

DEVELOPMENT OF A FRAMEWORK FOR A WATERSHED-BASED MUNICIPAL STORMWATER PERMIT FOR THE MENOMONEE RIVER WATERSHED

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**MEMORANDUM REPORT
NUMBER 204**

**DEVELOPMENT OF A FRAMEWORK FOR A
WATERSHED-BASED MUNICIPAL STORMWATER PERMIT
FOR THE MENOMONEE RIVER WATERSHED**

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DEVELOPMENT OF A FRAMEWORK FOR A WATERSHED-BASED MUNICIPAL STORMWATER PERMIT FOR THE MENOMONEE RIVER WATERSHED

BACKGROUND

In April of 2011, the Milwaukee Metropolitan Sewerage District (MMSD) was awarded a U.S. Environmental Protection Agency (USEPA) Region 5 Water Quality Cooperative Agreement grant to develop the framework for a watershed-based municipal stormwater permit for the Menomonee River watershed. The development of the framework was accomplished through a collaboration involving the municipalities within the watershed, MMSD, the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water), the Wisconsin Department of Natural Resources (WDNR), USEPA, 1000 Friends of Wisconsin, Midwest Environmental Advocates (MEA), and the Southeastern Wisconsin Regional Planning Commission (SEWRPC).

The watershed-based stormwater permit framework builds from the existing Wisconsin Pollutant Discharge Elimination System (WPDES) municipal separate storm sewer system (MS4) permit for the Menomonee River watershed municipalities, which include the Cities of Brookfield, Greenfield, and Wauwatosa and the Villages of Butler, Elm Grove, Germantown, Menomonee Falls, and West Milwaukee.¹ Other MS4 permittees in the watershed, including Milwaukee County and the Cities of Mequon, Milwaukee, and West Allis, were involved in the watershed-based permitting framework process described herein.² The Southeast Wisconsin Professional Baseball District, which operates Miller Park, and the Wisconsin State Fair Park also have MS4 permits. The Village of Richfield and the Town of Germantown, which only comprise 1.1 and 0.6 percent, respectively, of the 136.1-square-mile watershed area, are the only municipalities within the watershed that do not have MS4 permits. Ozaukee, Milwaukee, and Waukesha Counties also have MS4 permits, but Washington County was granted an exemption under Section NR 216.023 of the *Wisconsin Administrative Code*. Map 1 shows the civil divisions within the Menomonee River watershed. Table 1 lists the MS4 permitted communities within the watershed, and Table 2 sets forth the areal extent of the counties, cities, villages, and towns within the Menomonee River watershed. Each of the permitted counties, cities, villages, towns, and special-purpose districts within the watershed that were not part of the existing eight-member Group MS4 permit were formally invited to participate in the watershed-based framework process (see Appendix A).³ In addition, the SEWRPC staff made follow up telephone contacts with both existing eight-member Group participants and those that are not part of the group to encourage their participation in development of the watershed-based permit framework.

¹*State of Wisconsin Department of Natural Resources, Wisconsin Pollutant Discharge Elimination System Storm Water Permit for the Menomonee River Watershed Municipalities, WPDES Permit No. WI-S050130-1, March 21, 2007 through February 28, 2012.*

²*The Cities of Brookfield, Wauwatosa, and West Allis; and the Villages of Germantown and Menomonee Falls provided letters of interest in the project that were submitted with the grant application to USEPA.*

³*Subsequent to sending the memorandum to the Village of Richfield (see Appendix A), the SEWRPC staff became aware that the Village of Richfield (then the Town of Richfield) had received an exemption from the permit requirement when the initial Phase II permits were issued.*

CIVIL DIVISIONS WITHIN THE MENOMONEE RIVER WATERSHED: 2000



Table 1

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)
PERMIT HOLDERS IN THE MENOMONEE RIVER WATERSHED**

Municipality	Permit Number	Current Group Permit Designation	Permit Expiration Date	Other Watersheds in Which Municipality is Located ^a
Milwaukee County	S050113	- -	December 15, 2011	Kinnickinnic River, Milwaukee River, Root River, Oak Creek
Ozaukee County	S050075	- -	December 31, 2010	Milwaukee River, Sauk/Sucker Creeks
Washington County	- - ^b	- -	- -	Milwaukee River, Rock River
Waukesha County	S050075	- -	December 31, 2010	Fox River, Rock River, Root River
City of Brookfield	S050130-1	Menomonee River watershed	February 28, 2012	Fox River
City of Greenfield	S050130-1	Menomonee River watershed	February 28, 2012	Root River, Oak Creek
City of Mequon	S050091-1	Mequon/Thiensville	June 30, 2011	Milwaukee River
City of Milwaukee	S049018-3	- -	March 31, 2013	Kinnickinnic River, Milwaukee River, Root River, Oak Creek
City of New Berlin	S050059-1	Root River watershed	July 1, 2013	Fox River, Root River
City of Wauwatosa	S050130-1	Menomonee River watershed	February 28, 2012	- -
City of West Allis	S049913-1	- -	November 1, 2013	Root River
Village of Butler	S050130-1	Menomonee River watershed	February 28, 2012	- -
Village of Elm Grove	S050130-1	Menomonee River watershed	February 28, 2012	- -
Village of Germantown	S050130-1	Menomonee River watershed	February 28, 2012	Milwaukee River
Village of Greendale	S050059-1	Root River watershed	July 1, 2013	Root River
Village of Menomonee Falls	S050130-1	Menomonee River watershed	February 28, 2012	Fox River
Village of Richfield	- - ^c	- -	- - ^c	Fox River, Milwaukee River, Rock River
Village of West Milwaukee	S050130-1	Menomonee River watershed	February 28, 2012	Kinnickinnic River
Town of Brookfield	S050105-1	Upper Fox River watershed	October 29, 2014	Fox River
Town of Lisbon	S050105-1	Upper Fox River watershed	October 29, 2014	Fox River
Southeastern Wisconsin Professional Baseball Park District	S049921	- -	September 30, 2012	- -
Wisconsin State Fair Park	S049930	- -	July 31, 2012	- -

^aExcluding the Lake Michigan direct drainage area.

^bIn December 2006, Washington County was granted a waiver of the requirement to obtain permit coverage under Section NR 216.023 of the Wisconsin Administrative Code.

^cIn July 2008, the Village of Richfield was granted a waiver of the requirement to obtain permit coverage under Section NR 216.023 of the Wisconsin Administrative Code.

Source: SEWRPC.

The Menomonee River Watershed Group met on August 24, October 12, and December 14, 2011, and on January 25, April 4, May 15, June 12, and July 18, 2012. The summary notes from those meetings are attached as Appendices B through I.

To facilitate development of a watershed-based permit framework that involves a relatively large number of municipalities, it was decided to form a small “work group” made up of members of the full Menomonee River

Table 2

AREAL EXTENT OF COUNTIES, CITIES, VILLAGES, AND TOWNS WITHIN THE MENOMONEE RIVER WATERSHED

Civil Division	Area (square miles)	Percent of Total
Ozaukee County		
City of Mequon	11.69	8.59
Milwaukee County		
City of Greenfield	2.90	2.13
City of Milwaukee	31.60	23.23
City of Wauwatosa	13.23	9.72
City of West Allis	6.77	4.97
Village of Greendale.....	0.12	0.09
Village of West Milwaukee	0.64	0.47
Subtotal	55.26	40.61
Washington County		
City of Milwaukee.....	0.02	0.02
Town of Germantown.....	0.76	0.56
Village of Germantown.....	29.37	21.59
Village of Richfield.....	1.55	1.14
Subtotal	31.70	23.31
Waukesha County		
City of Brookfield.....	13.54	9.95
City of New Berlin.....	0.67	0.49
City of Milwaukee.....	0.08	0.06
Town of Brookfield	0.21	0.15
Town of Lisbon.....	0.29	0.21
Village of Butler	0.79	0.58
Village of Elm Grove	3.29	2.42
Village of Menomonee Falls.....	18.54	13.63
Subtotal	37.41	27.49
Total	136.06	100.00

Source: SEWRPC.

group that would review and discuss preliminary work products prior to presentation of those products to the full Group. The work group included representatives from MMSD, WDNR, USEPA, the City of Brookfield, the Villages of Germantown and Menomonee Falls, Sweet Water, Midwest Environmental Advocates, Clean Wisconsin, and SEWRPC. That group met on June 6, 2011, and March 21, 2012. The first meeting was for the purpose of establishing the roles of each of the partners in the project; to discuss recent regulatory developments at the State level; to review the status of the MMSD third party total maximum daily load (TMDL) studies for the Kinnickinnic, Menomonee, and Milwaukee River watersheds, and the Milwaukee harbor estuary; and to discuss WDNR efforts regarding water quality trading. The second meeting was convened to discuss details of the draft watershed-based permit in depth prior to being presented and reviewed at the full Menomonee River watershed-based permit group meeting on April 4, 2012.

Another subgroup met periodically to address education and outreach issues related to the watershed-based framework process. That subgroup included representatives from the City of Brookfield, the Villages of Menomonee Falls and Germantown, the WDNR, the University of Wisconsin-Extension, and 1000 Friends of Wisconsin.

On November 28, 2011, and May 14, 2012, meetings were held to seek input from the WDNR central office staff on issues identified during the watershed-based framework development process. Those meetings were attended by the WDNR Southeastern District and central office staffs, the Sweet Water Executive Director, and SEWRPC staff.

The results of the November 28, 2011, meeting are described in the summary notes of the December 14, 2011, Menomonee River Watershed Group meeting (see Appendix D). The May 14, 2012 meeting was mentioned in the summary notes of the May 15, 2012, Group meeting (see Appendix G).

The staffs of USEPA Regions 5 and 6 arranged for a webinar on December 6, 2011, during which the three USEPA watershed-based permit pilot project teams (St. Paul, Minnesota pilot study focused on the Ramsey-Washington Metropolitan Watershed District; Albuquerque, New Mexico pilot study involving the Middle Rio Grande watershed; and the Menomonee River watershed pilot study) shared their experiences. The webinar is summarized in Appendix C.

The project 1) explored the feasibility of developing a watershed-based stormwater permit for the Menomonee River watershed, 2) investigated innovative approaches to improving the quality of stormwater discharges through a watershed-based permit while considering the regulatory and financial burdens on municipalities, 3) considered cost effective permit conditions and stormwater management activities, particularly related to implementation of green infrastructure, that are tailored to the watershed and that would be expected to yield the greatest improvements in water quality, 4) considered more effective sampling requirements that are related to needs identified under recent subregional water quality management plans,⁴ and 5) recognized that a third-party total maximum daily load (TMDL) study for the watersheds is being conducted by MMSD and that TMDL load allocations would eventually be incorporated in a watershed-based stormwater permit, or any individual municipality stormwater permits.⁵

This SEWRPC memorandum report documents the process for developing a “replicable framework” for a watershed-based permit that could be applied elsewhere in the State of Wisconsin and perhaps in other states, subject to local regulations.

Outreach to elected leadership and coordination of Menomonee River group information and education activities was provided by 1000 Friends of Wisconsin and Sweet Water. MEA addressed legal considerations related to location of the group municipalities in multiple watersheds and to individual and shared municipal responsibilities.

APPROACH

Relationship to Recent Subregional Water Quality Planning Studies

The watershed-based permit framework was developed considering the recommendations of the SEWRPC 2007 update to the regional water quality management plan for the greater Milwaukee watersheds (RWQMPU), the

⁴MMSD, 2020 Facilities Plan, *June 2007*; SEWRPC Planning Report No. 50 (PR No. 50), A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds, *December 2007*; SEWRPC Technical Report No. 39 (TR No. 39), Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, *December 2007*; and MMSD and Sweet Water, Menomonee River Watershed Restoration Plan (WRP), *April 1, 2010*.

⁵The TMDL project schedule calls for a final TMDL report, including load and wasteload allocations to promote watershed-based permitting and trading, to be completed by April 30, 2013. Because the watershed-based permitting project described herein was completed before that time, it does not incorporate final TMDL study products. Available, relevant information from the TMDL study was considered in the watershed-based permitting framework to the greatest degree possible.

2007 MMSD 2020 facilities plan, and the April 2010, MMSD and Sweet Water Menomonee River Watershed Restoration Plan, which built from the RWQMPU.⁶ By considering the recommendations of those recent planning efforts, specific permit conditions were developed to address water quality problems and potential solutions identified under those studies.

USEPA Guidance

The USEPA report “Watershed-based National Pollutant Discharge Elimination System (NPDES) Technical Guidance,” August 2007, served as the overall guide within which the framework was developed. Project tasks were patterned after the three watershed permitting “navigator” elements described in that document.

The SEWRPC staff took the lead in developing the watershed-based permit framework, incorporating the USEPA Navigator Elements and corresponding tasks as described below.

Navigator Element 1: Create Watershed and Source Data Inventories

Task No. 1: Integrate Data from Previous Reports and TMDL

The SEWRPC staff prepared a summary of relevant water quality information from the MMSD 2020 facilities plan, the Menomonee River WRP, and the SEWRPC regional water quality management plan update for the greater Milwaukee watersheds as documented in TR No. 39 and PR No. 50. That water quality summary is set forth in Appendix J and summarized below. This involved identifying additional pollutants to be considered by the Menomonee River Group for inclusion under a watershed-based permit.

Under this task, the SEWRPC staff addressed changes to the WDNR NR 151 stormwater quality performance standards resulting from the 2011 State budget process. To the degree possible, the final framework was written to conform to the performance standard/permitting situation that existed at the time that the framework was finalized, while acknowledging the affects on permit conditions once TMDL wasteload allocations are developed.

Navigator Element 2: Apply a Watershed Permitting Analytical Approach

Task No. 2: Refine and Test Watershed Permitting Approaches

The work conducted under this task built from Task No. 1, and considered stressors and pollutants of concern in the watershed, including further, more-detailed consideration by the Menomonee River Watershed Group of possible additional pollutants/stressors to include under the permit. Along with the consideration of additional pollutants, the illicit discharge detection and elimination (IDDE) requirements under the permit were evaluated to develop an IDDE program that would target monitoring of storm sewer outfalls for human sources of pathogens and viruses, and would focus on eliminating such sources of pollution. Such an IDDE program was recommended under the regional water quality management plan for the greater Milwaukee watersheds (documented in SEWRPC Planning Report No. 50).⁷

⁶SEWRPC Planning Report No. 50, op. cit.; MMSD, 2020 Facilities Plan, June 2007, op. cit.; and MMSD and Sweet Water, Menomonee River Watershed Restoration Plan, April 2010, op. cit.. SEWRPC Technical Report No. 39, op. cit., is a companion report to PR No. 50. The RWQMPU was conducted cooperatively with the MMSD 2020 facilities plan, and those planning efforts are collectively referred to as the Water Quality Initiative.

⁷The local IDDE effort was modified to better target those storm sewer outfalls that should be monitored, regardless of size, while reducing the level of monitoring of large outfalls as defined in Chapter NR 216 of the Wisconsin Administrative Code. Annual monitoring would be limited to those outfalls where illicit discharges would be most likely based upon what is known about the age and condition of the associated stormwater conveyance systems and sanitary sewage conveyance systems, water quality conditions within receiving waters, and other available information the permittees consider relevant, including storm sewer outfall monitoring for human sources of sewage by MMSD and Milwaukee Riverkeeper. The IDDE program was designed to address a significant source of water pollution as identified under the WQI, while limiting the expense to the MS4s by eliminating the blanket requirement to annually screen all major outfalls and developing a watershed-wide procedure for targeting which outfalls to screen.

This task also included identification of various general permit structures with input from the Menomonee River Group regarding the most appropriate structure for the municipalities in this watershed. Consideration was given to how to address municipalities that are located in multiple watersheds, including approaches to synchronizing permit time frames and how permit conditions would be affected upon completion of the TMDL studies that MMSD is conducting for the Menomonee, Kinnickinnic, and Milwaukee River watersheds and the Milwaukee Harbor estuary. As indicated below, a multisource watershed-based permit structure was selected by the Group.

Navigator Element 3: Construct an NPDES Watershed Framework

Task No. 5: Draft the Watershed-Based Permit Framework

Task No. 7: Finalize the Framework

These were key tasks of the project under which SEWRPC drafted and finalized the framework with significant input from the members of the Menomonee River Watershed Group, especially MMSD, WDNR, USEPA, and the municipalities that chose to seriously consider being included under a watershed-based permit. Midwest Environmental Advocates provided legal analysis under this task. It was during this phase of the project, that 1) the group determined it would be feasible to implement the watershed-based permitting framework and 2) municipalities committed to participate in a watershed-based permitting process.

The most-current available Menomonee River watershed TMDL study information was considered during this phase, and approaches to linking agricultural interests and other WPDES permittees to the municipal stormwater permit were explored. That included some discussion of the role of urban and agricultural stormwater pollution sources and how they might be linked with each other, other WPDES permittees, and nonpoint sources of pollution through water quality trading.

ISSUES RELATED TO DEVELOPMENT OF THE FRAMEWORK

The process for developing the watershed-based permitting framework was guided by the overriding question of whether a watershed-based permit structure would be a better option for the permitted communities than the current permitting approach.⁸ The following questions were considered and discussed in the specific context of the Menomonee River Watershed Group communities, but many of them would also be pertinent to other geographic areas. These questions were initially discussed during the August 24, 2011, and October 12, 2011, Group meetings. The summary notes from those meetings are attached as Appendices B and C, respectively.

1. How should the permitting framework be structured to address communities that are located in multiple watersheds (see Table 1)?
 - a. **QUESTION:** Can permit conditions be developed to adequately address receiving water quality goals in each of the watersheds within which a given community or county may be located, or should the permit be limited to the portion of the community within the Menomonee River watershed, creating multiple permit conditions for a single community?

RESOLUTION: This question relates to the period prior to expiration of the first watershed-based permit in 2017. The watershed-based permit issued in 2017 would include TMDLs for the portions of MS4s within the Kinnickinnic, Menomonee, and Milwaukee River watersheds, and the Milwaukee Harbor estuary.

Multiple decisions made by the Group over the course of the Group meetings led to a permit framework under which the six minimum USEPA requirements for an MS4 permit; the IDDE

⁸Under the current approaches, some of the municipalities participate in a group permit and some have individual permits.

program; the education and outreach component; and the achievement of a 20 percent reduction in total suspended solids (TSS) from areas of existing development, or maintenance of a level of control of TSS from existing development beyond 20 percent for those MS4s that had achieved such a level of control by July 1, 2011, could all be applied in the multiple watersheds in which a given MS4 may be located. Implementation of watershed projects specific to the Menomonee River watershed, as incorporated in the permit framework in an effort to improve water quality in a manner consistent with the RWQMPU and the WRP while possibly satisfying multiple related permit requirements, would generally only apply to areas within the Menomonee River watershed. Once a TMDL is in place, this question is likely to be a moot point for multiple-watershed municipalities located solely in two or more of the Kinnickinnic, Menomonee, and Milwaukee River watersheds.

QUESTION: How will the assignment of watershed-specific TMDLs factor into the decision regarding communitywide, or watershed-specific, permit conditions? (During development of the watershed-based permit, work was underway on developing TMDLs to address the bacteria and phosphorus-related impairments in the Menomonee, Milwaukee, and Kinnickinnic River watersheds and the Milwaukee Harbor estuary area.)

RESOLUTION: Once WDNR approves a TMDL for an impaired water body to which the permittee discharges, the Department anticipates that when the permit is reissued in the next permit cycle it will include requirements necessary to achieve the TMDL wasteload allocation for the MS4. The table below provides an example of the way that wasteload allocations may be presented in the next permit cycle.

TEMPLATE FOR MS4 WASTE LOAD ALLOCATIONS BY MUNICIPALITY

Municipality	Reach	Water Body Name	Water Body Extents	Reach Description	Annual TSS Waste Load Allocation (tons)
MCD Name	Reach No.	Local Name	Stream Mile to Mile	Landmark to Landmark	Tons
MCD Name	Reach No.	Local Name	Stream Mile to Mile	Landmark to Landmark	Tons
MCD Name	Total				Tons

After issuance of TMDLs for the Kinnickinnic, Menomonee, and Milwaukee River watersheds and the Milwaukee Harbor estuary, the six minimum USEPA requirements for an MS4 permit; the IDDE program; the education and outreach component; and the achievement of a 20 percent reduction in total suspended solids (TSS) from areas of existing development, or maintenance of a level of control of TSS from existing development beyond 20 percent for those MS4s that had achieved such a level of control by July 1, 2011, could all be applied in those watersheds for which there were not TMDLs.

- b. **QUESTION:** Will watershed municipalities that are currently in an MS4 permit group with another municipality, or other municipalities, located completely outside the watershed elect to participate in a Menomonee River watershed-based permit? (See Table 1, regarding the Cities of Mequon and New Berlin, the Village of Greendale, and the Towns of Brookfield and Lisbon. Such municipalities may no longer be able to remain in their “other” watershed group if uniform requirements, based largely on Menomonee River watershed needs, are applied throughout each municipality in the Menomonee River Watershed Group.)

RESOLUTION: The City of Mequon participated in the framework development process to some degree, but ultimately chose not be a party to a watershed-based permit. None of the other municipalities listed participated in the process.

2. **QUESTION:** What are the potential benefits of a county participating in a watershed-based permit, given the somewhat scattered nature of county permitted facilities?

RESOLUTION: Such participation affords greater opportunity for cooperative projects with municipalities to meet county and municipal goals.

3. **QUESTION:** Relative to the current MS4 permit(s), what, if any, additional pollutants should be regulated under the framework?

RESOLUTION: The water quality analyses presented later in this memorandum led to the selection of total suspended solids (already addressed under the existing permit), total phosphorus, and fecal coliform bacteria as the three pollutants to be regulated. These are also the three pollutants for which TMDLs are being developed.

4. **QUESTION:** What modifications to the illicit discharge detection program could be made to better target pollutants of the most concern, based on extensive recent watershed-based water quality planning efforts,⁹ but without imposing a financial burden on the MS4 communities?

RESOLUTION: A program to better target storm sewer outfalls to be sampled for detection of illicit discharges is set forth in Part II-Section D, “Analysis Procedure for Identifying Outfalls Likely to be Discharging Sanitary Wastewater,” and Part III-Section A, “Illicit Discharge Detection and Elimination” (see Appendix K).

5. **QUESTION:** How can the monitoring programs under the existing MS4 permits held by the watershed communities be integrated and/or revised to provide useful results to guide future efforts to improve water quality and habitat and perhaps to facilitate water quality trading?

RESOLUTION: Based upon the discussion of this issue during the August 24, 2011, Group meeting, an examination of NR 216 by the SEWRPC staff, and the information provided in a September 23, 2011, electronic mail message from Bryan Hartsook of the WDNR staff, it was concluded that, under the next MS4 permit, there is not a requirement for the municipalities to monitor stormwater beyond the illicit discharge detection and elimination efforts.

The ongoing water quality monitoring programs conducted by MMSD and the U.S. Geological Survey are expected to continue. The MS4s participating in the watershed-based permit will focus on monitoring to detect illicit discharges.

6. **QUESTION:** Will a watershed-based permit achieve economic benefits?

- a. **QUESTION:** How can the group communities cooperate to avoid increasing, or to reduce, permit compliance costs?

RESOLUTION: The permit participation incentives listed in Appendix M include evaluations of which incentives would be expected to reduce the costs of permit compliance. All but a few of those incentives are only available through a watershed-based permit.

- b. **QUESTION:** How do the watershed-based permitting requirements relate to anticipated improvements in water quality and aquatic habitat and enhancement of riparian areas, and what are qualitative representations of the economic benefits of such improvements?

⁹*MMSD 2020 facilities plan, SEWRPC regional water quality management plan update (PR No. 50), SEWRPC water quality conditions report (TR No. 39), and MMSD/Sweet Water Menomonee River watershed restoration plan.*

RESOLUTION: Where appropriate, the permit requirements were designed to address recommendations from the SEWRPC RWQMPU or the MMSD/Sweet Water Menomonee River watershed restoration plan (WRP). The fact sheet that accompanies the permit includes examples of projects that are recommended under the Menomonee River watershed WRP. The identification of qualitative representations of the economic benefits of improvements in water quality or habitat arising from meeting the permit requirements proved to be difficult and beyond the scope of the watershed-based permit framework process.

7. What are the prospects for successful water quality credit trading within the watershed?

- a. **QUESTION:** What are the factors in favor of successful trading, or of one-to-one pollutant loads exchanges between MS4s participating in a watershed-based permit?

RESOLUTION: The following factors were identified through the watershed-based permit framework process:

- The potential for improvements to water quality conditions that might be achieved through trading or one-to-one exchanges
- Community interest in minimizing costs of achieving MS4 permit compliance through avoiding expensive public works improvements or ordinance requirements that may be viewed as onerous
- 2011 Wisconsin Act 151 changes the pilot program for trading water pollution credits to a potentially broadly applicable statewide program, and it eliminates the five-year limit on trading agreements that was part of the pilot program. That creates more certainty for communities and makes it easier to convince legislative bodies to commit to trading in place of public works improvements or ordinance requirements.
- Agreements can be made between MS4s to offset pollutant discharges from one MS4 which is having difficulty meeting permit requirements with pollutant controls implemented in another MS4 (within the same watershed-based permit group) which may be able to exceed the requirements under the permit. Such agreements would not be subject to application of trading ratios which would call for more pollutant removal than the amount that the purchasing MS4 can claim.¹⁰

- b. **QUESTION:** What are the factors in opposition to successful trading, or of one-to-one pollutant loads exchanges?

RESOLUTION: The following factors were identified through the watershed-based permit framework process:

¹⁰*During the development of the watershed-based permit framework, it was noted by WDNR that a) point to nonpoint source trades, or point to point source trades when one or both MS4s involved in the trade are not parties to a watershed-based permit, would be governed by standard water quality trading considerations, including defining trading ratios to reasonably assure that the pollutant reduction achieved would be sufficient to offset a downstream pollutant discharge by the entity purchasing credits, but b) pollution reductions achieved in the watershed through the collective efforts of MS4s that are parties to a watershed-based permit would not require the application of trading ratios since they will be regulated as a single, permitted point source and trading considerations are only necessary when accounting between multiple point or nonpoint sources. The municipalities would need to submit a plan to WDNR for approval before implementing a watershed-based project.*

- Much of the agricultural land in the watershed is leased, reducing landowner incentive to implement best management practices.
- When TMDLs are incorporated in the MS4 permit, the level of stormwater pollution control to be achieved may be so high in some stream reaches that there would be limited excess municipal pollution control capacity available for one-to-one pollutant load exchanges.
- The amounts of rural loads available for trading would be limited. Table J-4 of Appendix J and Exhibit A-1 of Appendix C summarize modeled nonpoint source pollution loading information developed for year 2000 conditions under the Water Quality Initiative. The information in the table gives an indication of the amount of watershed-wide rural nonpoint source pollution loads relative to urban nonpoint source loads (a rough approximation of the loads from MS4s in the watershed). For total suspended solids, which are currently regulated under the MS4 permits within the watershed, the total rural load is 12 percent of the urban load. For phosphorus and fecal coliform bacteria, the two other pollutants for which TMDLs are being developed, rural loads represent 14 percent and 3 percent of urban loads, respectively.

The amounts of the rural loads available for trading would be less than the percentages in the table because of the practical inability to reduce those loads to zero and the anticipated need within a water quality trading framework to reduce the loads to meet the performance standards of Chapter NR 151 of the *Wisconsin Administrative Code* before claiming long-term credit for further reductions achieved through trades. When TMDLs are in place, they may take the place of the NR 151 standards.

- c. **QUESTION:** What are factors that could affect the success of trading, but could be either favorable or unfavorable?

RESOLUTION: The following factors were identified through the watershed-based permit framework process:

- Communities that have achieved their wasteload allocations as specified under a TMDL may only be willing to trade water quality credits available from the control of additional pollutant loads if they can receive an acceptable return on what could be a relatively large investment necessary to implement those additional controls.
- The 2011 WDNR water quality trading framework establishes conditions under which trades can be accomplished, and it calls for an “interim credit” approach that provides a means of addressing the ability to obtain credits through point to nonpoint source trades within the context of the requirements of Chapters NR 151 and 216 of the *Wisconsin Administrative Code*.¹¹

8. **QUESTION:** Does excluding non-MS4 point sources and CSOs from the watershed-based permit preclude such sources from executing water quality trades?

RESOLUTION: Based on discussions among the Group and WDNR staff during the course of development of the watershed-based permit framework, it was decided that, in general, there should be enough regulatory flexibility to enable water quality trades to be executed between different sources.

¹¹The WDNR water quality trading framework document can be accessed at: <http://fyi.uwex.edu/wqtrading/files/2011/07/WQT-Framework-Final.pdf>. As of the date of this memorandum report, the USEPA had reviewed the WDNR guidelines and met with WDNR staff and WDNR staff was developing some revisions to the guidelines.

9. **QUESTION:** What green infrastructure measures would be most effective in improving water quality, and how can the watershed-based framework promote implementation of such measures? (This raises the question of how MS4 communities could ensure that green infrastructure installed on private property is maintained, allowing them to claim credit for such measures under the permit. If a private entity is granted a stormwater utility fee reduction for installing green infrastructure, the municipality would have a systematic means of tracking those facilities and ensuring that they are maintained. Such a tracking system could enable the municipality to claim credit toward meeting its performance standard or TMDL wasteload allocation goal.)

RESOLUTION: During the October 12, 2011, Group meeting (see Appendix C), there was discussion of how to ensure that green infrastructure is maintained so that it continues to function over the long term. Possible approaches explored during that discussion were:

- Reductions in stormwater utility fees for installation of green infrastructure practices, especially on residential sites. (The City of Milwaukee provides a fee reduction for commercial and industrial sites with green infrastructure, but not for residential sites.)
- Establishment of procedures to ensure maintenance of private, residential green infrastructure, including imposing deed restrictions to ensure that the subsequent property owners continue to maintain the facilities.

Providing a residential credit toward stormwater utility fees for properties where green infrastructure is installed would establish a tracking system that would enable a municipality to claim credit toward meeting its performance standard or TMDL wasteload allocation goal. For residential properties, this would require considerable effort on the part of the municipalities, especially in terms of staff time, to make sure that the practices remain in place. In the case of commercial and industrial properties, the practices installed are often tied to stormwater management plans, and such properties are charged higher stormwater utility fees than individual residences, so there are greater financial incentives to maintain the practices.

It may be beneficial for communities to work together on residential installation of green infrastructure, through making available standard designs that homeowners can install, and it might be cost-effective to contract with a private consultant or nonprofit group to perform inspections to ensure that green infrastructure practices are installed and functioning.

There was some sentiment expressed that communities should be able to receive credit for these practices, even if this must be done somewhat subjectively without an established program to track maintenance of green infrastructure on private residential properties over time. This approach could be as simple as devising a means of crediting an MS4 for a certain percentage of installed green infrastructure.

The watershed-based permit does not provide a means for resolving this issue. If a proposal to gain credit toward meeting the requirements of the permit through accounting for green infrastructure installed on private property were made to WDNR by the MS4s that are regulated under permit, either as a group or individually, the proposal could be evaluated by WDNR on its merits.

10. **QUESTION:** How can the existing Menomonee River group permit expiration date (February 28, 2012), the permit expiration dates of additional participating communities, and the anticipated date when TMDLs will be complete (April 2013) be synchronized under a single, watershed-based permit?

RESOLUTION: As seen in Table 1 of Appendix A, the permits for municipalities that have been active in the Menomonee River WBP Group process expire in 2012 and 2013. During the November 28 WDNR/Sweet Water/SEWRPC meeting, the following two options were discussed for addressing procedures for issuing a WBP:

- Reissue the MS4 permit(s) and then revoke and reissue as a watershed-based permit following development of a framework, assuming municipal acceptance of a WBP approach,
- Allow the existing permits to expire, continue coverage under the expired permit, and reissue as a watershed-based permit following development of a framework, assuming municipal acceptance of a WBP approach.

The consensus of those in attendance at the meeting and of the Menomonee River Watershed Group was that the second option would be best. Either of these options would lead to adoption of a single permit expiration date for all parties to the WBP. A step in implementing the second option was taken on January 19, 2012, when WDNR sent a letter to each of the current eight-member Menomonee River MS4 Permit Group members, stating that “pursuant to ch. NR 216.09 Wisconsin Administrative Code, the existing permit conditions will remain in effect after (the) February 28, 2012” permit expiration date, pending anticipated issuance of a watershed-based permit after development of the watershed-based permit framework.

11. **QUESTION:** Would the targeted performance standard procedure set forth in Section NR 151.004, “State targeted performance standards,” of Chapter NR 151, “Runoff Management,” of the *Wisconsin Administrative Code* be applied to mandate agricultural compliance with a more-stringent water quality performance standard or load allocation stated in a TMDL if it is determined that meeting the NR 151 performance standards will not achieve water use objectives and water quality criteria? (Section NR 151.005, “Performance standard for total maximum daily loads.”)

RESOLUTION: Southeast District and central office WDNR staff indicated that the targeted performance standard procedure would not be applied to mandate agricultural compliance with a more-stringent water quality performance standard or load allocation stated in a TMDL if cost share funds were not available.

POSSIBLE WATERSHED-BASED PERMITTING STRUCTURES

The August 2007 USEPA watershed-based NPDES technical guidance that was referenced previously provides the descriptions of the following three watershed-based permit types:

- Coordinated Individual Permits
- Integrated Municipal NPDES Permit Coverage
- Multisource Watershed-based Permit

The following descriptions of the three permit types are quoted directly from the USEPA technical guidance report:

“Coordinated Individual Permits. This permitting approach is the closest to traditional NPDES permitting in that each discharger receives an individual permit. The difference is that WQBELs [water quality-based effluent limits] and other conditions of coordinated individual permits are developed using a holistic analysis of the watershed conditions rather than being established to ensure attainment of water quality standards on a permit-by-permit basis. Collectively, the individual permits are designed to meet watershed-specific goals (e.g., comprehensive watershed monitoring, nutrient reduction, management of biosolids or manure). The permitting authority may issue permits to single dischargers or modify existing single discharger permits. To strengthen the coordination among individual permits, the permitting authority could consider synchronizing their expiration and reissuance or effective dates.

Integrated Municipal NPDES Permit Coverage. This approach may bundle a number of point source permit requirements for a municipality (POTWs [publicly owned treatment works], combined sewer overflows (CSOs), biosolids, pretreatment, and stormwater, including municipally

owned industrial activities such as public works and utility yards) into a single permit. In cases where the treatment plants, stormwater, CSOs (if applicable), and other municipally controlled point source activities are all under single ownership, the permitting authority could consider one permit that covers and integrates all NPDES requirements. Ideally, these activities would take place within the boundaries of the same watershed. This approach may reduce the administrative burden for both the permittee and permitting authority (e.g., one application, one public notice and public hearing, one compliance report) and allow the permitting authority to develop permit conditions (limitations and monitoring requirements) that specifically address existing watershed goals and watershed management plans. The Clean Water Services integrated municipal NPDES permit in the Tualatin Watershed in Oregon is an example of this type of permit.

Multisource Watershed-based Permit. This type of permitting approach is also a single permit and would cover multiple sources included in the same watershed, watershed plan, or TMDL. It would allow several point sources in a watershed to apply for and obtain permit coverage under the same permit. This type of permit might be appropriate in situations where a watershed plan or TMDL identifies the need to address a specific pollutant. A watershed plan or TMDL implementation plan might include agreed-upon controls necessary to achieve watershed goals. Stakeholders could then identify point sources that would be logical to group under a single permit. Some permitting authorities have chosen to issue a single watershed-based permit that supplements or overlays the existing individual permits for the covered facilities. This approach allows the permitting authority to focus effluent limitations, monitoring requirements, trading provisions, and other special permit conditions that are developed on a watershed basis in a single permit and clearly links the permitted facilities in a way that simply incorporating watershed-based permit conditions into individual permits does not accomplish. The permit would identify all point sources that have agreed to the controls and the individual specific requirements for each point source. An example is a permit that includes control requirements for nutrients issued to all POTWs in the watershed and requires specific nutrient reductions that reflect agreed-upon goals and, possibly, trades. This permit might be issued in addition to the existing individual permits and, if so, would include limitations or controls to address only the watershed-specific common pollutant or pollutants. Other pollutants would continue to be addressed through each facility's individual permit.

Another type of multisource watershed-based permit might address all pollutants of concern in the watershed for similar types of discharges. For example, a single permit might implement a comprehensive watershed plan with each facility regulated as a co-permittee. Assuming the watershed plan included procedures for addressing a number of stressors and identified specific point sources, the permit might include controls for the point sources and all requirements that would otherwise be found in individual permits for the point sources.

In addition to using individual permits, NPDES permit writers might also consider using general permits as multisource watershed-based permits. These permits would be similar to many existing general permits, except that the watershed boundary (in addition to type of discharge) would be a criterion defining eligibility for coverage or the applicability of certain conditions in the permit. The permit might include requirements that reflect watershed-specific goals (e.g., comprehensive watershed monitoring, nutrient reduction, management of biosolids or manure). Point sources would request coverage through a Notice of Intent (NOI) once the permit is issued rather than through the application process used for individual permits. A general permitting approach could be further refined on the basis of the category or source of discharger and would allow coverage of common sources (e.g., all POTWs, CAFOs, or stormwater) in the watershed. The limitations and requirements within a category or subcategory of sources would largely be the same, but specific limitations and requirements might differ among categories or subcategories.

Multisource watershed-based permits may facilitate water quality trading and provide a vehicle for cooperative efforts (such as watershedwide monitoring) necessary for meeting watershed goals. This approach also focuses public participation on a single permit.”

Since the Menomonee River Watershed Group is, by definition, comprised of multiple sources, and the watershed-based permit framework is to directly address a single type of discharge (i.e., stormwater runoff pollution from municipal separate storm sewer systems), the multisource watershed-based permit structure appears to be the best fit as a starting point for development of the framework. The USEPA guidelines note that that approach allows for a multisource permit to “be issued in addition to the existing individual permits [e.g., for industrial discharges and CSOs] and ... would include limitations or controls to address only the watershed-specific common pollutant or pollutants. Other pollutants would continue to be addressed through each facility’s individual permit.”

SUMMARY OF SURFACE WATER QUALITY INVENTORY

As a step in developing the watershed-based permit framework, the SEWRPC staff prepared an inventory of relevant water quality information for the Menomonee River watershed. This section summarizes the methods used to conduct the inventory and the findings of the inventory. The complete inventory is set forth in Appendix J.

A watershed-based stormwater permit offers the potential advantage of tailoring permit conditions to conditions in the watershed. Under this approach, permit requirements can be structured in a coordinated manner to address the water quality problems that are occurring in the receiving waters, emphasizing those stressors that are contributing to the water quality problems. This tailoring of permit conditions in a coordinated manner will assist dischargers in setting priorities for potential solutions, such as determining which pollutants and which sources to focus on first to achieve the greatest water quality improvements. Thus, an analysis of water quality conditions in the Menomonee River watershed provides a context in which to select and prioritize permit conditions for MS4 discharges.

To tailor permit conditions to the situation in the Menomonee River watershed, a thorough understanding of existing conditions in the watershed is needed. This involves being able to answer a number of questions regarding water quality conditions in the watershed, such as:

- To what extent are the surface waters of the Menomonee River watershed able to achieve the uses for which they are designated by the State of Wisconsin pursuant to the Federal Clean Water Act?
- If these waters are not fully supporting these uses, what pollutants are acting as stressors to reduce water quality?
- To what extent are these stressor pollutants being contributed through discharges from municipal separate storm sewer systems (MS4s)?

Methods and Sources of Data

To address these questions, existing water quality conditions in streams of the Menomonee River watershed were evaluated by comparing the available water quality data to the water quality criteria supporting the streams designated water use objective. Five water quality constituents were examined: concentrations of dissolved oxygen, chloride, total phosphorus, and fecal coliform bacteria, and temperature. For each constituent, the evaluation determined the percentage of samples in which conditions within the stream were in compliance with the applicable water quality criterion. The concentrations of a sixth constituent, total suspended solids, were examined and summarized. Because the State of Wisconsin has not promulgated water quality criteria for suspended solids, a comparison of concentrations to water quality criteria could not be made.

The analysis of water quality conditions is complicated by the fact that most of the municipalities and all of the counties that are permitted to discharge stormwater through MS4 systems in the Menomonee River watershed are located within portions of more than one watershed. Other watersheds in which Menomonee River watershed communities are located include the Fox, Kinnickinnic, Milwaukee, and Root River watersheds and the Oak Creek watershed. Because of this, the inventory also examined surface water quality conditions in, and downstream, of those surface waters in the watersheds adjacent to the Menomonee River watershed that are contained within Menomonee River watershed municipalities.

The inventory of water quality conditions drew heavily on existing sources of data. Existing water quality conditions in streams in the Menomonee, Kinnickinnic, Milwaukee, and Root River watersheds and the Oak Creek watershed, were assessed under the 2007 RWQMPPU.¹² The water quality data used in the RWQMPPU study came from several sources, including stream monitoring conducted by the MMSD and monitoring data collected by the WDNR. The most recent systematic evaluation of water quality in the Fox River watershed was conducted as part of a status report and updating of the regional water quality management plan for Southeastern Wisconsin.¹³ Water quality analyses in that report examined data collected over the period 1976 through 1993. While these are not recent data and may not completely reflect current conditions, they constitute the last systematic examination of water quality condition in the Fox River watershed.

As part of this inventory, the assessment of the achievement of water use objectives for streams in the Menomonee River watershed was updated to include data from the period 2002 to early 2011. This update made use of data from the same sources as were used in the RWQMPPU. These data were supplemented with data collected by the University of Wisconsin-Extension's Water Action Volunteer's program and Milwaukee Riverkeeper's Volunteer Stream Monitoring program. In addition, continuously-recorded data collected by the WDNR and under a joint MMSD/U.S. Geological Survey real-time monitoring program were incorporated into these analyses.

Findings

Dissolved Oxygen

With the exception of a few tributary locations, the Menomonee River and its tributaries were in substantial compliance with the applicable water quality criteria for dissolved oxygen. The streams of the Kinnickinnic and Milwaukee River watersheds show a similar high degree of compliance. While discharges of urban stormwater could be causing some localized impacts relative to dissolved oxygen concentrations, they do not appear to be causing wholesale problems throughout these watersheds. The exception to this conclusion occurs in the upper reaches of the Root River. Dissolved oxygen concentrations showed a lower degree of compliance with applicable water quality criteria in this stream. Because discharges of urban stormwater can transport organic materials into receiving waters, discharges into streams of this watershed may require control efforts.

Water Temperature

At all locations examined within the Menomonee River watershed, daily maximum water temperatures were almost always in compliance with the acute water quality criterion. At most of the locations that were examined, the calendar week averages of daily maximum temperature were usually, to always, in compliance with the sublethal water quality criterion. Two tributary streams—Noyes Park Creek and the section of Underwood Creek downstream from Juneau Avenue—were exceptions to this generalization. Both of these streams are channelized

¹²SEWRPC *Planning Report No. 50*, op. cit.

¹³SEWRPC *Memorandum Report No. 93*, A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report, March 1995.

and lined with concrete, which can significantly contribute to higher water temperatures. Thus, discharges of urban stormwater do not appear to be causing water temperatures in this watershed to exceed the applicable water quality criteria.

Chloride

Concentrations of chloride in streams of the Menomonee River watershed and adjacent watersheds were almost always in compliance with the State's acute and chronic toxicity criteria; however, few of the samples used to evaluate compliance with the toxicity criteria for chloride were collected during the winter deicing season when the highest inputs of chloride would be expected. Evidence from other studies suggests that it is likely that the evaluation in the inventory overestimates the degree of compliance with the toxicity criteria for chloride in streams of the Menomonee River watershed and adjacent watersheds. Given this, it would be prudent to continue monitoring chloride concentrations, either directly or through a suitable surrogate measure—especially during the winter deicing season. Such monitoring may show whether additional controls will be necessary in order for surface waters to meet the toxicity criteria during the winter deicing season.

Total Phosphorus

Concentrations of total phosphorus in streams of the Menomonee River watershed were commonly to usually greater than the applicable water quality criteria. In streams of the watersheds adjacent to the Menomonee River watershed, concentrations of total phosphorus were commonly to usually greater than the planning standard recommended in the regional water quality management plan—for most streams a less stringent standard than the applicable water quality criterion.¹⁴ Estimates of loads of total phosphorus indicate that a high proportion of the load of total phosphorus is being contributed through discharges of urban stormwater. Additional controls related to phosphorus may be necessary in order for total phosphorus concentrations in these streams to comply with the applicable water quality criteria.

Fecal Coliform Bacteria

Fecal coliform bacteria concentrations in streams of the Menomonee River watershed and adjacent watersheds were commonly to usually greater than the applicable water quality criteria. Concentrations of these bacteria in samples collected from stormwater outfalls and estimates of loads indicate that a substantial portion of the loads of these bacteria are being contributed from urban stormwater systems. Reductions in fecal coliform bacteria concentrations in these streams will be needed to comply with the applicable water quality criteria. However, as discussed in Appendix J, these bacteria act as an indicator of the possible presence of disease-causing agents. Therefore, targeting controls based upon assessments of whether stormwater contains fecal wastes of human origin may be a more viable method to protect human health than focusing purely on ambient concentrations of these bacteria.

Total Suspended Solids

With one exception, mean concentrations of total suspended solids in streams of the Menomonee River watershed and adjacent watersheds were below about 30 milligrams per liter.¹⁵ Concentrations were highly variable and maximum concentrations were generally one to two orders of magnitude higher than average concentrations. Empirical estimates of instream loads showed that loads during wet weather were considerably higher than those

¹⁴*In 2011, Wisconsin's water quality criteria for total phosphorus went into effect. Total phosphorus concentrations in streams of the Menomonee River watershed were compared to this criteria. In streams of the other watersheds, total phosphorus concentrations were compared to a planning standard recommended in the regional water quality management plan.*

¹⁵*This was a concentration below which most of the distribution of sample values were observed to fall. It does not represent a standard or criterion for establishing an acceptable TSS concentration.*

during dry weather. Estimates of TSS loading indicate that urban nonpoint sources constitute the major source of TSS to streams in the Menomonee River watershed. Much of the control efforts related to MS4 systems in Wisconsin have focused on reducing TSS in stormwater discharges. Given the regulatory nature of the watershed-based permit framework, and the fact that many other pollutants of concern are associated with TSS through chemical processes such as adsorption, these control efforts should continue.

Conclusion

Streams of the Menomonee River watershed and adjacent watersheds are not fully supporting their designated use objectives pursuant to the Federal Clean Water Act. At the minimum, total phosphorus, fecal coliform bacteria, and total suspended solids are causing water quality problems in these streams. In addition, it is likely that chloride may also be causing a problem during the winter deicing season; however, insufficient sampling has been conducted during this season to assess the magnitude of this problem. Discharges of urban stormwater accounts for a large portion of the load of these four pollutants. Reductions in the loads of these pollutants contained in stormwater discharged to receiving streams will likely be needed for these streams to support their designated uses.

WORK PRODUCTS

In addition to this narrative describing the watershed-based permit framework development process, the following documents were developed:

Annotated and Final Wisconsin Pollutant Discharge Elimination System (WPDES)

Group Storm Water Permit

The USEPA Region V staff provided an annotated version of the current Menomonee River group Wisconsin Pollutant Discharge Elimination System (WPDES) permit that was discussed at the February and April 2011 meetings of the full Menomonee River Group. That annotated version served as the starting point for development of watershed-based permit conditions. The final permit that evolved from that original annotated permit is attached as Appendix L.

Fact Sheet to Accompany the Permit

During development of the watershed-based permit, decisions were made by the Group to include certain information in a fact sheet that would accompany the permit and provide additional background and elaboration on the permit, but which would not be a regulatory document. The WDNR staff developed the fact sheet, which was reviewed by the Group (see Appendix L).

Informational Fact Sheet for Elected Officials

In addition to the framework, Sweet Water, 1000 Friends, MMSD, and the municipalities, in collaboration with SEWRPC, prepared a watershed-based permitting fact sheet directed toward, and distributed to, elected officials (see Appendix M).

List of Incentives for MS4s to Participate in a Watershed-Based Permit

Throughout the framework development process, the Group focused on identifying incentives for the MS4s to participate in the watershed-based permit. The identified incentives are listed in Appendix N.

OUTREACH TO LOCAL OFFICIALS AND LOCAL PARTICIPATION DECISION PROCESS

Participating MS4s

By the time that the draft watershed-based permit was substantially complete in August 2012, the staffs from the following 11 MS4s, out of a possible total of 18 in the watershed, had indicated a willingness to seek official approval of participation in the permit:

- Milwaukee County
- City of Brookfield
- City of Greenfield
- City of Milwaukee
- City of Wauwatosa
- City of West Allis
- Village of Butler
- Village of Elm Grove
- Village of Germantown
- Village of Menomonee Falls
- Village of West Milwaukee

Those municipalities comprise 89 percent of the watershed land area. The only other MS4 with substantial area within the watershed is the City of Mequon, which covers 8.6 percent of the watershed area. Mequon considered participating in the watershed-based permit, but ultimately chose to remain in a group permit with the Village of Thiensville, given the City's relatively large land area and concentration of urban development in the Milwaukee River watershed. Each of the remaining municipal MS4s in the watershed (the Village of Greendale and the Towns of Brookfield and Lisbon) have very small land areas in the watershed and currently are members of Fox and Root River watershed permit groups. Besides Milwaukee County, the three other counties in the watershed are Ozaukee, Washington, and Waukesha. Ozaukee County has no unincorporated area in the watershed, Waukesha County has very little unincorporated area in the watershed, and aside from highways, those counties have no significant facilities in the watershed. Washington County is currently not required to have an MS4 permit.

Outreach

Following development of the watershed-based permit framework, efforts were made to inform and educate elected officials in Menomonee River watershed municipalities about the watershed-based permit. These outreach efforts included several elements.

