

**AGENDA**  
**MINIMAL IMPACT DESIGN STANDARDS WORKGROUP**

February 19, 2010  
9:00 -12:00  
MPCA-Conference Room 2A-2B  
520 Lafayette Road North; St. Paul

**Welcome, Introductions**

Anne welcomed the group and introductions of all participants around the table were provided.

Anne provided some background on the Low Impact Development workgroup and the State Stormwater Steering Committee.

31 attendees: Lois Eberhart, Mike Findorff, James Hafner, Jay Riggs, Wayne Cymbaluk, James Vagle, Karen Jensen, Julie Westerlund, Klayton Eckles, Mark Doneux, Chad Anderson, Mike Kelly, Paul Moline, Peder Otterson, Wesley Saunders-Pearce, Steve Woods, Michele Caron, Garry Johanson, Phil Belfori, Anne Gelbmann, Mike Isensee, Mark Zabel, Jesse Schomberg, Mike Kinney, Craig Otto, Matt Durand, Randy Hedlund, Ken Holmen, Brian Livingston, Cliff Aichinger.

**Overview of MIDS Project**

Julie Westerlund provided group overview of the legislative process that started the MIDS project and the extensive stakeholder input process to help develop the RFP for the MIDS work. Anne explained that the legislature appropriated \$500K, but due to unallotment, we only had \$355K to complete this work. Anne was able to secure \$125K from EPA 319 funds for the education, outreach and ordinance work.

Team Members asked the following questions:

Saunders-Pearce noted disagreement with interpretation (by Julie Westerlund) that pre-development hydrology based on native soils and vegetation means presettlement. Saunders-Pearce asked instead that the group be allowed to collectively arrive at the same shared understanding of how legislation should be interpreted.

As a taxpayer, what are the benefits to me (MCPZA)? Answer is water quality improvements.

Are there any economists being invited to participate in this project (Watershed)? It's important to think about the cost/benefit analysis with this project.

Ken Holmen/DNR mentioned that stormwater is the foot in the door to provide better co-benefits for other things such as carbon sequestration and others, especially with urban trees.

Klayton mentioned the APWA report regarding cost-benefits and using that analysis as a model. APWA is concerned about jumping on the bandwagon of unproven technologies.

- Public participation/web site/fact sheet

Presentations, fact sheets, and other information given to stakeholder groups and others provided on MPCA website.

- Status of RFP, timeline and funding

The RFP should go out in 3-4 weeks. Bruce Wilson will follow-up with proposal review team about timeline. It is anticipated that consultants could begin work in May/June.

March and April MIDS meetings will be prep for beginning the process. Also providing input on pilot project.

Group discussed potential unallotment and impacts on project. Brian Livingston noted that MPCA may provide staff support to conduct the MIDS project if unallotment occurs. Anne noted there is high-level MPCA support for the MIDS project.

Ken from DNR discussed potential additional sources of funding from DNR and other sources. Stormwater forestry is a very hot issue – it's a high priority for funding at many levels. Anne mentioned that Bruce is looking into other funding sources as he does on an ongoing basis.

Mike Findorff pointed out that MIDs will be used as a tool to achieve antidegradation requirements.

### **Review and discuss MIDS Charter**

Julie provided overview of the MIDS charter, members, primary and alternate decision-making process, time commitment for members, decision-making process, and upcoming nomination and election of chairpersonship.

Purpose of group: Provide guidance to MPCA for MIDS project and oversee consultant work.

Julie provided overview of consensus-based process. Chair will determine when the group is at a decision-point (aka consensus moment). The chair will capture the decision point and prompt the group for a consensus.

Process based on the Stormwater Manual subcommittee process.

Mark Doneux asked how group will direct MPCA and consultants.

MIDS workgroup is empowered to make decisions, but Bruce as the project manager is responsible for managing the project.

Klayton asked if the workgroup members are just commentators. The document will be less powerful if this is just a PCA document.

Paul expressed need for MPCA deference to workgroup for decisions.

Lois pointed out that a one-size-fits-all approach may not work. Anne pointed out that this is a statewide project and that site specific conditions need to be considered.

What is meant by Consensus? Agreement by all Primary members at the table (not all observers in the room).

Mike Findorff stressed that there are clear legislative requirements and if consensus agreements do not occur about these critical issues, then MPCA is obligated to make a decision.

Brian Livingston noted that the SSC process lead to documents and provided direction to the MPCA.

Steve Woods suggested folks to draft alternative language if members would like an alternative approach to decision-making.

Decision making process will be brought back to the MIDS workgroup next month.

Julie finished off her dynamic overview of the charter with the closing comments that members were selected to represent the interests of the organization they are representing, they are representing a larger group, and they will be liaising with their interest group and providing feedback to the MIDS workgroup.

Steve Woods asked who's in charge, what's going to be delivered, and when? These are expensive efforts. We have to know about the timeline. Anne noted we'll have a timeline at an upcoming meeting. Workplan should be ready by April.

Mark Zabel put on his watershed/JPO. We have a credit system in our rules and standards. We are anxiously awaiting the outcome of this project to help guide local standards. We want these guidelines and credits for implementation on the landscape.

### **Chair nomination(s)**

Nominees:

Mark Doneux

Mark Zabel

Jay Riggs

Karen Jension (Vice-Chair only)

Members voted and Riggs was elected chair. Doneux elected vice-chair.

### **“St. Croix MIDS Pilot Project”**

Update on this 319 project was given by Jay Riggs; see project summary handout for more information. Jay gave brief historical review of project (its origin as 319 grant application, St. Croix River organization partners providing cost share, funding through EPA Region 5 office). Upcoming project activities include formation of technical advisory group, which will occur once final contract is signed.

- Question (Steve Woods): Will Wisconsin agencies/entities be involved?  
Answer (J.R.): Yes, there be communication with Wisconsin portion of St. Croix watershed.

### **Other LID funded Projects**

Report on Clean Water Fund 2010 Projects (Steve Woods, BWSR): Woods handed summary of 2010 projects, with those relevant to MIDS highlighted.

- Comment (Anne Gelbmann): MPCA staff plan to contact those applicants whose projects are related to MIDS to offer technical support/guidance of MPCA. For those projects where LID practices will be constructed, MPCA staff will work to incorporate MIDS products into design process.
- Comment: Steve Woods suggests MIDS work group members look through project list and offer assistance/guidance to those projects where appropriate.

- Question (Paul Moline): Is there a way to get ranking/ratings of projects? Answer (Woods): Contact Marcey Westrick at BWSR.
- Question (Riggs): Is there a process to pull together all grant projects in MN associated with LID/MIDS? Answer (Gelbmann): Yes. MPCA is assembling list and will make available at March MIDS meeting.

Vice-chair voting results – Mark Doneaux of Capital Region WD elected as vice-chair.

### **Formation of Sub-teams**

- Anne Gelbmann suggested formation of several subteams to divide work for MIDS work group.
- Discussion:
  1. Comment (Lois Eberhardt): suggests performance goal subteam needs to be broken down further
  2. Comment (Mike Findorf): does not see need for subteams. Believes it is important all Work Group members participate in all review activities.
  3. Comment (Paul Moline): advocates use of subgroups to reduce time commitment of work group members.
  4. Comment (?): Subteams may be good options, but suggests revisiting issue once RFP is issued.
  5. Question (?); Where does outreach/education fit in subteams?  
Answer (Riggs): Outreach/education was unallotted. Will be included in St. Croix watershed pilot study. Will also be part of MPCA outreach to inform public about project.
  6. Question (Gelbmann): How will St. Croix pilot study work group be selected?  
Answer (Riggs): Request for team members will be issued once project contract has been signed.

Jay Riggs/Wesley Saunders-Pearce suggest compilation of terms/definition list for use by MIDS workgroup to standardize meanings and improve clarity of communication.

- Wes will compile list for March 19 meeting.
- Requests that MIDS members forward terms and definitions for inclusion in list. Mike Findorf suggests referral to legislative language when compiling/defining terms.
- Question (Riggs): Should MPCA review list of terms prior to March meeting?  
Answer (Gelbmann): Yes, MPCA will review list. Wes should forward list to Anne Gelbmann/Bruce Wilson. List will be given to MIDS work group at March meeting.

### **Schedule of future meetings**

- Anne Gelbmann: MPCA facilities for MIDS work group meetings include video-conferencing facilities, if necessary. Those organizations with access to Enterprise Technology System can call in from remote locations and participate in discussions. The MPCA boardroom facility would allow for webcast of meetings but would not allow participation from remote locations.

- Jay Riggs: Requests show of hands of those representatives interested in remote access of the MIDS meetings: Approximately three members expressed interest. Riggs would like to look into laptop based systems (eg. Skype) for remote participants.
- Anne Gelbmann: As the MIDS group starts releasing results/products, the MPCA would be willing to set up stakeholder webcasts to disseminate results.
- Question (Mark Doneux): Will minutes/meeting notes be posted on MPCA MIDS website: Answer (Gelbmann): Yes.

#### Tracking of New EPA stormwater rules

- Anne Gelbmann pointed out that EPA is working on stormwater rule update for 2012. Suggests that Bob Newport of EPA Region 5 (who is one of the MIDS group advisors) be invited to participate in some of the work group discussions, at least to give rule updates.
- Mike Findorff pointed out that there is a website set up for 2012 stormwater rulemaking on EPA website (<http://cfpub.epa.gov/npdes/stormwater/rulemaking.cfm>).
- Question (Riggs): Would Bob be willing to present to MIDS workgroup? Answer (Gelbmann): Perhaps Bob could give an update on EPA stormwater rulemaking via conference call. There are also monthly updates from EPA given to MPCA staff.
- Steve Woods: Offers dissenting voice; wants to keep MIDS effort separate from that of EPA until further progress on work products is made. Suggests EPA and MPCA coordinate timelines and identify possible intersection points of MIDS work group efforts with those of EPA; share information at those times.
- Klayton Eckles: Agrees. He would like to keep MIDS separate from EPA.
- Wes Saunders-Pearce: MS4 permit will be re-issued in 14 months. MIDS projects will likely “inform” permit update. He is cautious about MIDS being incorporated into re-issued MS4 permit, as MIDS has been advertised as voluntary standards and tools.
- Mike Findorff: MPCA attempts to incorporate “latest/greatest” info into standards and permits; if a portion of MIDS is scientifically-defendable, it may be rolled into permit. However, permit formation process has public meetings at numerous levels to get comments/feedback.
- Lois Eberhardt: Feels legislation is moving faster than technology.
- Jim Hafner: Would like updates to MIDS to be award of MS4 permit process and anti-deg rules.
- Question: (Jay Riggs): Does group want regular updates on upcoming rule-making, including MS4, anti-deg, etc? Group: Yes.

#### Request for future agenda items:

- Paul Moline: would like MPCA to give MIDS WG a work plan based on RFP, as well as results of stakeholder meetings.  
Julie Westerlund will give short update of stakeholder results at March meeting.
- Gelbmann: Consensus process.
- Riggs: If work plan is not ready for March 19 meeting, should meeting be changed? Julie Westerlund recommends keeping March date. Klayton would like March meeting to include discussion about type of work products envisioned by original MIDS team. Riggs: responded that Bruce Wilson will likely be able to give overview of work products at the March meetings, including examples of calculators, etc.

- Riggs: March 19 meeting will remain on calendar in MPCA Room 2A. Chair will bring snacks. A hat will be passed to pay for future consumable meeting supplies.

Meeting adjourned approx. 12:00 p.m.

Future Agenda Items/Presentations Ideas:

Overview of MIDS and the Legislative Process

Similar National Efforts

NURP Overview and examples

State Stormwater Manual – what’s in there now

MIDS calculator examples

MIDS model input parameters

MIDS confidence levels

Using MIDS to update the SSM – oversight and research process

MEI report and planning synchronization

MIDS Work Group  
Meeting Minutes  
March 19, 2010; MPCA Video Conference Room 4-1  
Notetaker: Karen Jensen, (Met Council Environmental Services)

Please contact Anne Gelbmann of MPCA with substantive corrections to these minutes.

Attendees: Lois Eberhart, James Hafner, Jay Riggs, Wayne Cymbaluk, Karen Jensen, Julie Westerlund, Chad Anderson, Mike Kelly, Paul Moline, Peder Otterson, Wesley Saunders-Pearce, Shane Missaghi, Michele Caron, Garry Johanson, Anne Gelbmann, Scott Anderson, Mark Zabel, Jack Frost, Craig Otto, Matt Durand, Ken Holman, Sharon Pfeifer, Dale Thompson, Todd Smith, Doug Snyder, Bob Swanson, Mary Davy, Donna Herman, Shelly Pederson, Dave Newman, Sally Wakefield.

Start of meeting ~9:03 a.m.

**I. Agenda Item I: Demonstration of Video-conferencing facility at MPCA by Dee Palacio (612-220-8058) and Dan McLean (651-757-2563).**

- See handout for summary of facilities/technologies available at MPCA for use by MIDS Committee. Contact Dee or Dan with questions.
- Brief note: new technology (“Vidyo”) requires remote users to have webcam, headphones, microphone, and web access, plus download of access software. Allows 10 locations to join meeting; 8 of which can be visible on screen at one time. Allows projection of PowerPoint slide shows, spreadsheets, and other file types.
- Those interested in attending MIDS meetings remotely, please contact Anne Gelbmann one week prior to the next meeting.

**II. Agenda Item II: Overview of Current Stormwater Program in MN (aka “How it fits with MIDS”) – Dale Thompson, MPCA**

- Dale Thompson is supervisor of the Municipal Stormwater Unit at MPCA
- See <http://www.pca.state.mn.us/water/index.html> for additional info
- Summary of presentation (no visuals presented):
  - MS4 Permit Program overview: (see <http://www.pca.state.mn.us/publications/wq-sw1-04.pdf>)
    - MS4 = Municipal Separate Storm Sewer System; publicly owned or operated stormwater infrastructure
    - In MN, MS4s are generally owned by cities, counties, townships, college/universities, prisons, MNDOT. Two Phase I cities = Minneapolis and St. Paul. 233 Phase II MS4s in Minnesota.
    - MS4 generally made up of structural (pipes, ponds, ditches, BMPs) and non-structural (educational, pollution prevention, street sweeping) components
  - TMDL vs. Anti-degradation/Non-degradation
    - TMDL = total maximum daily load. Set for impaired water bodies. Amount of pollutant MS4 can discharge - set through waste load allocation process. Load allocation process should ultimately result in

lowering of pollutant concentrations in impaired water bodies such that water quality standards are met.

- Anti-deg/Non-deg (MIDS committee will use terms interchangeably); rules that govern the discharge of pollutants to pristine/high quality (non-impaired) water bodies. Goal is to maintain and protect non-impaired water quality. MPCA cannot issue permits that lead to degradation of Waters of the State. Current rule-1988 concentrations used to set baseline water quality.
- Question: Does MS4 boundary cover political municipal boundary or just extent of conveyance system?  
Answer: In general the political boundary but with certain qualifications: 1) depends on whether the MS4 is city, limits exist for county, or MNDOT; 2) direct runoff not included.
- Question: Is there any legal connection between the NPDES construction permit and anti-deg rules? Answer: Construction permit structured to prevent anti-deg from the permitted project. Construction permit is a general permit applied to entire state, therefore there are situations where it may technically not always meet anti-deg. Typically, if construction permit followed, anti-deg is avoided
- Thompson stresses to reach the goal, local ordinances are an important part of anti-deg effort
- Question (Jim Hafner): Please comment on the 30 cities required by MPCA to look at anti-deg. Answer (Thompson): the rule calls for MPCA to look at anti-deg requirements before permit coverage is given. General conclusion was that with treatment BMPs no new or expanded discharges of total suspended solids and total phosphorus have been allowed in the 30 non-deg communities (with a few exceptions). The “Select 30” communities developed water quality models that have indicated that expanded development has increased pollutant loading (off-set by treatment) and runoff volume (no addressed by BMPs). Runoff volume is currently being used as a surrogate for pollutant loading. Minneapolis/St. Paul, “ancillary data” (history of development, BMPs, ordinances, etc) was used to determine if water quality degradation has occurred since 1988. Thompson predicts in future anti-deg determinations will use a combination of data elements such as monitoring, modeling and ancillary data.
- Question: Which pollutants does anti-deg apply to? Answer (Bruce Wilson): Everything. Traditional pollutants are those associated with wastewater treatment (BOD, nutrients); also includes pollutants such as fire retardants. In MIDS process, primary pollutants for consideration will include volume, phosphorus, TSS (total suspended solids).
- Comment (Wesley Saunders-Pearce): Anti-deg applies not just to lakes, but also to rivers, streams, and wetlands.
- Question: Will rest of Minnesota MS4s have to submit anti-deg studies similar to those done by the “Select 30” communities? Answer (Thompson): No, remainder of MN MS4s will follow process more similar to that used for Minneapolis/St. Paul (Phase I MS4s).
- Comment (Bruce Wilson): MIDS process will look at issues such as: how will pollutant loads be determined? How will credit be given for BMPs? Can MIDS provide unifying standards for governmental units (especially watershed districts) using varying requirements for volume reductions? EPA has developed new urban storm water model “SUSTAIN” (see



<http://www.epa.gov/ednrmrl/models/sustain/index.html>), which can be complicated. There are simpler less data intensive options for assessing urban storm water quality and calculating loading.

- Question (Paul Moline): How does TMDL process handle new MS4s? Answer (Thompson): New MS4s (communities with population greater than 5,000); once TMDL is approved, community is “on radar” as far as assignment of waste load allocation. The MS4 must be covered by the MS4 permit and develop a plan as to how they will meet the load allocation within 18 months.
- Question (Julie Westerlund): Do communities have to be greater than 5,000 for TMDL process to apply? Answer (Thompson): Permit process starts for populations of 5,000 and greater. There is a petitioning process to allow for exceptions (example, for smaller community that makes significant load contribution to a water body).
- Comment (Dale Thompson): At Federal level, NRC (National Resource Council) report (see [http://dels.nas.edu/dels/rpt\\_briefs/stormwater\\_discharge\\_final.pdf](http://dels.nas.edu/dels/rpt_briefs/stormwater_discharge_final.pdf)) looked at impact of municipal stormwater on waters of USA. The EPA is in process of revising its stormwater rule (expected completion 2012), which will likely result in aggressive changes in future permits. The draft EPA guidance is much more aggressive on how states will be held accountable on water quality issues. In Minnesota, there are approximately 100 TMDLs in some phase of process or study .

### **III. Agenda Item: Presentations on history of MIDS project (Jim Hafner, Julie Westerlund, Jay Riggs)**

- Jim Hafner, City of Blaine (no presentation visuals)
  - Provided basic foundation of MIDS
  - In 2006, Minnesota Cities Stormwater Coalition (MCSC; see <http://www.lmc.org/page/1/mcsc.jsp>) formed under League of Minnesota Cities to provide guidance to Minnesota cities on MS4 permitting issues. Organization currently includes approximately 100 cities. MCSC provides collective voice when working with MPCA on permits and regulations. The organization has been successful so far with a good working relationship with MPCA. Organization has 11 member steering committee which meets once per month.
  - Over one year, MCSC looked at how MS4s could meet anti-deg rules including no new/increased runoff volume. Historically there has been little guidance/standards available for implementation of LID (low impact development) practices which reduce runoff volume, like infiltration basins. Questions were formed: will cities get credit for implementing LID practices? How will LID be included in MS4 permit?
  - MCSC used NURP (National Urban Runoff Program) ponds as a model that could be followed for LID practices. Over years, expected removal efficiencies and design guidelines have been created for NURP ponds, which have been incorporated into permit processes.
  - For LID practices, MCSC recommended development of performance standards, identification of appropriate structural and non-structural BMPs, development of “good math” for design and assessment of effectiveness, development of guidelines to provide ease of review of proposed BMPs.....This is how MIDS started.

- Jay Riggs/Julie Westerlund presented PowerPoint used at MIDS state-wide stakeholder meetings. **See MPCA MIDS webpage for PDF of presentation.**
  - Notes 30 anti-deg cities had to show how they have met 1988 non-deg water quality guidelines, especially TP, sediment, and volume.
  - Both speakers stressed importance of stakeholder meetings and stakeholder input in defining MIDS project goals.
  - Question: What was interest in MIDS from private sector? Answer: construction community must use LID practices to meet permit requirements. Also MIDS may resolve variations in cross-jurisdictional local rules.
  - Comment: See report submitted to Met Council (as part of MetroEnvironment Partnership grant) on Wildwood Conservation development in western suburb. Were required to monitor water quality for 5 years. Karen Jensen will find report and make available to MIDS members.
  - Question (Sharon Pfeifer): Is MIDS group aware of study showing greater pollutant inputs from high socio-economic areas? Answer (Riggs): Will look it up.
  - Comment (Mark Zabel): Grad student developed calculator based on household population.
  - Comment (Anne Gelbmann): MPCA website undergoing revision so may take a while to get MIDS items posted to the website.
  - Question: Request for MIDS tour of LID installations.

#### **IV. Agenda Item: MIDS Group Membership (Jay Riggs)**

- Described the 3 month LID Workgroup process to identify critical stakeholders, voting members and alternates for the 3-year MIDS process.
- 3 requests have been received from groups asking to participate in MIDS: CEAM (City Engineers Association of Minnesota; <http://www.ceam.org/>); Minnesota Stormwater Partnership (MSP; no website provided), and Minnesota Tree Trust (<http://www.treetrust.org/>). See handouts: request letters from CEAM (signed Shelly Pederson; 02/18/2010) and MSP (signed Mary Davy, Bob Swanson, and Donna Herman; 03/17/2010).
- Riggs noted that MIDS meeting are open to anyone or any group to provide input, and the format for consensus decision-making is set in place
- Riggs asked attendees for input on whether process to select MIDS voting members has been inclusive? This is crucial as we don't want MIDS decisions to be eventually derailed by protests from groups claiming lack of access to provide input in process.
  - Suggestion that Klayton Eckles could also represent CEAM on MIDS committee.
  - Julie Westerlund: noted length of process to select MIDS members and to keep group size to 20-30 members. Reiterated that meetings are open to anyone. Reiterated comprehensive job done by LID workgroup to select members for MIDS.
  - Peder Otteson: Noted that MIDS is state-wide project; membership needs to be representative across state, not focused on Metro area. Feels LID workgroup did a good job of selecting members; suggest keeping current membership.
  - Representative of 1,000 Friends of Minnesota, Sally Wakefield, suggests that non-voters could work with that voting member representing their

interest/industry. Suggests setting up process/guidance on how non-voting stakeholders can provide input on MIDS.

- Jay Riggs: Notes that stakeholder input will be sought throughout the MIDS process.
- Comment (Riggs): MPCA is forming upper level group, consisting of MCEA (Minnesota Center for Environmental Advocacy; <http://www.mncenter.org/>) and LMC (League of Minnesota Cities, <http://www.lmc.org/>), that will provide occasional feedback throughout the MIDS process.
- Question (Paul Moline): Can non-voting members participate in the subgroups? Answer: That process has not yet been defined.
- Comment (Mary Davy): Notes that MN Stormwater Partnership (MSP) represents on-the-ground installers and contractors; those groups responsible for constructing LID practices. MSP wants to ensure process will provide installation guidance to prevent failing installations.
- Question: How is MSP different than MNLA (Minnesota Nursery and Landscape Association; <http://www.mnla.biz/>)? Answer (Davy): MNLA is more specialized than MSP. See handout letter from MSP that gives detailed description of their mission and goals. Davy reported that MSP represents approx. 2,000 installers/contractors, either directly through individual membership or indirectly by membership in other groups sponsoring MSP.
- Jay Riggs: Asks MIDS members to think about process to revise membership. Defers consideration of the three requests until April meeting. Suggestions on membership issues should be sent to Jay Riggs. Requests that Mary Davy send MSP membership list for review.

**V. Meeting adjourned: approximately 11:45 a.m.**

MEETING NOTES: APRIL 27, 2010

MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING  
APRIL 16, 2010  
MPCA ST. PAUL OFFICE  
520 LAFAYETTE ROAD NORTH – CONFERENCE ROOMS 2-A/2-B  
9:00-12:00

**Attendees:** Lois Eberhart, Mike Findorff, James Hafner, Jay Riggs, Wayne Cymbaluk, Karen Jensen, Julie Westerlund, Klayton Eckles, Larry Frank, Mark Doneux, Mike Kelly, Paul Moline, Peder Otterson, Wesley Saunder-Pearce, Shane Missaghi, Trevor Russell, Steve Woods, Anita Rasmussen, Garry Johanson, Anne Gelbmann, Scott Anderson, Mike Isensee, Mark Zabel, Jack Frost, Mike Kinney, Andy Erickson, Anna Kerr, Joel Morgan, Bruce Wilson, Douglas Snyder, Bob Swanson, Mary Davy, Vanessa Morrell, Art Kalmes, Dave Newman

**Minutes**

1. Welcome, Introductions and Agenda review 9:00-9:05  
Anne Gelbmann, MPCA welcomed the group. Introductions ensued.

2. Consensus Building – Mark and Jay 9:05-9:15  
Jay Riggs defined the consensus-based decision process. The process is summarized below:

- Information necessary to make decisions is delivered.
- Group reaches a consensus moment
- Chair clarifies the decision
- Chair asks if there are any questions about the decision
- Chair asks group if there are any who disagree with the decision and if you disagree with the decision then explain why.
- Chair ascertains if the decision item needs to be "parked" for further discussion
- If this process does not work, then we will have to talk about an alternative approach to be able to give meaningful guidance to the MPCA.

3. MIDs Definitions: 9:15-9:45

Predevelopment hydrology definition:

Lois - native soil and hydrology is not relevant in ultra urban areas.

Wes – we should have another definition for this for sites that are heavily modified.

Jay R. asked about the focus of P1 of MIDS – local and regional constraints

Mike F- the definition should stay the same

Jim H – we need a qualifier to add flexibility for sites with significant site constraints

Lois – MPLS should not be just a footnote

Klayton – In practice the definition of predevelopment is not the language used. It is presettlement.

Defining predevelopment this way

Wes – Statutory language is an operational definition – how you apply that is what gives you the flexibility. MIDS is going to set out the methods on how to do this. As we move forward it will set the side boards. The definitions are a platform for bringing out these issues. Maybe we should take baby steps.

Bruce – as this ramps up we have different amounts of money, and if we have some efficiencies, that will dictate the scope for the four main elements of the project (Single family, commercial, high density, linear).

Klayton – the common usage is pre vs post. The legislation got it wrong because predevelopment is yesterday.

BN – we need a running tally of acronyms!

Mark D – examples attached to the definitions would be helpful.

Mike K - Economics may dictate an alternative approach.

Mark D – Changed condition issue. Predevelopment means different things to different people.

Lois E – Design standards are rules vs design guidelines (which are suggestions).

Karen J – asked about definition of MIDS. Is the definition limiting?

Mark D – This is a living document.

Paul M – What about the definition of natural hydrology?

Wesley SP – If we are talking about presettlement, then let's call it presettlement. Natural hydrology is the goal. Predevelopment is more what's the realistic quantified target. One's conceptual and the other is quantitative.

Trevor R – we have a crystal clear intent from the legislation.

Peder O – Natural hydrology speaks of processes – those are the natural conditions we are trying to emulate.

Wesley SP – above the grey bar on page 2 is relating to the legislation. The remaining items were put there for consideration. As we keep moving forward we will find other items to include. Clarify loaded terms.

Klayton E – Stormwater credits (change at a site to for a site).

Steve W – something to chew on – design guidelines – maybe add something like “this is not subject to regulatory enforcement.”

➔ Deadline for comments by April 30<sup>th</sup>. We will come back to talk about predevelopment definition. All comments should go to Anne by end of April.

#### 4. U of M's Performance of LID Practices on Stormwater Pollutant Load Abatement

Dr. Niebur, U of M and Joel Morgan, U of M

9:45-10:30

Joel Morgan presented introduction of project as a whole and work he's conducting.

Goals:

Develop guidelines and use of new infiltrometer - Modified Phyllip Dunn (MPD) Infiltrometer – work almost completed – easier and faster than double-ring infiltrometer – drains out in 20-30 minutes

Determine infiltration rates of practices using MPD

Assess long-term performance

Pollution retention and groundwater pollution – when do we need to replace bioretention technology?

Goal is to determine the lifespan of a raingarden. Objective will be met in two ways: assess ability of soil and compost to remove pollutants and combine field and lab experiments to simulated runoff tests. Study will also look a lifecycle analysis of raingardens.

TMDL study with predominance of LID practices

Results of project will be written into case studies and placed in stormwater BMP assessment manual

Mike I. asked how the MPD compares to the AMOOZA meter? Andy E. was not aware of the differences.

Dr. Nieber provided more information about MPDI and process for developing device.

5. International LID Conference Update/Connections to MIDS 10:30-11:00

Julie W and Jay R provided overview of International LID conference. There are many projects underway that have a connection with MIDS. Most LID work in the nation is focused on CSO compliance. Julie W will place proceedings on Minnehaha Creek Watershed District's ftp site. Julie will send link to Anne and Anne will forward to MIDS workgroup members.

6. Information sharing (discuss use of blogs, etc. for tracking projects) 11:00-11:15

All

How do we want to share information and keep track of the project? Do we want to use social networking technologies?

Also, what about project mapping? JW will look at using National NEMO GIS mapping.

Mark D- We should coordinate with State agencies and see if we can get something that meets multiple needs.

Scott A. – Mike Trojan is working on mapping standards. For MS4 mapping.

Wesley SP – Information sharing is great. Information we share needs to be relevant to the goal of MIDS. We need to avoid sidetracking. We should stay focused on MIDS topics.

Anne G – Email will be limited – isn't a good tool to reach all interested stakeholders.

Mark D – Post a website. Office live is free.

Vanessa M - Uses a google group.

Julie W - Climate Change group uses NING.

Jay R – Why don't we use email for now and then look at other options as the project moves forward.

Anne G – How do we share information from the consultant?

Julie W – We need to send out an update whole MIDS stakeholders at milestones during project.

7. Subteams for MIDS (Performance goals, credits, calculators, ordinances-St. Croix Pilot)

Bruce Wilson, MPCA

11:15-11:30

Bruce talked about ways to harness the expertise of the MIDS workgroup? How do we work efficiently with the contractor? Bruce suggests we form subcommittees to synthesize information and bring it back to the MIDS Workgroup. Four categories of products:

- Performance goal
- Site-based credits: Volume, P, TSS, Density Credits, City-wide credit calculating, other pollutants?
- Calculators (site based vs landscape scale)
- Ordinances

Group discussed importance of clarifying communication process for Workgroup, subcommittees, Bruce, and contractor.

Mike F – Concerned about communication between subcommittees.

Bruce W – Some of it will be sequenced. Subcommittee will refine ideas and report back to larger workgroup.

Steve W – Cautions being too segmented. How often anybody besides Bruce interacts with consultant. Very few of us would have frequent interaction with consultant outside of workgroup meetings. When is the consultant going to be on board?

Bruce W – The RFP, ranking, then hiring. That takes time. We have a couple months in there. We're looking at something this summer.

Steve W – As of a couple months ago, the timing was May. Now we are bumping into the next legislative session.

Wesley SP – What is our direction.

Mark D – We will have subcommittees. The structure is not clear yet because the RFP is not out yet.  
Wesley SP – We need to be moving forward on the same page. At this point it sounds like we may fragment into subcommittees.  
Bruce W – Let's wait till we see the RFP and then have a decision.

8. Membership 11:30-11:40

Mark D – there was a discussion and decision-making process. The SSC formed the group as it is now. We feel we have adequate representation from all groups.

Anne G – We need to talk about roles of workgroup members and what that means. If a Watershed District has a question about MIDS, then the Watershed District representative represents that group.

Klayton E – We need to have some control. The effort we sat through was to get balance and a wide range of viewpoints.

Mary D – do you think we are light on the folks who build these things. There is a big disconnect between the design and installation. We spent the last many months to convince them they need to participate. This group was created to work with this process. Do make it work with the contractors and make it successful. We have to start changing the business paradigm. You are making a big mistake. I beg you to reconsider. Mary provided list of participants organizing to participate in this process.

Mark D – We have new information to look at and will add it to the next agenda.

9. Miscellaneous (Technical topics, etc.): 11:40-11:50

- a. NOAA Atlas 14 update
- b. First flush: or who cares which flush
- c. Pros and Cons of Curve Number approaches to stormwater runoff
- d. GIS mapping for LID/MIDS
- e. Metro monitoring partners case studies

Mark D discussed future agenda items. Are there any other topics?

Anne G – are presentations like we did worthwhile?

Group agrees that technical topics are good for these meetings.

Klayton E – How do we make sure we have only relevant presentations to what we are doing.

Bruce W – What are some topics we should have to bring the group up to a core level of understanding?

Klayton E – the standard has to be pretty high and creates strength to move the group forward.

Julie W – We are moving into a very technical arena. We need presentations on performance standards.

Modeling. Stormwater standards. BMP performance credits. Let's do a quick survey monkey – what presentations do you want? What do folks really need to know to be able to participate effectively.

Investing time now could pay off in the future.

Gary J – We are always pushing up against the clock. We may need to look at a longer meeting with a working lunch.

10. Next Meeting/Updates/Etc. 11:50-12:00

**Next meeting: Friday May 21, 2010.**

Misc comments/notes:

To-Do List:

Refine definitions page and distribute to group – Anne G

Prepare project summary/outline and timeline – Bruce W

Prepare living acronym document – Jay R

Prepare living list of coordinated/associated projects – Anne G

Who is going to do the definitions page? Suggest we start with SSM and build from there.

We should have nice visitor nametags made for this group (where you can read names from a distance) or some other way to make sure folks get to know everyone's names. The folding table signs are good, but impersonal.

Should we offer a LID workshop at some point to really go into the details around the concept of mimicing natural hydrology?

We clearly define the role of the MIDS workgroup. Our role is to provide guidance and feedback to the MPCA MIDS project manager.

We should have a living list of presentation topics. Items we should provide greater information to prepare group for making decisions.

What's the state of LID research – coordinated research. National research.

Impact of CWA updates? New NPDES guidelines?



MIDS Meeting Notes  
*May 21, 2010*  
Taken by Karen Jensen

Please send additions/correction to Anne Gelbmann of MPCA

MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING  
MAY 21, 2010  
MPCA ST. PAUL OFFICE  
520 LAFAYETTE ROAD NORTH – CONFERENCE ROOMS 2-A/2-B  
9:00-12:00

Attendees: Lois Eberhart, Mike Findorff, James Hafner, Jay Riggs, James Vagle, Karen Jensen, Julie Westerlund, Klayton Eckles, Larry Frank, Mark Doneux, Mike Kelly, Paul Moline, Wesley Saunders-Pearce, Shane Missaghi, Steve Woods, Michele Caron, Garry Johnson, Anne Gelbmann, Scott Anderson, Mike Isensee, Mark Zabel, Lisa Frenette, Mike Kinney, Sharon Pfiefer, Dave Newman, Liz Boyer, Doug Snyder, Bob Swanson, Mary Davy, Robert Race, Bruce Wilson, Tom Scheuler (by Vidyó)

Meeting called to order at 9:05 a.m. by Jay Riggs

1. MIDS workgroup mission – Jay Riggs (Co-Chair)
  - Jay Riggs reviewed the components and goals of the MIDS workgroup (see handout), including performance goals, calculation methodology, local implementation (319 Grant for St. Croix Valley)
  - Next few meetings will be used to bring committee members up to speed on technical issues so group can provide meaningful input to MPCA during project.
  - Question: How will MIDS interface with Stormwater Steering Committee (SSC) and the Water Quality Framework process?  
Answer (Riggs): MIDS workgroup is subgroup of SSC; Framework is working on prioritizing use of Constitutional Amendment dollars
  
2. MIDS Membership -Mark Doneux (Co-Chair)
  - Mark reviewed MIDS membership list and represented organizations to review if there was good representation of contractor/installer organizations. Opinion is that there could be better representation.
  - Looked into professional groups that could participate in MIDS and provide representation of contractor/installers: for example, Association of General Contractors (AGC), Minnesota Utility Contractors Association (MUCA), Minnesota Chapter of Association of Landscape Architects
  - Expressed opinion the Minnesota Stormwater Partnership, which has requested to serve on MIDS workgroup, does not have the history of these other professional groups.
  - Recommends Minnesota Stormwater Partnership remain in role of providing technical assistance to MIDS workgroup and suggests a representative from one of the other listed groups could be invited to serve on MIDS workgroup
  - Otherwise feels MIDS group is adequately represented.
  - Question: How will voting at MIDS workgroup meetings be handled?

Answer (Doneux): MIDS workgroup members will make recommendations to the MPCA. Any interested person can get on the email list and provide input, but will not be part of the consensus process.

- Riggs: Discussion points out the long process taken to select members and balance group size. And the process to select members was approved by the SSC.
- Anne Gelbmann will ask AGC or MUCA to participate.

3. Definitions-Discuss current draft: Jay Riggs (Co-Chair)

- Handed out latest draft of official definitions that will be used during MIDS process plus list of EPA definitions
- Added “pre-development” to address Klayton Eckles’ past comments
- Recognize that some terms have more than one meaning
- Question: there are three definitions for impervious; are all three valid, especially #c?  
Answer (Saunders-Pearce): Tried to capture all definitions in manuals, plans, ordinances
- Anne Gelbmann will be the keeper of the definitions and acronyms. Send additions/corrections to Anne to include on MIDS website.

4. Technical topic: The Fallacy of NURP and the Magic of MIDS: Wesley Saunders-Pierce (MnDOT)

Presentation and Discussion

- Provided brief overview of NURP (Nationwide Urban Runoff Program) and relationship to MIDS process.
- NURP was 5-year program consisting of 28 individual projects implemented at local level in cooperation with EPA; NURP projects looked at urban runoff dynamics, methods of water quality control, and receiving water impacts
- NURP follow-up studies are often confused with NURP. There is no “NURP-ordinance” on pond construction included in any NURP study, although in Minnesota practitioners often mistakenly refer to “NURP-ordinance” when referring to criteria/guidelines for detention pond sizing
- Comment: Mark Zabel notes the importance of LID (low impact development) in MIDS process and relationship with pre-development hydrology
- Comment (Klayton Eckles): Examples of grassed swales shows complication of MIDS task, which is to evaluate a large number of practices. Need to get on point that recommended practices are robust with proper installation and maintenance and life-cycle issues.
- Comment (Jay Riggs): Update of stormwater manual is not included in MIDS. What if we learn of new practices? There is no process to updating manual.
- Comment (Lois Eberhart): Crucial for MIDS is that the process be flexible; cannot be rigid, must be able to include new practices
- Comment (Jay Riggs): Not many 319 projects have a monitoring component – we are losing the opportunity to collect information on effectiveness.
- Comment (Paul Moline): Often hear comments that NURP is proven science and that LID is still unknown. Wes seems to be saying that NURP also shows the variability of effectiveness of wet ponds.
- Comment (Klayton Eckles): The engineering of NURP ponds is pretty well developed; one can feel pretty sure that over time a pond will achieve a set effectiveness goal, if maintain properly.
- Comment (Steve Woods): Workgroup must include area, volume, velocity, soil and vegetation in development of MIDS guidelines.

- Comment (Shane Missaghi): NURP can be neatly presented = simple design parameters to communicate. Thinks if design parameters for MIDS can be broken down and presented simply, will be as well-accepted as NURP.
- Comment (Lois E.): Surprised that no one has mentioned sediment resuspension in ponds as a big issue
- Comment (Klayton E.) We feel, with proper design and maintenance, that resuspension can be prevented.
- Comment (Mike F.): Stormwater manual has addendum with a range of efficiencies for various practices.

