WHAT IT TAKES TO PROTECT 10,000 LAKES

From the perspective of a local implementer

Jay Riggs, District Manager
Washington Conservation District
WCD Mission Statement

To enhance, protect, and preserve the natural resources of Washington County through conservation projects, technical guidance, and educational services to citizens and local government.

The WCD is a special purpose local unit of government dedicated to the conservation of soil and water resources in Washington County - Created in 1942 - Elected Five-Member Board.
Thank you for having me back!
So still not safe!
Not necessarily the same scale . . .
Minimal Impact Design Standards Preview

Jay Riggs, CPESC, CPSWQ, District Manager, Washington CD,
Just the Co-Chair of the MIDS Workgroup

Mike Isensee, CPESC, Urban Conservationist, Dakota County SWCD,
Chair of the MIDS Calculator Workgroup

Minimal Impact Design Standards
for enhancing stormwater management in Minnesota

3/3/2014

One Watershed, One Plan
Evolution of water planning in Minnesota

Water Planning Timeline

November 2013
The development of Minimal Impact Design Standards is based on low impact development (LID) — an approach to stormwater management that mimics a site’s natural hydrology as the landscape is developed. Using the low impact development approach, stormwater is managed on site and the rate and volume of predevelopment stormwater reaching receiving waters is unchanged. The calculation of predevelopment hydrology is based on native soil and vegetation. (Minnesota Statutes, section 115.03, subdivision 5c).
Minimal Impact Design Standards (MIDS) represents the next generation of stormwater management and contains three main elements that address the following challenges:

• A higher clean water **performance goal** for new development and redevelopment to provide enhanced protection for Minnesota’s water resources.

• New **modeling methods and credit calculations** that will standardize the use of a range of innovative structural and nonstructural stormwater techniques.

• A **credits system and ordinance package** that will allow for increased flexibility and a streamlined approach to regulatory programs for developers and communities.
MIDS: Performance Goals

New development

Linear Projects

Flexible Treatment options – when a site just cannot meet the goal.

Redevelopment
New development and Redevelopment
For developments that create more than one acre of impervious surface on sites without restrictions, stormwater runoff volumes will be controlled and the post-construction runoff volume shall be retained on site for 1.1 inches of runoff from impervious surfaces.

*New* = Any development that results in the conversion of land that is currently prairie, agriculture, forest, or meadow and has less than 15% impervious surface.

*Redevelopment* = Not that.

*Linear* = Flexible Treatment #1
When site restrictions exist: Tight clay soils, shallow bedrock, or Karst topography, soil contamination, existing building or utility conflicts, or other site constraints such as zoning requirements.

Option #1 = 0.55” Volume control + 75% annual TP + evidence

Option #2 = Maximum possible volume control + 60% annual TP + evidence

Option #3 = Off-site mitigation through banking or another project
MIDS: Credit Calculator

**Input**
- Project size or watershed
- % Impervious surface
- Soil type
- Precipitation
- Choice of stormwater practices

**Calculate**
1. Amount of stormwater volume control needed (cubic feet)
2. Amount of particulate (sediment) control needed (TSS - total suspended solids)
3. Amount of phosphorus control needed (TP - total phosphorus)

**Output**
1. Volume removed by practice (cubic feet)
2. Additional volume removal needed to meet requirement.
3. % Volume removed
4. Annual phosphorus load removed by BMP (lbs/yr)
5. % Annual phosphorus removed
6. Annual TSS removed (lb/yr)
7. % of Annual TSS removed
**Summary Information:**

- Impervious area not routed to a BMP: 0 acres
- Pervious area not routed to a BMP: 0 acres
- Performance goal requirement: 7986 ft³
- Performance goal reduction achieved: 7986 ft³
- Percent TP reduction achieved: 94%
- Percent TSS reduction achieved: 95%

**Project Information:**

- Project Name: Six Acre Residential Development
- User Name/Company Name: Mike Isensee
- Date: 09/16/2013
- Project Description: Four acres of turf and two acres of new impervious on B soils