Sweet Water, 1000 Friends of Wisconsin, MMSD, and the municipalities, in collaboration with SEWRPC, prepared a watershed-based permitting fact sheet directed toward, and distributed to, elected officials (see Appendix M). This fact sheet was provided in a format that allowed municipal staff to customize it to conditions in their communities. This fact sheet included a description of the watershed-based permit, a comparison of the permit condition in the watershed-based permit to the conditions of the existing group permit and individual MS4 permits, and a discussion of the incentives for MS4s to participate in the watershed-based permit.

In addition, the University of Wisconsin-Milwaukee School of Freshwater Sciences developed an informational publication in its "Our Waters" series entitled "Southeast Wisconsin and Watershed-Based Permitting" (see Appendix O).

The draft watershed-based permit was presented at existing intergovernmental forums. Presentations by Sweet Water, WDNR, and SEWRPC were made at:

- The July 19, 2012, meeting of the MMSD Technical Advisory Team, which includes municipal staff, primarily engineers and public works directors, from the MMSD member and contract municipalities (see Appendix P) and
- The September 10, 2012, meeting of the Intergovernmental Cooperation Council of Milwaukee County (ICC), which consists of the chief elected officials of all Milwaukee County municipalities. The chief elected official of the Menomonee River watershed communities that are not members of the ICC were invited to attend the ICC meeting at which the watershed-base permit was presented.

Two approaches were identified for bringing the watershed-based permit to local boards and councils. In the first approach, individual presentations were made to a local committee and/or a local board or council solely by local staff, using the informational materials that were developed for this purpose. A Microsoft PowerPoint presentation template was prepared by WDNR and SEWRPC and provided to each municipality to use directly, or customize, for local staff presentations to committees, boards, and councils (see Appendix Q). In the second approach, individual presentations were made to a local committee and/or a local board or council by local staff with assistance from Sweet Water, the WDNR, and/or SEWRPC. In this approach, the selection of assisting staff was made by the municipality's staff. In each community, the choice of which approach to be taken was left to the discretion of the local staff.

Rollout of the watershed-based permit to municipal decision-making bodies generally occurred during September and October 2012.

- On September 19, 2012, WDNR sent the draft watershed-based permit and the draft permit fact sheet to potential MS4 permittees, asking them to review those documents and indicate in writing whether they intended to participate in the permit (see Appendix R).
- The watershed-based permit project staff assisted the County and Village staffs in making presentations at the September 18, 2012, meeting of the Milwaukee County Parks, Energy and Environment Committee (Sweet Water and WDNR) and the October 1, 2012, meeting of the Village of Menomonee Falls Board (WDNR and SEWRPC).
- In the other municipalities participating in the watershed-based permitting process, the local staff made presentations to the pertinent committees, boards, and/or councils.

The City of Brookfield and the Village of Germantown began local consideration of participation in the watershed-based permit in August 2012, and the remaining nine participants deliberated during October and November.

Following review of the draft permit by WDNR administration and legal staff and USEPA, the permit was issued for public notice on October 30, 2012 (see Appendix S). This initiated a 30-day comment period in which, aside from statements of support from the Cities of Brookfield and Milwaukee and Sweet Water, there were no comments on the permit. The permit became effective on November 30, 2012 (see Appendix L). The 11 MS4s listed at the beginning of this report section as indicating a willingness to seek official approval of participation ultimately became co-permittees under the final watershed based permit.

A recognition event for the 11 participating municipalities and the other members of the watershed-based permit team was organized by Sweet Water and was held at MMSD headquarters on December 18, 2012 (see Appendices T and U).

APPENDICES

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Appendix A

INVITATIONS TO PARTICIPATE IN THE WATERSHED-BASED FRAMEWORK PROCESS

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SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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MEMORANDUM

TO: Mr. Andrew A. Holschbach, Director Ozaukee County Planning, Resources,
and Land Management Department
Mr. Paul B. Sebo, Washington County Conservationist
Mr. Perry M. Lindquist, Manager, Land Resources Division, Waukesha County
Department of Parks & Land Use
Mr. J.P. Walker, City Engineer, City of New Berlin
Mr. Joshua Schoemann, Administrator, Village of Richfield
Mr. Richard M. Czopp, Administrator, Town of Brookfield
Mr. Jeffrey Musche, Administrator/Clerk, Town of Lisbon
Mr. Michael Duckett, Executive Director, Southeast Wisconsin Professional
Baseball Park District

FROM: Southeastern Wisconsin Regional Planning Commission staff

DATE: September 12, 2011

SUBJECT: **DEVELOPING A WATERSHED-BASED STORMWATER PERMITTING
FRAMEWORK FOR THE MENOMONEE RIVER WATERSHED**

You are receiving this memo because:

- Your unit of government is wholly, or partially located in the Menomonee River watershed (see the attached Map 1),
- You hold a municipal separate storm sewer system (MS4) discharge permit under the Wisconsin Pollutant Discharge Elimination System (WPDES) program, or, in the case of Washington County, you may hold such a permit in the future, and
- We want to inform you of an ongoing project to explore development of a framework for a watershed-based municipal stormwater permit for the Menomonee River watershed and to invite you to participate in the process.

The Milwaukee Metropolitan Sewerage District (MMSD) has been awarded a U.S. Environmental Protection Agency (USEPA) Region 5 Water Quality Cooperative Agreement grant to develop the framework for a watershed-based municipal stormwater permit for the Menomonee River watershed. The development of the framework is being accomplished through a collaboration involving the municipalities within the watershed, MMSD, the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water), the

Wisconsin Department of Natural Resources (WDNR), USEPA, 1,000 Friends of Wisconsin, Midwest Environmental Advocates (MEA), the Sixteenth Street Community Health Center, and the Southeastern Wisconsin Regional Planning Commission (SEWRPC).

The watershed-based stormwater permit framework will use information from recent watershed-based water quality planning efforts in the Menomonee River watershed¹ to address municipal stormwater runoff pollution abatement needs by considering the watershed as a whole. The approach would enable municipalities to collaborate with each other and with industries, institutions, and agricultural landowners to consider alternative ways of cost-effectively reducing point and nonpoint source pollution of receiving waters. During the framework process, the feasibility of such collaborations will be evaluated.

The project will:

- Explore the feasibility of developing a watershed-based stormwater permit for the Menomonee River watershed,
- Investigate innovative approaches to improving the quality of stormwater discharges through a watershed-based permit while considering the regulatory and financial burdens on municipalities,
- Consider cost effective permit conditions and stormwater management activities, particularly related to implementation of green infrastructure, that are tailored to the watershed and that would be expected to yield the greatest improvements in water quality,
- Consider more effective sampling requirements that are related to needs identified under recent subregional water quality management plans, and
- Recognize that a third-party total maximum daily load (TMDL) study for the watershed is being conducted by MMSD and that TMDL load allocations would eventually be incorporated in a watershed-based stormwater permit, or any individual municipality stormwater permits.

The other municipalities in the watershed, as shown on Map 1, have begun to participate in the framework development process through participation in several meetings initiating the process. Participation in meetings to discuss issues and obtain comment from the watershed communities does not indicate any commitment to ultimately participate in a group, watershed-based permit. It is anticipated that a draft framework will be developed by participating municipalities with assistance from SEWRPC at the end of this year. That framework will be further refined from January through May 2012. The success of the watershed-based permit framework as a vehicle for establishing a watershed-based MS4 permit will depend largely on whether in May of 2012 a sufficient number of watershed communities decide to proceed with a watershed-based permit. Participation is completely voluntary, and if a community decides

¹MMSD, 2020 Facilities Plan, *June 2007*; SEWRPC Planning Report No. 50 (PR No. 50), A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds, *December 2007*; SEWRPC Technical Report No. 39 (TR No. 39), Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, *December 2007*; and MMSD, Menomonee River Watershed Restoration Plan (WRP), *April 1, 2010*.

not to participate it would continue to have an individual MS4 permit, or to be part of a group permit for another watershed, depending on the community's specific situation.

We recognize that the municipalities receiving this memo have relatively small land areas within the Menomonee River watershed, that the City of New Berlin is already a member of the Root River watershed stormwater discharge permit group, that the Towns of Brookfield and Lisbon are members of the Upper Fox River watershed MS4 group, and that there is little or no unincorporated area within the watershed in Ozaukee, Washington, and Waukesha Counties. Those factors may lead those municipalities and counties to decide that participation in a Menomonee River watershed-based permit is not of interest to them; however, we believe that it is important that each of your units of government be notified of the framework process and be afforded an opportunity to participate in that process.

If your community is interested in participating, you are invited to attend the next group meeting on October 12, 2011 at 9:00 a.m. at Brookfield City Hall, 2000 N. Calhoun Road. Subsequent meetings are expected in November and December 2011 and January and May 2012. If your community is interested in participating, but is unable to attend the October 12 meeting, please contact Michael G. Hahn, SEWRPC Chief Environmental Engineer at (262) 547-6722, extension 243, or mhahn@sewrpc.org, and he will add you to the distribution list for project work products and future meeting notices. If your community is not interested in participating, please reply to Mr. Hahn.

* * *

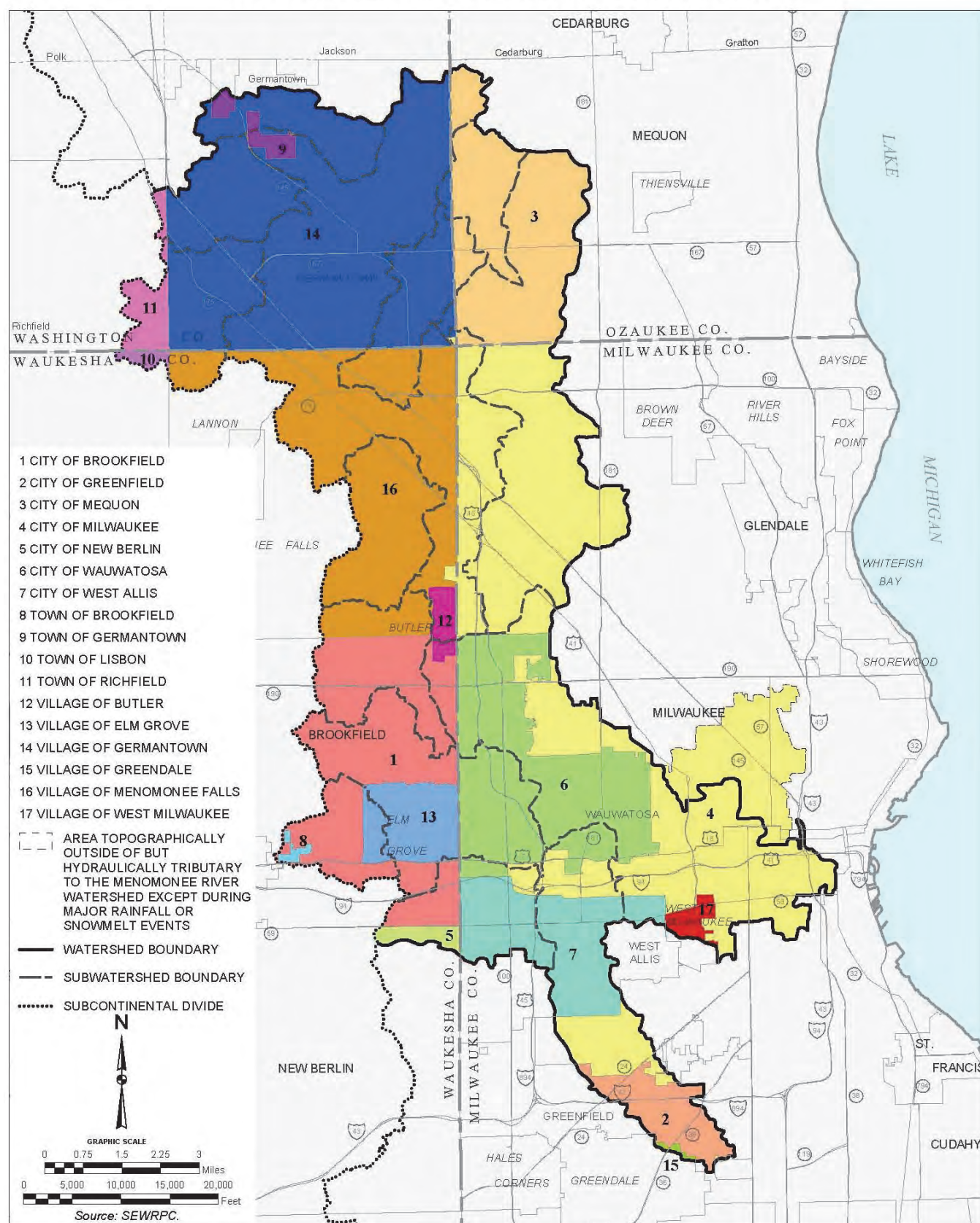
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Enclosure

cc: Mr. Robert Newport, FEMA Region V
Ms. Sharon L. Gayan, WDNR
Mr. Bryan Hartsook, WDNR
Ms. Karen L. Sands, MMSD
Mr. Jeffrey Martinka, SWWT
Mr. Thomas M. Grisa, City of Brookfield

Map 1

CIVIL DIVISIONS WITHIN THE MENOMONEE RIVER WATERSHED: 2000



SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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MEMORANDUM

TO: Richard Frenette, Executive Director, Wisconsin State Fair Park

FROM: Southeastern Wisconsin Regional Planning Commission staff

DATE: October 13, 2011

SUBJECT: DEVELOPING A WATERSHED-BASED STORMWATER PERMITTING FRAMEWORK FOR THE MENOMONEE RIVER WATERSHED

You are receiving this memo because:

- Wisconsin State Fair Park is wholly, or partially located in the Menomonee River watershed (see the attached Map 1),
- You hold a municipal separate storm sewer system (MS4) discharge permit under the Wisconsin Pollutant Discharge Elimination System (WPDES) program, and
- We want to inform you of an ongoing project to explore development of a framework for a watershed-based municipal stormwater permit for the Menomonee River watershed and to invite you to participate in the process.

The Milwaukee Metropolitan Sewerage District (MMSD) has been awarded a U.S. Environmental Protection Agency (USEPA) Region 5 Water Quality Cooperative Agreement grant to develop the framework for a watershed-based municipal stormwater permit for the Menomonee River watershed. The development of the framework is being accomplished through a collaboration involving the municipalities within the watershed, MMSD, the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water), the Wisconsin Department of Natural Resources (WDNR), USEPA, 1,000 Friends of Wisconsin, Midwest Environmental Advocates (MEA), the Sixteenth Street Community Health Center, and the Southeastern Wisconsin Regional Planning Commission (SEWRPC).

The watershed-based stormwater permit framework will use information from recent watershed-based water quality planning efforts in the Menomonee River watershed² to address municipal stormwater runoff pollution abatement needs by considering the watershed as a whole. The approach would enable municipalities to collaborate with each other and with industries, institutions, and agricultural landowners to consider alternative ways of cost-effectively reducing point and nonpoint source pollution of receiving waters. During the framework process, the feasibility of such collaborations will be evaluated.

The project will:

- Explore the feasibility of developing a watershed-based stormwater permit for the Menomonee River watershed,
- Investigate innovative approaches to improving the quality of stormwater discharges through a watershed-based permit while considering the regulatory and financial burdens on municipalities,
- Consider cost effective permit conditions and stormwater management activities, particularly related to implementation of green infrastructure, that are tailored to the watershed and that would be expected to yield the greatest improvements in water quality,
- Consider more effective sampling requirements that are related to needs identified under recent subregional water quality management plans, and
- Recognize that a third-party total maximum daily load (TMDL) study for the watershed is being conducted by MMSD and that TMDL load allocations would eventually be incorporated in a watershed-based stormwater permit, or any individual municipality stormwater permits.

Municipalities and special units of government in the watershed have begun to participate in the framework development process through participation in several meetings initiating the process. Participation in meetings to discuss issues and obtain comment from the watershed communities does not indicate any commitment to ultimately participate in a group watershed-based permit. It is anticipated that a draft framework will be developed by participating municipalities with assistance from SEWRPC by early next year, and that the framework will be finalized by May 2012. The success of the watershed-based permit framework as a vehicle for establishing a watershed-based MS4 permit will depend largely on whether in May of 2012 a sufficient number of watershed communities and special units of government decide to proceed with a watershed-based permit. Participation is completely voluntary, and if a permittee decides not to participate it would continue to have an individual MS4 permit, or to be part of a group permit for another watershed, depending on the specific situation.

²MMSD, 2020 Facilities Plan, *June 2007*; SEWRPC Planning Report No. 50 (PR No. 50), A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds, *December 2007*; SEWRPC Technical Report No. 39 (TR No. 39), Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, *December 2007*; and MMSD, Menomonee River Watershed Restoration Plan (WRP), *April 1, 2010*.

If the Wisconsin State Fair Park is interested in participating, you are invited to attend the next group meeting on December 14, 2011 at 9:00 a.m. at Brookfield City Hall, 2000 N. Calhoun Road. Subsequent meetings are expected in January, March, and May 2012. If you are interested in participating, but are unable to attend the December 14 meeting, please contact Michael G. Hahn, SEWRPC Chief Environmental Engineer at (262) 547-6722, extension 243, or mhahn@sewrpc.org, and he will add you to the distribution list for project work products and future meeting notices. If you are not interested in participating, please reply to Mr. Hahn.

* * *

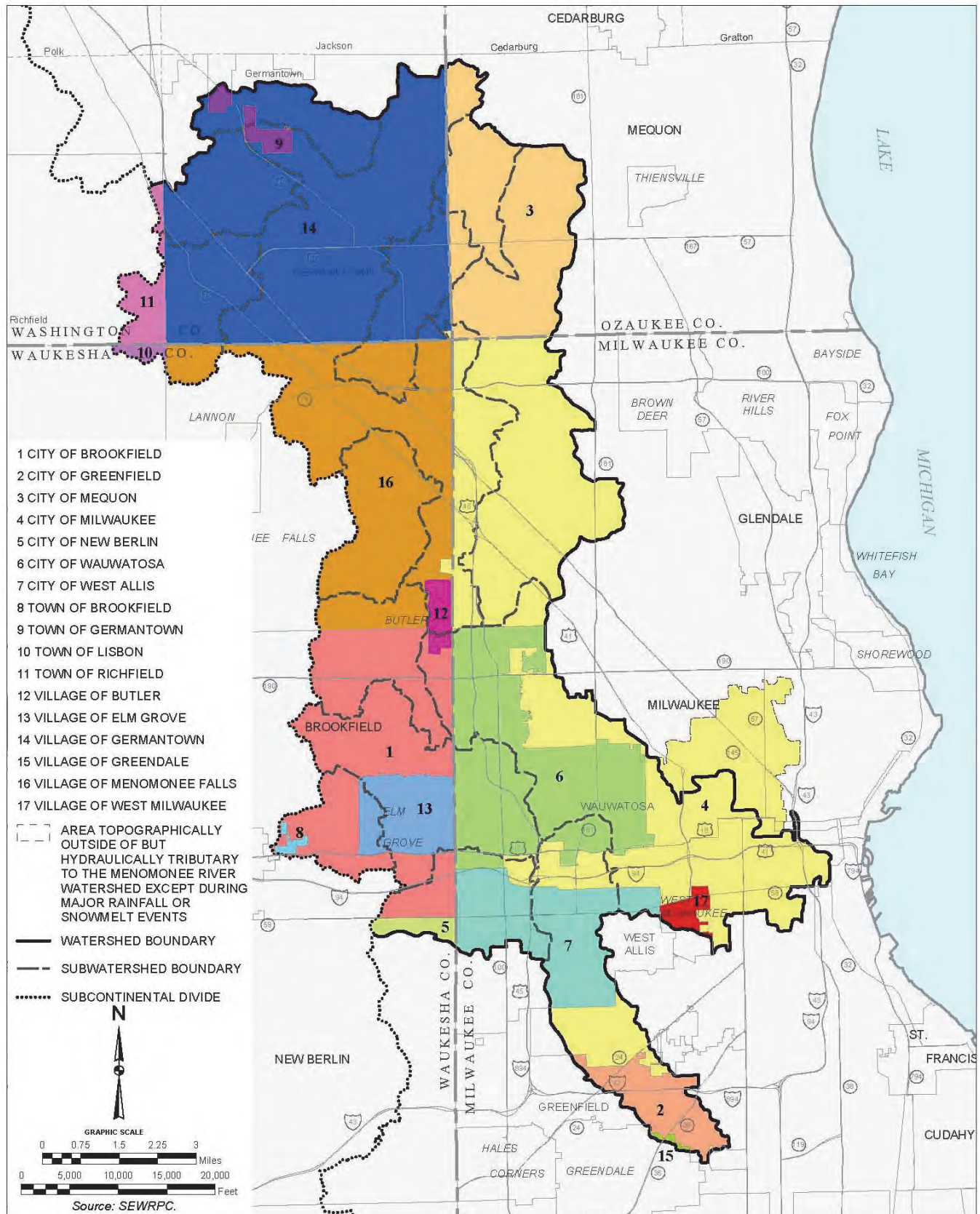
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Enclosure

cc: Mr. Robert Newport, FEMA Region V
Ms. Sharon L. Gayan, WDNR
Mr. Bryan Hartsook, WDNR
Ms. Karen L. Sands, MMSD
Mr. Jeffrey Martinka, SWWT
Mr. Thomas M. Grisa, City of Brookfield

Map 1

CIVIL DIVISIONS WITHIN THE MENOMONEE RIVER WATERSHED: 2000



Appendix B

**SUMMARY NOTES
AUGUST 24, 2011 MEETING**

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SUMMARY NOTES OF THE AUGUST 24, 2011 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The August 24, 2011 meeting of the Menomonee River Watershed-Based Permit Framework Group was convened at the City of Brookfield City Hall at 10:00 p.m. The meeting was called to order by Thomas M. Grisa, Director of the City of Brookfield Department of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Theresa Caven	Project Engineer, City of Brookfield
Cindi V. DeBruine	Senior Water Resources Engineer, R.A. Smith National, Inc. (representing the Villages of Butler and West Milwaukee)
Sharon L. Gayan	Milwaukee River Basin Supervisor, Wisconsin Department of Natural Resources
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Dennis Grzezinski	Senior Counsel, Midwest Environmental Advocates
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Lauren Justus	Engineering Assistant, Village of Germantown
Laura L. Kletti	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Jeff Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc.
Ezra Meyer	Water Resources Specialist, Clean Wisconsin
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Cheryl Nenn	Riverkeeper, Milwaukee Riverkeeper
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Kevin P. O'Brien	Environmental Compliance Manager, Milwaukee County Department of Transportation and Public Works
Gail Epping Overholt	Natural Resource Educator, University of Wisconsin-Extension
Karen Sands	Manager of Sustainability, Milwaukee Metropolitan Sewerage District
Richard Sokol	Director of Neighborhood Services, City of Greenfield

Mr. Grisa noted that there were several people in attendance who were not at the last meeting and asked everyone to introduce themselves.

REVIEW AND DISCUSSION OF PARTIAL PRELIMINARY DRAFT OF SEWRPC STAFF MEMORANDUM, "DEVELOPMENT OF A FRAMEWORK FOR A WATERSHED-BASED MUNICIPAL STORMWATER PERMIT FOR THE MENOMONEE RIVER WATERSHED"

At the request of Mr. Grisa, Mr. Hahn reviewed the draft SEWRPC staff memorandum. Mr. Hahn thanked the members of the Group for their attendance. He stated that participation by everyone will be essential in the development of a framework for a watershed-based municipal stormwater permit. He noted that participation by the municipalities is especially important, because their input is essential to development of an implementable framework. He added that Commission staff will try to bring more of the municipalities to the table.

Mr. Hahn thanked Mr. Meyer for taking summary notes at previous meetings of the Group. He indicated that Commission staff would draft summary notes of Group meetings, beginning with this meeting. He explained that this would allow Commission staff to document additions and revisions to the staff memorandum. He asked if the Group wanted to approve meeting summary notes at each subsequent meeting. Mr. Grisa replied that having the Group approve the notes would allow the members to offer additions and corrections. It was agreed to have the Group review and approve the summary notes.

Mr. Hahn pointed out that the document describing development of the framework is currently framed as a SEWRPC Staff Memorandum. He explained that this was done to document the process of developing a “replicable framework” for the watershed-based stormwater permit and to stimulate discussion. He indicated that there is flexibility in the format of the final document takes, and noted that he expects that the content and format of the narrative will evolve based upon discussions within the Group over the coming months.

Mr. Hahn stated that there are currently two parts to the Staff Memorandum. The first part provides background, describes the approach, identifies 11 issues related to the development of the framework, and describes three possible watershed-based permitting structures. The second part presents an inventory of water quality conditions in the Menomonee River watershed and in watersheds adjacent to the Menomonee River watershed. He indicated that the current review of the Staff Memorandum would focus on the first part.

Mr. Hahn asked that the Group provide comments and discussion on the Staff Memorandum as it is reviewed. Mr. Grisa asked that the Group should wait until the end of discussion to point out typographical errors, unless the errors change the meaning of a sentence.

Mr. Hahn reviewed the section of the Staff Memorandum that provides background information. He noted that the framework will need to recognize that the Milwaukee Metropolitan Sewerage District (MMSD) is conducting a third-party total maximum daily load (TMDL) study for the Kinnickinnic, Menomonee, and Milwaukee River watersheds and the Milwaukee Harbor estuary, and that, following completion of that study, TMDL waste load allocations will eventually have to be incorporated into the stormwater permits for municipalities in those watersheds, regardless of whether the permits are watershed-based or individual.

Mr. Hahn reviewed the section of the Staff Memorandum that describes the approach taken to develop the framework. In reference to the last sentence in the second full paragraph on page 4, Mr. Grisa asked what is meant by municipalities committing to participate in a watershed-based permit. Mr. Hahn replied that a goal of the framework development process is to obtain commitments from the municipalities to participate in the process. Mr. Grisa suggested adding the word “process” to the end of the sentence and listing the communities that have committed to this.

[Secretary’s Note: The last sentence in the second full paragraph on page 4 was revised to read (In this Secretary’s Note and in subsequent Notes, unless indicated otherwise, revised and added text is indicated in bold letters for clarification only. The Staff Memorandum text will not be bold):

“It was during this phase of the project, that 1) the group determined that it **would/would not** be feasible to implement the watershed-based permitting framework and 2) **the following** municipalities committed to participate in the watershed-based **permitting process: (to be added later in the process).**”]

Ms. Sands asked whether we know which municipalities are not committed to the process. Mr. Hahn replied that the Cities of Brookfield, Mequon, Greenfield, Milwaukee, Wauwatosa, and West Allis and the Villages of Butler, Elm Grove, Germantown, Menomonee Falls, and West Milwaukee have participated in meetings. He added that the City of New Berlin; the Villages of Greendale and Richfield; and the Towns of Brookfield, Germantown, and

Lisbon have not. He commented that, while he hopes to involve more municipalities, there is a good critical mass participating.

Mr. Hahn stated that a commitment for a municipality to be covered under a watershed-based stormwater permit will require agreement by the municipality's elected officials. He noted that the framework scope of study envisions creating a fact sheet to educate elected officials about this type of permit. He added that this will occur later in the process.

Mr. Hahn reviewed the section of the Staff Memorandum that discusses issues related to development of the framework. He noted that discussion in this section reflects questions and issues identified by the Commission staff. He asked for input from the Group on these issues.

With respect to the first issue identified—how the framework should be structured to address communities that are located in multiple watersheds – Mr. Hahn referred the Group to Table 1 of the staff memo that indicates the other watersheds in which several Menomonee River municipalities are located and that also indicates whether a municipality has a permit as part of a group. He noted that once TMDLs take effect watershed-specific pollutant loads will be developed, and there may no longer be a question of how to address multiple watershed municipalities. However, he noted that there may be an interim period between development of a framework and inclusion of TMDL waste load allocations under the municipal separate storm sewer system (MS4) permit, and he asked for the Group to consider providing comments on this issue.

Mr. Grisa asked when the requirements to meet waste load allocations related to a TMDL will go into effect following approval of the TMDL. Ms. Gayan replied that the requirements will go into the stormwater discharge permits and added that this may require some coordination. She said that WDNR has not decided if they will open a five-year permit to include TMDL allocations. Mr. Hahn asked whether the TMDL implementation plan that MMSD is going to develop as part of the TMDL process will be considered as WDNR decides how to incorporate TMDLs in stormwater discharge permits. Ms. Gayan indicated that it would be. Mr. Hahn asked whether permit conditions for a municipality would be watershed-specific. Mr. Grisa added that he does not want to be required to meet conditions imposed by a TMDL for the Menomonee River watershed in the portion of his community that is located in the Fox River watershed if water quality in the Fox River watershed is meeting its goals. Ms. Gayan responded that this issue will need to be worked out by the WDNR and the U.S. Environmental Protection Agency (USEPA).

Ms. Justus commented that answering Issue 1 (How should the permitting framework be structured to address communities that are located in multiple watersheds?) is the responsibility of USEPA and WDNR, not the municipalities. Mr. Hahn replied that it would help to know whether the municipalities would prefer to have a single set of conditions in their permits. Mr. Grisa pointed out that some of the municipalities are currently subject to differing conditions based upon only a portion of the municipality being served by MMSD. Ms. Gayan noted that the MS4 permit would be reissued before development of TMDLs is complete, and it is, therefore, important that the framework address multiple-watershed communities in a manner acceptable to the communities.

Mr. Meyer asked whether the scope of the framework development projects includes incorporating the load allocations from the TMDL into a watershed-based stormwater permit and comparing the consequences and implications of these load allocations on the relative costs and benefits of entering into either a watershed-based permit or an individual permit. Mr. Hahn replied that this may not be part of the scope. He said that the Menomonee River Group's current stormwater discharge permit expires at the end of February 2012 and the TMDL load allocations will not be available until the end of 2012; thus, it may be four years before the allocations become part of permit conditions.

The Group discussed the likelihood of some municipalities participating in the permit framework development process. Ms. DeBruine stated that she would discuss this with the Village of Greendale and ask whether they are interested in participating.

[Secretary's Note: Following the meeting, Commission staff received an electronic mail message from Ms. DeBruine indicating that she had discussed this with a representative of the Village of Greendale who stated that the Village does not wish to participate. A copy of Ms. DeBruine's email is attached hereto as Exhibit A.]

There was a general discussion regarding providing each municipality within the watershed the opportunity to participate in the framework process. Mr. Hahn noted that he intended to contact each municipality and county that was not participating as well as those who participated in past meetings, but were not in attendance at this meeting. Ms. Sands said that it would be best to get a yes or no from the counties and municipalities regarding participation in the framework process.

Mr. Hahn drew the Group's attention to the second issue identified in the Staff Memorandum—the potential benefits of county participation in a watershed-based stormwater permit. Mr. O'Brien stated that Milwaukee County is currently participating; however, it may make more sense for the County to continue to be covered under an individual permit. Mr. Grisa commented that if the County were to continue to operate under an individual stormwater discharge permit, it would not preclude any municipalities covered under a watershed-based permit from partnering with the County on activities such as pollutant credit trading or information and education efforts.

Mr. Hahn asked whether Ozaukee, Washington, and Waukesha Counties had been contacted regarding the watershed-based permit framework development process. Mr. Grisa responded that they had not been contacted. He explained that Milwaukee County is unique in the amount of riparian lands it owns in the Menomonee River watershed. He noted that Waukesha County does not own the same type of lands. Mr. Hahn stated that it might be useful to contact the other counties in order to document the process.

[Secretary's Note: Following the meeting, Mr. Hahn distributed the memorandum attached as Exhibit B to the listed counties and municipalities and the Southeast Wisconsin Professional Baseball Park District, none of which have participated to date in the framework development process. Prior to sending the memo, he discussed the watershed-based framework project with the listed County Land Conservationists, each of whom indicated interest in receiving the memo. He also contacted each of the municipalities that had participated in previous meetings, but were not in attendance on August 24 (Cities of Mequon, Milwaukee, Wauwatosa, and West Allis and the Village of Elm Grove). Each person contacted, with the exception of the Village of Elm Grove, indicated that their municipality intended to continue to participate in the framework development process. As of the date of these summary minutes, Mr. Hahn had not been able to speak with Mike Flaherty, Elm Grove Public Works Director, directly, but he will continue to follow up on that contact.]

Mr. Grisa stated that in the past participating in a group stormwater permit resulted in municipalities paying a lower fee than they would have paid for an individual permit. He noted that this was no longer the case. He asked whether there is an advantage to the WDNR in having group permits. Ms. Gayan replied that the major advantages to group permits lie in linking funding for educational and monitoring activities and in the ability to move some pollutant allocations among communities without conducting a trade. Ms. Gayan and Mr. Hahn agreed that the greatest value of developing a watershed-based permit may come from being able to consider water quality conditions in the context of the entire watershed. Ms. Gayan said that she will raise the issue of adjusting permit fees within the Department.

[Secretary's Note: Ms. Gayan has inquired within the Department regarding the issue of reducing permit fees for participants in a group MS4 permit, but there was no resolution of that issue as of the date of these summary notes.]

Mr. Hahn then initiated discussion of the third issue identified in the Staff Memorandum—what, if any, additional pollutants should be regulated under the watershed-based permit framework relative to the current MS4 permits for communities in the watershed. He explained that the second part of the Staff Memorandum provides a discussion of water quality conditions in the receiving waters that should be useful in consideration of this issue. He noted that it is not the intent to impose a greater permit compliance burden on the municipalities by considering regulation of the sources of additional pollutants. This topic was deferred to a discussion at a subsequent meeting.

Mr. Hahn drew the Group's attention to the fourth issue identified in the Staff Memorandum—what modifications could be made to the illicit discharge detection and elimination programs to better target pollutants of the most concern. He noted that Milwaukee Riverkeeper was conducting bacterial source identification monitoring of stormwater outfalls to identify outfalls with contamination from human sources and that it may be possible for municipalities to become involved in these efforts or expand upon them. He stated that as the framework is developed, illicit discharge detection monitoring requirements will be reviewed to determine where changes can be made to increase effectiveness and lower costs to the municipalities.

The Group's next considered the fifth issue identified in the Staff Memorandum—how monitoring programs under existing MS4 permits can be integrated and/or revised to provide useful results to guide future efforts to improve water quality and habitat. Mr. Grisa commented that his understanding was that stormwater monitoring was a one-time requirement for the municipalities during the first permit cycle. He noted that the municipalities have agreed that stormwater is polluted. Mr. Hahn inquired whether ongoing stormwater monitoring is required. Mr. Grisa asked what sort of monitoring requirements have been included in renewed permits for other municipal group stormwater permits. Mr. Hartsook answered monitoring was dropped from the Upper Fox River Basin Group permit upon permit renewal. He explained that the goal of the initial permit is to develop the municipalities' stormwater management program. He added that during permit reissuance, the goal is to refine the program and make the requirements less nebulous. He commented that the Department wants funding to go to those efforts that will best improve water quality.

[Secretary's Note: Based upon the discussion of the fifth issue during the meeting, an examination of NR 216 by the Commission staff, and the information provided in a September 23, 2011 electronic mail message from Bryan Hartsook of the WDNR staff, it is concluded that, under the next MS4 permit, there is not a requirement for the municipalities to monitor stormwater beyond the illicit discharge detection and elimination efforts.]

Ms. Nenn stated that the funding for her organization's stormwater outfall monitoring program will expire soon. She indicated that her group would like to coordinate their outfall testing with municipal illicit discharge detection efforts. She also noted that her group would like to examine outfalls smaller than 36 inches in diameter.

Ms. Overholt mentioned that an identification of research needs regarding the performance of urban stormwater best management practices (BMPs) might be an adequate substitute for a monitoring program.

Mr. Hahn called the Group's attention to the sixth issue identified in the Staff Memorandum—whether a watershed-based permit will achieve economic benefits. Mr. Grisa commented that this issue is more related to the costs of permit compliance rather than permit administration.

[Secretary's Note: The sentence in part a under issue 6 on page 6 was revised to read:

“a. How can group communities cooperate to avoid increasing, or to reduce permit **compliance** costs?”]

Mr. Sokol asked whether SEWRPC was active in processes to consolidate government services. Mr. Hahn answered that Commission staff has been facilitating discussions regarding a possible merger of the City and Village of Pewaukee. He indicated that he is not aware of any other similar efforts in which the Commission is involved. He noted that the idea behind a watershed-based permit is to assist communities in taking actions in a coordinated manner. Mr. Sokol responded that the Milwaukee County Executive has done some investigation into consolidating services. He added that there are some existing organizations that could facilitate consolidation. He stated that it is important that the Group know the status of consolidation efforts to prevent watershed-based permitting efforts from being in conflict with those efforts. Mr. Grisa noted that the municipalities are doing some coordination and consolidation. Mr. Nettesheim stated the Village of Menomonee Falls has worked with other entities on some issues. He commented that some municipalities in Waukesha County would be reluctant to establish a multi-municipality entity on stormwater issues.

Ms. Justus asked whether the annual report required by the municipal stormwater discharge permit could be done using a form with a checklist and fill in the blank format. Mr. Hartsook replied that he has a State optional reporting form that could be used unofficially. He commented that he prefers short annual reports that highlight recent and upcoming changes in the municipalities' stormwater management programs. He noted that NR 216 allows for biannual reporting. He stated that this appears to be a viable option for reporting for a watershed-based permit.

Mr. Hahn then began discussion of the seventh issue identified in the Staff Memorandum—what the prospects for successful water quality trading are within the watershed. Mr. Grisa commented that improvement to waterways should be added to the factors in favor of successful trading.

[Secretary's Note: Part a. under issue 7 on page 6 was revised to read:

“a. What are the factors in favor of successful trading? (community interest in minimizing costs of achieving MS4 permit compliance (avoiding expensive public works improvements or ordinance requirements that may be viewed as onerous), possibility of trading between communities that are having difficulties meeting permit requirements and those that may be able to exceed the requirements, **the potential for improvements to water quality conditions that might be achieved through trading**)”]

At Mr. Hahn's request, Mr. Boxhorn distributed and explained a handout that presents an example of how a point source to nonpoint source trade might work under the July 2011 draft trading framework developed by the WDNR.

[Secretary's Note: A copy of the handout is attached as Exhibit C.]

Mr. Boxhorn noted that this example reflects the current WDNR draft trading framework¹ and that this framework has not yet been approved by the State Natural Resources Board. He continued that it may change following review and discussion by the Board. He also indicated that the current draft of the trading framework mostly reflects trading for phosphorus as a pollutant. He noted that Kevin Kirsch of the WDNR staff stated at a presentation on August 10 in Lake Mills that, following approval by the Natural Resources Board, the trading framework will require at least one year of additional work and development.

¹*Wisconsin Department of Natural Resources, A Water Quality Trading Framework for Wisconsin – A Report to the Natural Resources Board, July 1, 2011.*

Ms. Gayan indicated that USEPA may not approve the use of interim credits in the draft trading framework. She explained that current USEPA regulations require that an agricultural operation be in compliance with performance standards before credits can be generated. She added that trades will be less likely in the Milwaukee area and other areas without the interim credit. Ms. Gayan also said that the interim credit is valuable for achieving long-term improvements in water quality because it provides a mechanism for bringing agricultural lands into compliance with the State stormwater runoff performance standards and for maintaining that compliance. Mr. Grisa commented that no one will trade if the requirements for making a trade are too onerous.

[Secretary's Note: The following excerpt from the draft WDNR water quality credit trading framework supplements the information set forth in Exhibit C, and illustrates how the proposed interim credit approach is designed to achieve long-term improvements in water quality:

“Interim pollutant reduction credits will be given to initially bring agricultural sources into compliance with the performance standards. This allowance is made because a cost-share rate of 70 percent of the cost of the management practices is required to make the performance standard a regulatory requirement. Once an agricultural source is brought into compliance with statewide performance standards it has to stay in compliance without additional cost share dollars.”]

Ms. Gayan stated that in the Milwaukee area the current phosphorus index is generally in the range of eight to 10.

Mr. Grisa asked what is meant by the trade duration for long-term credits. Mr. Boxhorn replied that this is usually set as the expected life of the BMP.

Mr. Grisa outlined a situation in which a farmer involved in a trade sells his land for development. He asked whether the credit purchaser still gets credit for reductions realized under urban development relative to the previous agricultural use. He added that this is one reason why the issue of trade duration is important. Mr. Hahn said that under developed conditions, the allowable credit might only be for reductions beyond the 80 percent control of TSS required for new development under the State performance standards. Mr. Grisa also asked what happens to credits when land with BMPs implemented under a credit trade is annexed by a municipality and developed. He emphasized that under these and other likely scenarios, the MS4 systems need certainty regarding credits they purchase. Mr. Boxhorn noted that in some discussion of trading systems, it has been suggested that the broker or the point sources purchase extra credits to create an insurance pool for situations where trade conditions may not be fulfilled. Ms. Sands suggested that these issues could also be dealt with in the written contracts for trades. Mr. Grzezinski suggested that trade agreements could be written to include restrictions on use of lands such that any conversion would not be allowed to cause a greater discharge of the pollutant traded for than would be discharged from the BMPs contracted for in the trade.

Mr. Hahn stated that the issues raised in this discussion will be considered during development of the watershed-based permit framework.

In the interest of time, Mr. Hahn asked to defer the discussion of the eighth, ninth, and tenth issues identified in the Staff Memorandum, and drew the Group's attention to the eleventh issue—whether the targeted performance standard procedure in Section NR 151.004 of the *Wisconsin Administrative Code* would be applied to mandate agricultural compliance with a more-stringent water quality performance standard or load allocation stated in a TMDL if it is determined that meeting the NR 151 performance standards will not achieve water use objectives and water quality criteria.

[Secretary's Note: Issues 8, 9, and 10 will be addressed during the next group meeting.]

He explained that NR 151.004 sets up a procedure for the Department to promulgate stricter targeted performances standards by rule when it can be shown that meeting the statewide NR 151 performance standards will be insufficient to achieve water quality standards and that Section NR 151.005 (2) indicates that this procedure shall be used if compliance with more stringent performance standards is required in order to meet a load allocations in an approved TMDL. Ms. Gayan responded that such a targeted standard would not be promulgated without cost sharing. She noted that the WDNR has never promulgated targeted standards using these rules. She indicated that she would seek clarification within the Department on this issue.

[Secretary's Note: As of the date of these summary notes, the WDNR staff was still considering this issue internally.]

Ms. Justus asked to discuss the tenth issue identified in the Staff Memorandum. She noted that there is a deadline of six months prior to the expiration of an MS4 permit for reapplication, and asked when the communities need to reapply. Mr. Hartsook replied that the annual reports constituted a reapplication for the permit. He indicated that he would send letters to the municipalities to that effect. Mr. Hahn asked to be copied on these letters. Mr. Hartsook stated that as a worst case, either the existing permit would be reissued or coverage under it would be extended.

Mr. Hahn informed the Group that he had received an electronic mail message from Brionne Bischke, Village of Germantown Engineer, that presented three comments on the first part of the Staff Memorandum.

[Secretary's Note: A copy of the email from Mr. Bischke is attached herein as Exhibit D.]

Mr. Hahn stated that Mr. Bischke's first comment was to ask how the Wisconsin Public Service Commission's (PSC) framework for regulating utility companies that service multiple municipalities works and whether the Menomonee River Group could benefit from using this framework. Mr. Hahn indicated that he would discuss this with PSC staff.

[Secretary's Note: Mr. Hahn discussed Mr. Bischke's question with Jeffrey Ripp, PSC Assistant Administrator for Water. Based on that conversation, and considering the differing fundamental nature of the roles of municipal water or power utilities versus stormwater utilities and the PSC's very limited role in regulating stormwater utilities, it does not appear that the PSC can offer guidance to the stormwater permit group based on PSC experience in regulating multiple-municipality utilities.]

Mr. Hahn stated the Mr. Bischke noted in his second comment that municipalities are subject to levy increase limits imposed by the State. The magnitude of these limits may differ among municipalities and may differ from year to year for any single municipality. Mr. Bischke commented in his email message that annual apportioning of costs in a watershed-based permit beyond a municipality's allowable levy increase could overburden the municipality's budget. Mr. Grisa commented that municipalities will need to deal with this issue through their budgeting processes. He added that this does not need to be addressed within the watershed-based permitting framework.

Mr. Hahn stated that Mr. Bischke third point asked whether the PSC would begin to regulate stormwater utilities over the next five years and how a watershed-based permit would respond to this. Mr. Hahn indicated that he had discussed this question with Jeffery Ripp, Assistant Administrator for Water, at the PSC. Mr. Ripp explained that, with two exceptions, any regulation of stormwater utilities would require legislation. The first exception is that wastewater utilities can seek to be voluntarily regulated by the PSC. The second exception is that the PSC has jurisdiction over allegations of unfair rate charges by stormwater utilities.

NEXT STEPS

Ms. Morgan told the Group that an event to recognize and publicize the USEPA grant for the watershed-based permitting project was scheduled for Wednesday, August 31, 2011 at 11:00 a.m. at Hart Park in the City of Wauwatosa.

Mr. Hahn distributed a schedule of activities for the watershed-based permitting framework project.

[Secretary's Note: A copy of this schedule is attached as Exhibit E.]

He indicated that the second part of the Staff Memorandum, addressing water quality issues, would be discussed at the next meeting. He noted that part of the memo was quite detailed, and suggested that the members of the Group look at the summary of water quality problems section on pages 31 through 34. He noted that this section gives an idea of the purpose of the inventory.

Mr. Hahn stated that Commission staff would draft summary notes of the meeting. He added that additions and changes to the text of the Staff Memorandum will be documented in these notes. He proposed that the next meeting be scheduled for October 12, 2011 at 10:00 a.m. and he said the Commission staff would send a meeting notice to members of the Group before that meeting. Ms. Justus asked whether it would be possible to start the next meeting earlier. Mr. Hahn replied that this meeting could start at 9:00 a.m. and extend to noon, and there was general agreement on that starting time.

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 12:06 p.m.

COMMENTS MADE BY BRYAN HARTSOOK, OF THE WDNR STAFF ON THE DRAFT SEWRPC STAFF MEMORANDUM FOLLOWING THE MEETING

Following the August 24, 2011 meeting of the Group, the Commission staff received comments from Mr. Hartsook of the WDNR staff by electronic mail. A copy of this email message is attached herein as Exhibit F. Mr. Hartsook made four comments.

In his first comment, Mr. Hartsook indicated that the permit should identify for each pollutant of concern which BMPs will be needed and where in the watershed implementation of these practices will be of greatest concern.

In his second comment, Mr. Hartsook asked whether the permit will address dischargers other than urban nonpoint dischargers.

In his third comment, Mr. Hartsook noted that while the permit should emphasize common trends and shared concerns in the Menomonee River watershed and adjacent watersheds, it may be more practicable, in certain cases, to implement pilot programs. He asked how waterways, pollutants, and practices will be prioritized by the Group based upon the summarized data.

In his fourth comment, Mr. Hartsook indicated that he felt that the Staff Memorandum should be included as part of a cover letter or attachment to the watershed-based permit.

[Secretary's Note: Regarding Mr. Hartsook's first comment, the permit framework can address these issues in a general sense and can call for the actual permit to address specific types and locations of BMPs. Regarding the second comment, the permit framework will only address urban nonpoint source discharges, but it is expected that any consideration of water quality credit trading in the memorandum documenting the

framework development process will recognize agricultural nonpoint sources and point sources. The third comment should be a topic of discussion at the October Group meeting.]

**COMMENTS MADE BY MR. JEFFREY S. NETTESHEIM, DIRECTOR
OF UTILITIES, VILLAGE OF MENOMONEE FALLS, ON THE DRAFT
SEWRPC STAFF MEMORANDUM FOLLOWING THE MEETING**

Following the August 24, 2011 meeting of the Group, the Commission staff received comments from Mr. Nettesheim by electronic mail. A copy of this email message is attached herein as Exhibit G. In his email, Mr. Nettesheim commented that, for communities that are located in multiple watersheds, he would prefer to have the permit set conditions that are appropriate for each watershed, rather than have blanket, communitywide conditions. He noted that this will allow municipalities to direct resources more efficiently and effectively to the proper watersheds.

Respectfully Submitted,

Michael G. Hahn
Secretary

#158764 V1 - MNR WBP FRAMEWORK SUMMARY NOTES 08/24/2011
300-1099
MGH/JEB/pk
09/30/11

Exhibit A

24-Aug-2011 Hahn to DeBruine RE MRG Permit - Greendale.txt

From: Hahn, Michael G.
Sent: Wednesday, August 24, 2011 3:38 PM
To: 'DeBruine, Cindi'
Cc: Boxhorn, Joseph E.; Kletti, Laura L.
Subject: RE: MRG Permit - Greendale

Cindi,

Thanks for letting me know so promptly.

Mike

Michael G. Hahn, P.E., P.H.
Chief Environmental Engineer
Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
W239 N1812 Rockwood Drive
Waukesha, WI 53187-1607
Phone: (262) 547-6722 Ext. 243
Fax: (262) 547-1103
E-mail: mhahn@sewrpc.org
Web site: www.sewrpc.org

From: DeBruine, Cindi [mailto:cindi.debruine@rasmithnational.com]
Sent: Wednesday, August 24, 2011 1:47 PM
To: Hahn, Michael G.; Tom Grisa (grisa@ci.brookfield.wi.us)
Cc: Roecker, Len J.
Subject: MRG Permit - Greendale

I checked with the Village Engineer and Greendale does not want to be a participant in the Menomonee River Group Watershed-based Permit.

