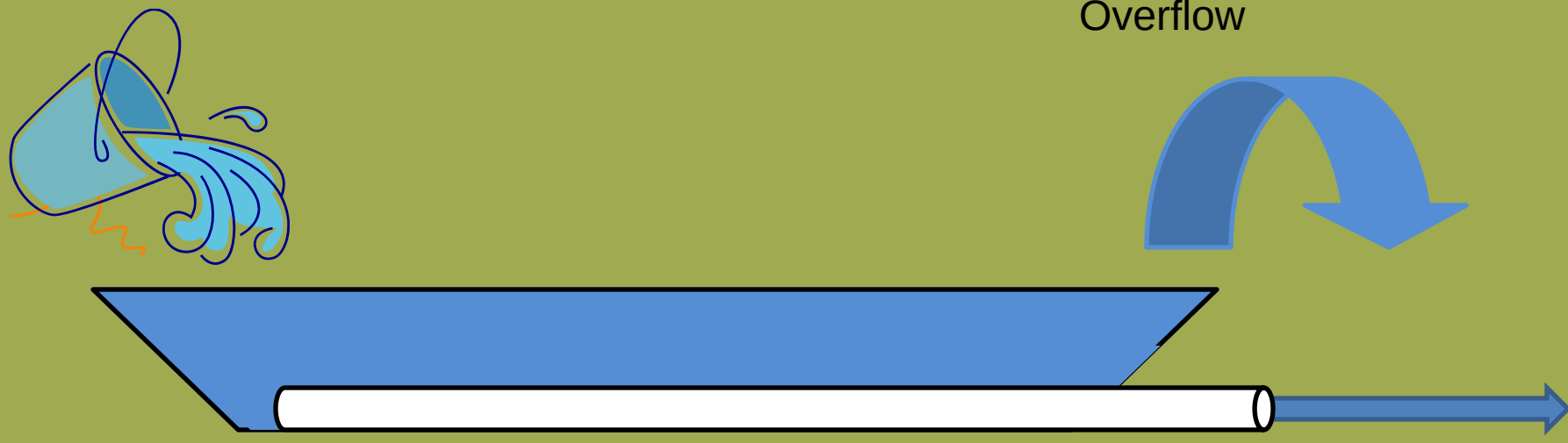
Understanding BMPs
and how they manage stormwater

- Bioretention Basin
  - With and without drain tile (biofiltration)
- Wet Pond
- Pervious Pavement
  - With and without drain tile
- Trees/Urban Forestry