## 5. News from the East Coast that are applicable to MIDS

Tom Schueler (on Vidyo)

- Lots of laughing at poor Tom, who attempted Videoconferencing using Vidyo. Eventually worked out bugs and could continue using phone connection to broadcast audio.
- Schueler notes that poor economy has rolled back implementation of maintenance
- Recent trends on East Coast:
  - a. Use of woodlands as land coverage representing pre-development conditions
  - b. Use of spreadsheets to track compliance on site. He will forward an example to MIDS workgroup.
  - c. Refinement of individual LID practice designs to remove specific pollutants
  - d. Refinement of construction sequencing to aid proper installation
  - e. Chesapeake Bay stormwater training partnership: one day training, online training, etc. Program has received \$500,000 for three years.
  - f. Some practices (eg. Permeable pavements, submerged gravel wetlands) need a higher level of training.
  - g. 85% of MS4 communities surrounding Chesapeake are concerned about LID inspection and maintenance
- Question (Klayton E.): If private Homeowner Association installs practices, how can one make sure they are installed and maintained properly?  
Answer (Tom S.): Still a challenge. This issue is still being worked out; he will send MIDS some model language. Recommends going through all practices on a site, which is difficult especially to identify if credits are maintained (eg. Filter strips, disconnectivity, etc). Credit practices, if installed properly, will be relatively low maintenance. Private properties need an inspection guide.
- Comment (Lisa F.): Maintenance is being pushed back on builders, even when project has been turned over to homeowner. If practice not maintained, cities will often come down on builder. Enforcement and maintenance needs to be further addressed.
- Comment (Jay R.): MIDS may not address those issues. U of MN extension is one venue for future training.

## 6. St. Croix MIDS Pilot Project Update

Jay Riggs (Washington Conservation District)

- St. Croix MIDS pilot project is community assistance portion of MIDS.
- First steering committee meeting last week: includes watershed reps, counties, ST. Croix River Association, city engineers, DNR, educators, MPCA
- MIDS work products will feed into the ordinance package that will be developed as part of the 319 project. Will identify 2-3 pilot communities, update the ordinances, including design specifications and zoning
- Project will set stage for pilot communities to adopt ordinance package using MIDS info.

- August 2013 completion date; hoping to extend to 2014. Budget is \$125,000
- Currently reviewing existing ordinances. Pilot projects won't happen until MIDS products become available.
- Comment (Lois E.): Points out importance of updating stormwater manual and importance of tying in funding. Could the manual be housed elsewhere and still get funding?
- Comment (Mary Davy): SSC Operations Committee and Jason Moeckel is trying to tie manual updates into interagency coordination team.
- Comment (Lois E.): Good analogy is the frequent updates made of the MnDOT specifications book. MnDOT sends out updates every 5 years, and sends out supplements and memos throughout each year.

7. Other updates, items for next meeting, etc.

- P8 Training June 9-10
- APWA Sustainability Conference also June 9-10
- Green Infrastructure/Climate Change Summit: Sept 16-17 at Arboreteum
- Upcoming will be a conference on use of trees in managing stormwater with follow-up training.

Next meeting will be **June 18, 2010** from 9-12 at the MPCA.

## MIDS Work Group

### Meeting Minutes

June 18 2010; MPCA Conference Room 2-A/B

Note taker: Mike Isensee, (Dakota County Soil and Water Conservation District)

Attendees: Lois Eberhart, Mike Findorff, James Hafner, Jay Riggs, Wayne Cymbaluk, Julie Westerlund, Klayton Eckles, Mike Kelly, Peder Otterson, Wesley Saunders-Pearce, Trevor Russell, Garry Johanson, Anne Gelbmann, Scott Anderson, Mike Isensee, Mark Zabel, Jack Frost, Matt Durand, Dave Newman, Anna Kerr, Doug Snyder, Mary Davy, Liz Boyer, Craig Otto, Bruce Wilson, DeAnn Stish, Jill Thomas, Dale Thompson, Bill Cole, Randy Neprash (for first ½ of the meeting)

Deann Stish was introduced as a new member of the workgroup, representing the MN Utilities Contractors Association.

Please contact Anne Gelbmann of MPCA with substantive corrections to these minutes.

### **Center for Watershed Protection Webcast and Other Workshops**

CWP Web Cast Watershed Treatment Model (Anne Gelbmann, Wesley Saunders-Pierce, Mike Kelly)- Presentation highlighted a spreadsheet based calculator methodology (Watershed Treatment Model) used in Maryland and New York for identifying pollutant loads and crediting load reductions for best management practice implementation. May have applicability during the development of the MIDS calculator.

APWA National Sustainability Conference Summary (Lois Eberhart)- Attendance was approximately 100. Very few Minnesota attendees. Indianapolis presentation was impressive.

### **Other Upcoming Events**

- CWP Webcast Permeable Pavers August 18<sup>th</sup>
- APWA Webcast Good House August 29<sup>th</sup>
- APWA Webcast Pavement as Green Infrastructure Conference June 24. Webcast will be available at the Bonestroo Lunchroom. Contact Randy Neprash for more information.
- EPA Stormwater Model Training for FORTRAN BASIN/HSPF, August 9-13 in St. Paul. (Anna Kerr)
- SUSTAIN Model Workshop in Duluth. Date is not set and seats will be limited. MIDS group would like to designate two representatives proficient in P8 and/or WinSLAMM attend. (Bruce Wilson)
- Urban Trees Update Symposium being organized for September with international expert Orjan Stahl. USEPA is developing national guidance document advocating the use of urban trees. (Randy Neprash)-

### **MIDS and Antidegradation-**

Presenter: Bill Cole MPCA Water Quality Standards Unit- Antidegradation Rule Revision Coordinator, presented on the following topics: 1. Antidegradation Background, 2. Antidegradation Proposed Rule Changes Progress and Process 3. How Antidegradation and MIDS Intersect. Much discussion occurred during and after the presentation.

- Discussion: Mike Findorff- MIDS is a path to compliance for antidegradation requirements through defined performance goals, calculation methodology and credits system.
- Question: Randy Neprash: If a city adopts MIDS as its review and approval process and the MPCA approved the adoption, would there be additional antidegradation review required by the MPCA. Answer: Bill Cole- The permittee would be responsible to ensure that no increase pollutant loading would occur from the project.
- Discussion: Dale Thompson: The permittee is required to identify alternatives to meet antidegradation requirements. MIDS could be one alternative or one of a combination of alternatives to achieve the requirements.
- Question: Klayton Eckles: Please further discuss offsets upstream and prior to the project. Bill Cole- Upstream refers to upstream of the impacted water body. Answer Bill Cole: The goal of the program is to ensure individual water bodies are protected from increased loading. Discussion: Klayton Eckles: Offsets are potentially a great feature of the new rule.
- Question: Randy Neprash: What is the linkage between MPCAs Clean Water Fund Statewide Water Quality Assessment Initiative and Antidegradation? Answer Bill Cole- Assessments will be important for Antidegradation determinations.
- Question Randy Neprash: If a TMDL load reduction is achieved then Antidegradation is also addressed? Answer Bill Cole: ... maybe the question is once standards are achieved via reductions in loading (and delisted) when and how does antideg apply? Once standards are achieved through loading reductions and the water has been delisted, then Tier 2 protection applies. This means there must be no net increase in permitted loading, unless a demonstration is made that it is necessary for important social and economic development in the areas in which the waters are located. Where, on the rare occasion, water quality is allowed to be lowered through antideg review, existing uses must be maintained and water quality standards may not be violated.

For clarification: Tier 1 protection, which is the prohibition of removing existing uses, applies to all waters (impaired, high quality, ORVWs) at all times. For impaired waters, if a TMDL has been approved the antideg rule will require that TMDL procedures must be followed. Where a TMDL has not been approved, the antideg rule will require that any regulated action or activity must not cause or contribute to the impairment.

Baseline conditions may be adjusted to reflect a lowering of water quality, where on rare occasions, water quality is allowed to be lowered through antideg review. Baseline conditions may also be adjusted where loading from regulated sources have been reduced or eliminated.

- We have had broad improving trends in river P levels concurrently with increasing flow patterns (and broad patterns of wastewater P reductions. How do we deal with a moving target?  
Good question. One thing that might help is to think about baselines not only in terms of the quality of the receiving water, but also in terms of baseline loading. Permitted loading should be fixed over the course of the permit cycle. For stormwater, this is achieved through adherence to permit conditions that avoid net increases in permitted loading. Baseline loading may be adjusted where, through antideg review, increases in loading are allowed. Baseline loading may also be adjusted to reflect reductions in permitted loading.
- Question: Wesley Saunders Pierce: When Antidegradation is integrated into the MS4, Construction and Industrial Permits will it drive the thresholds for the permit? Answer Bill Cole: Antidegradation applies to each water of the state. The de facto de minimis for municipal permits have not been determined at this point.

- Question: How does antidegradation apply to temporary pollutant loading? Answer Bill Cole: Language will be included in the rules for temporary impacts to outstanding value water resources and high water quality waters.
- Question: Mark Zabel: In the presentation it was stated that the antidegradation level of protection baseline can be adjusted to reflect improving water quality...
- Question Dave Newman: How do you define “significant socio economic benefits?” Answer Bill Cole: Currently for wastewater treatment plants it is an intensive process. It has not been done for stormwater.

15 minute BREAK

### **MIDS Update**

Bruce Wilson. MPCA, MIDS Project Manager

- Seeking a sub workgroup of four experienced members to provide assistance with expediting required technical writing and budgeting for performance goal development. Please contact Bruce directly to provide assistance.
- MIDS Workgroup Activity Request: Please review the work tasks and provide any comments to Bruce before July 9<sup>th</sup>.
- Budget: Bruce has requested an additional \$350,000 from the Clean Water Fund for MIDS development.
- Timeline: Performance Goal Development July to October, Credits Development August to February, Calculator Development September to February
- Communication Norms: 1. To maximize consultant time and streamline workload all communications must go through Bruce Wilson, MPCA Project Manager. Workgroup members contacting consultants directly is prohibited. 2. The website, webcasts and surveys will be used to maximize communication. 3. Work products will be posted on the web.
- Discussion: Items that are critical for the workgroup to make a decision/recommendation at the following meeting will be flagged, action required will be identified and a deadline will be set.
- Question: Wesley Saunders Pierce: What is the information processing/review model that will be used by the MIDS Workgroup: Subcommittee Model or Entire Workgroup Model? Discussion Mary Davy: Entire workgroup needs to be involved at junctures where the action item is a decision/recommendation to MPCA.
- Consensus: All decision/recommendations will be made by the workgroup as a whole. Ad hoc subcommittees will function as technical support to work with Bruce and the contractors.
- Discussion: Cliff Aichinger: Subcommittee members will need to be willing to have additional meetings outside the regularly scheduled MIDS workgroup meetings.
- Discussion Gary Johanson: Beginning in September all workgroup members should begin blocking the entire day for the meeting to ensure adequate time to address time sensitive items.
- Discussion: Klayton Eckles: Ad hoc subcommittees can also be used to meet outside of regular MIDS meetings to find compromise and bring back to the group for further discussion and decisions.

Meeting adjourned at 11:55

## **Minimal Impact Design Standards Workgroup**

Meeting Minutes - July 16, 2010

Attendees: Mike Findorff, James Hafner, Jay Riggs, Wayne Cymbaluk, James Vagle, Karen Jensen, Julie Westerlund, Klayton Eckles, Larry Frank, Chad Anderson, Mike Kelly, Paul Moline, Wesley Saunders-Pearce, Michele Caron, Garry Johnson, Anne Gelbmann, Scott Anderson, Mike Isensee, Mark Zabel, Lisa Frenette, Craig Otto, Paul Radomski, Anna Kerr, Cliff Aichinger, Doug Snyder, Bob Swanson, Mary Davy, Liz Boyer, Bill Cole, Bruce Wilson

Minutes taken by Chad Anderson.

1. Welcome and agenda review – Jay Riggs (Co-Chair) 9:00-9:10
  - Jay re-iterated the importance of MIDS to be an alternatives analysis for Anti-Deg and the development of performance standards.
  - Introductions.
  - Anne indicated that a copy of the minutes from last month's meeting will be on the website next week.
  
2. MIDS and AntiDegradation – Bill Cole (MPCA) 9:45-10:10
  - Bill provided a follow-up and review from the background presented at the June meeting.
  - The federal requirement for Anti-Deg includes:
    - i. Tier 1 – protect existing uses (uses attained in a water body on or after November 28, 1975).
    - ii. Tier 2 – protect high water quality (quality better than the criterion of the applicable standard. Water is assumed to be of high quality unless an assessment shows it is impaired).
    - iii. Tier 3 – protect outstanding water resources. Federal language uses the term “outstanding National resource waters”, to which new or expanded discharges are not allowed. This is analogous to waters designated in Minnesota rule as Prohibited Outstanding Resource Value Waters (ORVWs).
  - Tier 1 & 3 waters are fairly clearly defined. Tier 2 waters are less straight forward to deal with – the State determines the decision making process or establishes if the proposed activity is necessary or degradation justified.
  - There are three basic steps or determinations in the decision making process:
    - i. Is an Anti-Deg review required or is there a potential for increased loading? It is assumed for stormwater there will always be a review.
    - ii. What control measures can be used to avoid, minimize or mitigate the impact?
    - iii. Socio-economic need or to what extent can water quality be lowered? This step must include a public process.



- One overall goal is to reduce the amount of individual review. The MPCA would like most of the alternative analysis to be done in the general permit.
- Note: it was requested to put last month's Anti-Deg presentation in an outline format and also post on the MIDS web page.
- Question from Klayton Eckles: What is the scale for Anti-Deg (1 lot, 1 acre, city, etc.)?
  - i. Answer from Bill C.: We do not want a de minimis situation. Indications are that states that allow a de minimis may get into trouble because there is no way to track cumulative impacts.
  - ii. Some de minimis activities will still likely occur however.
  - iii. Permit conditions will be developed to meet no net increase and likely rolled into ordinances for LGUs to enforce.
- Bruce Wilson: MIDS to develop site calculators/credits that cities will be able to use for tabulation.
- Question from Klayton Eckles: What if a city does not adopt the ordinances?
- Answer from Bruce Wilson: Not sure on that yet, potentially the individual project would have to demonstrate project importance and the state would have to make a determination. Hopefully permit conditions will address this.
- Lisa Frenette: Will the burden be on the developer to prove benefit? Different rules/laws throughout the state make it difficult for developers and add cost. Need more of a one-size-fits-all approach.
- Bill C.: The State wants to avoid individual review.
- Mike Findorff: One possibility is that standards end up in the next construction permit (3 ½ yrs from now). Any permitted project would then meet Anti-Deg.
- Jay: To follow up on Klayton's question – if Woodbury has an approved Anti-Deg plan, then they would not have to adopt MIDS. Other cities would need MIDS or the same type of Anti-Deg plan.
- Jay: Note the distinction between individual permit vs. a general permit: General permits have no individual review while individual permits do.
- Bill C.: For general permits the Agency does the alternatives analysis. For individual permits, the permittee does the alternatives analysis and the Agency reviews.
- Question from Jim Hafner: As standards develop, if you adopt MIDS you would meet Anti-Deg as opposed to the previous non-deg process where an MS4 had to prove they met?
- Bill C.: Correct, but only if MIDS, on a project-by-project basis, results in no net increase in permitted loading, or would not otherwise cause degradation of high water quality. The Agency wants to avoid that along with individual review.
- Jay Riggs: The MIDS process should be flowing into an alternatives analysis for Anti-Deg. Tier 2 waters will have questions.

- Jim Hafner: Will we get into a situation similar to what has happened with the ACOE on occasion where through the review process they determine (for example) that there is a better location for a proposed project?
- Bill C.: Yes for individual permits, tougher to do through a general permit.
- Mike Findorff: But if you meet the standards, then there would be no net increase in loading.
- Bill C.: The optimistic timeline for Anti-Deg rule adoption is the end of 2011.
- Lisa Frenette: Any draft rules yet?
- Bill C: No – next week on the web we intend to post a document contrasting ideas for the new Anti-Deg rule with the existing rule along with some basic procedures for applying Anti-Deg to phase II cities.
- Klayton Eckles: Any thoughts to credits?
- Bill C: Only allowance for mitigation upstream and prior to. Cannot degrade the water resource.
- Jay R: Can mitigation occur in the same watershed?
- Bill C: We do not want any water sacrifices. This is simpler for lakes than rivers/streams.
- Jay R: Site/cost constraints?
- Klayton E: Need work on the definition of Waters of the State.
- Bill C: See existing statute – some discussion on how that fits with stormwater ponds.
- Jay R: How would you apply Anti-Deg where you have multiple wetlands draining to a lake?
- Bill C: Cannot use a water of the state to protect a water of the state. Personal view point is that if something was constructed for treatment, then Anti-Deg would not apply to it for the parameters for which the pond was designed to treat.
- Question from Scott Anderson: What about existing waterbodies/wetlands connected to the storm sewer system in older communities prior to WCA, Non-Deg, or other regulations? How does Anti-Deg apply here?
- Bill C: If certain ponds are treatment systems we will need accountability to ensure downstream protection.
- **HIGHLIGHT THE NEED FOR MORE DISCUSSION ON THE DEFINITION OF WATERS OF THE STATE AND HOW ANTI-DEG WILL BE APPLIED TO STORMWATER TREATMENT PONDS/WETLANDS.**
- Question: How would Anti-Deg treat the scenario where well drilling discharge is directed into a stormwater facility (cited for illegal discharge).
- Bill C: Need to identify what the pond was designed to treat. Suspected that well discharge was not considered stormwater, therefore the discharge was not allowed.
- Bruce W: Wastewater ponds/facilities are not waters of the state.

- Mike F: The discussion is on-going within the Agency on how these are operated and if under permits/limits.
3. MIDS Process and Schedule/Timeline – Bruce Wilson (MPCA) 9:45-10:10
- See handout.
  - 15 month timeframe down to 7 months.
  - Contract process included 5 reviewers (3 outside the agency –
  - 3 companies through the process.
  - Currently working on contracts and tasking.
  - Would like to see money spent by next February.
  - Will get detailed work plans back and go from there.
  - Adjusted timeline – many concepts swirling around performance goals.
    - i. Contactor to review what’s already out there.
    - ii. Different ideas on credits (no bacteria, no exotics).
  - Request for \$450,000 Clean Water Fund – won’t know until next spring.
    - i. Linear, urban forestry
  - Possibly start calculator work before completion of performance goals to speed project along.
  - Ordinance goals – how things change.
  - Fact sheets
  - Will have meeting with the MCEA, LMC, and other supporters next month..
  - Gaps next spring (issues we can’t cover, funding, etc.)
  - Suggestions??
    - i. Spend contract dollars up front on performance goals and money for other tasks may be able to be found at a later time.
  - Question from Klayton E: Is there enough time – do we need a different approach to the MIDS meetings?
  - Jay R: Once we know the contractors and work plans we’ll be able to determine this better.
  - Anne G.: The consultant could do a webcast or video prior to the meeting for review by the group.
  - Jay R: What are the criteria, what has to be in place for an alternatives analysis process in place for modifications? We’ll be done before the Anti-Deg rule.
  - Wesley Saunders-Pearce: Reference from last month’s meeting:
    - i. Work group makes decisions as a whole.
    - ii. Ad Hoc groups advise.
    - iii. Sub Committee groups meet outside.
    - iv. Starting September begin meeting all day.
    - v. Supports ad hoc sub committees.
  - Mary Davy: Heard emphasis on going together as a group and with consensus. As this process goes faster – can the group keep up?
  - Jay R: Technical advisory groups would bring all information back to the entire MIDS group. We are committed to everyone in the group being

comfortable with decisions. The distinction is being able to utilize talent in the group to the end product as good as it can be.

- Julie Westerlund: Are we willing to put the budget at risk in order to expand the timeline of the project. Maybe we need to look for new funding.
- Mike F: Money could be spent up front, then decisions/evaluations made.
- Wesley S-P: Credits and calculator work is predicated on the performance goals being clearly defined.
- Larry F: Are all-day meetings profitable? A lot of education is needed.
- Paul Moline: Can we decide on the need for ad hoc groups today?
- Jay R: Suggestion – everything goes to the entire group and whoever has input, do it, and it will be shared. No specific sub-committees since we need the flexibility. If separate trainings are needed, identify them as soon as possible.
- Paul M: We need to have extra forums.
- Jay R: All decisions come through the group to Bruce and from Bruce to the contractors. The Group will have enough info to make decisions. The timeline is tight maybe requiring extra meetings. Extra ad hoc meetings will be all-invited and whatever comes out of those will be communicated to the entire group.
- Jay R: By the August meeting we will need to decide on the meeting frequency going forward. We will know more detail on the consultants and the work plans at that time.
- Larry F: Suggested meeting 2 half days per month.
- Klayton E: Need time to report back to our constituency before agreeing to or making some decisions.
- Mary D: We will need frequency to keep up.
- Jay R: Not in a position to decide today, but be aware we will likely need to increase meeting frequency.

4. Break 10:10-10:25

5. MIDS Performance Goal 10:25 – 11:15

- Storm water hydrology and runoff standards – Mike Isensee (Dakota SWCD)
  - i. See presentation – points included predevelopment rate and volume, effects of urbanization, soil types, TR-55, IDF.
- Capitol Region Watershed District Volume Control Standards – Cliff Aichinger (RWMWD)
  - i. Capitol Region and Ramsey Washington joint rule process.
  - ii. Capital Region study – 3 consultants, 4 projects – to review the cost impact of rule implementation on projects – see Capitol Region website for full report.
  - iii. Bruce W: NOAA (10-states) IDF updates maybe complete this fall.
  - iv. Question from Mary D: What are some examples of BMPs for dissolved P?

1. Enhanced sand filtration
  2. Total infiltration
  - v. Bruce W: Should enhanced filtration be included in MIDS?
    1. Group indicated yes.
  - Work Order for Consultants – Bruce Wilson (MPCA)
    - i. Already addressed above (items 2 and 3).
    - ii. Jay R: future topic – implementation of standards and impact to cities.
6. Statewide BMP Research and Monitoring Related to MIDS – Jay Riggs (Co-Chair) 11:15 – 11:45
- Change from presentation to homework assignment for group: Compile information on projects that we know of that utilize expertise or knowledge, working projects (not research or published) that might fit into the MIDS project.
    - i. Find projects that can be given to the consultant to enhance performance of practices.
    - ii. Any items not working.
    - iii. Think of ways to incorporate.
    - iv. Provide summaries to Bruce by the next meeting (2-days prior).
  - Paul M: How willing will this group be to accepting anecdotal information?
  - Jay R: A lot of the research out there is based on limited data. Get the information on the table first, then evaluate.
  - Jay R: Long-term evaluation?
  - Bruce W: Costs and life cycle information very important.
7. Other Updates, Items for Next Meeting, September Meeting, Etc. 11:45-11:55
- Upcoming conference on clean water and climate adaptation summit
    - i. Should be good conference to attend – cost likely \$50-\$80/day
    - ii. Julie W: Any interest in being an endorsing partner send Julie an email (no cost, just promotion)
    - iii. Conflicts with September meeting
    - iv. Revised September meeting date: September 24, 2010 (Gary Johanson indicated they would be bringing snacks to the September meeting)
    - v. Bruce W: Can the Summit presentations be used for MIDS?
      1. Yes.
  - August 18 CWP webcast on permeable pavement from 11-2 in Room 2A/B. Let Anne Gelbmann know if you are interested in attending.
  - Jay R: Presentation topics for next meeting?
    - i. Randy Neprash’s urban tree presentation?
  - Bruce W: Should have two work products to review at the next meeting.
    - i. Summary of volume credits
    - ii. Different approaches to crediting
  - Things interesting

- Planning process
- Distinction between county planning and metro planning
- MIDS and TMDLs
- MIDS and MS4 programs
- Klayton E: Water framework project
- Next meeting August 20, 2010 9:00 MPCA (Mary Davy indicated snacks would be provided).

# Meeting Notes

## MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING

AUGUST 20, 2010

MPCA ST. PAUL OFFICE

520 LAFAYETTE ROAD NORTH – CONFERENCE ROOMS 2-A/2-B

9:00-12:00

Note taker: Karen Jensen

In attendance: Mike Findorff, James Hafner, Jay Riggs, Wayne Cymbaluk, James Vagle, Karen Jensen, Julie Westerlund, Larry Frank, Mark Doneux, Mike Kelly, Paul Moline, Peter Otterson, Wesley Saunders-Pearce, Michele Caron, Garry Johanson, Phil Belfori, Anne Gelbmann, Scott Anderson, Mike Isensee, Mark Zabel, Jesse Schomberg (phone), Craig Otto, Paul Radomski, Matt Durand, Dave Newman, Doug Snyder, Mary Davy, Liz Boyer, Randy Neprash, Diane Spector, John Hanson, Deann Stish, Dan Edgerton, Robert Pace, Bruce Wilson

1. **Introductions/Meeting minutes/ Review Work Group Charge** Jay Riggs 9:05

- a. Review of work group charge – see **handout**
- b. Anne Gelbmann sadly reported the passing of Keith Cherryholmes of the MPCA, on Thursday August 19. Additional details regarding services will be forth coming.

2. **Proud to Introduce MIDS Consulting Services** Bruce Wilson

Bruce introduced the three consultants selected through the RFP process to produce MIDS work products. Bruce thanked the RFP review team for excellent service (Mike Findorff, Lois Eberhardt, Wes Saunders-Pearce, and Mike Isensee). Each of the three consultant project managers were asked to briefly review their teams and technical strengths:

a. **Barr Engineering, John Hanson: Project Manager**

John gave brief overview of Barr technical team, which will include Kurt Leuthold, Art Kalmes, Keith Pilgrim, Greg Wilson, Steve Klein, Karen Chandler, Brad Lindeman, Daniel Jones, Fred Rozumulski, among others. John pointed out strength of team, with expertise ranging from LID engineering design and construction, to landscape design, to groundwater hydrology, to LGU (local government unit) management, particularly of watershed districts.

John will be meeting week of August 22 with Bruce Wilson to finalize Barr's work plan.

b. **Bonestroo, Randy Neprash: Project Manager**

Randy Neprash presented **handout** which reviewed the Bonestroo technical team, which includes landscape architects (John Slack, Kate Lamers and others), GIS/CAD specialists (Hart Gilchrist, Rozanne Nohre and others), a hydrologist (Jesse Carlson), engineers (Dan Edgerton, Phil Elkin, and others), scientists (Ben Meyer, Paul Bockenstedt and others), and urban planners (Ciara Schlichting, Phil Carlson and others). Randy reviewed technical strength of group, and pointed out particularly their work on urban tree connection to stormwater management with the City of Minneapolis Tree Advisory Commission. Also pointed out their strength/experience with LID construction and maintenance and noted Bonestroo's recent merger with DSU, a landscape architect/planning consultant. Randy noted the last 10 pages of the **handout** review Bonestroo's comprehensive services.

Bonestroo was tasked to review, evaluate and summarize various WMO, city, state and federal volume controls and linked rate controls and better site design options Task 1.1(3). Randy predicts

some materials will be forwarded to the MIDS workgroup one week prior to the next meeting (which is September 24).

c. **Wenck Associates, Diane Spector: Project Manager**

Diane presented an overview of the services provided by Wenck, which focuses on environmental management plus traditional civil engineering. Wenck has a strong emphasis on watershed management and TMDL/TMDL Implementation project preparation, as well as extensive experience in developing rules/ordinances/standards. Diane pointed out the Central Corridor Light Rail stormwater management project, which involved volume reduction, as a recent example of a Wenck LID project.

Wenck project team will include: Mike Panzer, Ed Mattheson, Joel Toso, Pam Massaro, Joe Bishoff, and Peter Miller.

3. **Proposed Timelines: Expedited Consulting Timeline vs. Work Group Review and Decision Timeline – Bruce Wilson**

Bruce presented **PowerPoint overview** of consultant timeline. Timeline is driven by available budget and financial distribution constraints. Most work tasks will be completed by January 2011, with Performance Goals to be completed by Halloween, Credits/Calculators to be completed by January, Specifications/Fact Sheets completed by January, and Ordinance Goals (through the St. Croix 319 Study managed by Jay Riggs) ongoing thru 2011. The first three items (Performance Goals, Credits/Calculators, and Fact Sheets) are part of Phase I funding, which means that MPCA must report to Legislature by June 2011 on MIDS progress.

Each MIDS work group meeting, starting with September 24 meeting will involve overview of completed work products, review of draft work products, and overview of products expected for completion by the next meeting. Anne and Bruce are still designing process that will distribute work products to the MIDS work group prior to each meeting. The distribution of materials may involve webcasts developed by the consultants, which will be available to work group members prior to each monthly meeting.

- a. Bruce has requested an additional \$400,000 of MIDS Phase II money. Phase II tasks will include: linear (road and highway) projects, urban landscape management (trees and turf), expansion of MIDS credits and calculators for municipal-wide tracking, reuse of stormwater, dealing with gaps and unresolved issues and updates to the Stormwater Manual **Proposed Anti-degradation Timeline and defining Alternatives Analysis**

Bruce briefly reviewed the connection of MIDS to the anti-degradation rules under development at the MPCA. The MIDS work products will feed into the Alternatives Analysis portion of the Anti-deg rules. (See June and July MIDS meeting notes for overview of Anti-deg presentations by Bill Cole of MPCA). Update on the Anti-deg rulemaking process can be found at

<http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/water-rulemaking/nondegradation-rulemaking.html>

4. **Proposed format of work products & discussion: Bruce Wilson**

- a. **Prior posting of draft technical memo/webcast, Work Group review and finalization of technical memos with Consulting Providers.**

Bruce will be meeting with consultants during week of August 22 to finalize work tasks. MIDS work group will be updated once that process is completed.

Question (Mary Davy): Mary asked that PowerPoint timeline be posted on MIDS website.



Comment (Jay Riggs): Asked that timeline be “live” document on the website, updated frequently to reflect work task progress.

Question (Jay Riggs): Can Bruce provide any more detail on task assignments to consultants?

Response (Bruce Wilson): Will have more detail on consultant assignments next week (week of August 22); cannot provide any more detail until then. The tasks for each consultant will be outlined in a technical memo which will be forwarded to the MIDS workgroup.

Bruce presented **PowerPoint on “MIDS Ingredients”**

1. Slide 1: pointed out the large variety of landscapes in Minnesota that will affect development of the performance goals
2. Slide 2: example of end products developed by State of Virginia
3. Question: Does it make sense to assess full build-out conditions to test performance goals?  
Response (Bruce): Yes, build-out conditions will be assessed.
4. Slide 3: Minneapolis-St. Paul precipitation during 2010. Bruce noted there have been at least 3 3” events this summer. Also noted the close succession of precipitation events. Noted the challenges these precipitation patterns present when designing the performance goals.
5. Slide 4: Rainfall versus flow for Elm Creek. Bruce noted the presence of large runoff events in the spring, which will drive major delivery of pollutant loads. Noted also the smoothness of the hydrograph across the year, with rising and falling hydrograph limbs and inter-event base flow.
6. Slide 5: Runoff of stormwater in Minneapolis Chain of Lakes watershed: stormsewer draining to Lake Harriet. Noted the lack of smooth hydrograph in urban stormsewer. Runoff instead occurs in short, intense pulses. MIDS products must incorporate both the hydrographic conditions similar to Elm Creek and similar to urban stormsewers, which presents major challenges for the consultants.
7. Slide 6: 3-d plot of average runoff per square mile for the State of Minnesota. Noted the wide range of runoff amounts across the state.
8. Slide 7: Population growth projected across state by county for 2000-2030. Average growth rate for that period is 27.4%.
9. Slide 8: Ecological provinces of Minnesota as determined by Minnesota DNR. Bruce noted vast difference in ecological regimes across state.
10. Slide 9: Illustration of Center for Watershed Protection (CWP)/Tom Schueler runoff reduction calculation method. MIDS will use this as a model on determining runoff volume reductions.
11. Slide 10: Anti-deg and TMDL (Total Maximum Daily Load) projects
12. Slide 11: Event-based results will be extrapolated to annual loads to calculate reductions necessary to meet MIDS goals.
13. Comment (Mark Zabel): Pointed out the varying technical/management capabilities of the counties across the state. Notes that in some counties, erosion control/shoreland ordinances are the only regulatory tool available to county staff.
14. Question (Jim Hafner): Can the MIDS schedule be revisited as time goes on?  
Response (Bruce Wilson): There is some flexibility, but most tasks must meet the January deadline.
15. Comment (Wes Saunders-Pearce): Notes that the RFP does not distinguish between Phase I and Phase II tasks. Some judgment will be necessary to assign I and II tasks and determine what must be done now and what can be delayed until Phase II.

16. Question (Jay Riggs): Asks Bruce's thoughts on MIDS workgroup effects on Anti-deg Alternatives Analysis.  
Response (Bruce): In simplest terms, the anti-deg rulemaking is looking at post development loading (volume and pollutants) = predevelopment loading. But some situations complicate the issue, such as loading from long-term fully developed cities like St. Paul and Minneapolis and linear projects (eg. MnDOT road projects). The MIDS work products, especially Performance Goals and Credits/Calculators, will aid in determining volume, TP (total phosphorus), and TSS (total suspended solids) reductions necessary. Adoption of MIDS "package" should aid communities in meeting Anti-deg requirements.
17. Question (Jay Riggs): When/how will MIDS workgroup give feedback to Bill Cole on Anti-deg process?  
Response (Bruce): Bill Cole (MPCA staff person working on Anti-deg rulemaking) is going to attempt to attend future MIDS work group meetings. Between now and December, the Anti-deg rulemaking process will allow us to provide feedback. Mike Findorff adds: Permit process will allow MIDS package to feed into the Anti-deg Alternatives Analysis.
18. Comment (Jay Riggs): I am worried about how we can combine Anti-deg input along with feedback to consultant on performance goals? In addition, we need to figure out how ordinance package (being developed as part of the St. Croix Basin 319 project) will also feed into the Anti-deg process. We want to ensure that communities can adopt the MIDS package as a patch to Anti-deg compliance.  
Response (Anne Gelbmann): Bill Cole will attend future meetings. He is committed to incorporation of MIDS into Anti-deg rules.
19. Comment (Randy Neprash): MPCA has responsibility for tracking MIDS in terms of Anti-deg requirements. Points out that MIDS high level review group (MCEA {Minnesota Center for Environmental Advocacy}, MPCA commissioners) will review and approve, thus providing "buy-in" by MPCA.  
Response (Bruce): MCEA and Builder's Association were the primary groups that drove the initial development of the MIDS process. Bruce wants periodic higher level review to make sure MIDS process is approved as it occurs.
20. Question (Jay Riggs): If we need to provide feedback for Anti-deg Rulemaking, perhaps we need an extra MIDS workgroup meeting each month. Jay pointed out MIDS work group decided in June that we would forego forming sub-groups and continue to meet as one large group to cover all topics. Suggest all MIDS work group members keep the first Friday of each month for September through January open for additional meetings.
21. Comment (Wes Saunders-Pearce): Still confused about MIDS tasks and level of detail that will be involved. **Notes that Anti-deg is a rulemaking process and thus is broad-scaled. Yet the MIDS tasks are very detailed. What level of detail do we need to consider, especially in terms of Anti-deg?**  
Response (Jay Riggs): Asked that these comments be highlighted in minutes for future discussion.
22. Comment (Mary Davys): The MIDS timeline is daunting. Many of workgroup have never seen this type of work product before. In her opinion we need at least 2 meetings per month.  
Response (Jay Riggs): **Save the 1<sup>st</sup> Friday of each month for additional MIDS meetings – especially for months of September, October, November, and December. Try to keep the**

entire day open in case we decide to meet for entire day. No additional MIDS meetings are scheduled at this point.

23. Question (Anne Gelbmann): Asked consultants when we can expect first work products? Points out the next MIDS meeting is September 24.

Response (Randy Neprash of Bonestroo): Stated Bonestroo will have some results on the Performance Goal work task one week prior to the September 24 meeting.

24. Question (Anne Gelbmann): How would workgroup members like to see the products?

Response (Jay Riggs): Prefers distribution of products via FTP site.

Response (Anne): MPCA is considering having the consultants produce webcast which will present overview of work task products that MIDS members can view in advance of each meeting.

Comment (Jim Hafner): Reminded group that all communications with consultants must be transmitted through Bruce Wilson.

Comment (Mike Isensee): Recommended posting webcasts on MPCA MIDS website.

Comment (Karen Jensen): Would like to review technical details of work products rather than just overview.

Comment (Julie Westerlund): Would rather rely on MIDS workgroup members to educate each other rather than use consultant time/dollars to provide education to MIDS members.

Response (Bruce Wilson): Is concerned about less-technical MIDS work group members being left behind without knowledge to appropriately review work products.

**b. Involving Greater MN: using Webinars                      Anne Gelbmann**

An MPCA communications staff person has been assigned to MIDS to help develop fact sheets, press releases, materials for conferences, etc. The MPCA is considering use of “Web-X” or “Webinar” tools to broadcast MIDS meetings to outstate Minnesota or to anyone who cannot be physically present at meetings. Both tools can handle up to 200 participants. In the next 2-3 weeks should have a communication plan to share. Should be able to use Web-X at September 24 meeting.

Question (Mike Isensee): Can meetings be recorded and posted to website?

Response (Anne): Will look into that.

Question (Anne): Should she start arranging communications about MIDS progress to the large stakeholder group involved in the initial tasking meetings?

Response from group: Yes!

**5. Update on Ordinances via the MIDS 319 Grant in St. Croix Basin                      Jay Riggs**

- a. The tasks provided by the MIDS 319 grant were reduced from MIDS Phase I monies. Anne Gelbmann was able to secure \$125,000 from EPA 319 program to replace these funds.
- b. Why was St. Croix basin selected for model ordinances study? Jay pointed out it is a diverse watershed with urban, forests, and agriculture lands, plus it is covered by a basin-wide TMDL project.
- c. Overview of St. Croix MIDS project tasks:
  1. Steering Committee: made up of watershed district, city, and county staff from within St. Croix basin. Will provide technical review and recommendations.
  2. Development of Metrics to determine success of project. Will be based on the FMR (Friends of the Mississippi) “Blue Star” program (see website at <http://www.bluestarmn.org/>). The Blue

Star award is a certification and award program that offers public recognition to municipalities that excel in stormwater management. The program uses an on-line survey to assess community's activities in managing stormwater. Program became operational only 3-4 weeks ago. Jay asked MS4 cities in the ST. Croix basin to fill out the Blue Star survey. Jay is also connecting with the NEMO (Nonpoint source pollution education for Municipal Officials; see website: <http://www.extension.umn.edu/stormwater/NEMO/index.html>; <http://www.northlandnemo.org/>) programs involved in Lake St. Croix, Chisago City, etc.

3. Review existing ordinances from the 62 cities/counties in the Minnesota portion of the ST. Croix Basin, with focus on those in Washington, Chisago, and Anoka Counties. Existing ordinances will be evaluated for erosion control, stormwater, infiltration requirements, etc.
4. Use focus groups to develop list of items for MIDS package as path to meet Anti-deg requirements. Jay notes that they will coordinate this effort with the TMDL implementation planning process.
- 5.
6. Awareness building with 2-3 pilot communities, which will include at least one MS4, one small city, and one county. Pilot communities have not yet been selected.
7. *5, 7, and 8. Prepare MIDS package and work with 2-3 pilot communities.*
8. Jay notes that the completion date for the MIDS St. Croix Pilot Project August of 2013. .
9. Question (Peder Otterson): Are townships excluded?  
Response (Jay Riggs): The focus is on cities and counties.

6. **BREAK**

10:30-10:50

**Announcements:**

Julie Westerlund: Clean Water and Climate Adaptation Summit at Minnesota Landscape Arboretum on September 16-17. Can attend either one or two days. Julie notes items presented on September 16 will be of most interest to MIDS.

Anne Gelbmann: Center for Watershed Protection Webinar: Pervious Pavers on September 1. MIDS members can watch at MPCA office. Let Anne know in advance if you want to attend.

Question (Karen Jensen): Does Bruce still want MIDS members to forward unpublished studies?

Response (Bruce): Yes, quickly. Especially interested in studies that involved actual monitoring.

7. **Trading Rule Overview and background material, presentation next meeting. Bruce Wilson**

- a. Draft rule for pollutant trading of phosphorus is under review at MPCA. This rule focuses on point source (for example waste water treatment plants). The concepts will also apply to Anti-deg. Bruce read key points from the draft rule.
- b. The "currency" for the current rule is phosphorus, but should also be able to apply to process to other pollutants (runoff volume, solids, nitrogen) in the future. The rule will include several different types of ratios (for example, 1 pound of point-source load typically is equivalent to 2-3 pounds non-point source load). There typically is also included some reasonable assurance that the remediative activities will take place, and some statement of risk factors.
- c. Bruce would like to advance both phosphorus and volume as trading parameters to be considered in MIDS. Notes that thermal trading was evaluated in the Vermillion River Watershed.
  1. Mark Zabel provided brief overview of Vermillion River thermal trading process. They looked at both the technical aspects and economic aspects of thermal trading. Was challenging because thermal impairments are not conservative (i.e. the impairment is greatest at the source of thermal pollution and because less away from the source due to cooling). Because of complications, thermal trades will be allowed but only on a case-by-case basis. Applicants must identify remediation site and demonstrate how remediation will occur.
- d. Bruce pointed out that administrative costs (to track trades) can be extensive

- e. Question: Pollutant trading seems similar to the wetland banking process administered by BWSR.
- f. Bruce notes that pollutant trading must occur within same watershed, especially for Anti-deg.