**Volume Retention Requirement (inches):** 1.1

**Site's Zip Code:** 55128

**Annual Rainfall (inches):** 32.1

**Phosphorus EMC (mg/l):** 0.3

**TSS EMC (mg/l):** 54.5

**Land Cover:**
- Forest/Open Space - Undisturbed, protected forest/open space or reforested land: 0 acres
- Managed Turf - disturbed, graded for yards or other turf to be mowed/managed: 4 acres

**Impervious Area: 2 acres**

**Total Area: 6 acres**
100 ft flow path of mowed turf

100 ft swale

3 curb cut bioretention cells

5,000 ft² Infiltration basin
The Community Assistance Package (CAP) provides ordinances and policies that integrate the MIDDS performance goal, calculator, and overall LID principles into a tool that can be used by local units of government.

These can be used by communities to help them achieve MIDDS performance goals for stormwater volume.

Help cities comply with federal regulations and requirements under Total Maximum Daily Load (TMDL), Municipal Separate Storm Sewer System (MS4), Anti-Degradation, and Outstanding Resource Value Waters (ORVW) programs.
MIDS: Community Assistance Package

- Background on MIDS
- How to use the package
- Long form stormwater and erosion control ordinance
- Short form stormwater and erosion control ordinance
- Illicit discharge ordinance
- Subdivision ordinance
- Conservation subdivision ordinance
- Shoreland standards (forthcoming)
- Development checklist
- Planning process checklist
- Sample adoption resolution for ordinance changes

Available Online! Google MPCA MIDS.
Minimal Impact Design Standards Preview

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Minimal Impact Design Standards for enhancing stormwater management in Minnesota

3/3/2014

One Watershed, One Plan
Evolution of water planning in Minnesota

November 2013
One Watershed, One Plan
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What is One Watershed, One Plan?

Minnesota has a long history of water management by local government (see sidebar). One Watershed, One Plan is rooted in this history and in work initiated by the Local Government Water Roundtable (Association of Minnesota Counties, Minnesota Association of Watershed Districts, and Minnesota Association of Soil and Water Conservation Districts) in 2011. Roundtable members recommended that the local governments charged with water management responsibility should organize and develop focused implementation plans on a watershed scale.

The recommendation was followed by legislation that permits the Minnesota Board of Water and Soil Resources (BWSR) to adopt methods to allow comprehensive plans, local water management plans, or watershed management plans to serve as substitutes for one another; or to be replaced with one comprehensive watershed management plan. The legislation also requires BWSR to establish a suggested watershed boundary framework for these plans. This legislation is referred to as One Watershed, One Plan.

One Watershed, One Plan is the next logical step in the evolution of water planning in Minnesota. The One Watershed, One Plan vision is to align local planning and implementation with state strategies over a ten year transition period into plans built largely around the state’s major watersheds.
Show me the money!
Minimal Impact Design Standards Preview
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One Watershed, One Plan
Evolution of water planning in Minnesota

Water Planning Timeline
November 2013
Legacy Funds

In 2008, Minnesota's voters passed the Clean Water, Land and Legacy Amendment (Legacy Amendment) to the Minnesota Constitution to: protect drinking water sources; to protect, enhance, and restore wetlands, prairies, forests, and fish, game, and wildlife habitat; to preserve arts and cultural heritage; to support parks and trails; and to protect, enhance, and restore lakes, rivers, streams, and groundwater.

The Legacy Amendment increases the state sales tax by three-eighths of one percent beginning on July 1, 2009 and continuing until 2034. The additional sales tax revenue is distributed into four funds as follows: 33 percent to the clean water fund; 33 percent to the outdoor heritage fund; 19.75 percent to the arts and cultural heritage fund; and 14.25 percent to the parks and trails fund.
Funding Overview

This page provides an overview on how the four Legacy Funds and the Environment and Natural Resources Trust Fund Dollars have been appropriated.

