Minimal Impact Design Standards (MIDS) Project

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Overview

- Who We Are and MIDS Project
- The Problem
- Recommendations
- Benefits to Communities
Who We Are

- Client-based clinic working with the Washington Conservation District (WCD)
- Clinic focused on environmental policy development through changes in zoning regulations
Clinic’s Work

- **Goals**
  - Decrease volume and rate of water discharge into St. Croix River
  - Improve surface water quality
  - Offer easy-to-adopt ordinance changes

- **Method**
  - Review 20 communities’ ordinances in Washington and Chisago Counties
  - Researched model ordinances and best practices
  - Meet with key local experts and officials
  - Recommend ordinance changes
Communities Reviewed

- Afton
- Bayport
- Chisago City
- East Bethel
- Forest Lake
- Harris
- Hugo
- Lake Elmo
- Lakeland
- Lakeland Shores
- Lindstrom
- Marine on St. Croix
- North Branch
- Oak Park Heights
- Scandia
- Shafer
- Stacy
- Stillwater
- Taylors Falls
- Wyoming
Types of Ordinances Reviewed

- Zoning Ordinances
- Development Codes
- Erosion and Sediment Control Ordinances
- Stormwater Management Ordinances
- Parks and Open Space Planning

Developed a spreadsheet documenting the results of the review for each city.
Primary Resources Used

- Center for Watershed Protection *Better Site Design Handbook’s Model Development Principles*
- MPCA’s *Model Subdivision Ordinance for Water Quality*
- MPCA’s *Model Ordinances for Sustainable Development*
- MIDS Workgroup *memo on performance goals alternatives*
- Other states’ model parking ordinances – Massachusetts
- Stormwater Manager’s Resource Center’s *Open Space Model Ordinance*
MIDS Project

- “The agency shall develop performance standards, design standards, or other tools to enable and promote the implementation of low-impact development [LID] and other stormwater management techniques. . . . [LID] means an approach to stormwater management that mimics a site’s natural hydrology as the landscape is developed. . . .”

- Focus: St. Croix River Basin
MIDS Project

- Federal policy behind project:
  - National Wild and Scenic River
  - Clean Water Act
- State policy derived from federal policy:
  - MIDS Legislation
- Local ordinances implementing state policy
The St. Croix Watershed
What is a Watershed?

- An area of land that contains a common set of streams and rivers that all drain into a single larger body of water

- “A bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community” – John Wesley Powell
St. Croix Watershed
Threats to the St. Croix:
- Soil erosion
- Flooding
- Polluted Waters

Consequences:
- Contamination of lakes, rivers, streams, and Gulf of Mexico
- Degradation of natural areas
- Loss of fish
- Temperature change in water
Addressing the Problem
Current Ordinances – Areas for Improvement

- Performance Goals
- Design Technology
- Erosion and Sedimentation
- Site Design Process
- Impervious Surface Reduction
Performance Goals - Review

Review questions:

- What is the performance standard for water quality?

- What is the performance standard for rate and/or volume control?
Performance Goals - Review

Results:

- 5 did not specify a standard for quality, rate, or volume
- 4 referred to MPCAs “Protecting Water Quality in Urban Areas” as the standard
- 3 referred to no greater runoff than 2, 10, and 100 year storm event
- 3 required no greater than pre-development conditions
- Others required a stormwater management plan to be submitted for review
Performance Goal - Recommendation

- MIDS Work Group to set performance standard
- One Approach: Limit runoff volume based on amount of impervious surface
- Other Approach: Limit peak flow based on a chosen level of rain event such as a 1.2 inch event
Ratio (Option One): Connection Between Land Cover and Runoff

Three Inch Rain Event

Woods | Meadow | Agriculture | Residential | Urban
Runoff | Infiltration

0 | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5
Design Technology - Review

Review questions:

- Does the ordinance refer to natural drainage or topography?
- Does the Zoning Ordinance allow/promote the location of bioretention, rain gardens, filter strips and swales in the right-of-way?
- Do the regulations address buffer strips?
Results:

- 17 refer to natural drainage
  - Primarily as part of a required stormwater pollution prevention plan
- Only 6 specifically referred to bioretention, rain gardens, filter strips, or swales
- 15 ordinances include buffer requirements:
  - primarily for shoreland
  - a few for wetlands and open space one required
  - buffers on stormwater detention ponds
Use the MPCA Model Ordinance Language which lists a descending order of preferable sustainable LID technology

Use MIDS calculator to determine specific credit for practices
Erosion & Sediment Control - Review

Review questions:

• Are there erosion/sediment control provisions?