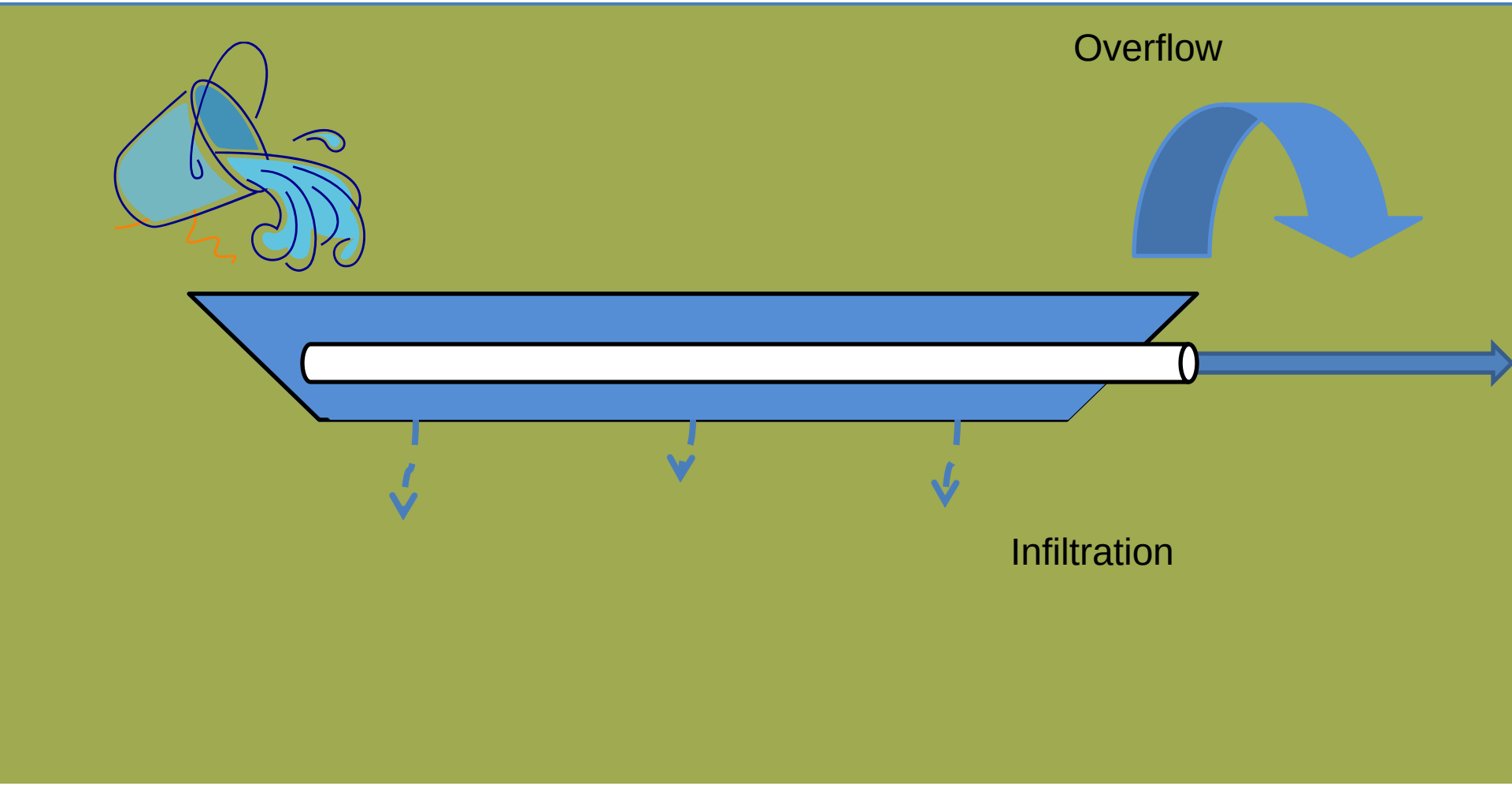
Bioretention without drain tile



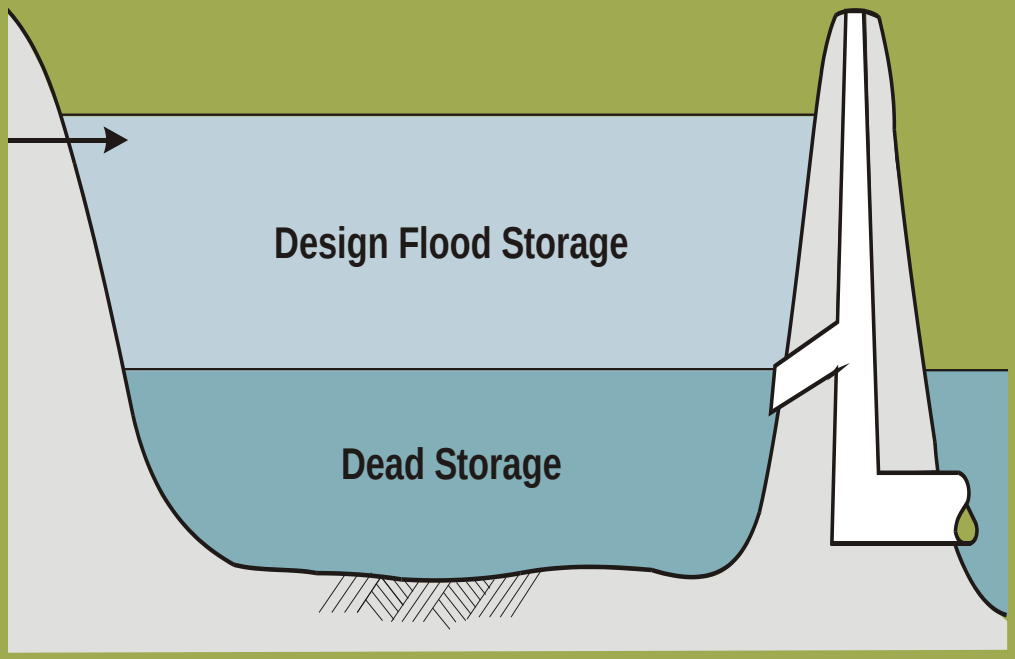
Biofiltration (drain tile at bottom of basin)