## 8. Future Glimpse : Watershed District Volume Control References and Examples of Credits and Calculators: Bruce Wilson

- a. See Handout (Pollution Prevention and MS4 program), pages 65-67. Gives an example of what consultant may provide in September.
- b. Comment (Mark Doneux): Notes that "infiltration requirements" are really "volume reduction" requirements. Volume reduction can occur by means other than infiltration. Mark also noted that Capitol Region Watershed District also includes "in lieu of" options.
  1. Noted that if a contractor wants to use filtration rather than infiltration, they are required to filter 30% more volume than infiltration requirements.
  2. If developers cannot meet volume reduction requirements, they have option to pay a stormwater reduction fee.
  3. Noted that the new high school built in the district will use water reuse as a volume reduction technique.
  4. Noted that the green (vegetated) roof on the new fire station in St. Paul held 100% of rainfall from a recent 3-inch storm. No runoff occurred from the event.
- c. Mark Zabel noted that Vermillion River WMO allows alternatives for volume reduction. For example, incorporation of compost into soil under turf areas, but that developers rarely use those alternative practices. He looks to MIDS to help put value on the alternative practices.
- d. Jay Riggs: It seems like Minnesota has many more water resources ordinances/standards than other parts of the country. But notes that proper training on design, construction, and maintenance is necessary to ensure proper function of practices, and an education component is not included in MIDS (other than the activities noted in the pilot project).
- e. Question (Mary Davys): How can MIDS set performance standards when we are not addressing operation and maintenance of practices?  
Response (Bruce): O&M will be included. University of Minnesota studies have already shown that improper design, construction, and maintenance have resulted in failed practices. Some crucial items may be missed during MIDS Phase I, but work group will attempt to identify missing pieces and incorporate into Phase II. Also noted that Ross Bintner of City of Prior Lake has been crafting some neat work products regarding chemically enhanced treatment of stormwater, mainly thru incorporation of iron filings into infiltration basin soils.
- f. Question (Mike Isensee): Notes that we will need to differentiate between water reuse on public use areas versus water reuse on non-use areas due to danger of exposure to pathogens.
- g. Comment (Wes): Noted that inclusion of more items in Phase I means other items will need to be delayed until Phase II; because a value judgment. For example, he would prefer that linear systems not be eliminated from MIDS due to MNDOT concerns.
- h. Question (Paul Moline): When can we provide feedback on what will be included in Phase I work tasks?  
Response (Bruce): Within next week, will have better idea of how far the Phase I budget will go.
- i. Question: How will soil types be addressed in MIDS (for example, clay soils)?  
Response (Mark Doneux): Capitol Region Watershed District allows use of filtration or "payment in lieu of" as alternative to infiltration in presence of clay soils.  
Response (Jay Riggs): Some standards focus on matching pre/post-development volume to address clay soils.
- j. Bruce notes that he will make use of MIDS co-chairs to make immediate decisions on work orders, if necessary.

9. **Work Group Items**

**All**

Bruce notes that progress timeline will be easier to update and assess once work tasks have been finalized and assigned.

10. Next meeting will be **September 24**, 2010 from 9-12 at the MPCA-note date change!

a. Proposed Meeting Format:

- i. Review of previous material
- ii. Review and discussion of present tasks
- iii. Future glimpse

MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING  
SEPTEMBER 24, 2010  
MPCA ST. PAUL OFFICE  
520 LAFAYETTE ROAD NORTH – TRAINING ROOM 2  
9:00-12:00  
**AGENDA**

Attendees: Lois Eberhart, Mike Findorff, James Hafner, Jay Riggs, Wayne Cymbaluk, James Vagle, Karen Jensen (Webex), Julie Westerlund, Klayton Eckles, Larry Frank, Chad Anderson, Mike Kelly, Paul Moline, Peder Otterson, Wesley Saunders-Pearce, Trevor Russel, Garry Johanson, Anne Gelbmann, Scott Anderson, Mike Isensee, Mark Zabel, Lisa Frenette, Jack Frost, Jesse Schomberg (Webex), Mike Kinney, Craig Otto, Paul Radomski, Beth Neuendorf, Melissa Lewis, Dave Newman, Brian Livingston, Kurth Leuthold, Janna Kieffer, Doug Snyder, Mary Davy, Art Kalmes, Liz Boyer, Bruce Wilson (Webex), Bill Cole, Carol Hejl, Dan Edgerton, Todd Smith, Bruce Olsen,

**1. Introductions: Jay Riggs, Co-Chair** **9:00-9:10**

Jay opened the meeting with a revised agenda – Bruce Wilson is out, but available via WebEx and Randy Neprash is unavailable today. Randy's presentation will either be moved to the October 15 meeting, provided to the workgroup in another format ahead of the October 15 meeting, or occur during a special meeting prior to October 15. Details to follow.

**2. MIDS contract, work orders – Bruce Wilson, MPCA** **9:10-9:30**

Via email and Webex

Two work orders have been issued:

- Bonestroo – to summarize state, local and national volume control approaches.
- Barr – to begin to package various precipitation and runoff data and begin to craft a range of volume control practices and associated strengths and weaknesses. Barr will proceed on tasked items relating to credits and calculators based on work group performance path choices.

One work change order pending with Barr is for additional modeling to help form a technical basis of simple volume control practices (continuous simulation vs. event based).

There is not enough funding to do everything so the work group will have to be very selective in what work is tasked to our consultants. Work orders can be issued in about two weeks. This is not comforting given the mid-January target date. Propose that sequential work orders for best targeted work based on critically important volume control approaches that are chosen by the work group. Similar approaches that are technically defensible seem to be most commonly mentioned by the work group members to date.

We need to bridge from storm events to annual loading – which will be a modeling exercise.

Once the main Legislative intent is satisfied (pre-post runoff and based on native soils and vegetation), we can begin credits.

The main focus on credits will be on Anti-deg (which will focus on the alternatives analysis).

Closely related will be the linking of BMPs to annual loading credits (volume, TP, and maybe TSS if we have resources).

Questions on work orders – contact Bruce.

Jay R – How does the delay impact the timeline?

Bruce – We will have to choose between forks in the road and pursue the detail. No blanket approach where we can pursue detail on all forks.

### 3. Bruce Olsen– MDH Wellhead Protection Areas

9:30 – 9:45

See presentation:

Wellhead protection

- Does not preclude stormwater management.
- In place to prevent contamination of public well supplies.
- A couple of years ago the MPCA and MDH worked on a process to determine stormwater infiltration in wellhead protection areas (WPA).
  - Introduction of pathogens reaching public well supplies.
  - Looking at a 1 Year time of travel to well.
  - If within 1 year travel time it becomes of interest.
  - If not within 1 year travel time, then likely not of interest.

Designating wellhead areas – 3 types of water supplies:

- Community systems – 15 or more service connections serving 25 or more year round (954).
- Nontransient noncommunity – serving 25 or more 6 months/yr (657).
- Transient noncommunity – serves 25 for 60 days (6977).

Two kinds of WPAs

- Inner wellhead management zone (200' radius around a well).
- Wellhead protection areas (MN Rules 4720).

Well vulnerability assessment

- Monitoring frequency and identify risk to water quality.

WPA delineation criteria

- Groundwater flow, aquifer transmissivity, volume pumped, travel time, etc.

Drinking Water Supply Management Area (DWSMA)

- Management area in the WHP plan
- Boundaries are often roads, etc.

DWSMA vulnerability – dictates management strategies

- Aquifer geology
- Groundwater chemistry and isotopic composition

MDH guidance on MPCA website in selecting stormwater BMPs in WHP.



Beth N – What about private wells? (approx 1.5 million)

Bruce O – MDH regulates construction and determines requirements for new construction, testing, etc. After that it's up to the owner – no state requirements.

Mike I – Any studies that looked at parameters for assessing potential risk due to stormwater?

Bruce O – Need to study quality of stormwater and risk of pathogens in stormwater. Need to look at a site by site basis to determine potential transport. Bacteria usually die in groundwater however viruses are unknown.

Paul M – If someone was planning to install a BMP what would MDH role be?

Bruce O – MDH has a hydrologist that can work with you to help make determinations – technical assistance only. MDH could raise concerns, but it is a local decision.

#### 4. EcoRegions, Precipitation patterns, Interception

**Kurt Leuthold, Barr Engineering**

**9:45- 10:30**

Barr is breaking the work order into parts – expect to be done in January.

See presentation:

- Starting with legislative language and defining/interpreting native soils/vegetation and pre-settlement/natural hydrology and human alteration. Still need to define.

Jay R – The goal of MIDS is to develop performance goals and credits for development and redevelopment that will meet Antidegradation rules.

Refer to definition work previously done.

Task – provide background and foundation for defining performance goals.

First work order due in the first part of October.

Lois E – How does “research options to define performance goals for different sections of MN” fit with Randy’s work/schedules?

Jay R – Randy will be looking at what’s out there and Barr’s work will take that and develop tools to meet Anti-deg.

Kurt L – We are looking for direction on three volume control practices – which one to pursue the most.

Jay R – Kurt will provide the foundation and the group will need to get consensus to Bruce so he can direct Barr.

Anne G – Randy will present at the October 15 meeting – we will try to have his information available before the meeting for review.

Jay R – We will work with Randy on possibilities to present information in some format prior to Oct 15.

Lois E – How does “goal” fit with eco-regions (change “goal” to “goals”?)

Bruce W – OK with that.

Kurt's presentation continued discussing climate variation, rainfall amounts/intensities, topography, vegetation/eco-region, and 100 year return period/1 % chance frequency.

Some variables to consider in relation to volume control include the differences between the 24 hour storm and ½ hour storm, depression storage, and interception.

\*Concept to consider – average annual runoff based on stream gauging (measuring flow rate in streams over time giving volume – spread out over an area to get depth) resulting in variability across state. Base flow and other variables would have to be considered.

Paul M – Does this consider land use?

Kurt L – Since this is actual stream flow measurements it is the actual volume generated by the actual watershed (again need to address base flow issues).

No exact formula to taking out base flow.

Lengthy discussion on statewide variability and development/application of MIDS primarily in the metro vs. outstate and the impacts associated with agricultural runoff.

Klayton E – MIDS needs to focus on metro development and redevelopment recognizing that 80% of the state is Ag or timber – is a statewide analysis of precipitation and runoff necessary state-wide?

Jim H – The boundary of what is considered the metro area is continually getting larger.

Mark Z – I disagree with focusing primarily on the metro. Lakes areas will need these applications to address new development and impact to water resources and Anti-deg.

Klayton E – Ag is not in the room for these discussions and needs to be a part of the solution.

We cannot address Ag.

Jay R – MIDS is focused on performance goals and tools to meet Anti-deg for development and redevelopment. We recognize that there are urban/non-urban issues.

Jim H – It's an issue of regulated vs. non-regulated. Anti-deg will apply state-wide.

Jay R – MIDS only addresses the new development and redevelopment piece – not state wide stormwater issues. State wide variability is still important.

Lisa F – When we go to the Legislature we could try to address this. Ag feels that they do not have to be at the table there. Is there any additional outreach to Ag? Farm Bureau? Dept. of Ag?

Jay R – The issue of Ag interaction with development/redevelopment is not part of this project. We are looking strictly at land use changes as part of development/redevelopment. We must stay focused.

Klayton E – We should then remind people that the Ag issue is unresolved and this project does not address it.

Lois E – Stream gauge approach to volume is only a surrogate for showing variability.

Lisa F – The MS4 group is waiting for MIDS to happen. Groups need to talk and work together. MIDS is not a solution to everything.

Jim H – When MIDS is done and if adopted, it should show that an MS4 and urban areas have done their part.

## 5. Break

~~10:30~~-10:45-11:00

## 6. Overview of 4 common volume control approaches and products -

**Kurt Leuthold, Barr Engineering**

10:45-11:15

Jay R – Reviewed the goals of MIDS – path to compliance (review charge) for the summary report, we could communicate what MIDS is and is not.

Performance goal alternative evaluation – wait to see Randy's work before eliminating anything.

Goal: Mimic a site's natural hydrology (up for discussion – average annual precipitation vs. single event).

\*Be sure to reference the graphics from Barr's presentation – very helpful in reviewing the differences between the 3 alternatives.

1. Retain runoff volume on-site equal to 1" runoff from proposed impervious surfaces.
  - Ret volume = 1" \* imp area
  - Does not take soils into account
  - Very simple
  - No modeling
  - Seems to work on an annual basis
  - Many projects in the metro – modeling has shown 90-95% volume reduction
2. Retain post-construction runoff volume on site for 95<sup>th</sup> percentile storm (1.4") in Mpls.
  - Use CN method to calculate runoff volume from pervious and impervious
  - No pre-settlement calculation required
  - 95<sup>th</sup> percentile comes from the Feds (see Randy's work upcoming for more info)
  - In metro 1" = 90<sup>th</sup> percentile storm
  - See additional/similar info and graphics in the Storm Water Manual (appendix or issue paper. Shapes are similar.
3. Limit post-construction runoff from 1, 2, or 5 yr 24 hr design storms to a volume equal or less than pre-settlement.
  - Need to know pre-settlement
  - 1 yr – 2.3"
  - 2 yr – 2.8"
  - 5 yr – 3.5"
  - Probably more stringent, but you're only storing (retaining) the difference between the pre-settlement and post-construction.

Lois E – What is the appropriateness on any of these in D soils?

Kurt L – The graphics in the presentation will demonstrate the issues with D soils.

Need to determine the approach and values to be used. Infiltration rates used in the presentation are low end of range and are conservative for demonstration purposes. For any alternative or approach D soils are problematic. Could compare high and low end infiltration rates to compare footprint size.

Any existing volume control methodology is an issue with D soils.

- Design
- Construction
- Maintenance

Talking with Bruce:

- Do a long-term continuous simulation to estimate average annual pre-settlement or natural hydrology.
- Use model to evaluate how volume control standards mimic pre-settlement runoff.

Jay R – Need to have something defensible.

Lois E – Any thought on varying standards accordingly based on receiving waters?

Jay R – Need to discuss adjusting standards depending on the character of a receiving water.

Mike I – Will Anti-deg or MIDS define the standards?

Bill C – Anti-deg is responsible for defining standards – no net increase in permanent loading from 1988 (1988 is a precedent from existing rule. 1988 is not pre-settlement. If you cannot meet, some degradation can occur if it goes through the process.

Mark Z – OK for Anti-deg, but MIDS should be looking for long-term sustainability.

The criteria for defining how MIDS documents the process to meet Anti-deg have not been developed.

Klayton E – 90%=1" over impervious surfaces created a cost-effective uniform approach for us. South Washington /City of Woodbury in some areas the standards achieve more and in others less.

Wesley S – What is the take home message?

Kurt L – The relative difference is between the 3 options. Tweak values, do continuous simulation, and see if the goals are met.

Jay R – Setting the stage for this group to make recommendations. Apply this information to Randy's information.

Mary D – Definitions debate – when do we talk about those?

Jay R – Working through the process we may find that the definitions are not important when focusing on what is needed to meet Anti-deg.

**7. Clean Water Summit debrief-meeting, discussions with Andrew Reese 11:15-11:45**

Skipped the debrief.

The Arboretum web site should contain the presentations in the near future.

Recognize soils/site conditions and use continuous modeling.

**8. Announcements: 11:45-12:00**

• **Upcoming conferences/training:**

- **Brainerd Lakes Regional Stormwater Meeting 10/7 (Bruce Wilson will present)**
- **Association of Minnesota Counties 12/6/10 in St. Cloud**
- **MN Association of Watershed Districts 12/2**

- Water Resources Conference Oct 19/20
- Government Training Services
- LID Conference in Duluth Nov 16/17 (Bruce Wilson will present)
- Stormwater Steering Committee 10/21
- Mississippi National River and Recreation Area (MNRRA) National Park Service Nov 19 (St. Cloud) and/or Dec 17 (Mpls)
- MN Association of Watershed Districts:

- **Other**

Trevor R – Blue Star program, MN Water Sustainability Framework Oct 25 public comment.

Anne G – Watch for a number of upcoming MIDS presentations. We want to keep track of these and have slides available for use.

**Next meeting will be October 15, 2010 from 9-12 at the MPCA.**

MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING  
DECEMBER 17, 2010  
MPCA ST. PAUL OFFICE  
520 LAFAYETTE ROAD NORTH – TRAINING ROOM 2  
9:00-12:30  
**MEETING MINUTES**

Attendees: Lois Eberhart, Mike Finforff, James Hafner, Jay Riggs, James Vagle, Karen Jensen, Julie Weserlund, Klayton Eckles, Larry Frank, Mark Doneux, Chad Anderson, Mike Kelly, Paul Moline, Peder Otterson, Wesley Saunders-Pearce, Trevor Russell, Michele Caron, Garry Johanson, Anne Weber, Anne Gelbmann, Scott Anderson, Mike Isensee, Mark Zabel, Tina Carstens, Mike Kinney, Beth Neuendorf, Matt Durand, Dave Newman, Brian Livingston, Kurt Leothold, Janna Kieffer, Nathan Campeau, Doug Snyder, Mary Davy, Liz Boyer, Bruce Wilson, Randy Neprash, Bill Cole, John Hanson, Ian Peterson, Dave Stark, Joni Giese, Robert Race.  
WebEx participants: Todd Smith, John Chapman, Jay Dorsey

**1. Introductions: Jay Riggs, Co-Chair**

Jay opened the meeting with around the room introductions and a project status update. Clarification was given on the purpose of the meeting which is to rank the various performance goals for future modeling exercises and not to determine the ultimate performance goal for the project. The following chart was shared and drawn by Jay:

Performance Goals	-----I-----
Credits	---I-----
Calculators	---I-----
Community Assistance	-----I-----

This shows that we are nearly ½ way complete on the performance goal; just in the beginning stages of the credits and calculators and community assistance.

**2. Met Council’s Stormwater Reuse Project: Karen Jensen and Brian Davis**

Brian gave a presentation on the Met Council’s Stormwater Reuse Plan for Communities as an informational item. The funding comes from the MN Clean Water Fund with \$400,000 coming from water supply funding. The mandate is to develop plans for stormwater reuse in metro communities. An example of a community that has done a project like this is the St. Anthony Village water containment and reuse system.

Some of the tasks of the project are to review existing projects and formulate guidance to be used by the communities. The deliverable will be a document regarding guidelines for communities. The plan completion date is set for May 31, 2011.

If anyone is interested in being involved with this project they should contact Karen or Brian for more information.

**3. Presentation from Barr Engineering – Kurt Leuthold, Janna Kieffer, John Hanson & Nathan Campeau**

- Kurt started the presentation with a look at the performance goal evaluations.

- Presentation can be found on MIDS Work Group website at: <http://www.pca.state.mn.us/publications/p-gen3-12k.pdf>
- Using the model to evaluate how well rate and volume mimic native runoff.

**Page 7 of Presentation:**

Lois E: Why does the first goal say 1 inch if we haven't picked what the standard should be yet?

Kurt L: The 1 inch is just a starting point and picked as it is a common standard in the metro area. Can use the model to adjust this number in the future.

- Regarding the second performance goal, clarification was made that the 95% storm does not equal 95% of annual volume. And also that the 95% storm for the metro is 1.4 inches.

**Page 9 of Presentation:**

- Discussion was had about what is the definition of native condition and when it was decided. Consensus was that there wasn't a moment of decision among the group but that some assumptions were made for modeling purposes.
- Hydrograph analysis of rain events and soils conditions
- Conclusions from RATE control analysis is:
  - Volume BMPs control 1 yr 24 hr (and maybe 2 yr) event peak rates for most scenarios but rate control BMPs are needed to truly mimic native hydrology.

**Page 27 of Presentation:**

- Janna Kieffer from Barr Engineering picked up the presentation at the Continuation of Runoff Volume Comparisons

**Page 29 of Presentation:**

Question: Why are the frozen conditions all the same at 4 inches/acre?

Janna K: Assuming that frozen conditions means no infiltration and therefore it isn't dependent on the soils.

**Page 32 of Presentation:**

- Good look at the difference between developed without BMPs and all the other scenarios which shows that there really isn't a huge difference between the 4 performance goals.

**Page 34 of Presentation:**

Karen J: Are you assuming that the BMPs are operating during frozen conditions?

Janna K: No, we assumed that they fill up once but then do not infiltrate in the frozen conditions.

**Page 35 of Presentation:**

- Note here that none of the goals mimic native conditions when looking only at the growing season.
- Question is how do we use this information? Do we only look at the growing season when talking about mimicking or do we include the snow melt time period also?

Page 36 of Presentation:

- Mike I: You are assuming that a meadow or forest are acting as a parking lot when we know that it doesn't all run off in those land uses.
- Barr: We needed to make assumptions for the model and don't have a widely accepted way to mimic what actually happens. It is generally accepted that there is 100% runoff in frozen conditions for models. And in the end we just need to relate the numbers to each other and not just look at the number itself. Make the same assumption for each goal.
- Jay R: What is your recommendation? That we just look at the growing season or both frozen and non-frozen conditions?
- Barr: That is a group decision to be made. This information so far is just for volume but we have also looked at loading in frozen/non-frozen.
- Beth N: We are in MN and therefore we need to take into account frozen conditions since we have those conditions for much of the year.
- Randy N: How can we say a developed with rain gardens is less than native?
- Barr: Because of the one time fill up storage in the winter.
- Mark Z: The model is just making assumption that these BMPs over perform in the winter and under perform in the summer.
- Klayton E: What this shows is the benefit of BMPs in the winter. Period.
- Lois E: The question is would we design our BMPs differently depending on if we were looking at summer vs winter?
- John H: Question is how often do we want to exceed? And looking at the combination of winter/summer maximizes the size of the BMPs.
- Randy N: The BMPs only cover the first event.
- Wesley S: 95% of storms is approx 75% of annual volume – does that account for snow events?
- Barr: It does take into account the water equivalent of snow on % volume graph which could be misleading.
- Barr: We can get the number to mimic native conditions in a number of different ways. When we look at loads (peak events) – capture snowmelt & big storms – snow melt is huge.
- Lois E: I recommend looking at them separately.
- Jay R: Think we should wait until we have the loading information.

**BREAK**

Page 43 of Presentation:

- Conclusions from VOLUME control analysis:
  - All performance goals do well at matching native conditions on an average annual basis
  - All do worse at matching native conditions during non-frozen groundconditions (some yield up to 2 times more runoff)
  - If goal is to match or not exceed native conditions, values could be adjusted (e.g., use 1.3" vs. 1", use 97% vs. 95%, use 5-year vs. 2-year)



- First, what goal method is the best and then what is the number we use in that method?

**Page 47 of Presentation:**

- Looking at phosphorus loading without BMPs versus with BMPs and see significant reductions. These are assuming a single BMP before outletting from the site.

**Page 51 of Presentation:**

- Volume reduction performance goals result in significant pollutant loading reduction from a site
- All performance goals evaluated have similar removal efficiencies for TP and TSS

**Page 53 of Presentation:**

- Kurt L looked at the percentage of site area needed for BMPs in order to meet the 4 goals.
- Maximum depth assumption for BMPs was 18” to protect plants but a BMP without plants could be deeper and therefore not take up as much room to drain in 48 hours.

**Page 54 of Presentation:**

- For 20% impervious, the BMP size for only volume reduction would range from 1.3% to 1.8% on B soils.

Dave N:           A real world example showed more like 3-6% but that also includes rate control BMPs.

**4. Discussion of Presentation and Ranking of Performance Goals for Next Phase of Assessments**

**Page 57 of Presentation:**

- John H passed around a handout with Side A and B titled Comparison of Performance Standards
- Side A looks at each performance standard and compares all the information that was just presented regarding methodology, BMPs sizes and incentivizing.
- Side B looks at how each standard mimics native hydrology.
- The matching pre/post standard has the most subjectivity but that could be reduced if curve numbers and infiltration rates are defined.
- But anytime you build a model there is more subjectivity.

Michele C:       Consultants use HydroCAD anyway and it is an accepted method.

Dave N:           Concerned more about subjectivity than the goal itself.

- We can select any methodology we want and then tweak the numbers to mimic native hydrology.
- Another reminder that we are not making a recommendation on a number, just the method that is chosen to do additional modeling.

Bruce W: TMDL and Non-Deg look at loads – a no net increase in loads. Benchmark for non-deg is 1988 for non-impaired waters. For impaired waters, follow TMDL recommendations.

Jay R: Need to remember that this performance goal is to not meet ALL load reductions for TMDL but a piece of it.

Comment: Why are we picking a method today?

Bruce W: Need to narrow modeling exercise to move forward and model other parts of the state.

Klayton E: Looks like all the performance standards do the job but don't like the last two (matching scenarios) because of the need to talk about what is "native" and subjectivity that brings.

Mark Z: Mimicking natural hydrology is to move towards a sustainable condition for the resource.

Lois E: Don't want to gloss over the impervious/pervious and incentives.

Mark D: If looking at picking two different standards to move forward on, doesn't it make sense to look at the two most different (1 & 3b) and move forward with that?

Dave N: Picking two now doesn't mean we can't look at different ones later.

Wesley S: What will we get from further modeling?

Barr: Will get information on A soils and also different areas of the state and help to tweak the standard across the state.

Randy N: We are looking at different soil types but not talking about urban land.

Jay R: Do we feel like we can vote now using a dot exercise?

Wesley S: If one is clearly the winner can we just model that one to save money?

Bruce W: We will see how it plays out.

- Group consensus was to vote now with each primary member of the work group getting two dots that they could place on any of the 3 options. They could choose to place them both on one or split them on different choices.

- **VOTING RESULTS:**

- **Option 1 – Ruler → 17 votes**
- **Option 2 - % → 18 votes**
- **Option 3 – Match → 5 votes**

(Note: Option 1 is to retain a runoff volume on site equal to one inch of runoff from proposed impervious surfaces; Option 2 is to retain the post-construction runoff volume on site for the 95<sup>th</sup> percentile storm which is approximately 1.4 inches in Mpls; and Option 3 is to limit post-construction runoff from a 1 year 24 hour design storm to a volume equal to or less than native soil and vegetation conditions.)

- **Consensus is that the additional analysis using the top two methods:**

- **A and B soils**
- **In Brainerd, Duluth and Rochester**
- **20%, 50% and 80% Impervious**

- Mark's discussion of other programs with MIDS and the Antidegradation discussion will be postponed for a future meeting.
- Bruce W, Anne G, Mark D, and Jay R updated the group on a meeting had the week before with the MIDS partners including MCEA, MPCA, Builder's Associations, MAWD and League of Cities. Everyone felt like the process was moving forward and on track.
- Next meeting is January 21, 2011 at 9 am at the MPCA in St. Paul.

MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING  
JANUARY 28, 2011  
MPCA ST. PAUL OFFICE  
520 LAFAYETTE ROAD NORTH – TRAINING ROOM 2  
9:00-12:00  
**MEETING MINUTES**

Attendees: Anne Weber, Beth Neuendorf, Bill Cole, Bruce Wilson, Chad Anderson, Craig Otto, Dave Newman, Douglas Snyder, Garry Johanson, Ian Peterson, James Hafner, Janna Kieffer, Jay Riggs, John Hanson, Joni Giese, Julie Westerlund, Karen Jensen, Klayton Eckles, Kurt Leuthold, Liz Boyer, Lois Eberhart, Mark Doneux, Mark Zabel, Mary Davy, Matt Durand, Michele Caron, Mike Findorff, Mike Kelly, Mike Kinney, Paul Moline, Randy Neprash, Robert Race, Scott Anderson, Shane Missaghi, Tina Carstens, Todd Smith (WebEx), Wesley Saunders-Pearce, Bob Swanson, Sheila Sahu, Kristen Larson, Rocky Kuehn (Webex), Scott Lucas (WebEx), John Chapman (WebEx), Anne Gelbmann,

**1. Introductions: Jay Riggs, Co-Chair**

Jay opened the meeting with around the room introductions and gave a brief overview of the agenda. Jay turned it over to Mark Doneux to discuss the connection of MIDS to other programs.

**2. Connection to MIDS and other programs-Mark Doneux**

Through a brainstorming session, several programs were identified and added to a table as a point of discussion. The table is meant to engage members in what their expectations and goals are for MIDS related to other programs. Mark encouraged members to review the table, make comments, and forward to Mark for review and discussion in subsequent meetings. Add yes or method of measurement to the form for input. Feedback from stakeholders and stormwater professionals indicates that there are expectations for the MIDS workgroup.

Further discussion provided feedback including suggested additions to programs section of the table:

- Linear projects
- WMO's
- Anti-deg and ORVW's are dependent on one another-should be combined
- Industrial Stormwater Permits
- Stormwater Manual-as a delivery mechanism
- Wellhead Protection
- CSO's in Minneapolis

Bill Cole discussed that Anti-Degradation is interested in MIDS, see further details regarding Anti-Degradation below. Scott A. talked about a feeling of nervousness when the MPCA uses vague, non-committal terms that MIDS might not meet anti-deg. requirements. Bill

stated that its “very likely” that MIDS will come up with something that fulfills anti-deg alternative analysis.

Discussion about whether I&I should be included, with majority of comments to stay focused on the initial goals for why MIDS was formed. Jay noted that programs could be divided into primary and secondary categories.

### **3. Continuation of Discussion on Pollutant Loading Removals – Barr Presentation – Janna Kieffer, & John Hanson**

(See Barr Performance Goal Powerpoint Presentation on MIDS web page)

- Presentation outlined the P8 modeling used to evaluate phosphorous pollutant loads. Pollution loads vary with several factors including land use, amount of impervious and the degree of the storm.
- Modeling generated from the previous 35 years for a 10 acre site with impervious coverage of 20%, 50%, and 80% on type B & C soils. Natural vegetation with native conditions was not modeled.
- The modeling indicated that an increase in imperious surface square footage had a direct connection to the increased loads.
- All added BMPs showed significant removals based on an infiltration basin used as the constant BMP in all scenarios.
- All scenarios showed a comparable rate of load reduction based on the various performance standards. The comparable results were an outcome of the infiltration basin being sized to treat the amount of impervious square footage.
- Law of Diminishing Returns was discussed. Increased pollutant reduction can remove greater amounts of loads however; at some point the amount reduced is marginal compared to the increased construction costs associated with increasing the size of the BMPS.
- Karen noted that global climate changes may affect rainfall events, having an effect on the modeling data used.
- Wesley discussed the perceived comparison of P8 modeling and XP-SWMM as similar when there is a degree of variation between the two in assumption made during the modeling. Barr tried very hard to match the data sets entered into both models. Modeling will be reviewed and discussed at future meetings.
- Klayton suggested that MIDS “take a farm tractor approach verses a formula one race car approach when reviewing the goals and desired outcomes”

### **4. Antidegradation Discussion-Summary of 30 cities-Bruce Wilson and Bill Cole**

Bruce provided a brief overview of the anti-degradation requirements and introduced Bill Cole. (See Powerpoint Presentation on the MIDS web page)

Bruce discussed that of the 30 cities required to provide anti-degradation reports many had similarities, were more urban, stormwater ponds were the most common BMP and many were required to provide additional information outlining maintenance of the BMPs. The timeframe of reference options included 1988 or present to 2020.

Conclusion from the 30 cities reports showed the need to:

- Reduce volume
- MS4s to address BMP maintenance and operation
- MPCA's need to formulate one anti-degradation rule.

The objective of Anti-degradation is no net increase in permitted loading. MPCA is focused on TP, TSS, and volume as pollutants for loading. Moving forward, if a MS4 meets the anti-degradation standards that MPCA plans to finalize, MS4 will not have to submit a Anti-deg report.

If projects show parameters of concern regarding anti-deg stands set forth, MPCA will perform a review if standards are met. If not, provide mitigation to the project or show value in the project. MPCA currently does not have the staff capacities to provide such review in a timely manner.

Bill discussed that anti-deg standards would be developed for MS4s and agencies to use, with the MS4s and agencies ensuring that projects within their jurisdiction are met by the contractors/owners.

Garry Johannson questioned what the enforcement method had been discussed if cities do not meet the Anti-Deg. Standards. Bill noted that it hasn't been discussed but warranted a further discussion.

Mike F. asked how anti-deg. requirements would be applied to the construction stormwater permit and what happens when development methods could not be met. Bill noted that the MPCA will develop alternative methods for construction stormwater permits to meet the anti-deg standards.

Jay R. inquired that if communities adopt the end product of MIDS through ordinance approval, will the adoption satisfy anti-deg standards and equal an alternative analysis. Bill stated that other alternatives will be allowed, and that MIDS has to equal the anti-deg standards in order for it to be an approved alternative.

Randy discussed how the anti-deg standards that are in place for wastewater have manageable requirements with flexibility and have worked well so far. Comparable standards and understanding would be similar for the MIDS process.

## **5. Demonstration of Virginia Stormwater Runoff Calculator – Sheila from Barr**

(See Barr's presentation and paper on the MIDS web page)

Barr reviewed over 20 different calculators found through research. Screening was conducted on all of the calculators to narrow them down. Screening criteria included:

- What was the level of documentation to provide support
- If it was applicable to site development
- If two were similar, then the best was chosen.

15 remained after the first screening. Additional 15 were reviewed to ensure the following functions were included:

- Pollutant loading
- Ground water recharge
- Water quality volume capability
- Channel protection
- Runoff rate

The remaining 15 calculators were also compared based on the criteria set forth in the MIDS legislation.

- Native Hydrology Mimicry
- LID Promotion
- Pollutant Loading Estimation
- Scientific Evaluation
- User Friendliness
- Input Standardization
- BMPs treatment train inclusion

After further review of the 15 calculators, 6 entries were selected for further analysis including:

- Florida
- Kitsap County, WA
- Pennsylvania
- Purdue
- Stearns County, MN
- Virginia

Barr suggested that the Virginia credit tracking calculator performed most of the desired functions and could be adapted to Minnesota's needs.

Sheila presented screenshots of the Virginia calculator and discussed the process of entering data and reviewing results.

Kurt L. Any calculator that will fit the MIDS goals and objectives will need to have custom modifications.

Randy noted that Virginia is still defining the variables for their calculator and only included phosphorous and no other pollutants. Virginia only requires that the target be met, no pre/post construction, or mimic native hydrology is needed.

John Hanson of Barr, closed the presentation with four key questions to the workgroup.

- Who will develop the MIDS calculator?
- What are must have features to have with the calculator?
- What are the expectations of the MID calculator? (TMDL, MS4, etc.)
- How should stormwater runoff rate control be handled within the calculator?

Further discussion of these questions will take place in a subsequent meeting.

#### **6. Group Discussion on definition of “mimic” – Bruce**

Bruce discussed the meaning behind the term “mimic native hydrology”. Bruce noted that the term native means A, B, & C soils with prairie, grass, and forest land uses. Native hydrology is assumed through current understandings land use, not pre settlement conditions.

- Next meeting is February 4 2011 at 9 am at the MPCA in St. Paul.

Meeting minutes taken by Matt Durand



**MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING**  
**April 15, 2011**  
**MPCA ST. PAUL OFFICE**  
**520 LAFAYETTE ROAD NORTH –TRAINING ROOM 2 (LOWER LEVEL)**  
**9:00-12:00**

**Meeting Minutes**

**Attendees:** Bruce Wilson, Craig Otto, Dave Newman, Doug Snyder, Garry Johanson, Jim Hafner, James Vagle, Jay Riggs, John Hanson, Julie Westerlund, Karen Jensen, Klayton Eckles, Kurt Leuthold, Larry Frank, Liz Boyer, Mark Doneux, Mark Zabel, Mary Davy, Mike Findorff, Paul Moline, Randy Hedlund, Randy Neprash, Robert Race, Scott Anderson, Shane Missaghi, Tina Carstens, Wesley Saunders-Pearce, Bob Swanson, Natalie Shanstrom, Kristen Larson, Tim Power, Nick Tiedeken, Leslie Yetka, Donna Herman, Anne Gelbmann

**Webex participants:** Todd Smith, Matt Durand, Mary Palmer, Wayne Cymbaluk, Bruce Irish, Dawn Doeing, Mike Trojan, Brian Livingston, Doug Malchow, Bob Newport, Chris Buntjer, Dale Thompson, Amy Garcia

1. Introductions – Jay Riggs/Mark Doneux 9:00-9:10
  - A) Doug Snyder offered an update about a research coordination meeting at St. Anthony Falls Laboratory yesterday. The Research Council is planning to develop a web based way of sharing documents. They will meet twice a year to review new applied research needs or get info from other parts of the country. The meeting was taped and will be on the web, and a summary of meeting minutes will be available. Cliff has met with MnDOT librarian and possible others about housing the repository of information. Forward additional ideas to Cliff or Doug. Doug will distribute the information when it's available.
  - B) Tom Scheuler called in to go over memo provided to the work group.

**Highlights:**

Exclusive infiltration approach vs. extended filtration (facilities with underdrains). Extended filtration increases runoff reduction even without infiltration and provide significant pollutant removal. There are certain conditions where infiltration should not be allowed. With the runoff reduction approach, developers are asked to use alternates to infiltration first and then are allowed to use more traditional approaches (wet ponds) when the alternates don't achieve the goals.

Spreadsheets are difficult to develop because the regulations need to hang together seamlessly. Inconsistencies, bugs, and implementation issues results in numerous updates to the spreadsheet. Expect to have multiple iterations to get it right once you start using it. When you get it right, the users will like you a lot!

Redevelopment – a great deal of variation in requirements, but generally still less than new development. Tom explained the difference between runoff reduction and volume reduction. Runoff reduction is used in the Bay States-this approach uses the same the same mechanisms for dealing with stormwater, but it also contains filtration (for sites with poor soils-underdrains, that –doesn't promote infiltration).

Nonstructural runoff reduction credits: Challenge for minimum inspection and maintenance

The new stormwater paradigm is a fundamental change to designers. They lack experience with the practices and are prejudiced against certain practices. Surveys show designers are further behind the learning curve than expected.

Q: Randy N: Most or all of states have used a spreadsheet approach for design calculators. Was there consideration of trying to work with existing models (P8, Winslamm)? A: Those models are not very good for site analysis and keeping track of progressive runoff reduction of practices in series. The spreadsheet is useful for concept design. You still need to show actual calculations for final design. Spreadsheets allow you to recalculate curve numbers. We are old grumpy men who don't have a lot of good history with these fancy models and prefer to use the simple method to keep track of phosphorus reduction.

Q: Klayton E: Elaborate on maintenance issues and paradigm shift? A: There are two fundamental changes: 1) new practices that we have not designed before and we are uncertain about. 2) need to reshape our maintenance programs. Historically we were trying to ensure that large structures were not going to catastrophically fail (vs. function well hydrologically). New issues: how do we inspect to give credit? What's role of erosion and sediment control inspector? How do we get access for inspection? The Chesapeake Stormwater Network is writing a technical bulletin about LID maintenance. It does not have to be a greater cost, we just need to fundamentally re-think our maintenance programs.

Q: Mark D: What are you seeing for offset fees in your area? A: \$35,000 per impervious acre or \$35,000 per pound of phosphorus. In areas where opportunities are not available for retrofit, they can go as high as \$50K - \$100K. The states have generally not established the fee; they leave it to the local government to decide what is needed to offset the costs. See Technical Bulletin 5 for more information, assumptions, etc.

Q: Bruce W: Have there been discussions about this from the Antidegradation standpoint? A: The assumption is that if you meet the highest levels of runoff reduction, you are effectively complying with antideg. If you are able to have effective impervious cover of less than 7-8% over the site as a whole, you meeting antideg. This is still in development. Working on calculations that make the link between effective impervious cover and stream quality. This is work that was done in Region 1 EPA.