Cindi V. DeBruine, P.E., CFM
Senior Water Resources Engineer
(262) 317-3254
(262) 781-8466 fax

R.A. Smith National, Inc.
16745 West Bluemound Road, Suite 200, Brookfield, WI 53005-5938

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Exhibit B

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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MEMORANDUM

TO: Mr. Andrew A. Holschbach, Director Ozaukee County Planning, Resources,
and Land Management Department
Mr. Paul B. Sebo, Washington County Conservationist
Mr. Perry M. Lindquist, Manager, Land Resources Division, Waukesha County
Department of Parks & Land Use
Mr. J.P. Walker, City Engineer, City of New Berlin
Mr. Joshua Schoemann, Administrator, Village of Richfield
Mr. Richard M. Czopp, Administrator, Town of Brookfield
Mr. Jeffrey Musche, Administrator/Clerk, Town of Lisbon
Mr. Michael Duckett, Executive Director, Southeast Wisconsin Professional
Baseball Park District

FROM: Southeastern Wisconsin Regional Planning Commission staff

DATE: September 12, 2011

SUBJECT: **DEVELOPING A WATERSHED-BASED STORMWATER PERMITTING
FRAMEWORK FOR THE MENOMONEE RIVER WATERSHED**

You are receiving this memo because:

- Your unit of government is wholly, or partially located in the Menomonee River watershed (see the attached Map 1),
- You hold a municipal separate storm sewer system (MS4) discharge permit under the Wisconsin Pollutant Discharge Elimination System (WPDES) program, or, in the case of Washington County, you may hold such a permit in the future, and
- We want to inform you of an ongoing project to explore development of a framework for a watershed-based municipal stormwater permit for the Menomonee River watershed and to invite you to participate in the process.

The Milwaukee Metropolitan Sewerage District (MMSD) has been awarded a U.S. Environmental Protection Agency (USEPA) Region 5 Water Quality Cooperative Agreement grant to develop the framework for a watershed-based municipal stormwater permit for the Menomonee River watershed. The development of the framework is being accomplished through a collaboration involving the municipalities within the watershed, MMSD, the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water), the

Wisconsin Department of Natural Resources (WDNR), USEPA, 1,000 Friends of Wisconsin, Midwest Environmental Advocates (MEA), the Sixteenth Street Community Health Center, and the Southeastern Wisconsin Regional Planning Commission (SEWRPC).

The watershed-based stormwater permit framework will use information from recent watershed-based water quality planning efforts in the Menomonee River watershed¹ to address municipal stormwater runoff pollution abatement needs by considering the watershed as a whole. The approach would enable municipalities to collaborate with each other and with industries, institutions, and agricultural landowners to consider alternative ways of cost-effectively reducing point and nonpoint source pollution of receiving waters. During the framework process, the feasibility of such collaborations will be evaluated.

The project will:

- Explore the feasibility of developing a watershed-based stormwater permit for the Menomonee River watershed,
- Investigate innovative approaches to improving the quality of stormwater discharges through a watershed-based permit while considering the regulatory and financial burdens on municipalities,
- Consider cost effective permit conditions and stormwater management activities, particularly related to implementation of green infrastructure, that are tailored to the watershed and that would be expected to yield the greatest improvements in water quality,
- Consider more effective sampling requirements that are related to needs identified under recent subregional water quality management plans, and
- Recognize that a third-party total maximum daily load (TMDL) study for the watershed is being conducted by MMSD and that TMDL load allocations would eventually be incorporated in a watershed-based stormwater permit, or any individual municipality stormwater permits.

The other municipalities in the watershed, as shown on Map 1, have begun to participate in the framework development process through participation in several meetings initiating the process. Participation in meetings to discuss issues and obtain comment from the watershed communities does not indicate any commitment to ultimately participate in a group, watershed-based permit. It is anticipated that a draft framework will be developed by participating municipalities with assistance from SEWRPC at the end of this year. That framework will be further refined from January through May 2012. The success of the watershed-based permit framework as a vehicle for establishing a watershed-based MS4 permit will depend largely on whether in May of 2012 a sufficient number of watershed communities decide to proceed with a watershed-based permit. Participation is completely voluntary, and if a community decides

¹MMSD, 2020 Facilities Plan, *June 2007*; SEWRPC Planning Report No. 50 (PR No. 50), A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds, *December 2007*; SEWRPC Technical Report No. 39 (TR No. 39), Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, *December 2007*; and MMSD, Menomonee River Watershed Restoration Plan (WRP), *April 1, 2010*.

not to participate it would continue to have an individual MS4 permit, or to be part of a group permit for another watershed, depending on the community's specific situation.

We recognize that the municipalities receiving this memo have relatively small land areas within the Menomonee River watershed, that the City of New Berlin is already a member of the Root River watershed stormwater discharge permit group, that the Towns of Brookfield and Lisbon are members of the Upper Fox River watershed MS4 group, and that there is little or no unincorporated area within the watershed in Ozaukee, Washington, and Waukesha Counties. Those factors may lead those municipalities and counties to decide that participation in a Menomonee River watershed-based permit is not of interest to them; however, we believe that it is important that each of your units of government be notified of the framework process and be afforded an opportunity to participate in that process.

If your community is interested in participating, you are invited to attend the next group meeting on October 12, 2011 at 9:00 a.m. at Brookfield City Hall, 2000 N. Calhoun Road. Subsequent meetings are expected in November and December 2011 and January and May 2012. If your community is interested in participating, but is unable to attend the October 12 meeting, please contact Michael G. Hahn, SEWRPC Chief Environmental Engineer at (262) 547-6722, extension 243, or mhahn@sewrpc.org, and he will add you to the distribution list for project work products and future meeting notices. If your community is not interested in participating, please reply to Mr. Hahn.

* * *

KRY/MGH/pk
#158909 V1 - MNR WBP MUNIC MEMO

Enclosure

cc: Mr. Robert Newport, FEMA Region V
Ms. Sharon L. Gayan, WDNR
Mr. Bryan Hartsook, WDNR
Ms. Karen L. Sands, MMSD
Mr. Jeffrey Martinka, SWWT
Mr. Thomas M. Grisa, City of Brookfield

Map 1

CIVIL DIVISIONS WITHIN THE MENOMONEE RIVER WATERSHED: 2000

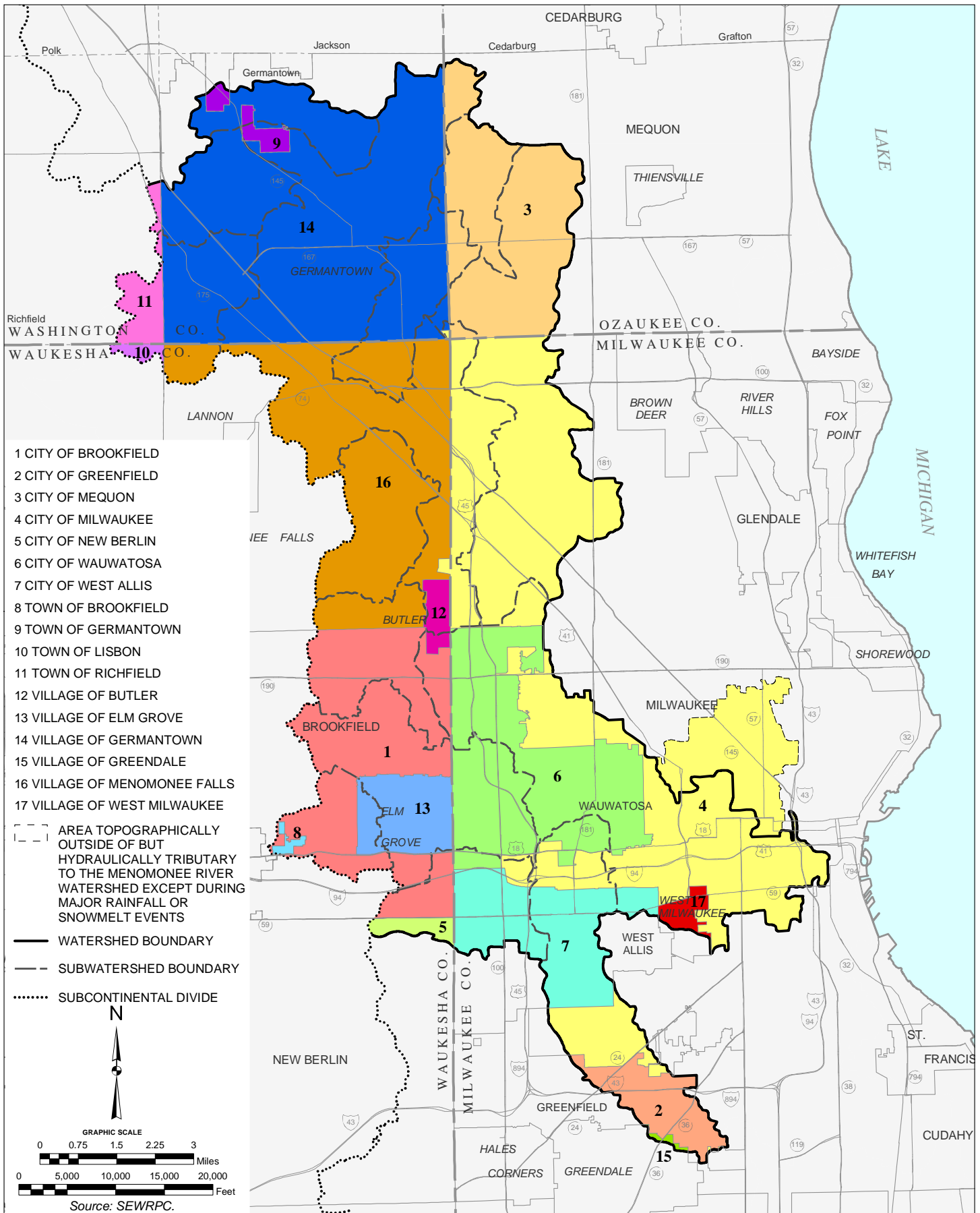


Exhibit C

#158720 V1 - WATER QUALITY TRADING EXAMPLE
300-1099
JEB
08/23/11

EXAMPLE OF WATER QUALITY TRADING UNDER THE DRAFT GUIDANCE FROM THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Definitions

Interim credits	Credits generated by making pollution reductions down to the credit threshold—last for 5 years
Long-term credits	Credits generated by making pollution reductions below the credit threshold—last for trade duration

Situation

- > A point source seeks to satisfy a requirement to reduce phosphorus discharges by 150 pounds per year through trading
- > The agricultural threshold is a Phosphorus Index (PI) of 6 (6 pounds P released per acre per year)
- > The point source pays to install BMPs on a 10 acre field that is at a PI of 16 (16 pounds P released per acre per year)
- > The BMPs bring the field down to a PI of 1 (1 pound P released per acre per year)

Credits Generated for the First Five-Year Permit by This Trade

<u>Type</u>	<u>Reduction (lb/acre/year)</u>	<u>Acres</u>	<u>Total (lb/year)</u>	<u>Comments</u>
Interim Credits	10	10	100	<i>Generated by reducing PI from 16 to 6</i>
Long-Term Credits	5	10	50	<i>Generated by reducing PI from 6 to 1</i>
Total	15	--	150	

The trade produces all of the credits the point source needs for the term of this permit.

Credits Generated for the Second Five-Year Permit by this Trade

<u>Type</u>	<u>Reduction (lb/acre/year)</u>	<u>Acres</u>	<u>Total (lb/year)</u>	<u>Comments</u>
Interim Credits	0	10	0	<i>Interim credits have expired</i>
Long-Term Credits	5	10	50	<i>Generated by reducing PI from 6 to 1</i>
Total	5	--	50	

The trade continues to produce 50 pounds of credits per year. The point source will need to obtain 100 pounds of credits per year or otherwise reduce the amount of phosphorus discharged annually by 100 pounds in order to meet permit conditions.

Comments

- > The above situation assumes that no TMDL has been done.
- > Lower agricultural thresholds may be set by a load allocation or performance standard related to a TMDL
- > Example does not include the effects of trade ratios for delivery of pollutants, equivalence of pollutant forms, uncertainty regarding BMP performance, and retirement of credits. The likely impact of these ratios is that a point source will need to trade for more than one pound of reduction for each pound of reduction they need to obtain.

Exhibit D

16-Aug-2011 Hahn FW (Bischke) Prelim Draft of SEWRPC Staff Memo.txt
From: Hahn, Michael G.
Sent: Tuesday, August 16, 2011 2:23 PM
To: Boxhorn, Joseph E.
Subject: FW: Prelim Draft of SEWRPC Staff Memo

From: Brionne Bischke [mailto:bbischke@village.germantown.wi.us]
Sent: Thursday, August 11, 2011 1:01 PM
To: Kate Morgan; Butler@wi.rr.com; ddeangelis@elmgrove.wi.org; JNettesheim@menomonee-falls.org; mmaki@wauwatosa.net; len.roecker@rasmith.com; Grisa@ci.brookfield.wi.us; Jeff Martinka; mflaherty@elmgrove.wi.org; Ricks@Greenfield.wi.us; ngreifenhagen@menomonee-falls.org; Lauren Justus;

Hahn, Michael G.; cindi.debruine@rasmithnational.com; tmorgan@riverrevitalizationfoundation.org; dennisg@midwestadvocates.org; tim.thur@milwaukee.gov; wwhehrley@wauwatosa.net; Mike Lewis; Peter Daniels; Mark Lloyd; Dan Ewert; Larry Neitzel; Sharon.Gayan@wisconsin.gov; bryan.hartsook@wisconsin.gov; caven@ci.brookfield.wi.us; kevin.o'brien@milwcnty.com; stevan.keith@milwcnty.com
Cc: Dan Ludwig
Subject: Prelim Draft of SEWRPC Staff Memo

In reference to the Preliminary Draft of SEWRPC Staff Memo entitled "Development of a Framework for a Watershed-based Municipal Stormwater Permit for the Menomonee River Watershed", I'd like to introduce three comments for the focus group's consideration:

1. How does the Public Services Commission (PSC) framework the regulation of utility companies (e.g., WE Energies, Time Warner Cable, AT&T, etc.) that service multiple municipalities? Can the Menomonee River Group benefit by the framework that they use? Do their frameworks permit any form of trading?
2. Municipalities are subject to levy increase limits imposed by the State of Wisconsin, the form of the limits being subject to differing ideological practices. Regardless of the ideology, the levy increase limits exist and should trickle down to the burden of the permit's aggregate costs and trickle down to the burden of the permit's annual growth of aggregate costs. For example in Year 2013, Municipality A may be subject to a 0% levy increase limit while Municipality B may be subject to a 2% levy increase limit. Then in Year 2014, Municipality A may be subject to a 1.1% levy increase limit while Municipality B may be subject to a 4% levy increase limit. Obviously, annual apportioning could be contentious and any annual apportioning beyond a municipality's levy increase limit would overburden that municipality's budget.
3. For municipalities who have or will have storm water utilities, is it possible that the PSC may begin to regulate storm water utilities within the next 5 years? If so, how would the permit respond?

8

16-Aug-2011 Hahn FW (Bischke) Prelim Draft of SEWRPC Staff Memo.txt

Thanks for your consideration.

Brionne R. Bischke, P.E.
Village Engineer
Village of Germantown
N112 W17001 Mequon Rd.
P.O. Box 337
Germantown, WI 53022-0337
W: 262-250-4724; F: 262-253-8355; M: 414-975-4699

Exhibit E

SCHEDULE FOR ACTIVITIES RELATED TO WATERSHED-BASED PERMITTING FRAMEWORK PROJECT FOR THE MENOMONEE RIVER WATERSHED

Project Element Group Meeting Date	Task Deadline	Actual or Proposed Group Meeting Date
Element 1: Create Watershed and Source Data Inventories	August 31, 2011	August 24, 2011
Element 2: Apply a Watershed Permitting Analytical Approach	September 30, 2011	October 12, 2011
Element 3: Construct an NPDES Watershed Framework		November 16, and December 14 , 2011
Draft Framework	December 22, 2011	January 25, 2012
Final Framework	May 31, 2012	May 2, 2012

Source: SEWRPC.

#158705 V1 - USEPA/MMSD WATERSHED-BASED PERMITTING SCHEDULE
300-1099
/MGH/
08/22/11

Boxhorn, Joseph E.

From: Hahn, Michael G.
Sent: Thursday, August 25, 2011 11:17 AM
To: 'Gayan, Sharon L - DNR'
Cc: Boxhorn, Joseph E.; Kletti, Laura L.
Subject: RE: Prelim Draft WBP Framework Development

Thanks, Sharon.

We'll look forward to additional comments and answers to questions that came up.

Mike

Michael G. Hahn, P.E., P.H.
Chief Environmental Engineer
Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
W239 N1812 Rockwood Drive
Waukesha, WI 53187-1607
Phone: (262) 547-6722 Ext. 243
Fax: (262) 547-1103
E-mail: mhahn@sewrpc.org
Web site: www.sewrpc.org

From: Gayan, Sharon L - DNR [<mailto:Sharon.Gayan@wisconsin.gov>]
Sent: Thursday, August 25, 2011 7:41 AM
To: Hahn, Michael G.
Cc: Grisa@ci.brookfield.wi.us
Subject: FW: Prelim Draft WBP Framework Development

Mike,

Sending you Bryan's comments on the framework. I have routed the document to Madison for further comments along with some of the questions raised at the meeting. I will have more information for you next week. Nice work on the framework. Sharon

Sharon L. Gayan
Milwaukee River Basin Supervisor
2300 N. Martin Luther King Jr. Drive
Milwaukee, WI 53212

ook, Bryan D - DNR
sday, August 24, 2011 8:19 AM
rgan
Sharon L - DNR
Prelim Draft WBP Framework Development

Good morning Kate,

I read through Mike's draft framework memo. I am hoping that I won't be too late for the discussion this morning, but I figured it would be best to send you a couple of follow up questions that could be discussed at the meeting in the event of my complete absence.

The paper is very helpful in giving us a 'one-stop-shop' look at water quality in the watershed, which is the first essential step in structuring the WBP. Now that the concerns are once again clearly brought to the front, it seems logical that the next thing the group needs to do is sort out the what, where, who, and how - the scope - of what we hope to accomplish through implementation of the WBP in its first permit term to address these concerns. Here are some initial questions that came to mind while reading:

- 1) Phosphorus, fecal coliform bacteria, total suspended solids, and chloride were the pollutants identified as having the lowest rate of compliance with surface water quality standards (with exception to TSS which does not have a standard for concentration but it is identified as a source for several 303d waters). What best management practices should the permit identify to address each pollutant and where in the watershed will implementation of these practices be the greatest concern? In other words, the permit should identify what soft practices are best for certain pollutants and what hard practices are best for others. i.e. Fecal coliform bacteria is a pollutant of concern in the Little Menomonee and has a 16.7% rate of compliance with applicable water quality standards, so having the permit introduce a program to identify and eliminate sanitary to storm cross-connections would be appropriate.
- 2) Will the permit to address dischargers other than urban nonpoint?
- 3) The permit should emphasize common trends (shared concerns) in the Menomonee and adjacent watersheds, but it may be more practicable to implement pilot programs rather than trying to satisfy a broad-brushed permit condition for a whole watershed (in certain cases). What waterways, pollutants, and practices would the group prioritize based on the summarized data?

8

Overall, I think having this document be included as part of a cover letter or attachment to the WBP is a must. This goes back to Bob Newport's comments on Section B of the existing permit on defining the Menomonee River Watershed.

Great foundation to work from :)

See you later this morning. I'll try to stay out of the mud!

Oh, and sorry for sending this to you last minute.

Thanks,



Bryan D. Hartsook

Water Resources Engineer, Southeast Region
Wisconsin Department of Natural Resources
141 NW Barstow St. Room 180
Waukesha, WI 53188

(☎) phone: (262) 574-2129

(☎) fax: (262) 574-2117

(✉) e-mail: Bryan.Hartsook@wisconsin.gov

Exhibit G

Boxhorn, Joseph E.

From: Hahn, Michael G.
Sent: Friday, August 26, 2011 12:44 PM
To: 'Nettesheim, Jeff'
Cc: Boxhorn, Joseph E.; Kletti, Laura L.
Subject: RE: Watershed Based Permitting Comments

Jeff,

Thanks for your thoughtful comments. We will definitely take them into consideration, and notify the rest of the group by including them in the summary notes of the meeting.

Mike

Michael G. Hahn, P.E., P.H.
Chief Environmental Engineer
Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
W239 N1812 Rockwood Drive
Waukesha, WI 53187-1607
Phone: (262) 547-6722 Ext. 243
Fax: (262) 547-1103
E-mail: mhahn@sewrpc.org
Web site: www.sewrpc.org

From: Nettesheim, Jeff [<mailto:JNettesheim@menomonee-falls.org>]
Sent: Friday, August 26, 2011 11:11 AM
To: Hahn, Michael G.
Subject: Watershed Based Permitting Comments

Hello Mike,

For municipalities that have multiple substantial watersheds i.e. Menomonee Falls with the Menomonee River and Fox River basins (roughly 50-50% split), I would prefer that conditions appropriate for each watershed are spelled out for each and not have blanket community wide conditions. One of my frustrations with some of the previous permit conditions is that they seemed arbitrary. For instance, there did not seem to be a science based rationale behind the 20% and 40% TSS removal goals other than the presumption that future conditions in the waterways should be better. I prefer conditions or permit goals that are science-based to achieve a desired goal in the receiving water. It is easier to explain and is more logically based. We can then direct scarce resources more efficiently and effectively to the proper watersheds.

Thanks,

Jeff

Jeffrey S. Nettesheim, P.E., WISECI

Director of Utilities

Phone: 262-532-4848

Menomonee Falls, WI

A Water Star Community




Overall, I think having this document be included as part of a cover letter or attachment to the WBP is a must. This goes back to Bob Newport's comments on Section B of the existing permit on defining the Menomonee River Watershed.

Great foundation to work from :)

See you later this morning. I'll try to stay out of the mud!

Oh, and sorry for sending this to you last minute.

Thanks,

 *Bryan D. Hartsook*

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Appendix C

**SUMMARY NOTES
OCTOBER 12, 2011 MEETING**

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SUMMARY NOTES OF THE OCTOBER 12, 2011 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The October 12, 2011 meeting of the Menomonee River Watershed-Based Permit (WBP) Framework Group was convened at the City of Brookfield City Hall at 9:10 a.m. The meeting was called to order by Theresa Caven, Project Engineer of the City of Brookfield Department of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Joseph Burtch	Assistant City Engineer, City of West Allis
Theresa Caven	Project Engineer, City of Brookfield
Mike Flaherty	Director, Village of Elm Grove Department of Public Works
Sharon L. Gayan	Milwaukee River Basin Supervisor, Wisconsin Department of Natural Resources
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Dennis Grzezinski	Senior Counsel, Midwest Environmental Advocates
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Andrew A. Holschbach	Land Conservation Director, Ozaukee County
Lauren Justus	Engineering Assistant, Village of Germantown
Laura L. Kletti	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Mark Lloyd	Deputy Director of Public Works, City of Mequon
Mike Maki	Stormwater Engineer, City of Wauwatosa
Jeff Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc.
Katherine McNelly-Bell	Environmental Scientist/Compliance Manager, Kapur and Associates, Inc. (representing the Southeastern Wisconsin Professional Baseball Park District)
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Kevin P. O'Brien	Environmental Compliance Manager, Milwaukee County Department of Transportation and Public Works
Timothy J. Thur	Chief Sewer Design Manager, City of Milwaukee Department of Public Works
Bill Wehrley	City Engineer, City of Wauwatosa

Mr. Hahn thanked the attendees for their participation. He noted the importance of participation from the municipalities and indicated that the WBP framework process will only work with the municipalities' input. He observed that there were several people in attendance who were not at the last meeting and asked everyone to introduce themselves.

REVIEW SUMMARY NOTES OF THE AUGUST 24, 2011 WATERSHED-BASED PERMIT FRAMEWORK GROUP MEETING

Mr. Hahn reviewed the summary notes of the August 24, 2011 meeting of the Group. He noted that for the benefit of those communities that did not attend the preceding meeting, he would review the summary notes in detail. He stated that he does not anticipate reviewing the summary notes from future Group meetings in this amount of detail.

Mr. Hahn reminded the Group that the framework development process is being documented in a SEWRPC Staff Memorandum that has been developed in two parts. He stated that at the August 24, 2011 meeting, the Group reviewed a portion of the first part of the Staff Memorandum, dated August 3, 2011. He indicated that review of the first part of the Staff Memorandum would be completed at this meeting, in addition to review of the second part, dated August 18, 2011.

Mr. Hahn also mentioned that the ongoing third-party total maximum daily load (TMDL) studies being conducted by the Milwaukee Metropolitan Sewerage District (MMSD) for the Kinnickinnic, Menomonee, and Milwaukee River watersheds and the Milwaukee Harbor estuary will eventually be incorporated in municipal separate storm sewer system (MS4) permits.

Mr. Hahn said that the first part of the Staff Memorandum identified a series of issues related to the development of the WBP framework. He noted that the first issue identified was how the permitting framework should be structured to address communities that are located in multiple watersheds. He stated that he had received a preliminary electronic mail response from Mary Anne Lowndes of the Wisconsin Department of Natural Resources (WDNR) staff in which she indicated that the least complicated way to address a single municipality within multiple watersheds, where only some of the watersheds are under a TMDL, would be through an individual permit. Her email message also indicated that this may require discussions with the U.S. Environmental Protection Agency (USEPA) relative to compliance with the Federal Clean Water Act and Wisconsin's delegated authority for stormwater permitting. Mr. Hartsook explained that this answer was given within the context of the State's Phase II municipal stormwater general permit. He added that within that context, a WBP could be considered an individual permit and that he would provide clarification of that issue.

[Secretary's Note: On November 28, 2011, the WDNR Water District South and Central Office staffs, Sweet Water Executive Director, and SEWRPC staff met to discuss watershed-based permit-related issues that arose during the August 24 and October 12, 2011 meetings of the Menomonee River Watershed Group. The issue of possible watershed-based permit formats was discussed. During that meeting Russell Rasmussen, WDNR Deputy Division Administrator for Water, said that he views a watershed-based permit as a general/individual permit hybrid. Kevin Kirsch, WDNR Water Resources Engineer, said he had received a sample permit from the State of Oregon that combined general permit features and requirements with total maximum daily load wasteload allocations for specific point sources. The consensus of those at the meeting was that that type of permit structure would be a good starting point for the Menomonee River Group framework.

Mr. Rasmussen indicated that most workable approach would be to for each party to the WBP to have its entire municipal or jurisdictional area covered under the permit. That could be accomplished with 1) general conditions and features applicable to all MS4s within a WBP (e.g., achievement of 20 percent total suspended solids reduction from areas of existing development) and 2) specific conditions and features applicable to individual MS4s.]

Mr. Hahn stated that Ms. Lowndes had also responded to the question of how a waste load allocation under an approved TMDL would affect a municipality's implementation of a WBP where only a portion of the municipality's MS4 is within the TMDL area. He asked Mr. Hartsook to summarize the electronic mail response. Mr. Hartsook stated that requirements in the area of the municipality outside of the portion covered by the TMDL would be tied to existing performance standards. For total suspended solids (TSS), municipalities would need to meet the 20 percent reduction standard in the non-TMDL portions of the communities and the TMDL waste load allocations (WLAs) in the portions covered by the TMDL. Mr. Nettesheim commented that this would be good as it is better to have science-based requirements for each watershed. He noted that this makes it easier to sell the requirements to elected officials. Mr. Hahn commented that this may result in concerns arising that development may be less restricted in some areas than in others. He added that this issue might arise independently of a WBP being issued.

Mr. Hartsook stated that the final Menomonee River watershed TMDL is scheduled to be completed in December 2012. He continued that because the waste load allocations are required to be reflected in the next permit issued after TMDLs are available, he anticipates that TMDLs will be incorporated into the permit when it is issued in 2017. He noted that this will provide additional time to work out the details of incorporating the TMDL into the MS4 permits.

Mr. Martinka announced that Sweet Water, MMSD, WDNR, and CDM will be holding the first stakeholder meeting on the TMDLs for the Milwaukee River Basin (consisting of the three watersheds and the Harbor estuary) in late November. He indicated that all of the MS4s will be invited to participate. Ms. Gayan added that WDNR will have staff present at this meeting who will discuss the Rock River TMDL and how aspects of that project might translate into the Milwaukee Basin TMDL.

Mr. Hahn noted that the issue of which communities have been participating in the permit framework development process is discussed on page 4 of the summary notes. He stated that Exhibit B in the summary notes from the August 24, 2011 meeting is a memorandum that was sent to the counties and several municipalities that had not attended previous Group meetings, that describes the WBP development process, and that invites those units of government to participate. He noted that the memorandum indicated that participation in the framework development process does not indicate any commitment to ultimately participate in a WBP. He stated that to date only Greendale had formally opted out of the WBP process, and that none of the other communities contacted have replied indicating a lack of interest in the process. He stated that those communities will be notified of subsequent Group meetings.

In reference to the discussion of the benefits of having group MS4 permits at the bottom of page 4 of the August 24, 2011 summary notes, Mr. Hahn noted that they provide the ability to move some pollutant allocations among communities without conducting a trade. He asked whether this had been done in the State. Ms. Gayan responded that this has not been done in the Menomonee River watershed and noted that the WDNR has never received a proposal to do this from any community. Mr. Hahn noted that another potential benefit of a WBP that was discussed was whether communities could be charged a reduced permit fee for participation in a group permit. Mr. Hartsook replied that this is currently precluded by the population-based fee structure set forth in NR 216. He added that to change the permit fee structure would require a change in NR 216. Ms. Gayan noted that NR 216 is now open for revision and that this could be discussed within WDNR as a potential change. She indicated that Mr. Hartsook had estimated what the municipalities' fees would be, if charges were apportioned on a proportional population basis and the municipal group was treated as a single municipality with a total fee based on the fee schedule in NR 216. Mr. Hahn asked Mr. Hartsook to provide this analysis to the Commission staff. Mr. Hartsook replied that he would provide it. Mr. Hahn commented that the issue of whether an economic benefit would derive from a WBP has not been resolved.

[Secretary's Note: An email containing Mr. Hartsook's estimates is attached hereto as Exhibit A. During the November 28 meeting with WDNR staff, Central Office personnel

indicated reluctance to reduce permit fees for a WBP group based on existing challenges to funding the stormwater permitting program at the State level.]

Regarding the eleventh issue identified in the Staff Memorandum -- whether the targeted performance standard procedure in Section NR 151.004 of the *Wisconsin Administrative Code* would be applied to mandate agricultural compliance with a more-stringent water quality performance standard or load allocation stated in a TMDL if it is determined that meeting the NR 151 performance standards will not achieve water use objectives and water quality criteria. Mr. Hahn noted that the preliminary electronic mail response from Ms. Lowndes of the WDNR staff confirmed Ms. Gayan's response at the preceding meeting that cost-share funding would be required before TMDL load allocations could be applied to an agricultural source. Mr. Thur asked whether this would mean that the MS4s might see their WLAs under the TMDL become more stringent over time if the MS4 WLAs are achieved and water quality goals are not met. Ms. Gayan replied that the nonpoint source load allocations (from sources that are not required to have permits) and permitted point source WLAs are both components of the TMDL and the allocations would not be subject to change once they have been determined.

Mr. Hahn remarked that the TMDLs may impose conditions on MS4s that are more stringent than the ones that they are currently required to meet. Ms. Gayan stated that load allocations will be discussed at the stakeholder meetings for the Milwaukee Basin TMDL. She noted that the reductions in TSS discharges required by WLAs in the Rock River TMDL have been as high as 70 percent for some communities. She added that the allocations have not yet been calculated under the Milwaukee River Basin TMDL studies. Mr. Martinka asked when the municipalities in the Rock River watershed would need to achieve the WLAs in the TMDL. Mr. Hartsook replied that this is one of the details that will need to be determined in the implementation plan and strategy that is currently being developed for the Rock River TMDL. He speculated that the key for the communities will be showing continuing progress toward meeting their WLAs through each successive permit cycle.

Regarding the issue of the time frame for implementation of TMDL waste load allocations, Mr. Grzezinski remarked that infrastructure replacement projects offer opportunities to implement management practices to reduce stormwater runoff pollution, and that not implementing such measures now and in the near future will only make it more difficult to achieve TMDL waste load allocations in the future.

Mr. Wehrley asked whether there is enough agricultural land in the Menomonee River watershed for water quality trading to be a viable approach for municipalities to meet their WLAs. He asked whether meeting WLAs would require municipalities to make reductions even if all the agricultural land in the watershed were converted to green space. Mr. Hahn said that the answers to these questions can only be determined through the TMDL process.

[Secretary's Note: The attached Exhibit A-1 summarizes modeled nonpoint source pollution loading information developed for year 2000 conditions under the Water Quality Initiative and set forth in Table 6 of the August 18, 2011 partial preliminary draft of SEWRPC Staff Memorandum (Part 2), "Development of a Framework for a Watershed-Based Municipal Stormwater Permit for the Menomonee River Watershed." The information is provided to give an indication of the amount of watershed-wide rural nonpoint source pollution loads relative to urban nonpoint source loads (a rough approximation of the loads from MS4s in the watershed). For total suspended solids, which are currently regulated under the MS4 permits within the watershed, the total rural load is 12 percent of the urban load. For phosphorus and fecal coliform bacteria, the two other pollutants for which TMDLs are being developed, the rural to urban percentages are 14 and 3, respectively.

The amounts of the rural loads available for trading would be less than the percentages in the table because of the practical inability to reduce those loads to zero and the anticipated need within a water quality trading framework to reduce the

loads to meet the performance standards of Chapter NR 151 of the *Wisconsin Administrative Code* before claiming long-term credit for further reductions achieved through trades. When TMDLs are in place, they may take the place of the NR 151 standards.]

Mr. Hahn asked whether the provision currently in the *Wisconsin Administrative Code* related to controlling stormwater runoff pollution to the maximum extent practicable would no longer be applicable once a TMDL is in place. Mr. Hartsook replied that this provision would probably remain applicable. Mr. Hahn replied that the option will then still be available to invoke the maximum extent practicable clause if a municipality has made its best effort to comply with the stormwater runoff performance standards. Mr. Hartsook commented that communities will need to capitalize on measures that can be installed as part of redevelopment projects.

[Secretary's Note: During the November 28 meeting with WDNR staff, Mr. Rasmussen addressed a question regarding the applicability of the NR 151 "maximum extent practicable" provision once TMDLs are in place. He indicated that if a TMDL allocation cannot be met, two available options would be 1) to redo the TMDL to reallocate among pollution sources and 2) to implement water quality trades. Mr. Kirsch added a third option, which would be to perform a use attainability analysis for the particular water body.]

Mr. Wehrley asked whether municipalities would seek as a group to make water quality trades with agricultural producers or whether the communities would act individually. Mr. Boxhorn responded that the WDNR's draft water quality framework envisions that there would be a broker to facilitate trading. He added that while WDNR staff has stated that the Department will not act as the broker, they noted that in one trading pilot program in the State, a county land conservation department acted as the broker.

Ms. Gayan noted that the implementation process for the TMDL will take a long time.

Mr. Martinka commented that there needs to be benefit to the municipalities for participating in a watershed-based stormwater permit. He added that if water quality trading is not the benefit, it needs to be something else.

The summary notes for the August 24, 2011 meeting were approved by the consensus of the Group.

**CONTINUATION OF REVIEW AND DISCUSSION OF AUGUST 3, 2011
PARTIAL PRELIMINARY DRAFT OF SEWRPC STAFF MEMORANDUM,
"DEVELOPMENT OF A FRAMEWORK FOR A WATERSHED-BASED MUNICIPAL
STORMWATER PERMIT FOR THE MENOMONEE RIVER WATERSHED"**

At the request of Mr. Grisa, Mr. Hahn continued the review of the draft SEWRPC Staff Memorandum. He began by reviewing the remaining issues relative to development of the framework in the first part of the Staff Memorandum.

Mr. Hahn drew the Group's attention to the eighth issue identified in the August 3, 2011 Staff Memorandum—whether excluding non-MS4 point sources and combined sewer overflows (CSOs) from the WBP would preclude such sources from executing water quality trades. Ms. Gayan replied that the current group permit allows reallocations of loads among MS4s and that a WBP would allow trades between MS4s. Mr. Hartsook added that once the TMDL is in place it will allow point-source-to-point-source trades and point-source-to-nonpoint-source trades. He noted that the TMDL might not allow nonpoint-source-to-nonpoint-source trades. WDNR staff also suggested that MS4s would not be able to trade with agricultural nonpoint sources prior to establishment of TMDLs, but they also indicated that WDNR might consider enabling MS4 to agriculture trades as an incentive for establishing a watershed-based permit. Mr. Hahn asked for confirmation from the WDNR about these trading issues, noting that the inability to make trades between MS4s and agricultural nonpoint sources would

significantly limit the attractiveness of participating in a watershed-based permit. Mr. Boxhorn noted that the draft WDNR water quality trading framework does have provisions for trading in the absence of a TMDL. Mr. Hartsook answered that he would pursue answers to these questions. Ms. Gayan indicated that she would ask Kevin Kirsch of the WDNR staff to attend the next Group meeting.

[Secretary's Note: Commission staff reviewed the WDNR's draft July 1, 2011 water quality trading framework. The trading framework allows for trading in the absence of a TMDL when water quality-based effluent limitations have been calculated pursuant to an administrative rule such as section NR 217.13 of the *Wisconsin Administrative Code*. The trading framework envisions that most cases of trading that occur under this provision will require that the trade be made with a site upstream from the discharge point to prevent violation of water quality criteria outside the mixing zone. This is illustrated in the example from the trading framework, attached herein as Exhibit B. In the absence of calculated water quality-based effluent limitations, trading would not be allowed under the draft trading framework.

During the November 28 WDNR/Sweet Water/SEWRPC meeting, and in discussions prior to that meeting, WDNR Central Office staff indicated that MS4s could trade with agricultural nonpoint sources. In general, there should be enough regulatory flexibility to enable water quality trades to be executed between different sources.]

Mr. Grisa asked what the point of the WBP is if water quality trading may be allowable under the trading framework without a WBP. He commented that there needs to be benefit that can be achieved only under the watershed-based permit.

Mr. Hahn drew the Group's attention to the ninth issue identified in the Staff Memorandum—what green infrastructure measures would be most effective in improving water quality and how the WBP framework could promote implementation of such measures. He noted that the Group will not be able to fully resolve this issue at this time because both USEPA and MMSD will need to weigh in on these questions. He posed the question of how to ensure that green infrastructure is maintained so that it continues to function over the long term and asked if there are opportunities for sites to receive reductions in stormwater utility fees for installation of these practices, especially residential sites. Mr. Thur responded that the City of Milwaukee provides a fee reduction for commercial and industrial sites with green infrastructure, but not for residential sites.

Mr. Hahn offered the example of a developer's proposal to construct rain gardens on individual lots in a subdivision for the purpose of meeting Kenosha County runoff reduction requirements. The County staff expressed concerns regarding long-term maintenance of the rain gardens, considering both the commitments to rain garden maintenance of the initial owners and possible new future owners. The SEWRPC staff, which at that time had a role in assisting the County with stormwater management reviews, suggested a procedure to ensure maintenance of the private rain gardens, including imposing deed restrictions to ensure that the subsequent property owners continue to maintain the rain gardens. That approach did not completely allay the County's concerns and the development proposal was revised to eliminate the private rain gardens.

Mr. Hahn asked whether it would be worth establishing a residential credit toward stormwater utility fees for installation of green infrastructure. He asked whether this would require revising rates. He also noted that it would establish a tracking system that would enable the municipality to claim credit toward meeting its performance standard or TMDL wasteload allocation goal. Mr. Thur responded that for residential properties, this would require a lot of effort on the part of the municipalities, especially in terms of staff time, to make sure that the practices remain in place. Mr. Hahn asked whether this was the case for commercial and industrial properties. Mr. Thur answered that in the case of commercial and industrial properties, the practices installed are often tied to stormwater management plans. He added that these properties are also charged higher stormwater utility fees, so there are greater financial incentives to maintain the practices. Mr. Hahn commented that the feasibility of

providing credits to residences that install green infrastructure may be an issue that the permit framework process cannot resolve.

Mr. Grzezinski suggested that it may help to have communities work together on residential installation of green infrastructure, either by offering a single contract for inspections of installations or through making available standard designs that homeowners can install.

Mr. Grisa indicated that he disagreed with Mr. Hahn's conclusion regarding providing credits to residences that install green infrastructure being addressed by the permit framework. He explained that he would like his community to be able to receive credit for these practices. In addition, he stated that he feels it is important to recognize these efforts, even if this must be done subjectively. He noted that the framework should allow for some uncertainties or should suggest that credit be given for a certain percentage of installed green infrastructure.

Mr. Martinka suggested that the USEPA should indicate their stance on this issue. Mr. Hahn said that he was not trying to discourage such green infrastructure installation, but that there would need to be a method of inventorying and tracking the effectiveness of private property installations.

Mr. Grzezinski suggested that it might be more cost-effective to contract with a private consultant or nonprofit group to perform inspections to ensure that green infrastructure practices are installed and functioning.

Mr. Hahn next drew the Group's attention to the tenth issue identified in the Staff Memorandum—how the expiration date of the existing Menomonee River group permit, the permit expiration dates of additional participating communities, and the anticipated date when the TMDLs will be complete can be synchronized under a single WBP. He noted that synchronizing the permit terms will depend upon when the expiration dates occur.

Mr. Hartsook offered to provide a list of expiration dates for MS4 discharge permits in the Menomonee River watershed.

[Secretary's Note: The permit expiration dates provided by Mr. Hartsook were added to Table 1 of the Staff Memorandum. Subsequent to the meeting, Mr. Hartsook told Commission staff that Washington County and the Village of Richfield requested, and were granted, exemptions from the MS4 permit requirements under Section NR 216.023 of the *Wisconsin Administrative Code*. This information was also added to Table 1. In addition, entries were added to the table for the Southeastern Wisconsin Professional Baseball Park District and Wisconsin State Fair Park. The revised table is attached hereto as Exhibit C.]

Mr. Hartsook stated that after the TMDLs are in place, the WDNR may issue individual permits with common conditions for MS4s whose permits expire. He indicated that as an alternative, the Department may issue a WBP in mid-cycle or allow municipalities to continue to operate under an expired permit until the WBP would be issued. He noted that all of the municipalities have stormwater programs that are operating. Mr. Hahn asked whether the chosen permit alternative would depend upon the latest date of permit expiration for a participating community. Mr. Hartsook responded that the expiration dates may influence the choice. He emphasized that the Department would like to have all of the watershed communities on the same permit cycle.

[Secretary's Note: As seen in Exhibit C, the permits for municipalities that have been active in the Menomonee River WBP Group process expire in 2012 and 2013. During the November 28 WDNR/Sweet Water/SEWRPC meeting, the following two options were discussed for addressing procedures for issuing a WBP:

1. Reissue the MS4 permit(s) and then revoke and reissue as a watershed-based permit following development of a framework, assuming municipal acceptance of a WBP approach,
2. Allow the existing permits to expire, continue coverage under the expired permit, and reissue as a watershed-based permit following development of a framework, assuming municipal acceptance of a WBP approach.

The consensus of those in attendance at the meeting was that Option 2 would be best. Either of these options would lead to adoption of a single permit expiration date for all parties to the WBP.]

Mr. Hahn drew the Group's attention to the section of the August 3, 2011 Staff Memorandum on possible watershed-based permitting structures. He stated that the text in the Staff Memorandum directly quotes from the August 2007 USEPA report "Watershed-based National Pollutant Discharge Elimination System (NPDES) Permitting Technical Guidance." He indicated that the guidance described three WBP types: coordinated individual permits, integrated municipal NPDES permit coverage, and multisource WBPs. He described the three permit types and concluded that the multisource WBP structure was the most appropriate permit structure for a watershed-based municipal stormwater permit for the Menomonee River watershed. Mr. Grisa stated that he agreed and asked whether representatives of the USEPA had indicated whether they concurred with this conclusion. Mr. Hahn replied that he has not heard from them on this issue, but that he will follow up with USEPA.

[Secretary's Note: Following the meeting, Commission staff spoke by telephone with Robert Newport of the USEPA staff. In that phone call, Mr. Newport indicated that he intends to attend the December 14, 2011 meeting of the permit group. That will provide an opportunity for him to comment on this issue.]

REVIEW AND DISCUSSION OF AUGUST 18, 2011 PARTIAL PRELIMINARY DRAFT OF SEWRPC STAFF MEMORANDUM (PART 2), "DEVELOPMENT OF A FRAMEWORK FOR A WATERSHED-BASED MUNICIPAL STORMWATER PERMIT FOR THE MENOMONEE RIVER WATERSHED"

At Mr. Hahn's request, Mr. Boxhorn reviewed the second part of the August 18, 2011 draft SEWRPC Staff Memorandum, which addresses the surface water inventory. He stated that the guidance from USEPA suggests conducting a water quality inventory as a first step in doing a watershed-based analysis. He noted that characterization of water quality presented in the Staff Memorandum drew heavily on the analyses presented in SEWRPC Technical Report No. 39, (TR No. 39) which analyzed and assessed water quality in six watersheds as part of the update of the regional water quality management plan for the Greater Milwaukee watersheds. He stated that the inventory seeks to examine three issues: 1) the extent to which surface waters are able to achieve the uses designated for them pursuant to the Federal Clean Water Act, 2) what pollutants are reducing water quality in those surface waters not supporting their designated uses, and 3) the extent to which these pollutants are being contributed through discharges from MS4 systems. He noted that the inventory presented in the Staff Memorandum also addresses water quality in watersheds adjacent to the Menomonee River watershed because, with three exceptions, all of the municipalities in the watershed are in two to five watersheds. He indicated that permit conditions for a WBP may need to address water quality in these adjacent watersheds.

Mr. Boxhorn drew the Group's attention to Table 5 of the Staff Memorandum. He stated that, for several water quality constituents, it presents the results of a comparison of conditions in streams of the Menomonee River watershed to the applicable State water quality criteria. He noted that this table was updated from the analyses presented in TR No. 39 with data collected between the date of the last data used in TR No. 39 (2001) and early 2011.

Mr. Boxhorn then reviewed Table 8 of the Staff Memorandum. He stated that for several water quality constituents, that table presents the results of a comparison of conditions in streams of the adjacent watersheds to the applicable State water quality criteria. He noted that for the Kinnickinnic River, Milwaukee River, Oak Creek, and Root River watersheds, this table presents the analyses given in TR No. 39. He indicated that there have been no recent analyses of water quality in the Fox River watershed. He added that he used data from a 1995 update of the regional water quality management plan and from WDNR priority watershed plans to evaluate conditions in the Fox River watershed. He noted that the priority watershed studies were conducted in the early 1990s. Mr. Boxhorn stated that the inventory in Table 8 is also based on pollutant load estimates that were developed under the 2007 regional water quality management plan update (Kinnickinnic River, Milwaukee River, Oak Creek, and Root River watersheds), the priority watershed program (Fox River watershed), and at those waters that are listed as being impaired on the State's 303(d) list (all pertinent watersheds).

Mr. Boxhorn stated that the analyses presented in Tables 5 and 8 indicate that most of the streams in the Menomonee River watershed and adjacent watersheds appear to be meeting the applicable water quality criteria for dissolved oxygen, with only localized instances of noncompliance. He noted that the Upper and Middle Root River subwatersheds were exceptions to this. He explained that dissolved oxygen concentrations collected at sampling stations along the Root River were commonly-to-usually below the applicable standard.

Mr. Boxhorn stated that the analyses presented in Table 5 indicate that water temperatures in most of the streams of the Menomonee River watershed were almost always in compliance with the acute and sublethal temperature criteria. He stated that Noyes Park Creek and a portion of Underwood Creek were exceptions. He noted that both of these streams contained reaches that are channelized and concrete-lined and that this can act to increase water temperatures. He drew the conclusion that municipal stormwater discharges were probably not the stressor causing the temperature exceedences in these streams.

Mr. Wehrley asked whether the water temperature data for Underwood Creek reflected conditions before or after the removal of the concrete lining in a portion of the Creek. Mr. Boxhorn answered that he was not sure, but thought that there may be data from before and after the concrete lining was removed. He added that he would examine whether it would be possible to conduct a before and after comparison.

[Secretary's Note: The continuous temperature data for Underwood Creek were collected between June 2010 and July 2011, after completion of Phase I construction. Because of this, no continuously-collected water temperature data are available from prior to the removal of the concrete lining. Thus, the type of comparison that was suggested is not possible because of the differences in how data were collected before and after the concrete lining was removed.]

Mr. Boxhorn noted that continuously-recorded temperature data were not available for the other watersheds.

Mr. Boxhorn stated that the analyses presented in Tables 5 and 8 indicate that chloride concentrations in streams in the Menomonee River watershed and adjacent watersheds were almost always in compliance with the State's acute and toxic water quality criteria; however, he noted that he believes that these results overestimate the degree of compliance with these criteria. He explained that most of the chloride data that were available were collected as a part of MMSD's water quality sampling program. He noted that MMSD does not normally collect samples during the winter deicing season, when salts are most likely to be applied to area roads. He continued that a recent paper reporting work conducted by the U.S. Geological Survey did show evidence of chloride concentration spikes in surface water in southeastern Wisconsin during the winter. He added that samples collected by MMSD from stormwater outfalls also occasionally show high concentrations of chlorides. Mr. Boxhorn concluded that the Group may want to consider whether chloride should be addressed as a pollutant in a WBP.

[Secretary's Note: The study referred to in the last paragraph is: S.R. Corsi, D.J. Graczyk, S.W. Geis, N.L. Booth, and K.D. Richards, "A Fresh Look at Road Salt: Aquatic Toxicity and Water-Quality Impacts on Local, Regional and National Scales," *Environmental Science and Technology*, Volume 44, 2010.]

Mr. Boxhorn noted that municipalities have expended considerable effort to reduce the amount of road salt applied during deicing; however, he expressed concern about applications on private property. Mr. Grisa asked what the effect of chloride concentration spikes were on aquatic biota during cold weather. Mr. Boxhorn answered that his understanding is that toxic effects begin to be seen at concentrations of chloride above 250 milligrams per liter. He added that he could see what is available in the toxicology literature regarding the effect of cold temperatures on chloride toxicity.