Bioretention with suspended drain tile

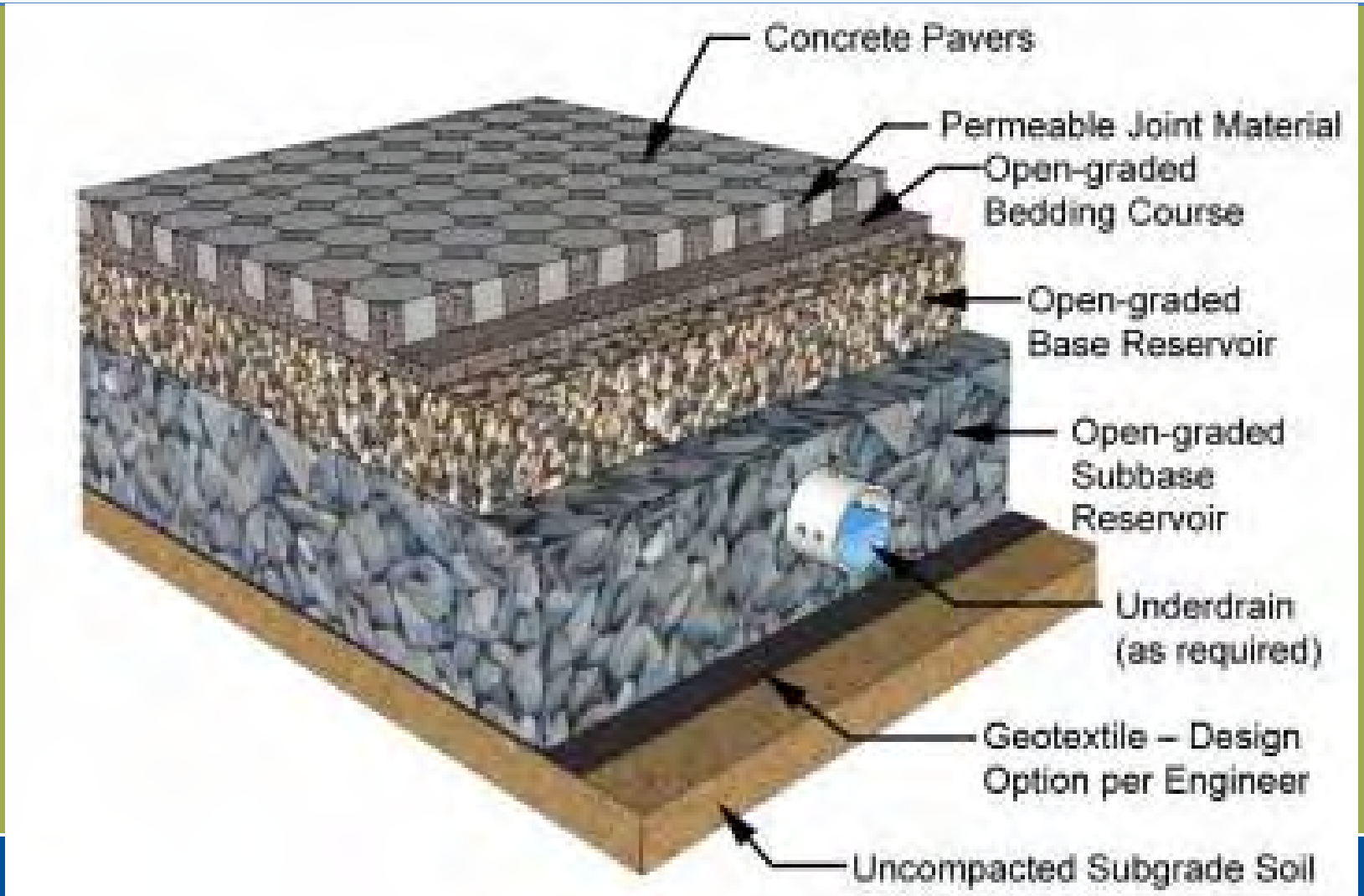


Wet Pond



Pervious Pavement

"It's the entire structure, not just the surface"



