Using LID and Sustainability Principles to Lessen the Burden of BMP Requirements

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Speakers

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TERMINOLOGY
TERMINOLOGY

- LID
- BMPs
- Structural Controls
- Green
- Sustainable
- Light Imprint

LID TO REDUCE BMP REQUIREMENTS
LOW IMPACT DEVELOPMENT
BEST MANAGEMENT PRACTICES
REGULATORY DRIVERS

- EPA Phase II MS4 Permit
  - Minimum Control Measure 5 – Post-Construction Runoff Control
    - Develop and implement strategies which include a combination of structural and/or non-structural best management practices
    - Have an ordinance or other regulatory mechanism requiring the implementation of post-construction runoff controls to the extent allowable under State, Tribal, or local law
    - Ensure adequate long-term operation and maintenance of controls
REGULATORY DRIVERS

- States requiring structural controls
  - North Carolina
    - 85% TSS removal of 1-year 24-hour storm
    - Additional watershed nutrient removal requirements
  - Georgia
    - 80% TSS removal of first 1.2 inches
  - Kentucky
    - Management of the 80th percentile storm event
GOALS VS. REALITY
REGULATORY DRIVERS

- EISA Section 438
- “Maintain or restore, to the maximum extent technically feasible (METF), the predevelopment hydrology of the property with regard to temperature, rate, volume and duration of flow.”

  Two options:
  - Employ systems to infiltrate, evapotranspirate, and/or reuse precipitation from the 95th percentile storm.
  - Maintain predevelopment hydrology (temperature, rate, volume duration) and perform a site specific analysis.
REDUCTION IN BMP SIZING

Conservation of natural features

Low impact design

Reduction in impervious area

Reduce time of concentration

= 

Reduce volume of runoff
C Soil + 40% DCIA

87% capture vs. 58% capture
C Soil 40% DCIA & 40% Sheet

58% capture vs. 75% capture
REDUCTION IN BMP SIZING

- Methods to account for disconnecting area
  - Remove disconnected areas from site area for volume sizing

Example:

Site Area = 3.0
Impervious Area = 1.9 acres (or 63.3% impervious cover)
“Disconnected” Impervious Area = 0.5 acres

\[ R_v = 0.05 + 0.009 (I) = 0.05 + 0.009 \times 63.3\% = 0.62 \]

Credit:

0.5 acres of surface imperviousness hydrologically disconnected
New drainage area = 3 - 0.5 = 2.5 acres

Before credit:

\[ WQ_v = (1.2)(0.62)(3)/12 = 0.19 \text{ ac-ft} \]

With credit:

\[ WQ_v = (1.2)(0.62)(2.5)/12 = 0.15 \text{ ac-ft} \]

(21% reduction in water quality volume)
ADDITIONAL BENEFITS TO LID

- Reduced construction costs
- Increased property values
- More open space for recreation
- More pedestrian friendly neighborhoods
- Protection of sensitive forests, wetlands, and habitats
- More aesthetically pleasing and naturally attractive landscape
- Easier compliance with wetland and other resource protection regulations
WAYS TO INCREASE LID DESIGN
FIT LID IN YOUR DEVELOPMENT PROCESS

Applicant contacts the City in order to submit a development application and to arrange a Pre-Application Conference with Planning and Engineering Staff.

- Pre-Application Conference
  - Site Plan
    - Site Plan
      - Site Plan
        - Site Plan
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                                          - Site Plan
ENVISION TO PROMOTE LID

CREATED TO:

• Apply to **INFRASTRUCTURE** rather than buildings/facilities

• Assess projects in a holistic, community approach and with **MULTIPLE STAKEHOLDERS**
ENVISION TO PROMOTE LID

Project Types:

- Roadways
- Bridges
- Pipelines
- Railways
- Airports
- Pump Stations
- Dams
- Levees
- Landfills
- Parks
- Treatment Plants
- Hike and Bike Trails
ENVISION RATING SYSTEM

- 5 Major Credit Categories
- 14 Credit Subcategories
- 60 Individual Credits (5 Innovation Credits)
Envision™ Levels of Achievement:

- **Restorative**: Restoration of resources and ecological systems, economic and social systems
- **Conserving**: Zero negative impacts
- **Superior**: Remarkable performance
- **Enhanced**: On the right track
- **Improved**: Encouraging
- **Conventional**: State of the practice

Axes:
- **Project Life Cycle**
- **Stakeholder Collaboration**
# Envision™ Project Recognition:

<table>
<thead>
<tr>
<th>Recognition Level</th>
<th>Points Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronze Award</td>
<td>20%</td>
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<tr>
<td>Silver Award</td>
<td>30%</td>
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<tr>
<td>Gold Award</td>
<td>40%</td>
</tr>
<tr>
<td>Platinum Award</td>
<td>50%</td>
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LID IN YOUR CRITERIA AND ORDINANCE

- How to translate low impact development into regulations?
  - Point systems
  - Requirements
  - Incentives

- Accounting for conflicts in existing ordinance language
  - Landscaping Ordinance
  - Subdivision Ordinance
  - Zoning Ordinance
LID IN YOUR CRITERIA AND ORDINANCE

- **Point Systems**
  - Subjective nature, best kept to a minimum of quantifiable factors

- **Requirements**
  - Select a few desired practices that become required
  - Can be burdensome on a case-by-case basis

- **Incentives to Consider**
  - Additional reductions in treatment requirements
  - Parking reductions
  - Flexibility in landscaping requirements
  - Fee reductions
GETTING PEOPLE INVOLVED

Policy Review

- Discuss desired development goals for LID
- Review existing development process and ordinances for areas to increase LID opportunities
- Determine method of promoting LID and the additional factors to consider
  - Means of protecting LID areas (i.e. easements)
  - Subjectivity in point systems
  - Incentives to allow and if variances will be required
  - Criteria for LID practices
    - For example, disconnecting impervious area should have criteria on area, flow paths, and slopes
Questions?

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