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

LAW
UNIVERSITY OF MINNESOTA
LAW SCHOOL

WCD
WASHINGTON
CONSERVATION
DISTRICT

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

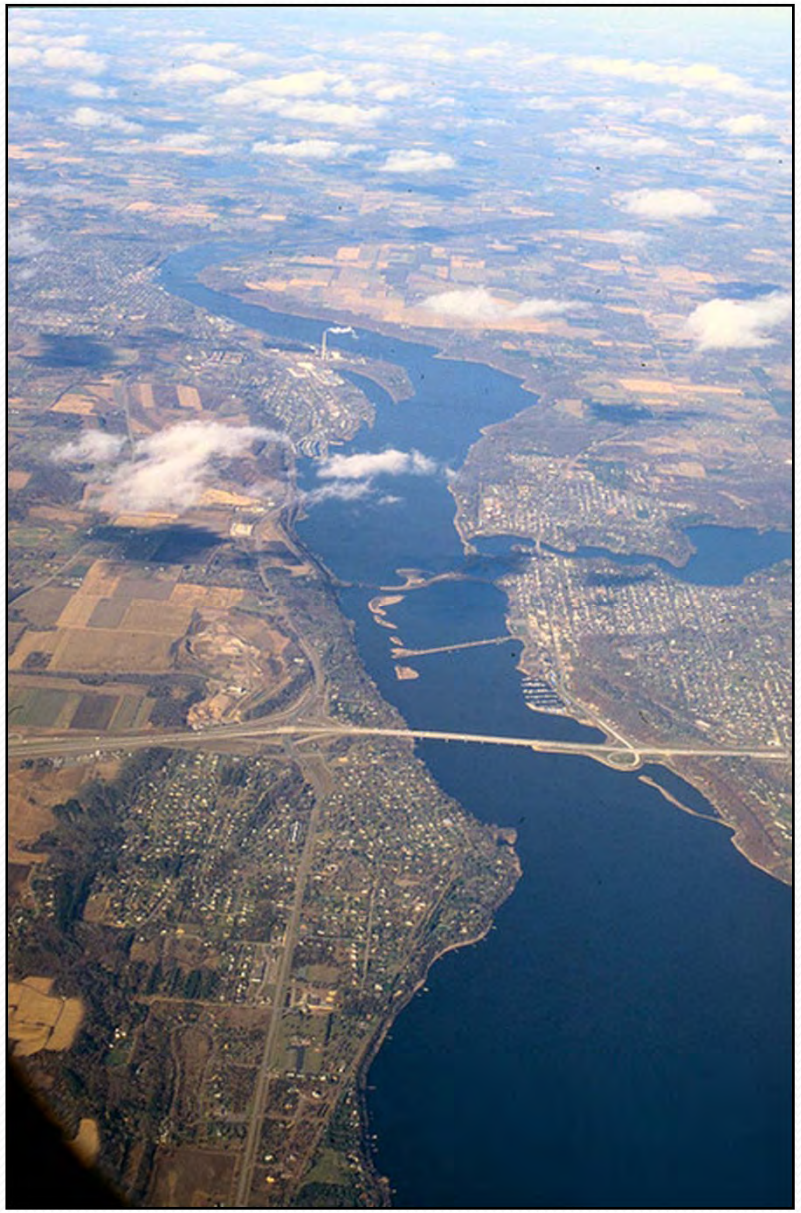
Developed a spreadsheet documenting the results of the review for each city