Source: http://www.icpi.org/node/553?gclid=CJjI9MzF1KcCFcfsKgodxBH29g

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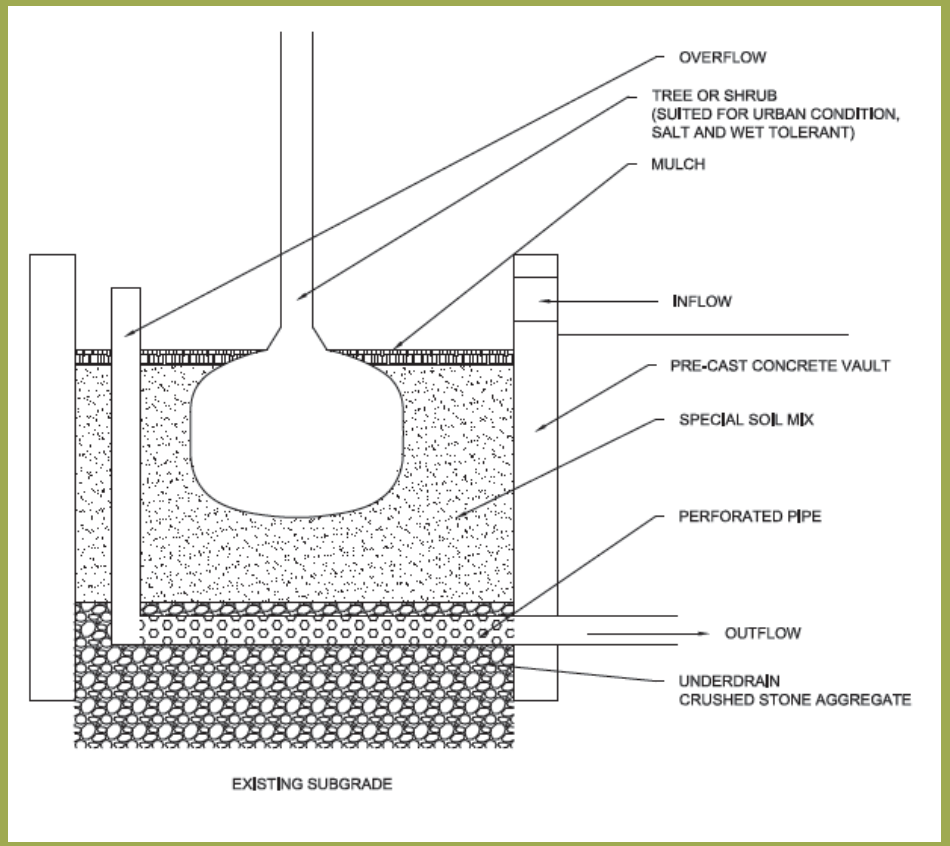
Table 7 from Draft Memorandum

- Discussion
  - Overview of data
  - BMPs with limited data/gaps
  - Confidence level in removal quantities of TP, TSS, and volume varies between BMPs
  - Quantities vs. percentages – preferences
  - Process for evaluating/re-evaluating credits – Credit Council

Trees/Urban Forestry



Source:
http://www.crwa.org/projects/bmpfactsheets/crwa_treepit.pdf

Quantifying Credits

Our Understanding of Work Group Wants

	Volume	TP (lbs/year)	TSS (lbs/year)
Required	X	X	X
Provided	X	X	X

- Broad suite of BMPs
- Adequately quantify credits & don't oversimplify
- User friendly/doesn't require too much effort