2. Proposed MIDS Performance Goal for New Development  
Bruce Wilson, MPCA  
John Hanson, Barr Engineering

9:10-10:30

Bruce went over the handout provided to the group.

Highlights:

A "grand mean" approach was used. One number for the state – 1.1 inch of runoff or 93% storm. These numbers represent averages across the state.

We can get 80-97% phosphorus reduction on A-C soils.

Conclusion: these performance goals will achieve antidegradation quite well.

Some of the nuances on developed sites are really important. There's a huge amount that can be done on established communities.

Mitigation/Offsets: proposal – provide a time lag for upstream mitigation after the site is built. It does not make sense to require this prior to building.

Enhanced treatments: lots of new stuff going on.

Flexibility is important!

Feedback from the group:

Mark Z: are you proposing that we'd choose either 93% OR 1.1 inch over impervious for purposes of establishing an ordinance? A: Yes, the suggestion is that the group would choose.

Karen J: Is the value being brought down by the Northwest part of the state because the precipitation is lower? A: We started looking at demographics to take into consideration where the development is going to take place.

Mark Z: For that reason, I'd advocate for the 93%. It simplifies things. Bruce: we are anchoring this to a number because the precipitation values are going to shift with climate change. The precipitation values could go up by 10 – 20%, which will have implications for the standards.

Dave N: what about D soils? John: We are not recommending infiltration on D soils. Jay: you would go through a selection process of other practices that do not infiltrate (see page 2 of proposal).

Bruce W: We need a commitment to volume control on A-C soils in non-restricted areas. We are not talking about strictly infiltration.

Bruce W: Issues: Depressional storage, and winter infiltration. How much do forests and meadows infiltrate in the winter? We have research that says forests do not infiltrate in winter. (but this may change with climate change) We had a lot of people looking at this and we are still doing final tweaks. The numbers might shift a tenth of an inch when we take this into consideration.

Jay R: could we have a different standard with an off ramp for D soils. Jay: This is complicated.

Karen J: Weren't we looking at the volume off the whole site? Yes, for the 93%. The 1.1 inch standard is only off impervious.

Jay R/Bruce W: If we go with the percentile storm approach, we need to lock into A NUMBER because of climate reasons. This would vary across the state.

Mark Z: you will get gains differentially depending on the soils.

Jay R/Jim H: The off-ramps, alternatives will give us the flexibility we need

Scott A: Are the alternatives compliance an option on the A-C soils? Jay: Volume reduction would be mandatory as a first approach. You would have the option of the BMP alternative selection when you can't meet the standard with volume control.

Scott A: would local governments have the option to use the runoff reduction approach for impervious disconnection or other approaches? We will try to get this in the calculator but it's going to be difficult.

Mark Z: we should not be afraid of what might happen with TP-40. If we are acknowledging a real change in precipitation, we need to be sure we are not allowing ourselves to underdesign. We need to consider this (precipitation rates are already in the parking lot).

Klayton E: what's critical is what the designers use for the infiltration rates for the soils. These can vary by an order of magnitude. Jay: good point. This moves us toward refining the credits and the calculator.

Paul M: Regarding the calculator: won't the calculator address filtration? How/when do we decide what the calculator will include? Bruce: there's nothing in the budget to address filtration. Mike F: we have some preliminary numbers we are going to include (eg. Volume control with underdrains).

Randy N: Regarding comments about extended detention/disconnection. John said this was going to be hard, but my impression was that Tom S. said it would not be hard, that we should do it. John: I was referring to the multiple iterations of the calculator (Randy: that should make us secretly happy as consultants!)

Randy N: The question of simplicity vs. complicated: In the metro, there's a good comfort level with working with sophisticated models in the metro area. Is it really that big of a leap for the folks in the rest of the state?

Jay R: yes.

Randy N: the metaphor that I use is the building code. It's very complex but necessary for public safety. The universe has adjusted to it because it's felt that it's necessary. I've always felt that addressing stormwater is important enough to accept the level of complexity that we need to do it right.

Dave N: I'm frustrated with the whole process because it feels we are making this decision in a vacuum without context of real world development. Are we really considering the law of diminishing returns and letting our experiences (e.g. Woodland Cove) inform how we do this? Are the rules practical? We are not really talking about how this will be done and what the benefits will be. What are the policy implications to the cost of development? As we develop in the metro area, the good sites are gone and we are working primarily on C and D soils.

Mike F: we've taken a scientific approach to get to a number that gets us to the clean water goal; the charge is not necessarily to do the economic impact analysis.

Jay R: to clarify, we are talking about what it will take to comply with antidegradation. We need to decide: are we going to set the bar for the goal now and work out the details of how we can achieve it, or are we going to work out all the details and THEN decide on the number for the goal at the end of the process.

Garry J: That may be overreaching. You've brought developers around the table and they have shown you that it's impractical in the real world.

Klayton E: when Woodbury looked into this issue, once you go over 90%, the cost of going to 91, 92, 93 gets much greater – the law of diminishing returns really kicks in.

Karen J: Clarify – will the percent across the entire site approach give us more flexibility because you are taking the landscape into account? Answer: No, the two approaches of the calculation will not exclude options for runoff reduction.

Jim H: if we are realistically looking at protecting the resource, the degradation of our resource has happened because of development. The reality is that we all need to pay the price of our previous and future actions to keep our water clean. Even without MIDS, there needs to be an increase in design to address clean water goals.

John H: Going back to the diminishing returns concept: previous slide from variations on the ruler approach. The difference in phosphorus removal between the 1 and 1.1 inch standard is actually pretty small.

Wesley S-P: do we all share the same understanding of new development?

Nick : if we select a number for a performance standard, does that lock us in to the next phase when we look at linear and redevelopment projects?

Mike F: that was not our initial thought process, but we need to think about it more.

Bruce: New Development (Slide): (Wisconsin NR 151)...

- “New Development” means development resulting from the conversion of previously undeveloped land or agricultural land uses”
- “Development” means residential, commercial, industrial, or institutional land uses and associated roads.
- “Redevelopment” means areas where development is replacing older development.
- “Redevelopment is: Any construction, alteration, or improvement that disturbs land where the

Using the NRCS “urban land” designation is not accurate because it refers to undeveloped land.

Mark Z: establishing the performance goal is the biggest thing we are going to do as a group: If we undershoot the standard (because we are worried about cost) going to result in more cost later if waters become degraded? If we overshoot, we are asking for too much and it will cost more than we need to pay.

Klayton E: We are starting from the basis of “mimic natural hydrology” but we are rarely developing from a natural state. Development may actually improve the situation over ag.

Bruce W: If we go from corn-soybean to urban, it stays about the same. There are no ag areas that don't have impaired waters (mass balances, flow-weighted means). Urban and ag land uses have trashed the water. We need to go back.

Klayton E: my point is that we may be setting the bar too high – if we could fix ag we would not need to be here. Are we making the developers pay for the actions of the farmers? There's some artificiality to this system in terms of the starting point.

Jay R: The modeling approaches used “meadow” vs. native, ancient prairie, which have dramatically different curve numbers.

Paul M: Are we asking that development does not make it worse, or are we asking development to fix the problems caused by ag? Answer: in some cases, development will need to fix ag problems.

Garry J: I agree with Klayton. I'm in a county that has ag and does not have many impaired waters. The developers have made a proposal of a performance goal of 1.1 inch over impervious or 90%. We are suggesting 1.1

Randy: Clarify: Single number statewide: 1.1 inch off impervious surface for new development with a process for achieving compliance for difficult sites (soil type is irrelevant in this case).

Karen: Barr has pointed out that to meet or mimic natural hydrology, we need to get to 93% storm. Mark Z has pointed out that the number associated with that may shift with climate change.

Nick: Don't we have a wide ranging definition of impervious surface? Which one(s) are we going to use? (Anne reads them all.) We referenced 3 different definitions that came from Minnesota. “b” is the definition we typically operate under. “A constructed hard surface that either prevents or retards the entry of water

into the soil and causes water to run off the surface in greater quantities and at an increased rate of flow than prior to development. Examples include rooftops, sidewalks, patios, driveways, parking lots, storage areas, and concrete, asphalt or gravel roads”.

Wes S-P: If the intent of MIDS is to get to a point where we have a unified approach to ordinances, what do we do when other entities do not have the same definition of what is an impervious surface? We need to share the same definition. If we base our standard on IS, we may have a stumbling block down the line. Anne added definitions to the parking lot list.

Craig O: can't we put the definition in the standard?

Wes S-P: yes, we can make a recommendation to the MPCA, but one of the points of MIDS was to avoid overlap – situations where a developer needs to comply with two sets of standards/rules.

Jay R: Yes, a goal is consistency. The ultimate goal is to give clarity to communities on how to comply with antidegradation. And ultimately resource protection.

Garry J: I'm here representing the STATE, not just the urban areas. So I'm thinking the number – 1.1 and/or 90% are important statewide. In response to Mike: when the state passes rules down to the county, we can adopt them or make them more restrictive. We would feel better if we could voluntarily go more restrictive, so don't set the bar too high.

Mark Z: What I see on the sheet is that 1.1 for north central, SE, and Metro would undershoot the antideg and cause water quality degradation in those areas of the state. Therefore I'm advocating for 93%.

Paul M: Does the 1.1 has some scientific basis? A: YES!

Jay R: The proposal that Bruce put together was 93% over the site OR 1.1 inch over impervious. They are essentially the same. The 1.25

Anne G: if you think about the Southeast (1.2 inches), think about all the restrictions – it's mainly karst. Larry agrees.

Larry F: How do we determine our soils? Can we look at county soil maps, then do additional tests? A: we are not getting to that level of detail

Jim H: I support the 1.1, but are there implications around the unknowns? What the antideg rules will look like, and shifts in precipitation.

John H: The modeling was based on real world precipitation data from the 1970s to the present. (Mark Z is more comfortable knowing this).

Julie W: can we give ourselves flexibility to change the performance goal in the future based on predictive global climate models? Group: in the future, yes.

**Consensus Moment:** The proposed standard: For new, nonlinear developments that create more than one acre of new 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

statewide. THIS WILL NOT predetermine the approach used for development of standards for redevelopment and linear projects.

The work group will provide a recommendation to the MPCA that includes definitions for all the terms in the performance standard.

The Group REACHED CONSENSUS on the performance goal! Congratulations.

Meeting was adjourned at 11:55

Notes taken by Julie Westerlund

At 12:15, University of MN Law Students gave a presentation on ordinance work they have done in the St. Croix Basin. Jean Coleman is teaching the class and introduced the students who presented the information.

MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING  
May 20, 2011  
MPCA ST. PAUL OFFICE  
520 LAFAYETTE ROAD NORTH – TRAINING ROOM 2  
9:00-12:00  
**MEETING MINUTES**

Attendees: Garry Johanson, Jim Hafner, James Vagle, Janna Kieffer, Jay Riggs, John Hanson, Julie Westerlund, Karen Jensen, Ken Holman, Klayton Eckles, Larry Frank, Mary Davy, Melissa Lewis, Mike Findorff, Randy Neprash, Robert Race, Scott Anderson, Shane Missaghi, Tina Carstens, Trevor Russell, Wesley Saunders-Pearce, Tim Power, Sharon Doucette, Nick Tiedeken, Steve Christopher, Bruce Wilson, Anne Gelbmann

WebEx attendees: Matt Durand, Wayne Cymbaluk, April Ryan, Andrea Hendrickson, Dave Newman, Todd Smith, Bruce Irish, Dave Poggi, Amy Garcia, John Bilotta, Rocky Keehn, Wayne Sicora, John Chapman

### 1. Introductions: Jay Riggs, Co-Chair

Jay opened the meeting with introductions and gave a brief overview of the agenda. Jay also temporarily anointed Trevor Russell as co-chair, if only as a clever attempt to make him take notes. Jay turned it over to Bruce Wilson to review our progress & timeline.

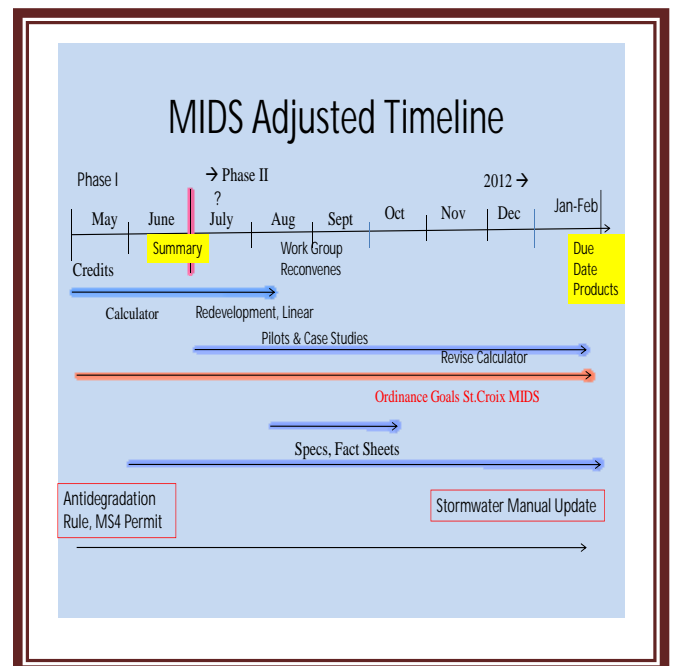
### 2. MIDS Project Schedule/Timeline Review – Bruce Wilson

Bruce summarized our progress thus far and provided some perspective on MIDS

- MIDS performance standard: (1.1 inches from pre-to-post runoff volume)
- Implementation must account for variations in community development patterns &
- BMPs' in series: .
- Phase I: Complete summer 2011
  - *Performance goal*
  - *Credits*
  - *Calculator*
- Phase II: Complete February 2012
  - *Redevelopment/linear projects*
  - *Pilots & case studies*
  - *Calculator revisions & BMP specs*
- Anti-Deg Rule & Stormwater Manual updates will happen in conjunctions with MIDS completion.

(Q): Have MIDS “founding partners” met to “approve” performance standard.

(A): That meeting will happen in June for the first phase of MIDS.



### 3. Establishing Credits for Stormwater BMPs - Barr Engineering



PART ONE: Barr reviewed the MIDS approach to establishing credits for stormwater BMPs and the proposed functions of the calculator. MIDS credit calculator is designed to do two things:

1. Quantify the performance goal requirement:
    - a. How much volume must be retained
    - b. How many pounds of pollution must be retained
  2. Determine if project meets performance goal:
    - c. How much volume must be retained
    - d. How many pounds of pollution must be retained
- Volume reduction numbers are based on the performance of various BMPs designed to achieve an event-based standard (1.1 inches).
  - Pollutant removal is generally aggregated annually for reporting purposes. This presents a challenge for the MIDS calculator in properly expressing BMP pollutant removal.

Barr gave examples of BMP pollutant removal functions and highlighted the range of certainty with which MIDS can calculate pollutant removal for certain practices.



- For those BMPs for which pollutant removal (TSS, TP) is quantified and commonly accepted, MIDS will use those numbers in the calculator now.
- For those BMPs for which we do not have strong pollutant removal numbers, MIDS will use literature averages for now until more refined data is available.

(Q): How do we know if the user is applying the correct BMP and installing it to specifications?

(A): Updates to the MN Stormwater Manual will require spec sheets for all calculated BMPs.

(Q): What if we could quantify non-calculated BMP values for a specific project? How would regulators use this?

(A): Using the calculator for baseline design is valuable. Developers and/or communities could come in with more advanced models, calculations or additional data to support their compliance with MIDS. It was also recommended that the calculator include an “other” line that could be used to calculate BMPs not included in the original menu.

(Q): As it stands, MIDS calculator numbers serve as proof of compliance with MIDS. Will the MPCA accept these numbers in ascertaining compliance with TMDLs and Anti-deg provision?

(A): Yes.

Note #1: *everyone should mute their speaker phone if they're calling in.*

Comment: **All urban watershed soils may be disturbed (filled, moved, and mashed) and** may behave differently than calculated numbers for undisturbed soils. Shouldn't we have to use measured data in that instance? We need to be able to input actual data in place of assumed performance data where necessary.

(Q): Will MIDS calculator be legally defensible as applied to Anti-Deg, TMDLs and other rules?  
(A): We think so....

Comment: It's possible that developers or others might "model shop" to find a more favorable result for their project. Variation in model outputs may allow developers to calculate their performance in the most favorable manner.

(Q): How much data do you expect from the development site? How much verification is required? Some jurisdictions require on-site infiltration testing and enhanced verification. Others do not.

Comment: It comes down to accuracy vs. precision. We need enough precision to know we're probably correct. But the power of MIDS is providing for distributed design elements across an entire site. Accurate without being overly prescriptive.

Comment: MIDS assumes that calculator users are properly designing, installing and maintaining BMPs to specification. Verification will be left up to LGUs.

(Q): How do we include flexibility in the numbers in the calculator.

(A) We should trust our engineers – who take their professional seriously and are accountable for their decisions, to apply to correct numbers, models and installation specs on a site and then sign **documents with due diligence and their PE licenses.**

Comment: We have multiple options for verification depending on the needs of the community:

1. Use the calculator as a baseline
2. Use city numbers if that LGU has more protective standards and/or better local data.
3. Apply actual on-the-ground verification

(Q): Some BMPs show very high performance rates at first but lose viability over time. How do we account for that?

(A): The MN Stormwater Manual allows for a correction factor to account for this.

Comment: We'll need a training system (possibly certification?) for MIDS to be successful. Perhaps it's a package deal: if you want MIDS - you must be trained.

Response: Jay and Anne are working with Stormwater U to develop MIDS training and hopefully we can develop a guidance manual for MIDS users.

Comment: We'll need to include a drop-down "other" box to account for new/innovative BMPs in the calculator.

PART TWO: Barr reviewed their proposed approach for calculating pollutant removal for BMPs. The process involves converting volume reduction (inches) into pollutant removal (lbs per year).

Step 1. Use "Simple Method" to calculate annual pollutant load from a site (w/o BMP)

Step 2. Estimate Pollutant Removal (%) from BMP(s)

Step 3. Apply pollutant removal % to annual load to determine annual pollutant load reduction

**Step 1 A (total volume):  $R = A * P * P_j * R_v \div 12$**

R = Annual runoff volume (measured in acre-feet)

A = Drainage Area (acres)

P = Annual rainfall (inches)

P<sub>j</sub> = Fraction of annual rainfall events that produce runoff (usually 0.9)

R<sub>v</sub> = Runoff coefficient, which expresses the fraction of rainfall that is converted into runoff.

**Step 1 B (total pollution): L = R \* P \* UCF**

L = Annual pollutant load (lbs/year)

R = Annual runoff volume (acre-feet from step #1)

P = Pollutant concentration (mg/l)

UCF: 0.226 Unit conversion factor

Janna walked through the approach for determining P (mg/l pollution concentration) by establishing the “Event Mean Concentration” (EMC) for different land covers. An example of EMCs is at right.

Land Cover/Land Use	Total Phosphorus (mg/L)
Cropland <sup>1</sup>	0.32
Forest/Shrub/Grassland <sup>2</sup>	0.04
Open Water <sup>1</sup>	0.01
Wetlands <sup>1</sup>	0.01-0.04 <sup>1</sup>
Freeways <sup>1</sup>	0.25
Commercial <sup>1,2</sup>	0.22
Farmsteads <sup>1</sup>	0.46
Industrial <sup>1,2</sup>	0.26
Residential <sup>1</sup>	0.30
Multi-Family Residential <sup>1,2</sup>	0.27-0.32
Park and Recreation <sup>1</sup>	0.04
Open Space <sup>1,2</sup>	0.31
Public/Semi Public (Institutional) <sup>1,2</sup>	0.18

**Step 1C: (total annual load) L = [(P)(P<sub>j</sub>)(R<sub>v</sub>)/12] (C) (A) (2.72)**

L = Load of pollutant (lbs/yr)

P = Rainfall depth per year (in)

P<sub>j</sub> = Fraction of rainfall events that produce runoff

R<sub>v</sub> = Runoff coefficient –expresses the fraction of rainfall which is converted to runoff

C = Flow-weighted mean concentration of pollutant in runoff (mg/l)

A = Site area (ac)

12 and 2.72 = unit conversions

**Step 2 Summary:**

Barr proposes assigning BMP pollutant removal performance by multiplying the BMPs annual runoff volume its % pollution removal defined by the change in EMC for the site. The Calculator will use performance curves to determine the percent of annual volume retained on site for each BMP and aggregate total annual volume retained on site for all BMPs in combination.

BMP	TP % PR	TSS % PR
Bioretention/Rainwater Garden	50-100	85-90
Biofiltration	25-50	60-85
Infiltration Basin/Trench	25-100	85-100
Permeable Pavement	25-85	75-90
Grass Channel	15-50	50-87
Dry Swale	20-50	50-87
Wet Swale	20-50	69-87
Filter Strips	0-45	30-73
Sand Filters	0-65	70-92
Green Roofs	0-100	0-90
Wet Pond	40-75	70-90
Infiltration Shelf at Wet Pond	?	?

**Step 3 Summary:**

Barr proposes applying pollutant removal % to annual load to determine annual pollutant load reduction using a combination of modeling data and literature summaries to assign total pollutant removal capacity to various BMPs.

**4. Discussion:**

Comment: BMPs can vary widely in their pollutant removal capacity for different pollutants. And the EMC’s assigned to different land uses seem questionable. Example: Open Space has a higher EMC than residential. That would need some on-the-ground verification. Further work is required here.

Comment: Our methodology highlights the dichotomy between the model inputs and model outputs. Front end input calculations have a high degree of certainty. Back-end output is very theoretical – essentially and educated guess.

(Q): Is it correct to assume that if we achieve volume control, we will get associated pollutant removal for TMDLs, Anti-Deg and grant applications?

(A): Yes.

(Q): What about runoff from off-site flowing in to an on-site BMP? How do we track credit?

(A): this needs to be explored later

Comment: For future discussion, an alternatives analysis must include sensitive areas for which the 1.1 inch performance standard may not be sufficient.

Comment: This simple method approach is useful in moving forward. Aggregated over multiple sites across multiple acres - the assumptions should provide us with clarity as to total pollutant removal. However, the natural uncertainty in this method – and lack of sophistication in model assumptions – might be a challenge for regulators when applied to an individual site or project.

Response: Let's reserve judgment until we see how the calculator performs and compare it to on-the-ground actuals.

(Q): To clarify, our assumption is that we achieve volume control performance standard via a menu of BMPs. Then based on the BMPs selected, we calculate total pollution removal achieved. Future MIDS work will incorporate non-structural BMPs and Phase II types of developments and redevelopments in to this calculator.

(A): yes

Comment: There is a big difference between using models to predict loads vs comparing different development scenarios. This calculation method is great for comparing scenarios but will always have natural uncertainty when it comes to predicting pollutant removal.

Comment: TP and TSS are standard pollutants of concern. What about Nitrogen, bacteria, Chloride?

(A): Phase I was to cover volume, TP and TSS. See how far we can go in Phase II for other parameters of concern.

Announcements:

- September 8<sup>th</sup> fall conference at the MN Arboretum.

5. **Next Meeting:** Thursday June 9<sup>th</sup> from 1:00pm to 4:00pm at MPCA to “test drive” calculator (extra meeting for those who want to experiment with the calculator – or you will receive and can do so at your desks). Please try to use the draft calculator before the next regularly scheduled MIDS meeting on June 17 from 9-12. There will be no meetings in July or August.

Minutes taken by Trevor Russell

# MINIMAL IMPACT DESIGN STANDARDS WORKGROUP MEETING

June 17, 2011

MPCA ST. PAUL OFFICE

520 LAFAYETTE ROAD NORTH –Conference Room 2A/B

9:00-12:00

## Meeting Notes

Attendees: Bill Cole, Bruce Wilson, Doug Snyder, Garry Johanson, Jim Hafner, James Vagle, Jay Riggs, John Hanson, Julie Westerlund, Ken Holman, Klayton Eckles, Kurt Leuthold, Larry Frank, Lisa Frenette, Mark Doneux, Mark Zabel, Mary Davy, Matt Durand, Mike Findorff, Mike Isensee, Paul Moline, Randy Neprash, Robert Race, Shane Missaghi, Todd Smith (WebEx), Trevor Russell, Wayne Cymbaluk (Webex), Bob Swanson, Nathalie Shanstrom (WebEx), Tim Power, Nick Tiedeken, Bruce Irish (Webex), Leslie Yetka, John Bilotta, Anne Gelbmann

### Introductions and announcements

- Randy noted that MIDS appears in the new MS4 permit.
- Mike Isensee invited everyone to You Betcha Fest 2011 on July 16.

Anne G. – MIDS website update and email updates via GovDelivery. Go to the MIDS website and look for email update signup.

John Hanson – demonstration of MIDS calculator. Reminder: this is a DRAFT BETA version. It is a framework for the MIDS calculator, not the final product (the contract was for BARR to develop a draft framework). There's a lot of flexibility in the framework and things can be tweaked as we move forward.

Launch into calculator demo. Note that you need to turn your macros on in Excel in order for the calculator to work and the 2007 version is required.

John reviewed the basics on the **site information and summary page**. Zip code is needed to calculate annual precipitation. Enter total site information on this page.

**MIDS BMP Calculator page:** work from left to right to fill in information about direct drainage areas. BMPs are divided into several categories based on the manner in which they reduce volume, pollutants, or both. Some BMP volume removal are user defined (see next page for calculator that allows users to input parameters to generate the volume reduction calculation.)

The calculator has a section that calculates a runoff volume retention – transforming our instantaneous volume reduction goal into an annual number for volume reduction. The BMP volume credit is different from the volume reduction (accounts for how much water is actually draining to the BMP combined with the BMP's capacity). The next section over converts the volume reduction to phosphorus and tss reductions.

Many people brought laptop computers to the meeting. John walked through an example that was handed out to the group. John invited the group to make comments and suggestions.

Paul M: is this designed for planning, regulatory, or both? Some people might find it overwhelming.

James V: an engineer from Westwood looked at it last week and said he liked the calculator and found it very user friendly. He commented that anything more complicated would be duplicating hydrocad.

Mary D: This will be tied directly to the stormwater manual in the future. If people have worked with the stormwater manual in the past or if you are motivated to spend some time with it, they will be able to use it.

Larry F: We are dealing with professional engineers. They'd better learn how to use it. We've been irritated in the past by engineers who just send in a boilerplate SWPPP without going to the site. They need to become more professional.

Trevor R: it's our obligation to take this around and do some communication, outreach, training etc to the target users.

Shane M: Stormwater U is planning 4 workshops this coming spring. MIDS calculator will be on the docket. We need to be able to easily articulate what the calculator is for and to remind folks about what needs it was designed to fulfill. Stormwater U can go out to regions of the state with training.

Gary J: YES- get out there and advertise it.

Klayton E: This is not an end-all design system. If an engineer specifically designs something and got different results than what the calculator gives, what numbers would we use? The system they develop might be a better system, but it may not give the same numbers. SO – will this be a regulatory tool or is it a planning tool?

Lisa F: every regulator has a different approach that comes with a bias around what they would like to see happen – the calculator results will be interpreted with that bias. There may be other, more cost effective approaches that could be used and we don't want to limit ourselves. We've seen lots of regulatory tools that don't work.

Jay R: The key to the calculator is the input parameters. We are standardizing our assumptions about how we calculate the performance of these systems.

Randy N: We can do both. The calculator can be a starting point, but a regulator can accept other, more sophisticated techniques like P8 or HydroCAD.

Klayton E: This is a great step forward in terms of creating consistency across regulatory units. But we need to be careful that we don't "dumb it down" too much. We need to also remember that the latest research and technology will always be ahead of the spreadsheet.

Mary D: This at least gives us a common baseline for higher level discussions and frames the conversation a lot better than it has in the past.

Mark D: CRWD uses their calculator as a starting point tool to check in to validate the design plans, but in the end it's the final designs that are regulated. And we need to ensure an infrastructure for updating the calculator.

Mike I: We need to talk about setting a procedure for getting the BETA version to the 1.0 version.

Bruce W: The next step after the beta version will be to establish procedures for the 1/3 of the state that are special circumstances where the standard will not apply and that need flexible treatment options (coming in Phase II). We will need to establish a credit council and peer review mechanisms.

Jay R: Barr has spent all the Phase I money. So we don't have a MIDS calculator for public distribution.

Bruce W: The work order for Phase II is all ready to go (linear/redevelopment, calculator refinement, etc) but we need to wait for the funding to come through (legislature needs to appropriate the money – we have no signed bill at this point in time).

Paul M: On the annual volume and pollutant tab: what is the connection between what's in this and the calculation tab? The information on this tab is annualized.

BREAK

MIDS timeline and summary – Phase II (Separate document-see document on the web page under June 17 meeting materials)

Bruce W: THANK YOU for all your efforts so far. We appreciate all the feedback. We've covered a lot of ground so far.

Upcoming stuff: Conferences, MIDS pilot activity, etc.

We've requested \$375,000 of Clean Water Fund money, to be approved by the legislature.

Bruce is anticipating 4 work orders to be completed by June 30 2012. We'd like to wrap up everything with the work group by March. Target version 1 of calculator: October. Some gaps: redevelopment and linear projects, big storms, impervious cover disconnection, urban soil compaction, etc.

Randy N: it would be worth involving permit folks in our MIDS work moving forward.

Mike Findorff is already involved.

Read on your own MIDS work order element gaps – subject to future funding.

Summer assignments: MPCA is looking for workgroup members to sign up for small groups to work on the BMPs in the current calculator. They will ask the workgroup to look into: design specs, maintenance needs, training, research, etc. Bruce and Anne will provide an outline of expectations for the group.

This summer will give us a chance to take a breath – look at everything that’s been done so far and think about what else is needed.

Everything we do needs to be efficient so we can plug it right into the manual and link to other efforts. Bruce and Anne will set up a format that will allow the information the work groups develop to go right into the manual.

Do we need additional groups? We will wait on flexible treatment options.

Shane M: Turf management: we are doing workshops on this across the state.

Work group members ran around the room signing up for work groups.

Anne will compile all the information on the charts and will send them out to the members.

Thank you went around to our chairs and MPCA staff for the extra work they have put into this process.

Have a great summer!

Notes taken by Julie Westerlund



## October 18, 2011 MIDS Meeting

**Attendees:** Doug Snyder, Garry Johanson, Ian Peterson, James Hafner, James Vagle, Jay Riggs, John Hanson, Joni Giese, Karen Jensen, Ken Holman, Klayton Eckles, Lois Eberhart, Mark Zabel, Mary Davy, Matt Durand, Michele Caron, Mike Findorff, Mike Isensee, Mike Kinney, Paul Moline, Randy Neprash, Robert Race, Scott Anderson, Shane Missaghi, Tina Carstens, Wesley Saunders-Pearce, Bob Swanson, Nathalie Shanstrom, Tim Power, Nick Tiedeken, Leslie Yetka, Peter MacDonagh, Pam Perri, Beth Lockwood, Mike Trojan, Bob Bean, David Bade, Mark Anderson, Bruce Wilson, Tim Malooly

Webex: Todd Smith, Amy Garcia, Wayne Cymbaluk, Bruce Irish, Chris Kleist, Jeff, Johnny Clearwater, Dave P., Tom Johnson, Dave Nash,

New members were introduced –Pam Perri (BAM) and David Bade (NIOP-the Commercial Real Estate Development Association),

Jay and the group confirmed the components of MIDS: (1) Performance standards, (2) Credits and calculator and (3) Ordinance package-it will streamline the antideg process and comply with other regulations.

**National LID Conference in Philadelphia:** (Mike Isensee, Shane Missaghi, Peter McDonough): Other MN people that attended were: Jay Michels, Anne Gelbmann and Greg LeFevre. Shane presented information on the education and codes sessions of the conference. Shane's take away messages: We are lucky in MN-we have a strong education network; MN is one of the leaders in stormwater management; much of what gets reported in stormwater education is observation-the "so-what" is missing.

Mike's focus was on technical standards and BMP's-specifically bioretention; current research and first year preliminary data. Bioretention – research is focused on pollutant load coming and going out-what is happening in the "black box" and how we can enhance performance. Nitrogen reduction-retention time within the soil media-raised underdrains to process nitrogen; biological transformation and uptake-there is an article in the Stormwater Journal-biological activity in the first few inches of the soil. How to increase removal of bacterial (e-coli) by increasing protozoa in the mix; soluble phosphorus reduction; Maryland presentation on petroleum byproducts in bioretention facilities; Philadelphia –maintenance program-creating "green acres"; in 4 years; converting 250 acres per year to green acres. Questioning how they will maintain 500 plus acres of green infrastructure-paid by stormwater fees (combined sewer overflows)-77 percent of maintenance costs will be in labor; Portland maintenance-3 full time staff that do inspections-hire contractors to do maintenance (\$3/sq ft over first 2 years; year 3 -\$1.55/sq ft) current program is \$465K/year. Will share PDF presentations when they are on line.

Peter: presented on Urban forest is broken"; too many parallel tracks-too much information; MN is leader in implementation; interested in credits and calculator; Philadelphia-EPA gave permission to solve CSO problem with green infrastructure; Protozoa and soil biology and the metabolism of pollutants and heavy metals going into trees. Villanova tour-porous concrete parking lot will not cause back up. Ottawa-research project on monitoring infiltration swales and perforated pipes-date since 1992-never clogged and the water quality continues to be high; exceptional conference.

**Technical team report outs:** Teams are: Infiltration basin, stormwater capture and reuse, tree trench, porous pavement, bioretention, dry swales, green roofs, turf and the calculator team. Met Council's reuse report will be out soon (December)

**Infiltration Basin-Jim Hafner;** members include: Mike Isensee, Larry Frank, John Hanson and Mike Findorff (see presentation)

Discussion: If the calculator will be successful tool, design is important; definition of infiltration and bioinfiltration; what are design standards, what rates are expected and being reported; is pretreatment necessary? Maximum infiltration rates are being looked at.

Klayton-failure can be caused by decline of infiltration rate over time –causes problems with maintenance; be conservative with infiltration rates.

Lois: Soil depth-need to look at full column of soil. Mike I-soil boring is recommended (5 feet)-should this be required and is 5 feet sufficient? State with best research base is in Wisconsin-how deep is their soil boring requirement?

Has there been any in depth studies over the long term? How quickly do they plug up and constraints? Mike-in the current manual it's based on long term studies.

Mike I-challenge is definition of infiltration basin-need to minimize risk of failure; there is a big range in infiltration rates-could be caused by many reasons-pretreatment, etc.

Recommendations will include what an infiltration basin is, how it functions, how to reduce failure.

Use a 48 hour draw down time, unless you are in a protected waters (trout stream). Jay Riggs-flaw in manual is difference between bioretention and infiltration basin-needs to be defined based on drainage area.

Paul M-bioretention group and infiltration basin should talk so their recommendations match for the manual updates.

What is the relationship between technical group and calculator: Calculator subgroup will do another round of comments to improve the calculator based on technical team recommendations.

Technical teams will make recommendations to calculator team and stakeholder group will review.

Working on details on calculator and manual integration.

Jay R reminded the group that the MIDS workgroup is part of the SSC and the manual workgroup will reconvene.

Beth Lockwood-some manual decisions will need to be made early on-some will have to wait-timing is a concern.

**Tree Trench - Peter MacDonagh ;** members include: Mary Davy, Tim Powers, Janna Keiffer, Randy Neprash, Gary Johnson, Jill Johnson, Nathalie Shanstrom, John Lloyd; Advisors: Roger Kelgren (University of Utah); Greg McPherson and Dave Nowak and Ken Holman

Rigor will reduce lawsuits. Specs won't be perfect-need to have placeholders when data comes in. Have tree planting specifications; soil volume and quality of soil specifications (in progress); extensive literature review-have FTP site (list) – growing healthy trees, stormwater benefits, etc. Creating list of research gaps. Pushing for performance of trees and stormwater – Greg McPherson is on board; calculator inputs; average tree lives for 13 years-want life cycle to increase; a 30 inch tree is 70 times better;

Lois-are you addressing comprised sites? Group is working on this-trying to reduce the number of performance minimums. Mary- focus will be to maximize technology in compromised spaces. It's about media volume, not just soil volume-will include structural soils-volume change is a lot bigger.

Calculator will account for trees with certain size classes. Credit for existing trees on site--interception is massive. A 3<sup>rd</sup> category of credit for small trees will be reviewed.

Scott A-leaf drop included? Are considering contribution of leaf drop (evergreens and broadleaf deciduous) will be addressed in operation and maintenance.  
Categories are volume within media, interception, deep and shallow infiltration and evapotranspiration.

Tim P. introduced Tim Malooly as MNLA alternate. Tim was asked to be on various technical teams.

Break

**Founding partners meetings (James Vagle and Pam Perri):** meeting in September went well; founding partners helped move legislation; third time we've checked in; letter from BATC/BAM was main issue; supportive of MIDS –we needed a couple more folks from development community-NIOP and shopping malls-big deal for residential, commercial, industrial and retail developers. Need to be present and represent issues. Cost and feasibility was concern-staff acknowledge that this has to work in the market. We have to understand real world projects and how this will look in the real world. Our engineer members will work with staff to work on modeling. Pam appreciates the enthusiasm-were supportive of the development of MIDS-concerned about real world implementation; respect the work of the teams; when we move into phase 2 we hope costs will be respected and alternative compliance options. Need to work together to figure out the right regulatory work.

Design for the site-developers are working on this-lots of manuals and advice out there, and right now it's picking and choosing. Pam-when regulations first came out, education on requirements was important. How do we shift the paradigm so we think of stormwater first? Culture has already been changed for the large developers. There is a shared acknowledgement that we have to get it right-have it transparent and efficient. How can we best provide homeowners with clean water, parks and trails.

Worked with U of M masters degree student on rain water gardens in varying soils-real world experience-using rain water for irrigation and reuse-thinking about it differently-

Mary-deals with cost benefit now. As you do analysis-need to factor in the cost of doing nothing. Pam-We have to be convinced that doing it will make a difference and tell us how to do it right. James-will be done with staff on projects and will share with stakeholder group.

Klayton-wearing city engineer hat-cities are bottom of food chain. Regulatory process is complex and doesn't work. Excited about MIDS process-see MIDS as a possible nexus where we can say-if we do this-all the other stuff goes away. MIDS can be the tool to work the complexity out-the state needs to buy into a simplification process.

Gary J-inspired by Stone Hill Farms-real life example-great subdivision and good example of stormwater management.

Peter-Developer's advantage to use green technology; planning process is broken; needs to be front end loaded-pre planning and individual contractors are talking in the beginning; contractors are running over rain gardens; developers need to take an offensive approach with contractors; streets can be shortened; lot sizes can be changed. James-these changes are taking place. Pam-cities tell the developers how big the lots should be and other infrastructure needs. Street width and length is an issue.

Jay-lots of interconnected issues. We are all trying to be proactive. We have more issues in common-we all want good design, installations to be correct-O&M addressed.

MCEA was not present at the founding partners meeting-scheduling conflict. Lisa Thorvig did talk to Chris and they are tracking the progress-may need to set up a separate meeting with them.

**Turf Group-Shane Missaghi;** members are Mary Davy, Nick Olson, Connie Fortin, John Hanson and Bruce Wilson (see presentation)

Discussion: Should the turf group deal with impervious disconnection? For turf to be an effective BMP, it's a change in mindset-design, operation and maintenance. How would an inspector know that the turf

has been installed correctly? It's an education process-contractor could document installation. Turf in calculator addresses soil amendment and disconnection. No current credit for installation of turf. There could be credit for proper installation.

FTP site is: <https://sites.google.com/a/umn.edu/the-turf-group/>

**Bioretention Team- Paul Moline;** Members: Todd Smith, John Hanson, Matt Durand, Nathalie, Peter, Met twice-one conference call. Struggle-what does that include? Need to define that-terminology is important. Need a simple way to connect the practice to the calculator. Construction specs in manual need to be updated-recommendations need to be flushed out. The FTP site is:

<https://sites.google.com/site/midsbioretentionsubcommittee/documents> . Soil mixes-what type of soil should be in there? Recommendations versus requirements need to be included. Need to coordinate with other subgroups. Size of drainage area is key-what is the right cut off? Vegetation density-calculator can have 2 categories-dense and less dense. Started discussion of pretreatment and maintenance. Bioretention works in cold climate.

