TMDL – MS4 Urban Stormwater Technical Team Meeting Notes

April 3, 2012
DNR Service Center – Fitchburg, WI

Attendees:

*Eric Rortvedt (WNDR)
*Tim Ryan (WDNR)
*Bryan Hartsook (WNDR)
*Greg Fries (City of Madison)
*Jim Bachhuber (AECOM)
*Jon Lindert (Strand Assoc.)
*Tom Grisa (City of Brookfield)
*Solomon Bekele (City of Milwaukee)
*Steve Wurster (Ruekert-Mielke)
*Leif Hauge (Waukesha County)
*Eric Thompson (MSA)
*Nick VandeHey (McMahon & Assoc.)
Kevin Kirsch (WDNR)
Roger Bannerman (WDNR)
Sharon Gayan (WDNR)
Andy Morton (WDNR)
Michelle Reynolds (WDOT)
Rick Eilertson (City of Fitchburg)
Dan Heim (WDNR)
Maureen McBroom (WDNR)
Theresa Ford (WDNR)
Eric Nitschke (WDNR)

* Team member

Acronyms:

TMDL = Total Maximum Daily Load
RRTMDL = Rock River TMDL
TSS = Total Suspended Phosphorus
TP = Total Phosphorus
MS4 = Municipal Separate Storm Sewer System
SLAMM = Source Load and Management Model
SWAT = Soil & Water Assessment Tool
303(d) waters = Impaired waters

Goals & Expectations:

The goals & expectations/outcomes of the TMDL – Urban Stormwater Technical Team's work were discussed. The primary work product is expected to be a guidance document for staff both internal and external to DNR to use in determining compliance with the TMDL allocations set forth in future municipal separate storm sewer system (MS4) permits.

- TMDL modeling is different than the standard MS4 modeling already completed by municipalities.
- Most of the focus has been on Total Suspended Solids (TSS), but will now need to include total phosphorus.
- What practices should be considered (by this group)? What credits? EPA does not apply Maximum Extent Practicable (MEP) when meeting

TMDL allocations in MS4 permits. Current & future technology is expected to move forward.
- 15 to 20 year time frame for MS4 permittees to achieve TMDL mass allocations.
- This is a 12 member technical team; we don't expect 100% attendance. A proxy is welcome to attend. This is a public meeting; public is welcome to listen/observe.
- We expect to meet about once per month over the next 12 to 18 months.
- TMDL/MS4 work completed by this group is expected to apply to other TMDLs state-wide.
- Focus is on TSS/TP; other pollutants in a TMDL are an issue to be addressed but not the focus of this team. (Milwaukee TMDLs are also addressing bacteria)
- Working toward a DNR guidance document / memo.
- Internal communication / structure set up to bring TMDL – MS4 issues to DNR's upper management.
- External communications to the broad group of interested parties for review and comment will be in the form of notes, meeting notifications, draft work product, etc.

<u>Specific information on how the TMDLs were developed:</u>
Kevin Kirsch presented information on the methodology used when developing the Rock River Basin TMDL, the Lower Fox Basin TMDL, and currently being used in the development of the 4 Milwaukee area TMDLs. (Milwaukee River - mainstem, Menomonee River, Kinnickinnic River & the Milwaukee Estuary Area.) It was an informal presentation & discussion, with many questions and concepts shared by the group. The following are highlights of that discussion:

It is important to look at the mass allocations listed in the TMDL reports for TMDL compliance. An annual average mass limit expressed in lbs/day (not concentration limit) will be included in the MS4 permit. The percent reduction, as used in NR 151, is proportional but mass concentration is different. It may be easier to work on the TMDL compliance through the MS4 permit on a mass basis.

The TMDL has to show compliance with permit requirements as a baseline. The allocations are calculated after the baseline conditions have been accounted for.

EPA has multiple different methods for developing TMDL allocations, but most use the proportional method. This was also used in Wisconsin.

For each of these TMDLs: TP instream criterion is 75μ/L for smaller streams and 100 μ/L for larger streams (specified in s. NR 102.06) and evaluated on a monthly basis for May to October because EPA requires a seasonal analysis for TMDLs.

A 40% TSS reduction for MS4s correlated to approximately 27% TP reduction for MS4s.