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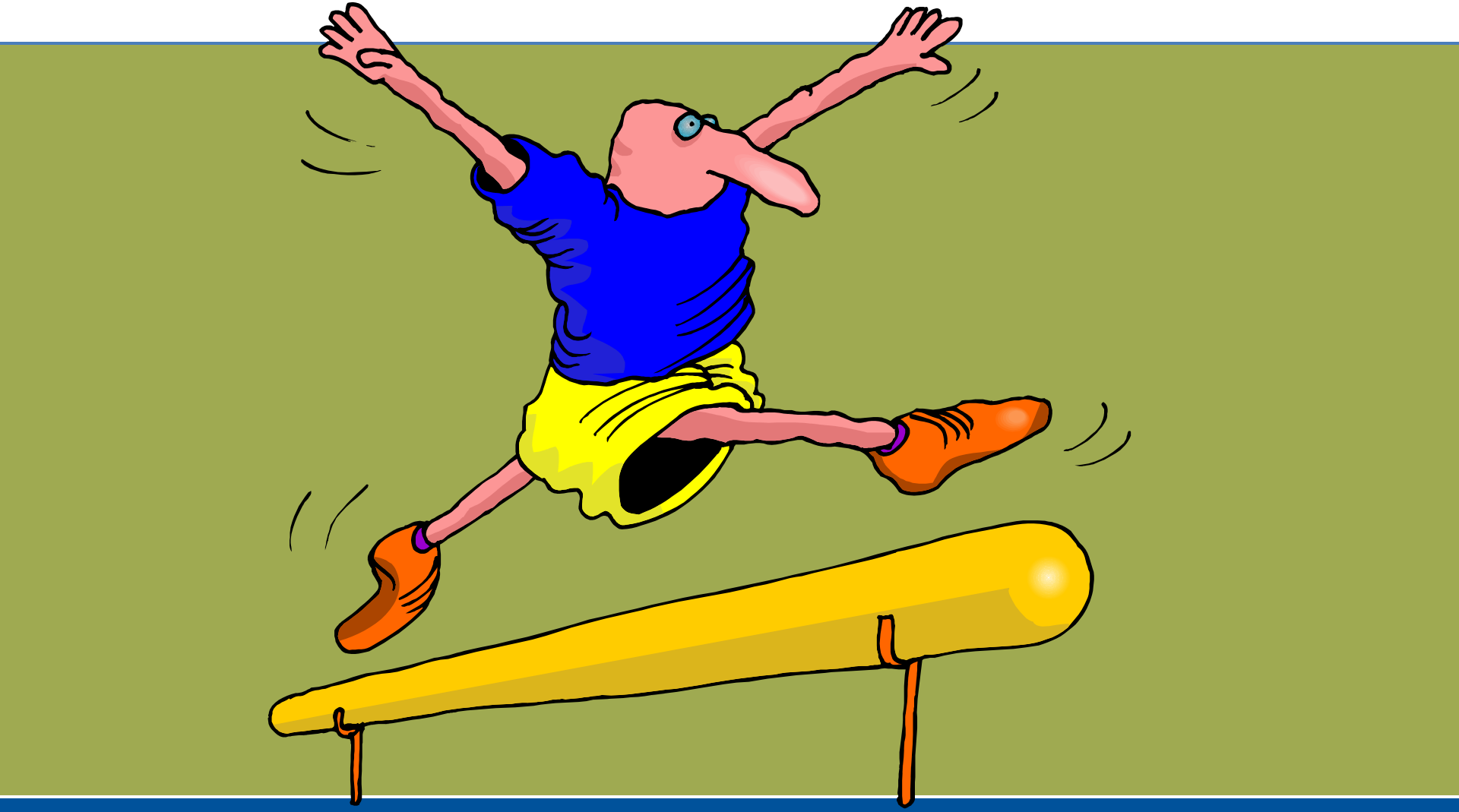
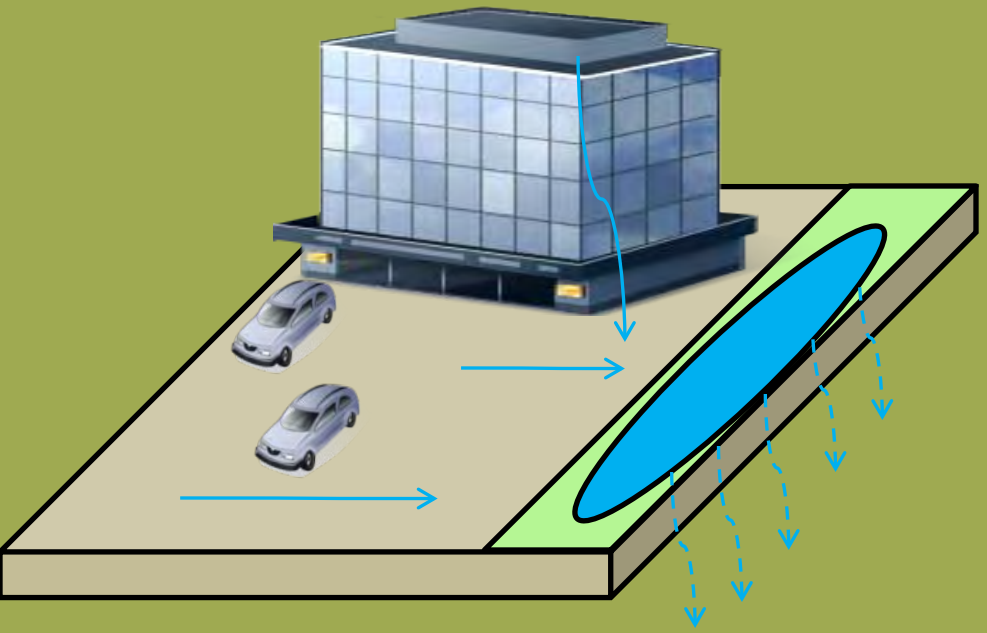
Balancing Act
Adequately Quantifying vs. User Friendly