[Secretary's Note: An appendix examining the toxicity of chloride and relating it to winter chloride concentrations in streams of the Menomonee River watershed was added to the second part of the Staff Memorandum. This appendix is attached herein as Exhibit C-1.]

Mr. Grisa noted that high chloride concentrations in surface waters may be transient events. He commented that he would not want to risk human safety in order to control chloride that is not greatly harming the environment. He pointed out that the main alternative to applying deicing salts is to apply sand. He commented that this simply exchanges one pollutant for another. Mr. Hahn replied that there are two reasons for concern about chlorides. First, the Commission staff has documented a trend toward increasing chloride concentrations in surface waters throughout the Southeastern Wisconsin Region, and second, chloride is a conservative pollutant that is not removed through any natural or man-made treatment process.

Mr. Boxhorn stated that the analyses presented in Tables 5 and 8 indicate that concentrations of total phosphorus generally exceed the State's water quality criteria. He noted that the compliance percentages in Table 8 reflect comparisons of total phosphorus concentrations to a planning standard recommended in the initial regional water quality management plan. He explained that for most of the streams examined, this planning standard concentration is higher than the State's water quality criteria. He indicated that this means that the analysis presented in Table 8 overestimates the amount of compliance with the State's current water quality criteria for phosphorus. He noted that even with this overestimate, the analyses show that phosphorus is a problem in all of the streams examined. He drew the Group's attention to Table 6 of the draft Staff Memorandum, which presents estimates of pollutant loads for the Menomonee River watershed. He reported that these estimates indicate that about half of the phosphorus loadings to streams in the Menomonee River watershed are being contributed through MS4 systems. He concluded that phosphorus is a pollutant that should be considered in a WBP. He commented that the chemistry of phosphorus may be advantageous for controlling phosphorus, noting that phosphate in nature is usually particulate or adsorbed to particles, which means that reductions in TSS will lead to reductions in total phosphorus.

Mr. Grisa asked whether there were any estimates of natural or predevelopment concentrations of total phosphorus and TSS in the surface waters being discussed. Mr. Boxhorn answered that he was not aware of any such studies.

Mr. Wehrley asked whether the limits place on phosphorus in fertilizer will result in a measurable reduction in phosphorus concentrations in streams. Mr. Boxhorn replied that he thought there would be reductions, although it is likely to require a long time period to notice because of the variability of phosphorus concentrations in surface waters.

Mr. Boxhorn stated that the analyses presented in Tables 5 and 8 indicate that concentrations of fecal coliform bacteria generally exceed the applicable water quality criteria in most of the watersheds.

Mr. Boxhorn stated that the State has not promulgated numerical water quality criteria for TSS. He indicated that because of this, the Staff Memorandum examines this constituent by summarizing concentrations. He noted that while mean concentrations in the streams examined are generally below 30 milligrams per liter, concentrations are highly variable with maximum concentrations being one to two orders of magnitude higher. He noted that urban nonpoint sources appear to be major sources of TSS.

Mr. Boxhorn summarized the conclusions of the second part of the Staff Memorandum, noting that water quality problems related to fecal coliform bacteria, total phosphorus, and TSS are present in the Menomonee River watershed and the adjacent watersheds. He indicated that discharges of urban stormwater account for a large portion of the loads of these pollutants. He noted that the Staff Memorandum also concludes that water quality problems related to low concentration of dissolved oxygen are present in the Root River watershed. He added that chloride may also be causing problems during the winter deicing season; however, currently insufficient data are available to assess the magnitude of this problem.

Mr. Boxhorn distributed a copy of the illicit discharge detection and elimination (IDDE) requirements from Chapter NR 216.07(3)(i) of the *Wisconsin Administrative Code* to the Group. He noted that they require field analysis of stormwater outfalls to include sampling for pH, total chlorine, total copper, total phenol, and detergents; however, they also allow a permitted MS4 to use alternative tests for constituents such as ammonia, potassium, and bacteria, with the concurrence of the WDNR. He asked the Group what tests they have found to be most effective locating illicit discharges in their IDDE programs.

[Secretary's Note: A copy of the referenced *Wisconsin Administrative Code* section is attached hereto as Exhibit D.]

Mr. Grisa asked whether residual chlorine can be detected due to its rapid volatilization. Mr. Thur responded that the City of Milwaukee has found water main breaks by testing for chlorine. He added that in their experience ammonia and detergents have been best for detecting illicit connections. Mr. Boxhorn asked whether monitoring fluoride has been useful. Mr. Grisa pointed out that some communities, including the City of Brookfield, do not fluoridate their municipal water. Mr. Hartsook distributed a summary of illicit discharge screening for Menomonee River watershed MS4 permitted communities for 2010.

[Secretary's Note: A copy of the summary Mr. Hartsook distributed is attached herein as Exhibit E.]

Mr. Hartsook noted that the Cities of Greenfield and West Allis test for fluoride. He indicated that the combination of testing for ammonia and testing for detergents using the methylene blue test seems to be the most effective for detecting illicit discharges. He added that the City of Greenfield also tests the ammonia to potassium ratio. Mr. Boxhorn asked whether Greenfield has successfully differentiated between sanitary wastewater and wash water using the ammonia to potassium ratio. Mr. Hartsook replied that he did not know. Ms. Morgan asked what size outfalls are screened in field analysis. Mr. Hartsook replied that 36-inch diameter and larger outfalls and outfalls discharging runoff from an industrial drainage area of two or more acres are screened. Mr. Maki noted that test results are dependent, in part, on the methods used and asked whether a uniform testing procedure should be developed and included in the permit. Mr. Grisa replied that the purpose of the testing is to identify illicit connections. He added that standardized test procedures may not be necessary in order to accomplish this. Mr. Hartsook indicated that he agreed with this.

Mr. Hartsook noted that follow up procedures and responses to the detection of an illicit discharge vary greatly among the communities. He suggested that it might be good to establish uniform response procedures under a WBP. Ms. Justus indicated that she would send the Village of Germantown's illicit discharge response procedure to the Commission staff.

[Secretary's Note: Following the meeting Ms. Justus provided the Villages IDDE. It is attached as Exhibit F.]

Mr. Boxhorn noted that he had discussed the State's water quality criteria for water temperature with WDNR staff and would make some changes to the Staff Memorandum description of the temperature criteria based upon those discussions.

NEXT STEPS

Mr. Hahn stated that the Group would review and expand upon the annotated version of the MS4 permit provided by Robert Newport of the USEPA staff.

The Group set the next meeting for 9:00 a.m. on December 14, 2011 at the Brookfield City Hall.

Ms. Morgan suggested holding a meeting of the education and outreach group at 10:00 a.m. on November 15, 2011 the Brookfield City Hall.

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 12:10 p.m.

REVISIONS MADE TO PARTIAL PRELIMINARY DRAFT OF SEWRPC STAFF MEMORANDUM (PART 2) FOLLOWING DISCUSSIONS WITH AMANDA MINKS OF THE WDNR STAFF

SEWRPC staff discussed the State's water quality criteria for temperature with Amanda Minks of the WDNR staff in order to clarify the role of the ambient temperature in the criteria. Ms. Minks indicated that the ambient temperature is not intended as a criterion that is not to be exceeded. Instead, it is used for calculating the acute and sublethal temperature criteria and for calculating effluent limitations in Wisconsin Pollutant Discharge Elimination System discharge permits.

[Secretary's Note: The second bullet point on page 8 was revised to read (In this Secretary's Note and in subsequent Notes, unless indicated otherwise, revised and added text is indicated in bold letters for clarification only. The Staff Memorandum text will not be bold):

"In 2010, the State promulgated water quality-based criteria for temperature. This rule specifies three temperature criteria—ambient, acute, and sublethal—that are to be applied simultaneously.⁷ **The ambient temperature is used to calculate corresponding values of the acute and sublethal criteria and for setting effluent limitations for discharge permits. The acute and sublethal criteria are used for assessment purposes and evaluation of the attainment of water use objectives.** In accordance with this, where continuously recorded data were available, daily maximum water temperatures were compared to the applicable acute temperature criterion and the average of daily maximum **temperatures** over a calendar week were compared to the applicable sublethal temperature criterion."

The footnote in the above passage was not changed.

The first full paragraph on page 12 was revised to read:

"Table 5 show comparisons of water temperature in the streams of the Menomonee River water shed to **two** criteria: the acute and the sublethal. As previously described, daily maximum water temperatures were compared to the applicable acute temperature criterion and the average of daily maximum temperatures over a calendar week were compared to the applicable sublethal temperature criterion."

The column headed “Ambient” was removed from Table 5.

The column headed “Ambient” was removed from Table 8.]

#159622 V1 - MNR WBP FRAMEWORK SUMMARY NOTES 10/12/11 - 2
300-1099
MGH/LLK/JEB/pk
11/07/11

Exhibit A

Boxhorn, Joseph E.

From: Hartsook, Bryan D - DNR [Bryan.Hartsook@wisconsin.gov]
Sent: Thursday, October 20, 2011 8:52 AM
To: Boxhorn, Joseph E.
Subject: FW: SE Region MS4 Billing Summary
Attachments: RE: SE Region MS4 Billing Summary; SER_MS4_BillingSummary.xls

ook, Bryan D - DNR
 sday, October 05, 2011 10:45 AM
 :ini, Jim K - DNR
 Sharon L - DNR
 FW: SE Region MS4 Billing Summary

Jim,

We've been asked by municipalities participating in the Menomonee River watershed-based permitting framework group whether or not participating in a watershed-based group permit would reduce their permit fee amount. Currently, everyone is billed according to the fee structure in NR 216. Has the prospective of reducing fees for a group permit been discussed before?

For example, there are 8 municipalities in the current Menomonee group permit. Totaling a population of 179,347. The NR216 fee corresponding to this total population would then be \$12,000 (for populations between 100,000 and 199,000). Right now, each of the eight communities pays a separate fee relative to their separate populations. This amount totals \$30,250.

I am assuming what the group is proposing is to have the total fee be the lesser amount based on the whole population of the permit group, and then weight the amount due from each municipality by a factor of their own population over the total of the group. So under this pay scheme, Brookfield with a population of 38,649 would end up paying $(38,649/179,347) * \$12,000$, or \$2586. Right now Brookfield pays \$6,500.

The least populated of the Menomonee group, Butler, would pay $(1,881/179,347) * \$12,000$, or \$126, versus the \$250 they pay right now.

Seems sort of fair considering the fact that the intent of the permit fee is to offset DNR's operating costs of the program and it theoretically takes less total time to administer a group than it does its separate entities. Less this email of course :)

Anyway, has this been considered before? Is anyone else in the state doing this that you are aware of?

Thanks!

Bryan

ook, Bryan D - DNR
sday, October 05, 2011 10:26 AM
Sharon L - DNR
SE Region MS4 Billing Summary

Sharon,

All 90 permitted MS4s in SER are billed according to the fee structure found in NR 216 by total population. It appears that no discounted fees were awarded for group permits. Attached is the billing list in order of lowest to highest population.

Sorry about the delay. It took me longer than I expected to find the population field in the database. Turns out "NO_EMP_AMT" stands for population. Of course.

 *Bryan D. Hartsook*

Water Resources Engineer, Southeast Region
Wisconsin Department of Natural Resources
141 NW Barstow St. Room 180
Waukesha, WI 53188

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(☎) fax: (262) 574-2117

(✉) e-mail: Bryan.Hartsook@wisconsin.gov

Exhibit A-1

COMPARISON OF MODELED URBAN AND RURAL
NONPOINT SOURCE LOADS IN THE MENOMONEE RIVER WATERSHED: 2000

Pollutant	Urban Nonpoint Sources	Rural Nonpoint Sources	Rural Load As a Percentage of Urban Load
Total Suspended Solids (pounds)	15,738,270	1,950,230	12
Total Phosphorus (pounds)	29,040	4,070	14
Biochemical Oxygen Demand (pounds)	993,390	175,850	18
Fecal Coliform Bacteria (trillions of cells)	14,112	393	3
Total Nitrogen (pounds)	209,340	118,410	57
Copper (pounds)	1,768	106	6

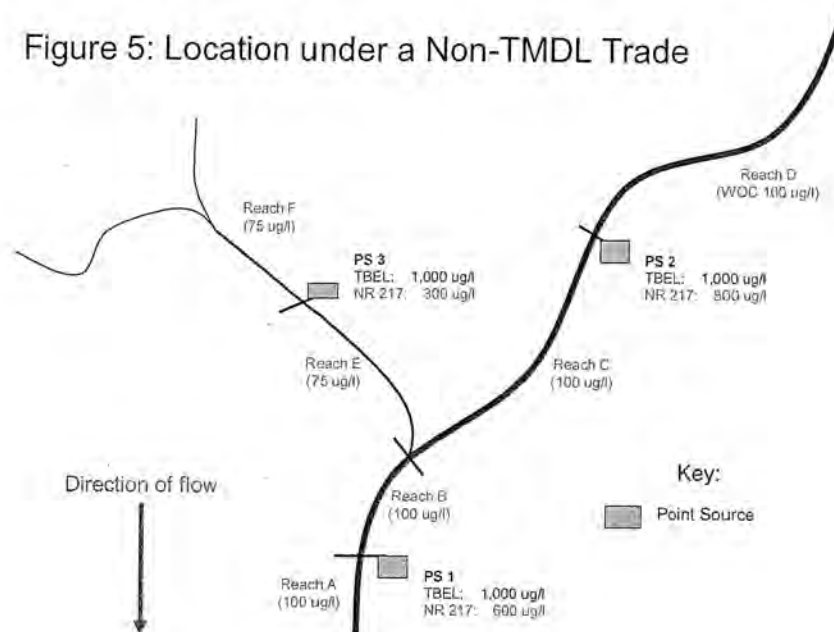
Source: SEWRPC.

Exhibit B

2.3.2 Trading to meet Non-TMDL WQBELs

If a facility desires to trade to meet the effluent requirements stemming from a non-TMDL WQBEL (for phosphorus see NR 217.13) in most cases the trade will need to occur upstream of the discharge point to prevent the violation of water quality criteria outside the mixing zone. This is because derivation of the WQBEL includes consideration of upstream concentrations. In cases where a discharger is a small percentage of the relative load at the point of discharge, the point source may have the option to trade with downstream sources within the reach without creating local violations of the water quality criteria. This requires evaluation on a case by case basis.

Figure 5: Location under a Non-TMDL Trade



Explanation of Figure 5:

Figure 5 shows the technology effluent limits (TBELs) and the calculated WQBELs based on water quality criteria. Trades can occur as follows:

Point Source: PS1 may trade with sources in reaches B, C, D, E, and F.

Point Source 2: Assuming that PS2 is only 10% of the load (calculated through a quantification of phosphorus loads); PS2 could trade with sources in reach D and can likely trade with downstream in reach C since PS2 is not a significant contributor.

Point Source 3: Assuming that PS3 is 60% of the load going into reach E. To prevent a local violation of water quality standards, PS 3 should trade with sources draining to reach F.

Exhibit C

Table 1

**MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)
PERMIT HOLDERS IN THE MENOMONEE RIVER WATERSHED**

Municipality	Permit Number	Current Group Permit Designation	Permit Expiration Date	Other Watersheds in Which Municipality is Located ^a
Milwaukee County	S050113	- -	December 15, 2011	Kinnickinnic River, Milwaukee River, Root River, Oak Creek
Ozaukee County	S050075	- -	December 31, 2010	Milwaukee River, Sauk/Sucker Creeks
Washington County	- - ^b	- -		Milwaukee River, Rock River
Waukesha County	S050075	- -	December 31, 2010	Fox River, Rock River, Root River
City of Brookfield	S050130-1	Menomonee River watershed	February 28, 2012	Fox River
City of Greenfield	S050130-1	Menomonee River watershed	February 28, 2012	Root River, Oak Creek
City of Mequon	S050091-1	Mequon/Thiensville	June 30, 2011	Milwaukee River
City of Milwaukee	S049018-3	- -	March 31, 2013	Kinnickinnic River, Milwaukee River, Root River, Oak Creek
City of New Berlin	S050059-1	Root River watershed	July 1, 2013	Fox River, Root River
City of Wauwatosa	S050130-1	Menomonee River watershed	February 28, 2012	- -
City of West Allis	S049913-1	- -	November 1, 2013	Root River
Village of Butler	S050130-1	Menomonee River watershed	February 28, 2012	- -
Village of Elm Grove	S050130-1	Menomonee River watershed	February 28, 2012	- -
Village of Germantown	S050130-1	Menomonee River watershed	February 28, 2012	Milwaukee River
Village of Greendale	S050059-1	Root River watershed	July 1, 2013	Root River
Village of Menomonee Falls	S050130-1	Menomonee River watershed	February 28, 2012	Fox River
Village of Richfield	- - ^c	- -	- - ^c	Fox River, Milwaukee River, Rock River
Village of West Milwaukee	S050130-1	Menomonee River watershed	February 28, 2012	Kinnickinnic River
Town of Brookfield	S050105-1	Upper Fox River watershed	October 29, 2014	Fox River
Town of Lisbon	S050105-1	Upper Fox River watershed	October 29, 2014	Fox River
Southeastern Wisconsin Professional Baseball Park District	S049921	- -	September 30, 2012	- -
Wisconsin State Fair Park	S049930	- -	July 31, 2012	- -

^aExcluding the Lake Michigan direct drainage area.

^bIn December 2006, Washington County was granted a waiver of the requirement to obtain permit coverage under Section NR 216.023 of the Wisconsin Administrative Code.

^cIn July 2008, the Village of Richfield was granted a waiver of the requirement to obtain permit coverage under Section NR 216.023 of the Wisconsin Administrative Code.

Source: SEWRPC.

Exhibit C-1

SEWRPC Staff Memorandum (Part 2)

DEVELOPMENT OF A FRAMEWORK FOR A WATERSHED-BASED MUNICIPAL STORMWATER PERMIT FOR THE MENOMONEE RIVER WATERSHED

Appendix A

During review of the second part of the draft SEWRPC Staff Memorandum, “Development of a Framework for a Watershed-Based Municipal Stormwater Permit for the Menomonee River Watershed,” by the Menomonee River Watershed-Based Permit (WBP) Framework Group, a question arose as to what effects concentration spikes of chloride occurring during cold weather are likely to have upon aquatic biota within the Menomonee River watershed. This appendix presents the results of a literature review to address this question. Specifically, this appendix presents the results of a review of the literature regarding the acute toxicity of sodium chloride to freshwater aquatic organisms, compares the results of this review to estimates of chloride concentrations during the winter deicing season at locations within the Menomonee River watershed, and discusses whether aquatic organisms are likely to experience toxic effects in streams in the watershed.

ACUTE TOXICITY OF SODIUM CHLORIDE TO FRESHWATER AQUATIC ORGANISMS

Table A-1 presents data on the acute toxicity of sodium chloride to freshwater aquatic organisms. These results are taken from the toxicological and ecological literature. With two exceptions the tests use the LC50, the concentration at which 50 percent of the organisms die over the duration of the test, as the measure of acute toxicity.¹ A higher LC50 indicates lower toxicity to the organism, while a lower LC50 indicates greater sensitivity to the toxin. The table presents results for several exposure times; however, the majority of results listed come from 96-hour (four-day) acute toxicity tests. This is in keeping with standard toxicological procedures. The results are presented in terms of both the concentration of sodium chloride and an equivalent concentration of chloride. This was done to facilitate comparison of the toxicological data to estimates of chloride concentrations in streams and to the State’s acute toxicity criterion for fish and aquatic life. In the discussion that follows, the LC50s will be expressed in terms of chloride concentrations.

Some patterns are apparent in values presented in Table A-1. LC50 There is considerable variation in LC50 values. For 96-hour tests, they range from 425 milligrams of chloride per liter (mg Cl/l) for the mayfly, *Callibaetis coloradensis*, to 13,085 mg Cl/l for the American eel, *Anguilla rostrata*. With the exception of the LC50 value for *C. coloradensis*, these values are all higher than the State’s acute toxicity criterion for chloride of 757 milligrams per liter. LC50 values for fish species tend to be higher than those for many invertebrate species, suggesting that they are less sensitive to acute chloride toxicity. LC50 values also vary among tests for the same species. This may be due to several factors, including differences in test conditions, genetic variation within species, and differences among statistical techniques used to calculate the LC50 value from the raw toxicology data.

Few data are available on the effects of temperature upon the acute toxicity of sodium chloride. The one study that examined this found that the mayfly *Hexagenia limbata* was more sensitive to chloride at a higher water temperature than at a lower temperature. It is important to note that the temperatures used in this study, 28°C and

¹The two exceptions occur in six-hour toxicity tests and use LC40 and LC47 endpoints. These reflect the concentrations at which 40 percent and 47 percent, respectively, of organisms die during the course of the test. LC50 values for these organisms in six-hour acute toxicity tests would be higher than the values shown.

18°C, were both higher than what would be expected to be observed in streams of the Menomonee River watershed during the winter deicing season.

With one exception, the most sensitive organisms listed in Table A-1 have LC50 values in 96-hour toxicity tests starting at about 1,400 mg Cl/l.² Based on this, it was decided to use 1,400 mg Cl/l as a threshold for acute toxicity effects in further analysis and discussion. It should be noted that this threshold is considerable higher than the State of Wisconsin's acute toxicity criterion for fish and aquatic life for chloride of 757 mg/l and represents a threshold at which substantial acute toxic effects would be expected to occur.

The LC50 values listed in Table A-1 are for toxicity associated with sodium chloride. The toxicity of chloride can vary depending upon the cations with which it is associated. Sodium chloride-based deicers were shown to have lower toxicity to rainbow trout, the water flea *Ceriodaphnia dubia*, and the alga *Selenastrum capricornatum* than other chloride-based deicers such as calcium chloride and magnesium chloride and acetate-based deicers.³ For example, the LC50 for sodium chloride for *C. dubia* was 6,583 mg/l. Lower LC50s were seen for this organisms for other chloride-based deicers with an LC50 for calcium chloride of 3,828 mg/l and LC50's for magnesium chloride ranging between 660 mg/l and 4,950 mg/l, depending on the particular deicer formulation. By comparison, LC50s for *C. dubia* for acetate-based deicers range between 660 mg/l and 4,670 mg/l.⁴

It is important to note that the LC50 values listed in Table A-1 reflect the toxicity of sodium chloride. Commercial deicers also contain trace amounts of metals and other substances. For example, one study found that sodium chloride-based deicers contained trace amounts of copper, zinc, cyanide, and sulfate.⁵ Some of these substances can cause acute toxicity in aquatic organisms at low concentrations. Toxic effects related to the presence of these substances in deicers are not reflected in the LC50 values in Table A-1.

LC50 values represents a substantial toxic effect to organism populations. While the LC50 values are useful measures of acute toxicity, they do not represent thresholds below which concentrations are safe or harmless in aquatic habitats. It should be kept in mind that appreciable acute toxic effects can be expected to occur at chloride concentrations that are lower than the LC50s. In addition, appreciable acute toxic effects can be expected to occur over shorter periods of time than the test period associated with a particular LC50. Because of this, it is important to recognize that evaluations of toxicity that utilize LC50s as an indicator of toxicity refer to concentrations at which substantial incidences of toxic effects are likely to be occurring, as opposed to concentrations at which toxic effects begin to appear.

²The LC50 of the one exception, the mayfly *Callibaetis coloradensis*, is below the range of chloride concentrations that can be calculated from specific conductance using the regression relationship described in the next section.

³B. Mussato and T. Guthrie, "Anti-icers: Chemical Analysis and Toxicity Test Results," Prepared for Insurance Corporation of British Columbia, 2000, cited in Colorado Department of Transportation, "Evaluation of Selected Deicers Based Upon a Review of the Literature," Report No. CDOT-DTD-R-2001-15, October 30, 2001.

⁴An important caution in interpreting these comparisons is that they do not take into account any differences in how they are used. It is possible that a more toxic deicer may produce fewer toxic effects in nature due to less of the deicer being required to remove ice from roads.

⁵Mussato and Guthrie, op. cit.

AMBIENT CHLORIDE CONCENTRATIONS IN STREAMS OF THE MENOMONEE RIVER WATERSHED DURING THE WINTER DEICING SEASON

Whether toxicity resulting from road salt constitutes a water quality problem within the Menomonee River watershed depends, in part, on whether concentrations of chloride in streams of the watershed reach the toxic levels identified in Table A-1 for appreciable periods of time during the winter deicing season. A reasonable hypothesis is that much of the chloride loading to these streams consists of pulses that occur either while deicing operations are conducted during winter storms or when ice melt and snowmelt during thaws carries accumulated salt into streams. Under this sort of scenario, it might be expected that chloride concentrations would spike fairly rapidly, followed by a rapid decrease to a relatively nontoxic level. If chloride loading during winter follows this sort of pattern, aquatic organisms might be exposed to high concentrations of chloride for relatively brief periods.

Unfortunately, chloride concentrations in streams of the Menomonee River watershed are rarely directly measured during the winter deicing season. Few data exist and those that do are not collected with enough frequency to allow characterization of the sort of spikes hypothesized in the previous paragraph. Because of this, measurements of specific conductance were chosen as a surrogate for chloride concentration.

Continuously-collected specific conductance data are available from six monitoring stations in the Menomonee River watershed which were established as part of a joint Milwaukee Metropolitan Sewerage District (MMSD)-U.S. Geological Survey (USGS) real-time water quality monitoring program. Under this program, real-time sensors measure specific conductance, dissolved oxygen concentration, turbidity, water temperature, flow, and river level at five-minute intervals under all weather conditions. The data are transmitted to MMSD and USGS offices. While the five-minute interval data are retained for only 120 days, summary data consisting of daily minimum, maximum, and mean values are archived and available from the USGS's NWIS database. Table A-2 lists the monitoring stations from this program that are located in the Menomonee River watershed and lists the periods of record for specific conductance monitoring at these stations. The table also identifies the extent of gaps in the records during the winter deicing season in which specific conductance data were not collected.

A regression model is available that relates specific conductance to chloride concentration in Wisconsin streams⁶. The model was developed using simultaneously collected measurements of specific conductance and chloride concentration from 17 Wisconsin streams, including several in the Milwaukee area. The equation developed in this model is:

$$Cl = 0.363 \times Sc - 271.$$

In this equation, Cl indicates chloride concentration in milligrams per liter and Sc indicates specific conductance in microSeimens per centimeter ($\mu S/cm$). Based on graphical examination of the data, it was determined that the relationship is valid for chloride concentrations greater than 230 mg Cl/l, which is equivalent to a specific conductance of 1,380 $\mu S/cm$. The regression has an R^2 value of 0.997, indicating that this relationship accounts for over 99 percent of the variation in the data within the valid range.

This regression model was used to estimate minimum, maximum, and mean daily chloride concentrations at monitoring stations in the Menomonee River watershed using the daily summary values of specific conductance collected as part of the MMSD-USGS real-time monitoring program. For all values of minimum, maximum, and mean daily specific conductance that were equal to or greater than 1,380 $\mu S/cm$, the concentration of chloride was estimated using the regression equation. For each monitoring station, the record of estimated chloride

⁶Corsi, S.R., D.J. Graczyk, S.W. Geis, N.L. Booth, and K. D. Richards, "A Fresh Look at Road Salt: Aquatic Toxicity and Water-Quality Impacts on Local, Regional, and National Scales," Environmental Science & Technology, Volume 44, 2010.

concentrations was examined to identify periods in which the daily minimum chloride concentration was equal to or greater than 1,400 mg Cl/l for four or more days. This value was chosen as the screening value because it both exceeds the State's acute toxicity criterion for fish and aquatic life for chloride and reflects the low end of the LC50 values identified for freshwater organisms in the 96-hour acute toxicity studies summarized in Table A-1.

There were two stations, one along Honey Creek and one in Underwood Creek, at which periods were detected when the daily minimum concentration of chloride exceeded 1,400 mg Cl/l for four or more days. These periods are summarized in Table A-3. At the monitoring station along Honey Creek, there were nine periods between November 2008 and March 2011 during which the daily minimum concentration of chloride exceeded 1,400 mg Cl/l for four or more days. The lengths of these periods ranged from four to 19 days. These periods often occurred in rapid succession. For example, four periods occurred during the time between December 22, 2010 and February 28, 2011, accounting for 42 out of 69 days. The summary statistics presented in Table A-3 suggest that chloride concentrations in Honey Creek were quite variable during these periods. For example, during the period December 22-25, 2010 the daily minimum chloride concentrations at the Honey Creek monitoring station ranged between 1,566 mg Cl/l and 5,718 mg Cl/l. Maximum daily chloride concentrations at this station during the same period ranged between 2,226 mg Cl/l and 7,933 mg Cl/l. The average chloride concentrations detected in these streams during these periods ranged between 1,917 mg Cl/l and 3,742 mg Cl/l. At the monitoring station along Underwood Creek, one period during which the daily minimum concentration of chloride exceeded 1,400 mg Cl/l for four or more days occurred between February 2010 and July 2011. Chloride concentrations at that station were above 1,400 mg Cl/l for nine consecutive days.

Daily minimum chloride concentrations at three other monitoring stations—the Little Menomonee River near Freistadt, the Menomonee River at Pilgrim Road, and the Menomonee River at N. 70th Street—did not exceed 1,400 mg Cl/l for periods of four or more days during the period of record.

Two conclusions emerge from this examination of winter deicing season chloride concentrations calculated from specific conductance. First, concentrations of chloride during the winter in Honey and Underwood Creeks, as calculated from specific conductance, achieve levels that are well within the range of chloride concentrations that were found to result in the deaths of 50 percent of test organism in 96-hour toxicity tests. In both streams, chloride concentrations during the winter deicing season appear to remain at levels that are associated with acute toxic effects for extended periods of time. Thus, for these streams, the rapid-spike model previously hypothesized does not appear to give a good description of chloride concentrations during the winter.

Second, the results suggest that chloride concentrations probably reach higher levels in smaller streams that are located in highly urbanized areas than they do in larger streams and streams located in less urbanized areas. Comparisons of discharge at streamflow monitoring gauges in the Menomonee River watershed show that on average discharge at the monitoring stations along Honey and Underwood Creek account for 6 and 14 percent, respectively, of the discharge at the gauge along the Menomonee River at N. 70th Street.⁷ In addition, the subwatersheds drained by these streams are highly urbanized. By contrast, discharge at the gauge along the Menomonee River at Pilgrim Road—one of the sites where calculated chloride concentrations did not exceed 1,400 mg Cl/l for periods of four or more days during the period of record—accounts for 29 percent of the discharge at the gauge along Menomonee River at N. 70th Street. The higher volume of discharge at this station may result in greater dilution of chloride. In addition, rural land uses comprise a greater percentage of the areas upstream of this site than they do for the Honey Creek and Underwood Creek stations.

⁷See Map 32 in *SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007*.

LIKELY EFFECTS OF POTENTIALLY TOXIC CONCENTRATIONS OF CHLORIDE TO ORGANISMS IN THE MENOMONEE RIVER

As described above, chloride concentrations in some streams of the Menomonee River watershed reach toxic levels during the winter deicing season for extended periods of time. The likelihood that toxic effects are occurring in these streams also depends upon what organisms are present in the streams during the winter deicing season. It should be noted that, to some extent, the organisms listed in Table A-1 for which the acute toxicity of sodium chloride has been characterized reflect species that are suitable for toxicity testing. These are organisms that are readily available, that can be maintained under laboratory conditions, and that have well-understood physiological and nutritional requirements. How much they reveal about potential toxic effects in streams of the Menomonee River watershed depends on at least two factors: 1) how representative these species are of the biota found in streams of the watershed, and 2) whether sensitive life history stages of these species are present in streams during the winter deicing season.

The species for which sodium chloride toxicity has been characterized, as listed in Table A-1, were compared to the species records reviewed as part of the analyses made for the recent update of the regional water quality management plan for the Greater Milwaukee watersheds.⁸ Four fish species listed in Table A-1—bluegill, brook trout, fathead minnow, and goldfish—have been detected in fisheries surveys of the watershed. In species other than fish, one frog species—wood frog—and two macroinvertebrate species—the scud *Gammarus pseudolimnaeus*, and the caddisfly *Hydropsyche betteni*—have also been reported as being present. In addition, organisms belonging to five additional macroinvertebrate genera—caddisflies in the genera *Hydroptila* and *Pycnopsyche*, mayflies of the genus *Callibaetis*, midges of the genus *Chironomus*, and snails of the genus *Physa*—have been collected from streams in the Menomonee River watershed. It is important to note that organisms were identified only to the level of genus in many of the macroinvertebrate surveys, so it is possible but not certain that these particular test species are also present in the watershed. At least seven to 12 of the species listed on Table A-1 have been reported as being present in streams of the Menomonee River watershed. Given this, Table A-1 can be held as including a reasonable representation of aquatic organism species typical of the Menomonee River watershed.

A brief review of available literature regarding the life histories of the species listed in Table A-1 indicates that many of the species listed would be expected to be present in streams during the winter deicing season. Three of the fish species that are listed in the table and present in streams of the watershed—bluegill, brook trout, and goldfish—have life spans that last several years.⁹ While fathead minnows typically live for only one to two years, spawning occurs in the spring and eggs hatch within about a week of spawning.¹⁰ Thus, all four of these species may be present in streams as adults during the winter deicing season. The remaining vertebrate listed in the table—the wood frog—typically would not be present in streams during the winter deicing season. These animals normally hibernate in terrestrial and wetland forest habitats.¹¹

⁸SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007.

⁹George Becker, *Fishes of Wisconsin*, University of Wisconsin Press, 1983.

¹⁰Ibid.

¹¹A.H. Wright and A.A. Wright, *Handbook of Frogs and Toads of the United States and Canada*, 3rd edition, Cornell University Press, 1949.

Life history information was available for some of the invertebrates listed in Table A-1. Two groups of caddisflies listed in the table, the species *Hydropsyche betteni* and members of the genus *Pycnopsyche*, overwinter in waterbodies as late-instar larvae.¹² In northern areas like Wisconsin, the mayfly *Hexagenia limbata* typically completes its life cycle over two years. While some populations may overwinter as eggs during the first winter, they are typically present in waterbodies as larvae during the second.¹³ The scud *Gammarus lacustris* has a 15-month lifespan with reproduction occurring in or around the month of February.¹⁴ Thus, this species is present in streams as adults for much of the winter. The isopod *Lirceus fontinalis* overwinters as adults or large juveniles.¹⁵ The water flea *Daphnia pulex* overwinters both as resting eggs and as adults in the water column.¹⁶

Some of the invertebrate species that are present in waterbodies during the winter may experience less exposure to dissolved chloride than would be indicated based on ambient concentrations either because they remove themselves from the water column or enter a diapause, or resting, stage during winter. Nymphs of mayflies in the genus *Callibaetis* are thought move to areas of deeper water and overwinter in mats of vegetation.¹⁷ Larvae of midges of the genus *Chironomus* often overwinter in diapause.¹⁸

Based on the available life history information, it is likely that organisms are present in streams of the Menomonee River watershed during the winter deicing season. Given that concentrations of chloride in some streams of watershed appear to reach levels associated with substantial incidences of toxic effects as measured by LC50 concentrations for extended periods of time, it is likely that inputs of chlorides from deicers are causing some toxic effects to aquatic organisms in streams of the watershed.

¹²S. Alexander and L.A. Smock, "Life Histories and Production of Cheumatopsyche analis and Hydropsyche betteni, (Trichoptera: Hydropsychidae) in an Urban Virginia Stream, Northeastern Naturalist, Volume 12, 2005; R. J. Mackay, The Life Cycle and Ecology of Pycnopsyche gentilis (McLachlan), P. luculenta (Betten), and P. scabripennis (Rambur), (Trichoptera: Limnephilidae) in West Creek, Mont. St. Hilaire, Quebec, Ph.D. Dissertation, McGill University, Montreal, Quebec, April 1992.

¹³B.P. Hunt, "The Life History and Economic Importance of a Burrowing Mayfly, Hexagenia limbata in Southern Michigan Lakes," Michigan Conservation Department Bulletin of the Institute of Fisheries Research, No.4, 1953.

¹⁴H.B.N. Hynes and F. Harper, "The Life Histories of Gammarus lacustris and Gammarus pseudolimnaeus in Southern Ontario, Crustaceana, Supplement No. 3: Studies on Peracarida, 1972.

¹⁵X. Zhao, M.G. Fox, D.C. Lasenby, A.C. Armit, and D.N Kuthamale, "Substrate Selection and Seasonal Variation in Abundance and Size Composition of Isopod Lirceus fontinalis in Ontario Streams, Canada," Chinese Journal of Oceanography and Limnology, Volume 25, 2007.

¹⁶W. Lampert, K.P. Lampert, and P. Larsson, "Coexisting Overwintering Strategies in Daphnia pulex: A Test of Genetic Differences and Growth Responses," Limnology and Oceanography, Volume 55, 2010.

¹⁷K. E. Gibbs, "Ovoviviparity and Nymphal Seasonal Movements of Callibaetis spp. (Ephemeroptera: Baetidae) in a Pond in Southwestern Canada," Canadian Entomologist, Volume 111, 1979.

¹⁸B.R. Goddeeris, A.C. Vermeulen, E. DeGeest, H. Jacobs, B. Baert, and F. Ollevier, "Diapause Induction in the Third and Fourth Instar of Chironomus riparius (Diptera) from Belgian Lowland Brooks," Archiv fur Hydrobiologie, Volume 150, 2001.

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* * *

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Table A-1

ACUTE TOXICITY OF SALT (SODIUM CHLORIDE) TO FRESHWATER AQUATIC ORGANISMS

Species	Common Name	NaCl Concentration (mg/l)	Chloride Concentration (mg/l)	Exposure Time (hours)	Response ^a	Reference
<i>Salvelinus fontinalis</i>	Brook trout	50,000	30,330	0.25	LC50	Phillips, 1944
<i>Lepomis macrochirus</i>	Bluegill	20,000	12,132	6.00	LC47	Waller, <i>et al.</i> , 1996
<i>Oncorhynchus mykiss</i>	Rainbow trout	20,000	12,132	6.00	LC40	Waller, <i>et al.</i> , 1996
<i>Chironomus attenuatus</i>	Midge	9,995	6,063	6.00	LC50	Thornton and Sauer, 1972
<i>Lepomis macrochirus</i>	Bluegill	14,100	8,553	24.00	LC50	Doudoroff and Katz, 1953
<i>Daphnia magna</i>	Water flea	7,754	4,704	24.00	LC50	Cowgill and Milazzo, 1990
<i>Cirrhinus mrigalo</i>	Indian carp fry	7,500	4,550	24.00	LC50	Gosh and Pal, 1969
<i>Labeo rohito</i>	Indian carp fry	7,500	4,550	24.00	LC50	Gosh and Pal, 1969
<i>Catla catla</i>	Indian carp fry	7,500	4,550	24.00	LC50	Gosh and Pal, 1969
<i>Daphnia pulex</i>	Water flea	2,724	1,652	24.00	LC50	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	2,724	1,652	24.00	LC50	Cowgill and Milazzo, 1990
<i>Daphnia pulex</i>	Water flea	2,042	1,239	48.00	LC50	Gardner and Royer, 2010
<i>Daphnia pulex</i>	Water flea	1,812	1,099	48.00	LC50	Gardner and Royer, 2010
<i>Anguilla rostrata</i>	American eel, (black eel stage)	21,571	13,085	96.00	LC50	Hinton and Eversole, 1978
<i>Anguilla rostrata</i>	American eel, (black eel stage)	17,969	10,900	96.00	LC50	Hinton and Eversole, 1978
<i>Gambusia affinis</i>	Mosquito fish	17,500	10,616	96.00	LC50	Wallen, <i>et al.</i> , 1957
<i>Hydropsyche betteni</i>	Caddisfly	13,308	8,073	96.00	LC50	Kundman, 1998
<i>Lepomis macrochirus</i>	Bluegill	12,964	7,864	96.00	LC50	Trama, 1954
<i>Oncorhynchus mykiss</i>	Rainbow trout	11,112	6,743	96.00	LC50	Spehar, 1987
<i>Pimephales promelas</i>	Fathead minnow	10,831	6,570	96.00	LC50	Birge, <i>et al.</i> 1985
<i>Culex</i> sp.	Mosquito	10,254	6,222	96.00	LC50	Dowden and Bennett, 1965
<i>Lepomis macrochirus</i>	Bluegill	9,627	5,840	96.00	LC50	Birge, <i>et al.</i> 1985
<i>Gammarus pseudolimnaeus</i>	Scud	7,700	4,670	96.00	LC50	Blasius and Merritt, 2002
<i>Pimephales promelas</i>	Fathead minnow	7,681	4,659	96.00	LC50	Wisconsin State Laboratory of Health, 1995
<i>Pimephales promelas</i>	Fathead minnow	7,650	4,640	96.00	LC50	Adelman, <i>et al.</i> , 1976
<i>Carassius auratus</i>	Goldfish	7,341	4,453	96.00	LC50	Adelman, <i>et al.</i> , 1976
<i>Anaobolia nervosa</i>	Caddisfly	7,014	4,255	96.00	LC50	Sutcliffe, 1961

Table A-1 (continued)

Species	Common Name	NaCl Concentration (mg/l)	Chloride Concentration (mg/l)	Exposure Time (hours)	Response ^a	Reference
<i>Limnephilus stigma</i>	Caddisfly	7,014	4,255	96.00	LC50	Sutcliffe, 1961
<i>Daphnia magna</i>	Water flea	6,709	4,071	96.00	LC50	Wisconsin State Laboratory of Health, 1995
<i>Chironomus attenuatus</i>	Midge	6,637	4,026	96.00	LC50	Thornton and Sauer, 1972
<i>Hexagenia limbata</i>	Mayfly	6,300	3,822	96.00	LC50 at 18°C	Chadwick, 1997
<i>Daphnia magna</i>	Water flea	6,031	3,658	96.00	LC50	Cowgill and Milazzo, 1990
<i>Lepidostoma</i> sp.	Caddisfly	6,000	3,640	96.00	LC50	Williams, <i>et al.</i> , 2000
<i>Hydroptila angusta</i>	Caddisfly	5,526	3,352	96.00	LC50	Hamilton <i>et al.</i> , 1975
<i>Cricotopus trifascia</i>	Midge	5,192	3,149	96.00	LC50	Hamilton <i>et al.</i> , 1975
<i>Rana sylvatica</i>	Wood frog (tadpoles)	5,109	3,099	96.00	LC50	Sanzo and Hecnar, 2006
<i>Cirrhinus mrigalo</i>	Indian carp fry	4,980	3,021	96.00	LC50	Gosh and Pal, 1969
<i>Labeo rohoto</i>	Indian carp fry	4,980	3,021	96.00	LC50	Gosh and Pal, 1969
<i>Catla catla</i>	Indian carp fry	4,980	3,021	96.00	LC50	Gosh and Pal, 1969
<i>Lirceus fontinalis</i>	Isopod	4,896	2,970	96.00	LC50	Birge, <i>et al.</i> , 1985
<i>Physa gyrina</i>	Snail	4,088	2,480	96.00	LC50	Birge, <i>et al.</i> , 1985
<i>Daphnia magna</i>	Water flea	3,939	2,390	96.00	LC50	Arambasic, <i>et al.</i> , 1995
<i>Pycnopsyche guttifer</i>	Caddisfly	3,526	2,140	96.00	LC50	Blasius and Merritt, 2002
<i>Pycnopsyche lepida</i>	Caddisfly	3,526	2,140	96.00	LC50	Blasius and Merritt, 2002
<i>Daphnia magna</i>	Water flea	3,054	1,853	96.00	LC50	Anderson, 1948
<i>Rana sylvatica</i>	Wood frog (tadpoles)	2,636	1,599	96.00	LC50	Sanzo and Hecnar, 2006
<i>Ceriodaphnia dubia</i>	Water flea	2,630	1,596	96.00	LC50	Wisconsin State Laboratory of Health, 1995
<i>Daphnia pulex</i>	Water flea	2,422	1,470	96.00	LC50	Birge, <i>et al.</i> , 1985
<i>Hexagenia limbata</i>	Mayfly	2,400	1,456	96.00	LC50 at 28°C	Chadwick, 1997
<i>Ceriodaphnia dubia</i>	Water flea	2,308	1,400	96.00	LC50	Cowgill and Milazzo, 1990
<i>Callibaetis coloradensis</i>	Mayfly	700	425	96.00	LC50	Wichard, 1975

^aLC50 is the concentration that is lethal to 50 percent of the test organisms. A higher LC50 value means lower toxicity of the chemical to the organism.

Source: SEWRPC.

Table A-2

**CONTINUOUS SPECIFIC CONDUCTANCE DATA RECORDS
AVAILABLE IN THE MENOMONEE RIVER WATERSHED**

Location	Period of Record	Comments
Honey Creek at Wauwatosa (Honey Creek Parkway)	12/6/2008 – 8/26/2011	Six data gaps during winter deicing seasons totaling to 37 days without data
Little Menomonee River near Friestadt (downstream of W. Donges Bay Road)	11/8/2008 – 7/26/2011	One data gap during winter deicing season totaling four days without data
Little Menomonee River at USH 41	5/7/2010 – 9/28/2010, 5/5/2011 – 7/18/2011	No data collected during the winter deicing season
Menomonee River at N. 70th Street	11/5/2008 – 9/13/2010	Three data gaps during winter deicing seasons totaling nine days without data
Menomonee River at Pilgrim Road	11/8/2008 – 7/26/2011	- -
Underwood Creek at Wauwatosa (Gravel Sholes Park downstream of Mayfair Road)	2/12/2010 – 7/26/2011	One data gap during winter deicing season totaling two days without data

Source: Milwaukee Metropolitan Sewerage District, U.S. Geological Survey, and SEWRPC.

Table A-3

**PERIODS WHEN CALCULATED CHLORIDE CONCENTRATION IN STREAMS OF THE MENOMONEE RIVER
WATERSHED EXCEEDED 1,400 MILLIGRAMS PER LITER FOR FOUR DAYS OR MORE: NOVEMBER 2008 TO JULY 2011**

Stream	Length (days)	Calculated Chloride Concentrations (milligrams per liter)						
		Lowest Daily Minimum	Highest Daily Minimum	Lowest Daily Maximum	Highest Daily Maximum	Lowest Daily Mean	Highest Daily Mean	Average over the Period
Honey Creek at Wauwatosa								
December 6, 2008-December 13, 2008.....	8	1,715	3,348	2,724	6,589	1,998	4,630	3,448
January 8, 2009-January 12, 2009	5	1,417	3,087	2,223	4,230	1,882	3,577	2,613
January 18, 2009-January 22, 2009	5	1,420	1,613	1,969	2,727	1,733	2,179	1,917
February 9, 2010-February 14, 2010	6	1,504	2,266	1,972	4,775	1,734	3,021	2,519
February 17, 2010-March 2, 2010.....	14	1,410	3,326	1,751	6,227	1,577	4,266	2,421
December 22, 2010-December 25, 2010	4	1,566	5,718	2,226	7,933	1,842	6,590	3,742
January 11, 2011-January 21, 2011	11	1,613	3,904	2,383	7,679	2,092	6,227	3,522
January 28, 2011-February 15, 2011	19	1,456	3,504	2,001	5,573	1,725	3,904	2,542
February 21, 2011-February 28, 2011	8	1,929	2,680	2,963	4,448	2,426	3,831	3,024
Underwood Creek at Wauwatosa ^b								
February 21, 2011-March 1, 2011.....	9	1,413	1,940	1,649	2,869	1,507	2,383	1,833

^aChloride concentrations were calculated from specific conductance using the regression equation from Corsi et al. (2010). The regression equation is based on data from 17 Wisconsin streams. The regression equation is $Cl = 0.363 \times Sc - 271$, where Cl is the concentration of chloride in milligrams per liter and Sc is the specific conductance in microSiemens per centimeter. This equation is considered valid for chloride concentrations greater than 230 milligrams per liter, which is equivalent to a specific conductance of 1,380 in microSiemens per centimeter.

^bPeriod of record at this site was February 12, 2010 through July 26, 2011.

Source: SEWRPC.

Unofficial Text (See Printed Volume). Current through date and Register shown on Title Page.

specific audiences such as lawn care companies and restaurants on methods of storm water pollution prevention.

3. Promote environmentally sensitive land development designs by developers and designers.

Note: The public education and outreach program should be tailored, using a mix of locally appropriate strategies to educate the general public and target specific audiences likely to have significant storm water impacts.

(2) **PUBLIC INVOLVEMENT AND PARTICIPATION.** A program to notify the public of activities required by the municipal storm water discharge permit required under this subchapter and to encourage input and participation from the public regarding these activities. The implementation of this program shall comply with all applicable state and local public notice requirements.

(3) **ILICIT DISCHARGE DETECTION AND ELIMINATION.** A program to detect and remove illicit discharges and improper disposal of wastes into the municipal separate storm sewer system, or require the discharger to obtain a separate WPDES permit. The program shall include all of the following:

(a) To the extent authorized by law, measures to effectively prohibit, through ordinance or other regulatory mechanism, non-storm water discharges into the storm sewer system and implement appropriate enforcement procedures and actions.

(b) A strategy to address all types of illicit discharges. In addition, non-storm water discharges or flows such as landscape irrigation, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, fire fighting and discharges authorized under a WPDES permit shall be included in the strategy if identified by the municipality as significant sources of pollutants to waters of the state.

(c) Procedures to conduct on-going field screening activities during the term of the permit, including locations of storm sewers that will be evaluated.

(d) Procedures to be followed to investigate portions of the municipal separate storm sewer system that, based on the results of field screening or other information, indicate a reasonable potential for containing illicit discharges or other sources of non-storm water. Procedures may include sampling for the parameters listed within par. (i), testing with fluorometric dyes or conducting inspections inside storm sewers where safety and other considerations allow. The department shall be given advanced notice of the time and location of dye testing within an MS4.