Need to increase volume reduction credit based on other state requirements. There is intersoil storage space, evapotranspiration. Challenge is current standards are in place for everything but the underdrain. Need to come up with underdrain sizing credit.

Important to have Mike Trojan at these meetings as he begins his work on the manual.

Discussion comes back to treatment train-one BMP won't do it all-need the series of BMP's. What about biology of plant? Need to quantify performance of different types of vegetation.

**Regional MIDS meetings (Bruce) – see presentation :** There is interest in doing ordinances better – MIDS pilot will be critical. People want a simple calculator. Detroit Lakes-flooding; Duluth-thermal and shading credits and base flows; Rochester-interest in flexible treatment options. Need to return to regions when flexible treatment options are drafted.

Flexible treatment options slide-first work order is out to Barr.

Andy Erickson's slide: treatment train presented at Water Resources conference;

Timeline slide

Contract with Tom Schuler is nearly done.

Bruce needs specific needs from technical teams for contract work

MCPZA conference-Garry said that Jay and Bruce did a great job presenting – they want more detailed layout at next annual meeting-lots of interest.

When is deadline for technical teams? They are not 100 percent complete-what's realistic?

Bruce will meet directly with teams to find out what they need-Bruce will craft something and get it back to the group.

Jay Riggs-SSC just approved charter for the research workgroup that will be starting soon. Connections need to be made to various workgroups.

Meeting adjourned at 11:55

**MINIMAL IMPACT DESIGN STANDARDS  
MEETING  
November 18, 2011  
MPCA Offices – training 2  
9:00-11:00**

Meeting Notes

Attendees: Dave Newman, Doug Snyder, Garry Johanson, Jim Hafner, Janna Kieffer, Jay Riggs, John Hanson, Julie Westerlund, Tim Malooly, Larry Frank, Lisa Frenette, Lois Eberhart, Mark Doneux, Mark Zabel, Mary Davy, Matt Durand, Michelle Caron, Mike Findorff, Mike Isensee, Paul Moline, Shane Missaghi, Trevor Russell, Wesley Saunders-Pearce, Nathalie Shanstrom, Kristen Larson, Tim Power, Nick Tiedeken, Leslie Yetka, Beth Lockwood, Mike Trojan, Anne Gelbmann, Bob Bean, David Bode, Marni Karnowski, Jay Michels. Webex: Wayne Cymbaluk, John Chapman, Paul Hudalla, John Bilotta, Liz Swann, Derek Asche

1. Introductions/Review Agenda
2. Welcome and Thank You-Assistant MPCA Commissioner John Linc Stine.  
Assistant Commissioner Stine gave kudos for MIDS workgroup and emphasized that the need for design standards is apparent and crucial work. This process highlight how far we have come from the stormwater treatment approach during the 1980's.
3. Report out from technical teams
  - Green Roof-Nathalie Shanstrom  
Nathalie reviewed the list of team members. The group used the stormwater manual and calculator as guidance to make changes. Minutes and recommendation are on website - <https://sites.google.com/site/midsgreenroofsubteam>  
Discussed:
    - the importance of structural capacity,
    - focusing green roofs on tight sites and areas with soil constraints
    - Cost ranges per sq/ft are appropriate for stormwater manual.
    - Life cycle vs construction costs.
    - Defining soil porosity
    - How to show different storage capacity
    - Show benefit/credit for connecting green roofs to cisternsQuestion: Did the group look at constraints for green roof installation? A: not really a focused listing of those constraints.  
Question: was there a cost per sq/ft avg. mentioned? A: approx. \$10-15/sq ft w/o membrane.
  - Pervious Pavement-Mary Davy  
Group has not really started yet. Idea is to expand discussion group to include lots of outside members (engineers and "experts"). Mary is going to pull together data starting after thanksgiving. The subgroup will have a google site to track info and will hold meetings via "gotomeeting.com".

Question: The pavement is just the “entry” to the BMP. Does the calculator look into what the capacity & design underneath the pavement should be? A: Yes, the calculator assumes storage underneath, but the stormwater manual should lay out those specs.

Question: who are the team members? A: Group members include: Bob Swanson, Mark Doneux, Robert Race, Paul Moline, Matt Durand, Mike Isensee, John Hanson, Jill Thomas, Anne Gelbmann.

Question: Is there a database on MN installations being developed? A: no, but intent is to create a way to report future projects.

Question/Comment: Data on what went right and wrong would be useful. A: MN is somewhat behind early digging into project data shows not much has been collected.

Question: Are asphalt members represented. A: yes, Mary D. will make list and links available.

- Dry Swale Squad-Jay Riggs

Member list includes: Nick Tiedken, Leslie Yetka, Pete Young, Emily Javens, John Gulliver, John Nieber, John Hanson, Michele Caron, Bruce Wilson, Mike Findorff. Group discussed

- Dry Swale v. Grass Channel. Dry Swale = check dams to better control volume. Grass Channels =soil amendments and vegetation only.
- Extreme variability in systems – trying to sort that out in the index for the calculator. Initial recommendation was to add to portion of contract a way to model the differing dry swale systems. Turns out there are 11,000? potential scenarios so group is rethinking that approach. Still need to determine how to account for variability in slope, length, soils, width, etc.

Next meeting set for Nov 30

Question: Did group look at vegetation difference as a factor? A: Not much variability. Soil bottom ratio to impervious is much more significant.

Question: For the 3 groups presenting today, what is timeframe for wrapping up. A: depends on group. Bruce Wilson wants changes now for the new version of calculator due by April. Recommendations for Stormwater Manual can be a little longer in coming.

#### 4. Calculator Changes-Mike Isensee

Members on Team : Mark Doneux, Mary Davy, Doug Snyder, Robert Race, Paul Moline, Mark Zabel, Mike Findorff, Michele Caron, John Hanson, Bruce Wilson.

Mike reviewed process, calculator, and recommended changes

Question: Does the calculator have the ability to use outside models? A: Yes, calculator will allow outputs to go to P8, XPSWMM, etc.

Bruce needs input after thanksgiving – email already sent out.

Mike reviewed and demonstrated an example of making the calculator more user friendly through a Graphical User Interface (GUI). Reference to the MINUHET model from SAFL. Posed question to group – should we move forward? A: YES, YES

Question: Does this need new code developed or would it use existing foundation code (i.e. MINUHET code used for developing MIDS calculator GUI?) A: Use existing but there is cost to changing.

Question: How much cost? A: Bruce will update at Dec. Meeting.

Question: will GUI be adjustable? A: yes

Question: Would it be web-based or a separate application to download? A: Not sure. Two existing ones now (MINUHET and SHAZAMM) need to be downloaded.

Question: Mark D. - should calculator be updated and a GUI be created. A: GROUP DECIDED BY CONSENSUS, YES and to direct Bruce Wilson to get financial estimate.

5. Nominations for Co-Chairs

Group discussed need to re-open Co-Chair positions for nomination. Determined that nominations would be accepted and voting would take place by paper ballot during the break. Question: can alternate to MIDS work group be a co-chair? Group determined that YES, they can.

Nomination made to appoint Jay Riggs, Karen Jensen and/or Mark Doneux as co-chair(s)  
Vote during break

6. Break - Voting, discussion

7. Nominations for Co-Chairs revisited

Concern was expressed that the nomination process was not on the agenda, and some attendees were not present, so decision on nominations should not occur today.

CONSENSUS – wait until December meeting to nominate co-chairs.

8. Flexible Treatment Options – John Hanson

- o Background on previous MIDS discussion: (Powerpoint available on MIDS website)
- o New, nonlinear development without soil restrictions= 1.1" standard. (when feasible)
- o Performance goal meets legislation and non-deg requirements
- o SAFL slide which shows pollutant spectrum and applicable BMP's
- o Use MPCA's roadmap for alternate approach to handle feasible alternatives to performance goal
- o MIDS is path to non-deg if it is prudent and feasible (Handout has more info)

Question: What about trading as an alternate route? A: Vermillion River does trading; 3 known in Washington County.

Question: Does it work? How many take advantage of it? A: some applicants have taken it. The trading really acts more like "banking" (i.e. funds are put towards compliance to be used by watershed elsewhere.) Trading implies there is a market looking for it now, while banking can equal installation later.

**Question: what does work group need to move forward? (to determine if performance goal is prudent and feasible). A: need BMP costs, need BMP area requirements and need BMP credits.**

Comments:

- o prudent and feasible is site specific while determination should be more global.

- Volume reduction = pollutant removal. If volume reduction can't be met, then pollutant removal is still needed.
- Prescription v. Innovation?
- Encourage compliance AND encourage alternate means
- Standard is prescriptive, BMP is not
- Concern that alternatives are not allowed in performance goal.
- Process of alternatives analysis is key, credits need to be defined
- Subgroups should be looking at cost or maybe it is outside of MIDS scope
- Area requirement for BMPs is more important and flexible to cost. Need to provide in database
- Deadlines for workgroups to determine above outputs should be set – Anne G. will talk to PCA staff more and set.

9. St. Croix 319 Grant Update-Jay Riggs

Pilot projects starting in St. Croix Basin. Proposals are out for communities now. Deadline is December 31. 319 grant goes through mid 2013.

10. Update on BATC/BAM review of MIDS material –John and James

John Hanson, Bruce Wilson and Mike Findorff met with BATC reps and discussed need to clarify future efforts in developing credits. Applying to existing cities as examples. Mike, Bruce or Anne or available to work with more outside groups if they have questions.

11. Update on tree grant proposal-Anne G.

Itree tools compatible with MIDS tools . \$150,000 grant from US Forest Service – Bruce Wilson submitted the pre-proposal and was asked to submit full proposal by Dec 6.

12. Other

- December meeting
  1. Flexible treatment options
  2. Workgroup structure and deadlines
  3. Met council Re-use study
  4. Calculator GUI costs
  5. Co-chairs decision

13. Thank You and group picture- Commissioner Paul Aasen thanked the workgroup members for all their hard work. He said that the work on MIDS aligns with the MPCA's priorities. MIDS is an important effort because it has a strong partner base and is performance based. He encouraged the group to continue to keep the process focused on outcomes.

14. Adjourn



**Minimal Impact Design Standards**  
**Workgroup Meeting**  
**January 20, 2012**  
**9:00 – 12:00**  
**MPCA St. Paul Office, Training Room 2**

**Meeting Notes**

**Attendees:** Deann Stish, Doug Snyder, Garry Johanson, Ian Peterson, Jim Hafner, James Vagle, Jay Riggs, Joni Giese, Karen Jensen, Klayton Eckles, Larry Frank, Lois Eberhart, Mark Doneux, Mark Zabel, Mary Davy, Matt Durand, Mike Findorff, Nick Tiedeken, Paul Moline, Robert Race, Scott Anderson, Shane Missaghi, Tina Carstens, Trevor Russell, Vanessa Perry, Beth Lockwood, Brian Livingston, Dave Newman, Jay Michels, John Hanson, Kurt Leuthold, Leslie Yetka, Mike Trojan, Randy Neprash, Sharon Pfeifer, Tim Powers, Todd Smith, Jill Thomas, Rob Stangler, Bob Swanson, Forrest Kelley, Anne Gelbmann, Bruce Wilson  
Webex participants: Ross Bintner, Liz Swann, Wayne Cymbaluk, Bruce Irish, John Chapman, Dave Poggi, Peter MacDonagh, Nathalie Shanstrom, Jeff Berg, Lisa Frenette,

**1. Welcome/Introductions/Review Agenda**

- Jim Hafner was introduced again as the new co-chair of the workgroup and led the meeting.
- It was suggested to move up the flexible treatment goal discussion on the agenda and move down the timeline, budget and work order discussion.

**2. Discussion of Draft Flexible Treatment Goals (Bruce Wilson)**

- Bruce introduced the fact that we are still in the new development standard but looking how flexible treatment standard and how the calculator can be used in these cases.
- Handout – New Site Development Flow Chart- see attached
  - i. Sites that have restrictions that don't allow for infiltration process
    - 1. Try to partially meet the volume control and look at traditional treatments such as ponds, dry swales.
    - 2. Also can factor in municipal wide practices such as street sweeping.
- Handout (attached)–Draft Completing the New Development Performance Goal Flexible Treatment Options (for sites with restrictions) January 20, 2012
  - i. Lower standard for flexible treatment?
  - ii. First preference is for infiltration, reuse, evapo-transpiration

- iii. Second is filtration
  - 1. What about credits for enhanced sand filtrations?
- iv. Third is offsite, banking, cash in lieu of

**3. Presentation: Flexible Treatment Goal and Calculator Example – John Hanson, Barr (see power point on MIDS web page)**

- What should the performance goal be for restricted sites?
- Only certain BMPs that can manage dissolved phosphorus on sites with restrictions and are requiring those prudent and feasible?
- Options to consider: requiring filtering of the same volume or cost cap or...
- Example site: 10 acres, 50% impervious, B and D soils comparisons
  - i. B soil site with infiltration 89% TP removal and 89% TSS removal
    - 1. Klayton E – What is the infiltration rate?
    - 2. John H – B soils from the manual, 0.6 in/hr.
  - ii. D soil site with a pond 50% TP, 84% TSS
  - iii. D soil site with biofiltration basin 50% TP, 85% TSS
  - iv. D soil site with grass swale to biofiltration basin 66% TP, 96% TSS
  - v. D soil site with swale to pond to biofiltration 83% TP, 99% TSS
  - vi. D soil site with swale w/ soil amendment to pond to sand filter to biofiltration 99% TP, 100% TSS
  - vii. Do need to differentiate between particulate and dissolved phosphorus
    - 1. Lois E – Does the pond do anything? Why is it there?
    - 2. John H – Just showing treatment train and how much it would take.
    - 3. Mike F – What is the design for the bioretention and is the current design in the calculator?
    - 4. John H – No, and that would make the numbers better. This is also giving volume control credit with a drain tile. None of the updates are in the calculator yet.
    - 5. Karen J – Surprised not getting more removal with biofiltration. 50%?
    - 6. Klayton E – Go to that last picture. Nobody would build that.
    - 7. Jim H – Point is that there is a treatment train needed in some cases.
    - 8. John H – And we can use the calculator to determine what the total percent removal is based on the treatment provided.
    - 9. Kurt L – This is an exercise on how you get to 90% TP removal. It is difficult and comes back to the question of feasibility.
- John H walked through the use of the calculator with a treatment train approach.
  - i. Lois E – Is there a group looking at disconnected impervious?
  - ii. Bruce W – Yes, turf and dry swale are both looking at it.

- Summary, what is a reasonable and prudent flexible standard? The treatment amounts needs to be revised in the calculators by the groups.
  - i. Kurt L – What is in the calculator now is conservative. As the calculator get developed numbers will improve so keep that in mind.
  - ii. Randy N – Step back to the fundamental issue watching the change of runoff pre vs. post development. And D soils would have more runoff pre development.
  - iii. Mark Z – takes us back to the ruler vs. match and we choose the ruler.
  - iv. Jay R – Question is – is 90% TP removal on D soils reasonable? Should there be a cost cap?
  - v. Lois E – Wise use of funds to pay above cost cap?
  - vi. Randy N – Don't want to revisit ruler vs. match but need to look at issue of matching in context of restricted sites.
  - vii. Tina C – in response to how the cost cap works at RWMWD, cost cap is per acre of impervious surface.
  - viii. Klayton E – Go back to what is feasible and cost effective.
  - ix. Randy N – Excessive cost is a factor in Bruce's draft handout for restricted sites and that is encouraging.
  - x. Mark Z – when looking at cost analysis can look at other things like street sweeping
  - xi. Mike F – Can't look at street sweeping on a site by site basis. That is a global city wide credit for anti-deg.
  - xii. Klayton E – Every BMP has O & M needs
  - xiii. Mike F – But don't factor O & M into site design for pollutant removals
  - xiv. Lois E – In the end one city might have stricter development standards and another might choose to do more municipal wide practices.
  - xv. Mark Z – Restricted sites don't have many options.
  - xvi. Mike F – developing calculator to give more and more options
  - xvii. Jim H – If looking at BMPs, need to look at full costs
  - xviii. Mike F – Yes, but street sweeping isn't site specific so can't be built into a BMP calculator.
  - xix. Jay R – Looking at all these potential credits just like more broader credits like open space preservation and how it all fits in the puzzle
  - xx. Lois E – Can be site specific for parking lot sweeping.
  - xxi. Randy N – Maybe need a new work group for this? Looks like Randy, Lois and Mike F would be interested.
  - xxii. Dave P. – Webex question: already have a tool like WinSLAMM that can do all this. Do we need a new calc for that?

- xxiii. Bruce W – wanted a simple calculator for statewide use
- xxiv. Matt D – Do we need a cost analysis of these prudent ideas for B & D soils?
- xxv. Bruce W – How do you do a cost analysis for sites across the state and need to factor in possibly trading and also look at cost per pound
- xxvi. Jay R – Also, need to come back to the fact that this standard is for anti-deg and not restoration of TMDL lakes.
- xxvii. Karen J – Has the calculator been modified since it was since? The answer was No.

#### **4. Handout – Status of MIDS BMPs and Other Components – Anne Gelbmann (attached)**

- Mike Isensee suggested this be put together to track with each of the technical teams and BMPs in the MIDS calculator.
  - i. Permeable Pavements – Mary D – looking at VA model and adapting that. Lots of information going on Google site.
  - ii. Dry Swale – Jay R – looking at new work order to Bruce.
    - 1. Lois E – dry basins too? Bruce W will talk to Lois about this.
  - iii. Bioretention – Paul M – finalizing the terminology and what the difference is between this and infiltration basin.
  - iv. Tree Trench – Peter M – waiting some on the news of the US Forest Service Grant.
  - v. Harvest/Reuse – Klayton E – Have the Met Council report and meeting in Feb with technical team. Woodbury also has some information on some reuse projects they are doing this year. Should have something to the big group my May-ish.
  - vi. Infiltration Basin – Jim H – shifting to manual additions and potential work orders and also on the definition issue.
    - 1. Lois E – could an owner do more maintenance if chooses not to have any pre-treatment?
    - 2. Jim H – No, because we feel that pretreatment is too necessary
  - vii. Green Roof – Natalie – changes going to the calculator as well as work orders and manual
    - 1. Karen J – Green roof and reuse could be linked
    - 2. Lois E – Are recommendations not coming through the MIDS group before going to the manual?
  - viii. Turf Management – Shane M – will have their piece complete by end of Jan
    - 1. Klayton E – Should this be expanded to landscape management?
    - 2. Bruce W – Forest Service grant will address some of this.

- ix. Performance Goals for New development/sites with restrictions and flex treatment by end of March
- x. Redevelopment and Linear begin in April or May
  - 1. Karen J – should our group meet to start the discussion or should we continue to delay?
  - 2. Lois E – think the group should start meeting. Karen will start the process.
- xi. Calculator – 1.0 version done in fall with the “final” version to be done by June of 2013.
- xii. Ordinances – MIDS 319 Grant – Jay R – meeting with the advisory group to select the 2-3 communities
  - 1. Mary D – Can we see the ordinances?
  - 2. Jay R – Not ready for public consumption
  - 3. Matt D – How many of the applicants are MS4s? East Bethel is one.
  - 4. Lois E – Will these ordinances be applicable to built up cities?
  - 5. Jay R – Honestly, barely.
  - 6. Lois E – Should consider an ordinance package for fully developed cities in the future.
- xiii. Other Items on Handout are considered parking lot items
  - 1. Randy N – Ross Bitner’s research project will end this year and should have data soon.
  - 2. Garry J – strongly recommend that we do a field trip in May to see how some of these things work.
  - 3. Matt D – what about a calculator for non site specific BMPs like public education and street sweeping etc?
  - 4. Paul M – Somehow to calculate credits for MS4 but separate from MIDS.
  - 5. Mike Trojan – meeting in a week to talk about method for tracking TMDL progress.
  - 6. Shane M – also working on that
  - 7. Randy N – Project and Manual work – how is it all tied together?

## **5. Critical Gaps – Bruce W.**

- Lois E – Long term maintenance and performance – was discussed that this should be addressed in each of the technical teams.
- Jim H – technical teams take notes that you are expected to address this
- Paul M – Same goes for pretreatment
- Lois E – Urban Land MPD? – integrated into redevelopment standards

- Paul M – Amended soils addressed? Part of the technical teams of turf, dry swales and infiltration.
- Lois E – increased precipitation rates? Should have more info by end of 2012.

**6. MIDS Flow Chart Handout with Yellow Highlighting – Anne G.**

- Just shows how MIDS fits in with other programs and grants etc.

**7. Other/Next Meeting/Adjourn – Bruce W.**

- For the next meeting:
  - i. Retool flexible treatment and amend work order
  - ii. Dry swale work order
  - iii. Advance turf group
  - iv. Modified Calculator
- If the redevelopment/linear subgroup needs support, need to let Bruce know especially when determining help from Tom Schueler.
- Look at enhances sand filter treatment and get the rundown from SAFL at next meeting?
- Dave N – when do we start the cost benefit analysis?
- Bruce W – Gulliver can bring in some of that information.
- Lois E – How do we do this with a state wide approach?
- Randy N – the development community would have cost data from across the state?
- Adjourn

Notes taken by Tina Carstens

**Site Development/Redevelopment**



**Better Site Design**

as feasible



**Assess Potential**

Infiltration, + Reuse/Harvest +  
Evapotranspiration



**Site Full Performance Goal Achievement**  
•New Development = 1.1 inch from IC  
•Redevelopment = TBD  
•Linear = TBD

**Site Restrictions as determined by  
Local Units of Government  
Flexible Treatment Options**

Partial Volume  
Control

Traditional + Treatments

+

+

Plus Municipal Wide Practices  
Part of Stormwater Manual not MIDS

Plus Municipal Wide Practices  
Part of Stormwater Manual, not MIDS

## Draft Performance Goal for Sites with Restrictions

January 20, 2012

The MIDS Performance Goal for sites with restrictions (see Restrictions Memo) is to achieve equivalent (defined as 90%-or should it be a lower %?) removal of annual TP and TSS loads based on MIDS calculator using 'B' soils, the development impervious cover and a bioretention device.

1. First preference is to employ as much infiltration, reuse/harvesting, and evapo-transpiration as feasible.
2. Secondary preference is to employ filtration BMPs to achieve this standard. BMPs that employ enhanced filtration methods for the removal of total and dissolved phosphorus are encouraged as needed for management.
  - a. Need to address enhanced P removal and crediting.
3. For instances where this is not feasible and prudent due to site constraints and regional treatment limitations or excessive costs (as determined by the local authority), then equivalent off-site mitigation (including banking or cash, as determined by local authority) can be used so as to protect the downstream water body that would receive the site runoff.

This performance goal for sites with restrictions in tandem with the MIDS New Development Performance Goal, are being proposed to satisfy prudent and feasible in the context of antidegradation applications for Minnesota Stormwater management.



## Status of MIDS BMPs and Other Components

BMP	Work Completed	Next milestone and anticipated completion date	Comments/Other
Permeable Pavements (Mary Davy)	<p>Team's membership was expanded beyond core MIDS members to include both state and national experts from all three principle industries: asphalt, concrete and pavers. These members were briefed on the MIDS Project, The MN Stormwater Manual, and the tasks given to the Technical Teams. A comprehensive literature search was conducted, including search for existing standards around the country. The Virginia Specification for Permeable Pavements was selected a "template" or starting point. First Draft of a MN Design Specification is complete and Team is in process of editing, commenting and reviewing.</p>	<p>First Draft MN Design Specification Comment &amp; Review expected to be completed by 01/27/12.</p> <p>Anticipated completion of a MN Design Specification by May 2012</p>	<p>Google site on MIDS web page. Team includes national experts. Team will provide information that can be incorporated into the stormwater manual.</p>
Dry Swale (Jay Riggs)	<p>Squad has agreed to use VA as a model for calculator updates</p>	<p>Technical team is working with PCA project manager to write work orders; anticipated date: February, 2012 (?)</p>	<p>Grass channels are included Chemically enhanced filter 319 studies underway; U of M and MPCA Local Road Research Board studies addressing dry swales and associated filter strip assessments.</p>
Bioretention (Paul Moline)		<p>One additional meeting in March to clarify definitions and compile recommendations</p>	<p>Google site on MIDS web page</p>

<b>BMP</b>	<b>Work Completed</b>	<b>Next milestone and anticipated completion date</b>	<b>Comments/Other</b>
Tree Trench (Peter McDonough)	Team developed specifications for tree quality, started specifications for tree planting, soil volume and soil quality; started a literature review; started a list of research gaps; and started a discussion of calculator inputs – both internally within the team and with nationwide experts	US Forest Service Grant - anticipated date is May, 2012 (if awarded)	Google site on MIDS web page Street sweeping of leaves will be included in US Forest Service Grant; Recommendations have been passed on to MPCA Manual and MIDS project managers for work orders
Harvest/Re-Use (Klayton Eckles)		Will meet in February	Met Council's Reuse Report
Infiltration Basin (Jim Hafner)	Maximum depth, need for pretreatment, flow length, maximum drainage area, need for a reasonable infiltration test	Distinguish between biofiltration and infiltration (March 2012); revision of infiltration rates and use of chemical treatment – work order.	Recommendations have been passed on to MPCA Manual and MIDS project managers for work orders.
Green Roof (Nathalie Shanstrom)	Technical team has provided a detailed list of manual and calculator needs	Suggested changes will be included in 1.0 version of the calculator	Google site on MIDS web page Recommendations have been passed on to MPCA Manual and MIDS project managers for work orders
Turf Management (Shane Missaghi)	In process of developing specs on the minimum components to be included in the RFP for Turf-section of the Manual update.	Technical team is conducting analysis of collected data, defining metrics and translating work into the calculator	Google site on MIDS web page

Other	Work Completed	Next milestone and anticipated completion date	Comments/Other
<p>Performance Goal for New Development;</p> <p>Performance goal for sites with restrictions</p>	<p>For new, nonlinear developments that create more than one acre of new 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 statewide.</p>	<p>Flexible treatment options will complete new development goal; anticipated date to complete is March, 2012</p>	
<p>Performance Goal for Redevelopment</p>			<p>Subgroup to meet in February</p>
<p>Performance Goal for Linear</p>			<p>Work completed by dry swale squad will feed into linear work.</p>
<p>Calculator</p>	<p>Beta version includes 13 BMPs and will include percent annual runoff retained, TP and TSS volume reduction and removal.</p>	<p>1.0 Version expected to be completed by Fall, 2012. Final version-June, 2013</p>	
<p>Ordinances-MIDS 319 grant in the St. Croix</p>	<p>Advisory committee formed; NEMO workshops; applications from LGU's submitted; ordinances have been reviewed.</p>	<p>Advisory committee meeting on January 26 to review and score applications. Work will begin with selected cities in spring, 2012</p>	<p>Will include better site design; may not apply to ultra urban cities.</p>
<p>Operation and Maintenance (street sweeping, turf management and pollution prevention</p>			<p>Street sweeping of leaves will be addressed in the US Forest Service grant if awarded ; Prior Lake street sweeping study nearing completion (Fall, 2012) Turf management is one of the technical teams. UM Stormwater Treatment: Assessment and Maintenance:</p>

Other	Work Completed	Next milestone and anticipated completion date	Comments/Other
			<a href="http://stormwaterbook.safl.umn.edu">http://stormwaterbook.safl.umn.edu</a>
Information and Education			Not part of MIDS, but will look for opportunities for credits (manual)???
MIDS Outreach and work with LGU's			Establish a community assistance team (?)
Groundwater mounding analysis			Manual subteam will be addressing this topic
Urban land (NRCS)			Redevelopment team will address; UM infiltration work, LRRB, turf, trees, dry swale assessments
Pretreatment standards			Street sweeping, education, urban trees, turf, recycling, hot spot management, treatment train, filtration, chemically enhanced filtration; Technical teams will address this (?).
Drinking water protection maps and groundwater atlases			MDH presentation, UM research Further discussion needed.
Class V regulation			Discussion needed
Long term maintenance			UM Stormwater Treatment: Assessment and Maintenance

Other	Work Completed	Next milestone and anticipated completion date	Comments/Other
			manual , CWP, other states, Capitol Region Watershed District (CRWD) studies-To be included in technical team work (?).
Long term performance			UM, CRWD studies, Ramsey Washington Metro Watershed District studies, CWP others; to be included in technical team work (?)
Increased precipitation rates			LCCMR grant NOAA Atlas 14 will be completed in late 2012
Policy Development			Discussion Needed

WORK IN PROGRESS

**MINIMAL IMPACT DESIGN STANDARDS  
MEETING  
February 17, 2012  
MPCA Offices – training 2  
9:00-12:00**

Meeting Notes (Taken by Scott Anderson)

Attendees: David Bade, Doug Snyder, Forrest Kelley, Jim Hafner, James Vagle, Jay Riggs, Karen Jensen, Klayton Eckles, Lois Eberhart, Mark Zabel, Mary Davy, Matt Durand, Melissa Lewis, Mike Findorff, Mike Isensee, Mike Kinney, Nick Tiedeken, Robert Race, Scott Anderson, Trevor Russell, Vanessa Perry, Wesley Saunders-Pearce, Dave Newman, John Hanson, Kristen Larson, Kurt Leuthold, Jill Thomas, Mike Trojan, Randy Neprash, Tim Power, Todd Smith, Bob Swanson, Rob Stangler, Nick Olson, Dave Stark, John Bilotta, Jason McCarty, Bob Bean, Anne Gelbmann, Bruce Wilson  
Webex attendees: Nathalie Shanstom, John Chapman, Wayne Cymabluk, Tina Carstens, Shane Missaghi, Doug Thomas, Thai Van-Anh, Andrea Hendrickson, John Bartunek, Paul Drotos, Larry Zdon, Wade Johnson, Ann Messerschmidt

**1. Introductions/Review Agenda – Jim Hafner/Jay Riggs**

- Introductions around the room and acknowledgment of webex attendees.
- Lorax movie event experience proposal☺
- New members were introduced
  - Mark Doneux has retired from MIDS membership and Tina Carstens has been designated as his replacement with Forrest Kelley as alternate
  - Doug Thomas is the alternate for greater Minnesota watershed districts.
  - Nick Olson MnDOT/MPCA rotation working on turf, dry swales, and permeable pavements with Bruce Wilson (MPCA).

**2. Antidegradation Alternatives Analysis – Jay Riggs**

Four items regarding Anti-deg for complex sites/sites with restrictions where volume control is too difficult or too expensive to apply – an approved alternative treatment analysis is needed. The MIDS group will define or set the parameters for what this means and provide to MPCA as a proposal.

Four presentations:

- Alternative Treatment Feasibility: U of M Innovations – Dr. John Gulliver  
(See presentations on website)
  - Urban runoff research at U of M
  - Mitigation of water quality impacts
  - Dissolved pollutants (very important)
  - Dissolved P removal
  - Applications
  - BMP maintenance costs

How do we mitigate WQ impacts?

- Underground separators
- Wet ponds
- Dry ponds
- Constructed wetlands
- Filters
- Raingardens
- Infiltration basins
- Swales
- Green roofs
- Source reduction

Pitt 2005 data examines fraction of dissolved/settled pollutants. Dissolved fraction of pollutants is very important for bioavailability (ex. Phosphorus 44.4% is dissolved fraction) – chemicals dissolve first and are then available for plant/algae uptake.

Review of pollutant spectrum – from dissolved to particulate.

Question: Are pollutants associated with other compounds? Yes, Ex. Phosphorus is available as Phosphate.

Question: Given the importance of dissolved pollutants, how important are particulate pollutants? They are important because pollutants such as phosphorus can be released from particulate form and become dissolved and therefore be available for uptake. The type of environment – anaerobic, for example would increase release of phosphorus and disturbing of lake sediment would also promote release.

Question: Is there a bio-availability issue with heavy metals as there is with phosphorus? Yes – toxicity.

Storm variability will greatly influence pollutant spectrum and particle size delivery.

Pollutant spectrum graph doesn't represent colloids well (couldn't measure) – best that could be done with these techniques (Soluble/dissolved = 45%). This is reflected in the effectiveness of treatment practices results – TSS removal is particle removal and difference between the TP removal is the dissolved fraction.

Rationale – Most urban watersheds need about 80% capture of solids and pollutants and we are currently dealing with approximately 50% of the pollutants without the dissolved component.

Three unit processes that will treat dissolved pollutants that are not being used much are precipitation, adsorption, and ion exchange.

Idea of treatment train - % untreated

Untreated	100%
Sweeping	79%
Pond	57%
Filters	52%

Chem./bio (gets to dissolved portion)	14%
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This is different from infiltration – this would be an alternative to infiltration.

Sorption: surface sorption or complexation to capture dissolved pollutants

Biodegradation: bacteria conversion of nitrates to nitrogen gas or petroleum hydrocarbons to carbon dioxide.

Vegetative processes: plant uptake and rhizospheric activity that use and convert dissolved pollutants.

Metals sorption to compost – see graph on breakthrough.

Question: is there a standard measure for makeup of compost? Yes

Question: any issues with ph? No. No significant difference between composts across the country.

Biodegradation of petroleum hydrocarbons – raingardens are effective for addressing hydrocarbons.

Phosphorus leaching from compost – mainly a problem with raingardens that have underdrain or outlet. Shouldn't be a problem with groundwater as soils will pick up.

Designing for metals and petroleum hydrocarbon capture with raingardens:

- Incorporate compost to capture metals and hydrocarbons

- Ensure aerobic conditions to promote biodegradation (note: nitrate removal would require anaerobic process).

- Incorporate another process to capture dissolved pollutants

Batch studies for adsorption and precipitation (calcareous sand, limestone, steel wool, iron filings, steel byproducts, aluminum oxides).

Iron – lab 35 yr life. Ferric oxide adsorbs P.

Question: What would shorten life in field? Sulphates, salt. Incorporating other items in the lab now.

How it works – as iron rusts, sorption sites for phosphorus are created.

Minnesota Filter

- Ensure oxygenated to ensure iron oxides remain aerobic

- Spec of 8% or less to minimize clogging.

Application – MN filter – sand with 5% iron filings – Maplewood

- Pre-treatment good for catching sands before they get to the filter.

- 48 hr draw down time

- Aerated base

- Contact time between media and water – 5 hours

- Can heavy metals be removed? Some, but not a lot. If treating for dissolved metals you need a dual system (compost and iron).

Filter trenches around wet detention ponds – Prior Lake

- Construction of the MN Filter in the safety bench around a pond.



Possibility for weir and/or check dam applicability

Field testing results – some irreducible phosphorus concentration – possibly attached to colloids.

Bioretention – compost great at removing heavy metals and hydrocarbons, but releases dissolved phosphorus. Especially with an underdrain – will transport downstream.

Possibility of coconut coir in place of compost – Mike I working with Dr. Gulliver on this.

## Break

- Flexible treatment – BMP cost overview – Maintenance costs of stormwater management practices:
  - 2005-2007 research
  - Article in Nov 2007 issue of Stormwater Magazine
  - Annual O & M costs
    - Wet ponds
      - Larger ponds – lower O&M as a percentage of construction costs

Also possible efficiency or economy of scale for original construction costs for larger facilities.

O & M costs data for wetlands may be a little suspect possibly due to practice simply consisting of stormsewer connection to existing wetland (minimizing construction costs).

Costs do NOT include recently emerging PAH issues.

Question: Are these average costs for established practices or costs for initial maintenance? These are life-cycle costs over the entire life of the practice.

Costs not examined for a cost per unit pollutant removed. Others have taken this information and derived costs per lb TSS or P removed. Wet ponds and dry ponds more cost efficient for removing TSS, all practices essentially the same for P removal.

Costs do not include land costs.

Question: How comfortable are you in using this data for estimating costs in MN? Comfortable if you consider the confidence interval (large – about an order of magnitude).

Question: Is this data available for the SAFL Baffle? No. No proprietary devices at all in this analysis

Conclusions:

Maintenance costs are important to consider.

Maintenance costs = construction costs:

- After 10 years for a \$10,000 installation
- After 20 years for a \$100,000 installation

Cities perspective – long term maintenance especially when inherited by cities to carry out year after year is becoming an increasing issue. Also makes a huge difference when deciding how to address bmp installation – Ex. 400 small bmps or one large bmp – very important when maintenance is required. Ultimately success is often directly dependent on long-term maintenance and operation.

This is an issue with small scale bmps. One possibility – reverse auction concept (city construct bmp on private property (or in easement or in row adjacent to property) and have owner take over responsibility).

Question: how long have iron filings been field tested? First installation went in three years ago.

Question/issue: who is responsible for innovative designs that don't perform or fail? Most practices if they are going to fail, will fail very early on.

Question: Are there enough sources of iron filings to support ramping widespread implementation? Yes.

Question: What is the cost per lb of iron filings? It varies – Prior Lake study was \$80/cy for the sand/iron mix – approx 3x cost of sand.

35 year life cycle for MN Filter would require replacement of media at that time. Filter would probably not last that long. Plan for significant rehab.

- Cost Cap Concepts and Linkage to Alternatives Analysis – Forrest Kelley

Capital Region rules for linear projects - \$30,000/impervious acre cost cap to meet their 1-inch rule. Regardless of performance, if the cost cap is met, site is in compliance with rule.

Capital Region observes that St. Paul has been able to meet the 1-inch standard at or below the cost cap.

Linear projects typically include:

Street reconstruction

Trail

Pipeline/interceptor

Other underground utilities

1-acre threshold and reconstruction of impervious surface applies.

2008 - \$30,000 cost cap was set. In 2006 it was \$20,000 and is adjusted by the Board annually. Note in 2006, the cap only applied to volume. In 2008 it was modified to apply to volume and water quality.

Capital Region is getting compliance with this rule and cost cap in place.

- Flexible Treatment Examples using MIDS Calculator – John Hanson

What is the TP load from a natural D soil site? And what TP reduction for a developed site is needed to match that load? Pollutant load = runoff volume x pollutant conc.

Why was the B soil site chosen as the site to match? Based on the avg % reduction of developed ABC soils with bioretention basin installed.

What about the standards for streams, shallow lakes, and lakes? Based on 300 ug/L and again look at the average.

What would the volume reduction standard be for the D soil site if we're looking at an arbitrary 75% reduction to meet average removals to meet standards? 0.5" – 60%-70% removal of TP.

Handout possible flexible treatment performance goal based on the 75% reduction.

This may apply to 1/3 to 1/2 of all sites in State (D soils, bedrock, urban fill, karst, hot soils, etc.).

### 3. Tech Team Roundup/Timeline

- Stormwater reuse – Dave Stark
  - Rainwater harvesting training being developed for next year
  - Rainwater is primary source
  - Plumbing code issues need to be addressed
  - Initially looking strictly at irrigation – need to look at other potable and non-potable uses/in-building uses
  - Cold weather applications
  - Set of design guidelines to protect safety – working to get guidelines incorporated into code
- Turf committee – Anne
  - Finish up work next Friday
  - Put items together for manual
- Dry swales – Bruce
  - Scoping document
  - Barr workplan – final stages
- Harvest/reuse – Klayton
  - Due to plumbing code issues they have been focusing on stormwater reuse for public works uses – field irrigation etc. and plan to inform the State.
  - Possible changes to plumbing code
  - For now, group has ignored in-building use
  - Difference between rainwater reuse and stormwater reuse

**Potential contractors who may bid on manual work were excused from the meeting at this time.**

Bruce discussed MIDS project completion and timeline.

First objective

- Reinforce performance goals
- Complete calculator
- Ordinance objectives

May will be a decision point for flexible treatment options.

Still waiting on cost benefit information from EPA before deciding how to move forward.

Could be a need to assemble a dissolved P sub-group.

Redevelopment and linear group meets next week.

Tom Schuler contract coming in July.

St. Croix MIDS through summer 2013.

MIDS Ver. 1 calculator by this summer.

Rainfall intensity update by end of year.

LID national conference Aug 2013.

Other:

- Grants
- Work order estimates
- MIDS/manual outreach
- Cost/benefit - \*CRITICAL\*
- Antideg review
- Respond/adjust

Pending issues:

- Guidance
- Municipal wide calculator
- Discharge to higher order streams/large lakes
- Rethink cost/benefit based on EPA release maybe March or April
  - Other sources?
  - Review Barr summary memo June 2011 to build from for cost
  - APWA study
  - Should we assign a Tech Team for cost??