Allocation of Legacy Funds

- **Arts & Cultural Heritage**: 19.75%
- **Outdoor Heritage**: 33%
- **Parks & Trails**: 14.25%
- **Clean Water**: 33%

<table>
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<tr>
<th>Fund</th>
<th>Percentage</th>
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<tr>
<td>Outdoor Heritage Fund</td>
<td>33%</td>
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<tr>
<td>Clean Water Fund</td>
<td>33%</td>
</tr>
<tr>
<td>Parks &amp; Trails Fund</td>
<td>14.25%</td>
</tr>
<tr>
<td>Arts &amp; Cultural Heritage Fund</td>
<td>19.75%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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Appropriations by fund

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<thead>
<tr>
<th>Year</th>
<th>Outdoor Heritage</th>
<th>Clean Water</th>
<th>Parks &amp; Trails</th>
<th>Arts &amp; Cultural Heritage</th>
<th>Environment &amp; Natural Resources Trust</th>
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<tbody>
<tr>
<td>FY 2010</td>
<td>$69,532,000</td>
<td>$69,522,000</td>
<td>$29,917,000</td>
<td>$44,470,000</td>
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<tr>
<td>FY 2011</td>
<td>$76,939,000</td>
<td>$83,923,000</td>
<td>$35,180,000</td>
<td>$48,750,000</td>
<td>$25,479,000</td>
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<tr>
<td>FY 2012</td>
<td>$86,484,000</td>
<td>$90,517,000</td>
<td>$39,676,000</td>
<td>$52,600,000</td>
<td>$25,328,000</td>
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<tr>
<td>FY 2013</td>
<td>$99,920,000</td>
<td>$95,383,000</td>
<td>$38,468,000</td>
<td>$54,329,000</td>
<td>$25,328,000</td>
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</tbody>
</table>
Clean Water, Land and Legacy Stories

- Aitkin County Soil & Water Conservation District
  *Preserving Water Quality in the Mille Lacs Lake Watershed*
  - Clean Water Funds: $73,543
  - Funds Leveraged: $41,391
  - Project Cost: $114,934
  - View the Report

- Aitkin County Soil & Water Conservation District
  *Water Quality Improvements for the Big Sandy Lake Watershed*
  - Clean Water Funds: $33,900
  - Funds Leveraged: $29,690
  - Project Cost: $63,590
  - View the Report

- Bassett Creek Watershed Management Commission
  *Bassett Creek and Plymouth Creek Stabilization Projects*
  - Clean Water Funds: $360,000
  - Funds Leveraged: $1,601,300
  - Project Cost: $1,961,300
  - View the Report

- Benton SWCD
  *Management of Irrigation Water and Animal Waste*
  - Clean Water Funds: $16,500
  - Funds Leveraged: $7,500
  - Project Cost: $24,000
  - View the Report

- Blue Earth County Soil & Water Conservation District
  *Channel management in the Le Sueur River*

- North Cannon River Watershed Management Organization
  *North Cannon River Watershed Runoff Reduction*
  - Clean Water Funds: $150,000
  - Funds Leveraged: $67,000
  - Project Cost: $217,000
  - View the Report

- Pelican River Watershed District
  *Rice Lake Nutrient Reduction and Habitat Improvement*
  - Clean Water Funds: $250,000
  - Funds Leveraged: $2,526,000
  - Project Cost: $2,776,000
  - View the Report

- Pennington Soil & Water Conservation District
  *Erickson Group Streambank Stabilization*
  - Clean Water Funds: $77,600
  - Funds Leveraged: $19,400
  - Project Cost: $97,000
  - View the Report

- Pope Soil & Water Conservation District
  *Glenwood Dairyland Basin Stormwater Mitigation Project*
  - Clean Water Funds: $209,179
  - Funds Leveraged: $55,298
  - Project Cost: $264,477
  - View the Report

- Ramsey-Washington Metro Watershed District
  *Maplewood Mall Stormwater Infiltration Retrofit*

- Read more about our Clean Water, Land and Legacy program
Clean Water, Land and Legacy Stories

Read more about our Clean Water, Land and Legacy program

- **Aitkin SWCD**
  *Cedar and Farm Island Lakes, Reversing the Downward Trend*
  Clean Water Funds: $108,011
  Funds Leveraged: $36,000
  Project Cost: $144,011
  View the Report