Note: The dye may be reported to the department by concerned citizens as an illicit discharge. Prior notification will prevent false alarms.

(e) Procedures to immediately investigate reports of illicit discharges to its MS4, including cooperation with the department, in order to locate and eliminate illicit discharges.

(f) Procedures for immediate notification of the department in accordance with ch. NR 706, of a spill or release of a hazardous substance, into or from an MS4.

Note: The department shall be notified via the 24-hour toll-free spill hotline at 1-800-943-0003.

(g) Procedures to prevent, contain and respond to spills that may enter the municipal separate storm sewer system.

(h) Appropriate measures to eliminate any leakage or discharge from sanitary conveyance systems into municipal separate storm sewer systems.

(i) A field screening analysis for illicit connections and illicit discharges at all major outfalls, plus any additional selected field-screening points designated by the municipality or the department. At a minimum, a screening analysis shall include a narrative description of visual observations made during dry weather periods. If any flow is observed, field analysis shall be conducted to determine the presence of illicit discharges. All field analysis shall include a narrative description of the color, odor, turbidity, the presence of an oil sheen or surface scum, and a description of the flow rate as well as any other relevant observations regarding

the potential presence of non-storm water discharges. In addition, the field analysis shall include sampling for pH, total chlorine, total copper, total phenol and detergents unless the permittee obtains concurrence from the department to perform alternative sampling that is more effective to detect illicit discharges such as with ammonia, potassium or bacteria. The field screening points shall be established using the following:

1. Field screening points shall, where possible, be located downstream of any sources of suspected illegal or illicit activity.

2. Field screening points shall be located where practicable at the farthest manhole or other accessible location downstream in the system. Safety of personnel and accessibility of the location shall be considered in making this determination.

3. Consideration shall be given to hydrological conditions, total drainage area of the site, population density of the site, traffic density, age of the structures or buildings in the area, history of the area and land use types.

(4) **CONSTRUCTION SITE POLLUTANT CONTROL.** Except for construction sites that are exempted under s. NR 216.42 (2) to (11), a program to implement and maintain erosion and sediment control best management practices to reduce pollutants in storm water runoff from construction sites with one acre or more of land disturbance, and sites of less than one acre if they are part of a larger common plan of development or sale. This program shall encompass any adjacent developing areas that are planned to have a minimum density of 500 people per square mile, the urbanized area and developing areas whose runoff will connect to the MS4. The program shall include all of the following:

(a) The implementation and enforcement of a legal authority to comply with ss. NR 151.11 and 151.23, as well as sanctions to ensure compliance, to the extent authorized by law.

Note: Section NR 151.11 applies to construction sites that are not transportation facilities and s. NR 151.23 applies to transportation facility construction sites.

(b) Procedures for site planning which incorporate consideration of potential water quality impacts.

(c) Requirements for erosion and sediment control best management practices.

(d) Procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, the characteristics of soil and receiving water quality.

(e) Requirements for construction site operators to manage waste such as discarded building materials, concrete truck wash-out, chemicals, litter, and sanitary waste at the construction site so as to minimize adverse impacts to water quality.

(f) Procedures for receipt and consideration of information submitted by the public.

(5) **POST-CONSTRUCTION SITE STORM WATER MANAGEMENT.** A program to develop, implement and enforce controls on discharges from new development and redevelopment projects that disturb one acre or more of land, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. This program shall encompass any adjacent developing areas that are planned to have a minimum density of 500 people per square mile, the urbanized area and developing areas whose runoff will connect to the MS4. The program shall include all of the following:

(a) The implementation and enforcement of a legal authority to comply with ss. NR 151.12 and 151.24.

Note: Section NR 151.12 applies to construction sites that are not transportation facilities and s. NR 151.24 applies to transportation facility construction sites.

(b) Procedures for site planning which incorporate consideration of potential water quality impacts.

(c) Requirements for source area control and regional best management practices.

(d) Procedures for inspecting and enforcing maintenance of best management practices.

Exhibit E

2010 Illicit Discharge Screening Summary for MS4-Permitted Communities within the Menomonee River Basin

MS4	Number of Outfalls in MS4	Number of Outfalls Screened, with Flow	Number of Suspected Illicit Discharges	Samples Parameters (Max, Min, Avg) mg/L						
				Ammonia	Detergent	Fluoride	Potassium	Copper	Chlorine	Phenol
Greenfield	37	37, 27	4	(3.5, 0, 0.35)	(3, 0, 0.60)	(1.28, 0.03, 0.46)	(20.1, 1.2, 7.41)			
Brookfield	48	48	2	()	()			()	()	()
Menomonee Falls	173	173, 12	0	()	()				()	()
Germantown	23	23, 5	0		(0.25, 0, 0)			(0, 0, 0)	(0.1, 0, 0.04)	(0.05, 0, 0)
West Milwaukee	17	17, 11	2		(0, 0, 0)			(0, 0, 0)	(0.6, 0, 0.13)	(0, 0, 0)
Wauwatosa	31	31, 27	11	(1, 0, 0.05)	(10, 0, 2)			(0.58, 0.06, 0.30)	(0.52, 0.02, 0.15)	
Elm Grove	4	4, 0	0	No sampling conducted in 2010						
Butler	9	9, 5	0		(0, 0, 0)			(0, 0, 0)	(0, 0, 0)	(0, 0, 0)
Milwaukee	757	963 tested locations (including upstream follow-up), 263	67 tests above expected range, 8 cross-connections	(20, 0, 1.17)	(10, 0, 0.53)			(1.25, 0, 0.01)	(2, 0, 0.22)	(0.4, 0, 0.004)
West Allis	49	37, 23	1		(1.5, 0, 0.25)	(0.1, 0, 0.008)			(0.6, 0, 0.09)	(0.3, 0, 0.028)
TOTAL	1148	373	95	Range 0.00 - 20.0 mg/L	Range 0.00 - 10 mg/L	Range 0.00 - 1.28 mg/L	Range 1.2 - 20.1 mg/L	Range 0.00 - 1.25 mg/L	Range 0.00 - 2.0 mg/L	Range 0.00 - 0.40 mg/L
Expected Ranges:				< 0.1 mg/L	< 0.25 mg/L	< 0.25 mg/L	< 3.1 mg/L	< 1.0 mg/L	< 0.2 mg/L	< 0.00 mg/L

Exhibit F

Earth Tech AECOM
June, 2008

Illicit Discharge Detection & Elimination Program Procedures Village of Germantown

TABLE 2
TEST PARAMETER RANGES AND FOLLOW-UP LEVELS (1)

Indicator Parameter	Limits of Detection	Parameter Accuracy	Follow-up Level
pH	0.0 - 14.0	+/- 0.1	≤ 6.0 or ≥ 9.0
Detergents	0.25 mg/l	0.125 - 0.5 mg/l	≥ 0.5 mg/l
Total Residual Chlorine	0.10 mg/l	0.05 - 0.25 mg/l	≥ 1.0 mg/l
Phenols	0.10 mg/l	0.05 - 1.0 mg/l	> 0.1 mg/l
Total Copper	0.10 mg/l	0.05 - 1.0 mg/l	> 0.2 mg/l

(1) Detection Limits and Accuracy (as shown and generally +/- 1/2 of color increment) identified is based on CHEMetrics™ CHEMets® field screening test kit and may require modification by the Village based on test kit changes, background levels and other factors. Follow-up level is based on WDNR guidance from other monitoring programs (specifically the City of Milwaukee's IDDE program), test subjectivity, and test variances.

- d. For those major outfalls identified in the field chemical analysis or identified by other information as having a reasonable potential for containing illicit discharges or other sources of unallowable non-storm water discharges, the Village will attempt to locate the source of the potential discharge. The following procedure will generally be followed:
 - i. The suspect outfall will be tested using the grab sample technique identified in Section B.2.d. above to confirm the presence of the suspect chemical(s). Typically, only the chemical(s) of interest will be tested for.
 - ii. The sampling crew will follow the storm drainage system upstream to the next accessible upstream manhole or storm sewer junction to confirm the presence of flow and chemical(s) of interest. This procedure will be continued using storm sewer system mapping until the suspect illicit discharge chemical source location is isolated to the extent practicable.
 - iii. Once the location is isolated (if possible), the crew will search for obvious visual signs of illicit connections and discharges by conducting a "windshield survey". The survey includes photographing the surrounding area including buildings, observing business types, and other items of interest. Other items of interest can include, but are not limited to outdoor storage areas, staining, or other potential signs of illicit discharges or dumping. Inlets and catch basins, if present may be inspected for the presence of discolored water, staining, or other indications of non-storm water discharges and may include direct chemical testing of sumps. No internal entry of any business is included in this effort. The results of the survey will be shared with Village staff at a meeting for discussion of potential sources and recommended next steps.
 - iv. Following the "windshield survey", building records may be researched to identify potential cross connections and discussions may be held with building owners.

- v. If no immediate source is apparent after visual site inspection of sewers and buildings, the Village will consider other methods to identify the flow such as leak detection, sewer system televising, dye water testing (The WDNR will be notified in advance of the time and location of any dye water testing), smoke testing, etc., based on the general location of the chemical and other specific details such as proximity to industrial activity, water mains, and sanitary sewers.
 - vi. The Village will assess whether or not an identified source facility is appropriately permitted to discharge into the storm water system.
 - vii. When an illicit connection/discharge is located, the Village will begin procedures to work with the subject property/owner to eliminate the connection as expediently as possible.
 - viii. In the case of an illicit discharge that originates within the Village and that discharges directly to a neighboring municipality, the Village will notify the affected municipality within one working day of confirming the illicit discharge.
 - ix. In the case of an illicit discharge that appears to originate from a neighboring municipality the Village will notify that municipality as soon as practicable.
 - x. Prior to the actual disconnection, the Village will require the owner/operator of the illicit connection/discharge to take all reasonable measures to minimize the discharge of pollutants to the municipal separate storm sewer system.
 - xi. Each illicit connection/discharge discovery will be handled on a case-by-case basis. The Village has not prepared an exact remedy or timeframe for illicit discharge correction because of the wide variability of potential discharge situations. More complicated or costly remedies may take a longer period of time to correct. If it appears that more than 72 hours will be required to remedy the situation, the WDNR will be contacted and provided with additional details regarding the problem, including but not limited to interim measures to eliminate or reduce pollutant exposure, and an estimated timeline for complete elimination.
 - xii. The contact person for responding to reports of illicit discharges and spills shall be the Village Engineer or his designee, at (262) 250-4720.
3. The Village proposes the following program to comply with the requirements of responding to and trying to prevent spills that may, or do, discharge into the municipal separate storm sewer system:
- a. The Village will respond to and investigate reported potential or known spills that discharge into and/or from the municipal separate storm sewer system including tracking the source of the spill (if possible) following the process outlined previously in this document.
 - b. Where appropriate, Village staff will work with first responders and within Village spill response plan guidance and follow-up.
 - c. The Village will prevent and contain spills (if possible) that may discharge into or are already within the municipal separate storm sewer system. Isolation of

Appendix D

**SUMMARY NOTES
DECEMBER 14, 2011 MEETING**

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SUMMARY NOTES OF THE DECEMBER 14, 2011 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The December 14, 2011 meeting of the Menomonee River Watershed-Based Permit (WBP) Framework Group was convened at the Brookfield City Hall at 9:05 a.m. The meeting was called to order by Tom Grisa, City of Brookfield Director of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Brionne Bischke	Village Engineer, Village of Germantown
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Joseph Burtch	Assistant City Engineer, City of West Allis
Theresa Caven	Project Engineer, City of Brookfield
Cindi V. DeBruine	Senior Water Resources Engineer, R.A. Smith National, Inc. (representing the Villages of Butler and West Milwaukee)
James Fratrack	Water Resources Management Specialist, Wisconsin Department of Natural Resources
Sharon L. Gayan	Milwaukee River Basin Supervisor, Wisconsin Department of Natural Resources
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Sean Hayes	Environmental Engineer, Milwaukee County Department of Transportation and Public Works
Andrew A. Holschbach	Land Conservation Director, Ozaukee County
Lauren Justus	Engineering Assistant, Village of Germantown
Kevin Kirsch	Water Resources Engineer, Wisconsin Department of Natural Resources
Laura L. Kletti	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Jeffrey Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc.
Maureen McBroom	Wastewater Specialist, Wisconsin Department of Natural Resources
Ezra Meyer	Water Specialist, Clean Wisconsin
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Robert Newport	Water Division, Region 5, U.S. Environmental Protection Agency
Karen Sands	Manager of Sustainability, Milwaukee Metropolitan Sewerage District
Kevin L. Shafer	Executive Director, Milwaukee Metropolitan Sewerage District
Jodi Habush Sinykin	Senior Counsel, Midwest Environmental Advocates
Timothy J. Thur	Chief Sewer Design Manager, City of Milwaukee Department of Public Works

Mr. Grisa welcomed the attendees to the meeting and thanked them for their participation. He asked everyone to introduce themselves.

REVIEW SUMMARY NOTES OF THE OCTOBER 12, 2011 MEETING OF THE WATERSHED-BASED PERMIT FRAMEWORK GROUP

At Mr. Grisa's request, Mr. Hahn reviewed the summary notes of the October 12, 2011 meeting of the Group.

Mr. Nettesheim asked whether there was an error in the urban nonpoint source load for total phosphorus given in Exhibit A-1. Mr. Boxhorn replied that the number given appeared to be erroneous and stated that this would be corrected.

[Secretary's Note: The total phosphorus row entry for the urban nonpoint sources column of Exhibit A-1 was changed to 20,040. The rural nonpoint source phosphorus load as a percentage of the urban nonpoint phosphorus load was shown correctly in the original table, thus, the conclusion regarding the relationship between rural and urban loads is correct as originally stated in the summary notes of the October 12 meeting.]

Mr. Grisa noted that there is a superfluous "to" in the first sentence of the second paragraph of the Secretary's note on page 2. Mr. Hahn replied that it would be corrected.

[Secretary's Note: The first sentence of the second paragraph of the Secretary's note on page 2 was changed to read (In this Secretary's Note and in subsequent Notes, unless indicated otherwise, revised and added text is indicated in bold letters for clarification only. The Staff Memorandum text will not be bold):

"Mr. Rasmussen indicated that **the** most workable approach would be for each party to the WBP to have its entire municipal or jurisdictional area covered under the permit."

Mr. Hahn stated that the summary notes include some documentation of issues discussed at the November 28, 2011 meeting between Wisconsin Department of Natural Resources (WDNR) Southeastern District and Central Office staffs, the Executive Director of the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water), and Southeastern Wisconsin Regional Planning Commission (SEWRPC) staff.

Mr. Hahn drew the Group's attention to the Secretary's note on page 2 of the summary notes. He stated that Russell Rasmussen, the WDNR Deputy Division Administrator for Water, had indicated at the November 28, 2011 meeting that he views a watershed-based permit as a general/individual permit hybrid. Under this hybrid, the permit would apply to the entire municipal or jurisdictional area of each party covered under the permit. The permit would include general conditions applicable to all MS4s within the permit and specific conditions for each MS4. When available, TMDL wasteload allocations (WLAs) would be incorporated into the permit as part of the specific conditions for each MS4.

Mr. Hahn next addressed the Secretary's note that begins at the bottom of page 3 and continues on page 4. He indicated that the topic of permit fees was discussed at the November 28, 2011 meeting. He stated that that it is unlikely that the WDNR would reduce permit fees for group or watershed-based permits. He noted that the Department expressed concerns about needing sufficient funds to operate the MS4 program.

Mr. Hahn then reviewed the last three paragraphs on page 4 of the summary notes and to Exhibit A-1. He stated that the modeling results for nonpoint source loads in the exhibit, which were developed under the regional water quality management plan update for the greater Milwaukee watersheds, address Wauwatosa City Engineer William Wehrley's question as to whether the Menomonee River watershed contains enough agricultural land for water quality trading to be a viable approach for municipalities to meet their WLAs under a TMDL. Mr. Hahn noted that based on the information in the table, it appears that potential reductions in the agricultural loads in the

watershed would not be large enough to enable urban sources to meet the WLAs that are likely to be established under the ongoing TMDL study. He also noted that, based on the current draft State water quality trading guidelines, the entire rural nonpoint source load would not be available to offset urban point source loads in the long term because a portion of any rural load reduction from land not meeting State performance standards (e.g., a phosphorus index of 6) would be treated as an “interim credit” which would not be available to offset urban nonpoint source loads after the initial five-year term of a water quality trade.

Mr. Hahn drew the Group’s attention to the first full Secretary’s note on page 5. He stated that the provision in the *Wisconsin Administrative Code* related to controlling stormwater runoff pollution to the maximum extent practicable was discussed at the November 28, 2011 meeting. He said that the WDNR staff indicated that once TMDLs are in place, this provision may not have much applicability. He continued that the WDNR staff said if a TMDL WLA could not be met, the available options would be to implement water quality trades, revise the TMDL to reallocate wasteloads among pollution sources, or conduct a use attainability analysis (UAA) for the waterbody. Mr. Kirsch noted that MS4s will have three permit terms after the TMDL is issued to come into compliance with their WLAs. He added that the MS4s will need to show progress toward meeting the WLA each permit term. He indicated that the U.S. Environmental Protection Agency (USEPA) will expect that there be some attempts at compliance with TMDLs before initiating any UAAs.

Mr. Kirsch explained that the way he wants to compute the TMDL load allocations for the three Southeastern Wisconsin watersheds currently being studied (including the Menomonee River watershed) is to first compute the allocations necessary to attain compliance with water quality criteria 100 percent of the time. Following this, he continued, load allocations would be computed assuming lower degrees of compliance. He gave the example of computing the allocations necessary to achieve compliance 90 percent of the time. Mr. Hahn commented that, based on the example of the Rock River watershed TMDL, it is likely that the degree of compliance that is adopted will be less than 100 percent of the time. Mr. Kirsch replied that complying with water quality criteria 100 percent of the time will require very large reductions in pollutant loadings. He noted that when the degree of compliance is reduced to 90 percent of the time, the necessary pollutant load reduction is reduced.

Mr. Hahn asked whether conducting UAAs would be a last resort. Mr. Kirsch replied that this would be the case. He noted that no UAAs have been conducted in Wisconsin. He added that the WDNR is beginning to develop a process for developing and issuing site-specific water quality criteria. He noted that this type of water quality criterion may also be relevant in the instance that point sources are unable to meet WLAs from a TMDL. Mr. Hahn noted that these are all issues that may become relevant during development and implementation of the TMDL, and that it was important to consider them in the context of the watershed-based permit even if they were not unique to a watershed-based permit.

Mr. Hahn stated that the Secretary’s note on page 6 indicates that it was confirmed at the November 28, 2011 meeting that there should be enough regulatory flexibility to enable water quality trading between different types of pollution sources.

Mr. Hahn then noted that the issue of getting MS4 permits in the Menomonee River watershed onto the same permit cycle was discussed at the November 28, 2011 meeting. He indicated that the Secretary’s note that begins on page 7 and continues on page 8 explains how this might be accomplished. Existing permits would be allowed to expire, with coverage being continued under the expired permit. Following development of the watershed-based permit framework, a watershed-based permit would be issued if the municipalities choose to participate in such a permit. Mr. Hahn asked whether the Department would still reissue the MS4 permit(s) prior to completion of the TMDL if TMDL development takes longer than scheduled. Mr. Hartsook replied that the permits would still be reissued prior to completion of the TMDL. He explained that reissuing the permits prior to completion of the TMDL is beneficial to the MS4s because it gives them up to an additional five years in which to prepare for the incorporation of the WLAs into the permit. Mr. Newport commented that for the MS4s to continue to be covered under an expired permit, they must reapply for coverage. Mr. Hartsook replied that the WDNR con-

sidered submission of their last annual report as a reapplication for coverage. Under this, he explained, all of the MS4s have reapplied for permit coverage.

Mr. Hahn said that the first full paragraph on page 8 indicates that the Menomonee River Watershed Group has concluded that a multisource watershed-based permit structure was the most appropriate permit structure, and he asked for Mr. Newport's thoughts on that. Mr. Newport commented that there was the option of structuring it as a group permit. He also noted that it could be structured as a watershed general permit. He added that under this option MS4s would apply for coverage by submitting a notice of intent. Mr. Hartsook stated that the WDNR's preference would be for the MS4s to be copermittees under an individual permit. He added that this could be used in the development of a statewide general permit.

At Mr. Hahn's request, Mr. Boxhorn reviewed Exhibit C-1 of the summary notes. Mr. Boxhorn stated that the Exhibit will be an appendix to the SEWRPC Staff Memorandum that documents the development of the watershed-based permit framework. He added that it was developed to address Mr. Grisa's question regarding the effects of chloride inputs into surface waters of the Menomonee River watershed during cold weather. He noted that the appendix has three parts, with the first part consisting of literature reviews relating to the toxicity of sodium chloride to aquatic organisms. He said that the results of this review are contained in Table A-1 of the appendix, adding that the toxicity measurements listed in the table represent substantial toxic effects, as opposed to the onset of toxic effects.

Mr. Boxhorn stated that the second part of the appendix examines ambient chloride concentrations in surface waters of the Menomonee River watershed during the winter deicing season and compares them to the toxicity data presented in the first part. He explained that because few direct measurements of deicing season chloride concentrations were available, ambient concentrations were calculated from measurements of specific conductance taken at the U.S. Geological Survey (USGS)/Milwaukee Metropolitan Sewerage District (MMSD) real-time monitoring stations using a regression model developed by the USGS staff. He continued that the calculated chloride concentrations were screened for periods in which the minimum daily chloride concentration at a station exceeded the 1,400 milligrams per liter lower threshold of toxic effects for four or more consecutive days. He said that this concentration is considerably higher than the State acute and chronic chloride toxicity criteria for fish and aquatic life. He indicated that nine such periods were found at the real-time station on Honey Creek and one such period was found at the station on Underwood Creek. He noted that these are listed in Table A-2.

Mr. Boxhorn stated that the third part of the appendix examines how representative the organisms used to test the toxicity of sodium chloride are of the aquatic biota of the Menomonee River watershed during the winter deicing season. He indicated that the list of test organisms in Table A-1 was compared to lists of species collected from surface waters in the watershed. He noted that, based upon the degree of taxonomic resolution to which organisms were identified in the available species lists, between seven and 12 of the test organisms listed in Table A-1 have been reported as being present in surface waters of the watershed. He indicated that when he examined the available information on the life histories of these organisms, he found that four fish species could be present in surface waters of the watershed during the winter deicing season. He also noted that some of the macro-invertebrate species were also likely to be present in surface waters during this season.

Mr. Grisa asked whether there were any data available showing decline of species in the Menomonee River watershed due to chloride. Mr. Boxhorn replied that such data were not available.

Mr. Hahn stated that chloride was considered as part of the process to identify which pollutants should be addressed as part of the watershed-based municipal stormwater permit framework and that the conclusion of the Commission staff is that chloride not be included under the framework. He explained that while it is a pollutant of concern, the Commission staff recognizes that the municipalities have been taking several steps to address application of chloride for winter deicing. He suggested that it might be appropriate to include information and

education programming directed toward use of chloride, with education efforts being targeted to private applicators and residents.

Mr. Thur stated that he agreed with this conclusion, noting that making the municipalities responsible for residents and private applicators creates a situation in which enforcement is difficult. Mr. Newport suggested handling chloride as a nonstructural best management practice (BMP), focusing on standard practices and information and education. He added that the State of Minnesota has done considerable work on this and the resources they have developed for information and education on deicing practices could be helpful.

Mr. Grisa noted that regulating total suspended solids under the MS4 permit means that it would be difficult to meet permit conditions to reduce chloride applications by substituting sand for salt. Mr. Newport responded that Lake and McHenry Counties in Illinois optimize deicing using several chemicals. Mr. Grisa replied that the challenge with this sort of optimization is to know what the weather is going to do. He continued that worse problems, such as ice slicks, can be created through optimization if the weather following application is not as anticipated. Mr. Boxhorn added that relative to toxic effects, other chemical deicers can be a poor alternative to salt. He explained that he had looked at available literature and found that most sodium chloride alternatives are similar in toxicity to, or more toxic than, sodium chloride and are applied at similar rates to sodium chloride.

Mr. Meyer commented that Sweet Water's implementation plan for the Menomonee River watershed restoration plan contains several recommendations relative to information and education for reducing chloride applications. He suggested that these could be included in a watershed-based permit. Mr. Hahn replied that, under Item 5 of the agenda, a preliminary watershed-based permit conditions matrix prepared by Mr. Hartsook would be reviewed, and he noted that the matrix includes actions related to salt use.

Mr. Grisa noted that municipal wastewater treatment plants (WWTPs) also discharge chloride into surface waters. He stated the amount of chloride discharged by some plants is about equal to the amount that the municipality applies to roads for deicing. He commented that these chloride discharges could be reduced by shifting to sources of municipal water that require less softening.

Mr. Fratrack stated that municipalities have been monitoring chlorides in WWTP influent and effluent for years. He noted that the concentrations of chloride in WWTP influent tends to be high in wet weather, indicating that chloride may be leaching from soils.

Mr. Hartsook suggested that the permit could include narrative conditions requiring communities to use similar approaches to chloride information and education programs. Mr. Grisa indicated that he did not favor doing this as different municipalities take different approaches dictated by local attitudes and expectations. Mr. Thur added that each municipality looks at deicing as a safety and transportation issue. Mr. Grisa indicated that he agrees with including an information and education provision on chlorides in the permit, but that each municipality should be allowed to optimize its other practices.

Mr. Kirsch suggested that it might be helpful to have Roger Bannerman of the WDNR staff speak with the Group regarding Madison-area salt application measures and their relationship to infiltration. Mr. Newport suggested that conducting and participating in a half-day workshop on state-of-the-art deicing practices for departments of public works in the watershed could be included as a permit requirement. Mr. Hahn noted that Waukesha County has conducted such workshops and that this could be done in partnership with them. Mr. Boxhorn said that Milwaukee County has also conducted deicing workshops. Mr. Hayes added that Milwaukee County invited local departments of public works to the workshops it held. He indicated that the County had brought in participants from the Minnesota programs to discuss state-of-the-art practices. Mr. Martinka noted that the American Public Works Association's North American Snow Conference will be held in Milwaukee in spring 2012. He added that there will also be a session dealing with chlorides at Sweet Water's Clean Rivers/Clean Lake Conference in spring 2012.

Mr. Hahn indicated that it appeared the Group had reached a consensus regarding how to address chlorides under the permit framework, which he summarized as addressing no specific chloride requirements beyond a narrative best practices statement, an information and education requirement, and discussion of how this ties in with the watershed restoration plan.

By consensus of the Group, the summary notes for the October 12, 2011 meeting were approved as corrected.

**DISCUSS RESULTS OF NOVEMBER 28, 2011 MEETING OF WDNR
SOUTHEASTERN DISTRICT AND CENTRAL OFFICE STAFFS,
SWEET WATER EXECUTIVE DIRECTOR, AND SEWRPC STAFF**

At the request of Mr. Grisa, Mr. Hahn summarized the discussion from the November 28, 2011 meeting between WDNR Southeastern District and central office staffs, the Sweet Water Executive Director, and SEWRPC staff. Mr. Hahn distributed a summary of the issues discussed at the meeting.

[Secretary's Note: A copy of the summary is attached hereto as Exhibit A.]

Mr. Hahn explained that the issues on the handout are framed as questions that were asked at the meeting. He noted that the discussions of some of these questions were addressed in the summary notes from the Group's October 12, 2011 meeting.

First Issue on Handout

Mr. Hahn stated that the first issue on the handout, how the watershed-based permit framework would address communities located in multiple watersheds, is addressed in the October 12, 2011 summary notes.

Second Issue on Handout

Mr. Hahn stated that relative to the second issue, the handout summarizes several potential incentives for municipalities to participate in a watershed-based MS4 permit. He noted that the list includes incentives that could be created. He noted that trading with less red tape is already in place under the existing group permit, although it has not been tried.

Mr. Grisa noted that it is unlikely that all of the municipalities in the Menomonee River watershed would participate in a watershed-based MS4 permit. He asked whether a community participating in a watershed-based permit would be able to work cooperatively with a community in the watershed that is not participating in the watershed-based permit. Mr. Hartsook answered that this type of cooperative activity could still be pursued under a watershed-based permit, noting that the *Wisconsin Administrative Code* allows trading within HUC-10 (10-digit Hydrologic Unit Code) watersheds. Mr. Newport added that MS4 permits have provisions allowing cooperation with other MS4s.

Mr. Hahn asked whether USEPA would be able to provide funding incentives for municipalities to participate in a watershed-based MS4 permit. Mr. Newport replied that there is no mechanism for doing this. He suggested that it might be possible to give MS4s permitted under a watershed-based permit higher priority in decisions regarding loans from the State Revolving Fund. Mr. Hahn noted that this is listed as an option in the handout. Mr. Grisa noted that resources are limited in the State Clean Water Revolving Loan Fund and commented that he would not want to take funding from other programs that municipalities rely upon.

Mr. Hahn stated that WDNR Central Office staff suggested that another potential incentive for municipalities to participate in a watershed-based permit is that the participating municipalities could take advantage of redevelopment opportunities to pool funds to implement BMPs to control stormwater pollution and save on the expense of retrofitting nonpoint source controls in areas of existing development. He noted that redevelopment provides some of the best opportunities for management practices in largely developed urban areas. He said that, under the approach suggested by the WDNR Central Office staff, those municipalities that helped to fund

practices to reduce nonpoint source pollution from a specific redevelopment project could get credit toward their required reductions. He said that it would likely be difficult politically for a municipality to fund best management practices for redevelopment in another municipality. Mr. Grisa commented that he thought that this would not be acceptable to elected officials.

Mr. Hahn noted that some communities may perceive that they could obtain less stringent permit conditions under an individual permit than under a watershed-based permit. He stated that this is unlikely. Ms. Gayan indicated that permit conditions will be the same under either permitting approach.

Third Issue on Handout

Mr. Hahn stated that the third issue on the handout, the applicability of the “maximum extent practicable” provision of NR 151 once the TMDLs are in place is discussed in the October 12, 2011 summary notes.

Fourth Issue on Handout

Mr. Hahn noted that the fourth issue on the handout discusses the “adaptive management” approach in Chapter NR 217 of the *Wisconsin Administrative Code* relative to the State’s phosphorus rule. He noted that adaptive management would not work for MS4s alone. He indicated that under the TMDL, MS4s would have a schedule for meeting WLAs that is comparable to the compliance schedule under the Chapter NR 217 adaptive management approach. Mr. Grisa indicated that the reference to instream pollutant concentration limits in the issue statement should be changed to effluent limits.

[Secretary’s Note: The second sentence of the second to last bullet point on the first page of the handout was changed to read:

“They do not need to apply adaptive management to receive comparable compliance schedule and trading opportunity benefits, and under adaptive management, they would have to meet interim **effluent** concentration limitations.”]

Mr. Kirsch commented that he is not sure how the interim effluent limits under the adaptive management approach would be applied to MS4s. He stated that dischargers utilizing this approach get 15 years to come into full compliance with final effluent limitations. He noted that the MS4s will get 15 years to implement the TMDLs.

Fifth Issue on Handout

Mr. Hahn noted that Mr. Kirsch’s preceding comments address the first part of the fifth item on the handout, and that the October 12, 2011 summary notes address the second part.

Sixth and Seventh Issues of Handout

Mr. Hahn stated that handout Items 6 and 7 verify the conclusion for issues that had been previously discussed by the group, and for which WDNR District staff had previously offered opinions.

Eighth Issue on Handout

Mr. Hahn pointed out that the WDNR staff had not begun work on a prototype watershed-based permit for statewide use, and had no short-term plans to do so.

SUMMARY OF DECEMBER 6, 2011 U.S. ENVIRONMENTAL PROTECTION AGENCY WEBINAR INVOLVING ALBUQUERQUE, NEW MEXICO; ST. PAUL, MINNESOTA; AND MENOMONEE RIVER WATERSHED PILOT STUDY GROUPS

At Mr. Grisa’s request, Mr. Hahn summarized the December 6, 2011 USEPA webinar involving the Albuquerque, New Mexico; St. Paul, Minnesota; and Menomonee River watershed pilot study groups. Mr. Hahn thanked Mr.

Newport and the USEPA Region 6 staff for bringing the participants of the three pilot studies together to exchange ideas.

St. Paul, Minnesota Pilot Project

Mr. Hahn stated that the St. Paul, Minnesota pilot study focuses on the Ramsey-Washington Metropolitan Watershed District. He explained that this district is a special-purpose local unit of government unit created under Minnesota Statutes with taxing authority and the responsibility to protect and enhance water resources in a 56-square mile watershed. He noted that the District's major programs include water quality protection, stormwater management with volume control, flood control, illicit discharge detection and elimination, lake and wetland management, cost-sharing for BMP installation, construction site permitting, exotic species control, native landscaping, lakeshore and habitat restoration, water quality and biological monitoring, watershed education, and conducting and implementing TMDL studies.

Mr. Grisa asked how long the Watershed District has been in existence. Mr. Hahn replied that it was founded in 1975.

Mr. Hahn said that in 2010 the District's property tax levy generated \$3.5 million in revenue for operations. He added that the District also obtains funds from other sources.

Mr. Hahn noted that the Watershed District has developed two reports related to watershed-based permitting. He stated that the first is a 2006 report entitled "Framework for Integrated Watershed-Based Stormwater Permitting in Minnesota," and the second is a 2008 report entitled "Integrating Stormwater Permitting and Watershed Management." He said that Commission staff would obtain and examine these documents and report back to the Group on their contents.

[Secretary's Note: The 2006 report describes the proposed process for watershed-based stormwater permitting in Minnesota and identifies five options for how this could be done. The 2008 report explores the five options and examines legal and practical issues related to watershed based permitting.]

Mr. Hahn stated that the Watershed District's approach is different from the Menomonee River Watershed-Based Permit Group's collaborative approach involving municipalities, regulatory agencies, MMSD, SEWRPC, and other interested organizations. He noted that the Watershed District is currently designing a framework that they will present to the municipalities at a later date, rather than coordinating up front as is being done with the Menomonee River watershed framework effort. Mr. Newport stated that the Watershed District thought that the approach they are following would be a more efficient way to proceed.

Mr. Grisa asked whether the municipalities within the Watershed District currently have MS4 permits. Mr. Newport responded that both the District and the municipalities have permits. He added that under the watershed-based permit framework being developed, the District will probably act as the lead co-permittee.

Mr. Holschbach asked whether water quality trading will be a part of the permit developed by the Watershed District. Mr. Newport replied that this is still being worked out.

Albuquerque, New Mexico Pilot Project

Mr. Hahn said that the Albuquerque, New Mexico pilot study involves the Middle Rio Grande watershed. He indicated that this project includes two counties with a combined population of over 794,000. He explained that it is a broadly-based effort that includes municipalities, Native American tribes, flood control authorities, an Air Force base, and the New Mexico Department of Transportation. He noted that the State of New Mexico does not have Federal Clean Water Act primacy.

Mr. Hahn indicated that part of this effort is to combine Phase I and Phase II MS4 permits, which is also possible under the Menomonee River watershed framework, depending on which municipalities ultimately choose to participate. Mr. Newport added that there are some differences between Phase I and II permit conditions, noting that Phase I communities oversee stormwater from industrial sites, while Phase II communities do not. He added that USEPA is looking to consolidate these types of permits.

Mr. Hahn stated that the Middle Rio Grande watershed pilot includes several complicating issues. He noted that TMDLs are in place for fecal coliform bacteria and *Escherichia coli*. He added that TMDLs for dissolved oxygen and polychlorinated biphenyls are under consideration and may be implemented in 2013. He indicated that water rights are being considered under this project, with New Mexico being a party to eight interstate compacts and a compact with Mexico.

Mr. Newport suggested that the Group should stay in touch with the Minnesota pilot project. He noted that they will have a draft report by May 2012. He indicated that USEPA is interested in scheduling another webinar involving the three pilot project teams in April or May of 2012.

Mr. Martinka stated that he viewed the webinar. He commented that he found it encouraging that both the USEPA and the WDNR want to pursue these sorts of innovations.

BEGIN CONSIDERATION OF COMPONENTS OF THE WATERSHED-BASED PERMIT

At Mr. Hahn's request, Mr. Hartsook distributed a draft table showing potential watershed-based stormwater permit conditions.

[Secretary's Note: A copy of the summary is attached hereto as Exhibit B.]

Mr. Hartsook stated that he developed this table as a visual tool to structure discussion of permit conditions. He explained that he reviewed the existing group permit and the implementation plan for the 2010 Menomonee River watershed restoration plan in choosing the projects and control measures that are listed in the table. He noted that the majority of the BMPs listed are nonstructural. He added that several address all four of the pollutants listed. He continued that while a few BMPs address only one pollutant, none of these are structural. He indicated that the table is a working draft and that additional projects or columns could be added.

Mr. Grisa suggested several revisions to the second Menomonee River watershed priority project listed in the table. In the projects and control measures column he suggested changing "salt use" to "deicing" and changing "develop consistency" to "share information." He also suggested adding sediment to the targeted pollutants in this row.

[Secretary's Note: The projects and control measures column entry for the second Menomonee River watershed priority project listed in the table was revised to read:

"Compile **deicing** data, promote alternative practices, and **share information** among communities."

The red triangle symbol for sediment was added to the targeted pollutant column entry for the deicing priority project.]

Mr. Newport said that he thought the matrix will be helpful. He suggested weaving in elements from the annotated version of the group permit that he provided to the Group in spring 2011. He suggested including a bacteria-related structural pilot or demonstration project on which the group could collaborate.

Mr. Hartsook said that it would be helpful if municipal staffs would review the priority project list from the watershed restoration plan to determine which projects they feel may apply to the permit.

Mr. Grisa stated that orthophosphate is added to municipal drinking water to address problems with lead and copper leaching out of plumbing. He noted that the costs of some alternatives to adding orthophosphate are prohibitive. He added that other alternatives are less costly but also less effective. He asked whether USEPA has considered the effects of orthophosphate addition to municipal water on the environment relative to the drinking water benefit. Mr. Newport replied that USEPA has issued a memorandum on program integration. He added that he could discuss this topic with the Agency's drinking water group. Mr. Hahn indicated that during the development of the recent regional water quality management plan update, he discussed this issue with Carrie Lewis, the Superintendent of the City of Milwaukee Water Works. He said that Ms. Lewis explained that orthophosphate was added to meet a human health-related Federal requirement and since that approach was working, she was reluctant to abandon it for an alternative.

Mr. Hahn asked whether this issue is being examined on the State level. Ms. Gayan replied that the Department has quantified the impacts of municipal water with orthophosphate additives being used as noncontact cooling water and then discharged into surface waters. Mr. Kirsch stated that noncontact cooling water facilities will receive WLAs under the TMDL. He added that the facilities will have some options for meeting these WLAs, including treating their discharges to remove the phosphate or contributing to the water utility's cost to implement an alternative anticorrosion agent.

Mr. Shafer noted that the U.S. Congress is holding a hearing on integrated permitting under the NPDES program. He continued that they are considering bringing combined sewer overflows, sanitary sewer overflows, and stormwater under a single permitting structure. He commented that they may be looking toward Milwaukee to act as a pilot. Mr. Newport commented that the watershed-based stormwater permitting framework that the Group is developing may be a step toward this sort of integrated permit.

Mr. Meyer suggested having the Watershed Action Team leaders for the Menomonee River watershed make a presentation to the Group regarding the project list from the watershed restoration plan (WRP). Mr. Hahn answered that the project list will first be examined by SEWRPC and WDNR staff, both of which are very familiar with the WRP. He added that a presentation could be considered at a later time.

Mr. Hartsook pointed out that the six minimum control measures listed in the rows of individual responsibility conditions in the matrix must be included in the permit, regardless of what form the permit takes. He added that the minimum control measures will also be included for areas of participating municipalities that are in adjacent watersheds. Mr. Grisa commented that it is important that the measures drawn from the watershed restoration plan priority project list for inclusion in a watershed-based permit be projects that help the MS4s meet the minimum control measures. He noted that the last project listed in the matrix, recreation access improvements, doesn't address minimum control measures and should not be included in the list. Mr. Martinka commented that recreational projects get the public involved. Mr. Thur indicated that he agreed with Mr. Grisa. He added that this is a good goal that could be included in information and education activities, but he would not want it to be included as a stand-alone item in a permit. Mr. Grisa suggested creating a list of information and education activities.

TOPICS AND DATE FOR NEXT MEETING

The Group set the next meeting for 9:00 a.m. to noon on January 25, 2012 at the Brookfield City Hall.

Mr. Hahn stated that Commission staff will start incorporating revisions into the Staff Memorandum based on the discussions during the past three group meetings on the framework and will provide the Group with a revised version to review at a future meeting after the January 25 meeting. He indicated that Commission staff will begin posting materials from this project on the SEWRPC website.

Mr. Grisa noted that the framework should recognize possible partnerships with nongovernmental organizations and the private sector through Sweet Water.

Mr. Grisa thanked the attendees for their participation.

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 11:10 a.m.

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Exhibit A

DECEMBER 14, 2011 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT GROUP

Agenda Item 3: Discuss results of November 28, 2011 meeting of WDNR and SEWRPC staffs

Issues Identified by Menomonee River Watershed Municipal Group and/or the SEWRPC staff:

1. How will the watershed-based permit (WBP) framework address communities located in multiple watersheds?

WDNR response/discussion: Addressed on page 2 of October 12, 2011 Group meeting summary notes.

2. What are the incentives for municipal separate storm sewer system permittees to participate in a watershed-based permit?

WDNR response/discussion:

- Can look at solutions from a broader geographic scale and achieve cost savings.
- Can trade with less “red tape.”
- Would USEPA provide funding incentives to permittees participating in a watershed-based permit (WBP)?
- Strength in numbers regarding obtaining funding
- Group can take advantage of redevelopment opportunities to pool funds and save on expense of retrofits.
- MS4s tend to score lower on State Clean Water Revolving Fund Loan applications. Would need to modify State rules to provide Clean Water Revolving Fund Loans.
- MS4s will not get a break on regulatory requirements by obtaining an individual, rather than a group, permit.
- Would be cautious about reducing permit fees for participants in a WBP.

3. With TMDLs in place, will the “maximum extent practicable” provision in NR 151 still be applicable?

WDNR response/discussion: Addressed on page 5 of October 12, 2011 Group meeting summary notes.

4. The WBP framework is only being developed for MS4s as established in the project scope submitted for the USEPA grant. Are there any limitations on water quality credit trading between different types of permitted dischargers and between MS4s and agricultural nonpoint sources?

WDNR response/discussion: Addressed on page 6 of October 12, 2011 Group meeting summary notes.

Would the “adaptive management” approach of NR 217 be more readily available to MS4s if a WBP framework included all permitted point sources in the watershed?

WDNR response/discussion:

- Adaptive management would not work for MS4s alone. They do not need to apply adaptive management to receive comparable compliance schedule and trading opportunity benefits, and under adaptive management, they would have to meet interim effluent concentration limits.

- Adaptive management involving MMSD and MS4s could work.
 - Under adaptive management, the point source must provide a plan to produce necessary pollutant reduction. Size of “watershed” selected is critical to successfully achieving the needed pollutant load reduction.
5. Sections NR 217.16 and 217.18 appear to provide up to 15 years for compliance with the phosphorus standards when a TMDL-based limitation for phosphorus is included in a WPDES permit.

WDNR response/discussion: NR 217, “Effluent Standards and Limitations for Phosphorus,” of the *Wisconsin Administrative Code* provides for up to three 5-year periods to achieve phosphorus wasteload allocations under a TMDL and provides for milestones toward progress to be met at the end of each five-year period. The overall compliance period of up to 15 years begins when TMDL wasteload allocations are incorporated in the permit.

Under a WBP, what are the most likely options to be implemented for synchronizing permit dates?

WDNR response/discussion: Addressed on pages 7 and 8 of October 12, 2011 Group meeting summary notes.

6. Verification that the second permit for the Menomonee River MS4 Group will not require monitoring other than the illicit discharge detection and elimination efforts.

WDNR response/discussion: This was verified.

7. NR 151.004 sets up a procedure for WDNR to promulgate stricter targeted performances standards by rule when it can be shown that meeting the statewide NR 151 performance standards will be insufficient to achieve water quality standards and Section NR 151.005 (2) indicates that this procedure shall be used if compliance with more stringent performance standards is required in order to meet a load allocations in an approved TMDL. WDNR staff was to get clarification that such a targeted standard would not be promulgated without cost sharing.

WDNR response/discussion: Cost sharing would be required.

8. What is the status of the Department in developing a watershed permit for statewide use?

WDNR response/discussion: No work initiated by WDNR on a prototype WBP for statewide use, and there are no short-term plans to do so.

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MnR WBP ISSUE MEETING W/ WDNR - RPT TO MNR GRP
12/13/11, 12/24/11

Exhibit B

DRAFT Menomonee River Watershed-Based Permit Conditions Matrix

Projects and Control Measures		BMP Category			Targeted Pollutant	Implementation Scale		
		Structural	Non-Structural	Source Reduction		Watershed-Based	Municipality-Based	
Existing Permitted Control Measures								
Group Responsibility Conditions	Public Education and Outreach		●		▲ ■ ● +	●		
	Storm Water Monitoring		●			●		
Individual Responsibility Conditions	Public Involvement and Participation		●		▲ ■ ● +	●		
	Illicit Discharge Detection and Elimination		●	●	●		●	
	Construction Site Pollutant Control		●		▲ ■		●	
	Post-Construction Storm Water Management		●		▲ ■		●	
	Pollution Prevention	●	●	●	▲ ■ +		●	
	Storm Water Quality Management	●			▲ ■		●	
Menomonee River Watershed Priority Project List*								
	Green Infrastructure Development in Targeted Subwatersheds	●			▲ ■	●		
	Compile salt-use data, promote alternative practices, develop consistency among municipalities		●	●	+	●		
	Riparian Buffer Restoration / Habitat Improvement	●	●		▲ ■	●		
	Evaluate SWWT Household Survey Results and Develop Targeted I&E Plan		●		▲ ■ ● +	●		
	Integrate Storm Sewer Mapping for Multi-Jurisdictional IDDE Screening		●		●	●		
	Establish Multi-Jurisdictional Approach to IDDE		●		●	●		
	Targeted Nutrient Management Plan Study for Public/Private-Owned Golf Courses in River Corridor			●	■	●		
	Analyze Orthophosphate Additive Use in Drinking Water and NCCW Discharges			●	■	●		
	Recreation Access Improvements		●			●		
					▲ Sediment	■ Phosphorus	● Bacteria	+ Chlorides

▲ Sediment ■ Phosphorus ● Bacteria + Chlorides

* Watershed Action Teams (WAT) were created in cooperation with Southeastern Wisconsin Watersheds Trust, Inc. (SWWT) to develop implementation plans and priority project lists for the Menomonee and Kinnickinnic Watersheds. Watershed data and recommendations were used from SEWRPC's Regional Water Quality Management Plan Update for the Milwaukee River Watershed as well as stakeholder involvement to develop the WAT plans. The items listed in the table only represent a small portion of the priority projects and focus areas identified under this planning process. For more information see <http://www.swwtwater.org/home/mnwat.cfm>

Appendix E

**SUMMARY NOTES
JANUARY 25, 2012 MEETING**

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SUMMARY NOTES OF THE JANUARY 25, 2012 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The January 25, 2012, meeting of the Menomonee River Watershed-Based Permit (WBP) Framework Group was convened at the Brookfield Public Library at 9:05 a.m. The meeting was called to order by Tom Grisa, City of Brookfield Director of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Charles Boehm	Senior Engineer, AECOM
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Joseph Burtch	Assistant City Engineer, City of West Allis
Theresa Caven	Project Engineer, City of Brookfield
Cindi V. DeBruine	Senior Water Resources Engineer, R.A. Smith National, Inc. (representing the Villages of Butler and West Milwaukee)
Mike Flaherty	Director, Village of Elm Grove Department of Public Works
James Fratrack	Water Resources Management Specialist, Wisconsin Department of Natural Resources
Sharon L. Gayan	Runoff Management Supervisor, Wisconsin Department of Natural Resources
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Lauren Justus	Engineering Assistant, Village of Germantown
Mark Lloyd	Deputy Director of Public Works, City of Mequon
Michael Maki	Stormwater Engineer, City of Wauwatosa
Jeff Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc.
Ezra Meyer	Water Specialist, Clean Wisconsin
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Cheryl Nenn	Riverkeeper, Milwaukee Riverkeeper
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Robert Newport	Water Division, Region 5, U.S. Environmental Protection Agency
Kevin P. O'Brien	Environmental Compliance Manager, Milwaukee County
Kevin L. Shafer	Executive Director, Milwaukee Metropolitan Sewerage District
Jodi Habush Sinykin	Senior Counsel, Midwest Environmental Advocates
Richard Sokol	Director of Neighborhood Services, City of Greenfield
Timothy J. Thur	Chief Sewer Design Manager, City of Milwaukee Department of Public Works

Mr. Grisa welcomed the attendees to the meeting and thanked them for their participation. He asked everyone to introduce themselves.

REVIEW SUMMARY NOTES OF THE DECEMBER 14, 2011 MEETING OF THE WATERSHED-BASED PERMIT FRAMEWORK GROUP

At Mr. Grisa's request, Mr. Hahn reviewed the summary notes of the December 14, 2011, meeting of the Group.

Mr. Hahn asked whether there were any questions or comments on the summary notes. None were offered. Mr. Newport moved and Mr. Flaherty seconded that the summary notes of the December 14, 2011, meeting of the Group be approved. The Group unanimously approved the summary notes of the December 14, 2011, meeting.

REVIEW OF ISSUES ON WHICH THE MENOMONEE RIVER WATERSHED-BASED PERMIT GROUP HAS REACHED CONSENSUS

At the request of Mr. Grisa, Mr. Hahn summarized the issues on which the Group has reached consensus. Mr. Hahn distributed a summary of the issues discussed at the meeting.