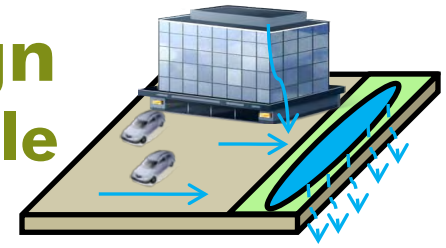


Quantifying Credits
Example: Bioretention Basin w/o Drain Tile



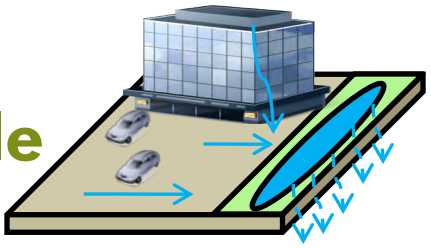
- Metro Site on B soils
- 10 Acre Site
- 80% Impervious

Credit Quantity Option: Fixed Design
Example: Bioretention Basin w/o Drain Tile



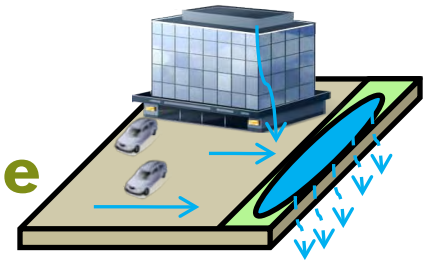
- Example Fixed BMP Design rules/standards:
  - Filter bed surface area = 5% captured drainage area
  - 2 cells
  - 2 forms of pretreatment
  - Filter media = 36” deep
  - 90% plant cover, including trees
- If BMP conforms to Fixed Design, 80% volume is removed, TP and TSS calculated

Credit Quantity Option: Flex Design
Example: Bioretention Basin w/o Drain Tile



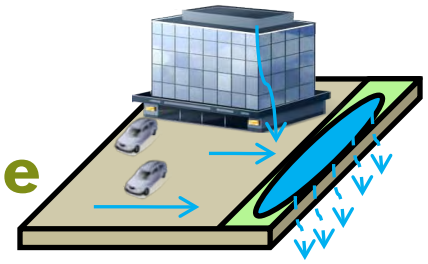
- Flex Design BMP:
  - Filter bed surface area = varies
  - Number cells = varies
  - Pretreatment required
  - Soil for filter = 36” deep
  - 90% plant cover, including trees
- Volume, TP and TSS removed calculated (0-100% volume removed)

Comparison of Options
Example: Bioretention Basin w/o Drain Tile



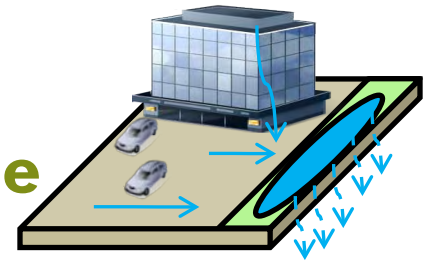
- Site doesn't allow designer to meet all specifications (e.g., surface area = 4.4% vs. 5% captured drainage area)
  - Fixed Design:
    - Doesn't conform; need to change design to conform
  - Flex Design:
    - Produces credit quantities based on BMP size (could be more or less than 80% of Standard Option)