- **Bassett Creek Watershed Management Commission**
  *Wirth Lake Outlet Modifications*
  Clean Water Funds: $75,000
  Funds Leveraged: $175,000
  Project Cost: $250,000
  View the Report

- **Becker SWCD**
  *Campbell Creek Phosphorus and Sedimentation Reduction*
  Clean Water Funds: $57,653
  Funds Leveraged: $42,849
  Project Cost: $100,502
  View the Report

- **Benton Soil & Water Conservation District**
  *Restoring Trout to Little Rock Creek*
  Clean Water Funds: $84,211
  Funds Leveraged: $22,000
  Project Cost: $106,211
  View the Report

- **Blue Earth County**
  *Blue Earth County Buffers*

- **Lake of the Woods Soil and Water Conservation District**
  *Protection of Botic and Zippel Bays*
  Clean Water Funds: $52,105
  Funds Leveraged: $25,500
  Project Cost: $77,605
  View the Report

- **Lincoln Soil & Water Conservation District**
  *Verdi Wellhead Protection Area*
  Clean Water Funds: $184,210
  Funds Leveraged: $47,500
  Project Cost: $231,710
  View the Report

- **Middle St. Croix Watershed Management Organization**
  *Lily Lake Stormwater Retrofit*
  Clean Water Funds: $43,400
  Funds Leveraged: $10,650
  Project Cost: $54,250
  View the Report

- **Murray County**
  *Jackson-Cottonwood-Murray West Fork Des Moines River BMP Project*
  Clean Water Funds: $83,064
  Funds Leveraged: $26,200
  Project Cost: $109,264
  View the Report

- **Nobles SWCD**
  *Lake Ochinda Shoreline Improvement*

- **Okanawa Soil & Water Conservation District**
  *Portage Lake Buffer Project*
  Clean Water Funds: $46,250
  Funds Leveraged: $12,500
  Project Cost: $58,750
  View the Report

- **Redwood Soil & Water Conservation District**
  *Mississippi River Watershed Protection*
  Clean Water Funds: $150,000
  Funds Leveraged: $25,500
  Project Cost: $175,500
  View the Report

- **Renville County**
  *Hawkeye Creek Drainage Improvement*

- **Scott Soil & Water Conservation District**
  *Maxwell Creek Restoration Project*
  Clean Water Funds: $92,550
  Funds Leveraged: $23,137
  Project Cost: $115,687
  View the Report
Clean Water, Land and Legacy Stories

Read more about our Clean Water, Land and Legacy program

- Anoka SWCD
  Oak Glen Creek Stabilization
  Clean Water Funds: $339,700
  Funds Leveraged: $55,000
  Project Cost: $424,700
  View the Report

- Bassett Creek Watershed Management Commission
  Stabilizing Bassett Creek
  Clean Water Funds: $217,500
  Funds Leveraged: $638,500
  Project Cost: $856,000
  View the Report

- Becker Soil and Water Conservation District
  Buffalo-Red Watershed Sediment Reduction
  Clean Water Funds: $42,160
  Funds Leveraged: $35,823
  Project Cost: $77,983
  View the Report

- Becker Soil and Water Conservation District
  Cormorant Chain of Lakes Sediment Reduction
  Clean Water Funds: $61,648
  Funds Leveraged: $15,412
  Project Cost: $77,060
  View the Report

- Becker Soil and Water Conservation District
  Hay Creek/Stinking Lake Sediment Reduction Project
  Clean Water Funds: $21,100
  Funds Leveraged: $5,300
  Project Cost: $26,400
  View the Report

- Lac qui Parle SWCD & County Environmental Office
  Level 3 Feedlot Inventory for Lac qui Parle County
  Clean Water Funds: $30,894
  Funds Leveraged: $8,916
  Project Cost: $39,810
  View the Report

- Lake County Soil and Water Conservation District
  Knife River Watershed Protection Project
  Clean Water Funds: $282,634
  Funds Leveraged: $94,212
  Project Cost: $376,846
  View the Report

- Lake County Soil and Water Conservation District
  Stewart River Watershed Protection Project
  Clean Water Funds: $105,075
  Funds Leveraged: $35,025
  Project Cost: $140,100
  View the Report