[Secretary's Note: A copy of the summary is attached hereto as Exhibit A.]

Mr. Hahn explained that the list of issues on the handout is based upon review of the summary notes from the Group's August, 24, 2011, October 12, 2011, and December 14, 2011, meetings. He noted that issues upon which the Group has reached consensus include the pollutants of concern to be addressed by the permit, the approach to addressing chlorides under the permit, the tailoring of permit requirements to watershed conditions, the general monitoring requirement under the first permit term being a one-time requirement, and the structure of the permit. He asked the Group whether there were any questions on or discussion of these issues. None was offered.

CONTINUATION OF CONSIDERATION OF POTENTIAL COMPONENTS OF THE WATERSHED-BASED PERMIT

At Mr. Grisa's request, Mr. Hahn distributed an annotated version of Menomonee River Watershed Group's current stormwater discharge permit.

[Secretary's Note: A copy of the annotated permit is attached hereto as Exhibit B.]

Mr. Boxhorn explained that comments with the identifier "JEB" are annotations he made based upon the summary notes from the Group's August, 24, 2011, October 12, 2011, and December 14, 2011, meetings and discussions with Mr. Hahn, comments with the identifier "ED" are annotations provided by Mr. Newport in the annotated version of the permit that he provided in April of 2011, and comments with the identifier "HMG" are annotations made by Mr. Hahn in his review of the annotated permit.

Mr. Hahn stated that he, Mr. Boxhorn, Ms. Gayan, Mr. Hartsook, and Mr. Newport reviewed and discussed the annotated version of the permit during a conference call on Monday, January 23, 2012. He indicated that he would discuss changes to the annotated permit that were suggested at that meeting during his review of the relevant sections of the permit. He noted that as revisions are made to the annotated permit, Mr. Hartsook will be more involved in drafting permit language.

Mr. Hahn informed the Group that he had received an electronic mail message from Brionne Bischke, Village of Germantown Engineer, that presented seven comments on the annotated version of the permit. He indicated that he would present and discuss Mr. Bischke's comments during his review of the relevant sections of the permit.

[Secretary's Note: A copy of the email from Mr. Bischke is attached herein as Exhibit C.]

Mr. Hahn drew the attention of the Group to the first page of the annotated permit. He stated that the municipalities listed are the members of the Menomonee River Group under the existing permit. He explained that this list is acting as a placeholder in the annotated permit and will be revised when the municipalities that will participate in a watershed-based stormwater permit are known. Mr. Grisa asked whether the communities participating in the watershed-based permit could be listed once in the permit and then identified subsequently by the group name. Mr. Hartsook replied that this would be done. Mr. Hahn stated that the municipalities covered

under the watershed-based permit would be referred to as the Menomonee River Watershed Permittees in the permit.

[Secretary's Note: All references to the "Menomonee River Municipalities" were changed to the "Menomonee River Permittees."]

Mr. Hahn reviewed the paragraph before Part I-Section A of the annotated permit. Mr. Grisa commented that the use of the phrase "pollutants of concern" in this paragraph is confusing because later sections of the permit refer to total suspended solids (TSS), total phosphorus, and bacteria as pollutants of concern. Ms. Gayan suggested changing this phrase to "pollutants often found."

[Secretary's Note: The last sentence of the paragraph before Part I-Section A, "Permitted Area," of the annotated permit was revised to read (In this Secretary's Note and in subsequent Notes, unless indicated otherwise, revised and added text is indicated in bold letters for clarification only. The annotated permit text will not be bold):

"Pollutants **often** found in municipal separate storm sewer system discharges include organic materials, suspended solids, metals, nutrients, bacteria, pesticides, fertilizer, and traces of toxic materials."]

Mr. Hartsook stated that in the final permit, the paragraph before Part I-Section A of the annotated permit will be incorporated into a new section describing the structure of the watershed-based permit. He stated that this new section will be placed after Part I-Section B.

[Secretary's Note: Part I – Section C was added to the annotated permit to lay out the structure of the watershed-based permit. The fifth and sixth (last two) sentences under Part I – Section A submitted by the SEWRPC Environmental Planning Division staff were moved to a new section, Part I – Section C, "WATERSHED-BASED PERMIT STRUCTURE." This section reads (text in bold is included here to denote language added onto the text submitted by the Environmental Division. Text will not be bold in the annotated permit):

"This permit is a watershed-based permit, meaning some of the stormwater management requirements are tailored to the needs and characteristics of the Menomonee River watershed. **Many of these requirements may also be applicable to other watersheds within the municipal boundaries of the permitted jurisdictions.** The permit includes group conditions and individual conditions. Individual conditions are those required to be implemented by each municipality within their own jurisdictional limits, including **those areas within the municipal boundaries of the permittees that do not drain to the Menomonee River watershed. INDIVIDUAL CONDITIONS** will require each municipality to continue implementation of the ordinances as well as the field response and enforcement protocols developed under preceding permit terms. These conditions will be implemented on a municipal scale. **GROUP CONDITIONS** specify collaborative development and implementation of distinctive management programs by the Menomonee River Permittees with the purpose of targeting specific needs of the Menomonee River watershed. These conditions will be implemented on a watershed scale. A municipality meeting a **GROUP CONDITION** will be in compliance with the permit even if the implementation does not directly address discharges from the municipal separate storm sewer systems for which the municipality is the owner or operator."

The smaller Working Group that was established as a subcommittee of the full Group early in the watershed-based framework development process met on March 21, 2012 to review a preliminary draft of these meeting summary notes. As noted by Mr. Newport during that meeting, the new text proposed above and Part I-Sections K and L must be reconciled by Mr. Hartsook.]

In reference to the last paragraph of Part I-Section A, “Permitted Area,” Mr. Grisa asked whether the use of the term “urban” excluded some portions of MS4 service areas. Mr. Newport and Mr. Hahn suggested changing this to refer to the MS4 service area. Mr. Grisa stated that he did not like the use of the phrase “adjoining watershed” because he felt it might be interpreted as imposing unintended requirements upon the MS4. After some discussion by the Group, it was decided to revise this to refer to the watersheds within the municipal boundaries of the permittees.

[Secretary’s Note: The fourth sentence in the last paragraph of Part I-Section A, “Permitted Area,” was revised to read:

“The permit requirements are intended to restore and maintain the chemical, physical, and biological integrity of waters of the state through management and treatment of storm water runoff **within the MS4 service area.**”

As noted in the preceding Secretary’s Note, the fifth sentence in that paragraph was moved to a new Part I - Section C.]

Mr. Hahn brought the Group’s attention to Part I-Section B, “The Menomonee River Watershed,” of the annotated permit. He stated that the annotated permit is currently written in terms of TSS, bacteria, and chloride. He indicated that Mr. Hartsook would craft text for the permit addressing how total phosphorus is regulated under this permit, noting this text may address total phosphorus by relating it to TSS.

[Secretary’s Note: Two sentences were added to the end of the third paragraph under Part I – Section B of the annotated permit. This paragraph now reads:

“In addition to the flashy flow patterns, certain pollutants have been identified as contributing to use impairments in the watershed. Wisconsin DNR and collaborating organizations conduct monitoring of the waters of the State; where waters are found to be not meeting State water quality standards, the water bodies are categorized as “impaired.” Impairments have been identified in the Menomonee River watershed related to bacteria (which is associated with recreational uses and human health) and total phosphorus. **Much of the phosphorus found in urban runoff is adsorbed in soil particles, particularly in the smaller textured silt and clay soils. It is reasonable to expect that implementation actions under this permit that reduce total suspended solids (TSS) loads will also reduce phosphorus to the extent sufficient to achieve designated use conditions in impaired waterways.**”]

Mr. Hahn stated that in Mr. Bischke’s e-mail message he asked whether the conclusions in the second paragraph of Part I-Section B were based on quantitative analyses. He noted that Mr. Bischke added that, if they were based on quantitative analyses, the source should be cited; otherwise they should be deleted from the annotated permit. Mr. Hahn explained that the view of the SEWRPC staff is that the paragraphs of Part I-Section B are intended to present a general description of the watershed. He suggested retaining the second paragraph of the section. After some discussion, the Group decided to retain the second paragraph with the addition of a footnote citing sources for the information.

[Secretary's Note: The following footnote was added at the end of the second paragraph in Part I-Section B, "The Menomonee River Watershed," of the annotated permit:

²*SEWRPC Technical Report No. 39, op. cit.; Milwaukee Metropolitan Sewerage District, Menomonee River Watershed Restoration Plan, April 2010.*"]

Mr. Fratrack stated that in the past, the Wisconsin Department of Natural Resources (WDNR) has issued a fact sheet to accompany MS4 permits. He asked whether a fact sheet would be issued to accompany the watershed-based permit and suggested that the text from Part I-Section B could be included in such a fact sheet. Mr. Hartsook replied that a fact sheet will be issued and that while the text from Part I-Section B can be included in the fact sheet, it will also be important to include the text in the permit. Mr. Hartsook, Mr. Nettesheim, and Mr. Newport supported including all of the text in Part I-Section B in the fact sheet, and condensing the Section within the permit.

[Secretary's Note: The narrative under Part I-Section B will be removed from the permit, and will be included in a supporting fact sheet. The text under this section will be replaced with the text and a table provided below.]

"B. THE MENOMONEE RIVER WATERSHED:

The Menomonee River Watershed is located within the Milwaukee River Basin and covers approximately 136 square miles of urban landscape across portions of Washington, Ozaukee, Waukesha, and Milwaukee Counties. The watershed is home to a population of about 322,000 people. The Menomonee River originates in wetlands near the Village of Germantown and the City of Mequon and runs south, southeast for about 32 miles where it meets the Milwaukee and Kinnickinnic Rivers in the Milwaukee Harbor. Sixty-four percent of the land is covered by urban uses, seventeen percent is covered by agriculture, and the remainder is covered by grassland, forested, or wetland areas. The watershed contains 96 total stream miles and over 6,780 wetland acres.

Stream and wetland modification, urban and rural runoff, construction site erosion and industrial point sources of pollution are the major contributors to degraded water and habitat quality within this watershed. Currently, 11.7 miles of stream are included on WDNR's 303(d) list as impaired. A water is considered impaired if a) the current water quality does not meet the numeric or narrative criteria in a water quality standard or b) the designated use that is described in Wisconsin Administrative Code is not achieved. A documented methodology called the Wisconsin Consolidated Assessment and Listing Methodology (WisCALM) describes the approach used to list waters as impaired. Table 1 shows the currently listed waters, as well as those proposed for listing based on new information for the 2012 Clean Water Act reporting cycle.

Table 1. Menomonee River Watershed – Waterway Impairments

Waterway Name	Segment Length (miles)	County(ies)	Pollutant of Concern	Impairment ⁺	Listing Status
Goldendale Creek	3.5	Washington	Fecal Coliform	+	TMDL Development
Honey Creek	8.96	Milwaukee	Fecal Coliform	+	TMDL Development
	8.96	Milwaukee	Total Phosphorus	●	Addition
Little Menomonee River	3.9	Ozaukee	Fecal Coliform	+	TMDL Development
	9	Milwaukee, Ozaukee	Total Phosphorus	●	Addition
	9	Milwaukee, Ozaukee	Creosote	△	EAP Project
	9	Milwaukee, Ozaukee	Fecal Coliform	+	TMDL Development
Menomonee River	2.67	Milwaukee	Total Phosphorus	▲	TMDL Development
	2.67	Milwaukee	PCBs	■	303d Listed
	2.67	Milwaukee	Fecal Coliform	+	TMDL Development
	2.67	Milwaukee	E. coli	+	TMDL Development
	2.67	Milwaukee	Unspecified Metals	△	303d Listed
	3.61	Milwaukee	Fecal Coliform	+	TMDL Development
Milwaukee River	2.9	Milwaukee	Total Phosphorus	▲	TMDL Development
	2.9	Milwaukee	E. coli	+	TMDL Development
	2.9	Milwaukee	Unspecified Metals	■	303d Listed
	2.9	Milwaukee	PCBs	■	303d Listed
Underwood Creek	2.84	Milwaukee	Fecal Coliform	+	TMDL Development
	2.84	Milwaukee	Total Phosphorus	●	Addition
	5.7	Milwaukee, Waukesha	Fecal Coliform	+	TMDL Development
	5.7	Milwaukee, Waukesha	Unknown Pollutant	●	Addition
South Branch of Underwood Creek	1	Milwaukee, Waukesha	Total Phosphorus	●	Proposed for List
West Branch Menomonee River	2.45	Washington	Fecal Coliform	+	TMDL Development
Butler Ditch	2.9	Waukesha	Fecal Coliform	+	TMDL Development
Lilly Creek	4.7	Waukesha	Fecal Coliform	+	TMDL Development
Nor-X-Way Channel	4.9	Ozaukee, Washington, Waukesha	Fecal Coliform	+	TMDL Development
Willow Creek	2.8	Washington, Waukesha	Fecal Coliform	+	TMDL Development
⁺ Key: Recreational Restrictions – Pathogens (+); Degraded Biological Community (●); Low DO (▲); Contaminated Fish Tissue or Sediment (■); Chronic Aquatic Toxicity (△)					

In addition to pollutant stressors, many streams in this watershed have been concrete-lined, or straightened to convey floodwaters off the land faster. Lined streams provide almost no habitat and also degrade conditions in unlined downstream stream sections by creating highly erosive flow velocities during wet weather conditions and excessively warm water during low flow conditions. About 14.5 miles of streams in the watershed are concrete-lined or enclosed.”

Mr. Grisa asked that the source of the numbers in the first paragraph of Part I-Section B be cited.

[Secretary’s Note: The following footnote was added at the end of the first paragraph in Part I-Section B, “The Menomonee River Watershed,” of the annotated permit:

¹*SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007; Wisconsin Department of Natural Resources, The State of the Milwaukee River Basin, August 2001.*”]

Mr. Grisa restated his concerns regarding the use of the phrase “adjoining watersheds” and asked that the phrase be changed in the last paragraph of Part I-Section B.

[Secretary’s Note: The first sentence in the last paragraph in Part I-Section B, “The Menomonee River Watershed,” of the annotated permit was revised to read:

“The **adjacent** watersheds face similar water quality issues.”]

In reference to Part I-Section E of the annotated permit, Mr. Grisa asked whether there are any outstanding or exceptional resource waters (ORW/ERW) in the Menomonee River watershed. Mr. Boxhorn answered that there are none of these waters in the Menomonee River watershed or in the portions of Menomonee River watershed communities that are in other watersheds. Mr. Grisa asked why Section E should be included in the annotated permit. Mr. Hartsook replied that it is probably required as standard permit language. He indicated that will consult WDNR policy staff to determine whether this section is required.

[Secretary’s Note: Mr. Hartsook later received correspondence from the WDNR Central Office staff acknowledging that conditions inapplicable to a permitted discharger may be removed from the permit. Part I-Section E, “Outstanding and Exceptional Resource Waters” has been removed from the permit as there are no ORW/ERW waterways within the boundaries of the municipalities in the watershed.]

Mr. Hahn drew the Group’s attention to Part I-Section F, “Impaired Water Bodies and Total Maximum Daily Load Requirements,” of the annotated permit. He stated Mr. Newport had suggested including an appendix in the permit that lists the impaired waters in the Menomonee River watershed and the portions of adjacent watersheds located in Menomonee River communities. Mr. Boxhorn noted that there are tables in the SEWRPC Staff Memorandum that list this information and that they could be adapted for such an appendix. He added that the proposed 2012 changes to the State’s impaired waters list could be incorporated.

[Secretary’s Note: Appendix A (see Exhibit D) was added to the annotated permit. This appendix contains tables listing the impaired waters within the Menomonee River watershed and portions of Menomonee River watershed municipalities that are located in watersheds adjacent to the Menomonee River watershed.

The first sentence in the second paragraph of Part I-Section F-1 of the annotated permit was revised to read:

“Tables showing identified impairments in the Menomonee, **Fox, Kinnickinnic, Milwaukee, and Root** River watersheds; **the Oak Creek watershed**; and the estuary area are included in Appendix A.”]

Mr. Hahn stated that the note at the end of Part I-Section F-3 in the annotated permit will need to be revised to reflect the fact that waste load allocations from the TMDL will be incorporated into the permit during the next permit cycle following the issuance of the TMDL.

[Secretary’s Note: Based on language suggested by Mr. Grisa, the note at the end of Part I-Section F-3 in the annotated permit was revised to read:

“Note: Once the Department approves a TMDL for an impaired water body to which the permittee discharges, the Department anticipates that this permit will need to be **reissued in the next permit cycle** to include requirements necessary to achieve the TMDL wasteload allocations for the MS4. Approved TMDLs are listed on the Department internet site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/tmdl.html>.”]

Mr. Grisa noted that there is a typographical error in Part I-Section J-5 of the annotated permit.

[Secretary’s Note: Part I-Section J-5 of the annotated permit was revised to read:

“5. Nutrients **conducive** to the excessive growth of aquatic plants and algae to the extent that such growths are detrimental to desirable forms of aquatic life, create conditions that are unsightly, or are a nuisance.”]

Mr. Hahn said that in Mr. Bischke’s e-mail message he asked that the table Mr. Hartsook developed as a visual tool to structure discussion of permit conditions be referenced in Part I-Sections K and L of the annotated permit. Mr. Hahn noted that this table is a work in progress and still under development. Mr. Newport noted that the watershed-based permit may streamline some permit conditions and responsibilities. He added that while the table could be worked into the fact sheet, it should not be a part of the permit. It was decided not to include the table in the permit.

[Secretary’s Note: The table referred to in Mr. Bischke’s e-mail message is Exhibit B of the December 14, 2011, meeting summary notes.]

Mr. Hahn drew the Group’s attention to Part I-Section M-4 of the annotated permit. He asked whether the paragraph regarding Indian Country could be removed from the permit. Ms. Gayan noted that the Casino is located within the combined sewer area, but that the N. 25th Street detention basin which discharges directly to the Menomonee River may receive stormwater runoff from the Potawatomi casino. Mr. Hartsook indicated that he would check on this and on whether this language could be removed from the permit.

[Secretary’s Note: Mr. Hartsook later received correspondence from the WDNR Central Office staff acknowledging that conditions inapplicable to a permitted discharger may be removed from the permit. The Forest County Potawatomi Community includes seven acres of trust land in the City of Milwaukee (Potawatomi Bingo & Casino). According to EPA, Indian country includes all land within the limits of any reservation under the jurisdiction of the United States government; all dependent Indian communities within the borders of the United States; and all Indian allotments. This includes trust lands. Since the casino is located in Indian country, Part I-Section M-4 of the annotated permit should remain.]

Mr. Grisa asked whether Miller Park will be covered under the watershed-based permit. Mr. Hahn replied that both Miller Park and State Fair Park have been invited to participate in the Group’s activities. He noted that, as of now, there is no indication whether either of these facilities intends to join a watershed-based permit. Mr. Hartsook noted that these facilities currently have separate permits, though they are located within permitted municipalities. Mr. Hahn asked whether the Milwaukee County Zoo is covered under Milwaukee County’s MS4 permit. Mr. O’Brien replied that it is. Mr. Hartsook suggested that including these facilities in planning efforts related to a watershed-based municipal stormwater permit is important. Mr. Newport suggested that it would be useful to have the permit include the requirement of an annual meeting of the municipalities covered in order to discuss issues like this and coordinate how the communities address them.

[Secretary's Note: The following Section E was added to the end of Part II, "Group Conditions," of the annotated permit. (Note this section is proposed to follow a new Section D that is discussed several pages below.)

"E. ANNUAL MEETING: The Menomonee River Watershed Permittees will meet once within the first twelve months of the permit cycle and annually thereafter to exchange information and set group priorities. Topics to be addressed at these meetings shall include setting annual priorities for the permittee's public education and outreach program; development, implementation, and modification of the permittee's framework for desktop analyses for targeting illicit discharge detection and elimination efforts; review of progress since the last meeting toward implementation of joint projects, and other such topics as the permittees deem appropriate for discussion."]

Mr. Sokol asked whether private condominium developments would be covered under the watershed-based permit. Mr. Hartsook replied that if these private facilities do not discharge into an MS4 system, they are not considered in the modeling of MS4 system performance and would not come under MS4 system requirements. He added that MS4s are accountable for those systems that discharge into their systems. He noted that municipal erosion control ordinances apply to these systems. Mr. Newport said that he would like such developments to be addressed in the permit as much as possible. Mr. Nettesheim said that post-construction ordinances address such systems as well. The Group discussed how stormwater management at these facilities affects meeting the goal of improved water quality.

[Secretary's Note: No conclusion was reached on this issue. There is no mechanism for addressing private residential storm sewer systems constructed to serve development that occurred prior to promulgation of local or State stormwater rules, but such developments that occurred after such rules were in place were covered by requirements regarding construction erosion control and post-construction stormwater management.

It was the consensus of the Working Group at its March 21, 2012 meeting to make no changes to address the issue of urban developments that are not covered under a stormwater discharge permit, although Mr. Newport will have further discussions with WDNR staff regarding the possibility of developing permits for such private stormwater management systems.]

Mr. Hahn drew the Group's attention to Part II, "Group Conditions," of the annotated permit. He noted that the first section of this part, Part II-Section A describes the public education and outreach requirements.

Mr. Newport stated that the watershed-based permit should encourage the permitted MS4s to conduct public education and outreach as a group activity. He added that the annual report on public education and outreach activities should be drafted and submitted as a group report. He commented that education and outreach activities should be tailored to watershed conditions, noting that the survey that was conducted was a piece of information that informed the Group about the level of public understanding on water resource and stormwater-related issues. He suggested that the Group could do a similar survey in the future. He noted that examining the results of such a future survey to determine whether responses to the survey change could yield information on which public education and outreach methods are most effective. Mr. Grisa noted that the requirement to evaluate the effect of the outreach program by 2013 or 2014 does not give much time, and Mr. Martinka suggested that the text be changed to refer to a "future annual report." Mr. Newport said that he would provide additional information on how the updated survey could be formulated for the next meeting.

[Secretary's Note: Based on these discussions, the last sentence of the last paragraph of Part II-Section A of the annotated permit was revised to read:

“In addition, the Menomonee River **Watershed Permittees** will evaluate the effects of the outreach program through an updated survey of residents in the watershed or using other appropriate methods, and will document the results of the evaluation in a **future** annual report **within this permit cycle** (see H., below).”]

[Secretary's Note: In follow-up to the January 25 meeting, Bob Newport further clarified that the evaluation of the effectiveness of the outreach program could be based on a follow-up survey, especially if funding for a follow-up survey could be obtained, but could also be done using other methods such as focus groups or relevant metrics. For example if outreach is done on green infrastructure and reducing stormwater volumes, the number or percent of homes with rain barrels or rain gardens could provide some indication of the effectiveness of the outreach efforts. Another example of a metric could be the number of households participating in a private property I/I reduction program. Mr. Hartsook will draft text for inclusion in the watershed-based permit based on the preceding.]

[Secretary's Note: During the March 21 Working Group meeting, Dennis Grzezinski of Midwest Environmental Advocates suggested, and the Working Group agreed to, revising Part II –Section A-9 as follows:

“Promote environmentally sensitive **and sustainable** land development designs by developers and designers.”]

Ms. Justus noted that the survey was not required under the Menomonee River Group permit and was paid for by grant funds. Mr. Grisa asked what the survey cost. Mr. Martinka replied that the cost was \$22,000. Ms. Morgan noted that there was also a match of in kind services, and that because the survey instrument has already been drafted, repeating the survey would cost less than the initial survey.

[Secretary's Note: In an electronic mail communication subsequent to the meeting, Ms. Morgan indicated that the in kind match for conducting survey was \$18,000, bringing the total cost of the developing and conducting the survey to \$40,000]

Mr. Hartsook stated that the Department feels there should be a mechanism for evaluating behavior changes as a result of education and outreach programs. Mr. Grisa commented that it is difficult to measure behavior. Mr. Newport indicated that he would develop language for the permit relative to evaluating the impact of the education and outreach program.

[Secretary's Note: See the second Secretary's Note immediately above this one.]

Ms. Justus asked how funding responsibilities for group activities will be apportioned among the permitted municipalities. Mr. Grisa replied that this will be done however the permitted municipalities decide among themselves. The Group agreed that this did not need to be addressed in the watershed-based permit.

Relative to Part II-Section A-2 of the annotated permit, Mr. Grisa asked whether there is a definition of the term “habitat degradation.” Mr. Newport suggested defining it by adding some examples to the text.

[Secretary's Note: Part II-Section A-2 of the annotated permit was revised to read:

“2. Inform and educate the public on sources of pollutant loadings and causes of habitat degradation—**such as sedimentation, thermal alterations, and increased flashiness of flows**—in the watersheds of Southeast Wisconsin, including stormwater.”]

Relative to Part II-Section A-3 of the annotated permit, Mr. Grisa asked what is meant by landscaping practices, noting that the use of the term in this section seems repetitive relative to Part II-Section A-4. Mr. Newport replied that this refers to fertilizer and pesticide use. Mr. Fratrack stated that this could also refer to erosion control practices associated with replacing lawns. Ms. Morgan suggested that the last sentence of Part II-Section A-3 be renumbered as a separated paragraph to emphasize the idea of cumulative actions. Mr. Newport suggested that this idea could be incorporated into the introductory paragraph of Part II-Section A. Mr. Hartsook stated that he would reword this section to be more specific and move the idea of cumulative actions to the introductory paragraph.

[Secretary’s Note: The reference to “landscaping” as an included source was removed from Part II-Section A-3 since it is repetitive with Part II-Section A-4.

The last sentence of Part II-Section A-3 was removed and a reference to “cumulative impact” was added to the first sentence of the first paragraph of Part II-Section A. that paragraph was revised to read:

“The Menomonee River Watershed **Permittees** shall implement a public education and outreach program to increase the awareness of **1) storm water pollution impacts on waters of the state and 2) how the cumulative actions of individual behavior can reduce such impacts**. The public education and outreach program may incorporate cooperative efforts with other MS4 regulated permittees or efforts by other groups or organizations provided a mechanism is developed and implemented to track the public education and outreach efforts within the MS4 regulated area and the results of such efforts are reported annually. The program shall establish measurable goals and, at a minimum, include the following elements:”]

Mr. Grisa commented that the reference to snow removal/deicing companies in Part II-Section A-8 of the annotated permit is redundant given that Part II-Section A-11 deals with snow removal and deicing.

[Secretary’s Note: Part II-Section A-8 of the annotated permit was revised to read:

“8. Identify businesses and activities that may pose a storm water contamination concern, and where appropriate, inform specific audiences such as lawn care companies, golf courses, car washes, restaurants, and homeowner associations about resources that provide further information on methods of storm water pollution prevention.”]

Mr. Grisa asked whether the municipalities all agreed with including Part II-Section A-11, noting that the municipalities all use different practices for snow and ice removal. Mr. Hahn explained that the focus of this section is promoting the use of best practices in snow and ice removal and management on private land. He added that the section does not impose a blanket approach to snow and ice removal. The Group decided to reword the section to clarify its intent.

[Secretary’s Note: Part II-Section A-11 was revised to read:

“11. Promote best practices for snow and ice removal **by informing** specific audiences such as snow removal/deicing companies, private residences, industrial

and commercial facilities, and residents about resources that provide further information on methods of reducing application of chemical deicers while maintaining public safety.”]

Mr. Boxhorn stated that Mr. Bischke had suggested in his e-mail message that a paragraph be added to Part II-Section A allowing other elements to be added to the public education and outreach program as mutually agreed upon by the Department and the permitted municipalities. Mr. Newport replied that the permit should allow for flexibility in this program and that it would be better to incorporate this idea into the introductory paragraph to the section.

[Secretary’s Note: The text under Part II-Section A states that “at a minimum,” the public education and outreach program shall include the listed elements. This language already allows for flexibility to introduce additional topics and target audiences as the permitted municipalities see fit. The following paragraph was added to the annotated permit after Part II - Section A-11:

“The Menomonee River Watershed Permittees shall be responsible for prioritizing elements each year to meet the needs of the watershed. A minimum of 3 elements must be implemented each year. Elements may be repeated, but all elements listed in this section must be addressed at least once during the permit term.”]

Mr. Hahn asked whether it would be useful to set priorities for the elements of the public education and outreach program. Mr. Grisa commented that if the elements are ranked by priority, they should be presented in order of priority. Mr. Newport suggested that the program could focus on some elements each year on a rotating basis. Mr. Thur suggested that the permitted municipalities prioritize the elements each year at an annual meeting. After additional discussion by the Group, it was decided that the program should focus on some elements each year on a rotating basis and that introductory paragraph to Part II-Section A should describe how the elements will be prioritized. Mr. Hartsook indicated that he would revise the introductory paragraph.

[Secretary’s Note: Note that the provision for this annual meeting is covered by the addition of Part II-Section E, as proposed above.]

Mr. Newport drew the Group’s attention to Part II-Section B of the annotated permit. He stated that he understood that the Group had decided against conducting monitoring. He asked whether the Group wanted the permit to include some other Group project or activity in addition to the public education and outreach. He noted that one possible Group activity would be a planning or assessment project to prepare for the TMDL. He cited the project listed in Part II-Section B-b as an example of this. He suggested that an alternative approach would be to review the watershed restoration plan for potential projects that could be included in the permit. He noted that an annual meeting of the permittees could be included in this section. Mr. Grisa commented that he is reluctant to get too far ahead of the TMDL, because of the uncertainty associated with the requirements that it will impose upon the MS4s. He added that a pilot project might be helpful.

The Group discussed possible projects, including an ongoing residential best management practice project in the Kinnickinnic River watershed (mentioned by Ms. Nenn), a possible tie-in to the regional green infrastructure plan that MMSD is developing (mentioned by Mr. Shafer), and permittees jointly pursuing funding for projects. Mr. Meyer asked whether the Group wanted to consider taking collective action to assist those municipalities that have not achieved 20 percent reductions in TSS as a possible project. Mr. Grisa replied that this may be worth considering after TMDL wasteload allocations are issued. He noted that until these allocations are issued, communities cannot know whether they have excess reductions that are available to trade. Mr. Newport suggested that the Group members bring ideas for possible Group projects to the next meeting.

[Secretary's Note: The agenda for the April 4, 2012, Group meeting calls for the members to bring suggestions for possible Group projects. This will also be an opportunity to further discuss the draft "Menomonee River Watershed-Based Permit Conditions Matrix" that was developed by Bryan Hartsook, and that includes a priority project list. (see Exhibit E).]

Mr. Hahn drew the Group's attention to Part III, "Individual Conditions," of the annotated permit. He indicated that Section B of this part, which deals with illicit discharge detection and elimination (IDDE), was a significant area of focus for both the Water Quality Initiative and the watershed restoration plans. He noted a typographical error in the first paragraph of Part III-Section B-2 of the annotated permit.

[Secretary's Note: The third sentence of the first paragraph of Part III - Section B-2 of the annotated permit was revised to read:

"In any single year at least one fifth of such major outfalls shall be screened, on a rolling basis such that at the end of the permit term all major outfalls which showed no indication of illicit discharges during the previous permit term have been screened."]

Mr. Hahn stated that the annotated permit contains some suggested changes to the IDDE program that would increase its efficiency and focus on sources of bacteria and pathogens. He continued that under the suggested changes, major outfalls that showed no evidence of illicit discharges over the previous permit cycle would undergo field screening once over the next permit cycle. After some discussion by the Group, Mr. Hahn suggested that major outfalls that had shown evidence of illicit discharges in the last two samplings of the previous permit term be screened annually.

[Secretary's Note: The first sentence of the last paragraph of Part III - Section B-2 of the annotated permit was revised to read:

"All major outfalls which showed evidence of illicit discharges during **either of the last two samplings under the preceding** permit term shall be evaluated annually, on an on-going basis, at a minimum one time per year during dry weather periods (typically 72 hours after any measurable rainfall). **For those outfalls on an annual cycle, when evidence of illicit discharges is not found in two consecutive years, the outfall can be placed on the list for sampling once every five years.**"

He indicated that some changes are also suggested in field screening. He noted that the visual observation component of the field screening would be the same as under the current permit. He indicated that field analysis component would be conducted following the procedures shown in a flow chart developed by the Center for Watershed Protection.

[Secretary's Note: That flow chart is attached herein as Exhibit F.]

Mr. Hahn stated that under the suggested changes, major outfalls which had shown evidence of illicit discharges over the previous permit term would continue to be screened on an annual cycle. He continued that the permitted municipalities would develop desktop analysis procedures that would identify stormwater outfalls, regardless of size, that are considered most likely to be conveying water contaminated with sanitary wastewater. He added that the identified outfalls would then be screened using the procedures described for major outfalls and that outfalls with discharges that field screening indicates are likely to be contaminated with sewage would be tested for the presence and numbers of bacteria indicative of human fecal contamination.

Ms. Nenn asked what would happen when data indicated fecal contamination in areas not suggested by the desktop analyses. Mr. Hahn answered that the procedure allows for the consideration of other available information.

Mr. Nettesheim asked why the municipalities would develop the desktop analyses individually rather than as a group. Mr. Boxhorn replied that staff was trying to avoid a “one size fits all” approach. Mr. Grisa stated that the communities could work together to develop the analyses, recognizing each community may have different conditions and ways of implementing the protocol. The consensus of the Group was to develop the analysis protocol as a group activity with a framework that would apply to all permittees. Each permittee would then refine this framework with specific details reflecting conditions in its community.

Ms. DeBruine asked whether existing data, such as that being generated in Milwaukee Riverkeeper’s outfall testing program, could be used rather than starting over again after two years with the desktop analyses. Mr. Hahn replied that this part of the proposed program changes is intended to give the municipalities time to develop a new program. Mr. Grisa added that once an illicit discharge is found, the response procedure in Part II-Section B-4 applies. He noted that the proposal does not change this.

Mr. Hartsook stated that he would like to include a common system for reporting and sharing information on illicit discharge detection and elimination across the watershed. He added that this could be done through a standard reporting form and process and perhaps a weblink to data tables. He noted that the data can be difficult to use unless it is put into a common format. The Group consensus was to move the development of a framework for doing the desktop analyses from Part III - Section B-3 (first paragraph) to Part II of the annotated permit and that text would be added to Part III-Section B-3 and B-4 regarding the use of a standard reporting form and using existing information.

[Secretary’s Note: The following Section D was added to Part II of the annotated permit after Section C (The text related to “outfalls ... identified for sampling” is inserted in response to Comments from Mr. Boehm as described in the next Secretary’s note.):

“D. ANALYSIS PROCEDURE FOR IDENTIFYING OUTFALLS LIKELY TO BE DISCHARGING SANITARY WASTEWATER: The Menomonee River Watershed Permittees will develop an analysis procedure to identify those outfalls which, based upon what is known about the age and condition of the associated stormwater conveyance systems and sanitary sewage conveyance systems, water quality conditions within receiving waters, and other available information the permittees consider relevant, are most likely to be conveying water contaminated with sanitary wastewater. This procedure shall address all known outfalls, regardless of size; **however, all outfalls may not be identified for sampling.** The permittees shall submit the procedure to the Department for its review and approval within two years of the issuance of this permit. The Department shall provide the permittees with the results of its review within six months of submission. **Until the framework is approved by the Department, illicit discharge detection and elimination efforts will be conducted under the terms of the preceding permit.”]**

The first paragraph of Part III-Section B-3 was deleted from the annotated permit.

The second and third paragraphs of Part III-Section B-3 were revised to read:

“3. Following approval of the analysis procedure described above in Part II - Section D, each municipality shall adapt the procedure to its local conditions. Each municipality shall screen those outfalls identified by the adapted analysis procedure using the procedures described in Part III-Section B-2-a and b. When

the results of the field screening indicate the likelihood that discharge from an outfall is contaminated with sanitary wastes, tests shall be conducted upon the discharge from the outfall for the presence and numbers of bacteria indicative of **human** fecal contamination. **In other sewersheds, screening for fecal coliform bacteria may be appropriate.**

For those outfalls **for which** bacterial testing indicates **human** fecal contamination the municipality, in consultation with the Department, shall initiate a systematic examination of the catchment area tributary to the outfall in an effort to determine and eliminate the source of the illicit discharge.”

See below regarding a standard reporting procedure.]

Mr. Boehm asked whether the Group had reached a consensus on following the flow chart from the Center for Watershed Protection (CWP). He noted that in his experience, this flow chart had not always worked. He suggested that the details for field analysis be revisited and to tie them into guidance from the working group at the WDNR. Mr. Hahn replied that Mr. Hartsook had provided a draft of the guidance. He added that the process suggested in the draft guidance is similar to that proposed in the annotated permit. He indicated that the suggested field analysis procedures could be modified. He asked Mr. Boehm to provide Commission staff with any comments on the field analysis procedures and indicated that this will be an agenda item for the next meeting of the Group if comments are received.

[Secretary’s Note: On March 6, 2012, Mr. Boehm and Mr. Hahn discussed Mr. Boehm’s experience with outfall sampling, including possible inadequacies in the CWP flow chart attached as Exhibit F. Mr. Boehm provided additional comments on these issues on March 26, 2012. He noted that in his experience:

- Potassium is difficult to screen for quickly and that the equipment to do such screening costs a couple of thousand dollars,
- Potassium has not been a deciding factor in identifying illicit discharges,
- Fluoride may occur naturally, making it difficult to use as an indicator of a possible interconnection between the sanitary sewer system and the storm sewer system, but, it should be kept as an option along with chlorine because it does not dissipate like chlorine does.
- The ammonia/potassium ratio (a ratio less than or exceeding 1 is a decision criterion in the flow chart) routinely exceeds 3, which would routinely lead to a conclusion of possible sanitary wastewater contamination, even in cases where such a conclusion may not be correct.

Based on these comments, it is recommended that Part III-Section B–2-b be revised as follows:

“b. Field Analysis - If flow is observed, field analysis shall be conducted to determine the presence of illicit non-storm water discharges or illegal dumping. The field analysis shall include sampling total copper, total phenol, detergent, ammonia, ~~potassium~~ and either fluoride or total chlorine as the indicator parameters. Other alternative indicator parameters may be authorized by the Department in writing.

Note: Detergent, ammonia, ~~potassium~~ and fluoride indicator parameters provide a better screening tool to identify whether the flow is contaminated with sanitary wastes or washwater, and also whether the source of the discharge is tap water or natural. ~~A flow chart illustrating the use of these indicator parameters to identify the source of an illicit discharge is included as Appendix B to this permit. The Center for Watershed Protection (CWP) has illicit discharge identification and elimination guidance available at www.cwp.org/idde_verify.htm. The CWP guidance includes illicit discharge field sampling guidance developed by Robert Pitt from the University of Alabama on how best to detect illicit discharges including recommended indicator parameters and associated levels of detection.~~"

Mr. Boehm also said that Part III-Section B-3 should be edited to indicate that all outfalls considered under the proposed illicit discharge detection and elimination sampling program may not be identified for sampling. This revision is addressed under the preceding Secretary's Note.

Finally, Mr. Boehm noted that there may be problems with expeditious local processing of Bacteroides tests.]

Mr. Hahn mentioned that the text in Part III-Section B-3 of the annotated permit that call for bacterial testing are vague. He noted that the University of Wisconsin-Milwaukee Great Lakes WATER Institute costs for tests for Bacteroides from human sources are about \$160 per sample. He said that the Group may want to add this testing to the IDDE investigation procedure when testing suggests that stormwater outfalls are discharging water contaminated with human wastewater. Mr. Grisa asked whether this should be left to each municipality to do using their own procedures. Mr. Hahn replied that given the cost cited, it may be less expensive to do this rather than immediately sending crews out to locate the source. Mr. Grisa replied that there may still be value in investigating, even if a suspected illicit discharge containing fecal bacteria is not from a human source. He indicated that the permit should not say that nothing needs to be done in cases where the bacteria are not from a human source.

Mr. Hahn noted that the permit could include a condition for producing an integrated storm sewer map to facilitate multijurisdictional IDDE efforts. After discussion of this proposal, the Group concluded that the technical difficulties involved in producing an integrated storm sewer map for the watershed would be formidable. In addition, because of the ways that municipalities link related information to their maps and identify system components, it is likely that even with an integrated mapping system, many municipalities would need to continue to use their existing mapping systems. The Group decided not to pursue fully integrating their storm sewer maps as part of the watershed-based stormwater permit effort.

[Secretary's Note: During the March 21 Work group meeting Karen Sands, MMSD Manager of sustainability, said that MMSD has developed, and is maintaining, an integrated, georeferenced storm sewer system map for its member and contract communities. Discussion during that meeting and follow up correspondence from Ms. Sands verified indicated that development of such a map may be more feasible than was indicated during the January 25 watershed-based permit Group meeting. While it is still not proposed to develop such a map as part of the watershed-based stormwater permit effort, the feasibility of developing an integrated map that retains local system component attributes could be explored under future permit-related efforts.]

Mr. Grisa said that he would like Part III-Section B-4-e of the annotated permit to say that the permittee has to give the responsible party three days to eliminate the illicit discharge or connection and notify the Department, because often these connections are not under the control of the MS4. Mr. Thur commented that the municipalities have to follow due process in order to remove these connections and that this can take longer than

three days. Mr. Hartsook asked whether the municipalities are finding many illicit discharges or connections. Mr. Thur replied that the City of Milwaukee finds about 10 to 12 per year. Mr. Hartsook suggested removing the three day elimination requirement and adding a requirement that the Department be notified. Mr. Newport suggested that the reporting suggested by Mr. Hartsook presents an opportunity for developing an integrated tracking and reporting system.

[Secretary's Note: Part III-Section B-4-e of the annotated permit was revised to read:

"Identified illicit discharges or connections shall be eliminated to the maximum extent practicable. If neither the source nor the non-stormwater discharge has been identified or observed within 6 months of beginning the investigation, then the municipality must maintain written documentation of the actions undertaken for review by the Department. A minimum of 3 separate investigations to observe flow at the identified outfall must be made within the 6 month period. Outfalls with indeterminate sources and non-stormwater discharges shall be maintained on the priority outfall list.

Once an illicit discharge is identified, the investigating municipality must contact the Department immediately then submit the completed "Illicit Discharge Reconnaissance" (IDR) form to the Department within 5 calendar days."

Note: This form is not yet created. Mr. Hartsook has contacted WDNR Central Office staff for their opinion. Such a form would be expected to resolve complications with trying to establish a consistent tracking system between the different MS4 programs.]

Mr. Grisa asked whether there is a definition of the term "sanitary conveyance systems" that is used in Part III-Section B-4-f of the annotated permit. He noted that he interprets this as referring to the municipally-owned system and that he would like clarification as to whether it includes laterals. Ms. Nenn and Mr. Grisa added that leaking laterals are not considered sanitary sewer overflows (SSOs) under the SSO rule. Mr. Nettesheim noted that some of the municipalities have mechanisms to address leaking laterals in their ordinances. Mr. Hahn stated that clarification of whether sanitary conveyance systems include laterals would have to come from the WDNR. At Mr. Newport's suggestions, further discussion of this was tabled until the next meeting of the Group.

[Secretary's Note: The purpose of this condition is to eliminate illegal connections to the separate storm sewer system as well as minimize infiltration into the storm sewer from leaky sewer systems. This includes municipally-owned and operated systems as well as privately owned laterals. If not already adopted, each municipality should have ordinances and the enforcement authority to remove connections and/or repair/replace exfiltrating sanitary sewers.

During the March 21, 2012 Work Group meeting there was considerable discussion regarding the fact that Part III-Section B-4 calls for establishment of procedures for the actions listed in Part III-Section B-4-a through i, but it does not specifically call for implementation of those actions. It was also noted that the first paragraph of Part III-Section B calls for development of a program to "detect and remove illicit connections and discharges", but it also does not specifically call for implementation of those actions. To address these concerns of the Work Group, the first sentence of the first paragraph of Part III-Section B was revised as follows:

"Each municipality shall develop and implement a program to detect and remove illicit connections and discharges to the municipal separate storm sewer system."]

Mr. Hahn drew the Group's attention to Part III-Section C of the annotated permit. He indicated that dates in this section will be updated. He noted the comments related to Part III-Section C-1-a-iii: 1) whether given the terms of the current permit, we can assume that all jurisdictions have authority to regulate erosion control at public buildings and places of employment; and 2) how the changes to the Department of Commerce's (now the Department of Safety and Professional Services (DSPS)) authority affect this section. Mr. Hartsook stated that he would seek clarification regarding these issues.

[Secretary's Note: At this time, there is not a signed Memorandum of Understanding between the WDNR and the DSPS. It is unknown whether this MOU would affect the delegated authority of municipalities to review plans and inspect commercial building sites on behalf of DSPS. All participating communities already have adopted ordinances and established inspection and enforcement procedures. The existing Part III-Section C of the permit is deleted and replaced with the following (bold text under C.7 shown here for emphasis):

C. "CONSTRUCTION SITE POLLUTANT CONTROL: The permittee shall continue to implement and enforce a program that establishes measurable goals and reduces the discharge of sediment and construction materials from construction sites. The permittee through implementation of this program shall:

1. Conduct plan reviews to ensure site erosion control plans are in accordance with design, installation, and maintenance standards and specifications that meet or exceed the Department's technical standards or permittee's ordinance.
2. Conduct erosion control inspections at all sites within the permittee's jurisdiction following the frequency and actions outlined in the permittee's construction site pollutant control program. The permittee shall contact the Department if there are significant or repeat violations at a site, or if there are threats or impacts to waters of the state.
3. Maintain records of site inspections, including any follow up necessary on sites out of compliance with their site-specific erosion control plans, as identified in the permittee's program.
4. Notify landowners who apply for local construction or land disturbance permits of the possible applicability of Subchapter III of NR 216, Wis. Adm. Code, *Construction Site Storm Water Discharge Permits*, or other Department waterway and wetland permits.
5. Enforce construction site performance standards equivalent to or more restrictive than those in ss. NR 151.11 and 151.23, Wis. Adm. Code on all sites including municipal projects applicable under the permittee's ordinance.
6. Enforce erosion and sediment control plan requirements for landowners of construction sites equivalent to those contained in s. NR 216.46, Wis. Adm. Code including municipal projects applicable under the permittee's ordinance.
7. Maintain and enforce the municipal ordinance regarding construction site storm water discharges. **Within 12 months of the effective date of this**

permit, the municipal ordinance shall be revised to include current s. NR 151, Wis. Adm. Code requirements.”]

Mr. Hahn indicated several revisions to be made to Part III-Section C.

[Secretary’s Note: Because the version of Part III-Section C of the permit that was reviewed on January 25 is proposed to be deleted as described in the preceding Secretary’s Note, those revisions are no longer pertinent.]

Mr. Hahn drew the Group’s attention to comment JEB55 (Part III-Section D-3), which poses the question whether it could be made easier for MS4s to claim credit for green infrastructure installed by private landowners in their jurisdictions. Mr. Boxhorn stated that one difficulty for municipalities is keeping track of privately installed green infrastructure practices. He suggested that municipalities could enact a registration requirement by ordinance with a small fee to offset the costs of the registration program and windshield surveys to verify the presence of the practices. He added that participating property owners could also be charge a lower stormwater utility fee. Mr. Grisa stated that it is to the municipalities’ advantage to identify these practices. He added that he does not want to mandate a system within the permit. Mr. Boxhorn replied that he was not looking to mandate this in the permit. Mr. Thur stated that the City of Milwaukee conducts a recertification of green infrastructure on industrial and commercial property on a five-year cycle. He indicated that this poses considerable difficulties for the City staff. After further discussion by the Group, it was decided to table discussion of this topic until a future meeting.

Mr. Hahn ended the review of the annotated permit at the end of Part III-Section D. He stated that he would continue reviewing the annotated permit starting with Part III-Section E. He noted that the Group had completed about 80 percent of the review.

DATE FOR NEXT MEETING

The Group set the next meeting for 9:00 a.m. to noon on April 4, 2012 at the Brookfield City Hall.

Mr. Grisa thanked the attendees for their participation.

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 11:55 a.m.

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Exhibit A

ISSUES ON WHICH THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP HAS REACHED CONSENSUS

Based on review of the summary notes from the August 24, 2001, October 12, 2011, and December 14, 2011 meetings of the Menomonee River Watershed-Based Permit Framework Group, the Group has reached consensus on the following issues:

1. The permit should address three pollutants of concern: total suspended solids, total phosphorus, and fecal indicator bacteria;
2. The permit should address chlorides as a pollutant through a narrative statement requiring the use of best practices, information and educational programming, and discussion of the relationship of these practices to the recommendations in the watershed restoration plan;
3. Permit requirements should be tailored to watershed conditions. For communities comprised of portions of more than one watershed, this may include different permit requirements in the different watersheds, if warranted by the science;
4. The general monitoring requirement under the first permit was a one-time requirement for the purpose of creating the communities' stormwater management programs; and
5. The multisource watershed-based permit structure is the most appropriate structure for a watershed-based municipal stormwater permit for the Menomonee River watershed. Such a permit would include the following elements:
 - a. General conditions applying to all MS4s and all portions of the watersheds they contain;
 - b. Specific conditions applicable to individual MS4s. Those portions of MS4s outside of the Menomonee River watershed would be subject only to the general conditions unless:
 - i. Differences are mandated by TMDL wasteload allocations, or
 - ii. Water quality data show a specific need.