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*

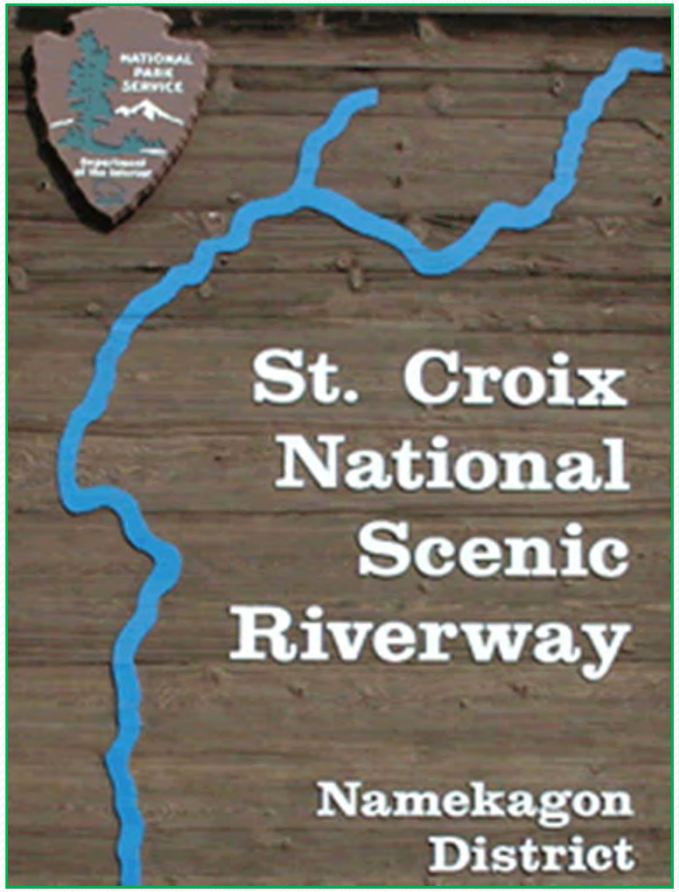
MIDS Project

- "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

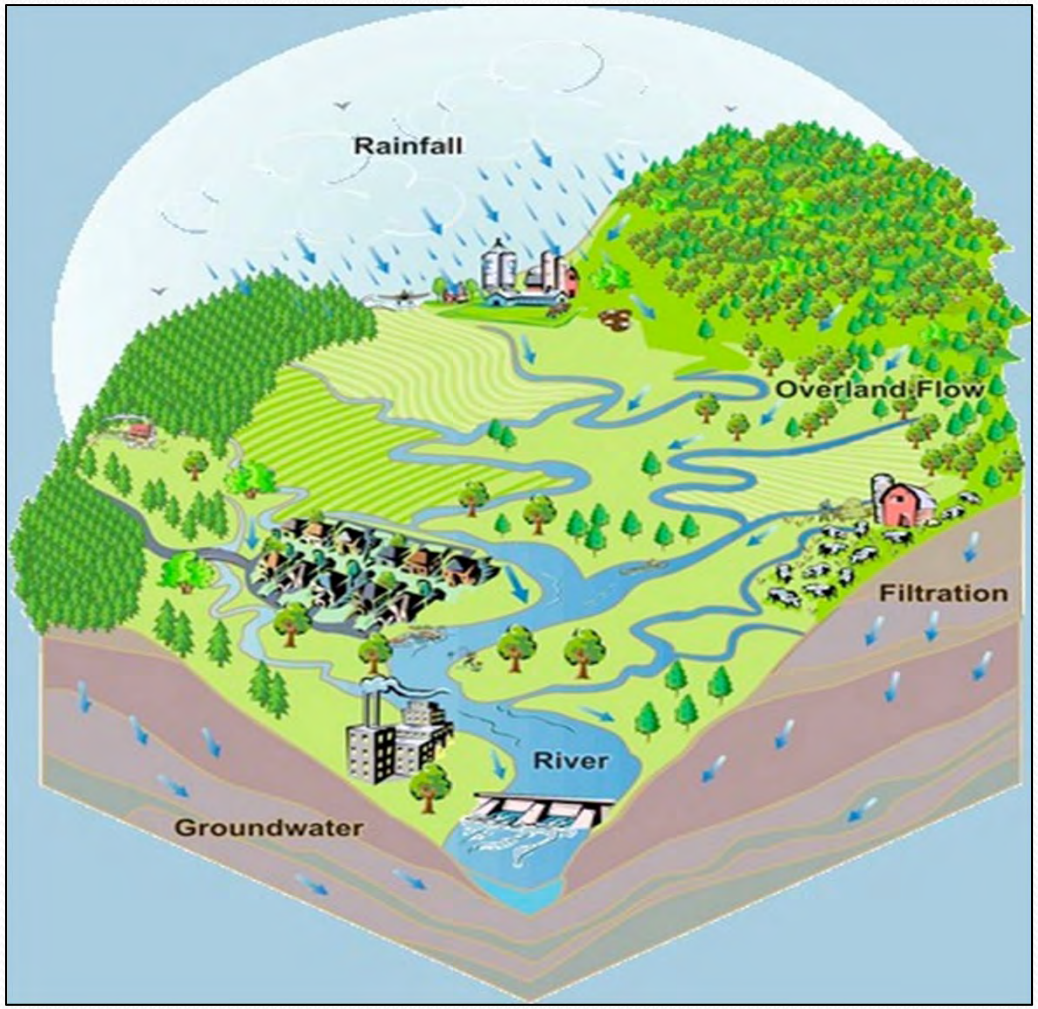
- Federal policy behind project:
  - National Wild and Scenic River
  - Clean Water Act
- State policy derived from federal policy:
  - MIDS Legislation
- Local ordinances implementing state policy



