UNIVERSITY OF MINNESOTA
Driven to Discover℠

Stormwater Assessment and Maintenance
UPDATES

July 2011 (Volume 6 - Issue 6)

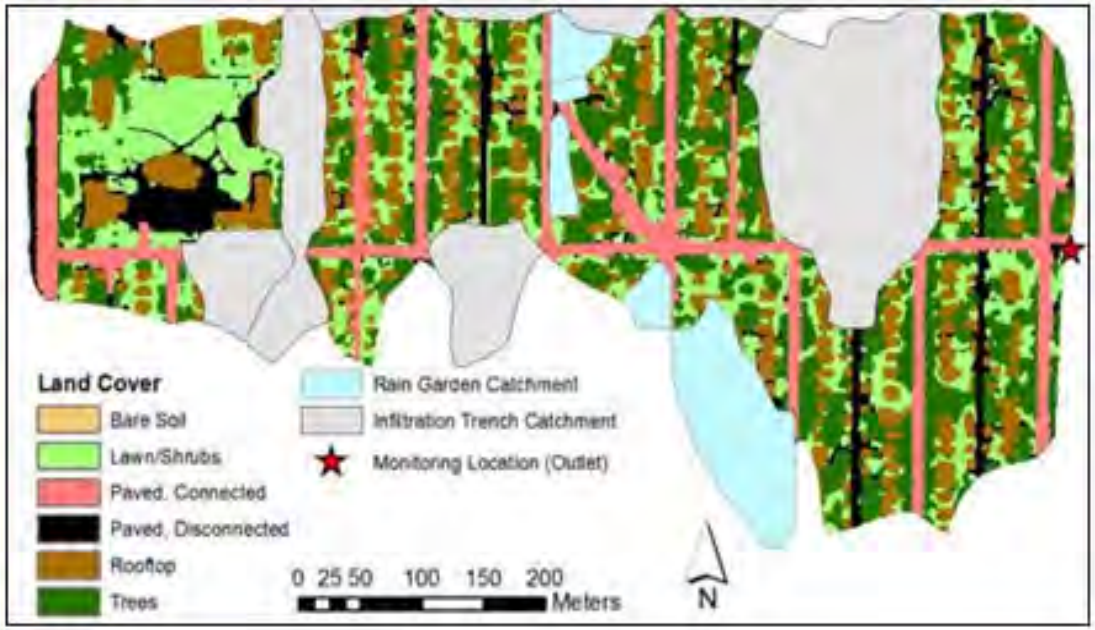
Welcome C. Bruce!

Thank you for reading our newsletter! Our purpose is to create opportunities for partnerships which are crucial to our quest for improving the methods for assessment and maintenance of stormwater treatment practices.

p-gen3-13v

Techniques for Determining Effective (Connected) Impervious Area

Contributed by Ben Janke and John S. Gulliver (Department of Civil Engineering, University of Minnesota)



Stormwater Treatment: Assessment and Maintenance

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Introduction

This website is an online manual that has been developed to help users **assess the performance of, and schedule maintenance for,** stormwater treatment practices. It is intended as a supplement to the Minnesota Stormwater Manual, which provides guidance for the *design and installation* of stormwater treatment practices.

This online manual provides a standardized methodology for the assessment and maintenance of stormwater treatment practices. It creates guidelines for assessing performance, reporting results, and scheduling maintenance which allows for comparison across geography, stormwater treatment practice type, season, and watershed.

Performance of Low Impact Development Practices on Stormwater Pollutant Load Abatement

John Gulliver, John Nieber and Ray Hozalski

- Infiltration capacity of LID practices
- Total Daily Maximum Daily Load Demonstration Study (of Lake Como)
- Sorption and Release of Dissolved Pollutants Via Bioretention Media
- Literature review, outreach, and UM's Stormwater Treatment: Assessment and Maintenance website.

Infiltration capacity of LID practices (Ahmed, Gulliver and Nieber)

- 14 sites monitored, diversity of soils
- Wide range of values per practice
- Modified Phillip Dunne practical tool
- ~10 samples per site (20% error margin)
- Geometric mean