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STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES
PERMIT TO DISCHARGE UNDER THE
WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 283, Wisconsin Statutes, and chs. NR 151 and NR 216, Wisconsin Administrative Code, the **Menomonee River Watershed Municipalities**:

CITY OF BROOKFIELD
CITY OF GREENFIELD
CITY OF WAUWATOSA
VILLAGE OF BUTLER
VILLAGE OF ELM GROVE
VILLAGE OF GERMANTOWN
VILLAGE OF MENOMONEE FALLS
VILLAGE OF WEST MILWAUKEE [HMG1]

are permitted to discharge storm water from

ALL PORTIONS OF THE CITY OF BROOKFIELD, CITY OF GREENFIELD, CITY OF WAUWATOSA, VILLAGE OF BUTLER, VILLAGE OF ELM GROVE, VILLAGE OF GERMANTOWN, VILLAGE OF MENOMONEE FALLS, AND VILLAGE OF WEST MILWAUKEE MUNICIPAL SEPARATE STORM SEWER SYSTEMS

owned or operated by the **Menomonee River Watershed Municipalities** to waters of the state in the following watersheds:

MENOMONEE RIVER
FOX RIVER
CEDAR CREEK
KINNICKINNIC RIVER
ROOT RIVER

in accordance with the conditions set forth in this permit.

This permit takes effect on the date of signature.

This permit to discharge expires at midnight, February 28, ~~2012~~2017.

To retain authorization to discharge after this expiration date, an application shall be filed for reissuance of this permit in accordance with the requirements of s. NR 216.09, Wis. Adm. Code, at least 180 days prior to this expiration date.

State of Wisconsin Department of Natural Resources
For the Secretary

By _____
Benjamin Benninghoff
Stormwater Specialist

Date of Signature

EFFECTIVE DATE/START DATE: March ~~24, 2007~~ 1, 2012 EXPIRATION DATE: February 28,
~~2012~~ 2017 [JEB3]

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GENERAL DESCRIPTION AND PURPOSE OF THE WPDES STORM WATER PERMIT FOR THE MENOMONEE RIVER WATERSHED MUNICIPALITIES

[ED4]

The Menomonee River Watershed Municipalities own and operate municipal separate storm sewer systems that discharge to waters of the state.

~~Discharges~~ Permitted discharges from municipal separate storm sewer systems may consist of runoff from rain events or snow melt ~~and fluids from spills or illicit connections~~. [ED5] Pollutants of concern found in municipal separate storm sewer system discharges include organic materials, suspended solids, metals, nutrients, bacteria, pesticides, fertilizer, and traces of toxic materials.

A. PERMITTED AREA:

This WPDES permit regulates municipal separate storm sewer system (MS4) discharges from the following municipalities located fully or partially within the Menomonee River Watershed:

City of Brookfield,

City of Greenfield,

City of Wauwatosa,

Village of Butler,

Village of Elm Grove,

Village of Germantown,

Village of Menomonee Falls,

Village of West Milwaukee [HMG6]

[ED7]

In this permit these municipalities are referred to as the Menomonee River Watershed Municipalities or the Menomonee River Watershed Permittees. This permit covers all areas within the jurisdiction of the Menomonee River Watershed Permittees, including areas of the communities which do not drain into the Menomonee River watershed. ~~This WPDES permit regulates discharges from the Menomonee River Watershed Municipalities municipal separate storm sewer systems~~ issued in accordance with chapter 283, Wis. Stats. and chs. NR 151 and NR 216, Wis. Adm. Code. The permit requirements are intended to restore and maintain the chemical, physical, and biological integrity of waters of the state through management and treatment of urban storm water runoff. [ED8]

This permit is a watershed-based permit, meaning some of the stormwater management requirements are tailored to the needs and characteristics of the Menomonee River watershed, and to some extent the adjoining and downstream watersheds. The permit includes group conditions and individual conditions. [ED9]

PART I. APPLICABILITY

~~B. PERMITTED AREA: This permit covers all areas within the jurisdiction of the City of Brookfield, City of Greenfield, City of Wauwatosa, Village of Butler, Village of Elm Grove, Village of Germantown, Village of Menomonee Falls, and Village of West Milwaukee that contribute to discharges from the municipal separate storm sewer systems owned or operated by the Menomonee River Watershed municipalities. Municipal separate storm sewer system, or MS4, has the meaning specified in Part VI. of this permit.~~

B. THE MENOMONEE RIVER WATERSHED:

The Menomonee River watershed covers approximately ~~140~~136 square miles of urban landscape which is home to a population of ~~more than 336,000~~about 322,000 people. There are portions of the watershed in Washington, Ozaukee, Waukesha, and Milwaukee Counties. The River originates in the Village of Germantown and the City of Mequon and flows in a southeasterly direction for about ~~322~~8 miles before it meets the Milwaukee and Kinnickinnic Rivers and then drains into Lake Michigan. The watershed contains 96 total stream miles and over ~~4,500~~6,780 wetland acres. Perhaps the most visible indications that the Menomonee River and its tributaries have been highly modified can be seen in sections of watershed where both the stream bed and banks are lined with concrete. About ~~8 percent~~14.5 miles of the streams in the watershed are concrete-lined or enclosed.[JEB10]

The watershed is characterized by small to medium sized warm water streams that exhibit flashy flow patterns. This means they often run very high and fast when it rains, and too low and slow when the weather is dry. These problems are rooted in historic channel modifications and growing urban land uses. The high flows in wet weather cause erosion of the streambanks and substrate (in unaltered sections of the River), causing releases of sediment and degrading habitat for fish and macroinvertebrates. The impervious surfaces in the watershed, which reduce groundwater infiltration and stream recharge, are key factors reducing stream flows in dry weather conditions; the low flow volumes and associated higher temperatures are also stressors for biological communities.

In addition to the flashy flow patterns, certain pollutants have been identified as contributing to use impairments in the watershed. Wisconsin DNR and collaborating organizations conduct monitoring of the waters of the State; where waters are found ~~not to be~~to be not meeting State water quality standards, the water bodies are categorized as "impaired." Impairments have been identified in the Menomonee watershed related to bacteria (which is associated with recreational uses and human health) and total phosphorus.

The fishery in the watershed has been and continues to be dominated by species that can tolerate low dissolved oxygen and other water quality impairments. The proportions of pollutant-tolerant fish species have all increased over the last 100 years. Most notable is the exotic invasive common carp species, which has increased from being found at 2 percent of the sites surveyed over the period 1900 to 1974 to being found at nearly 40 percent of the ~~catch since 1975 to present~~sites sampled over the period 1998 to 2004. Carp are likely having a negative effect on the [JEB11]overall fishery in the watershed by destroying habitat and competing with native fish species for food and spawning areas. There has been a decrease in the percent of native fishes in the Menomonee River watershed. Most notable losses include several intolerant species including the blacknose shiner and spottail shiner, the least darter and redbelly dace, which are species of special concern in the State of Wisconsin, and the greater redhorse which is a threatened species in the State of Wisconsin. Additional species that have not been observed since 1975 include the southern redbelly dace, northern redbelly dace, and grass pickerel.

The adjoining watersheds face similar water quality issues. There are identified water quality impairments related to bacteria and total phosphorus in the Milwaukee River, ~~and~~Kinnickinnic River, Root River, and Fox River watersheds and/or the estuary area. In addition, there are identified water quality impairments related to dissolved oxygen in the Root River watershed.

[JEB12] [ED13]

C. AUTHORIZED DISCHARGES

÷ This permit authorizes storm water point source discharges to waters of the state from the municipal separate storm sewer systems in the permitted areas. This permit also authorizes the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater, and storm water associated with industrial activity, provided the discharges are regulated by other WPDES permits or are discharges which are not considered

illicit discharges.

D. WATER QUALITY STANDARDS

1. This permit specifies the conditions under which storm water may be discharged to waters of the state for the purpose of achieving water quality standards contained in chs. NR 102 through 105 and NR 140, Wis. Adm. Code. For the term of this permit, compliance with water quality standards will be addressed by adherence to general narrative-type storm water discharge limitations and implementation of storm water management programs and practices.
2. This permit does not authorize water discharges that the Department, prior to authorization of coverage under this permit, determines will cause or have reasonable potential to cause or contribute to an excursion above any applicable water quality standards. Where such determinations have been made prior to authorization, the Department may authorize coverage under this permit where the storm water management programs required under this permit will include appropriate controls and implementation procedures designed to bring the storm water discharge into compliance with water quality standards.

E. OUTSTANDING AND EXCEPTIONAL RESOURCE WATERS

This permit does not authorize the discharge to any Outstanding or Exceptional Resource Waters as listed in ss. NR 102.10 and 102.11, Wis. Adm. Code.

F. IMPAIRED WATER BODIES AND TOTAL MAXIMUM DAILY LOAD REQUIREMENTS

1. Each permittee shall determine whether any part of its MS4 discharges to an impaired water body listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC 1313(d)(1)(C), and the implementing regulation of the US Environmental Protection Agency, 40 CFR 130.7(c)(1). Impaired waters are those that are not meeting applicable water quality standards. A list of Wisconsin impaired water bodies may be found on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/303d.html>.

Tables showing identified impairments in the Menomonee, Milwaukee, and Kinnickinnic River watersheds and the estuary area are included in Appendix A. There are 303(d) listings for bacteria and Total Phosphorus, along with certain other pollutants. Work is currently underway on TMDLs which will address the bacteria and phosphorus-related impairments in the Menomonee, Milwaukee, and Kinnickinnic River watersheds and the estuary area. [ED14]

2. If a permittee's MS4 discharges to an impaired water body, the permittee shall include a written section in its storm water management program that discusses the management practices and control measures it will implement as part of its program to reduce, with the goal of eliminating, the discharge of pollutants of concern that contribute to the impairment of the water body. This section of the permittee's program shall specifically identify control measures and practices that will collectively be used to try to eliminate the MS4's discharge of pollutant(s) of concern that contribute to the impairment of the water body and explain why these control measures and practices were chosen as opposed to other alternatives. Pollutant(s) of concern means a pollutant that is causing impairment of a water body.

3. After a permittee's start date of coverage under this permit, the permittee may not establish a new MS4 discharge of a pollutant of concern to an impaired water body or increase the discharge of a pollutant of concern to an impaired water body unless the new or increased discharge causes the receiving water to meet applicable water quality standards.

Note: Once the Department approves a TMDL for an impaired water body to which the permittee discharges, the Department anticipates that this permit will need to be modified to include requirements necessary to achieve the TMDL wasteload allocation for the MS4. Approved TMDLs are listed on the Department Internet

site at: <http://dnr.wi.gov/or/water/wm/wqs/303d/index/html>.

G. WETLANDS:

Each permittee's MS4 discharge to a wetland shall comply with the wetland water quality standards provisions in ch. NR 103, Wis. Adm. Code.

H. ENDANGERED AND THREATENED RESOURCES

Each permittee's MS4 discharge to an endangered or threatened resource shall comply with the endangered and threatened resource protection requirements of s. 29.604, Wis. Stats., and ch. NR 27, Wis. Adm. Code.

I. HISTORIC PROPERTY

No permittee's MS4 discharge may affect any historic property that is listed property, or on the inventory or on the list of locally designated historic places under s. 44.45, Wis. Stats., unless the Department determines that the MS4 discharge will not have an adverse effect on any historic property pursuant to s. 44.40 (3), Wis. Stats.

J. GENERAL STORM WATER DISCHARGE LIMITATIONS

÷The Menomonee River Watershed Municipalities may not discharge the following substances from the municipal separate storm sewer systems in amounts that have an unreasonable effect on receiving water quality or aquatic life:

1. Solids that may settle to form putrescence or otherwise objectionable sludge deposits.
2. Oil, grease, and other floating material that form noticeable accumulations of debris, scum, foam, or sheen.
3. Color or odor that is unnatural and to such a degree as to create a nuisance.
4. Toxic substances in amounts toxic to aquatic life, wildlife, or humans.
5. Nutrients conducive to the excessive growth of aquatic plants and algae to the extent that such growths are detrimental to desirable forms of aquatic life, create conditions that are unsightly, or are a nuisance.
6. Any other substances that may impair, or threaten to impair, beneficial uses of the receiving water.

K. INDIVIDUAL RESPONSIBILITY

÷Each Menomonee River Watershed Municipality is responsible for:

- 1.—Compliance with conditions of this permit relating to discharges from those portions of the municipal separate storm sewer system where the municipality is the owner or operator.
- 2.—Storm water management program implementation, as required by this permit, on portions of the municipalities that drain to the municipal separate storm sewer system where it is the owner or operator. This includes carrying out programs and activities as required under Sections III B., C., D., and E. of this permit[ED15]
- 3.—Working collaboratively with the other co-permittees as a member of the Menomonee River Watershed Municipalities to meet the Group Conditions (Section II). Failure to complete/comply with the Group Conditions could result in the Department requiring a permittee(s) to obtain discharge authorization under a State general permit or an individual permit. All other activities required by this permit, individually and jointly with the other co-permittees as a member of the Menomonee River Watershed Municipalities[ED16]-

L. SHARED RESPONSIBILITY

The Menomonee River Watershed Municipalities will work together to comply with the provisions of Section II of this permit. [ED17] The Menomonee River Watershed Municipalities may share implementation of one or more of the conditions of this permit if the shared responsibility is approved by the Department. The Menomonee River Watershed Municipalities' implementation of one or more of the conditions of this permit may incorporate cooperative efforts with other MS4 regulated permittees or efforts by other groups or organizations if the shared responsibility is approved by the Department. [JEB18]

M. EXCLUSIONS:

The following are excluded from coverage under this permit:

1. Combined Sewer and Sanitary Sewer Systems

Discharges of water from a wastewater treatment facility, sanitary sewer or a combined sewer system conveying both sanitary and storm water. These discharges are regulated under s. 283.31, Wis. Stats, and require a separate individual permit.

2. Agricultural Facilities and Practices

Discharges from "agricultural facilities" and "agricultural practices". "Agricultural facility" means a structure associated with an agricultural practice. "Agricultural practice" means beekeeping; commercial feedlots; dairying; egg production; floriculture; fish or fur farming; grazing; livestock raising; orchards; poultry raising; raising of grain, grass, mint and seed crops; raising of fruits, nuts and berries; sod farming; placing land in federal programs in return for payments in kind; owning land, at least 35 acres of which is enrolled in the conservation reserve program under 16 USC 3831 to 3836; and vegetable raising.

3. Other Excluded Discharges

Storm water discharges from industrial operations or land disturbing construction activities that require separate coverage [HMG19] under a WPDES permit pursuant to subchs. II or III of ch. NR 216, Wis. Adm. Code. For example, while storm water from industrial or construction activity may discharge from an MS4, this permit does not satisfy the need to obtain any other permits for those discharges. This exclusion does not apply to each permittee's responsibility to regulate construction sites within its jurisdiction in accordance with Part III. sections C and D of this permit.

4. Indian Country

Storm water discharges within Indian Country. The federal Clean Water Act requires that owners and operators of storm water discharges within Indian Country to obtain permit coverage directly from the United States Environmental Protection Agency.

Part II. GROUP CONDITIONS

The following permit conditions apply ~~individually~~ to the Menomonee River Watershed Municipalities, ~~however,~~ the ~~The~~ municipalities intend to collaborate and satisfy these conditions collectively. [ED20]

[JEB21]

A. PUBLIC EDUCATION AND OUTREACH

~~÷~~The Menomonee River Watershed Municipalities shall implement a public education and outreach program to increase the awareness of storm water pollution impacts on waters of the state to encourage changes in public behavior to reduce such impacts. The public education and outreach program may incorporate cooperative efforts with other MS4 regulated permittees or efforts by other groups or organizations provided a mechanism is developed and implemented to track the public education and outreach efforts within the MS4 regulated area and the results of such efforts are reported annually. [JEB22] The program shall establish measurable goals and, at a minimum, include the following elements:

1. Promote detection and elimination of illicit discharges and water quality impacts associated with such discharges from municipal separate storm sewer systems. This may include storm water inlet stenciling, neighborhood storm watches, and hot lines to report dumping.

2. Inform and educate the public on sources of pollutant loadings and causes of habitat degradation in the watersheds of Southeast Wisconsin, including stormwater. [ED23]

3. ~~Inform and educate~~Provide information educating the public ~~to on facilitate~~the proper management of materials that may cause storm water pollution from sources including automobiles, pets, household hazardous waste, car washing, landscaping, and household practices. Highlight that the cumulative actions of individuals can have a major effect in terms of helping to reduce stormwater-related pollution. [ED24]

4. Promote beneficial onsite reuse of leaves and grass clippings and proper use of lawn and garden fertilizers, herbicides, and pesticides.

5. Promote ~~the restorative and protective~~ management of streambanks and shorelines by riparian landowners to minimize erosion and restore and enhance the ecological value of waterways. [ED25]

6. Promote infiltration of residential storm water runoff from rooftop downspouts, driveways, and sidewalks. Such infiltration may be achieved through the disconnection of these areas from the storm water drainage system. Public Education and Outreach activities and materials should include information on green infrastructure practices such as rain gardens and permeable pavements. [ED26]

7. Inform those responsible for the design, installation, and maintenance of construction site erosion control practices and storm water management facilities about guidance and resources that ~~will~~ provide information on how to design, install, and maintain the practices. Construction companies and developers are key audiences for this education and outreach. [ED27]

8. Identify businesses and activities that may pose a storm water contamination concern, and where appropriate, inform specific audiences such as snow removal/deicing companies, lawn care companies, golf courses, carwashes, ~~and~~ restaurants, and homeowner associations about resources that provide further information on methods of storm water pollution prevention. [ED28]

9. Promote environmentally sensitive land development designs by developers and designers.

10. Conduct outreach to schools and/or community organizations on stormwater and the watershed. Work with collaborating organizations on River clean-up days or other water quality-related events. [ED29]

11. Promote best practices for snow and ice removal and inform specific audiences such as snow removal/deicing companies, private residences, industrial and commercial facilities, and residents about

resources that provide further information on methods of reducing application of chemical deicers while maintaining public safety. [JEB30] [JEB31]

~~Each year~~ On the same cycle as their annual reports, [JEB32] the Menomonee River Watershed Municipalities will develop a joint report on education and outreach activities carried out which individual municipalities can submit as part of their annual reports (see H., below). In addition, the Menomonee River Watershed Municipalities will evaluate the effects of the outreach program through an updated survey of residents in the watershed or using other appropriate methods, and will document the results of the evaluation in the 2013 or 2014 Annual Report (see H., below). [HMG33] [ED34]

B. STORM WATER MONITORING AND PLANNING: [HMG35]

The Menomonee River Watershed Municipalities shall participate in or contribute funding to ~~a two watershed-~~ focused storm water monitoring and/or planning projects during the term of this permit. The first project will be implemented in years 2-3 of the permit term, and the second project will be implemented in years 4-5 of the permit term. The permittees shall select monitoring/planning projects from the following:

a. A 2-year project, which includes continuing current testing of stormwater outfalls in the Menomonee River watershed during dry and wet weather for *E. coli*, *Enterococci*, and *Bacteroides*, with a goal of getting 3 wet weather samples from each problem outfall and dry samples if outfalls are running. In conjunction with this monitoring effort a small technical group ~~will be convened~~ of project partners will be convened to develop a strategy to find and fix problem stormwater pipes based on results of bacteria data, infrastructure condition information from MMSD and municipalities, and recreational use data.

(This project is from the WAT implementation plan of the watershed restoration plan.)

b. An investigation into the performance of BMPs (structural or nonstructural) in reducing bacteria loadings, including a demonstration project with monitoring/measurement of the results/effects.

c. An investigation into systems and practices for reducing chloride loadings. This project potentially would highlight successes in reducing salt application in the watershed and work to build capacity for municipalities, states, counties, private applicators and residents to reduce impacts of salt usage to the waterways. Capacity building will include discussion forums, webinars/workshops for municipal staff and private applicator. Project work will include research on salt alternatives and if applicable, will identify potential demonstration projects.

Intended outcomes include:

- Enhanced understanding of impediments to reducing municipal salt use
- Number of commercial and municipal BMPs employed will increase
- Chloride loads will be reduced
- All appropriate municipal staff will receive salt application BMP training
- Identification and training of commercial salt applicators in the Watershed.
- Advancing delisting of Beneficial Use Impairments in the Milwaukee Estuary Area of Concern.

[ED36]

d. A different monitoring project that is agreed upon by the group. Monitoring projects could consist of an evaluation of the effectiveness/performance of a storm water management practice(s), an evaluation of pollutant loadings from a particular source area, or another project proposed by the group. The monitoring project must be substantive and related to watershed needs.

[ED37]

1. ~~The monitoring project shall consist of one of the following:~~

a. ~~The monitoring project described in the Menomonee River Watershed Municipalities' application.~~

b. ~~A different monitoring project that is agreed upon by the group. Monitoring projects could consist of an evaluation of a storm water management practice, an evaluation of pollutant loadings from a particular source area, or another project proposed by the group.~~

~~2. Any proposed modifications to the monitoring project shall be submitted to the Department for approval prior to implementing the modifications.~~

2. The initial watershed-focused monitoring/planning project to be carried out must be communicated to the Department by the Menomonee River Watershed Municipalities by July 31, 2012. The second monitoring/planning project to be carried out must be communicated to the Department by the Menomonee River Watershed Municipalities by July 31, 2014. Any proposed modifications to the selected project shall be submitted to the Department for approval prior to implementing the modifications. [ED38]

[JEB39]

C. ILLICIT DISCHARGE NOTIFICATION: In the case of an illicit discharge which originates from any Menomonee River Watershed municipality and which discharges directly to a storm sewer or property under the jurisdiction of any other Menomonee River Watershed municipality, the municipality discovering the discharge shall notify the affected municipality within one working day. [ED40]

[JEB41]

[JEB42]

Part III. INDIVIDUAL CONDITIONS

The following permit conditions apply to each municipality in the Menomonee River Watershed Municipalities:

A. PUBLIC INVOLVEMENT AND PARTICIPATION: Each municipality shall implement a program to notify the public of activities required by this permit and to encourage input and participation from the public regarding these activities. The program shall comply with applicable state and local public notice requirements.

B. ILLICIT DISCHARGE DETECTION AND ELIMINATION: Each municipality shall develop a program to detect and remove illicit connections and discharges to the municipal separate storm sewer system. Each Municipality's implementation of its program to detect and remove illicit connections and discharges may incorporate cooperative efforts with other MS4 regulated permittees or efforts by other groups or organizations if the shared responsibility is approved by the Department. The program shall include measurable goals and include all of the following:

1. An ordinance or other regulatory mechanism to prevent and eliminate illicit discharges and connections to the municipal separate storm sewer system. At a minimum, the ordinance or other regulatory mechanism shall:

Prohibit the discharge, spilling or dumping of non-storm water substances or material into waters of the state or the storm sewer system.

a. Identify non-storm water discharges or flows that are not considered illicit discharges. Non-storm water discharges that are not considered illicit discharges including water line flushing, landscape irrigation, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, fire fighting and discharges authorized under a WPDES permit unless identified by the permittee as significant source of pollutants to waters of the state.

b. Establish inspection and enforcement authority.

Note: Chapter NR 815, Wis. Adm. Code, regulates injection wells including storm water injection wells. Construction or use of a well to dispose of storm water directly into groundwater is prohibited under s. NR 815.11(5), Wis. Adm. Code.

2. Field screening at all major outfalls during dry weather periods. All ~~Major-major~~ outfalls which showed no indication of illicit discharges during the previous permit term shall be evaluated ~~annually~~ at least once during this permit term, on an on-going basis, at a minimum of one time per year during dry weather periods (typically 72 hours after any measurable rainfall). In any single year, at least one fifth of such major outfall shall be screened, on a rolling basis such that at the end of the permit term all major outfalls which showed no indication of illicit discharges during the previous permit term have been screened. At a minimum, field screening shall be documented and include:

a. Visual Observation - A narrative description of visual observations including color, odor, turbidity, oil sheen or surface scum, flow rate and any other relevant observations regarding the potential presence of non-storm water discharges or illegal dumping. (include narrative in annual report)

b. Field Analysis - If flow is observed, field analysis shall be conducted to determine the presence of illicit non-storm water discharges or illegal dumping. The field analysis shall include sampling ~~for pH, total chlorine,~~ total copper, total phenol, ~~and detergents unless the municipality elects instead to use detergent,~~ ammonia, potassium and ~~either~~ fluoride^[HMG43] or total chlorine as the indicator parameters. Other alternative indicator parameters may be authorized by the Department in writing.^[ED44]

Note: Detergent, ammonia, potassium and fluoride indicator parameters provide a better screening tool to identify whether the flow is contaminated with sanitary wastes or wastewater/washwater, and

also whether the source of the discharge is a tap water or natural source of water. A flow chart illustrating the use of these indicator parameters to identify the source of an illicit discharge is included as Appendix B to this permit. The Center for Watershed Protection (CWP) has illicit discharge identification and elimination guidance available at www.cwp.org/idde_verify.htm. The CWP guidance includes illicit discharge field sampling guidance developed by Robert Pitt from the University of Alabama on how best to detect illicit discharges including recommended indicator parameters and associated levels of detection.

- i. Field screening points shall, where possible, be located downstream of any source of suspected illegal or illicit activity.
- ii. Field screening points shall be located where practicable at the farthest manhole or other accessible location downstream in the system. Safety of personnel and accessibility of the location shall be considered in making this determination.
- iii. Consideration shall be given to hydrological conditions, total drainage area of the site, population density of the site, traffic density, age of the structures or building in the area, history of the area and land use types.

All major outfalls which showed evidence of illicit discharges during the previous permit term shall be evaluated annually, on an on-going basis, at a minimum of one time per year during dry weather periods (typically 72 hours after any measurable rainfall). At a minimum, field screening shall be documented and include the visual observations and field analyses described for screening of major outfalls which showed no indication of illicit discharges during the previous permit term.

[JEB45]

3. Each municipality shall develop an analysis procedure to identify those outfalls which, based upon what is known about the age and condition of the associated stormwater conveyance systems, sanitary sewage conveyance systems, water quality conditions within receiving waters, and other available information the municipality considers relevant, are considered most likely to be conveying water contaminated with sanitary wastewater. This procedure shall address all known outfalls, regardless of size. The municipality shall submit the procedure to the Department for its review and approval within two years of the issuance of this permit. The Department shall provide the municipality with the results of its review within six months of submission.

Following approval of their analysis procedure, each municipality shall screen those outfalls using the procedures described above for major outfalls. When the results of the field screening indicate the likelihood that discharge from an outfall is contaminated with sanitary wastes, tests shall be conducted upon the discharge from the outfall for the presence and numbers of bacteria indicative of fecal contamination.

For those outfalls that bacterial testing indicates fecal contamination the municipality, in consultation with the Department, shall initiate a systematic examination of the catchment area tributary to the outfall in an effort to determine and eliminate the source of the illicit discharge. [JEB46]

[JEB47] 4 [JEB48]. Procedures for responding to known or suspected illicit discharges. At a minimum, procedures shall be established for:

- a. Immediately investigate investigating [JEB49] portions of the municipal separate storm sewer system that, based on the results of field screening or other information, indicate a reasonable potential for containing illicit discharges or other sources of non-storm water discharges.
- a. Responding to spills that discharge into and/or from the municipal separate storm sewer system including tracking the source of the spill if unknown.
- c. Preventing and containing spills that may discharge into or are already within the municipal separate storm sewer system.

d. Immediately notifying [JEB50] the Department in accordance with ch. NR 706, Wis. Adm. Code, in the event that the permittee identifies a spill or release of a hazardous substance, which results in the discharge of pollutants into waters of the state. The Department shall be notified via the 24-hour toll free spill hotline at 1-800-943-0003. The permittee shall cooperate with Department in efforts to investigate and prevent such discharges from polluting waters of the state.

e. Identified illicit discharges or connections shall be eliminated within three working days to the maximum extent practicable. If it will take more than three working days to remove an illicit connection, the Department shall be contacted to discuss an appropriate action and/or timeframe for removal.

f. To the maximum extent practicable, eliminating or minimizing leakage from sanitary conveyance systems into the municipal separate storm sewer system.

g. Providing the Department with advance notice of the time and location of dye testing within a MS4. (Because the dye may get reported to the Department as an illicit discharge, the Department requires prior notification of dye testing.)

h. In the case of an illicit discharge that originates from the municipality's permitted area and that discharges directly to a storm sewer system or property under the jurisdiction of another municipality, the first municipality shall notify the affected municipality within one working day.

i. The name, title, and phone number of the individual(s) responsible for responding to reports of illicit discharges and spills shall be included in the illicit discharge response procedure and submitted to the Department in accordance with Part IV.C.3.

[ED51]

C. CONSTRUCTION SITE POLLUTANT CONTROL. Each municipality shall develop, implement and enforce a program to reduce the discharge of sediment from construction sites. The program shall establish measurable goals and include:

1. An ordinance or other regulatory mechanism to require erosion and sediment control at construction sites and establish sanctions to ensure compliance. Note that Appendix A of ch. NR 152, Wis. Adm. Code, contains a construction site model ordinance. At a minimum, the ordinance or other regulatory mechanism shall establish or include:

a. Applicability and jurisdiction.

i. It shall apply to construction sites with one acre or more of land disturbance, and sites of less than one acre if they are part of a larger common plan of development or sale within the jurisdiction of the permittee. To the extent possible, the jurisdiction shall include any adjacent developing areas that are planned to have a minimum density of 500 people per square mile, the urbanized area, and developing areas whose runoff will connect to the MS4.

ii. It does not have to apply to construction sites that are listed under s. NR 216.42(2) to (11), Wis. Adm. Code, except that it shall apply to construction sites listed under s. NR 216.42(4) and (9) where erosion control authority has been delegated by the Wisconsin Department of Commerce to the permittee.

iii. If the permittee does not have authority from the Wisconsin Department of Commerce to regulate erosion control at public buildings and places of employment, the permittee shall request such authority from the Wisconsin Department of Commerce (Commerce) pursuant to s. 101.1205(4), Wis. Stats., by **June 30, 2008**. If Commerce delegates to the permittee the authority to regulate erosion control at public buildings and places of employment, the permittee shall exercise such authority as soon as possible [HMG52].

b. Erosion and sediment control criteria, standards and specifications equivalent to those approved by the

Department. Department erosion and sediment control standards are available through the Department's stormwater website at: <http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>

c. Construction site performance standards equivalent to or more restrictive than those in ss. NR 151.11 and 151.23, Wis. Adm. Code.[ED53]

d. Erosion and sediment control plan requirements for landowners of construction sites equivalent to those contained in s. NR 216.46, Wis. Adm. Code.

e. Permitting requirements, procedures, and fees.

f. Inspection and enforcement authority.

g. Requirements for construction site operators to manage waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site so as to minimize adverse impacts to waters of the state.[ED54]

2. Procedures for construction site inspection and enforcement of erosion and sediment control measures. At a minimum, the procedures shall establish:

a. Municipal departments or staff responsible for construction site inspections and enforcement.

b. Construction site inspection frequency and documentation. Conduct, at a minimum, monthly compliance erosion control inspections at all sites in the municipality. The municipality shall keep records of these inspections, including any follow up necessary on sites out of compliance with their erosion control plans. The municipality shall contact the Department if there are significant or repeat violations at a site.

c. Enforcement mechanisms that will be used to achieve compliance.

3. 3. Procedures for site planning which incorporate consideration of potential water quality impacts.

4. 4. Procedures for receipt and consideration of information submitted by the public.

D. POST-CONSTRUCTION STORM WATER MANAGEMENT. Each municipality shall develop, implement, and enforce a program to control the quantity and quality of discharges from areas of new development and redevelopment, after construction is completed. The program shall establish measurable goals and include:

1. An ordinance or other regulatory mechanism to regulate post-construction storm water discharges from new development and re-development. Note that Appendix B of ch. NR 152, Wis. Adm. Code, contains a post-construction site model ordinance. At a minimum, the ordinance or other regulatory mechanism shall establish or include:

a. Applicability and jurisdiction that shall apply to construction sites with one acre or more of land disturbance, and sites of less than one acre if they are part of a larger common plan of development or sale within the jurisdiction of the permittee. To the extent possible, the jurisdiction shall include any adjacent developing areas that are planned to have a minimum density of 500 people per square mile, the urbanized area, and developing areas whose runoff will connect to the MS4.

b. Design criteria, standards and specifications equivalent to the Wisconsin Storm Water Manual or other technical standards approved by the Department. The Technical Standards takes precedence over the Storm Water Manual. The Wisconsin Storm Water Manual and other Department approved technical standards are available at <http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>.

c. Post-construction performance standards equivalent to or more restrictive than those in ss. NR 151.12

and 151.24, Wis. Adm. Code.

d. Storm water plan requirements for landowners of construction sites equivalent to those contained in s. NR 216.47, Wis. Adm. Code.

e. Permitting requirements, procedures and fees.

f. Long-term maintenance requirements for landowners and other persons responsible for long-term maintenance of post-construction storm water control measures.

g. Inspection and enforcement authority.

2. Procedures that will be used to for site planning which incorporate consideration of potential water quality impacts.

3. Procedures that will be used to ensure the long-term maintenance of storm water management facilities [JEB55].

[ED56]

[JEB57] E. POLLUTION PREVENTION: Each municipality shall develop and implement a pollution prevention program that establishes measurable goals for pollution prevention. The program shall include:

1. Routine inspection and maintenance of municipal owned or operated structural storm water management facilities to maintain their pollutant removal operating efficiency.

2. Street sweeping and catch basin cleaning where appropriate. The program proposal shall identify the frequency of street sweeping and catch basin cleaning activities at specific locations in the municipality.

3. Proper disposal of street sweeping and catch basin cleaning waste.

4. If road salt or other deicers are applied by the permittee, no more shall be applied than necessary to maintain public safety. [ED58]

Note: The Wisconsin Department of Transportation (DOT) "Highway Maintenance Manual", chapter 35, contains guidance on application of road salt and other deicers that can be used to determine whether or not application is necessary and what application rate is appropriate for deicing and ice prevention. This information is held on a secured server and users must first register with the state of Wisconsin to obtain an ID and password. You can learn more about getting connected to this secured server at: <http://www.dot.wisconsin.gov/business/extranet/>. The Wisconsin Department of Transportation (DOT) highway salt storage requirements are contained in ch. Trans 277, Wis. Adm. Code.

5. Proper management of leaves and grass clippings, which may include on-site beneficial reuse as opposed to collection.

6. Storm water pollution prevention planning for municipal garages, storage areas and other municipal sources of storm water pollution, including quarterly inspections of these facilities.

7. Application of lawn and garden fertilizers on municipally controlled properties, with pervious surfaces over 5 acres each, no more frequently than a site-specific nutrient application schedule based on soil tests.

8. Education of appropriate municipal and other personnel involved in implementing this program.

9. Measures to reduce municipal sources of storm water contamination within source water protection areas. Wisconsin's source water assessment program information is available at: <http://www.dnr.state.wi.us/org/water/dwg/swap/index.htm>.

[JEB59]

F. STORM WATER QUALITY MANAGEMENT^[HMG60]: Each municipality shall develop and implement a municipal storm water management program. The storm water management program shall achieve compliance with the developed urban area performance standards of s. NR 151.13(2), Wis. Adm. Code, for those areas of the municipality that were not subject to the post-construction performance standards of s. NR 151.12 or 151.24, Wis. Adm. Code. (Note: projects prior to Oct. 1, 2004). The program shall include:

1. To the maximum extent practicable, implementation of storm water management practices necessary to achieve a 20% reduction in the annual average mass of total suspended solids^[HMG61] discharging from the MS4 to waters of the state as compared to no controls, by March 10, 2008. (Note: reconstruction or redevelopment projects should be targeted to incorporate storm water management practices to help attain 20% and 40%^[HMG62] total suspended solids reduction requirements). The municipality may elect to meet the 20% total suspended solids standard on a watershed or regional basis by working with other permittee(s) to provide regional treatment or other measures that collectively meets the standard.

Note: Pursuant to s. NR 151.13(2), Wis. Adm. Code, the total suspended solids reduction requirement increases to 40% by March 10, 2013^[HMG63]. The 20% and 40%^[HMG64] total suspended solids reduction requirements are applied to runoff from areas of urban land use and are not applicable to agricultural or rural land uses and associated roads. Additional MS4 modeling guidance for modeling the total suspended solids control is given on the Department's Internet site at:
<http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>

2. Evaluation of all municipal owned or operated structural flood control facilities to determine the feasibility of retrofitting to increase total suspended solids removal from runoff.^[ED65]

3. Assessment of compliance with s. NR 151.13(2), Wis. Adm. Code, by conducting a pollutant-loading analysis using a model such as SLAMM, P8 or equivalent methodology approved by the Department. At a minimum, the average annual total suspended solids and phosphorus loads to the MS4 shall be determined for the cumulative discharge from all outfalls for the controls and no controls conditions. For purposes of evaluating the modeling, pollutant loads for grouped drainage areas as modeled shall be reported. The modeling shall calculate the theoretical annual average mass of total suspended solids generated for the entire area served by a municipal separate storm sewer system within the permittee's jurisdiction with no controls or BMPs applied. Modeling to reflect the current state of controls and BMPs shall be judged against the no controls condition to determine the percent of reduction. A storm water infiltration system is considered to be a control or BMP. Controls and BMPs that exist at the time of permit issuance may be used to achieve this reduction. This pollutant level reduction applies to total suspended solids only. If the assessment of compliance indicates that compliance with s. NR 151.13(2), Wis. Adm. Code, will not be achieved by March 10, 2008, a compliance plan and schedule shall be developed.

G. STORM SEWER SYSTEM MAP: Each municipality shall develop and maintain a municipal separate storm sewer system map. The municipal storm sewer system map shall include:

1. Identification of waters of the state, watershed boundaries, name and classification of receiving waters, identification of whether the receiving water is an ORW, ERW, or listed as an impaired water under s. 303 (d) of the Clean Water Act, stormwater drainage basin boundaries for each MS4 outfall and municipal separate storm sewer conveyance systems.

2. Identification of all known municipal storm sewer system outfalls discharging to waters of the state or other municipal separate storm sewer systems. Major outfalls shall be uniquely identified.

3. Location of any known discharge to the municipal separate storm sewer system that has been issued a WPDES permit by the Department. A list of WPDES permit holders in the permittee's area may be obtained from the Department.

4. Location of municipally owned or operated structural storm water facilities including detention basins, infiltration basins, and manufactured treatment devices. If the permittee will be taking credit for pollutant

removal from privately-owned facilities they must be identified.

5. Identification of publicly owned parks, recreational areas and other open lands.

6. Location of municipal garages and other public works facilities.

7. Identification of streets.

[JEB66]

H. ANNUAL REPORT. Each municipality shall submit an annual report for each calendar year[JEB67]. The municipal governing body, interest groups and the general public shall be encouraged to review and comment on the annual report. The annual report shall include:

1. The status of implementing the permit requirements, status of meeting measurable program goals and compliance with permit schedules.

2. Updated storm sewer system maps, where necessary, to identify any new outfalls, structural controls, or other noteworthy changes.

3. A summary describing:

- a. The number and nature of inspections and enforcement actions conducted to ensure compliance with the required ordinances.
- b. Public education and outreach programs for each of the ~~eight~~ eleven[JEB68] areas listed in Part II. A.
- c. Spill responses.
- d. Street sweeping frequency and the amount collected.
- e. Catch basin cleaning frequency and the amount collected.
- f. DPW Yard inspections.
- g. Pollutant Loading removal rates and status of meeting performance standards.
- h. Any other activities that have measurable results.

4. A summary of revisions made to the storm water management plan.

5. Proposed revisions to the storm water management plan.

6. A fiscal analysis which includes the annual expenditures and budget for the reporting year, and the proposed budget for the next year.

7. Identification of any known or perceived water quality improvements or degradation in the receiving water to which the permittee's MS4 discharges. Where degradation is identified, identify why and what actions are being taken to improve the water quality of the receiving water.

8. A duly authorized representative of each municipality shall sign and certify the annual report and include a statement or resolution that the municipal governing body or delegated representatives have reviewed or been appraised of the content of the annual report. A signed copy of the annual report and other required reports shall be submitted to the Storm Water Specialist, DNR Milwaukee Service Center, 2300 North Dr. Martin Luther King Jr. Drive, Milwaukee, WI 53212.

PART IV. COMPLIANCE SCHEDULE

The Menomonee River Watershed Municipalities shall comply with the specific permit conditions contained in Parts II. and III. in accordance with the following schedule:

[ED69] PART II. GROUP CONDITIONS

A. PUBLIC EDUCATION AND OUTREACH: A public education and outreach program proposal shall be submitted to the Department by **September 30, 2008** for the Department's review and approval. The proposal shall include an implementation schedule with a deadline for implementation no later than **March 31, 2009**.

B. STORM WATER MONITORING: A monitoring project proposal, including either the existing project or a different project, shall be submitted to the Department for approval by **March 31, 2008**. The project proposal shall include an implementation schedule.

PART III. INDIVIDUAL CONDITIONS

A. PUBLIC INVOLVEMENT AND PARTICIPATION: Each municipality shall submit a public involvement and participation program proposal to the Department by **September 30, 2008** for the Department's review and approval. The proposal shall include an implementation schedule with a deadline for implementation no later than **March 31, 2009**.

B. ILLICIT DISCHARGE DETECTION AND ELIMINATION:

1. Each municipality shall submit a proposed illicit discharge and elimination ordinance to the Department by **March 31, 2008** for the Department's review and approval. Each municipality shall adopt the illicit discharge and elimination ordinance by **September 30, 2008**.

2. Each municipality shall complete initial field screening by **December 31, 2008**.

3. Each municipality shall submit proposed illicit discharge response procedures to the Department by **September 30, 2008** for the Department's review and approval. The proposal shall include an implementation schedule with a deadline for implementation no later than **March 31, 2009**.

C. CONSTRUCTION SITE POLLUTANT CONTROL:

1. Each municipality shall submit a proposed construction site pollutant control ordinance to the Department by **March 31, 2008** for the Department's review and approval. Each municipality shall adopt the construction site pollutant control ordinance by **September 30, 2008**. Existing construction site pollutant control ordinances shall be enforced until Department approved ordinances are adopted.

2. Each municipality shall submit proposed construction site inspection and enforcement procedures to the Department by **September 30, 2008** for the Department's review and approval. The proposal shall include an implementation schedule with a deadline for implementation no later than **March 31, 2009**.

POST-CONSTRUCTION STORM WATER MANAGEMENT:

1. Each municipality shall submit a proposed post-construction storm water management ordinance to the Department by **March 31, 2008** for the Department's review and approval. Each municipality shall adopt the post-construction storm water management ordinance by **September 30, 2008**. Existing post-construction storm water management ordinances shall be enforced until Department approved ordinances are adopted.

2. Each municipality shall submit proposed long-term maintenance procedures to the Department by **September 30, 2008** for the Department's review and approval. The proposal shall include an implementation schedule with a deadline for implementation no later than **March 31, 2009**.

E. POLLUTION PREVENTION: Each municipality shall submit a proposed pollution prevention program to the Department by **June 30, 2008** for the Department's review and approval. The proposal shall include an implementation schedule with a deadline for implementation no later than **December 31, 2008**. Existing pollution prevention activities shall be implemented until Department program approval is obtained.

F. STORM WATER QUALITY MANAGEMENT: Each municipality shall complete the 20% reduction of total suspended solids, the evaluation of flood control structures, and assessment of compliance and submit the results to the Department **by March 10, 2008**.

G. STORM SEWER SYSTEM MAP: Each municipality shall submit an updated storm sewer system map to the Department with the Annual Report by **March 31 of each year**, commencing in 2008.

H. ANNUAL REPORT: Each municipality shall submit an annual report for the preceding calendar year by March 31st of each year. The first annual report (for calendar year 2007) shall be submitted to the Department by **March 31, 2008**.^[JEB70]

I. REAPPLICATION FOR PERMIT COVERAGE: To retain authorization to discharge after the expiration date of this permit, each permittee shall apply for reissuance of this permit in accordance with the requirements of s.NR 216.09, Wis. Adm. Code, at least 180 days prior to this permit's expiration date.^[ED71]

^[ED72]

COMPLIANCE SCHEDULE SUMMARY [HMG73]

PERMIT CONDITION	ACTIVITY	RESPONSIBLE PERMITEE(S)	DUE DATE
Public Education and Outreach - Part II.A	Submit public education and outreach program proposal	Individual / Group	September 30, 2008
Storm Water Monitoring - Part II.B	Submit monitoring project proposal	Individual / Group	March 31, 2008
Public Involvement and Participation - Part III.A	Submit public involvement and participation program proposal	Individual	September 30, 2008
Illicit Discharge Detection and Elimination - Part III.B	1. Submit illicit discharge ordinance	Individual	March 31, 2008
	2. Complete initial field screening	Individual	December 31, 2008
	3. Submit illicit discharge response procedures	Individual	September 30, 2008
Construction Site Pollutant Control - Part III.C	1. Submit construction site pollutant control ordinance	Individual	March 31, 2008
	2. Submit construction site inspection and enforcement procedures	Individual	September 30, 2008
Post-Construction Storm Water Management - Part III.D	1. Submit post-construction storm water management ordinance	Individual	March 31, 2008
	2. Submit long-term maintenance procedures	Individual	September 30, 2008
Pollution Prevention - Part III.E	Submit pollution prevention program proposal	Individual	June 30, 2008
Storm Water Quality Management - Part III.F	1. 20% reduction in total suspended solids, to the maximum extent practicable	Individual	March 10, 2008
	2. Submit evaluation of flood control structures	Individual	March 10, 2008
	3. Submit assessment of compliance	Individual	September 30, 2008
Storm Sewer System Map - Part III.G	Submit updated storm sewer system map	Individual	March 31 each year
Annual Report - Part III.H	Submit annual reports	Individual	March 31, 2008
			March 31, 2009
			March 31, 2010
			March 31, 2011
			March 31, 2012

PART V. STANDARD CONDITIONS

The conditions in s. NR 205.07(1) and (3), Wis. Adm. Code, are incorporated by reference in this permit. The Menomonee River Watershed Municipalities shall meet these requirements. Some of these requirements are outlined below in paragraph A. through R.. Requirements not specifically outlined below can be found in s. NR 205.07(1) and (3), Wis. Adm. Code.

- A. **DUTY TO COMPLY:** The municipalities shall comply with all conditions of the permit. Any permit noncompliance is a violation of the permit and is grounds for enforcement action, permit revocation or modification, or denial of a permit reissuance application.
- B. **COMPLIANCE SCHEDULES:** Reports of compliance or noncompliance with interim and final requirements contained in any compliance schedule of the permit shall be submitted in writing within 14 days after the schedule date, except that progress reports shall be submitted in writing on or before each schedule date for each report. Any report of noncompliance shall include the cause of noncompliance, a description of remedial actions taken, and an estimate of the effect of the noncompliance on the municipality's ability to meet the remaining schedule dates.
- C. **NONCOMPLIANCE NOTIFICATION:**
 - 1. Upon becoming aware of any permit noncompliance that may endanger public health or the environment, each municipality shall report this information by a telephone call to the Department within 24 hours. A written report describing the noncompliance shall be submitted to the Department within 5 days after the municipality became aware of the noncompliance. The Department may waive the written report on a case-by-case basis based on the oral report received within 24 hours. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.
 - 2. Reports of any other noncompliance not covered under General Condition's B, C.1, or E shall be submitted with the annual report. The reports shall contain all the information listed in General Condition C.1..
- D. **DUTY TO MITIGATE:** Each municipality shall take all reasonable steps to minimize or prevent any adverse impact on the waters of the state resulting from noncompliance with the permit.
- E. **SPILL REPORTING:** Each municipality shall immediately notify the Department, in accordance with ch. NR 706, Wis. Adm. Code, in the event of a spill or accidental release of hazardous substances which results in a discharge of pollutants into waters of the state. The Department shall be notified via the 24-hour spill hotline (1-800-943-0003).
- F. **PROPER OPERATION AND MAINTENANCE:** Each municipality shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the municipality to achieve compliance with the conditions of the permit and the storm water management plan. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with conditions of this permit.
- G. **BYPASS:** Each municipality may temporarily bypass storm water treatment facilities if necessary for maintenance, or due to runoff from a storm event which exceeds the design capacity of the treatment facility, or during an emergency.
- H. **DUTY TO HALT OR REDUCE ACTIVITY:** Upon failure or impairment of best management practices identified in the storm water management program, each municipality shall, to the extent practicable and necessary to maintain permit compliance, modify or curtail operations until the best management practices are restored or an alternative method of storm water pollution control is provided.

- I. **REMOVED SUBSTANCES:** Solids, sludges, filter backwash or other pollutants removed from or resulting from treatment or control of storm water shall be stored and disposed of in a manner to prevent any pollutant from the materials from entering the waters of the state, and to comply with all applicable Federal, State, and Local regulations.
- J. **ADDITIONAL MONITORING:** If a municipality monitors any pollutant more frequently than required by the permit, the results of that monitoring shall be recorded and reported in accordance with this chapter. Results of this additional monitoring shall be included in the calculation and reporting of the data submitted in the annual report.
- K. **INSPECTION AND ENTRY:** Each municipality shall allow an authorized representative of the Department, upon the presentation of credentials, to:
1. Enter upon the municipal premises where a regulated facility or activity is located or conducted, or where records are required under the conditions of the permit.
 2. Have access to and copy, at reasonable times, any records that are required under the conditions of the permit.
 3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under the permit.
 4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance, any substances or parameters at any location.
- L. **DUTY TO PROVIDE INFORMATION:** Each municipality shall furnish the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking or reissuing the permit or to determine compliance with the permit. Each municipality shall also furnish the Department, upon request, copies of records required to be kept by the municipality.
- M. **PROPERTY RIGHTS:** The permit does not convey any property rights of any sort, or any exclusive privilege. The permit does not authorize any injury or damage to private property or an invasion of personal rights, or any infringement of federal, state or local laws or regulations.
- N. **DUTY TO REAPPLY:** If any of the Menomonee River Watershed Municipalities wish to continue an activity regulated by the permit after the expiration date of the permit, the municipality shall apply for a new permit at least 180 days prior to the expiration date of the permit. If a timely and complete application for a new permit is filed and the permit is not reissued by the time the existing permit expires, the existing permit remains in effect until the application is acted upon.
- O. **OTHER INFORMATION:** Where a municipality becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the department, it shall promptly submit such facts or correct information to the department.
- P. **RECORDS RETENTION:** Each municipality shall retain records of all monitoring information, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 5 years from the date of the sample, measurement, report or application. The Department may request that this period be extended by issuing a public notice to modify the permit to extend this period.
- Q. **PERMIT ACTIONS:** As provided in s. 283.53, Wis. Stats., after notice and opportunity for a hearing the permit may be modified or revoked and reissued for cause. If a municipality files a request for a permit modification, revocation or reissuance, or a notification of planned changes or anticipated noncompliance, this action by itself does not relieve the municipalities of any permit condition.
- R. **SIGNATORY REQUIREMENT:** All applications, reports or information submitted to the Department shall be signed for by a ranking elected official, or other person authorized by them who has responsibility for the overall operation of the municipal separate storm sewer system and storm water management program activities regulated by the permit. The representative shall certify that the information was gathered and

prepared under their supervision and based on inquiry of the people directly under their supervision that, to the best of their knowledge, the information is true, accurate, and complete.