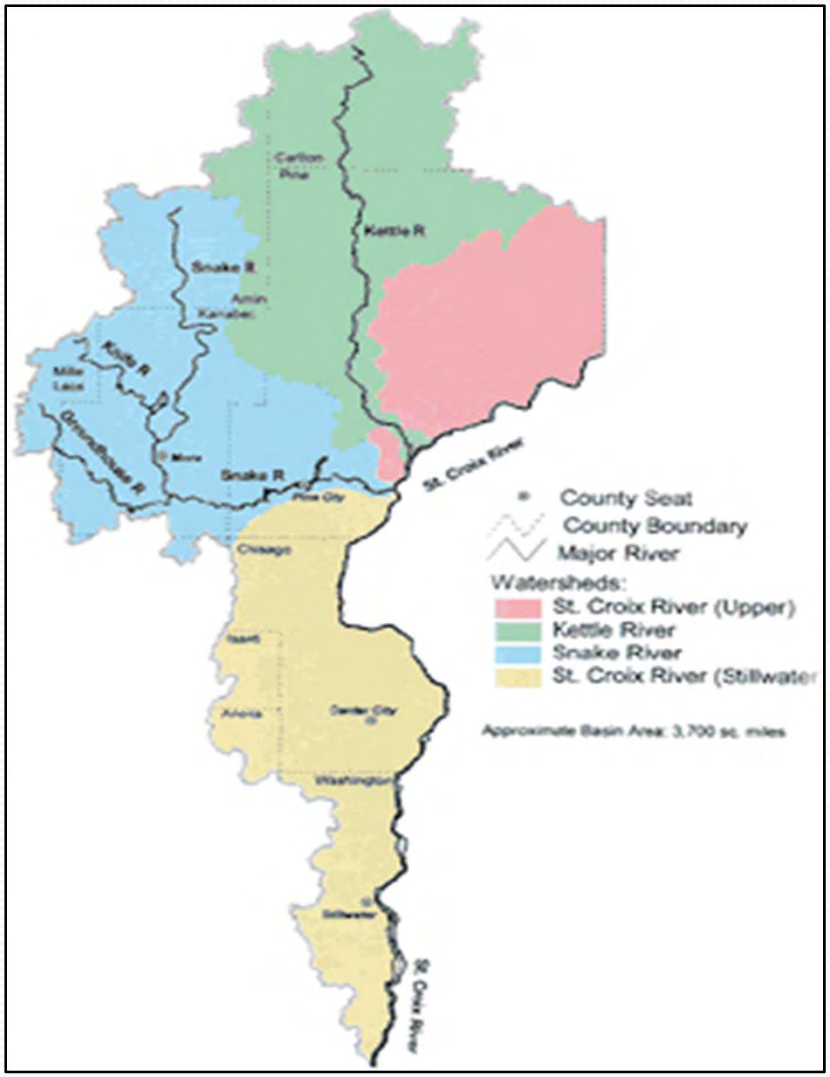
The St. Croix Watershed

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

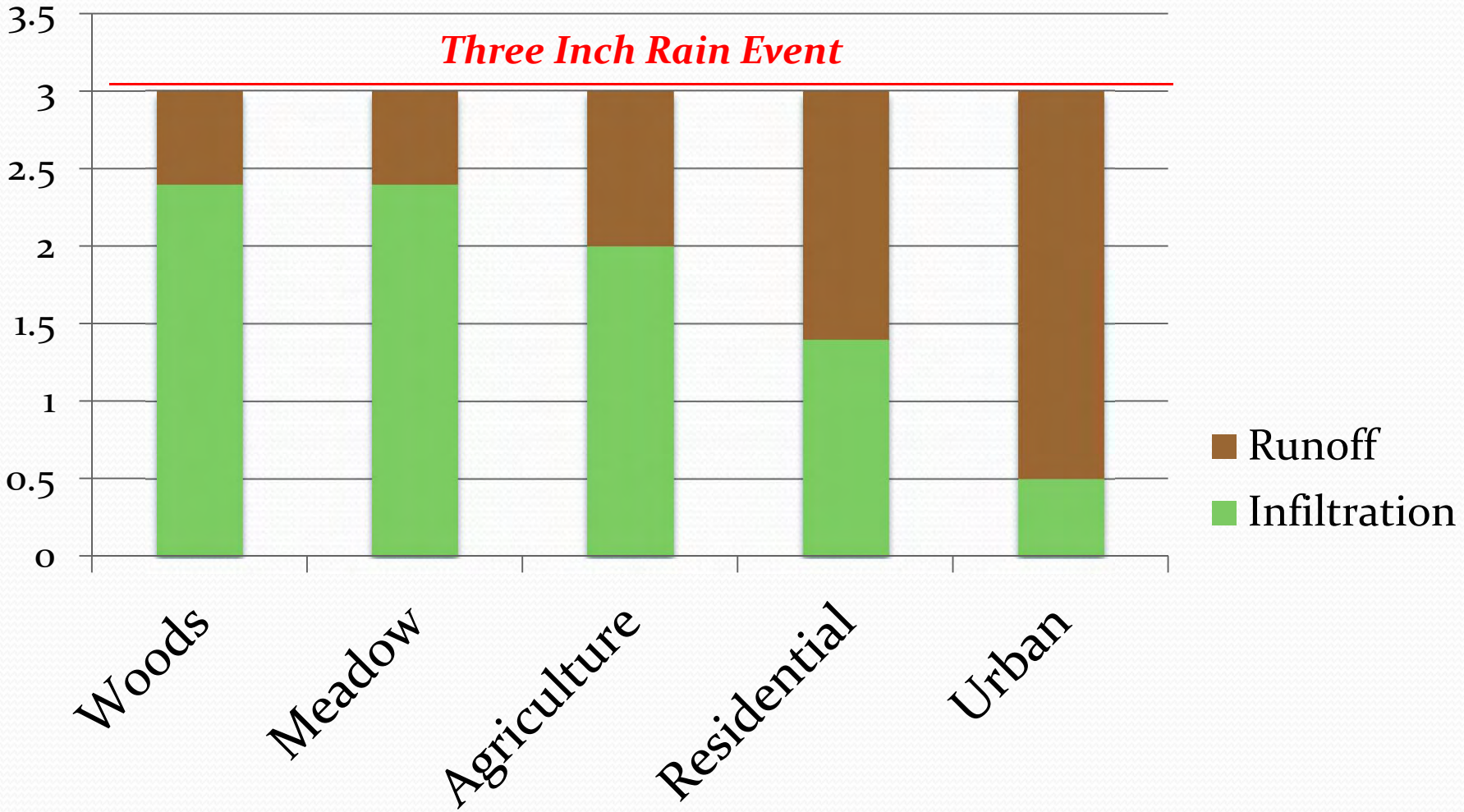
Results:

- 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



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?