TMDL development information:
Rock River TMDL (RRTMDL) development information:

- Rainfall data used in prior MS4 modeling used either a 1- or 5-yr average annual record
- A 10- yr rainfall period was used in the RRTMDL – extracted monthly loading; SLAMM looking at monthly in-stream target
- SWAT was used to calculate loads from agricultural and rural areas
- SLAMM was used to calculate urban loading

Milwaukee TMDLs:

- HSPF-based on SEWRPC 2020/Tetratech modeling

Lower Fox TMDL:

- SLAMM – bay used as a control point/target

Lower Fox TMDL started at no controls

Lower Fox TMDL is based on secchi depth data from in the bay.
Milwaukee & Rock River TMDLs were developed using a correlation between TP & TSS (TSS does not have numeric criteria)

- verified using reference stream condition where WQ standard is met

In the SLAMM model, the medium density residential matched well with the overall mass generated from MS4s for all combined urban land uses. Therefore medium density residential was applied across the board for the urban modeling.

SWAT reflected full implementation of NR 151 standards for ag. phosphorus standard and tolerable soil loss.

A 10 year time frame was used to extract monthly values in the TMDLs. Previous modeling efforts to meet the MS4 permit requirements used an average annual basis, per NR 151.

Baseline: industrial and municipal wastewater point source= 1 mg/L (TP)
MS4 = NR 151 reduction of 40% TSS which equates to 27% TP
Nonpoint source = P index of 6, tolerable soil loss (moves at equal percent reduction to total load per month)

From RRTMDL Report …
Appendix I → Average annual percent reductions are approximate and based on average of monthly average reductions over 10 years (noted on top of table but is not obvious). Appendix I shows the cumulative average of the monthly average

percent load reductions, but every month has a different percent reduction. Point sources implement on a monthly basis.

Appendix V→ MS4 mass allocations are correct (will not match with % reductions listed in Appendix I). Appendix V shows annual wasteload allocations for MS4s, not monthly allocations.

TMDL – meet targets 100%, EPA guidance for non-toxic pollutants can exceed the standard 10% of the time on a daily basis. It may seem odd but this resulted in only 7 out of 10 months complying with standard. TSS & TP are non-toxics, so the target for TSS & TP is set at 90%. EPA approved this approach.

Milwaukee has to calculate 100% compliance, then calculate back down to 90% compliance.

Point sources – permits must reflect daily allocations since a TMDL report is supposed to be based on the maximum daily load the waterways can receive. But permittees do not have to implement or comply on a daily basis.

The Lower Fox TMDL uses an average annual basis; the monitoring data from Green Bay was used to establish the target. Monthly data was not provided. The Lower Fox TMDL does not use the 90% compliance methods listed above.

A question was asked about including information in the guidance document, etc., regarding the different modeling methods and details that were used in the development of the TMDLs. It was suggested that this type of information / discussion may be included in the Milwaukee TMDL reports (currently under development), but this type of information would probably not fit in a statewide guidance document regarding general TMDL – MS4 issues.

The MS4 boundary information was not available during the Rock River or Lower Fox TMDL development. The urban area in the TMDL is different from the MS4 areas the MS4s have recently been modeling for permit compliance. Some of the differences include:

- development after 2004 (included in TMDL, not in MS4 permit submittals)
- Internally drained areas
- DOT / county lands (not separated from overall municipal urban areas in TMDL)
- Industrial permittees (not separated out from overall municipal urban areas in TMDL)

- UW-campuses (Madison & Whitewater) (not separated out from overall municipal urban areas in TMDL)

This group should evaluate and recommend how to break out these allocations.

Baseline was set using medium density residential settings in model; but the BMPs are not designed or evaluated based on that particular land use. BMPs need to be based on the actual land use where they are located.

TMDL loadings apply to the municipal political boundary, not the actual drainage areas that flow to a MS4 system. The EPA Urbanized Area maps from the 2000 census were used and the 1993 WISCLAND data set, which was merged with the Agricultural Statistics Survey.

Using these maps & WISCLAND data set the non-permitted urban areas were moved to non point.

The RRTMDL maps/shape files will be needed to evaluate the differences between the municipal boundaries and the MS4 permitted areas. These files were previously available on line, but need to be re-posted since the Department's new web-site launch approximately a month ago. The MS4s will need these TMDL boundary maps rainfall files, etc., to determine compliance. Actual loading rates should be used in this modeling effort.

How are impaired streams / reaches evaluated? This information can be accessed via the DNRs impaired waters home page:
http://dnr.wi.gov/org/water/condition/impaired/

Future TMDLs will be protective of both receiving water segment and impaired segment. Defining the reach will be more important for the Milwaukee TMDLs. Reach affects allocations & trading.