**Adjourn**

**MINIMAL IMPACT DESIGN STANDARDS  
WORKGROUP MEETING  
March 16, 2012  
9:00-12:00  
MPCA St. Paul Office, Training Room 2**

- |  |             |
|--|-------------|
| <b>1. Welcome/Introductions:</b> Jim Hafner/Jay Riggs  | 9:00-9:15   |
| <b>2. Flexible Treatment Option Scenarios in new development-</b> Barr   | 9:15-10:00  |
| <b>3. Water Quality Standards and MIDS:</b> Shannon Lotthammer<br>Manager, MPCA Water Assessment and Environmental Information Section | 10:00-10:30 |
| <b>4. East Coast News -</b> Tom Scheuler   | 10:45-11:00 |
| <b>5. Timeline</b>   |             |
| a. Month by month details- Bruce Wilson/Anne Gelbmann  | 11:00-11:30 |
| <b>6. Permeable Pavement Google Site-</b> Mary Davy  | 11:30-11:40 |
| <b>7. Other/Brownfields Seminar/next meeting:</b>  | 11:40-12:00 |

**MEETING MINUTES (Taken by Tina Carstens)**

Attendees: Bruce Irish, Doug Snyder, Forrest Kelley, Garry Johanson, Ian Peterson, Jim Hafner, Jay Riggs, Joni Giese, Lois Eberhart, Mary Davy, Melissa Lewis, Nick Tiedeken, Paul Moline, Robert Race, Scott Anderson, Tim Malooly, Tina Carstens, Trevor Russell, `Dave Newman, John Chapman, John Hanson, Kristen Larson, Kurt Leuthold, Leslie Yetka, Marni Karnowski, , Randy Neprash, Todd Smith, Bob Swanson, Nick Olson, Jason McCarty, Dan Sullivan, Jay Michels, Pierre Ilyamukuru, Bruce Wilson, Anne Gelbmann

Webex participants: Bonnie Finnerty, Karen Jensen, Nathalie Shanstrom, Wayne Cymbaluk, Amy Garcia, Michael Kuchaes, Mike Trojan, Matt Durand, Paul Hudalla, Jean Coleman, Jeff Berg, Tom Scheuler

1. Welcome and Introductions
  - St. Patty's Day Treats! Thank you!
2. Flexible Treatment Options – John Hanson. (Presentation on MIDS web page)
  - Phosphorus 55% particulate 45% dissolved
  - Many address particulate but few do dissolved which would allow 55% TOTAL phosphorus removal
  - Bioavailability factor is high in dissolved
  - To match loading from natural D soils sites. Need >87% TP removal.
    - Lois – but when looking at TMDL still just looking at TP and not at dissolved vs. particulate
      - Bruce W – should get more credit if we are removing the dissolved P? See where this goes.
  - Performance goal on non-restricted sites removes 87-92%
  - Example site: 14.2 acres – 80% impervious – assuming clay soils
    - Wet pond sized for NURP – 50% TP reduction but no dissolved - BMP % of Construction Costs 0.3% (rest of stats in presentation)

- Wet pond with filter trench on bench – 77% TP – 60% dissolved phosphorus (DP) – 0.3% costs
  - Question (Jason McCarty) about cost of BMP that didn't increase – answer was because over the total project costs it doesn't add that much.
- Biofiltration Basin – 55% TP – 10% DP – 0.7% costs
  - Lois & Nick – thought the DP should be higher for biofiltration
  - Jay R – where do you see that number going?
    - Kurt L – there is volume reduction but only during the growing season so need to look at that number on an annual basis. Tech team needs to weigh this number.
- Biofiltration with Iron – 83% TP – 60% DP – 0.7% costs
  - Questions-Jason McCarty)– regarding the need to provide NURP pond prior to biofiltration? Answer – most places do not require NURP but do require pretreatment of some sort.
  - Ian – estimating loss of 15% of land/parking etc. Costs of needing to take that?
    - John – one of the factors in the site design has to be stormwater management. And those costs are not into cost design.
- If this site didn't have restrictions – BMP would be about 15% smaller with A/B soils but would be 60% bigger with C soils.
- Lois – calculator with credits for TP, DP and TSS? Bruce – DP would be part of TP.
  - Might be more transparent to show DP separately.
- High Impervious Sites and BMPs – showing how to distribute BMPs throughout the sites.
  - Proposed EBC Church in Woodbury – 65% impervious
    - Can scatter your BMPs throughout the site – treatment trains – can meet the standards
  - Mills Fleet Farm – Rochester – Kurt L.
    - Parking Lot islands throughout parking. Clay soils with drain tile.
    - Question - Didn't they take it out? - And Kurt must tell the story!
      - Didn't do maintenance for a couple of years and then watered it like crazy and drowned out the drought tolerate plants. Then decided they didn't want to do the maintenance so they ripped it out and replaced it with giant rip rap.
      - Greater Green industry needs to help those understand new practices and the maintenance needs.
  - Eastridge Church – Duluth
    - Clay soils – green space in parking lot – biofiltration basins.
  - 7 SIGMA – Minneapolis
    - Parking lot biofiltration system and perimeter biofiltration
    - All green space depressed for filtration
  - UMD Parking Lot
    - Clay soils – parking lot drains to filter basin – want to add more water to go to it so diverting more of the parking lot to it.
    - Pretreatment – concrete basin sized for skid steer to get in and remove sediment.
  - Century College – West Parking Lot
    - Porous asphalt, Silva Cells, pervious concrete, underground infiltration
  - Minnetonka Civic Center

- All green space into depressions including in parking islands. Also pervious pavers.
  - Wirth Beach House Parking Lot – Golden Valley
  - Conclusions – BMPs can be installed and distributed throughout the sites. Filtration and enhanced filtration.
- Achieving 75% TP reduction is feasible on high impervious sites but is it prudent?
  - Lois – percentage needs to be science based and not picked out of the air
    - Bruce W - to what end point? Where do we put the percent? Where do we draw that line? From a resource standpoint – different in metro vs. other areas. 50-75%
  - Paul M – Reuse piece is real key and can get up to 90% removal
    - Bruce W – throw that to the subcommittee and look at other states and their treatment standards for reuse. Bacteria and turbidity.
    - Comment – word being used as SWIMMABLE standards for reuse in other areas. Beach swimmable level and not pool levels.
  - Jim H – can we equate volume reduction to percent removals?
    - Will look at that and come back with that information.
  - Question - what about residential sites? All those examples were commercial/business?

### 3. Water Quality Standards and MIDS – Presentation by Shannon Lotthammer, MPCA Section Manager (see presentation on MIDS web site)

- Take away – water quality standards are all based on beneficial uses
- Water Quality Standards
  - What are we trying to protect and who?
  - What conditions are protective?
  - How do we maintain high water quality? Anti-Deg
- Who/What Protect?
  - Waters are assigned beneficial uses – 7 classes in MN
  - Can the beneficial uses be changed? Uses were set in late 60's and early 70's.
  - November 28, 1975 – Important Date!
  - Have the issues been attained or are they attainable?
    - Clean Water Act (CWA)– say that if the use has been attained at or after November 28, 1975 then you must keep that designation.
    - If attained or attainable – you may not change beneficial use. Must protect/restore
    - If not, they you may define alternate use based on guidelines.
      - Question – what is the definition of attainable? Answer – is it possible to get to that use?
- What Conditions are Protective?
  - Standards identify the conditions needed to support the beneficial use.
  - Can be narrative or numeric
  - Statewide or regional
- How is Good Water Quality Protected?
  - Anti-Deg protection tool – 3 levels of protection
    - Maintaining existing uses
    - Protecting high water quality waters – only allow degradation if:
      - Avoid and minimize impacts

- Demonstrate need for important social or economic development
    - Protect existing uses
    - Maintain exceptional waters (ORVWs)
      - Gary J – hard to manage all the property owners around a water body that could impact the water quality. Not just the regulators. Big impacts from the land owners.
- Standards Development
  - Required by CWA and MN Statutes
  - Relies on best available science
  - Public review of standards at least every 3 years
    - 3 years hasn't been possible so looking at changing the process.
    - Move to a process where every 3 years we engage in public dialogue and standard list of needs and as diff standards are ready to move into rule making – we pick them off and go through the rule making.
- How are Standards Used?
  - Measures and benchmarks
  - Controls
  - Standards and TMDL – standard sets the goals and then the TMDL says how we get there
- Nick T – Implementation plans on TMDLs – what is this NEW implementation plans? Watershed Restoration and Protection (WRAPS)?
  - Shannon L – shifting not just on impaired waters but also those that need to be protected. Need to pay more attention on those that are in good shape to keep them that way.
  - Lois – what is new about this?
  - Shannon – not new but just putting more state agency energy into it.
- Randy N – setting beneficial uses and attainability – default designation – use attainability is difficult and expensive – most waters are getting a high use designation and then expensive to change – what percentage of waters have been classified by default? And how much to change?
  - Shannon L – we made assumptions with little data in the very beginning. Trying to address this situation starting with our streams and rivers. Tiered Aquatic Life designation. Tiers within default class. Re-designating them. Looking next at lakes and probably wetlands.

#### 4. East Coast News – Tom Scheuler on the phone

- Big change – he is working with the Chesapeake Bay groups to implement Bay TMDL. Working with 4 expert panels to define removal rates in various ways.
- These methods and science may be helpful to MIDS as we move forward.
- BMP Verification issue is big also right now. Making sure that the BMPs are accurately reported and maintained to be sure they get the credits that were planned and designed for.
- LID Maintenance issue – visual indicators defined to quickly assess conditions. LID credits for disconnection etc.
- Most training is on maintenance including field training and also landscape contractor training.
- Redevelopment – all bay states on track to have more restrictive standards. Washington DC looking at 1.2” redevelopment standard. Green streets seems to be the BMP of choice.



Economical way to reach compliance.

- Jim H – Green roofs? Applications being used?
  - Costs are coming down as standardized methods are in place. And incentives from local. 1/3 new buildings and 2/3 retrofits – designed for stormwater treatment. Green building and LEED is driving the industry. 100's of green roofs and on place for 1000 level. Green streets are slower to develop because requires more collaboration between road authorities and stormwater managers.
- Lois E – Differences you see in approach between CSO cities and non-CSO cities?
  - CSO cities were pushing LID to reduce size of CSO facilities – leading the way
  - Not that way anymore because of TMDL – so all cities have to do it. All in the retrofit game.
  - TMDL has forced us out of our normal box and looking at wide variety of strategies of meeting standards.
- Lois E – Shift in magnitude because of change from TMDL to CSO? Not major shift – just a continuum?
  - Some cities still haven't grabbed but can't really answer definitively.
- Jay M – Treatment standards for redevelopment
  - Every state has a different approach - based on disturbance – DC highest at 1.2” others at various levels from 0.2” to 0.75”.
  - Controversy on redevelopment has died down as they realize it isn't that difficult to meet the standards especially in comparison to new development.
- Jim H – Offsets and fees? How is that working?
  - Offset fees have been in place for many years. Some really like to push onsite but they are being used in most difficult instances. Cities have a hard to building retrofits – very expensive but looking at requiring cities to have utility fees in order to
- Jean C – Good definition of redevelopment site?
  - Technical Bulletin #5 – in beginning a good discussion on how to define it.
  - Maryland – redevelopment if predevelopment is 40% impervious or more then redevelopment.
- Randy N – have a workgroup looking at Tech Paper #5 – status?
  - Reasonably up to date. Only 8-9 months old with extensive commentary.
  - How much should infiltration be allowed in older cities with potential of contaminants?
  - Adapting it for MN? Cold climate part of it isn't very strong.
- Nick O – Linear projects and different standards?
  - State highway in DC and Maryland/Virginia are looking at how to apply those practices to narrow corridors.
  - Needing to change views on water under pavement etc... feeling more comfortable than a few years ago.
  - Stormwater Offset banks – so doesn't hold up construction - similar to wetland banking

#### 5. Timelines – Anne Gelbmann – Handout-(attached)

- As much work done as possible by the end of this calendar year.
- Master contract work will be done with tech team leaders and members
- See Handout for monthly schedule (attached)
- Nick T – would like the schedule to show that Redevelopment and Linear are still in one

group

- Cost benefit tech team will get going on things soon.
- Any work orders issued now have to be complete by the end of June
- Lois – May 18<sup>th</sup> meeting – flex treatment standard is a huge part of redevelopment and wondering if we should put off consensus?
  - Bruce W – ok, but should look at what loose ends there are left and get moving on that
- Want new works orders ready for July and new fiscal year
- Jim H – deadline for iron enhanced group regarding work orders
  - Bruce W – hoping to just look at what is coming out of the U and not need a work order
- Garry J has mentioned having a tour – that could be possible in afternoon in June or July
- Lois – puzzle pieces? There are so many factors and how do they fit all together? The big picture? For example, 1.2” volume vs. XX% pollutant removal for restricted sites? Two different approaches.
- Paul M – When will calculator be able to be used?
  - Waiting on work order to complete. Need to wait for tech teams to put in all their information together and then complete.
- Randy N – Funding for outreach?
  - Needs to be finished up this year but looking at ways to do this! Need to figure out how to do the outreach.
  - Tim – MNLA conference at the beginning of Jan – would be a good place to do this. OK.
- Jim H – if you think there are pieces that are missing to help make connections let Bruce know right away. So can get that worked out.

#### 6. Permeable Pavement Google Site – Mary Davy

- Showing the use of the Google Site for the tech teams (site is on MIDS web page under technical teams)
- Platform for communication and information gathering
- Link to Google site available from the MPCA's MIDS page.

#### 7. Other

- Brownfields Seminar at Barr last week – good attendance and information
- Next meeting – April 20, 2012 - 9:00 am

**Minimal Impact Designs Standards (MIDS)  
Timeline and Work Products  
March, 2012 – June, 2013**

2012

April:

- ✓ USFS Grant (decision by late March)
  - If no Tree Grant, define 'Plan B'
- ✓ MIDS Master Contractor work orders: dry swale, permeable pavement and turf (with tech teams)
- ✓ Redevelopment and linear tech team meets - scoping of work and timeline.
- ✓ St. Croix MIDS Pilot: City ordinance reviews
- ✓ Reuse Tech Team recommendations for treatment criteria: scoping of work and timeline (through June, 2012 or through December 31, 2012?)
- ✓ Establish MIDS soluble P/iron enhanced treatment group to define treatment/performance recommendations

April 20 MIDS Meeting

- ❖ Flexible Treatment Discussion for Decision Point in May.
- ❖ Report from Redevelopment and Linear workgroup
- ❖ Update : Dry Swale work order
- ❖ Update : Turf work order
- ❖ Tree Grant (or Plan B if not awarded)
- ❖ Costs and Benefits Discussion, Case Studies
- ❖ Big Picture Thru the Puzzle Pieces

May:

- ✓ Redevelopment and linear tech teams review work needed.
- ✓ Reuse Tech Team: Work order scoping for July, 2012 for treatment criteria to be forwarded to MDH, MPCA ?
- ✓ Form Tech Team: Costs and Benefits discussion, case studies
- ✓ Costs and Benefits Work Group to be formed

May 18 MIDS Meeting:

- ❖ Flexible Treatment Discussion leading to consensus recommendation on performance goal
  - Alternatives Analysis and Antidegradation
  - Costs and Benefits Discussion
- ❖ Draft products presented group review
  - Dry Swales
  - Turf
- ❖ Calculator Discussion
- ❖ Summer Schedule and Preferences

❖ Big Picture Thru the Puzzle Pieces

June:

- ✓ Consultants finish work on dry swale, permeable pavement and turf
  - Calculator inclusion, discussion.
- ✓ Flexible Treatment - consensus recommendation on performance goal
  - Alternatives Analysis and Antidegradation
  - Costs and Benefits Discussion
- ✓ Redevelopment and linear tech teams meet
- ✓ Iron Enhanced group meeting (work order?)
- ✓ FY 2013 Work Order (Calculator, Redevelopment, Reuse, Trees, other issues).

June 15 MIDS Meeting (Tour after lunch?)

- ❖ Dry swale presentation-work order completion (Barr)
- ❖ Permeable pavement presentation-work order complete (Wenck)
- ❖ Turf presentation-work order complete (Wenck)
- ❖ Flexible treatment option work order complete (Barr): consensus recommendation on performance goal
- ❖ Cost Benefit Discussions
- ❖ Big Picture Thru the Puzzle Pieces

July:

- ✓ Consultants doing work for calculator, reuse, redevelopment)
- ✓ Redevelopment Roundup, retrofitting.
- ✓ Linear Roundup
- ✓ U.S. Forest Service Tree grant begins (if awarded)... or Plan B.
- ✓ Costs and Benefits continued

July 20 MIDS Meeting:

- ❖ Redevelopment, performance goals & restrictions
- ❖ Linear Development
- ❖ Calculator Update
- ❖ Costs and Benefits continued
- ❖ Big Picture Thru the Puzzle Pieces

August:

- ✓ Calculator Version 1.0
- ✓ Consultant work continues on calculator, reuse, redevelopment, etc)
- ✓ Case studies

August 17 MIDS Meeting:

- ❖ Report from Redevelopment and Linear team
- ❖ Calculator V 1.0
- ❖ Costs and Benefits: Case Studies
- ❖ Status of the Puzzle

September:

- ❖ Consultant work continues on reuse/harvesting and calculator
- ❖ Reuse treatment criteria continues
- ❖ Redevelopment and Linear discussion
- ❖ St. Croix Pilot and community assistance

September 21 MIDS Meeting

- ✓ Discussion on redevelopment and linear performance goals and consensus recommendation
- ✓ Reuse treatment criteria status
- ✓ St. Croix Pilot- MIDS Package update

October:

- ❖ Form evaluation group for the NOAA Atlas 14
- ❖

October 19 MIDS Meeting

- ✓ Continue Calculator Updates for V 2.0 (July/August, 2013)?
- ✓ St. Croix Pilot Work Product Review

November:

- ❖ NOAA Update discussion if available
- ❖ Tree Grant

November 16 MIDS Meeting

December:

- ❖ Atlas 14 completed
- ❖ EPA Rule
- ❖ River Standards

December 21 MIDS Meeting

- ❖ MIDS Package Review
- ❖ Celebration !!

2013

- MNLA Conference/MIDS Training for MNLA professionals (January, 2012)
- If awarded, US Forest Service Grant (continues until June, 2014)
- MIDS Outreach Spring 2013
- MIDS 319 St. Croix Pilot completed in May, 2013
- MIDS Calculator version 2.0 w/ GUI format Aug 2013
- National LID Conference in August, 2013 – MIDS workshop

MINIMAL IMPACT DESIGN STANDARDS  
MEETING  
April 20, 2012  
MPCA Offices – training 2  
9:00-12:00

Meeting Notes (Taken by Paul Moline)

Attendees: David Bade, Doug Snyder, Forrest Kelley, Ian Peterson, Garry Johanson, Jim Hafner, Jay Riggs, Julie Westerlund, Karen Jensen, Klayton Eckles, Larry Frank, Lois Eberhart, Mary Davy, Matt Durand, Mike Findorff, Mike Isensee, Nick Tiedeken, Paul Moline, Robert Race, Scott Anderson, Tina Carstens, Vanessa Perry, Nick Olson, Anne Gelbmann, Dave Newman, Kristen Larson, Leslie Yetka, Jill Thomas, Marni Karnowski, Randy Neprash, Tim Power, Bob Swanson, Bob Bean, Dan Sullivan, Beth Neuendorf, Paul Hudalla.

Webex: Wayne Sicora, Shane Missaghi, Emily Javens, Natalie Siderius, John Chapman, Mike Trojan, Nathalie Shanstrom, Trevor Russell, Todd Smith, Andrea Hendrickson, Peter Macdonagh

1. Introductions/Review Agenda

- Process update
  - Consensus that MIDS will be complete by end of 2012 with goals
    - finalize MIDS work/charge
    - complete 6 RFP's/scoping
    - complete community assistance package
    - complete version 2 of MIDS calculator
    - compete goals for flexible treatment options

2. Polyphosphate treated drinking water – exploring influence on stormwater  
(POWERPOINT PRESENTATION AVAILABLE ON MIDS WEBSITE)

Bruce Wilson and Nick Olson presented info on the impact of adding polyphosphates to treat drinking water on the overall contribution of P to stormwater runoff.

- Used by 400+ communities in MN to stem corrosion
- Ranges from 450-2800 ppb (lake and stream standards range from 12-150ppb)
- Calculated % of external load to surface waters = 6-12%. This is based off of 1% of drinking water load getting into surface water (watering, flushing, etc.)
- 1 ppb = 1 foot of clarity loss in surface waters (avg. from statewide summary)
- 76-84% reductions needed statewide

Question: What is ideal range for fish? A: Bruce has lots of graphs and data for differing fish species

Question: What are the conclusions from the polyphosphates analysis? A: purpose of this exercise was to lay out methodology for further analysis (i.e. come up with numbers)

Question: unacceptable to remove polyphosphates from drinking water as it is a demand by users. Can there be alternatives to provide same anti-corrosion benefits? A:

this is the first time it has really been looked at in terms of impacts, so no further analysis has been done.

3. Rainfall, snowmelts and dry spells: exploring data for stormwater management

POWERPOINT PRESENTATION AVAILABLE ON MIDS WEBSITE

Bruce Wilson presented information on the impact of increased precipitation data coming out of NOAA on amounts of TP being released, along with some of the example map expressions of the revised precipitation data

- Storm intensity followed by drought modes have resulted in larger pulses of P
- Higher 10-100 year events in number of inches
- NOAA deliverables in late 2012 – will be in web based and GIS map format – in peer review now
- Very complex changes and potential impacts: Longer growing seasons = increased loading; increased volumes; increased temperatures, increased evaporation; increased thaw days in winter

Question: What is the impact to the MIDS workgroup? A: nothing right now. More extreme events lie outside of MIDS “events” anyway.

4. Developers perspectives: Overview of Cost Benefits (MOVED UP ON AGENDA)

POWERPOINT PRESENTATION AVAILABLE ON MIDS WEBSITE

Dave Newman presented information on the need/ability to account for the cost and benefit of MIDS “regulation” on development

- Stormwater regs adds to overall percentage of cost of housing
- Based on variable assumptions, raises cost of housing by 1.6% when the need for additional land is factored in.
- Capital costs of stormwater projects can raise cost by 3.5%

Question: Can the use of open space as stormwater treatment offset the overall land consumption? A: often difficult due to park dedication requirements and natural areas not being able to be used as treatment.

Question: market demand: is it for smaller lots? A: appears that lot sizes are creeping back up again.

Question: Where were percentage increases in cost derived from? A: from the MNPWA study which is just a baseline. MIDS cost benefit workgroup will do more.

Question/comments: need to document benefits of removal as well. How do we add in cost of trying to treat elsewhere? How do we factor in ecological costs? Costs should include life cycle costs as well. BARR’s presentations don’t seem to take into acct to builders community.

Question: what is role of sub-group? A: minimum is determining range of construction methods/costs as identified in calculator.

- Members of cost benefit sub-group include: James Vagle, Dave Newman, Paul Moline, Lois Eberhart, Mary Davy, Jim Hafner, Ian Peterson, Forrest Kelly, Larry Frank, Jason McCarty, Wayne Sicora.
- Group will meet from MAY – SEPT.

5. Discussion on Flexible Treatment Options (Discussion only-no resolution)
  - Does 75% of standard makes sense on constrained sites (soils, bedrock, contaminated, etc)
  - What is a typical site? Needed to determine point of reference
  - 75% is TP, not volume.
  - Needs more discussion at MAY meeting
  - Consensus at group was to have BARR come with recommendation at MAY meeting, and group should be prepared to discuss alternatives.
  
6. Other
  - Bruce Wilson briefly discussed work order status
  - Klayton requested a solidifying of the MIDS workgroup mission for 2012 and commented that the meeting today seemed to be drifting off scope.

Bruce and Anne commented on the timeline for 2012 (see attached)

7. Adjourn



# Minimal Impact Designs Standards (MIDS)

## Timeline and Work Products

March, 2012 – June, 2013

2012

### April:

- ✓ MIDS Tech Teams have developed work tasking and three Master Contractor work orders have been issued: Dry swale (Barr), Permeable Pavement (Wenck) and Turf (Wenck).
- ✓ Redevelopment Tech Team moving forward with difficult issues to scope work tasking by mid-June. Work order will be drafted and readied for early July (next fiscal year) issuance.
- ✓ Reuse Tech Team recommendations for treatment criteria: scoping of work and timeline (through June, 2012 or through December 31, 2012). Key issue will be degree of MN Dept. Health and perhaps MPCA's action to approve treatment guidance (suspended solids and bacteria) for use of storm pond waters to irrigate public fields, gardens.
- ✓ Establish MIDS soluble P/iron enhanced treatment group to define treatment/performance recommendations-Andy Erickson/John Gulliver will lead expedited efforts (by June 30, 2012.)
- ✓ US Forest Service Grant (decision delayed for several weeks)

### April 20 MIDS Meeting

- ❖ Flexible Treatment – scientific background continues for Decision Point in May.
- ❖ Scoping effects of polyphosphate treated drinking water on urban runoff.
- ❖ Presentation: Updating Rainfall Data For Cities and Fields (+ Droughts & Winter Thaws)
- ❖ Costs and Benefits Discussion-developer's perspective
- ❖ Big Picture Thru the Puzzle Pieces

### May:

- ✓ Redevelopment and linear tech teams review work needed.
- ✓ US Forest Service Grant (Trees) announced (?)
- ✓ Reuse Tech Team: Work order scoping for July, 2012 for treatment criteria to be forwarded to MDH, MPCA?
- ✓ Form Tech Team: Costs and Benefits discussion, case studies
- ✓ St. Croix MIDS Pilot: City ordinance reviews

### May 18 MIDS Meeting:

- ❖ Flexible Treatment Discussion leading to consensus recommendation on performance goal
  - Alternatives Analysis and Antidegradation

- Costs and Benefits Discussion
- ❖ Draft products presented group review-contractor presentations
  - Dry Swales
  - Turf
  - Permeable Pavement
- ❖ Calculator Discussion
- ❖ Report from Redevelopment and Linear workgroup
- ❖ 319 Ordinance Presentation
- ❖ Big Picture Thru the Puzzle Pieces

**June:**

- ✓ Consultants finish work on dry swale, permeable pavement and turf
  - Calculator inclusion, discussion.
- ✓ Flexible Treatment - consensus recommendation on performance goal
  - Alternatives Analysis and Antidegradation
  - Costs and Benefits Discussion
- ✓ Redevelopment and linear tech teams meet
- ✓ Iron Enhanced group meeting (work order?)
- ✓ FY 2013 Work Order (Calculator, Redevelopment, Reuse, Trees, other issues).
- ✓ USFS Conference in Minneapolis: MIDS Members Speaking

**June 15 MIDS Meeting (Tour after lunch?)**

- ❖ Dry swale\_presentation-work order completion (Barr)
- ❖ Permeable pavement presentation-work order complete (Wenck)
- ❖ Turf presentation-work order complete (Wenck)
- ❖ Flexible treatment option work order complete (Barr): consensus recommendation on performance goal
- ❖ Calculator work order discussion with Calculator Tech Team
- ❖ Cost Benefit Discussions
- ❖ Big Picture Thru the Puzzle Pieces

**July:**

- ✓ Consultants doing work for calculator, reuse, redevelopment
- ✓ Redevelopment Roundup, retrofitting.
- ✓ Linear Roundup
- ✓ U.S. Forest Service Tree grant begins (if awarded)... or Plan B.
- ✓ Costs and Benefits continued

**July 20 MIDS Meeting:**

- ❖ Redevelopment, performance goals & restrictions
- ❖ Linear Development
- ❖ Calculator Update
- ❖ Costs and Benefits continued
- ❖ Big Picture Thru the Puzzle Pieces

## **August:**

- ✓ Calculator Version 1.0
- ✓ Consultant work continues on calculator, reuse, redevelopment, etc)
- ✓ Case studies

## **August 17 MIDS Meeting:**

- ❖ Report from Redevelopment and Linear team
- ❖ Calculator V 1.0
- ❖ Costs and Benefits: Case Studies
- ❖ Status of the Puzzle

## **September:**

- ❖ Consultant work continues on reuse/harvesting and calculator
- ❖ Reuse treatment criteria continues
- ❖ Redevelopment and Linear discussion
- ❖ St. Croix Pilot and community assistance

## **September 21 MIDS Meeting**

- ✓ Discussion on redevelopment and linear performance goals and consensus recommendation
- ✓ Reuse treatment criteria status
- ✓ St. Croix Pilot- MIDS Package update

## **October:**

- ❖ Form evaluation group for the NOAA Atlas 14
- ❖

## **October 19 MIDS Meeting**

- ✓ Continue Calculator Updates for V 2.0 (July/August, 2013)?
- ✓ St. Croix Pilot Work Product Review

## **November:**

- ❖ NOAA Update discussion if available
- ❖ Tree Grant

## **November 16 MIDS Meeting**

## **December:**

- ❖ Atlas 14 completed
- ❖ EPA Rule
- ❖ River Standards

## December 21 MIDS Meeting

- ❖ MIDS Package Review
- ❖ Celebration !!

## 2013

- MNLA Conference/MIDS Training for MNLA professionals (January, 2012)
- If awarded, US Forest Service Grant (continues until June, 2014)
- MIDS Outreach Spring 2013
- MIDS 319 St. Croix Pilot completed in May, 2013
- MIDS Calculator version 2.0 w/ GUI format Aug 2013
- National LID Conference in August, 2013 – MIDS workshop

## MINIMAL IMPACT DESIGN STANDARDS

### WORKGROUP MEETING

May 18, 2012

9:00-12:00

MPCA St. Paul Office, Training Room 2

Meeting Notes

(Taken by Lois Eberhart)

Attendees: David Bade, Doug Thomas, Forrest Kelly, Jim Hafner, James Vagle, Karen Jensen, Lois Eberhart, Mark Zabel J, Mary Davy, Matt Durand, Mike Findorff, Nick Tiedeken, Paul Moline, Robert Race, Scott Anderson, Shane Missaghi, Tina Carstens, Vanessa Perry, Wesley Saunders-Pearce, Jay Michels, John Hanson, Kristen Larson, Leslie Yetka, Jill Thomas, Bob Swanson, Jason McCarty, Bob Bean, Paul Hudalla, Brian Davis, Ed Matthiesen, Ryon Lefos, Deb Bartels, Kevin Biehn, Anne Gelbmann, Bruce Wilson

Webex: Jessica Bass, Van-Anh Thai, Amy Garcia, Emily Javens, Andrea Hendrickson, John Chapman, Melissa Wenzel

#### Presentation by EOR (Presentation is on MIDS web site)

Kevin Biehn and Jay Michels went over a 2005 EOR cost benefit case study and discussed developing case studies and how to define. The 2005 study included quality of life benefits and assumed a 30-year life cycle for costing ongoing operation and maintenance. Study compared a) "traditional" (ponding), b) "built" (what was actually built at the site - ponding with regional infiltration basin), and "LID" using integrated BMPs (primarily in common space or ROW), bioretention and vegetated swales, and regional infiltration. The study concluded there were gains in developable area because of reduced ponding requirements and multifunctional landscape. The study concluded that, from the built to the LID scenarios, construct cost would decrease from \$3.5 million to \$3.2 million, and 30-year O&M would increase from \$3.2 million to \$3.9 million. Regarding the increase in O & M cost, it was emphasized that it is not an apples-apples comparison because the "built" scenario cost did not include maintenance costs that for traditionally landscaped areas, whereas the "LID" scenario used those same areas as "multi-functional landscapes" and therefore did include maintenance costs for those areas. The study did not consider implications for changes in parties responsible for O&M between the two scenarios. This particular study did not consider the following: narrowed streets, smaller lots, porous pavement, green roofs or underground devices.

#### Atlas 14

Bruce Wilson reported that the draft Atlas 14 (the new generation "TP40") will be out for peer review in July.

#### Discussion of Flexible Treatment for Difficult Sites/Sites with Restrictions (as Bruce reminded, site restrictions as determined by LGUs)

*(Apologies from the note-taker who cannot do this discussion justice. Was listening with rapt attention and not taking adequate notes, therefore can only list disconnected notes for this section.)*

John Hanson led discussion of Options A, B, C.

John commented that to achieve >55% TP reduction, only two methods available appear to be iron enhancement or volume reduction.

An example of Stillwater and Bayport was given to illustrate "disconnect" between MS4s and non-MS4s, and discussion that MIDS should not be limited to MS4s. Anti-deg is not just MS4s.

Mix and match: E.g., ponds, up to 50% TP, no volume reduction. Iron enhances sand filters, up to 85% TP.

Question: Did Option A consider TSS as a surrogate for TP, instead of using TP as a surrogate for TSS?

Response: Yes it was considered.

There was commentary that analysis of prudent and feasible could lead to conclusion that a given site should not be developed.

## New Study

Disconnection of impervious surfaces – Dr. John Gulliver

### Turf Team (See presentation on MIDS web site)

Ed Matthiesen reported on “managed turf” disturbance, compaction or excessive management. Discussion of different turf species, turf team should reconvene, and Shane will facilitate this. At 1.1”, would (want?need?) zero runoff from turf areas. If better, then consider additional credit. If worse, then what? Something about “poor” C soils might be CN86 whereas “good” C soils might be CN74.

Jay Michels talked about a study for Chisago City, Lindstrom and Center City.

Comment that according to Pitt, residential runoff contains significantly higher nutrient concentration than other land uses.

Seattle: 1) leave native, undisturbed vegetation in place; 2) amend in place, to 8”;3) salvage topsoil and amend (with appropriate ESC for stockpile); 4) import 8” topsoil (assumed to be amended)

Iowa: top 8”, 5% organic, or 2” compost (comment on using MnDOT-sanctioned terms, e.g., “ripped” vs. “tilled in”.)

### Permeable Pavement (See presentation on MIDS web site)

Ed Matthiesen reported. Approach of adapting State of Virginia’s work to cold climate. Remarked that best for parking lots, alleys, low traffic residential. Use railroad ballast-type rock for 30%-40% void space. Require less or no de-icer use. Discussion as to why to require less or no de-icers: 1) concern for groundwater? Or b) concern for damage to the pervious pavement? Or 3) just don’t need as much de-icer? Discussion that some clogging does not mean it is considered impervious. Discussion of vacuuming, sweeping.

### Dry Swales (See presentation on MIDS web site)

John Hanson presented. Described a) grass channel (does not have engineered soils), b) dry swale (“water quality swale”, has engineered soils, must have check dams, can have turf, trees, other), c) wet swale (intercepts water table – a linear wetland). What about check dams and snowmobiles? If using MnDOT specs, snowmobiles are accounted for. More modeling is to be done, with a number of variations.

## Re-Use

Karen Jensen and Brian Davis reported for the team. Discussed work order re: sedimentation basin water for irrigation. Working to define key words. Discussion of regulations, e.g., jurisdictions include Labor & Industry re: Mn Plumbing Code; Mn Dept. of Health. Discussion of issues being worked on, such as human contact concerns for irrigation of gardens, play fields; use for gray water; impact on groundwater. Treatment considerations need to include the source of stormwater and the intended use of the stormwater.

## General Update

Bruce Wilson reviewed status. Bruce reported that grant request to the US Forest service was not funded, other options related to trees as stormwater management are being looked into. Jim Hafner went over the plans for June meeting.

# MINIMAL IMPACT DESIGN STANDARDS

## WORKGROUP MEETING

June 15, 2012

9:00-12:00

MPCA St. Paul Office, Training Room 2

MEETING NOTES (Taken by Tina Carstens)

Attendees: David Bade, Doug Thomas, Jim Hafner, James Vagle, Jay Riggs, Julie Westerlund, Larry Frank, Lois Eberhart, Mark Zabel, Matt Durand, Mike Findorff, Mike Isensee, Paul Moline, Robert Race, Scott Anderson, Tina Carstens, Trevor Russell, Vanessa Perr, Wesley Saunders-Pearce, Anne Gelbmann, Bruce Wilson, Dave Newman, Jay Michels, John Hanson, Kristen Larson, Jill Thomas, Randy Neprash, John Bilotta, Jason McCarty, Bob Bean, Rob Stangler, Diane Spector

WebEx Participants: Derek Asche, Beth Neuendorf, Nathalie Shanstrom, Wayne Cymbaluk, Jon Lore, Mike Trojan, Stacy Meyers, Todd Smith.

1. **Welcome/Introductions:** Jim Hafner/Jay Riggs
  - Thanks to Bruce W for treats!
  - Introductions were done.
  - This project done by December 31!
  - Version 1 of calculator September 2012, Version 2 of calculator August of 2013
  
2. **Permeable Pavement work products/Wenck** - Diane Spector.
  - Permeable pavement work order - finishing up the memo and what needs there are for the calculator.
    - Mike Isensee - compaction of subgrade? and the way the calculator deals with that? Mary Davy - Tech team is looking at this.
    - Robert Race - What design storm is recommended for the calculator?  
Bruce W- 1.1 inch.
  
3. **Turf Work products/Wenck** - Diane Spector (See presentation on MIDS web page)
  - Soil and Turf Management Work Order
    - Overview: decompact subgrade to depth of 12 inches, selecting of seed mix for light conditions, fertilize according to traffic conditions
    - Mary Davy - research on fertilization based on well drained "golf course" soils - may need to adjust based on soil modification recommendations
    - Quantifying stormwater benefits of managing turf for stormwater
      - § Ratio of impervious to turf to infiltrate 1.1 inches?
      - § This is routing impervious surfaces to turf areas for credit
      - § Turf Management mini-calculator

- Lois Eberhart - what soil spec has a 30% void? Answer: most likely sand.
  - Doug Thomas - Look at rainfall simulator work done in Ag settings? How do you look at the runoff that occurs after it is saturated on sloped conditions? Diane - Yes, this doesn't take time factors into account and rough model.
  - Bruce W - how far can you reasonable rip soils? Answer: 12" is norm. The deeper you try to rip the more compaction may occur from equipment.
  - If you convert D to A through this process you still have D soils underneath and could have issues.
  - Is this appropriate for D soils? Or even C soils?
  - Lois Eberhart - would under drains be worth it at all?
  - Wes Saunders Pearce - Any consideration for urban fill soils? Answer - Not specifically?
  - § Mike Findorff - Other work showed 88-90% removal - that will be reflected? Slide says that 100% infiltration = 100% removal - that can be misleading. Answer - difference between annual average and when it is all infiltrated storm by storm.
  - § Bruce W - think about ag land development with feedlots? Surging effluent phosphorus levels.
  - § Pretreatment required still for this BMP
  - Questions for Discussion
    - § Acceptance/Inspection?
    - § Long Term Maintenance?
    - § Should turf used for other stormwater BMPs be required to meet the same soil/turf maintenance practices?
    - § How to incentivize practice over all turfed areas?
  - Dave Newman - we would never use 1% slope because of wet backyards. 2-5% slope typical. Answer: Integrate a slope variable into the calculator for this credit.
  - Paul Moline - 8-10" for Kentucky blue grass? Answer - maybe on a golf course otherwise 2-3".
  - Mike Isensee - Moving industry in sod laying practices with this credit, hopefully.
4. **Dry Swale Work products/Barr** - John Hanson (See presentation on MIDS web page)
- § Break swales into components like side slope, main channel, check dams, underdrains.
  - § Side slope/Main channel: Walked through modeling process using P8 using 58 years of Twin City rain data and 1.1 inch in 15/30/60 minutes - various lengths and slopes and infiltration rates
  - § Modeling results - presentation slides to see charts and graphs



- § Quick and dirty calculator - use reduction from calculator and put on chart and find BMP volume percentage - that is looking at the annual benefit of 74% reduction vs. the event volume reduction that is only 14%.
- § All numbers are in the range of literature values (0-98%) - so doing well on this. Ha.
- § Differences between LRRB and MIDS methods -
  - Green Ampt vs. constant infiltration rate.
  - Measured rates in the field (modified phillip dunn) vs. stormwater manual rates
  - Various rainfall intensities vs. 58 years of real storms at 1 hour time increments.
  - Neither of these are real word monitoring situations.
- § Working on drawings for these swales - preliminary draft is done
- § Next steps:
  - Wait until LRRB study is complete this fall - correction from Beth Neuendorf - LRRB won't be done until next spring with finalization in 2014.
  - U of M will compare and contrast various methods
  - Complete cross section details
  - Update the calculator for volume reduction
- § Do we use the Virginia calculator credits for the calculator for swales or do we put in the modeling done by Barr for this BMP?
  - Virginia - C/D soils 10% annual reduction, A/B soils 20%, Compost amended soils - 30%
  - Bounce it back to tech team to make a determination? Yes.
- § Jay R - How are we pulling all these work orders and tech teams together? Bruce W - need a work order task to pull everything together. In calculator or separate work order?
  - Paul Moline - Calculator could be confusing as to where you go to get credit for various BMPs.

