

Getting LID in the ground-local regulations and incentives

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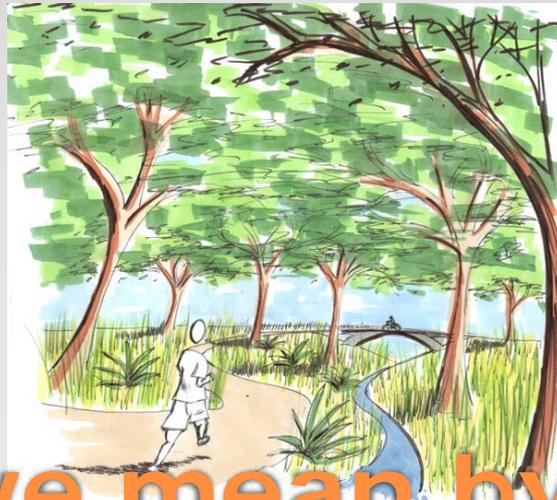
NC STATE UNIVERSITY

- NC LID Manual needs assessment
- A process for LID policy planning
- Tools for incorporating LID into policy
- How communities are encouraging LID
 - 8 methods for getting LID in the ground



Overview

1. conserve natural areas
2. minimize development impacts - design and clearing techniques
3. Increase time water stays onsite
4. Create areas local storage & treatment
5. build capacity for maintenance



What do we mean by LID?

NC LID Manual Needs Assessment

36 building professionals, consultants, and government staff replied

Building Professionals' Needs:

- best management practices info (24%)
- precedents & case study examples (14%)
- key rules & regulations (10%)
- costing information (10%)

LID Needs Assessment



Government Staff Needs:

- Design specifications (18%)
- Checklists (13%)
- Design guides (10%)
- BMP information (10%)
- Regulatory language (10%)

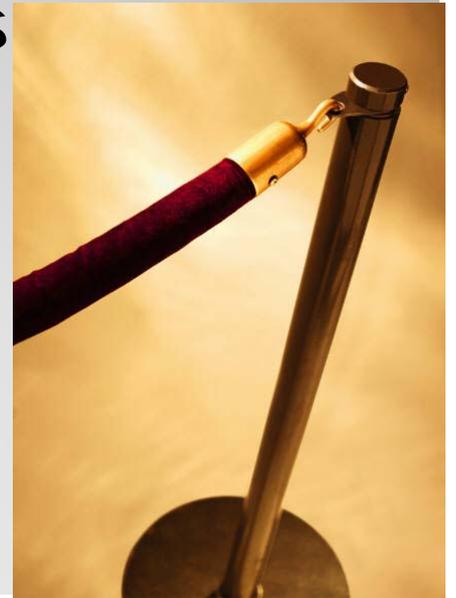
LID Needs Assessment



Development professionals: policy barriers

- Stormwater requirements
- Time for approvals
- Automotive-oriented standards
- Lot design and layout standards
- Restrictive regulations

LID Needs Assessment



1. Land use, watershed, & open space/green infrastructure planning

Why?

LID is a tool for protecting water quality
where development is appropriate



Process for LID Policy Planning

2. Stormwater ordinance

Why?

To define hydrologic goals/ specify performance objectives, and how to meet them



Process for LID Policy Planning

- Stormwater Center Post-Construction Runoff Model Ordinance
 - www.stormwatercenter.net
- UNC Environmental Finance Center Phase II Model Ordinance
 - www.efc.unc.edu/publications
- Center for Watershed Protection Post Construction Guidance Manual
 - www.cwp.org



Stormwater ordinance tools

3. Review all other codes and ordinances

Why?

Most developed b-4 understanding of development impacts on natural assets



Process for LID Policy Planing

- Clearing and grading
- Dimension & density
- Natural systems
- Parking requirements
- Street standards



Codes & ordinances: a few "best practices" for LID



- Retention of native vegetation & canopy
- Slope protection
- Prevent soil compaction/amend soils

Clearing and Grading

- Flexible setbacks and frontages
- Relaxed height restrictions & higher floor area ratios
- Density standards encourage conservation design



Dimension & Density

Natural Systems

- Encourage/require conserving open space
- Allow BMPs in landscape areas
- Encourage/require canopy preservation
- Require protecting riparian vegetation





- Set & enforce parking ratio & stall size maximums
- Allow/encourage shared parking
- Establish landscape requirements & require runoff treatment
- Allow/require pervious for spillover

Parking Requirements

- Permit reduced widths
- Don't require curb & gutter for full street length
- Permit roadside swales
- Provide flexible sidewalk placement & layout
- Minimize cul de sac radii & allow bioretention in island



Residential Street Standards

8 Methods for Getting LID in the Ground



- Public sites
 - Schools
 - Libraries
 - Municipal buildings
 - Park facilities
- Partner to get grants
- Provide mini-grants to fund private demos

Create demonstration projects

- Sponsor & participate in community roundtables
- Create an advisory Committee
- Education & open discussion



2. Foster community dialogue

- Stewardship Development awards
- Provide publicity
- Partner w/ other organizations, jurisdictions to spread costs & responsibilities