Design Technology - Review

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

Design Technology - Recommendation

- 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

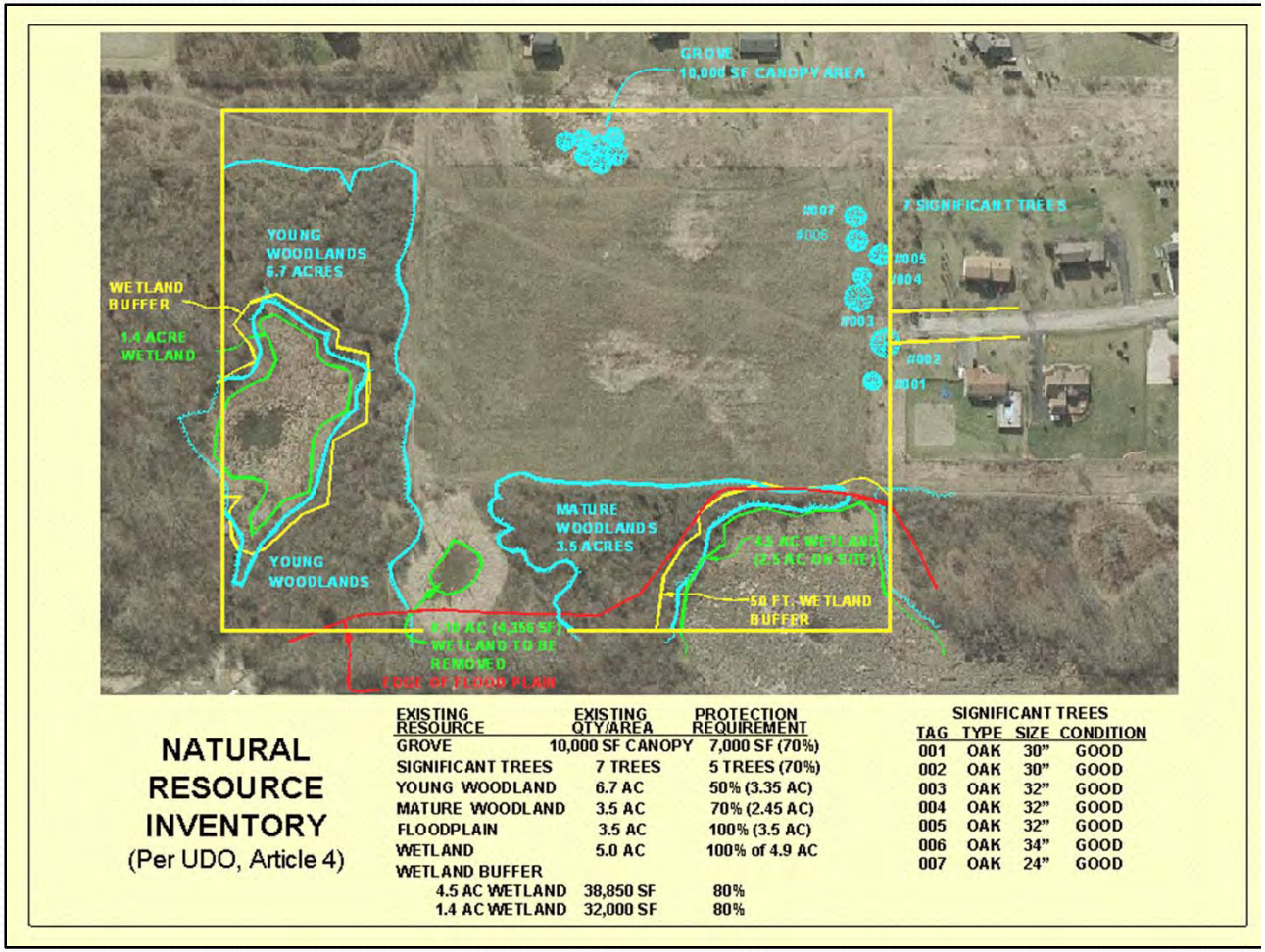
Site Design (con't)