##### 5. Flexible Treatment Discussion/Consensus

- § Two handouts were given at meeting - email response from Klayton (Option K) and Option D from Mike I. (Found at bottom of the meeting notes)
- § Option A allows flexibility to go into the next upstream MDNR catchment area which isn't always available because could be at the headwaters. Could use a little tweaking of that language.
  - Option A - 75% goal
- § Option B - site specific analysis - anti-deg
- § Option C - limited volume control approach. Look at treatment goal of .55 inches
  - Option A
  - Option D - presented by Mike Isensee
  - combines options and gives most flexibility to designers
  - See handout. (on MIDS web page)

- Doug Thomas - No variances language as it causes many issues. Diverse soil types on a site which can cause a lot of confusion.
- Paul Moline - MEP is hard to regulate. Suggests to drop poorly drained soils from flexible treatment.
- Mike Isensee - afraid that designers will just right to P removal and forget about volume reduction
- Wes Saunders Pearce - value option A because it is simple and flexible. Difference between MEP and prudent/feasible. If 1.1 can't be met than THIS is what is prudent and feasible.. Bruce W - we can wordsmith this after.
- Mark Zabel - Mike Isensee's concern is that we are setting up something that is all or nothing. Change language to put prudent and feasible first we can find middle group.
- Randy Neprash - option A says that 75% is the target and then says that volume reduction should be first.
- Scott Anderson - This still works for regulators. Don't care how you meet it but need to see 75%.
- Doug Thomas - Options A works - gets us to the point where we can look at biofiltration and we can determine the water quality treatment on the site. Option A gets us there.
- Lois Eberhart - when volume reduction works it is the cheapest way to get load reduction
- Randy Neprash - curious about supervision from MPCA to the local govts that are implementing this. Answer - would come out of audit?
- Option to LGU for which option they want? Answer - need to get one option into the calculator.
- Discussion of Klayon Eckles' email. – known as “Option K”
  - § leans towards option A
  - § language addition suggestions - see handout
- § Trevor Russell- Where did the Phosphorus equivalent from option C? Mike F - from Barr analysis showed that the full standard of 85-92% on restricted sites was too much.
- § Paul Moline - offsite questions? still an option always in non-restricted sites? Mike F - no, if you can do it on your site you do it on your site.
- § Randy Neprash - Klayton's comments are good. First comment is a word smithing issue. Approve the concept and work on the wording. Banking question is more fundamental. Moving the banking option up in the sequencing.
- § Julie Westerlund - torn on issue because regional treatment gets away from idea of treating the stormwater where it falls. LID=keep the raindrop where it falls.
- § Bruce Wilson - the law he is working with says ONSITE.
- § Mark Zabel - Lakeville example of higher infiltration on good soil sites and lower infiltration on poor soil areas - outside of MIDS because it is site design standard
- § Paul M - Volume is a pollutant in some places. We can do lesser volume just like lesser nutrient standard.

§ **Comment** - what incentive to do banking of additional credits if others can't use the credits.

§ Mike Isensee - One of the goals is to have consistent standards for development community. Does this conflict with that goal? Scott A - won't have consistency always but still have the same goals in treatment. Just different in how they get there.

§ **Lois Eberhart - Makes a motion (second by Larry Frank(?)) to adopt Option A with the following language (with consensus language added to the motion as noted below in the minutes):**

“For sites with restrictions, when it is not prudent or feasible to achieve the MIDS new development performance with volume reduction BMPs, the MIDS Flexible Treatment Performance goal is to achieve 75% removal of the annual TP load.

1. First, the applicant shall comply with the stormwater volume reduction MIDS New Development Performance Goal to the maximum extent practicable on site through volume reduction methods such as infiltration, reuse/harvesting, and evapotranspiration as feasible.

2. Secondary preference is to employ filtration, other BMPs or combination of BMPs to achieve this standard.

For instances where this is not feasible or prudent due to site constraints and regional treatment limitations or excessive costs (as determined by the local authority), or when significant additional environmental benefits can be achieved by use of offsite treatment options, then equivalent off-site mitigation (including banking or cash, as determined by local authority) can be used so as to protect the downstream water body that would receive the site runoff. Off-site compliance and banking credits shall be achieved in the following sequence:

- (i) within the direct tributary area to downstream receiving water body.
- (ii) within the same MDNR catchment basin
- (iii) within the next MDNR catchment upstream

This flexible treatment goal, in tandem with the MIDS New Development Performance Goal, is being proposed to satisfy prudent and feasible in the context of antidegradation applications for Minnesota Stormwater management.”

- Doug Thomas - catchment area - allows the LGU to go down to locally defined subwatersheds
- This meets Anti-deg. Yes.
- Julie Westerlund - If ok with MPCA, will include the alternative banking language as proposed by Klayton E. **CONSENSUS - YES**

- Trevor Russell - sequencing FIRST - within the direct tributary area to the downstream receiving body. **CONSENSUS - YES**
- Paul Moline - ranking the BMPs from 1 and 2 - why split? Trying to meet goal through volume reduction first and then the other BMPs.
- **Jay Riggs-DOES ANYONE OPPOSE THE MOTION AND WHY?**
  - § PAUL Moline - opposes MEP and need a number for volume
    - Bruce W - Have to have MEP for antideg.
    - Mike Findorff - already said we can't do volume reduction - how can we say a smaller amount of volume reduction?
    - Alternative proposal - Option C or D - A backs away from goals
    - Jay Riggs - 0.55 may actually limit what can be done.
    - Jim Hafner - if we need to include MEP in order to meet law and anti-deg then we need to include it
  - § Matt Durand - goal of MIDS is to make it more black and white and take away the grey. This doesn't take away the grey. He agrees with the number and Option C
    - But still have 75% number but volume is the pollutant that isn't solved about this.
    - Scott Anderson - can always have more restrictive rule - Matt Durand - but this is going backwards.
- **NOT GOING TO GET TO CONSENSUS MOMENT TODAY - PLEASE THINK AND WRITE OTHER OPTIONS OR PROPOSALS**

6. **St. Croix Basin 319 Ordinances**-Jay Michels & Jean Coleman

- Not ordinance but community assistance package finalized by December 2012
- Package Contents
  - Background on MIDS
  - How to use package
  - long form stormwater and erosion control ordinances
  - short form
  - Subdivision ordinance
  - conservation subdivision ordinance
  - development check list
  - planning process checklist
  - adoption resolution
- Randy Neprash - League of MN Cities may be willing to sell the economics to the cities.
- Mary Davy - can we see the draft of these things?
- Jay Riggs - Short form is almost ready. Long form has some major edits to go.
- Lois Eberhart - may other standards coming out with NPDES so these cities need to know all the other things coming down the line

- MIDified term was coined!
7. **Work Order Status-** Bruce and Anne
    - Bruce W - Budget Summary overview
    - Have \$220,000 left with a whole list of needs
    - Lois Eberhart - \$30,000 is too low for linear and redevelopment team.
    - Stormwater Manual - be able to talk in a week or two on that.
  8. **Implementation/outreach/training** -Anne
    - Anne G - Forming small team to discuss how we get the MIDS package implemented and training on calculator. No money to do training on this at a few venues coming up - LID Conference, BWSR Academy, MNLA
    - Mary Davy volunteers - others should contact Anne if they are interested
  9. **JULY Meeting is cancelled but a tour is being organized for July 20th. More information to follow with an e-mail to the group.**

### **FLEXIBLE TREATMENT OPTIONS:**

#### **OPTION A Draft Performance Goal for Sites with Restrictions**

For sites with restrictions and when volume reduction BMPs cannot achieve the MIDS new development performance goal, the MIDS Flexible Treatment Performance Goal is to achieve 75 % removal of the annual TP load.

First, the applicant shall comply with the stormwater volume reduction MIDS New Development Performance Goal to the maximum extent practicable on site through volume reduction methods such as infiltration, reuse/harvesting, and evapotranspiration as feasible.

1. Secondary preference is to employ filtration followed by more common (rate control) BMPs to achieve this standard.

For instances where this is not feasible and prudent due to site constraints and regional treatment limitations or excessive costs (as determined by the local authority), then equivalent off-site mitigation (including banking or cash, as determined by local authority) can be used so as to protect the downstream water body that would receive the site runoff. Off-site compliance and banking credits shall be achieved in the following sequence:

- (i) within the same MDNR catchment basin or the next MDNR catchment upstream

This flexible treatment goal, in tandem with the MIDS New Development Performance Goal, is being proposed to satisfy prudent and feasible in the context of antidegradation applications for Minnesota Stormwater management.

## OPTION B (Antidegradation)

### Draft Performance Goal for Sites with Restrictions

For sites with restrictions and when MIDS BMPs cannot achieve the MIDS new development performance goal, the applicant shall provide an evaluation of alternatives that avoid and minimize net increases in loading or otherwise avoid and minimize degradation of receiving waters through prudent and feasible prevention, treatment or mitigation offsets. Where receiving waters are of high water quality and there are no prudent and feasible alternatives that would avoid net increases in loading or would otherwise avoid degradation, the applicant shall identify prudent and feasible alternatives that result in the least degradation to receiving waters.

[Bruce's Notes: there are a couple of options for review of this analysis. I do not have a resolution for public noticing of the conclusions at this point. Also, if water is impaired but no TMDL has been completed, cannot add to the loading/impairment. ]

Alternatives for evaluation must include, but are not limited to:

- practices that incorporate pollution prevention techniques;
- additional or enhanced treatment levels;
- reduction in the scale of the activity;
- discharge to alternative locations;
- mitigation offsets;
- recycle/reuse of pollutants and water;
- improved operation and maintenance of existing pollution prevention and treatment systems;
- seasonal or controlled discharge options to avoid adverse water quality impacts at critical conditions of the receiving waters;
- establishing buffer areas; and
- land application and infiltration to capture pollutants and reduce surface runoff.

The applicant shall provide a statement describing the design parameters, expected performance, construction, operation and maintenance costs, and reliability of:

- the alternative necessary to avoid net increase in loading; and
- where there are no prudent and feasible alternatives that would avoid net increases in loading, the alternative determined to be prudent and feasible which results in the least degradation. MPCA have to review?

The local authority shall make a preliminary determination of whether and to what extent water quality will be lowered based upon information presented. Where the proposed activity would result in the lowering of high water quality, the applicant must show how the activity by itself or in conjunction with other regulated activities will not impact existing and outstanding resource value waters.

## OPTION C (Limited Volume Control Option)

### Draft Performance Goal for Sites with Restrictions

For sites with restrictions and when BMPs cannot achieve the MIDS new development performance goal, the MIDS Flexible Treatment Performance Goal is to provide for stormwater volume runoff control to the greatest extent feasible, and at least 0.55 inches times the new impervious surfaces, and phosphorus control in an amount equivalent to that which would be achieved through volume control of 1.1 inch times the site’s new impervious surfaces.

For instances where this is not feasible and prudent due to site constraints (e.g. contaminated sites) and regional treatment limitations or excessive costs (as determined by the local authority), then equivalent off-site mitigation (including banking or cash, as determined by local authority) can be used so as to protect the downstream water body that would receive the site runoff. Off-site compliance and banking credits shall be achieved in the following sequence:

- (i) within the same MDNR catchment basin or the next MDNR catchment upstream .

This flexible treatment goal, in tandem with the MIDS New Development Performance Goal, is being proposed to satisfy prudent and feasible in the context of antidegradation applications for Minnesota Stormwater management.

#### Mike Isensee’s Option D (presented in excel spreadsheet)

Option D provides flexible treatment options to meet the MIDS new development performance goal for sites with variable conditions. This option allows designers to make the best choice to meet site conditions and avoid and minimize net increases in loading or degradation of receiving waters.

	<b>MIDS Standard</b>	<b>Site Condition</b>	<b>Feasible BMP's</b>
1	1.1" Volume Control	Well to moderately drained soils	LID Practices Infiltration Control BMPs Stormwater Reuse
<b>Flexible Treatment Options</b>			
2	0.55" Volume Control and 75% TP Reduction	Poorly drained soils	LID Practices Infiltration BMPs Filtration BMPs Bioretention BMPs Stormwater Reuse Wet Ponds
3	75% TP Reduction	High Surficial Groundwater, High Bedrock, Fractured Geology, Stormwater Hotspots, DWSMA Conflict, Contaminated Soils	LID Practices Filtration BMPs with Liners Bioretention BMPs Stormwater Reuse LID Practices Wet Ponds

5	Offsite BMP	Site constraints or other reasons why onsite doesn't work	Infiltration BMPs Filtration BMPs Stormwater Reuse LID Practices Wet Sedimentation Basins
6	Variance Process	Must demonstrate that the above options are not achievable (variance situations should be clearly defined)	

### Klayton's e-mail "Option K"

Regarding flexible treatment options criteria:

*"Secondary preference is to employ filtration **followed by** more common (rate control) BMPs to achieve this standard."*

I don't agree with this "followed by" as it puts a hierarchy in a place where it shouldn't be (especially given the wide range and combinations of treatment options that fall into these broad categories) ...I would change it to:

*Secondary preference is to employ filtration, detention, or other TP BMP reduction strategy or combination thereof, to achieve this standard.*

Second, I strongly support the "Banking" concept; we have really missed opportunities to improve the environment by overzealous adherence to the artificial structures that are created in our regulatory frameworks. I suggest we have been applying the adage: why do a great job when you can follow the rules and do a poor one!

In a case where more benefit to the receiving water can be achieved for the same or less \$, Banking (or some other term not associated with bankers) should be seriously considered if not the preferred alternative. I'd like to suggest:

*For instances where this is not feasible and prudent due to site constraints and regional treatment limitations or excessive costs (as determined by the local authority), **OR WHEN SIGNIFICANT ADDITIONAL ENVIRONMENTAL BENEFITS CAN BE ACHIEVED BY USE OF OFF SITE TREATMENT OPTIONS**, then equivalent off-site mitigation (including banking or cash, as determined by local authority) can be used so as to protect the downstream water body that would receive the site runoff. Off-site compliance and banking credits shall be achieved in the following sequence:*

- (i) within the same MDNR catchment basin
- (ii) the next MDNR catchment upstream

For instance: take out oak woodlands to put in an infiltration basin? Or why not allow banking when a neighboring property has high permeability soils? Or when Larger scale systems can benefit multiple properties, but can't be built on the property in question? And so forth.



In determining when banking might be appropriate, I believe it should yield a greater overall benefit than the on-site solution would. Example: the alternative reduces the TP by more than an on-site option would, AND it reduces the impact on the woodland.

MIDS Budget Summary CBW 6/13/12

		Budget	As Writt
<b>Segment I Budget Expended</b>			
Three Master Contracts Issued	<b>% Completed</b>		
Seven Work Orders (3 amendments) + Schueler Contract issued	100%	\$350,000	\$349,8
<b>Segment II Work Orders</b>		<b>Budget</b>	<b>As Writt</b>
<i>Through June 30, 2012: Four Work Orders Issued</i>		<b>\$359,000</b>	<b>\$359,0</b>
Flexible Treatment (Barr)	98%	\$40,000	\$37,4
Dry Swale (Barr)	50%	\$45,000	\$48,7
Turf (Wenck)	50%	\$20,000	\$21,4
Permeable Pavement (Wenck)	50%	\$25,000	\$26,5
<b>Subtotal</b>		<b>\$130,000</b>	<b>\$134,0</b>
<i>Through December 31, 2012</i>		<b>Budget</b>	<b>As Writt</b>
Contracts with Barr, Stantec and Wenck amended thru June 30, 2013			
Redevelopment and Linear	Pending Tech Team	\$30,000	
Schueler contract	Drafting	\$5,000	
Reuse/Harvest	Pending Tech Team	\$20,000	
Calculator Version 1.0	Drafting	\$30,000	
Calculator Version 2.0	July, 2013	\$85,000	
Costs/Benefits	Pending Tech Team	\$20,000	
Enhanced Treatment - 2 meeting via UM	Begin July 2013	\$0	
Training/Misc	January, 2013	\$25,000	
Catch up issues/reserve		\$14,000	
<b>Subtotals</b>		<b>\$229,000</b>	
<b>Grand Total</b>		<b>\$359,000</b>	<b>\$134,0</b>
<b>Residual</b>		<b>\$0</b>	

**To Be Determined Issues**

- Urban forestry - link with other states
- Disconnected Impervious Cover



## MINIMAL IMPACT DESIGN STANDARDS

### MEETING

August 17, 2012

MPCA Offices – Training Room 2

9:00-12:00

Meeting Notes (taken by Scott Anderson)

**Attendees:** Doug Snyder, Forrest Kelley, Jim Hafner, James Vagle, Jay Riggs, Karen Jensen, Klayton Eckles, Larry Frank, Lois Eberhart, Mark Zabel, Mary Davy, Matt Durand, Melissa Lewis, Mike Findorff, Mike Isensee, Nick Tiedeken, Paul Moline, Robert Race, Scott Anderson, Tim Malooly, Tina Carstens, Vanessa Perry, Wesley Saunders-Pearce, John Hanson, Kristen Larson, Randy Neprash, Tim Power, Todd Smith, Jason McCarty, Dan Sullivan, Paul Hudalla, Richard Walters, John Bartunek, Bruce Wilson, Anne Gelbmann

**Webex:** Van-Anh Thai, Peter MacDonagh, Ashley Tooley, Beth Neuendorf, Shane Missaghi, Trevor Russell, Andrea Hendrickson, Doug Thomas

#### 1. Introductions/Review Agenda – Jim Hafner/Jay Riggs

- Introductions around the room and acknowledgment of webex attendees.
- Goals for today:
  - Come to a consensus on the flexible treatment option
  - Status of MIDS work orders
  - Roll-out of MIDS package

#### 2. Flexible Treatment Discussion – Jim Hafner/Jay Riggs

- Best of flexible treatment for sites with restrictions – Bruce (See presentation on MIDS website)
  - Why? Legislation
  - What? Regulation
  - How? Antidegradation
  - Key – to maintain existing uses, protect high quality waters, maintain ORVWs
  - Modeling efforts to date include 30-50 years of data for A-C soils.
  - Need flexibility for when infiltration is physically impossible, might lead to other problems, or might be excessively costly.
  - Review of performance goal options for sites with restrictions:
    - § Same as site with 1.1" goal
    - § TSS to 1.1" goal (95%)
    - § TP to 1.1" goal (87%)
    - § Install BMPs with cost equal to 1.1" (can be difficult to define) or cost cap
    - § Lower performance goal
    - § Express as "inches of impervious" and/or % removal
  - 45% P is in dissolved/soluble form
  - Previous presentation by Dr. Gulliver (2/2012) presented performance goal numbers based on 5-30 mg/L TSS and 100 ug/L TP for lakes and streams. Reinforced by studies ex. MPLS Chain of Lakes
  - Slide on Page 5 of the handout material demonstrates potential removal of particle sizes utilizing a treatment train approach.
    - § Jay noted that infiltration would get 100%.
  - Modeling exercises demonstrated pollutant reductions with an approximate annualized cost relative to a pond.

- Pre-treatment alternatives were discussed. Nation-leading work at the U of M was started in 2005 and ultimately resulted in development of the SHSAM model that models the effectiveness of small structural BMPs. The goal is to incorporate this into the MIDS calculator (likely under a future work order).
- In summary:
  - § Flow diagram for site development planning
  - § Trees have not been tackled yet (grant application was not successful)
  - § Redevelopment and linear to be determined
  - § Must compromise to get to the 75%
  - § Want to capitalize on SAFL work
    - Iron-enhanced sand (17 sites being monitored)
    - 4 practices (sand, weirs, check dams, MN filter)
  - § Focus is to maintain Antidegradation
- Recap of last meeting RE: consensus issues to arrive at an alternative Option A in hopes at arriving at a new consensus (Mike Isensee)
  - Option A – current flow path – 1.1" volume control to implement volume reduction to the maximum extent practicable to 75% reduction in P.
    - § Concerns from design community on how to achieve maximum extent practicable
    - § Propose standard to try for tight soils
    - § If the 0.55" does not work, go back to maximum extent practicable
    - § NOT a step and review process however, but a seamless design process by the designer (see decision sequence sheet)
    - § Also, volume control is needed in communities draining to lower-order streams while keeping flexibility for others.
  - Lois – concerned that 0.55" and 75% TP are not scientifically based enough, are arbitrary, or could be challenged.
    - § 75% could be defined as getting at the dissolved portion of P
    - § Need to define/justify numbers
    - § John H. and Bruce W. to address science/justification
  - Lois – have we dropped the discussion on the cap?
    - § No, still need to talk about this
  - Doug S. – Site placement as part of the Option A sequence could bump into existing zoning regulations – may need variances to re-site. LGUs would need to address this in local code etc.
  - Klayton – At the City level there are other factors that go into developments – economic development, parks, traffic – all are considered. Template has some language issues such as the word "must" and we need to be careful on language.
  - Randy N. – Provided MIDS Project Flexible Treatment Options Decision Sequence. This is based on conversations with others – goes from 4 step to 3 step – difference in 2a.
  - Matt D. – Addressing previous question – 0.55" is approximately equivalent to 70% TP. Volume is a huge stressor.
  - Clarification – MEP – target?
    - § CWA language
    - § EPA won't define. Potentially courts might.
    - § Technically and economically feasible as determined
  - What resource will local authority use to make determination?
    - § It will vary depending on location, city, wd, swcd, county
  - Paul M. – We needed a standard to address MEP ambiguity.

- § 0.55" gets to 70% but also gets to larger soluble portion helping get to that 75% goal
- Bruce W. – Want to give additional credit for addressing soluble P (x1.5) to be included in the calculator.
- Mary D. – Trouble with MEP – target has merit but still issues with 0.55" and the need to document science and numbers.
- Klayton – Would like number to eliminate conflict.
- Trevor (via webx) – Is equivalent off-site protection to the 1.1" or 0.55"?
- Randy – Off-site ties to Option A – full standard based on the 1.1".
- Bruce W. – Costs for difficult sites 2-6 times the cost of a typical pond to achieve 90% is just not feasible. Stormwater comprises 3-5% of total project costs (from Jason M.) 75% is a compromise to meet water quality standards.
- Lois – Will there be a dual target (soluble/particulate)?
- Bruce W. – potential for soluble = 1.5 x particulate – likely 5 years away on this.
- John H. – Calculator will be updated to track both particulate and soluble.
- Alternative Language presented for Alternative Option A.
  - Klayton – 2c. should examine merits of relocating project elements to address varying soil conditions and constraints across the site.
  - Mark Z. – are we accepting Randy's proposal – the main difference between step 2 is that in the current version one must show they can't meet 0.55" while in the new version one begins with MEP to try to achieve 0.55".
  - Jay – If you go into flexible treatment you are already into MEP.
  - Additional discussion points:
    - § Looking to collapse steps to minimize effort and still meet goals.
    - § Why not go from 1.1" standard to MEP if 1.1" cannot be met?
      - This was attempted at June MIDS meeting – did not reach consent.
      - Target was desired by some.
      - 0.55" should be helpful to developers as a standard target.
  - Mark Z. – Supports 4-step sequence. Would like to apply sequencing. Concerned about shooting for lowest target.
  - Matt D. – Not looking at sequencing/steps/extras for developers – not intending to create extra steps.
  - Wes – Please refresh credit for bio-filtration and iron-enhanced:
    - § P-65% for biofiltration
    - § P-80% for iron enhanced
    - § Standard biofiltration will not get you to the standard so inherently there will have to be some abstraction incorporated in a site.
    - § What will bio-filtration give as a credit in the calculator?
    - § Either process will almost have to include infiltration/volume control.
  - Jason M. – Concern was related to 75% what does that mean? Diminished pond role? Would like to have bio-filtration as a tool, but not the only tool.
  - Trevor (via webex) – I second Matt's and Paul's thoughts – interim target is useful and should help both parties.
  - Melissa – Number is good. Fine with either 3-step or 4-step process. Need to clarify language though.
  - Paul H. – Agree with Wes. If you can't meet the volume control standard, maybe a site can't meet at all – essentially needing chemical treatment and ultimately resulting in the need for stormwater treatment plants.
  - Tina – Note B says applicant must get approval at each step.
  - Lois – Still need to justify 0.55".
  - Paul M. – In heavy clay sites, a pond with filtration combo gets it close to 75%.
  - Doug S. – Clarify off-site treatment requirements.

- Mark Z. – Would this allow all treatment to be done off-site due to cost considerations?
- Mary D. – 4-step/3-step language modification. Note B – is the intent to have a step submittal? Can it come out?
  - § Yes
  - § One submittal should be able to address all steps.
- Paul M. – Should not try to dictate process.
- Bruce W. – Ponds are still needed as a consideration by cities to address rate control. The calculator contains significant volume control in swales and bio-filtration so MIDS is not dictating chemical treatment only.
- Karen – Need to see final language before voting.
- Break
- Presentation and discussion over revised proposed language
  - Revised the language – 3-step process withdrawn.
  - Discussion on steps/sequence/alternatives when the goal or standard has been met.
  - Process is a sequence, but does not mean separate submittals for each step.
  - Lois – Uncomfortable with 75% - prefers 60%-65% based on BMPs currently available.
  - Klayton – Suggest accompanying flow chart to go along with this language be incorporated into the MIDS package.
  - Any unintended consequences here?
  - Jim H. – Discussion with Bruce at break -science can be provided for the 75% to provide additional comfort.
  - Paul H. – Step 3 to Step 4 – how much on-site? Is the language strong enough for the LGU to have a portion done on site?
  - Klayton – Suggest note on flow chart addressing off-site alternative.
  - Mike F. – If a site does something on-site that does not meet the entire standard, they should only be required to provide the remainder off-site to meet the standard. Need to be able to allow for off-site alternative. Do not want unintended consequences.
  - Additional discussion on the need to allow off-site approaches.
  - Doug S. – Does the term “project elements” include stormwater BMPs?
    - § This would allow flexibility
    - § Can be addressed in the flow chart
      - “in the best interest of the LGU”
  - This will be cleared up in the flow chart.
  - Bruce W. – Every site has to do something.
    - § Some disagreement here.
  - City of Victoria example – regional treatment provided making development site more compact.
  - Additional discussion of the flow of steps, off site considerations, and the ability of the calculator to handle off-site BMPs and local level review flexibility.
  - Need to demonstrate Antidegradation for the receiving water.
  - Mike F. – Draft MS4 permit requires on-site BMP consideration first.
    - § Language allowing off-site may not match permit.
  - Permit language is still in draft form.
  - Mike F. – If there is a sequence for flexible treatment considerations with off-site considerations at the bottom – this would meet the draft language in the MS4 permit.
  - Mark Z. – Off-site alternative may be more cost efficient vs on-site BMPs on a dollar cost per pound of phosphorus treated.
  - Sequence = 1.1” -> 0.55” -> 75% TP with volume control to MEP -> off-site.

- Nick – define local authority. Is it MS4?
  - § Addressed in MIDS package not in flexible treatment document.
  - § **MIDS package must address local authority with consideration of who will be adopting MIDS and how a developer would utilize MIDS and how the process would work – especially when multiple layers exist.**
- **Consensus moment (see attached for working draft of flexible treatment option)**
  - § Is further review warranted or is anyone not comfortable having a consensus moment at this time.
  - § Would further review delay overall MIDS process?
  - § It was noted that redevelopment and linear workgroups are somewhat on-hold waiting for a development standard for site with restrictions. Without a consensus moment today, work would be delayed.
  - § If a consensus moment takes place today it should be contingent on final language i.e. straw poll – approving concept pending final language.
  - § Final language will be emailed so any issues should be returned within a reasonable timeframe so it can be addressed while keeping the project moving.
- **Consensus reached on flexible treatment options!**

### 3. Work Orders – Bruce Wilson

- Amended 3 contracts with master contractors for 1-2 year extension.
- 319 St. Croix amendment for additional money needed for fund 5 cities instead of 3.
- All MIDS products from this point forward are being formatted to go straight into the manual.
- No products for turf and permeable pavement work orders. They will be re-issued to another contractor.
- New Schuler contract in the works.
- St. Croix pilot trying to advance ordinance packet for all cities. Chisago chain of lakes example.
- Ver 1.0 of calculator work order has been issued.
- Dry swale work order has been issued to Barr – coordinating with the LRRB project.
- Iron enhanced sand filter – Dr. Gulliver will meet with us on Sept 6 from 9:00 to 11:00. Working closely with Barr to get this into the calculator.
- Harvest re-use scoping/fine-tuning work order.
  - § Issues with treatment still need to be shaken out (municipal stormwater vs wastewater and types of appropriate treatment).
- Redevelopment/linear still working away. Expect to see two different performance goals emerge here.
- Pretreatment work order with Barr to look at proprietary devices. Step 2 or 3 of ASTM process. Pull it right into MIDS and the manual.
- Cost-benefit group – once we get into cost per site a lot of work will go. Scoping needed with contractor in the next 4-6 weeks.
- Outreach/training \$25,000 budgeted. October-November work.
- Urban Forestry – still unresolved issues. Very important for legacy cities with large tree canopies.
- \$500,000 proposal for advancing unresolved issues such as long-term infiltration issues. Additional requests from MCSC and SSC.
- All together 11-12 work orders, 2 contracts, \$300,000, EPA grant \$125,000, requested another \$25,000 - \$50,000.
- Status of Stormwater Manual – waiting on signatures. Anne and Mike Trojan leading.

- Bio-retention not a work order but included in the manual RFP.
4. **Other**
- Randy wanted to acknowledge and expressed appreciation for the Jay Riggs consensus moment decision making process (Jay deferred ownership and in-turn highlighted his liking of his boots).
  - All work to be completed by the end of the year.
  - Bruce will be working with other to pull things together and get them into the manual.
  - Version 2.0 of the calculator expected in October 2013.
  - Likely to be some gaps if MIDS is implemented prior to October 2013.
5. **Preliminary schedule for MIDS training and outreach opportunities – Anne Gelbmann (see attached handout)**
- Work in progress, more opportunities to come.
  - Water resources conference potential with and number of planning committee members/workshop subcommittee members already involved in MIDS.
6. **Closing comments**
- Looking for State Fair staff volunteers – especially for the green roofs exhibit in the Eco-Experience. Free ticket for a 4-hour shift. Contact Karen Jensen.
  - Plug for the Clean Water Summit this September at the arboretum.
  - Water re-use group working with Department of Labor and Industry addressing code issues. Meeting coming up this month.
7. **Adjourn**

## **MIDS Project Flexible Treatment Options Decision Sequence-Working Draft -8/17/12**

**Note: this draft does not show track changes**

**(Preamble Stating when flexible treatment option apply-purpose, etc.)**

(Include a flow chart)

### **Goal**

Applicant attempts to comply with New Development Performance Goal (1.1" volume reduction).

Options considered and presented shall examine the merits of relocating project elements to address, varying soil conditions and other constraints across the site.

### **Alternative #1**

Applicant attempts to comply with the following conditions:

- 2.a. Achieve at least 0.55" volume reduction goal, and
- 2.b. Remove 75% of the annual TP load, and
- 2.c. Options considered and presented shall examine the merits of relocating project elements to address, varying soil conditions and other constraints across the site

### **Alternative #2**



Applicant attempts to comply with the following conditions:

- 3.a. Achieve volume reduction to the maximum extent practicable (as determined by the Local Authority), and
- 3.b. Remove 75% of the annual TP load, and
- 3.c. Options considered and presented shall examine the merits of relocating project elements to address, varying soil conditions and other constraints across the site.

**Off-site Considerations:**

Equivalent to the new development performance goal of 1.1 " volume reduction, off-site mitigation (including banking or cash, as determined by the Local Authority) can be used to protect the receiving water body. Off-site compliance and banking credits shall be achieved through a method that protects the receiving water using a method to be determined later in the MIDS Project.

**Notes:**

- A. Volume reduction techniques considered shall include infiltration, reuse & rainwater harvesting, and canopy interception & evapotranspiration and/or additional techniques included in the MIDS calculator and the Minnesota Stormwater Manual."
- B. Applicant shall document the flexible treatment options decision sequence. Following the sequence in order when all of the conditions are fulfilled within an alternative, this sequence is completed.
- C. Factors to be considered for each alternative will include:
  - Karst geology
  - Shallow bedrock
  - High groundwater
  - Hotspots or contaminated soils
  - Excessive cost
  - Poor soils (infiltration rates that are too low or too high, problematic urban soils)
- D. In Step #3, higher priority will be given to BMPs that include volume reduction. Secondary preference is to employ filtration techniques, followed by rater control BMPs.

## Minimal Impact Design Standards Training/Outreach Opportunities

Venue	Dates/Locatio	Presenting	Audience	Topic	Notes/Contacts
St. Croix Basin NEMO/Ordinance Workshops	Chisago Lakes: 6/14, 6/28, 7/12 and 7/26  East Bethel: 8/28	John Bilotta, Jean Coleman, Jay Michels	Elected officials, planning commission	Ordinances	
APA MN Chapter	9/27/12: Alexandria	Jean Coleman and Jay Michels	Planners	Ordinances	
National NEMO	Oct 1-3: Duluth	John Bilotta, Jean Coleman, Jay Michels	NEMO	Ordinances	
BWSR Academy	10/29/12: Brainerd  2-90 minute sessions	Jay Riggs, Mike Isensee	SWCD's; WSD's	Calculator, MIDS BMP's	Jenny Gieseke
MN Association of Watershed Districts	11/29/12 – 12/1/12: Alexandria (??)				Tina Carstens suggested

Venue	Dates/Locatio	Presenting	Audience	Topic	Notes/Contacts
MN Nursery and Landscape Association	1/10/13; 8:30-9:30 at the Minneapolis Convention Center	Jay Michels	Landscapers		Cassie Larson/MNLA  Speaker info due on <b>8/17/12</b>
MN Erosion Control Association	March, 2013; St. Cloud			MIDS workshop	Abstract is due <b>August 31</b>
International LID Symposium	August, 2013; St. Paul River Centre		Stormwater/LID professionals	Preconference Workshop and concurrent sessions	Mike Isensee, John Chapman, Jay Michels
Government Training Services	Various locations throughout the state				Joni Giese, Jean Coleman, John Bilotta
League of Minnesota Cities	September, 2013				
Water Resources Conference	October, 2013				Tina Carstens,

# MINIMAL IMPACT DESIGN STANDARDS

## MEETING

November 16, 2012

MPCA Offices – Training Room 2

9:00-12:00

Meeting Notes (taken by Shane Missaghi)

**Attendees:** David Bade, Doug Snyder, Forrest Kelley, Jim Hafner, Jay Riggs, Larry Frank, Lois Eberhart, Mary Davy, Melissa Lewis, Mike Flndorff, Mike Isensee, Paul Moline, Robert Race, Shane Missaghi, Vanessa Perry, Wesley Saunders-Pearce, Janna Kieffer, John Hanson, Mike Trojan, Anne Gelbmann, Bruce Wilson, Randy Neprash, Tim Power, Todd Smith, John Bilotta, Jason McCarty, Beth Neuendorf, Joe Mulcahy.

**Webex:** Corry Gruwell, Claudia Hochstein, Jill Thomas, Nathalie Shanstrom, Matt Durand, Kristen Larson, Emily Javens, Paul Hudalla, Tony Luft, Andrea Hendrickson, Trevor Russell, Lark Weller, Jean Coleman, Rachel Stangl

### 1. Introductions/Review Agenda –Jay Riggs

- Introductions around the room and acknowledgment of webex attendees,
- Goals of the day/meeting

### 2. Review of BMP Crediting Approaches: Barr Engineering

Barr provided a very detailed presentation on BMP Crediting covering topics such as: background, performance goal, checking compliance, flexible treatment options, major processes of the calculator,...

- Volume control performance goal is Simple:  $1.1" \times \text{surface area} = \text{Required Retention Volume}$ , to achieve at least 0.55" Volume reduction with 75% annual TP load removal.
- Bioretention: There were some discussions (Paul & Lois) on the rate and that % of the rate may be updated. The fact that the current calculator currently does not offer any volume reduction credits for anything above overflow. There is a need for additional discussion on how to develop a balance design to insure to provide enough volume and yet get credit for volume. And that there is (Mike ) much available information and research that we can tap into on this subject. The process needs to be simplified (Paul) and perhaps (Tim) we can utilize the knowledge available from soil field capacity information. Group agreed that we need to get more specific and that we need to get some credit for volume above the outlet elevation—perhaps considering using field capacity for both tiled at the bottom and elevated tiles cases. There was a question (Joe) if the effluent is mostly dissolved P. The calculator process needs to consider all of these issues (Mary) by using the best science. However, current available information is not always consistent and shows conflicting results (Barr). But it does need to be defensible by science (Jim) and the local units of governments can always provide flexibility.
- Permeable Pavement: it is very similar to the bioretention. No pollutant removal for the volume above the outlet.
- Turf & Impervious surface discount. Presentation explained the Turf, categories of turf credit, how and how much credit can be gained—and how to get better turf credits.  
*Discussions.* Tim: Turf has been getting a bad reputation because current practices and lack of maintenance made turf not very effective. Mary: We have also talked about a great deal about turf function, slopes, but we also need to include turf variations and the main core issue the amended soils.
- General discussions. Paul: How are these all working groups are working with and within the manual?  
Anne: They work products of MIDS will be placed in the manual.

### 3. Definitions by Redevelopment and Linear Team: Beth/Forrest

Forrest explained the subgroup efforts in putting together the Critical Definitions.

Group discussed the usage of the value of 15% in the definitions (page 2 line 2) and that it may not be related to the permitting. There was a question if utilities should be also included in the Linear Projects or not. A greater explanation is needed on what is land disturbance, what is covered in it.

- Eliminate "on property" (page 6, line 1)
- Impervious Surfaces: Accept the terms as defined but encourage each local government to include their own examples
- The group decided that sub-group should revisit and review the impervious surface and to bring a list back for the larger group at the next MIDS meeting.

### 4. BWSR Academy Report/Jay Riggs and Mike Isensee

- Jay and Mike shared with the group that they had presented a class at the academy
  - There were 30 people in the class
  - Although the calculator was not complete at the time of the presentation, but the people attending the class understood what MIDS was all about and it could all come into play,
  - They understood that the calculator was a work in progress,
  - Mike has the contact info. of many of the attendees who are willing to be contacted in the future and be involved in future evaluation of the calculator.
  - BWSR will surely have evaluation survey of the class that the group can gain more information from.

### 5. Work Orders: John Hanson/Bruce Wilson

- Bruce shared with the group that there are seven current work orders and explained the current status of each work order. They are Swales, Permeable pavement, Iron-Enhanced Filters, Turf, Redevelopment & Linear, Stormwater Reuse, and Calculator.
- Six work orders are now almost finished with 3 more to come:
  - Hydrodynamic separators, calculator 2 (June 30, 2013), and Cost benefit.
  - There is a potential for a \$25K upgrade to the St. Croix Project.

### 6. Timeline Adjustments/Bruce Wilson

- Most projects should merge to completions by March 2013
- When the groups come back with their finding to incorporate them into MIDS, it will come back to the group for review. For example when materials related to the manual from Kestrel Design Group, Inc., is developed, it will come back to MIDS for review.

### 7. Pilot Communities-Community Assistance Pkg/Jay Riggs

- Draft document is being made and then more revision will be made after the work with the pilot communities.
- John B. Progress is being made and they are going forward with the pilot communities and will also explore and discuss availability of any additional funds.

### 8. 2013 LID Symposium/Mike Isensee

- Mike gave a brief update on the upcoming 2013 LID conference:
  - There will be 250 presentations with 9 tracks.

Meeting adjourned at noon.