LOWER CAPE FEAR
Stewardship Development Award Program

Outstanding Recognition

Monteith Construction (2008)

Airlie Gardens (2006)

Halyburton Memorial Park (2006)

Preservation Park (2006)

Village of Woodsong (2005)

3. Recognize innovation

- Brunswick & New Hanover Counties, NC
- Involve stakeholders
- Tools
 - TVA/SEWF Growth Readiness Initiative
 - CWP Better Site Design Guide and worksheet



4. Remove obstacles in codes to make easier than traditional

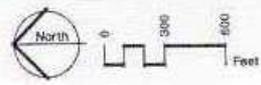
- Create or adopt manuals, pattern books, design guidelines
- Provide spreadsheet models
- Reference in ordinances
- New Hanover County & City Wilmington LID Guidebook
- NC LID Manual



5. Provide technical guidance

- Density bonuses
- Expedited review
- Reduced fees
 - impact, stormwater
- Examples:
 - Town of Cary, NC
 - Carteret County, NC
 - City Wilmington, NC
 - NC Div. Water Quality Fast track permitting allowed for LID

6. Provide incentives in exchange for conservation & LID



- In stormwater ordinance
- Jurisdiction-wide *or* to protect important resources
- Town of Cary, NC
 - Southeast Area Plan
- Town of Black Mountain, NC



7. Allow LID to meet stormwater & watershed requirements

- Jurisdiction-wide *or* to protect specific resources
- Town of Huntersville, NC
- City of Hickory, NC in Henry River Conservation overlay
- LID or some LID practices
 - Conserve 50% natural area-Town Mineral Springs, NC
 - Use infiltrative swales-Town of Bluffton, SC



8. Require LID for stormwater management



NC LID Manual

NC State University

- Ag and Resource Economics
 - Steve Smutko
 - Christy Perrin (WECO)
- Biological and Ag Engineering
 - Bill Hunt
 - Laura Szpir (Water Quality Group)
 - Jean Spooner (WQG)
 - Dan Line (WQG)
- Landscape Architecture
 - Lee-Anne Milburne
- Extension
 - Dwane Jones

• Soil Science

- David Lindbo

UNC-Coastal Studies Inst.

- Robert McClendon

Local Governments

- City of Raleigh
- Triangle J Council of Govts
- Land of Sky Council of Govts.

Consultants

- Tetrattech
 - Scott Job
 - Heather Fisher



Core Writing Team



The rest of the writing team wishes they were here...

State and Federal Government

- NCDENR Div. Water Quality
- NCDENR Ecosystem Enhancement Program
- NC Dept. of Transportation
- US EPA

Local and County Government

- Wake County
- Durham County
- Pitt County
- City of Kinston
- Town of Carrboro
- City of Brevard
- Town of Cary
- Mecklenburg County

Special Interest

- NC Coastal Federation
- NC Home Builders Assoc.

Academia

- NCSU Dept. Forestry & Env Res.
- Warren Wilson College

Builders / Developers

- Crossland
- The Milliken Co.
- Cherokee Investment Fund

Consultants

- BLUE Land, Water, Infrastructure
- Withers & Ravenel
- Horvath & Assoc.
- John R. McAdams
- Little & Little Landscape Architects
- Carter Burgess

Advisory Committee

1. Introduction
2. Managing Water Resources Using a Hydrologic Cycle Approach
3. LID Site Assessment & Design
4. LID Stormwater BMPs
5. Decentralized Wastewater
6. Low Impact Construction
7. Local Government Planning & Regulatory Strategies
8. LID Case Studies

NC LID Manual Chapters

Late Spring 2009 LID Manual Due date

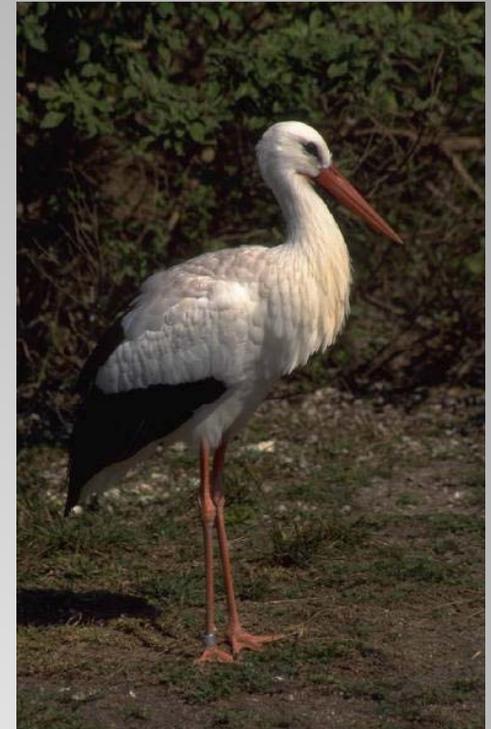
Manual will be posted online, visit

www.ncsu.edu/WECO

Or

www.bae.ncsu.edu/programs/extension/wqg/

Or provide us with your email for a notice!



- You are the leaders!
- Learn more about LID design
- Submit innovative LID designs- stretch boundaries
- Offer to review codes & policies
- Promote community discussion



Go forward innovators...