- Le Sueur County
  Gorman Lake Water Retention Basins
  Clean Water Funds: $21,100
  Funds Leveraged: $5,300
  Project Cost: $26,400
  View the Report

- Marshall County Soil and Water Conservation District
  Agassiz Pool Accelerated Sediment Reduction
Clean Water, Land and Legacy Stories

Read more about our Clean Water, Land and Legacy program

- **Aitkin County Soil & Water Conservation District**
  Aitkin County Partnerships for Clean Water
  Clean Water Funds: $35,475
  Funds Leveraged: $8,900
  Project Cost: $44,375
  View the Report

- **Becker Soil & Water Conservation District**
  Buffalo-Red River Shallow Lakes Restoration Project
  Clean Water Funds: $398,800
  Funds Leveraged: $99,700
  Project Cost: $498,500
  View the Report

- **Benton SWCD**
  Mayhew Lake Nutrient Management, Feedlot and Pasture Assessments
  Clean Water Funds: $79,276
  Funds Leveraged: $19,819
  Project Cost: $99,095
  View the Report

- **Blue Earth County**
  Blue Earth County Well Sealing
  Clean Water Funds: $30,000
  Funds Leveraged: $30,000
  Project Cost: $60,000
  View the Report

- **Bois de Sioux Watershed District**
  Mustinka River TMDL, Advanced Turbidity Reduction Project

- **Morrison Soil and Water Conservation District**
  Fletcher Creek and Mississippi River Shoreline Restoration and Runoff Abatement
  Clean Water Funds: $18,575
  Funds Leveraged: $10,000
  Project Cost: $28,575
  View the Report

- **Morrison Soil and Water Conservation District**
  Morrison County SSTS Compliance Ordinance Pilot Implementation - First Residences of Trap Lake
  Clean Water Funds: $71,250
  Funds Leveraged: $18,000
  Project Cost: $89,250
  View the Report

- **Mower Soil and Water Conservation District**
  Upper Iowa River Upland Restoration
  Clean Water Funds: $42,500
  Funds Leveraged: $35,500
  Project Cost: $78,000
  View the Report

- **Nicollet SWCD**
  Seven Mile Creek Watershed Riparian Enhancements for Water Quality
  Clean Water Funds: $683,950
  Funds Leveraged: $170,987.50
  Project Cost: $854,937.50
  View the Report
2014 ~ $8.5 Million to Projects

SWCDs Counties Watersheds Cities
Spatial Prioritization
Modified MN P Index

RUSLE Factors

Both RUSLE and USLE can be expressed as follows:

\[ A = R \times K \times LS \times C \times P \]

Where

- \( A \) = estimated average soil loss in tons per acre per year
- \( R \) = rainfall-runoff erosivity factor
- \( K \) = soil erodibility factor
- \( L \) = slope length factor
- \( S \) = slope steepness factor
- \( C \) = cover-management factor
- \( P \) = support practice factor

Sediment Loss (RUSLE) + Nutrient Potential / Delivery Ratio
Step 5: Implementation

Of the 59 priority projects identified, five were determined to have a high potential for rapid implementation. These Top5 projects include the following project IDs:

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Rank</th>
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<tr>
<td>Sediment Basin 5</td>
<td>44</td>
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<td>Sediment Basin 13</td>
<td>29</td>
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<td>Sediment Basin 14</td>
<td>34</td>
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<td>Sediment Basin 17</td>
<td>32</td>
</tr>
<tr>
<td>Sediment Basin 27</td>
<td>35</td>
</tr>
</tbody>
</table>

Total Phosphorus load reduction for these five projects: 163.04 Pounds.

The drawings on the following pages show the topography, drainage area, and sediment basin location for each of the five projects installed.

See Appendix B for Fact sheets for each of the projects implemented.
None of this could happen without . . . .

Supportive Elected Officials
Talented staff and nerdy engineers
Lots of nerdy engineers
Lots of boring exciting public meetings
Sunny days!
And the occasional boat trip on the St. Croix doesn’t hurt
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