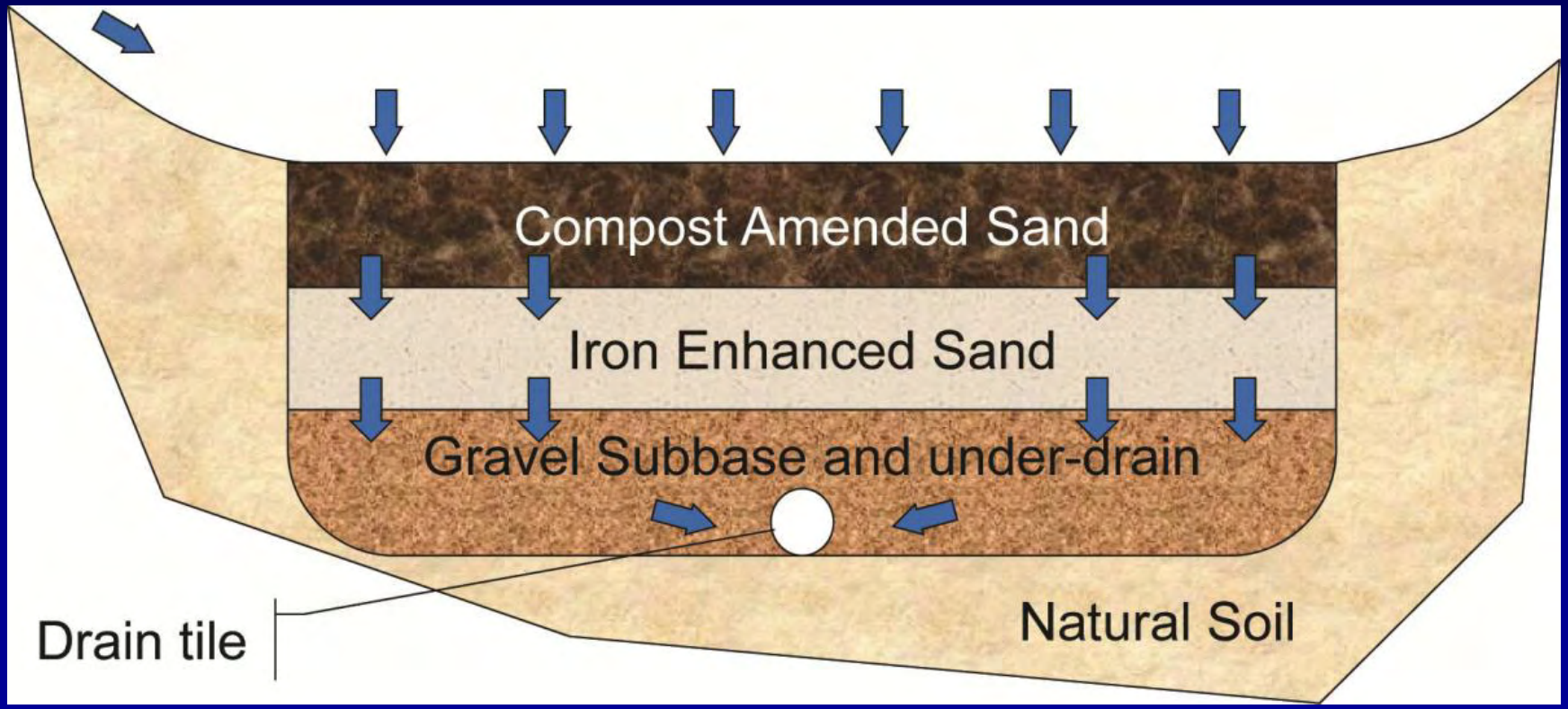
Total Daily Maximum Daily Load Demonstration Study (Weiss, Gulliver and Erickson)

- Capitol Region WD Lake Como
- TMDL ~60% phosphorus reduction
- P8 model showed ~32% reductions achieved
- Needed: 20.5 af (infiltration or sand filters)

Sorption and Release of Dissolved Pollutants Via Bioretention Media (Morgan, Hozalski, and Gulliver)

- Cadmium, Copper and Zinc in synthetic stormwater
- Column tests: sand and compost combos
- 15 cm (70% sand, 30% compost) – 95 year lifespan
- Problem: compost released phosphorus
- Solution: Add iron to remove P from compost

Proposed Filtration Design for metals & P removal



UM (Morgan, Paus, Hozalski and Gulliver, 2011)

MIDS II

Specifications, credits, calculator, costs & benefits

- Flexible treatment options
- Redevelopment and linear development goals
- Dry swales
- Urban forestry (street sweeping component) grant submitted
- Permeable pavements (pavers, asphalt, cement, other)
- Turf
- Green Roofs
- Bioretention
- Infiltration
- Reuse & Harvesting
- Calculator
- St. Croix Basin Ordinance goals, pilot and training
- Total CWF Budget ~$400,000 through 2013

MIDS Timeline & Draft Budget

Jan 2012 — Jan 2013 — Dec 2013

Large Healthy Urban Trees for Stormwater Management to UM (USFS $400K w/$65K MIDS in-kind)
Award? → roll ---------- ... June 2014
St. Croix (EPA $120 K) ----------
Redevelopment and Linear ($100K)

Schueler Contract (Redevelopment & Help) $5K

Flexible Treatment (~ $50K)
Ongoing WO ----------
Dry Swales (~$30K +)
WO ----------
Permeable Pavements (~$SWM contractor ready by June?)
Infiltration & Bioretention (SWM)
SWM ----------
Green Roof (~$20K +)
Turf (~$20K +)
Reuse/Harvest (~$20K +)
Other (structural & nonstructural BMPS)?
Outreach $25K
Buffer ~$60K

Calculator B2 + user's guide V 1.0 V 2.0
(~$75K+)

EPA Grant? Develop Municipal Education Credits (~~$100K w/$25K MIDS in-kind)
Award → ----------

Pending Issues

- Redevelopment -
- Linear -
- Pretreatment Standards
- Long term maintenance
- Long term performance
- Policy Development
  - Urban land (NRCS)
  - Discharge to higher order stream
- Drinking water protection maps/groundwater atlases
  - Class V regulation
  - Groundwater mounding analysis
- Precipitation Rates – by summer 2012
- Revisit the Prioritized BMP List

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Flexible Treatment (~ $50K)
Ongoing WO ----------
Dry Swales (~$30K +)
WO ----------
Permeable Pavements (~$SWM contractor ready by June?)
Infiltration & Bioretention (SWM)
SWM ----------
Trees (~$25K post forest research)
Green Roof
Turf (~$25K)
Reuse/Harvest (~$20K +)
Other (structural & nonstructural BMPS)
Outreach $25K

Calculator B2 + user's guide V 1.0 V 2.0
(~$75K+)

EPA Grant? Develop Municipal Education Credits (~~$100K w/$25K MIDS in-kind)
Award → ----------

Beyond-The-Site-Issues

- Costs, Benefits and case studies
- Education credits: significant potential
  - Pursue EPA Urban Grant?
- Traditional structural & nonstructural BMPS – how much can we cover?
- MS4 calculator for structural and nonstructural credits – outside of scope