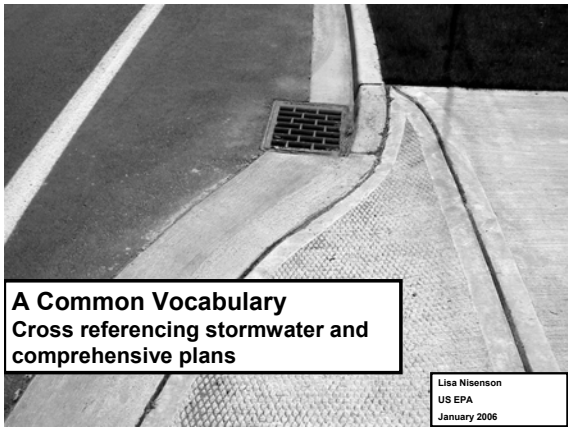

A Common Vocabulary
Cross referencing stormwater and comprehensive plans

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January 2006

What this presentation will cover

- What drives impervious cover (IC)?
- What can mitigate this drive for IC?
- Individual smart growth techniques and their relationship to managing runoff.
- Regulatory Recognition.
- Points to consider.

What drives Impervious Cover?

- Zoning
- Parking Standards
- Separation of Uses
- Roadways and their design
- Other factors you never thought of

Most stormwater manuals, ordinances, and textbooks don't even begin to address the main drivers of impervious cover

Which is better for water quality?

What drives this?

Source - Dodson Associates

Zoning and Impervious Cover

Zoning typically regulates

- Uses
  - eg. Residential, agricultural
  - typically separate
- Building size & form
- Height
  - either by # floors or gross height
  - FAR
- Lot coverage
  - yard requirements
  - setbacks
  - build to lines
- IC per unit?

IC & Parking requirements

- Can be in codes or separate documents
  - ITE - "Parking Generation"
  - parking minimums
  - parking assessed site by site
- Less advertised
  - financial plans
  - no incentive to study parking utilization
  - view there is no cost to excess parking*

Parking, continued

- Most parking spaces
  - 9 feet X 11 square feet to 9 feet to 18 square feet or more.
  - Rule of thumb - 200 square feet per space
- Other Rule of thumb - each parking space (total) ~330 ft^2 impervious surface

Parking, continued

- Most hideous aspects of parking - it can prevent intensity even when the zoning code allows taller buildings!
- What? This district allows 35 ft tall buildings
- The parking standard here prevents a taller building because the parking minimum cannot be met on the site.
- Barrier to redevelopment or improvement

Street Standards - The Untold Story on IC

- From water documents "Discourage connected impervious surfaces"
  - This is what good cities are!
- **Street connections support multi-modal travel and mixes of uses**
  - This in turn can support intensity on a smaller footprint

smart growth techniques and their relationship to managing runoff

- **Traditional "water" techniques**
  - watershed planning
  - restoration
    - streams & habitat
  - "cluster" zoning
  - reduce impervious surface coverage
  - water friendly landscaping in parking lots
  - better street design

- **Smart Growth counterparts**
  - regional planning
  - restoration
    - redevelopment/infill
  - density
  - compact design
  - reducing the # of spaces
  - better street design

A common vocabulary… right?

In Reality - What Can Happen

"Green" techniques
"Promote Infiltration"

Large lot zoning, impervious coverage limits

"Cluster Zoning"

Aka conservation subdivisions; familiar and easily adopted

"Better Street Design"

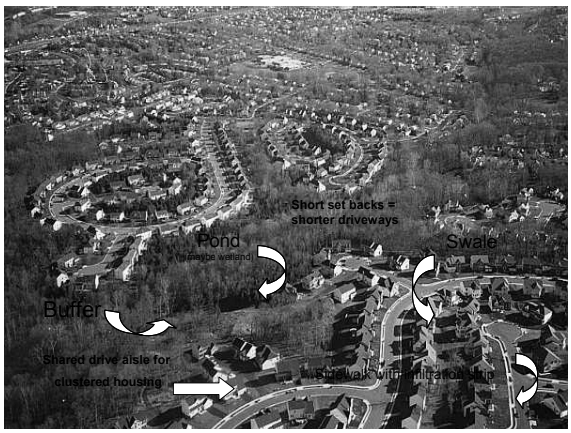
Better cul-de-sacs, minimize sidewalks

Outcomes for Smart Growth

Compact development and districts difficult, if not impossible. Unintended result of driving development to greenfields?