- **Step Three:**

  Create a "Prioritized Natural Resource Inventory"

- **Step Four:**

  Adopt tree preservation ordinance



NATURAL RESOURCE INVENTORY
(Per UDO, Article 4)

EXISTING RESOURCE	EXISTING QTY/AREA	PROTECTION REQUIREMENT
GROVE	10,000 SF CANOPY	7,000 SF (70%)
SIGNIFICANT TREES	7 TREES	5 TREES (70%)
YOUNG WOODLAND	6.7 AC	50% (3.35 AC)
MATURE WOODLAND	3.5 AC	70% (2.45 AC)
FLOODPLAIN	3.5 AC	100% (3.5 AC)
WETLAND	5.0 AC	100% of 4.9 AC
WETLAND BUFFER		
4.5 AC WETLAND	38,850 SF	80%
1.4 AC WETLAND	32,000 SF	80%

SIGNIFICANT TREES

TAG	TYPE	SIZE	CONDITION
001	OAK	30"	GOOD
002	OAK	30"	GOOD
003	OAK	32"	GOOD
004	OAK	32"	GOOD
005	OAK	32"	GOOD
006	OAK	34"	GOOD
007	OAK	24"	GOOD

Impervious Surface - Review

Review questions:

SETBACKS –SHORELAND AND NON-SHORELAND

- What are yard/right-of-way setback distances?
- What are the communitiy'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?