A question was asked regarding allocations for agricultural lands that are converted to developed urban areas. Allocations can be adjusted over time; Department staff are reviewing EPA guidance to determine the process to do this.

A load allocation was developed for non-permitted urban areas (under 10,000 population, not part of the EPA urbanized area, etc.) The baseline scenario was run as a low-density residential condition, adding some runoff going to swales. Municipalities may be designated for a MS4 permit if there is a significant load under NR 216. This may be an item for this group to discuss.

- Does permitting an urban area cause problems for trading? Offer trading instead of aggressively seeking trade? Yes, allocations given for non-permitted urban.

Kirsch presented a chart showing the long term monitoring station on the Rock River @ Afton. TP reductions occurred in the 1980's through the priority watershed programs and change in tillage practices in agriculture. Additional decreases in the 2000s due to implementation of NR 217 phosphorus limit of 1 mg/L.

The TMDL implementation plan document will include permitted MS4s, point sources, agricultural sources, non-permitted urban, and other nonpoint sources.

There are no other TMDL MS4 allocations outside of WI. TMDL implementation in other states has been done using a prescriptive list of BMPs. However we do not have any information about the success of prescriptive BMPs in meeting targets. EPA has delisted waters based on TMDLs. WDNR has existing guidance (WISCALM) on delisting 303(d) waters.

This group should look into practices/options to meet targets in the TMDL, practices the MS4s are not currently getting credit for, trading specific issues, etc.

The group discussed the ever changing environmental regulations. Could other factors (climate change? change in precipitation? other pollutants?) mean different requirements in the future compared to the current TMDL requirements?

→ if implementation time frame is not met, then it goes to WQ standard
→ if reduction is met, TMDL offers some protection to the regulated community
→ reasonable assurance of TMDL implementation is that protection
→ at what point does a community come under scrutiny?

-reduction from non point and point sources are both needed to meet WQ standards

-when does EPA level the playing field between point and non point sources?

-consistency in TMDL approval/implementation across the regions?

Commodity (crop) prices compete with conservation practices; higher commodity prices may lead to an increase in nitrogen application (to fertilize fields).

What are the holistic (all pollutants) issues?

- Nitrogen loads are typically from agricultural activities, not urban

- Chloride issues affect urban areas; could require monthly compliance due to seasonal applications, etc.
- Baseline loads per month for MS4s in the Rock River TMDL may provide opportunities for seasonal or monthly variations / compliance for seasonal modification of practices

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Is DNR developing an implementation plan for the Rock River TMDL?
Will this group be a clearing house for the specific MS4 issues that need to be resolved?

Will Long Term Maintenance Agreements (LTMAs) be required for the stormwater facilities included?
Will on-line ponds be used in the modeling to comply with the TMDL allocations?

Identify and group Issues that need Tech Team review / input

(see attached brain storming list of issues)

Summary / Final Comments

It is not the tech team's charge to come up with permit language, but we might be able to review permit language and information provided by central office staff. The guidance document developed by this group will work in concert with the new permit language. The guidance document is not the same as an implementation plan, but will show how the TMDL information in the MS4 permits should be implemented.

There are 2 meetings being scheduled this month for wastewater permittees in the Rock River Basin to hear what their allocations and possible permit structures are.

Mike Vollrath, WDNR Nonpoint Source Coordinator out of WDNR – Fitchburg is the new Rock River Recovery Team Leader. (Jim Congdon retired in December 2011.)

NEXT MEETINGS

- Potential topics for future Tech Team meetings:
    - Roger – TP loading data (in 2 mo. phosphorus management, treatment credit)
    - area –modeling; climate – compatibility issues
- Proposed meeting schedule: monthly, all-day meetings. Eric R. will send out a doodle to schedule the next meeting.
- Jim Bertolacini, WDNR Stormwater Program Coordinator, Madison, is working on draft MS4 permit language for this group to review.

- Implementation plan? What about existing guidance documents?
- Provide updates on wastewater / point source implementation?

Next Meeting: **TBA (Thursday, May 10 @ DNR – Waukesha Service Center, Room 151)**

Topics: **area issues, modeling issues; climate, other inputs? Phosphorus mng't & treatment credits presentation by R. Bannerman**

To-do's summarized

- Set next meeting date and location
- Set regular meeting date for future meetings
- Send meeting summary to team and broad group (any interested persons)
- Prepare agenda & supporting information for next meeting

Attachments

- Agenda
- Brainstorming list of issues