Highly separated uses means conventional driving/parking; patterns retained

Unconnected patterns, no emphasis on use mix, no connectivity



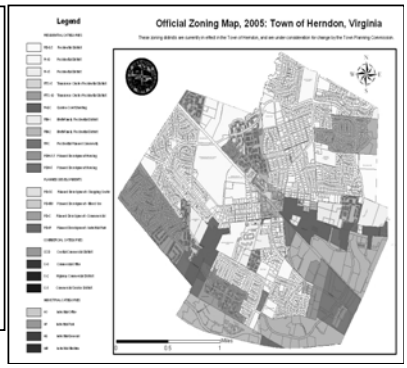
How do we get the best of green development at the site, neighborhood and regional level?

- **Comprehensive view of the "development shed"**
- **compact form**
  - **going up instead of out**
- **mix of uses that relates to trip-making**
- **mix of transportation**
- **connectivity**
- **Bottom line - if you don't get the "pattern" BMP right first, the pressure is on site level BMPs**
  - **Is this realistic?**

Plans and Codes

Joint stormwater and land use plans are on the horizon

- **Where do land use codes and stormwater codes come together?**
- **How do they treat patterns?**
- **There will be opportunities and challenges in how these plans & ordinances are worded.**



Opportunities - Street Design

- **From the SCVURPPP permit**
- **"j. Site Design Guidance and Standards Development**
  - The Dischargers shall review their local design standards and guidance for opportunities to make revisions that would result in reduced impacts to water quality and beneficial uses of waters... Areas that may be appropriate to address include the following, which are offered as examples:….
    - 3. Minimum impact street design standards for new development and redevelopment, including typical specifications **(e.g. neo-traditional street design standards and/or street standards** recently revised in other cities, including Portland, Oregon, Vancouver, British Columbia);... **"**

CNU/ITE street designs handbook

- **Many stormwater plans call for "narrower streets"**
- **Institute for Transportation Engineers and Congress for New Urbanism**
  - **With funding from EPA and FHWA**
- Example of offering alternatives to standard codes

Hillsborough County, FL

Opportunities - Street Design

Sample language - Virginia's new Subdivision Street Requirements

Streets must serve a public service by:

provide connecting links

serve access to schools, churches, public facilities

constitute part of the network of streets envisioned in the transportation & comprehensive plans, including bike and pedestrian links, special section on TNDs.

include "stub streets" as connections to future development

Challenges?

Most local road building delegated to developers - consequences

Having connections among new areas to existing ones

When connections need to be made in environmentally sensitive areas

Emergency responders & fire codes - dictate wider roads

Opportunities - Parking

From North Central Texas Council of Governments (NCTCOG) guidance

"2. Minimize impervious surfaces
Impervious surfaces are those such as roads, parking lots, driveways, and rooftops, that don't allow infiltration of storm water into the ground…Narrower streets and smaller parking lots benefit the environment and can make a development more attractive as well.

- **Reduce parking lot size by lowering the number of parking spaces** (minimum and maximum ratios) and by **sharing parking** among adjacent businesses - *Zoning Ordinance, Development/Engineering Standards*
- **Reduce parking requirements for developments in proximity to public transportation** - *Zoning Ordinance*
- Provide incentives or opportunities for **structured parking** rather than surface parking - *Zoning Ordinance"*

Opportunities - Parking

- **Examples**
  - **Emeryville, California**
  - **Can be thought of as "BMP manual" for Dense Urban places**
  - **Entire chapter on parking with 3 strategies**
    - **Reducing demand for parking**
    - **Maximizing efficiency of parking utilization**
    - **Design solutions to reduce impervious cover per space**

Challenges?
Overcoming perceptions that more parking is always better
Overcoming the "right to free parking"
Assigning true costs
Popularity of codes that allow excess parking with "landscaped islands"

Opportunities - Infill & Redevelopment

- **"Non-structural BMPs are preventative actions that involve management and source controls such as: policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space (including a dedicated funding source for open space acquisition), provide buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation; policies or ordinances that encourage infill development in higher density urban areas, and areas with existing infrastructure,…"**

EPA Phase II regulations, 1999

Opportunities - Infill & Redevelopment

- **Provisions of Exemptions for Infill & Redevelopment**
  - **New Jersey exempts most redevelopment projects from infiltration requirements.**
  - **Massachusetts -** if standards are not practicable stormwater management systems must be designed to "improve existing conditions."
- **General Cheerleading for Redevelopment**
  - **Minnesota - "infill and redevelopment should be encouraged to reduce new impervious cover in the landscape."**

Challenges?

Infill sites can be last of open spaces in an urbanized watershed

Other construction factors may come into play - permits, historic preservation

Difficult to quantify benefits (at least for now)

In some areas, water quality problems may dictate runoff management on all projects - new development, redevelopment & existing development.

Final Word - What is EPA looking for?

- **Flexible practices that prevent/control water quality/quantity at the site, neighborhood and watershed level at the same time.**
- **Systems to measure progress and ability to adapt**
- **Enforceable - this is where good ordinances come into play.**
- **Recognize that cities should be able to take advantage of programs underway that have water benefits.**