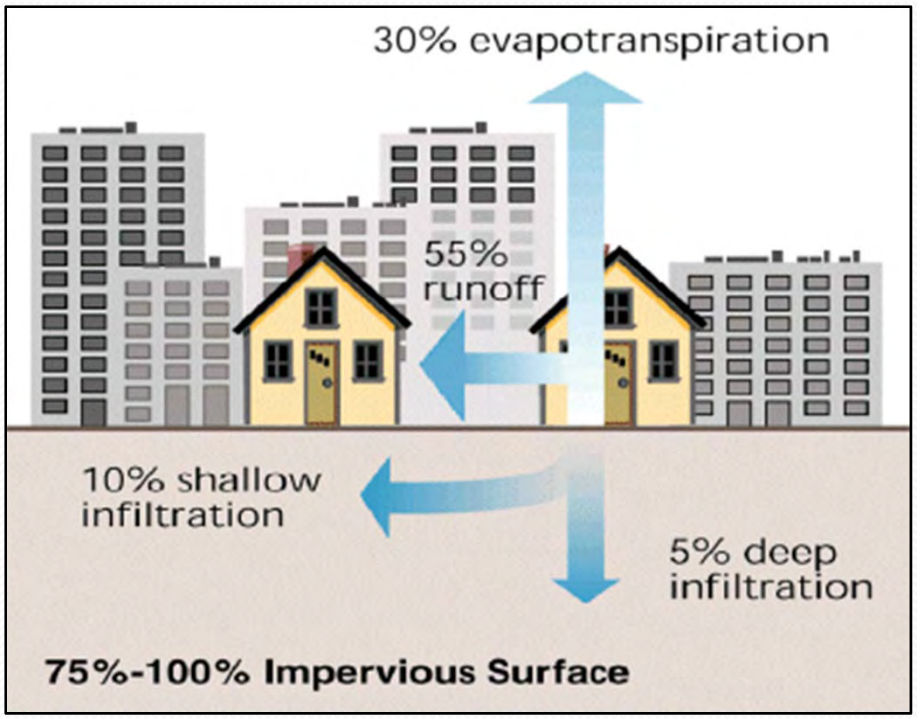
Impervious Surface - Review

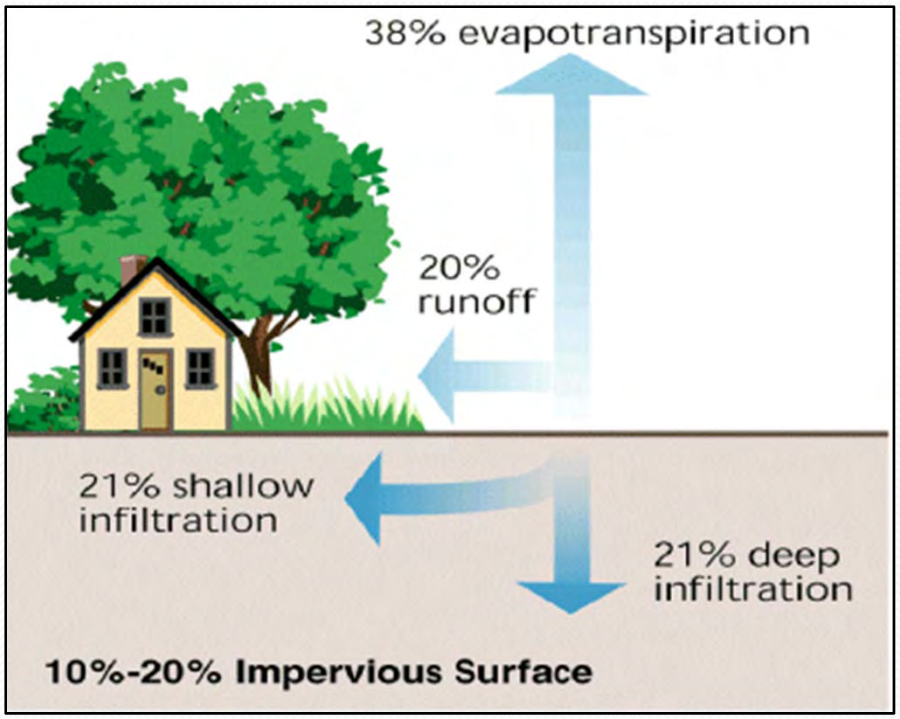
Results:

- 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

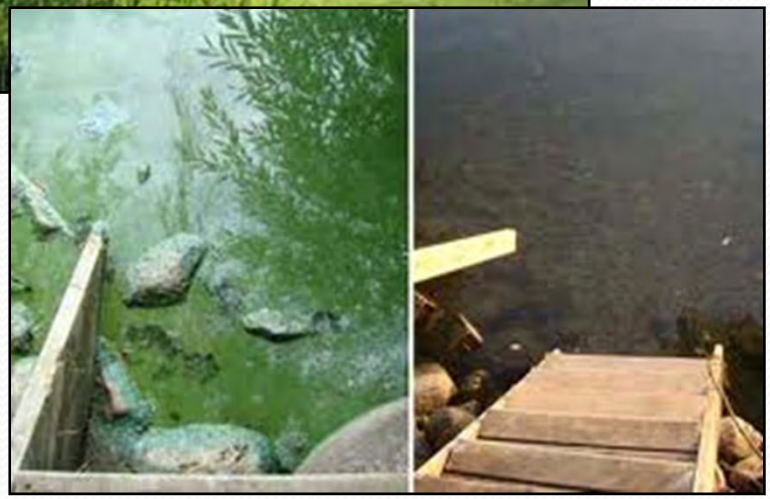


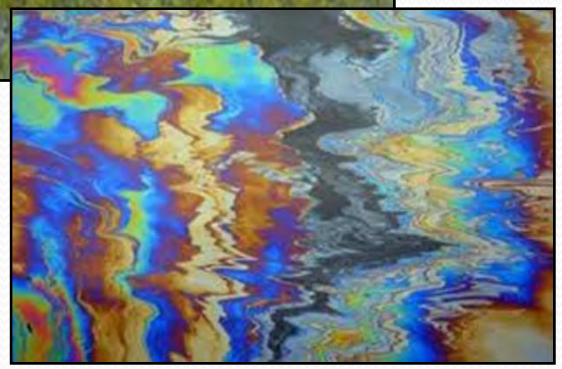


Benefits to Local Communities

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

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