Comparison of Options
Example: Bioretention Basin w/o Drain Tile



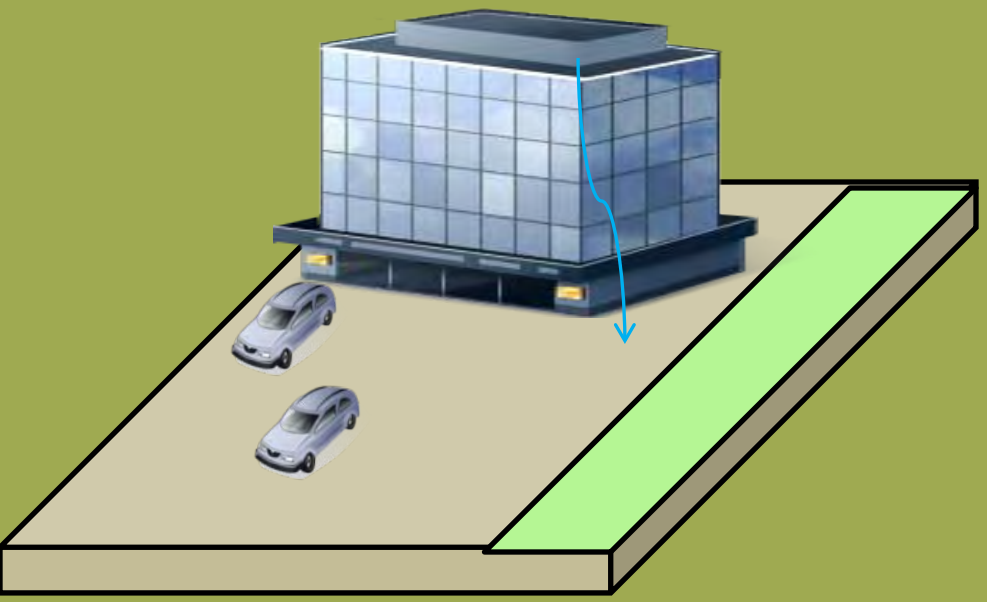
- Designer wants to use 10,000 s.f. basin and another BMP due to site design constraints to meet requirements
  - Fixed Design:
    - Doesn't conform to design rule; must redesign BMP to conform or use another specification and associated quantities
  - Flex Design:
    - Provides credit quantities

Comparison of Options
Example: Bioretention Basin w/o Drain Tile



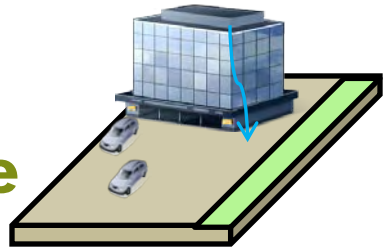
- Fixed Design might lead to variance requests to regulator
  - "Your site doesn't exactly conform. I can't really give you 80%, but I don't know what to give you."

Quantifying Credits
Example: Pervious Pavement w/o Drain Tile



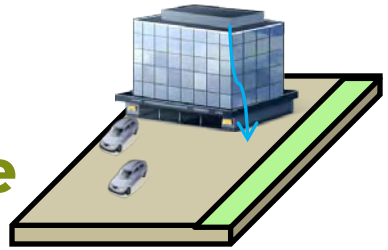
- Metro Site on C soils
- 10 Acre Site
- 80% Impervious

Credit Quantity Option: Fixed Design
Example: Pervious Pavement w/o Drain Tile



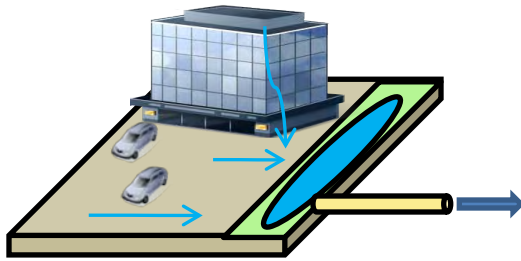
- Example Fixed Design rules/standards for 75% annual volume reduction:
  - Soil infiltration rate > 1 inch/hour (doesn't conform on C soil site)
  - No under drain
  - Captured drainage area = pervious pavement area
  - Slopes less than 2%

Credit Quantity Option: Fixed Design
Example: Pervious Pavement *w/o Drain Tile*



- Example Fixed Design rules/standards for 45% annual volume reduction:
  - Soil infiltration rate <1 inch/hour
  - *This example rule includes under drain*
  - Captured drainage area > or = pervious pavement area
  - Slopes 2-5%

Comparison of Options
Example: Pervious Pavement



- In some cases, conformance to Fixed Design can be easy
- Flex Design might encourage creativity in design and increase volume, TP, and TSS reduction (more than 75%)
  - Vary storage rock depth

Credit Quantity Option: Fixed or Flex
Example: Trees/Urban Forestry

Credit Quantity Option: Fixed or Flex

- Should it be a mix?
- Is it okay with Work Group to have some BMP credits based on a Fixed Design and others based on a Flex Design?
- Perhaps allow a Flex Design for bioretention basins but a Fixed Design for wet pond