• Does the community's program include:
  • Requirement that soil erosion control measures be in place before granting a building permit?
  • Requirement that mechanisms protect waterways and stabilize drainage ways?
  • Requirement that all erosion and sedimentation controls be monitored on a periodic basis?
Erosion & Sediment Control - Review

Results:

- All communities except 1 had erosion/sediment control provisions
  - 11 stand alone ordinances
  - 8 had some provisions in zoning or subdivision ordinances
- LID-type practices mentioned in about half
- Examples:
  - Most common language - Use of natural drainageways
  - vegetative buffers along waterways
Erosion and Sediment Control - Recommendation

- Adopt an independent, comprehensive erosion and sediment control ordinance
- Step One: Stabilize soil by preserving original grading, restricting vehicles, and restricting construction
- Step Two: Conduct proper monitoring and enforcement
Site Design Process - Review

Review questions:

- Is there an open space plan?
- Is there a prioritized natural resource inventory?
- Is there a tree conservation plan in place?
- Is there a concept review for subdividing?
- Is conservation design/planned unit development available as an alternative to subdivision?
Site Design - Review

Results:

- 17 communities had an open space plan
- 6 had a natural resource inventory or required natural resource inventory as part of subdivision
- 14 had tree conservation provisions
- Half of the communities required concept review for subdividing?
- 16 allowed planned unit development as an alternative to subdivision; 2 cluster ordinances; 1 “Preservation and Land Conservation Development”
Site Design - Recommendations

- **Step One:**
  Adopt a city-wide “Open Space Plan” that identifies areas to protect as natural

- **Step Two:**
  Modify site development standards to reduce impervious cover and increasing natural cover
Site Design (con’t)

- **Step Three:** Create a “Prioritized Natural Resource Inventory”

- **Step Four:** Adopt tree preservation ordinance
Impervious Surface - Review

Review questions:

SETBACKS - SHORELAND AND NON-SHORELAND

- What are yard/right-of-way setback distances?
- What are the community’s impervious area limits?
- What are required dimensions on street width? Right-of-way width? Cul de Sac dimensions?
- Are curb-gutters required?
- Does the community have flexibility to reduce the number of parking spaces constructed?
- Does the community require stormwater treatment for parking lot runoff?
- Are shared parking facilities encouraged?
- Is there a maximum on parking spaces sizes?
- Are sidewalks only allowed to be on one side of the road?
- Are sidewalks eliminated if an alternative path is provided?
Impervious Surface - Review

Results:

- All cities regulate roads, sidewalks, driveways and parking lots
- Few met the best practices from The Center for Watershed Protection’s Better Site Design Handbook
- Improvements can be made across the board in all communities
Impervious Surface Reduction

- Use standards from *Better Site Design Handbook*
- Restrict widths of driveways, rights-of-way, sidewalks, and cul-de-sacs, and adopt alternatives like hammerheads
- Restrict parking lot design to limit size of lots, based on types of lot usage
Benefits to Local Communities
Environmental Benefits

- Improves, restores, and preserves water quality
Environmental Benefits

- Decreases soil erosion
Economic Benefits

- U of MN study: every $1 spent conserving green space = up to $4 return
- LID development techniques reduce capital development costs up to 80%
Scenic/Recreational Benefits

- Clear and accessible rivers and lakes
- Fewer algal blooms and “littered banks”
- Improved fishing, bird watching, nature hikes, and much more
Conclusion

- MIDS Project
- Problems – Threats, Deficiencies in Current Ordinances
- Solution – Reform Local Ordinances
- Benefits – Environmental, Economic, & Scenic/Recreational
THANK YOU!

Questions?
Picture References

- **Slide 4**: http://www.rivers.gov/WSR-St-Croix.html
- **Slide 6**: http://www.flickr.com/photos/15068801@N00/317843095/
- **Slide 7**: http://www.umesc.usgs.gov/terrestrial/amphibians/armi/current_research.html
- **Slide 9**: http://www.clintonlakewatershed.org/Whatis.html
- **Slide 14**: http://farm4.static.flickr.com/3220/2537264929_5da4118591.jpg?v=0
- **Slide 15**: Information from http://www.landscapeforlife.org/water/3b.php
Picture References (cont’d)

- **Slide 16**: http://www.sws-sssd.org/conservation/conservation-reuse-practices.php
- **Slide 17**: http://passel.unl.edu/pages/printinformationmodule.php?idinformationmodule=1088801071
- **Slide 18**: http://www.iompc.org/images/Yards.jpg
- **Slide 19**: http://www.lakecountyil.gov/Planning/ZoningandDevelopmentServices/PublishingImages/Natural%20Resource%20Inventory.gif
- **Slide 20**: http://www.town-menasha.com/CDWeb/Planning/Stormwater/BMPs.htm
- **Slide 25**: http://www.housingpolicy.org/gallery/entries/High_Point.html; http://www.flickr.com/photos/14744041@N00/279012545
- **Slide 26**: http://www.panoramio.com/photo/11723736