**MINIMAL IMPACT DESIGN STANDARDS  
WORKGROUP MEETING**

**NOTES (taken by Jay Riggs)**

**January 18, 2013**

**9:00-12:00**

**MPCA St. Paul Office, Training Room 2**

**AGENDA**

Attendees: Beth Neuendorf, Forrest Kelley, Jay Riggs, Jim Hafner, Joe Mulcahy, Karen Jensen, Klay Eckles, Larry Frank, Lois Eberhart, Mary Davy, Matt Durand, Melissa Lewis, Mike Isensee, Paul Moline, Scott Anderson, Tim Malooly, Tina Carstens, Brian Livingston, Dave Newman, Ian Peterson, Janna Kieffer, Jill Thomas, John Hanson, Ken Holman, Marni Karnowski, Mike Trojan, Randy Neprash, Tim Power, Todd Smith

Webex: Anne Gelbmann, Trevor Russell, Wayne Cymbaluk, Jay Michels, John Bilotta, Kristen Larson, Jonathon Janke, Wayne Sicora, Van-Anh Thai, Derek Asche, Jean Coleman, Erik Larson, Angie Tomovic, Brenda Pence, John Bartunek

- 1. Introductions/Announcements:** Jim Hafner/Jay Riggs 9:00-9:15  
Jim facilitated introductions. Riggs agreed to take notes. Added agenda item between 2 and 3: Redevelopment & Linear definitions
  
- 2. BMP's with drain tile/field capacity- Barr** 9:15-9:45  
Jana presented powerpoint presentation discussing amount of volume control provided via more mechanisms than infiltration. Mechanisms include: Soil field capacity and evapotranspiration. Estimated ET in Twin Cities is 20 inches (out of approximately 29 inches/yr precipitation).  
Group discussed approach.  
Randy suggested group send a letter to the National Academy of Science regarding ET credit. Academy will be discussing research agenda about benefits of urban trees. This area of research is important to the work we're doing here.  
Moline asked if the current Kestrel work order would address the distinction between credit given for different plant types.  
Tim suggested that we be conservative on how much credit is given for ET. Joe M suggested the number given by Jana is a conservative number for ET. Klayton

suggests conservative approach as well - perhaps using a slot variable (i.e. if you meet certain criteria then you have a "slop" factor).

Approach does not address enhanced infiltration associated with deep-rooted vegetation. Native species should be spec'd' as much for maintenance benefits. Isensee noted that we know vegetated systems perform much better for water quality and quantity . Ian noted that we spend a lot of money on soils and plants for these facilities - why would we put in all these plant species if the credit is 2%. Karen noted that we have to include credit for plant species then we will end up with non-vegetated systems .

Neprash says some of us are leaning toward being overly cautious conservatism will result in overbuilding of systems, which means excessive costs and wasted expenses. There should be more work done now to document ET.

Hafner noted that research will be ongoing.

Lewis also noted that plants also provide interception. Also macropores enhance infiltration rates.

Work and discussion will continue.

### **3. Definitions - Forrest**

10:10

Redevelopment and Linear Group met on December 15. Only definition under discussion was use of "impede" or "prevent" in the impervious surface definition. Group agreed that impede was a continuum. Prevent was preferred. Question was not clarified about gravel lots and other severely compacted surfaces.

**R&L Impervious Definition:** A surface that prevents the infiltration of rainfall and results in an increased volume of surface runoff

### **4. Reuse Work Order-Barr**

10:20

John Hanson gave update on work. Memo of literature review drafted recently. Kick-off meeting with staff was held on January 10<sup>th</sup>. Tech team reviewing memo. Late Jan/Feb there will be a joint meeting between tech team and staff. Work order will put together ranges for credits and discuss how credits may be developed. See ppt for more details on presentation.

Agency jurisdictions:

MPCA: None

MDH: None

DLI: Regulation of conveyance to point of disposal (where it leaves the pipe). Jurisdiction applies to plumbing code so it is .

DNR: Some claim there may be some jurisdiction under water appropriation permit . . . .

Lois asked when we are going to find out who has jurisdiction. Klayton speculates it will be years out.

Neprash noted that there is an interagency coordination team as part of the CWF.

Suggest making this an item to have this group address.

Group also discussed who has jurisdiction for other reuse activities.

Neprash: Should we ask MDH to do health risk assessment?

Hanson will go back to tech team.

Neprash said we need to talk to EPA as their national rule process is focusing on this topic.

**BREAK**

**10:45**

**5. Turf and Impervious Disconnection-Barr**

**11**

Jana's back to talk about turf! Most of her presentation is focused on impervious disconnection and quantification thereof. She decided not to dwell on frozen ground condition issues . . . .

Impervious disconnection is about a 50% reduction . . . .

Used XPSWMM to model multiple scenarios with different ratios of impervious to pervious. For B soils: 0.2:1 62% runoff reduction, 1:1 54%, 10:1 20%.

Group discussed soil amendment, turf management, irrigation, compaction, etc.

Credits for "better turf". Simply amending the turf would address approximately 20% of the runoff from a typical site. And most of that 20% is snowmelt. Overall it is about 1% of the runoff.

Moline noted that those numbers are making a big assumption about the status of the soils. Compaction, etc.

Group debated use of 15 minute duration for the modeling to determine % of credit for standard. Suggested using same curve to translate annual treatment to storm credit as bioretention. Very small storm credit for these practices (also swales) may result in unintended consequences and excessive costs.

See ppt



**6. Calculator-Version 1/Plan for GUI version-Barr** 11:15-11:45

John Hanson provided an update and showed a ppt presentation.

Klayton says we should not use rates as high as 1.63. Evar! Woodbury allows up to 0.2"/hour max. Woodbury facilities are not failing because of their conservative assumptions.

According to John, using the Calculator will be as easy as doing your taxes.

**7. Timeline-Anne** 11:45-11:55

Jim provided overview of timeline that Anne and John prepared. Isensee expressed concern about timing for pervious pavement. That final product review will likely be pushed back a month. Race asked about the review process.

Moline asked when are we going to have consensus moments. Group would like to know when those moments will happen. See timeline.

**8. Other/Adjourn** 11:55-12:00

Jim gave an update on MPCA conflict of interest issue and potential impacts to members of MIDS workgroup. Role of SSC also discussed - it sounds like the group will continue with a larger focus on education

## MINIMAL IMPACT DESIGN STANDARDS

### MEETING

February 15, 2013

MPCA Offices – training 2

8:30-12:30

### Meeting Notes

Attendees: Doug Snyder, Forrest Kelley, Jim Hafner, Jay Riggs, Joe Mulcahy, Joni Giese, Klay Eckles, Lois Eberhart, Mary Davy, Melissa Lewis, Mike Findorff, Mike Isensee, Paul Moline, Bob Race, Scott Anderson, Tim Malooly, Jill Thomas, John Hanson, Kristen Larson, Kurt Leuthold, Marni Karnowski, Mike Trojan, Tim Power, Todd Smith, Bob Bean, Bob Seanson, Fred Corrigan, Sue Bogert  
Webex: Andre Hogg, Dave Poggi, Andrea Hendrickson, Tony Luft, Matt Durand, Jeff Berg, Nathalie Shanstrom, Wayne Sicora, Trevor Russell, David Smith, Jonathan Janke, Doug Thomas, Wayne Cymbaluk, John Bilotta, Dominic Digatono, Randy Neprash.

1. Introductions
2. Follow up From Last Meeting
  - Note that small group of MPCA staff is working at storm intensity/frequency (e.g what frequency does a 15 minute 1.1 inch event occur) and will bring to March meeting.
3. Timeline
  - Anne reviewed the latest timeline (see below). Overview of schedule for Mar-June 2013. June 2013 is anticipated to be the final MIDS meeting.
  - Relationship between MIDS and the stormwater manual development process summarized. There are three BMP's that are being directly developed for the manual by the Kestrel Contract. BARR products as developed for MIDS are input into the stormwater manual.
  - March meeting will provide more direction on how the stormwater manual and BMP calculator are maintained.
4. Pretreatment
  - Review of BARR tasks and schedule for the pretreatment BMP. (See below).
5. Iron enhanced Sand Filter
  - Review of BARR tasks and schedule for the pretreatment BMP. (See below).  
Q: Should the Sand Iron BMP be in the calculator?  
A: How new BMP's will be added to calculator will be identified at the Mar/Apr meeting.
6. Redevelopment & Linear
  - Overview of handout. Flowchart purpose is to allow for flexibility in the local process of determining appropriate BMP's.  
Q: Should MIDS group have the process identified as we move forward so they are comfortable in providing consensus moments?

A: MIDS consensus is for BARR work order products not too answer all questions regarding stormwater manual input.

A: MIDS members are encouraged to become more active in the MN Stormwater Steering Committee. Next meeting is March 20.

A: Future MIDS agenda items will provide more clarity on how decision tree will move forward.

Q: Is the linear redevelopment group separate from linear group?

A: They were tasked together to layout decision process, but not intended to be the same standard.

## 7. Permeable Pavement

- Noted revised handout at meeting
- BARR presentation

Q: Will MIDS group see draft document before draft is available?

A: Those that have an interest can contact work group (applies to all work groups) to see drafts as desired.

Q: Can recommended 2:1 drainage area to permeable surface area be higher (Say 5:1)?

A: yes, with considerations as identified in presentation.

Q: What about pervious areas draining to permeable pavement?

A: Not ideal practice, but pervious areas are not included in the recommended ratio.

Q: Can the design parameters include a "no-maintenance" recommendation? (i.e – if no maintenance occurs, what should drainage ratio be?)

A: the 2:1 recommended ratio somewhat addresses that issue as it accounts for some clogging, etc. The draft document discusses recommended typical maintenance schedule and equipment.

Q: clarification questions on diagrams in PP – drawdown times, storage, etc.

Q: Should infiltration rate assumptions be reduced to account for compaction, long term clogging, etc.

A: Calculator can be adjusted to limit infiltration rates.

Q: 48 to 24 hour drawdown time – where does 48 come from?

A: 48 hour comes from stormwater manual

Q/Comment: The volume credit for filtration in permeable should match the bioretention number (e.g. 0.06" vs. 0.00)

Q/Comment: Recommended that PICP term in document is clarified to imply covering all paver systems.

## 8. MIDS Calculator

- Presentation – Mike Isensee
  - i. Discussed site used as "test"-apple valley old subdivision retrofit project.
  - ii. Asking group to review calculator and compare calculator outputs to real data collected from monitoring.
  - iii. Reviewed schedule for moving forward to version 2 GUI format.
  - iv. Showed comparison outputs to WINSLAMM. (Calculator is based off of P8 results, so there is variation in the two.)

## 9. Green Roofs/Bioretention

- Mike Trojan reviewed the Green Roof & bioretention handouts.

- Case studies will be forwarded to MIDS group.
- Task 7 will be modified and is on hold.
  - Q: When did tasks start?
  - A: October 2012
  - Q: When will results be brought to MIDS?
  - A: Feb 26 tech team meets. Feb 27 all MIDS group.
  - Q: How will design guidelines and resulting credits affect calculator?
  - A: items prepared by kestrel that affect the calculator credits will be brought to MIDS and will clarify and complement what BARR has completed and presented to date.

10. Adjourn - NEXT MEETING IS ON MAR 15.

DRAFT

## **MIDS Meeting Schedule-2013**

Draft: February 4, 2013

### **For MIDS Work Orders**

#### **February 15**

Permeable Pavement-Preliminary: John, Mary D

Pretreatment-Introduction: Anne G.

Iron Enhanced Sand Filter-Introduction: Anne G.

Calculator-Version 1-final: Mike I.

Redevelopment and Linear: "Convince Me"-Introduction: Forrest, Beth, Anne

Green Roofs (Manual): Introduction: Mike Trojan

Bioretention (Manual): Introduction: Mike Trojan

#### **March 15**

Calculator-GUI format-Introduction: Mike I. and/or Barr

Permeable pavement-final-**CONSENSUS**: Mary D.

Swales-Preliminary: Emily Javens/John Hanson

Redevelopment and Linear: Case Studies-Preliminary: Forrest, Beth, John (?)

Reuse-Final-**CONSENSUS**: Klayton E./Todd Smith

Iron Enhanced Sand Filter-Preliminary: Mike F./John H.

Green Roofs (Manual)-Preliminary: Mike Trojan

Trees (Manual)-Introduction: Mike Trojan

#### **April 19**

Calculator-GUI – Preliminary: Mike I/Barr

Pretreatment-Preliminary: John H/Mike F.

Swales-Final-**CONSENSUS**: Emily Javens/

Turf/Disconnection of Impervious-Final-**CONSENSUS**: Barr (John or Janna)

Redevelopment and Linear: Case Studies: final-**CONSENSUS**: Forrest & Beth

Iron Enhanced Treatment-Final-**CONSENSUS**: Mike F/Barr

Redevelopment and Linear: "Convince Me"-Preliminary-Discuss Performance Goal:  
Forrest & Beth/Barr ?

Green Roofs (Manual): Final: Mike Trojan

#### **May 17**

Pretreatment-Final-**CONSENSUS**: Mike F/Barr (?)

Redevelopment and Linear: "Convince Me"-Final-**CONSENSUS**-Performance Goal: Forrest  
and Beth and Barr (?)

Trees (Manual)-Preliminary: Mike Trojan

Bioretention (Manual)-Preliminary: Mike Trojan

#### **June 21**

Calculator-GUI Format-Final-**CONSENSUS**: Mike I/Barr (?)

Trees (Manual)-Final: Mike Trojan

Bioretention (Manual) Final: Mike Trojan

## MIDS Timeline

**February-June, 2013**

<b>BMP/Work Order</b>	<b>Intro</b>	<b>Tech Team Review</b>	<b>Preliminary</b>	<b>Final-Consensus</b>	<b>Manual Inter</b>
Permeable Pavement		Early February	2/15/13	3/15/13	Yes-February
Turf/Impervious Disconnection		Early February	1/18/13	4/19/13	Yes-May or Ju
Swales		Early February	3/15/13	4/19/13	Later date-w work
Pretreatment	2/15/13	No tech team	4/19/13	5/17/13	Yes-May or Ju
Reuse		Mid February	1/18/13	3/15/13	Yes-March or
Calculator V 1		Early February	1/18/13	2/19/13	No
Calculator-GUI	3/15/13	Late March	4/19/13	6/21/13	Yes-June/July
Redevelopment and Linear	2/15/13 "Convince Me" diagram	Early February	3/15/13 – Case Studies 4/19/13 – "Convince Me" diagram	4/19/13 – Case Studies 5/17/13 – "Convince Me" diagram	Yes-will be in section of the
Iron Enhanced Filters	2/15/13	No Tech team	3/15/13	4/19/13	Yes-April or
Green Roofs (Manual)	2/15/13 (Mike T.)		3/15/13	4/19/13	
Bioretention (Manual)	2/15/13 (Mike T.)		5/17/13	6/21/13	
Trees (Manual)	3/15/13 (Mike T.)		5/17/13	6/21/13	

Introduction=present work order-show what Barr will be doing

Preliminary = material presented after it has been reviewed by MPCA engineers and tech teams

Final = final work is presented (could include changes from the preliminary work that was presented to MIDS workgroup)

## Pretreatment Work Tasks and Schedule

### Item 1: Prepare Draft Document

The following practices are commonly used for pretreatment:

- Vegetated Filter Strip (e.g., sod, natural vegetation, etc.)
- Flow-Through Structures, including
  - Underground Storage Structures (with multiple chambers, designed to capture coarse sediments, floating debris, and some hydrocarbons from stormwater runoff)
  - Proprietary Devices, sometimes referred to as “oil/particle separators,” “oil/grit separator,” or “hydrodynamic separators”
  - Sump Catch Basins

Barr will prepare a document that includes the following topics for the pretreatment practices listed above:

Overview  
Pretreatment/Function within Treatment Sequence Considerations  
Permit Applicability<sup>1</sup>  
Retrofit Suitability  
Cold Climate Suitability (Winter Considerations)  
Special Receiving Waters Suitability<sup>1</sup>  
Water Quality (very general benefits)<sup>1</sup>  
Water Quantity (very general benefits)<sup>1</sup>  
Design (Barr will not prepare any drawings)  
Construction  
Maintenance  
BMP Performance Assessment

Barr will provide a draft document to the MPCA for review. After receiving comments from the MPCA, Barr will update the draft document to address the comments. Barr assumes one round of comments and one revision based on the comments. Barr assumes that these revisions will be minimal.

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<sup>1</sup> Because these items apply to all filtration practices, Barr will only mention that typical permit applicability, special receiving waters suitability issues, and water quality and quantity treatment benefits involving filtration practices also apply to pretreatment practices and refer the reader to the filtration and/or filter section, not prepared by Barr under this work plan.

Item 2: Meetings

Included in this work plan are two meetings. Meeting #1 will be a meeting with Barr staff and MPCA staff at one 2-hour meeting held at Barr Engineering (or via a conference call organized by the MPCA). At Meeting #2, Barr will present pretreatment to the MIDS Work Group at one meeting.

DATE	WHO	TASK	Notes
Monday, March 11	Barr (John)	Sends draft document to MPCA (Findorff, Trojan and A. Gelbmann)	
Monday, March 25	MPCA (Anne)	Sends MPCA comments to Barr	
Tuesday, April 2	Barr (John)	Sends second draft document to MPCA	
Thursday, April 11	MPCA (Mike F. and Mike T.)	Sends any changes to draft document to Anne	
Monday, April 15	MPCA (Anne)	Sends draft document to MIDS workgroup	
Friday, April 19	Barr (John)	Presents preliminary document to MIDS workgroup	
Wednesday, May 1	MIDS WorkGroup members/MPCA (Findorff)	Return comments to Anne	
Monday, May 6	MPCA( Anne)	Sends all comments to Barr (John)	
Monday, May 13	Barr (John)	Sends final work products to Anne	
Tuesday, May 14	MPCA (Anne )	Final pretreatment memo is sent to MIDS workgroup	
Friday, May 17	MPCA (Mike F.)	Present final work to MIDS workgroup	



## IRON ENHANCED SAND FILTER WORK TASKS AND SCHEDULE

### Item 1: Meetings

Meeting #1: Barr will meet with researchers of the University of Minnesota and staff of the MPCA at one 3-hour meeting on September 6 at the MPCA to discuss current knowledge of iron-enhanced filter technology and performance.

Meeting #2: After a draft document is prepared (see Item 2), Barr will meet again with University of Minnesota and MPCA officials in one 2-hour meeting organized by the MPCA.

Meeting #3: Barr will attend and present information regarding iron-enhanced filters at one MIDS Work Group meeting.

### Item 2: Prepare Document

For the three typical BMPs mentioned above that integrate iron, Barr will prepare a document that includes the following topics:

- Overview
- Pretreatment/Function within Treatment Considerations
  - Permit Applicability<sup>2</sup>
- Retrofit Suitability
- Cold Climate Suitability (Winter Considerations)
- Special Receiving Waters Suitability<sup>1</sup>
- Water Quality (very general benefits)<sup>1</sup>
- Water Quantity (very general benefits)<sup>1</sup>
- Variants (Barr assumes this means design variants)
- Design (with only simple a drawing for each of the three iron-enhanced BMPs, not detailed CADD drawings) and simplified drawings for the MIDS calculator
- Construction
- Maintenance
- BMP Performance Assessment<sup>3</sup>
- Certification/Training
- Credits (see Item 2)

This document will look similar to the permeable pavement document being revised by separate work order.

Barr will provide a draft document to the MPCA for review. After receiving comments from the MPCA, Barr will update the draft document to address the comments. Barr assumes one round of comments and one revision based on the comments. Barr assumes that these revisions will be minimal.

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<sup>2</sup> Because these items apply to all filtration practices, Barr will only mention that typical permit applicability, special receiving waters suitability issues, and water quality and quantity treatment benefits involving filtration practices also apply to iron-enhanced filters and refer the reader to the filtration and/or filter section, not prepared by Barr under this work plan.

<sup>3</sup> Barr will briefly highlight main assessments and refer to the University of Minnesota assessment website: <http://stormwaterbook.safll.umn.edu/>

Item 3: Update the Calculator

Barr will update the credits in the MIDS calculator to provide percentages for total phosphorus, dissolved phosphorus, and total suspended solids removal. No volume reductions are assumed.

**SCHEDULE**

DATE	WHO	TASK	Notes
Early February	Barr (John)	Draft document is produced	
Monday, February 11	Barr (John)	Send draft document to MPCA (Mike F, Mike Trojan and Anne G.)	
Friday, February 15	MPCA (Mike F. or Anne G)	Presents introduction to MIDS workgroup	
Tuesday, February 19	MPCA (Mike and Anne)	Sends changes and comments to Barr	
Monday, February 25	Barr (John)	Sends second draft document to MPCA (Findorff, Trojan and A. Gelbmann)	
Tuesday, February 26	MPCA (Mike F. and Anne)	Send any changes to Barr and U of M	
Week of March 11	Barr (John)	Meeting with Barr, PCA and U of M	
Wednesday, March 13	MPCA (Anne)	Sends draft document to MIDS workgroup members	
Friday, March 15	MPCA (Mike F.)	Presents preliminary document to MIDS workgroup	
Monday, April 8	MIDS WorkGroup members/MPCA (Findorff)	Return comments to Anne	
Tuesday, April 9	MPCA( Anne)	Sends all comments to Barr (John)	
Monday, April 15	Barr (John)	Sends final work products to Anne	
Tuesday, April 16	MPCA (Anne )	Memo is sent to MIDS workgroup	
Friday, April 19	Barr (John)	Present final work to MIDS workgroup	

## REDEVELOPMENT AND LINEAR WORK TASKS AND SCHEDULE

### *Item 1: Prepare “Convince Me” Flow Chart*

Barr will create a general flow chart or charts to help designers and regulators navigate the path to compliance and assist in determining treatment options based on site conditions. The flow diagram will attempt to cover the most common issues, but it will not cover all site-specific and local government unitspecific issues. The flow chart might be split into the following categories:

- High density redevelopment (e.g., Minneapolis, St. Paul, etc.)
- Suburban redevelopment
- New, linear development
  - This group could possibly be split into the following groups:
    - § Interstate highways, state highways, and rural county highways
    - § County highways in urban areas and city collector roads
    - § City residential road
    - § Trails
- Linear redevelopment (This group could possibly be split into the groups listed above.)

Barr will provide a draft document to the MPCA in MS Visio and PDF format for distribution to the technical team. After receiving comments from the MPCA and the technical team, as compiled and sent by the MPCA, Barr will update the draft document to address the comments. Only one round of comments and revision based on those comments is included in this work plan. Barr assumes that the revisions based on the comments will be minimal.

### “Convince-Me Flow Chart” Schedule

DATE	WHO	TASK	Notes
Mid-February	Tech Team	Small group of tech team meets to discuss flow chart-sends ideas to Barr	
March	Barr	Works on flow chart	
Monday, April 1	Barr (John)	Sends draft flow chart to MPCA (Todd Smith & Anne Gelbmann)	
Tuesday, April 2	MPCA (Anne)	Sends draft flow chart to tech team	
Week of April 1	Tech team leads	Tech team meeting (?)	
Monday, April 8	Tech Team	Send comments on preliminary flow chart to MPCA (Anne)	
Tuesday, April 9	MPCA (Anne and Todd)	Compiles all comments and sends to Barr (John)	
Monday, April 15	Barr (John)	Sends preliminary flow chart to MPCA (Anne) –	
Tuesday, April 16	MPCA (Anne)	Sends draft flow chart to MIDS workgroup	
Friday, April 19	Barr (John)	Presents preliminary flow chart to MIDS work group;	Discuss performance goal
Week of April 22	Tech Team Leads	R&L team meeting to discuss preliminary flow chart and feedback from MIDS workgroup	
Tuesday, April 30	Tech Team	Send comments to Anne	

Wednesday, May 1	MPCA( Anne and Todd)	Compiles all comments and sends to Barr (John)	
Monday, May 13	Barr (John)	Sends final work products to Anne	
Tuesday, May 14	MPCA (Anne )	Flow chart is sent to MIDS workgroup	
Friday, May 17	Tech Team Lead (Forrest or Beth)	Present final flow chart to MIDS workgroup	Consensus on performance goal

**Item 2: Review and Summarize Real-World Examples**

In this item, Barr will review and summarize the performance of best management practices (BMPs) at real linear and redevelopment sites. The goal of this work will be for the technical team to understand the practicality and feasibility of BMPs and their associated performance so that the technical team can recommend a performance goal. The work will also aid in developing the flow chart(s) described in Item 1.

*Subtask A: Linear (Minnesota Department of Transportation) Case Studies*

The MPCA will provide to Barr working electronic hydraulic and P8 models, grading plans, associated drainage area maps, and other necessary documentation of the following examples:

1. TH 610 Phase I – SP 2771-31 in Maple Grove (Fernbrook to Hemlock)
2. If budget allows: TH 610 Phase II – SP 2771-38 in Brooklyn Park and Maple Grove (TH 169 to Elm Creek Blvd)
3. If budget allows: TH 12 – SP 2713-75 in Long Lake and Orono

For each project listed above, Barr will:

1. Run the models as the projects were planned,
2. Run the models with BMPs that will provide stormwater volume control equivalent to one half inch times the project impervious surfaces, which might require sizing conceptual BMPs, while maintaining the stormwater rate control provided,
3. Summarize the stormwater runoff volume and pollutant (TP, dissolved phosphorus, and TSS) reductions for both conditions.

Given the high uncertainty of the complications in running the models prepared by others, Barr will first review the TH 610 Phase I project and communicate with the MPCA project manager on whether additional case studies can be reviewed for the allocated budget.

**Subtask B: Redevelopment, Non-Linear Case Studies**

The MPCA will provide to Barr working electronic hydraulic and P8 models, grading plans, associated drainage area maps, and other necessary documentation for one redevelopment, non-linear project. If budget allows, Barr will review one or more additional projects, but Barr will first communicate with the MPCA project manager before reviewing additional projects.

Barr will:

1. Run the models as the projects were planned
2. Run the models with BMPs that will provide stormwater volume control equivalent to 1.1, 0.8, and 0.4 inch times the project impervious surfaces, which will require sizing conceptual BMPs (If it's not feasible to do volume control on a site, Barr will try to site and size a BMP or BMPs to provide 75% TP reduction.)
3. Summarize the stormwater runoff volume and pollutant (TP, dissolved phosphorus, and TSS)

reductions for all conditions

**“Case Studies” Schedule**

DATE	WHO	TASK	Notes
Friday, February 1	Tech Team	Tech team meeting at 1:00 to review case study work	
Monday, February 4	Tech Team	Submit comments on the Barr memo to Anne	
Monday, February 4	MPCA (Anne)	Sends comments to Barr (John)	
Week of February 4	MPCA	Works with Barr (John) to determine which case studies can be completed; also leverage with MWMO (Doug Snyder)	
Tuesday, February 19	Barr (John)	Sends revised memo to MPCA (Anne and Todd)	
Wednesday, February 20	MPCA (Anne)	Sends revised memo to tech team	
Thursday, February 21	Barr (John)	Sends case study work to MPCA (Todd and Anne)	
Friday, February 22 @ 1:00	Barr (John)	Presents memo, case studies and convince me tree to R&L Tech team	
Monday, April 4	Barr (John)	Revise work products based on comments; send revision back to MPCA (Anne & Todd)	
Wednesday, April 6	MPCA (Anne)	Sends revised work product to tech team	
Week of April 8 (?)	Tech Team	Tech team meeting ???	
Tuesday, April 16	MPCA (Anne )	Memo is sent to MIDS workgroup	
Friday, April 15	Tech Team Lead (Forrest or Beth)	Present final case study work to MIDS workgroup	

***Item 3: Meetings***

Included in this work plan are three meetings.

Meeting #1 will be a meeting with Barr staff and the redevelopment/linear technical team at one 3-hour meeting held at Barr Engineering (or via a conference call organized by the MPCA or a member of the technical team).

At Meeting #2, Barr will present the redevelopment/linear information to the MIDS Work Group.

At Meeting #3, Barr will present additional redevelopment/linear information to the MIDS Work Group and be available to answer questions as the MIDS Work Group discusses and decides on performance goals for linear projects and for redevelopment projects.

## PERMEABLE PAVEMENT WORK TASKS AND SCHEDULE

### Item 1: Review and Edit Draft Technical Team Document

Barr will review and edit the MPCA-reorganized May 10, 2012 draft MIDS Permeable Pavement document, which has been provided to Barr from the MPCA in MS Word format. Barr assumes that all of the figures and photographs already included in the document are in public domain.

Barr will review and edit the following topics of the existing document:

- Overview
- Pretreatment/Function within Treatment Considerations<sup>4</sup>
  - Permit Applicability<sup>1,5</sup>
- Retrofit Suitability<sup>1</sup>
- Cold Climate Suitability (Winter Considerations)<sup>1</sup>
- Special Receiving Waters Suitability<sup>1,2</sup>
- Water Quality (very general benefits)<sup>1,2</sup>
- Water Quantity (very general benefits)<sup>1,2</sup>
- Variants<sup>1</sup> (Barr assumes this means design variants, such as adding drain tile, etc.)
- Design<sup>1</sup> (with only one simple cross-section drawing for porous asphalt, porous concrete, and interlocking concrete, similar to the cross-sections in the existing document)
- Construction<sup>1</sup>
- Maintenance<sup>3</sup>
- Monitoring/BMP Performance Assessment<sup>1</sup>

Barr will add the following topics to the document:

- Certification (Barr assumes this means Contractor/Installer Training)
- Credits (see Item 2)

Barr will provide a draft document to the MPCA in MS Word format for distribution to the technical team. After receiving comments from the MPCA and the technical team, as compiled and sent by the MPCA, Barr will update the draft document to address the comments. Barr assumes one round of comments and one revision based on the comments. Barr assumes that the revisions will be minimal.

### Item 2: Update the Algorithms for Calculator

The technical team provided a summary of *event mean concentration* removal efficiencies of total phosphorus (median reduction of 43%) and total suspended solids (mean reduction of 74%). Barr assumes that these reductions are for systems with drain tile (under drains).

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<sup>4</sup> According to the MPCA project manager of the Minnesota Stormwater Manual (Manual) update, these topics have already been covered in the technical team document, as reorganized by the MPCA project manager for the Manual. Barr will review and edit these topics in the document.

<sup>2</sup> Because these items apply to all infiltration and filtration practices, Barr will only mention that typical permit applicability, special receiving waters suitability issues, and water quality and quantity treatment benefits involving infiltration and filtration practices also apply to permeable pavement and refer the reader to the infiltration and/or filtration section, not prepared by Barr under this work plan.

<sup>3</sup> This topic is included in the draft Technical Team document. Barr will review and edit the text associated with this topic.

Barr will use the available data collected by the technical team to determine the acceptable *annual* total phosphorus and total suspended solids removal percentages for permeable pavement with drain tile (filtration) and without drain tile (infiltration).

For determining compliance to the volume control performance goal, the MIDS beta calculator for permeable pavement will continue to be based on the void spaces, unless an under drain is planned. For sites with under drains at the bottom of systems, no volume reduction will be given. For sites with elevated drain tiles, the volume reduction will be limited to the storage area below the under drain. The dissolved phosphorus reduction for all systems will be based on the volume reduction.

Item 3: Meetings

Included in this work plan are two meetings. Meeting #1 will be a meeting with Barr staff and the permeable pavement technical team at one 2-hour meeting held at Barr Engineering (or via a conference call organized by the MPCA or a member of the technical team). At Meeting #2, Barr will present permeable pavement information to the MIDS Work Group at one meeting.

**SCHEDULE**

DATE	WHO	TASK	Notes
Fri 01/25	Barr (Kurt)	Send work products reviewed by MPCA to Tech Team	
Mon & Tue 01/29 & 01/30	Tech Team Lead (Mary)	Review Work Product with Mike Trojan and David Smith, Tech Editor and prep to send to entire Tech Team	
Thurs 01/30	Tech Team Lead (Mary)	Begin Coordination of the update of the Wiki with Mike Trojan.	
Fri 2/01	Tech Team Lead (Mary)	Send work products to tech team with instructions for review	Decision to review via Word Doc OR Wiki will be made by Mike T. & Mary.
Thurs 02/07 10:00 AM CST	Tech Team Lead (Mary)	Tech Team meets via GoToMeeting.	
Thurs 02/07 – Sun 02/10	Tech Team Lead (Mary)	Coordinate resolution of any issues, identified during Tech Team Meeting, with Barr, MPCA, Tech Editor and Tech Team.	
Mon: 2/11	Tech Team Lead (Mary)	Work is sent to Mike T. at MPCA to enter edits into MN Stormwater Manual Wiki	
Thurs: 2/14	MPCA (Mike Trojan)	Permeable Pavement work is integrated into the Wiki for Preliminary Presentation to the MIDS Work Group.	

Fri: 2/15	Barr (John), MPCA (Mike T.), Tech Team Leader (Mary) and Tech Editor (David Smith)	Present Introduction and Preliminary Work Products to MIDS workgroup	
Fri: 02/15 thru Fri 03/01	MIDS WORK GROUP	Offer written comments and review to Permeable Pavement Work Products Presented.	
Sat 03/02 thru Mon 03/11	Tech Team Lead (Mary) and MPCA (Mike T.)	Collate results of MIDS Work Group Input. Review and attempt reconciliation of any notable issues with Barr, MPCA, Tech Editor and Tech Team.	
Tue 03/12 thru Thurs 03/14	Tech Team Lead (Mary) and MPCA (Mike T.)	Coordinate Preparation of FINAL Work Products for presentation to the MIDS Work Group	
FRI: 03/15	Barr (Kurt), MPCA (Mike T.) and Tech Team Lead (Mary)	Present FINAL Work Product to the MIDS Work Group	
FRI: 03/15	Tech Team Lead (Mary) and Tech Editor (David Smith)	Hand off MIDS Work Products and Final MIDS Review to MPCA (Mike T.) for inclusion into the MN Stormwater Manual Publication Process.	
FRI: 04/01	MPCA (Mike T.)	GO LIVE ... MN Stormwater Manual Wiki with New Permeable Pavement BMP Section.	



# PERMEABLE PAVEMENT WORK TASKS AND SCHEDULE

(Revised 2/13/13)

## Item 1: Review and Edit Draft Technical Team Document

Barr will review and edit the MPCA-reorganized May 10, 2012 draft MIDS Permeable Pavement document, which has been provided to Barr from the MPCA in MS Word format. Barr assumes that all of the figures and photographs already included in the document are in public domain.

Barr will review and edit the following topics of the existing document:

- Overview
- Pretreatment/Function within Treatment Considerations<sup>6</sup>
  - Permit Applicability<sup>1,7</sup>
- Retrofit Suitability<sup>1</sup>
- Cold Climate Suitability (Winter Considerations)<sup>1</sup>
- Special Receiving Waters Suitability<sup>1,2</sup>
- Water Quality (very general benefits)<sup>1,2</sup>
- Water Quantity (very general benefits)<sup>1,2</sup>
- Variants<sup>1</sup> (Barr assumes this means design variants, such as adding drain tile, etc.)
- Design<sup>1</sup> (with only one simple cross-section drawing for porous asphalt, porous concrete, and interlocking concrete, similar to the cross-sections in the existing document)
- Construction<sup>1</sup>
- Maintenance<sup>3</sup>
- Monitoring/BMP Performance Assessment<sup>1</sup>

Barr will add the following topics to the document:

- Certification (Barr assumes this means Contractor/Installer Training)
- Credits (see Item 2)

Barr will provide a draft document to the MPCA in MS Word format for distribution to the technical team. After receiving comments from the MPCA and the technical team, as compiled and sent by the MPCA, Barr will update the draft document to address the comments. Barr assumes one round of comments and one revision based on the comments. Barr assumes that the revisions will be minimal.

## Item 2: Update the Algorithms for Calculator

The technical team provided a summary of *event mean concentration* removal efficiencies of total phosphorus (median reduction of 43%) and total suspended solids (mean reduction of 74%). Barr assumes that these reductions are for systems with drain tile (under drains).

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<sup>6</sup> According to the MPCA project manager of the Minnesota Stormwater Manual (Manual) update, these topics have already been covered in the technical team document, as reorganized by the MPCA project manager for the Manual. Barr will review and edit these topics in the document.

<sup>2</sup> Because these items apply to all infiltration and filtration practices, Barr will only mention that typical permit applicability, special receiving waters suitability issues, and water quality and quantity treatment benefits involving infiltration and filtration practices also apply to permeable pavement and refer the reader to the infiltration and/or filtration section, not prepared by Barr under this work plan.

<sup>3</sup> This topic is included in the draft Technical Team document. Barr will review and edit the text associated with this topic.

Barr will use the available data collected by the technical team to determine the acceptable *annual* total phosphorus and total suspended solids removal percentages for permeable pavement with drain tile (filtration) and without drain tile (infiltration).

For determining compliance to the volume control performance goal, the MIDS beta calculator for permeable pavement will continue to be based on the void spaces, unless an under drain is planned. For sites with under drains at the bottom of systems, no volume reduction will be given. For sites with elevated drain tiles, the volume reduction will be limited to the storage area below the under drain. The dissolved phosphorus reduction for all systems will be based on the volume reduction.

Item 3: Meetings

Included in this work plan are two meetings. Meeting #1 will be a meeting with Barr staff and the permeable pavement technical team at one 2-hour meeting held at Barr Engineering (or via a conference call organized by the MPCA or a member of the technical team). At Meeting #2, Barr will present permeable pavement information to the MIDS Work Group at one meeting.

**SCHEDULE**

DATE	WHO	TASK	Notes
Fri 01/25	Barr (Kurt)	Send work products reviewed by MPCA to Tech Team	
Mon & Tue 01/29 & 01/30	Tech Team Lead (Mary)	Review Work Product with Mike Trojan and David Smith, Tech Editor and prep to send to entire Tech Team	
Thurs 01/30	Tech Team Lead (Mary)	Begin Coordination of the update of the Wiki with Mike Trojan.	
Fri 2/01	Tech Team Lead (Mary)	Send work products to tech team with instructions for review	Decision to review via Word Doc OR Wiki will be made by Mike T. & Mary.
Thurs 02/07 10:00 AM CST	Tech Team Lead (Mary)	Tech Team meets via GoToMeeting.	
Thurs 02/07 – Sun 02/10	Tech Team Lead (Mary)	Coordinate resolution of any issues, identified during Tech Team Meeting, with Barr, MPCA, Tech Editor and Tech Team.	
Fri: 2/15	Barr (Kurt), MPCA (Mike T.), Tech Team Leader (Mary) and Tech Tech Editor (David Smith)	Present Introduction and Preliminary Work Products to MIDS workgroup	
Week of Feb. 18	Tech Team and MPCA	Tech team reviews final feedback	

Friday, 2/22	Team lead (Mary)	Sends revised draft with comments from tech team to MPCA	
Monday 2/25 thru Thurs, 2/28	MPCA (Mike F. and Mike T)	Reviews draft document	
Friday, 3/1	MPCA (Anne)	Sends draft document to MIDS workgroup	
Monday 3/4 thru Friday, March 8	MIDS WORK GROUP	Offer written comments and review to Permeable Pavement Work Products Presented.	
Sat 03/09 thru Tues, 3/12	Tech Team Lead (Mary) and MPCA (Mike T.)	Collate results of MIDS Work Group Input. Review and attempt reconciliation of any notable issues with Barr, MPCA, Tech Editor and Tech Team.	
Tues, 3/12	MPCA (Anne)	Submits draft document to Barr for "final" document	
Thurs, 3/14	Barr (John)	Sends "final" document back to MPCA (Anne)	
Thurs 03/14	Tech Team Lead (Mary) and MPCA (Mike T.)	Coordinate Preparation of FINAL Work Products for presentation to the MIDS Work Group	
FRI: 03/15	Barr (Kurt), MPCA (Mike T.) and Tech Team Lead (Mary)	Present FINAL Work Product to the MIDS Work Group	
FRI: 03/15	Tech Team Lead (Mary) and Tech Editor (David Smith)	Hand off MIDS Work Products and Final MIDS Review to MPCA (Mike T.) for inclusion into the MN Stormwater Manual.	
FRI: 04/01	MPCA (Mike T.)	GO LIVE ... MN Stormwater Manual Wiki with New Permeable Pavement BMP Section.	

Tech Team Members:

Mary Davy-Lead

Bob Swanson, David Smith, Nick Tiedeken, Paul Moline, Matt Durand, Mike Isensee, Bob Race, Nathalie Shanstrom, Sue Borgert, Jill Thomas, Kent Hansen, Rob Strangler, Tien Peng

MPCA staff: Anne Gelbmann, Mike Findorff, Todd Smith, Mike Trojan