- S. **ENFORCEMENT ACTION:** The Department is authorized under s. 283.89 and 283.91, Wis. Stats., to use citations or referrals to the Department of Justice to enforce the conditions of this permit. Violation of a condition of this permit is subject to a fine of up to \$10,000 per day of violation.
- T. **ATTAINMENT OF WATER QUALITY STANDARDS AFTER AUTHORIZATION:** At any time after authorization, the Department may determine that the discharge of storm water from a permittee's MS4 may cause, have the reasonable potential to cause, or contribute to an excursion of any applicable water quality standard. If such determination is made, the Department may require the permittee to do one of the following:
1. Develop and implement an action plan to address the identified water quality concern to the satisfaction of the Department.
 2. Submit valid and verifiable data and information that are representative of ambient conditions to demonstrate to the Department that the receiving water or groundwater is attaining the water quality standard.

PART VI. DEFINITIONS

Definitions for some of the terms found in this permit are as follows:

Controls Condition means a pollutant-loading analysis that includes pollutant reductions from storm water management practices.

Department means Department of Natural Resources.

Erosion means the process by which the land's surface is worn away by the action of wind, water, ice or gravity.

Hazardous substance means any substance which may pose a substantial present or potential hazard to human health or the environment because of its quantity, concentration or physical, chemical or infectious characteristics.

Illicit Connection means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer system.

Illicit Discharge means any discharge to a municipal separate storm sewer system that is not composed entirely of storm water except discharges authorized by a WPDES permit or other discharge not requiring a WPDES permit such as water line flushing, landscape irrigation, individual residential car washing, fire fighting and similar discharges.

Infiltration means the entry and movement of precipitation or runoff into or through soil.

Infiltration system means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.

Jurisdiction means the area where the permittee, or co-permittee, has authority to enforce its ordinance(s) or otherwise has authority to exercise control over a particular activity of concern.

Land Disturbing Construction Activity means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover that may result in storm water runoff and lead to increased soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes, but is not limited to, clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

Major Outfall means a municipal separate storm sewer outfall that meets one of the following criteria:

1. A single pipe with an inside diameter of 36 inches or more or equivalent conveyance (cross sectional area of 1,018 square inches) which is associated with a drainage area of more than 50 acres.
2. A single pipe with an inside diameter of 12 inches or more or equivalent conveyance (cross sectional area of 113 square inches) which receives runoff from land zoned for industrial activity and is associated with a drainage area of more than 2 acres.

Maximum Extent Practicable means a level of implementing management practices in order to achieve a performance standard or other goal which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features.

Menomonee River Watershed Municipalities includes: the Cities of Brookfield, Greenfield, and Wauwatosa; and the Villages of Butler, Elm Grove, Germantown, Menomonee Falls, and West Milwaukee.

Municipal Separate Storm Sewer System or MS4 means a conveyance or system of conveyances including roads 159

with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

1. Owned or operated by a municipality.
2. Designed or used for collecting or conveying storm water.
3. Which is not a combined sewer conveying both sanitary and storm water.

No Controls Condition means a pollutant-loading analysis that does not include pollutant reductions from storm water management practices.

Outstanding and Exceptional Resource Waters are listed in ss. NR 102.10 and 11, Wis. Adm. Code.

Outfall means the point at which storm water is discharged to waters of the state or leaves one municipality and enters another.

Permittee means the owner or operator, or a group of owners or operators, of a municipal separate storm sewer system authorized to discharge storm water into waters of the state.

Permitted Area refers to the areas of land under the jurisdiction of the Menomonee River Watershed municipalities that drains into their MS4, which is regulated under a permit issued pursuant to subch. I of NR 216, Wis. Adm. Code.

Redevelopment means areas where development is replacing older development.

Riparian Landowners are the owners of lands bordering lakes and rivers.

Sediment means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

Storm Water Management Practice means structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.

Storm Water Pollution Prevention Planning refers to the development of a site-specific plan that describes the measures and controls that will be used to prevent and/or minimize pollution of storm water.

Structural Storm Water Management Facilities are engineered and constructed systems that are designed to provide storm water quality control such as wet detention ponds, constructed wetlands, infiltration basins and grassed swales.

Waters of the State include surface waters, groundwater and wetlands.

WPDES Permit means a Wisconsin Pollutant Discharge Elimination System permit issued pursuant to ch. 283, Wis. Stats.

Exhibit C

Boxhorn, Joseph E.

From: Brionne Bischke [bbischke@village.germantown.wi.us]
Sent: Friday, January 20, 2012 1:50 PM
To: Kate Morgan; Chris Clayton; Ezra Meyer; Cheryl Nenn; Gail Overholt; Butler@wi.rr.com; ddeangelis@elmgrovewi.org; JNettesheim@menomonee-falls.org; mmaki@wauwatosa.net; len.roecker@rasmith.com; Grisa@ci.brookfield.wi.us; Jeff Martinka; ksands@mmsd.com; mflaherty@elmgrovewi.org; RickS@Greenfieldwi.us; ngreifenhagen@menomonee-falls.org; Lauren Justus; Hahn, Michael G.; cindi.debruine@rasmithnational.com; tmorgan@riverrevitalizationfoundation.org; dennisg@midwestadvocates.org; tim.thur@milwaukee.gov; wwhehrley@wauwatosa.net; Mike Lewis; Mark Lloyd; Dan Ewert; Larry Neitzel; Bob Newport; jburch@ci.west-allis.wi.us; Rick Frenette; chuck.boehm@earthtech.com; Melissa Scanlan; Boxhorn, Joseph E.; Kletti, Laura L.; Peter McAvoy; Sharon.Gayan@wisconsin.gov; Joshua Schoemann; Richard Czopp; aholschbach@co.ozaukee.wi.us; AKettlewell@mmsd.com; bryan.hartsook@wisconsin.gov; caven@ci.brookfield.wi.us; Jeffrey Musche; jwalker@newberlin.org; kevin.o'brien@milwcnty.com; kshafer@mmsd.com; Michael Duckett; Paul Sebo; Perry Lindquist; stevan.keith@milwcnty.com
Subject: Updated draft of Menomonee River watershed annotated stormwater discharge permit: Gtown Review

I read through the updated draft and offer a few comments:

1. Pg. 5, Sec. B, Par. 2: Are these conclusions based on quantitative analyses or are they based on qualitative theories? If from qualitative theories, then they should be stricken from permit language. If from qualitative analyses, then cite them via note using MLA or Turabian style.
2. Pg. 7, Sec. K & L: Insert reference to Bryan Hartsook's matrix issued last meeting (GREAT JOB BRYAN!!). (Additionally Pg. 9, Pg. 12, Pg. 19-21)
3. Pg. 9, Sec. A: Add new Par. 12 adding other efforts as mutually-agreed by the Department and the municipalities.
4. Pg. 14, Sec. C, Par. b: "are available" is mistakenly repeated.
5. Pg. 17, Sec. 4, Par. 1-3: Eliminate references to 40%, March 10, 2013 (40% TSS deadline), and March 10, 2008 (Assessment deadline). With respect to TSS removal, replace with language that municipalities will achieve 20% and , if already exceeded 20%, maintain current levels achieved; otherwise, implement adaptive management.
6. Pg. 18, Sec. H, Par. 8: Reports to be submitted to Department's Milwaukee or Waukesha office?
7. Pg. 19: Eliminate and recreate compliance schedule by adding schedule column to Bryan Hartsook's matrix issued last meeting.

Brionne R. Bischke, P.E.
Village Engineer
Village of Germantown
N112 W17001 Mequon Rd.
P.O. Box 337
Germantown, WI 53022-0337
W: 262-250-4724; F: 262-253-8355; M: 414-975-4699

From: Kate Morgan [mailto:kmorgan@1kfriends.org]
Sent: Tuesday, January 17, 2012 12:21 PM
To: Chris Clayton; Ezra Meyer; Cheryl Nenn; Gail Overholt; Butler@wi.rr.com; ddeangelis@elmgrovewi.org; JNettesheim@menomonee-falls.org; mmaki@wauwatosa.net; len.roecker@rasmith.com; Brionne Bischke; Grisa@ci.brookfield.wi.us; Jeff Martinka; ksands@mmsd.com; mflaherty@elmgrovewi.org; RickS@Greenfieldwi.us; ngreifenhagen@menomonee-falls.org; Lauren Justus; mhahn@sewrpc.org; cindi.debruine@rasmithnational.com;

tmorgan@riverrevitalizationfoundation.org; dennisg@midwestadvocates.org; tim.thur@milwaukee.gov; wwehrley@wauwatosa.net; Mike Lewis; Mark Lloyd; Dan Ewert; Larry Neitzel; Bob Newport; jburtch@ci.west-allis.wi.us; Rick Frenette; chuck.boehm@earthtech.com; Melissa Scanlan; Joe Boxhorn; Laura Kletti; Peter McAvoy; Gayan, Sharon L - DNR [Sharon.Gayan@wisconsin.gov]; Joshua Schoemann; Richard Czopp; aholschbach@co.ozaukee.wi.us; AKettlewell@mmsd.com; bryan.hartsook@wisconsin.gov; caven@ci.brookfield.wi.us; Jeffrey Musche; jwalker@newberlin.org; kevin.o'brien@milwcnty.com; kshafer@mmsd.com; Michael Duckett; Paul Sebo; Perry Lindquist; stevan.keith@milwcnty.com

Subject: Updated draft of Menomonee River watershed annotated stormwater discharge permit

Dear Colleagues:

A good Tuesday to all.

I am sending you two documents for the upcoming meeting of the Menomonee River Group:

1. an updated draft of the annotated Menomonee River watershed permit that Bob Newport started and
2. an appendix to be considered for addition to the permit.

These will be reviewed at our next group meeting on January 25, 9:00 to noon. We will meet at the Brookfield City Hall.

A reminder from Mike Hahn that this is a work in progress that may be substantially revised based on discussion during our January 25 meeting and subsequent meetings. "Track changes" has been used with comments shown in the right margin. The annotated permit includes Bob Newport's annotations and comments through the most-recent version of the annotated permit. Additional text and comments have been added based on the deliberations of the Group to date, and on SEWRPC's internal staff discussion. Mike and team are also suggesting that the addition of the attached Appendix B (see page 13 of the annotated permit) be considered by the group at the upcoming meeting.

If you have questions about these documents or the upcoming agenda for the meeting, please contact Mike Hahn at (262) 547-6722 Ext. 243 or by email at mhahn@sewrpc.org.

With best regards,

Kate

Kate Morgan
Water Policy Director
1000 Friends of Wisconsin
16 N. Carroll St. Suite 810
Madison, WI 53703
Cell - 414.416.6509
www.1kfriends.org

"If there is magic on the planet, it is contained in water."
-- Loren Eiseley

Exhibit D

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JEB
01/24/12

Table A-1

IMPAIRED WATERS WITHIN THE MENOMONEE RIVER WATERSHED: 2012

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Butler Ditch	Recreational restrictions-pathogens	0-2.9	Fecal coliform bacteria	Proposed 2010
Goldendale Creek	Recreational restrictions-pathogens	0-3.5	Fecal coliform bacteria	Proposed 2010
Honey Creek	Degraded biological community	0-8.96	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-10	Fecal coliform bacteria	Proposed 2010
Lilly Creek	Recreational restrictions-pathogens	0-4.7	Fecal coliform bacteria	Proposed 2010
Little Menomonee Creek	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	Proposed 2010
Little Menomonee River	Chronic aquatic toxicity	0-9	Creosote	1998
	Degraded biological community	0-9	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	Proposed 2010
Menomonee River	Low dissolved oxygen	0-2.67	Total phosphorus	1998
	Chronic aquatic toxicity	0-2.67	Unspecified metals	1998
	Contaminated fish tissue	0-2.67	PCBs	1998
	Recreational restrictions-pathogens	0-2.67	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-2.67	Fecal coliform bacteria	Proposed 2010
	Recreational restrictions-pathogens	2.67-6.27	Fecal coliform bacteria	Proposed 2010
Nor-X-Way Channel	Recreational restrictions-pathogens	0-4.9	Fecal coliform bacteria	Proposed 2010
South Branch Underwood Creek	Degraded biological community	0-1	Total phosphorus	Proposed 2012
Underwood Creek	Degraded biological community	0-2.84	Total phosphorus	Proposed 2012
	Degraded biological community	2.84-8.54	Unknown pollutant	Proposed 2012
	Recreational restrictions-pathogens	0-8.54	Fecal coliform bacteria	Proposed 2010
West Branch Menomonee River	Recreational restrictions-pathogens	0-2.45	Fecal coliform bacteria	Proposed 2010
Willow Creek	Recreational restrictions-pathogens	0-2.8	Fecal coliform bacteria	Proposed 2010

Source: Wisconsin Department of Natural Resources.

Table A-2

**IMPAIRED WATERS IN MENOMONEE RIVER WATERSHED MUNICIPALITIES
LOCATED IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED: 2012**

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Fox River Watershed				
Deer Creek	Degraded habitat	0-8.09	Elevated water temperature	2008
	Degraded habitat	0-8.09	Sediment/total suspended solids	2008
	Excess algal growth	0-8.09	Total phosphorus	1998
Fox River	Contaminated fish tissue	151.34-196.64	PCBs	1998
	Contaminated fish tissue	151.34-180.1	PCBs	1998
	Contaminated fish tissue	175.32-176.13	Mercury	1998
	Degraded biological community	113.24-151.34	Total phosphorus	Proposed 2012
	Degraded habitat	171.45-175.32	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Total phosphorus	1998
	Low dissolved oxygen	171.45-175.32	Total phosphorus	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Sediment/total suspended solids	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Total phosphorus	1998
Lannon Creek	Degraded habitat	0-5.48	Sediment/total suspended solids	1998
Master Disposal Drainage Channel	Chronic aquatic toxicity	0-.99	Unknown pollutant	1998
Poplar Creek	Low dissolved oxygen	0-8.06	Unknown pollutant	1998
Kinnickinnic River Watershed				
Cherokee Creek	Recreational restrictions-pathogens	0-1.6	Fecal coliform bacteria	Proposed 2010
Holmes Avenue Creek	Recreational restrictions-pathogens	0-1.8	Fecal coliform bacteria	Proposed 2010
Kinnickinnic River	Low dissolved oxygen	0-2.83	Total phosphorus	1998
	Contaminated fish tissue	0-2.83	PCBs	1998
	Chronic aquatic toxicity	0-2.83	Metals	1998
	Degraded biological community	2.84-9.94	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-2.83	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-9.61	Fecal coliform bacteria	Proposed 2010
Lyons Park Creek	Recreational restrictions-pathogens	0-1.5	Fecal coliform bacteria	Proposed 2010
South 43rd Street Ditch	Degraded biological community	0-1.16	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-1.16	Fecal coliform bacteria	Proposed 2010
Villa Mann Creek	Recreational restrictions-pathogens	0-1.2	Fecal coliform bacteria	Proposed 2010
Wilson Park Creek	Recreational restrictions-pathogens	0-5.5	Fecal coliform bacteria	Proposed 2010

Table A-2 (continued)

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Milwaukee River Watershed				
Beaver Creek	Chronic aquatic toxicity	0-2.69	Unknown pollutant	1998
Lincoln Creek	Chronic aquatic toxicity	0-9.0	Unspecified metals	1998
	Chronic aquatic toxicity	0-9.0	PAHs	1998
	Degraded biological community	0-9.7	Total phosphorus	Proposed 2012
	Degraded habitat	8.5-9.0	Sediment/total suspended solids	1998
	Elevated water temperature-degraded habitat	0-8.5	Sediment/total suspended solids	1998
	Low dissolved oxygen	0-9.0	Total phosphorus	1998
Milwaukee River	Contaminated fish tissue/contaminated sediment	0-2.9	PCBs	1998
	Contaminated fish tissue	2.9-19.35	PCBs	1998
	Contaminated sediment	0-2.9	Unspecified metals	1998
	Low dissolved oxygen	0-2.9	Total phosphorus	1998
	Recreational restrictions-pathogens	0-19.35	<i>Escherichia coli</i>	1998
Oak Creek				
Oak Creek	Chronic aquatic toxicity	0-13.32	Unknown pollutant	1998
	Degraded biological community	0-13.32	Total phosphorus	Proposed 2012
Root River Watershed				
Root River	Low dissolved oxygen	20.48-43.95	Sediment/total suspended solids	1998
	Low dissolved oxygen	20.48-43.95	Total phosphorus	1998

Source: Wisconsin Department of Natural Resources.

Exhibit E

DRAFT Menomonee River Watershed-Based Permit Conditions Matrix

Projects and Control Measures			BMP Category			Targeted Pollutant	Implementation Scale	
			Structural	Non-Structural	Source Reduction		Watershed-Based	Municipality-Based
Existing Permitted Control Measures								
Group Responsibility Conditions	Public Education and Outreach		●		▲ ■ ● +	●		
	Storm Water Monitoring		●			●		
Individual Responsibility Conditions	Public Involvement and Participation		●		▲ ■ ● +	●		
	Illicit Discharge Detection and Elimination		●	●	●		●	
	Construction Site Pollutant Control		●		▲ ■		●	
	Post-Construction Storm Water Management		●		▲ ■		●	
	Pollution Prevention	●	●	●	▲ ■ +		●	
	Storm Water Quality Management	●			▲ ■		●	
Menomonee River Watershed Priority Project List*								
	Green Infrastructure Development in Targeted Subwatersheds	●			▲ ■	●		
	Compile salt-use data, promote alternative practices, develop consistency among municipalities		●	●	+	●		
	Riparian Buffer Restoration / Habitat Improvement	●	●		▲ ■	●		
	Evaluate SWWT Household Survey Results and Develop Targeted I&E Plan		●		▲ ■ ● +	●		
	Integrate Storm Sewer Mapping for Multi-Jurisdictional IDDE Screening		●		●	●		
	Establish Multi-Jurisdictional Approach to IDDE		●		●	●		
	Targeted Nutrient Management Plan Study for Public/Private-Owned Golf Courses in River Corridor			●	■	●		
	Analyze Orthophosphate Additive Use in Drinking Water and NCCW Discharges			●	■	●		
	Recreation Access Improvements		●			●		
					▲ Sediment	■ Phosphorus	● Bacteria	+ Chlorides

▲ Sediment ■ Phosphorus ● Bacteria + Chlorides

* Watershed Action Teams (WAT) were created in cooperation with Southeastern Wisconsin Watersheds Trust, Inc. (SWWT) to develop implementation plans and priority project lists for the Menomonee and Kinnickinnic Watersheds. Watershed data and recommendations were used from SEWRPC's Regional Water Quality Management Plan Update for the Milwaukee River Watershed as well as stakeholder involvement to develop the WAT plans. The items listed in the table only represent a small portion of the priority projects and focus areas identified under this planning process. For more information see <http://www.swwtwater.org/home/mnwat.cfm>

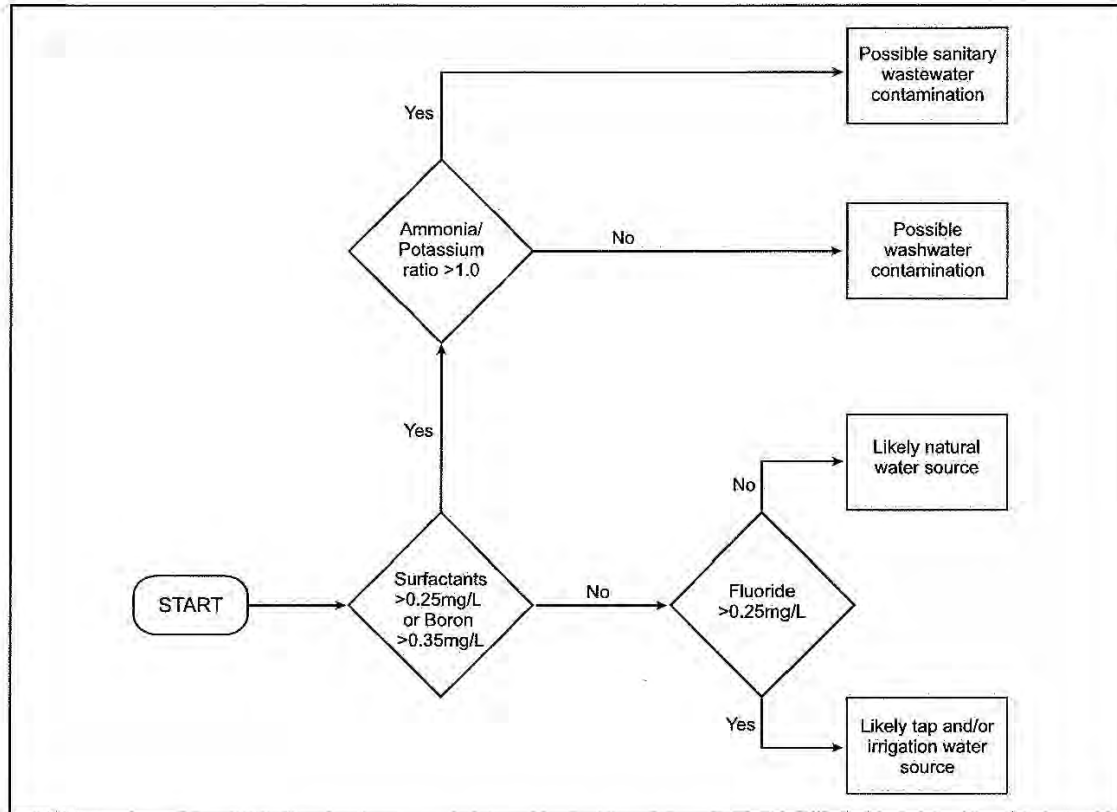


Figure 47: Flow Chart to Identify Illicit Discharges in Residential Watersheds

Appendix F

**SUMMARY NOTES
APRIL 4, 2012 MEETING**

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SUMMARY NOTES OF THE APRIL 4, 2012 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The April 4, 2012, meeting of the Menomonee River Watershed-Based Permit (WBP) Framework Group was convened at the Brookfield City Hall at 9:03 a.m. The meeting was called to order by Tom Grisa, City of Brookfield Director of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Maggie Anderson	Civil Engineer, City of Wauwatosa
Solomon Bekele	Civil Engineer, City of Milwaukee
Charles Boehm	Senior Engineer, AECOM (representing the City of Greenfield)
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Theresa Caven	Project Engineer, City of Brookfield
Cindi V. DeBruine	Senior Water Resources Engineer, R.A. Smith National, Inc. (representing the Villages of Butler and West Milwaukee)
Mike Flaherty	Director, Village of Elm Grove Department of Public Works
James Fratrack	Water Resources Management Specialist, Wisconsin Department of Natural Resources
Sharon L. Gayan	Runoff Management Supervisor, Wisconsin Department of Natural Resources
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Dennis Grzezinski	Senior Counsel, Midwest Environmental Advocates
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Rob Hutter	Engineer, City of West Allis
Laura L. Kletti	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Lauren Justus	Engineering Assistant, Village of Germantown
Jeff Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water)
Ezra Meyer	Water Specialist, Clean Wisconsin
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Robert Newport	Water Division, Region 5, U.S. Environmental Protection Agency
Kevin P. O'Brien	Environmental Compliance Manager, Milwaukee County
Karen Sands	Manager of Sustainability, Milwaukee Metropolitan Sewerage District
Kevin L. Shafer	Executive Director, Milwaukee Metropolitan Sewerage District
Richard Sokol	Director of Neighborhood Services, City of Greenfield
Timothy J. Thur	Chief Sewer Design Manager, City of Milwaukee Department of Public Works
Bill Wehrley	City Engineer, City of Wauwatosa

Mr. Grisa welcomed the attendees to the meeting and thanked them for their participation. He asked everyone to introduce themselves.

REVIEW SUMMARY NOTES OF THE JANUARY 25, 2012 MEETING OF THE WATERSHED-BASED PERMIT FRAMEWORK GROUP

At Mr. Grisa's request, Mr. Hahn reviewed the summary notes of the January 25, 2012, meeting of the Group.

Mr. Hahn stated that the process of developing a watershed-based permit framework is drawing to a close. He noted that as draft permit language is being developed, staff from the Wisconsin Department of Natural Resources (WDNR) and the U.S. Environmental Protection Agency (USEPA) have been more involved in developing the structure of the permit.

Mr. Hahn stated that the smaller Working Group that was established as a subcommittee of the full Group early in the watershed-based permit framework development process met on March 21, 2012 to review a preliminary draft of the summary notes from the Group's January 25, 2012 meeting. He indicated that the summary notes include additions that resulted from the Working Group meeting.

Mr. Hahn indicated that the second Secretary's Note on page 5, continuing on to page 6, contains text and a table to replace the narrative in Part I-Section B of the annotated permit. He noted that the narrative will be moved to a fact sheet that will accompany the permit. Mr. Hartsook indicated that he is currently drafting the fact sheet. Mr. Newport suggested adding a sentence to the last paragraph of the revised Part I-Section B discussing the fact that constructed U-shaped channels can contribute to flooding problems.

[Secretary's Note: The last paragraph of Part I-Section B of the annotated permit was revised to read (text in bold is included here to denote language changed or added onto the text. Text will not be bold in the annotated permit):

"In addition to pollutant stressors, many streams in this watershed have been concrete-lined, or straightened to convey floodwaters off the land faster. Lined streams provide almost no habitat and also degrade conditions in unlined downstream stream sections by creating highly erosive flow velocities during wet weather conditions and excessively warm water during low flow conditions. **Constructed u-shaped channels can also contribute to flooding problems as there is typically no floodplain to accommodate flows during extreme weather conditions.** About 14.5 miles of streams in the watershed are concrete-lined or enclosed."]

Mr. Newport commented that the value of the table that is included in the new version of Part I-Section B is that it gives context to the water quality problems in the watershed. Mr. Grisa expressed concern that the listing for the degraded biological community impairment for Underwood Creek indicated that the pollutant of concern is unknown. Mr. Boxhorn and Mr. Hartsook replied that this is what is listed in the State's proposed 303(d) impaired waters list. Mr. Newport explained that there are many factors that could contribute to a degraded biological community impairment in a stream like Underwood Creek. He added that this could reflect factors such as degraded habitat, concrete linings in portions of this stream, or a number of other factors. Mr. Hartsook and Mr. Newport indicated that they would look into the cause of this impairment. Mr. Grisa suggested adding a footnote to the table indicating the cause of the impairment.

[Secretary's Note: The following footnote was added to the entry in the pollutant of concern column in the last row pertaining to Underwood Creek in Table 1 of the annotated permit:

"Federal regulations, specifically 40 CFR section 130.7(b)(1), provide that water bodies included on State section 303(d) lists are those water bodies for which pollution controls required by local, State, or Federal authority are not stringent enough to meet water quality standards applicable to such waters. In addition, 40 CFR section 130.7(b)(4) requires States to identify, in each section 303(d) list

submitted to EPA, the "pollutants causing or expected to cause violations of the applicable water quality standards." These regulatory provisions apply even if the cause of the impairment or source of the pollutant cannot be identified at the time of listing. Therefore, water bodies that are biologically impaired by an unknown cause or source are included on the Wisconsin's section 303(d) lists. WDNR anticipates that the unknown pollutant will be identified when a Total Maximum Daily Load (TMDL) study is initiated. Supplemental data collected during a TMDL study should assist in identifying the impairing pollutant so that the TMDL can be established."]

Mr. Grisa indicated that he attended a meeting related to implementation of the TMDL for the Rock River watershed on April 3, 2012. He stated that many of the participants there asked how communities in the Milwaukee River basin will deal with implementing the bacteria TMDL, noting that bacteria concentrations can be highly variable and that it can be difficult to reduce bacteria inputs. He suggested that the Group needs to be careful how this is addressed in the watershed-based permit. Mr. Newport acknowledged that there are challenges related to bacteria, both on the water quality side and the best management practice (BMP) side. He suggested that conducting pilot projects assessing the effectiveness of BMPs in reducing bacteria would be helpful. He also indicated that it could be helpful to not write numerical reductions or limits for bacteria into the watershed-based permit.

Mr. Hahn indicated that the change to Part I-Section F-3 of the annotated permit that is documented in the Secretary's note that begins on the bottom of page 7 of the summary notes makes the permit language more specific regarding when waste load allocations (WLAs) from the TMDL will be incorporated into the permit. He noted that if the permit is renewed before the TMDL is issued it will buy the communities some additional time to meet the WLAs. Mr. Grisa expressed concern about whether this is correct. He explained that he came away from the Rock River TMDL meeting with the impression that reissuing the permit after the TMDL is approved might provide the MS4 communities with more time to meet the WLAs. He indicated that he wants any extra time that may be available because compliance with the TMDL will be difficult to achieve. Ms. Gayan replied that her understanding was that the reissuing the permit before the TMDL is completed would grant the municipalities the most time to meet the TMDLs. She explained that the Department's intent is to reissue the MS4 permit in summer 2012. She anticipates that the TMDL will be completed in December 2012 and approved early in 2013. She noted that reissuing the permit during summer 2012 should give the MS4s four to four and one-half years before the WLAs are incorporated into permit conditions. She added that the communities would have three permit terms after that to meet their WLAs. After additional discussion of this question, the Group decided to leave the language as documented in the summary notes. Ms. Gayan stated that she would consult with the WDNR Central Office on this question.

[Secretary's Note: Per WDNR staff, the compliance schedule for TMDLs will be based on the timing currently afforded under NR 217.18 for point source dischargers pursuing the adaptive management option. The adaptive management option allows for up to three five-year permit terms once an approved TMDL is in the permit so long as the discharger is meeting the interim compliance schedules under each permit term to achieve benchmark effluent concentrations. If a permit is reissued prior to the Milwaukee River Basin TMDLs being approved by EPA, then the existing permit that is in effect at the time of an approval will not be revoked and reissued mid-permit cycle to include wasteload allocations.

The Department ultimately has the authority to modify, revoke, and/or reissue a permit through s. 283.53 of the *Wisconsin Statutes*. Specifically, s. 283.53(2)(a)3 does not require the Department to take action to modify, revoke, or reissue permit coverage as a result of either a temporary or permanent reduction or elimination of the permitted discharge (*i.e.*, a TMDL WLA for an MS4).]

Mr. Hahn stated that the last Secretary's note on page 8 of the summary notes indicates that the exclusion listed for Indian Country in Part I-Section M-4 of the annotated permit will be retained. Mr. Thur noted that a portion of the Forest County Potawatomi trust land in the City of Milwaukee is served by the MS4 system. Mr. Hahn thanked him for providing this additional information.

Mr. Hahn stated that the first Secretary's note on page 9 of the summary notes documents text provided by Mr. Newport regarding annual meetings of permittees under the watershed-based permit. He noted that the Working Group revised Mr. Newport's text to make the timing of the meetings more specific.

Mr. Hahn said that the second Secretary's note on page 9 of the summary notes discusses the issue of private residential storm sewer systems constructed prior to promulgation of local or State stormwater rules. He reminded the Group that no conclusion was reached on this topic at the January 25, 2012, meeting. He stated that the consensus at the March 21, 2012, Working Group meeting was to make no changes to the annotated permit relative to this issue, with the caveat that Mr. Newport will have further discussion about this issue with WDNR staff. Mr. Newport responded that this is a global issue that will not be resolved in the context of the watershed-based permit.

Mr. Hahn stated that the last paragraph on page 9 of the summary notes discusses conducting the public education and outreach program as a group activity under the watershed-based permit. He noted that this includes drafting and submitting the annual report on public education and outreach activities as a group report. Mr. Newport commented that within the context of this group report, the permitted municipalities would still be able to get credit for any individual activities that they undertake.

In reference to the second Secretary's Note on page 10 of the summary notes, Mr. Newport stated that the permit should include language requiring an evaluation of the effectiveness of the public education and outreach program mandating that another survey be conducted. He noted that there are other methods that could be used to do this evaluation. As indicated in the summary notes of the January 25, 2012, meeting of the Group, Mr. Hartsook will draft text on this topic for inclusion in the annotated permit.

[Secretary's Note: Subsequent to the meeting, Mr. Hartsook provided revised text for Part II-Section A of the annotated permit that described the joint reporting requirement and methods to evaluate the educational program. The following changes were made to Part II-Section A of the annotated permit:

The second paragraph of Part II-Section A of the annotated permit was redesignated as Part II-Section B-1.

Part II-Sections A-1 through A-11 were redesignated as Sections B-1-a through B-1-k.

The portion of redesignated Part II-Section B of the annotated permit following Section B-1-k was replaced with the following text:

"2. The Menomonee River Watershed Permittees shall prepare and submit a joint report annually that includes the following:

- a. Public education and outreach programs executed during the calendar year, including topics addressed, target audiences reached, and the status of meeting measurable goals.

- b. A proposed work plan for public education and outreach programs to be conducted the following year. The work plan shall identify roles and responsibilities for each municipality.
3. The Menomonee River Watershed Permittees shall evaluate the effects of the outreach program through an updated survey of residents in the watershed or using other appropriate methods, and will document the results of the evaluation in a future annual report within this permit cycle.”]

Mr. Hahn stated that the first full Secretary’s Note on page 12 of the summary notes indicates that each year the permittees will select annual priorities for the public education and outreach program. Mr. Hartsook noted that this language does not prevent municipalities from continuing their own programs and activities. He indicated that he will draft language to this effect to add to the annotated permit.

[Secretary’s Note: The first paragraph of Part II of the annotated permit was revised to read:

“The Menomonee River Permittees intend to collaborate and satisfy these conditions collectively. **This does not prohibit the Menomonee River Permittees from continuing to implement unique programs within their respective jurisdictional municipal boundaries that were developed under previous permit terms.**”]

Mr. Hahn indicated that the pages 13 through 17 of the summary notes summarize discussion of and changes to Part III-Section B of the annotated permit, which deals with illicit discharge detection and elimination. He reminded the group that the concept behind the changes in this section of the permit is to better locate illicit connections and discharges by moving effort from annual examination of larger outfalls to examination of those outfalls of any size identified by desktop analyses as being most likely to have illicit connections and discharges. Mr. Newport noted that under the new approach set forth in the annotated permit, when examination and sampling of an outfall indicates that the possible presence of an illicit connection or discharge, the outfall will be placed on an annual field screening cycle. If field screening shows no indication of an illicit connection or discharge after the source of the problem is detected and fixed, the outfall will go back to being field screened once during the permit cycle.

Mr. Grisa asked whether the language in Part III-Section B of the annotated permit included a provision that when screening indicates that an outfall may have an illicit connection or discharge, the outfall is placed on an annual screening cycle. Mr. Hahn replied that staff would review the annotated permit and add that provision to Part III-Section B-2. Mr. Hartsook commented that with some instances of aggressive investigation and remediation in response to the results of field screening it might not be necessary to place an outfall onto an annual field screening cycle. Mr. Grisa asked that this be added to the language in Part III-Section B. Mr. Hahn responded that it would be.

[Secretary’s Note: The first sentence in the last paragraph of Part III-Section B was revised as follows:

“All major outfalls which showed evidence of illicit discharges during either of the last two samplings under the preceding permit term **and additional outfalls, regardless of size, identified for illicit discharge screening under Part II-Section D,** shall be evaluated annually, on an ongoing basis, at a minimum one time per year during dry weather periods (typically 72 hours after any measurable rainfall).”]

In reference to the third Secretary’s note on page 13 of the summary notes, Mr. Meyer suggested changing the condition under which outfalls being screened on an annual cycle go back to being screened on a five-year cycle. He suggested changing from a stipulation that evidence of illicit discharges not being found in two consecutive years would result in going to a five-year cycle to a stipulation that evidence of illicit discharges not being found

in two consecutive samplings would trigger the change to a five-year cycle. Mr. Thur responded that the requirement should be left as is (no illicit discharges detected in two consecutive years). He explained that sampling for two years is not an unreasonable amount of effort. He added that changes occur over time and this allows for the detection of additional illicit discharges. Mr. Hartsook indicated that he has crafted language regarding intensive investigation in response to field screening indicating a possible illicit discharge. He stated if this investigation does not determine the source of the indication, the outfall should be put on annual field screening for at least two years. He indicated that this response is documented on page 17 of the summary notes.

[Secretary's Note: The condition for an outfall being shifted to field screening on a five-year cycle was kept as indicated in the third Secretary's Note on page 13 of the summary notes of the January 25, 2012, meeting.]

Mr. Hahn asked the Group to skip ahead to page 17 of the summary notes and asked Mr. Hartsook to describe the investigation procedure. Mr. Hartsook drew the Group's attention to the first Secretary's Note on page 17 of the summary notes. He stated that the key idea is that detections of illicit connections and discharges will be intensively investigated over a six-month period. He noted that the language was adapted from U.S. Environmental Protection Agency (USEPA) guidance on improving NPDES permits. He indicated that the added text should be revised to mention sampling of outfalls.

[Secretary's Note: The second to last sentence in the first paragraph of Part III-Section B-4-e of the annotated permit was revised to read:

"A minimum of 3 separate investigations to observe **and sample** flow at the identified outfall must be made within the 6 month period."]

Mr. Grisa commented that he does not want to continue investigating if the source of the illicit discharge is detected and remedied during the first investigation. Mr. Hartsook replied that the language would be modified to reflect this.

[Secretary's Note: The following paragraph was added to the end of Part III-Section B:

"5. Once the source of an illicit discharge is detected and remediated, no further field screening at the affected outfall(s) will be required during the permit term."]

Mr. Hahn directed the Group's attention to the discussion of the flow chart from the Center for Watershed Protection (CWP) on page 15 of the summary notes. He said that subsequent to the January 25, 2012, meeting of the Group, he and Mr. Boehm discussed Mr. Boehm's experience with outfall sampling, including possible inadequacies in the CWP flow chart. He asked Mr. Boehm to summarize his comments. Mr. Boehm stated that the CWP flow chart has not worked well for him in outfall sampling. He explained that potassium concentrations tend to be high in all outfall samples. He continued that as a result of this, the ammonia to potassium ratio never exceeds 1.0, even in samples from outfalls that have sanitary contamination. He indicated that in his experience these two constituents tend to scale up together, even in outfalls with sanitary problems. He added that there is no quick hit for analyzing potassium concentrations in the field. He concluded that while he does analyze outfall samples for potassium, these considerations make him reluctant to recommend that municipalities do this. Mr. Hahn indicated that the Secretary's Note that begins on page 15 and continues on page 16 of the summary notes documents that the reference to the CWP flow chart has been removed from the annotated permit. He indicated that municipalities may still use it, if they so choose.

Mr. Hahn drew the Group's attention to the Secretary's note on page 18 of the summary notes. He indicated that this note documents a new set of conditions that Mr. Hartsook developed for the construction site pollutant control section, Part III-Section C, of the annotated permit. Mr. Hartsook explained that the new language replaces the section that was in the annotated permit and is a better match to the requirements of the State

Department of Safety and Professional Services. He noted that the references to NR 151 are incorrect and need to be corrected.

[Secretary's Note: Part III-Section C-5 of the annotated permit was revised to read:

"5. Enforce construction site performance standards equivalent to, or more restrictive than, those in ss. NR 151.111 and 151.123, Wis. Adm. Code on all sites including municipal projects applicable under the permittee's ordinance."]

Mr. Hahn asked whether there were any further questions or comments on the summary notes. None were offered. Mr. Thur moved and Mr. Nettesheim seconded that the summary notes from the January 25, 2012 meeting of the Group be approved. The Group unanimously approved those summary notes.

CONTINUATION OF CONSIDERATION OF POTENTIAL COMPONENTS OF THE WATERSHED-BASED PERMIT

At Mr. Grisa's request, Mr. Hahn continued the discussion of potential components of the watershed-based permit, beginning with Part III-Section E of the annotated permit. Mr. Hahn noted that comment JEB57 in the annotated permit poses the question of whether the permit should include language for targeting sites for installation of green infrastructure. He indicated that this could be discussed, if the Group wishes, as a potential Group project.

In reference to Part III-Section E-4, Mr. Hahn noted that the intent of this provision is to continue good practices. Mr. Grisa commented that while the provision is unenforceable, it provides encouragement that is worth having in the permit.

In reference to Part III-Section E-5, Mr. Grisa asked what is meant by the phrase "proper management of leaves and grass clippings," noting that he is not sure whether he is comfortable with this provision due to his uncertainty as to what it requires. Mr. Hartsook suggested removing the word "proper" from this provision. Mr. Nettesheim suggested changing the phrase "as opposed" to "in addition." Mr. Grisa asked whether this would obligate communities to institute leaf and grass clipping collection programs. Mr. Newport suggested substituting "and/or" for the phrase "as opposed to."

[Secretary's Note: Part III-Section E-5 of the annotated permit was revised to read:

"5. Management of leaves and grass clippings, which may include on-site beneficial reuse and/or collection."]

Mr. Hahn directed the attention of the Group to Part III-Section F of the annotated permit. He noted that this section will continue to be applicable; however, WLAs will need to be added after the TMDLs are issued. Mr. Hartsook indicated that he would develop a blank table to show how these allocations would be noted in the permit.

[Secretary's Note: A blank table, denoted as Table 2, showing how WLAs would be shown in the permit is attached herein as Exhibit A. It is referenced in a new section of the annotated permit that was inserted after the "STORMWATER QUALITY MANAGEMENT" section in Part III. The inserted section reads as follows:

"IMPAIRED WATER BODIES AND TOTAL MAXIMUM DAILY LOAD REQUIREMENTS: Each municipality shall determine whether any part of its MS4 discharges to an impaired water body listed in accordance with Section 303(d)(1) of the Federal Clean Water Act, 33 USC 1313(d)(1)(C), and the implementing

regulation of the US Environmental Protection Agency, 40 CFR 130.7(c)(1). Impaired waters are those that are not meeting applicable water quality standards.

1. If a permittee's MS4 discharges to an impaired water body, the permittee shall include a written section in its storm water management program that discusses the management practices and control measures it will implement as part of its program to reduce, with the goal of eliminating, the discharge of pollutants of concern that contribute to the impairment of the water body. This section of the permittee's program shall specifically identify control measures and practices that will collectively be used to try to eliminate the MS4's discharge of pollutant(s) of concern that contribute to the impairment of the water body and explain why these control measures and practices were chosen as opposed to other alternatives. Pollutant(s) of concern means a pollutant that is causing impairment of a water body.

Tables showing identified impairments in the Menomonee, Fox, Kinnickinnic, Milwaukee, and Root River watersheds; the Oak Creek watershed; and the estuary areas are included in Appendix A. There are 303(d) listings for bacteria and Total Phosphorus, along with certain other pollutants. Work is currently underway on TMDLs which will address the bacteria- and phosphorus-related impairments in the Menomonee, Milwaukee, and Kinnickinnic River watersheds and the estuary area. Since much of the phosphorus found in urban runoff is adsorbed to soil particles, it is reasonable to expect that implementation actions under this permit that reduce total suspended solids loads will also reduce phosphorus to the extent sufficient to achieve designated use conditions in impaired waterways.

2. After a permittee's start date of coverage under this permit, the permittee may not establish a new MS4 discharge of a pollutant of concern to an impaired water body or increase the discharge of a pollutant of concern to an impaired water body unless the new or increased discharge causes the receiving water to meet applicable water quality standards.

Note: Once the Department approves a TMDL for an impaired water body to which the permittee discharges, the Department anticipates that when this permit is reissued in the next permit cycle it will include requirements necessary to achieve the TMDL wasteload allocation of the MS4. Approved TMDLs are listed on the Department Internet site at:

<http://dnr.wi.gov/org/water/condition/impaired/>

Table 2 provides an example of the way that wasteload allocations may be presented in the next permit cycle.”]

Mr. Hartsook stated that antidegradation language would also need to be added to this Part III-Section F of the annotated permit. He indicated that he would develop this language. Mr. Hahn noted that Brionne Bischke, Germantown Village Engineer, had noted in his January 20, 2012, e-mail message that the references in Part III-Section F-1 to a 40 percent reduction in total suspended solids (TSS) will need to be removed from this section of the annotated permit. Mr. Hartsook indicated that he would draft appropriate language to replace the 40 percent TSS reduction requirement. Mr. Hahn stated that it might be useful to reiterate the tie between TSS and total phosphorus in Part III-Section F. Mr. Grisa commented that in the absence of a TMDL, there is no discharge limit on phosphorus for MS4s. Mr. Hahn explained that he was suggesting adding that controlling TSS would help control total phosphorus. Mr. Grisa said that this was acceptable.

[Secretary's Note: Mr. Bischke's e-mail was attached to the summary notes of the Group's January 25, 2012 meeting as Exhibit C. Part III-Section F of the annotated permit was revised to read:

"F. STORM WATER QUALITY MANAGEMENT: Each municipality shall develop and implement a municipal storm water management program **that controls the discharge of total suspended solids from the MS4 system to waters of the State. Since much of the phosphorus found in urban runoff is adsorbed to soil particles, it is reasonable to expect that implementation actions under this permit that reduce total suspended solids loads will also reduce phosphorus to the extent sufficient to achieve designated use conditions in impaired waterways.** The storm water management program shall achieve compliance with the developed urban area performance standards of s. NR 151.13(2), Wis. Adm. Code, for those areas of the municipality that were not subject to the post-construction performance standards of s. NR 151.12 or 151.24, Wis. Adm. Code. (Note: projects prior to October 1, 2004). The program shall include:

1. If applicable, a storm water management plan that identifies a schedule for implementing best management practices necessary to achieve a 20 percent reduction in the annual average mass of total suspended solids discharging from the MS4 to waters of the state as compared to no controls. The municipality may elect to meet the 20 percent total suspended solids standard on a watershed or regional basis by working with other permittee(s) to provide regional treatment or other measures that collectively meets the standard. Municipalities currently not achieving at least a 20 percent reduction must prepare and submit this plan to the Department within 12 months of the permit start date. Existing controls that collectively contribute to a given MS4 achieving greater than a 20 percent reduction in TSS loads from areas of existing development as of July 1, 2011, shall not be applied to increase the level of compliance in an MS4 with a level of reduction below 20 percent. The plan shall include the following:

a. Assessment of compliance with s. NR 151.13(2), Wis. Adm. Code must include an updated pollutant loading analysis using a model such as SLAMM, P8 or equivalent methodology approved by the Department.

b. Any agreements with an adjacent municipality, or with municipalities within a 10 digit hydrologic unit code level, to implement the required total suspended solids reduction.

c. Any long-term maintenance agreements with owners of non-publicly owned control measures where credit for the total suspended solids reduction is included in the analysis.

d. A cost-effectiveness analysis including the systematic comparison of alternatives to meet the 20 percent total suspended solids reduction based on the cost per pound of pollutant removed. This analysis shall take into account anticipated redevelopment or reconstruction projects and the cost to retrofit the site versus the cost to install practices during redevelopment or reconstruction. The analysis shall consider the cost to ensure long term maintenance of non-publicly owned control practices for which the municipality is taking credit as well as publicly owned control practices, the source of funding for installation and maintenance of control measures, and competing interests for that funding

source. The municipality may include an analysis of affordability in the cost-effectiveness analysis. The analysis shall consider the feasibility and commensurate increase in cost of installing a control measure where there are competing issues such as human safety and welfare, endangered and threatened resources, historic properties, and geographic features.

Note: Pursuant to s. NR 151.13(2), Wis. Adm. Code, the total suspended solids reduction requirements are applied to runoff from areas of urban land use and are not applicable to agricultural or rural land uses and associated roads. Additional MS4 modeling guidance for modeling the total suspended solids control is given on the Department's Internet site at:

<http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>

2. To the maximum extent practicable, continued operation and maintenance of all best management practices implemented on or before July 1, 2011 to achieve a total suspended solids reduction of more than 20 percent as compared to no controls.”]

In reference to Part III-Section F-2 of the annotated permit, Mr. Grisa asked whether the reference to structural flood control facilities could be made more specific, explaining that he did not want to have to evaluate every storm sewer for retrofitting. Mr. Newport suggested removing the word “all”. Mr. Hahn added that stormwater management facilities should be added to this. Mr. Hartsook suggested adding some examples.

[Secretary's Note: As indicated in the preceding Secretary's Note, the reference to structural flood control facilities was removed from Part III-Section F of the annotated permit.]

Mr. Grisa asked whether the references to outstanding resource waters and exceptional resource waters in Part III-Section G-1 of the annotated permit was necessary. Mr. Hahn replied that it would be removed from the annotated permit.

[Secretary's Note: Part III-Section G-1 of the annotated permit was revised to read:

“1. Identification of waters of the state, watershed boundaries, name and classification of receiving waters, identification of whether the receiving water is listed as an impaired water under s. 303 (d) of the Clean Water Act, stormwater drainage basin boundaries for each MS4 outfall and municipal separate storm sewer conveyance systems.”]

In reference to Part III-Section G of the annotated permit Ms. Caven asked whether there needs to be a definition of the term “major outfalls.” The Group discussed the storm sewer system mapping requirement. Mr. Fratrack noted that it is not the Department's intent to make the communities' maps look identical, the Department just wants to know what information the communities have.

[Secretary's Note: Part III-Section G-2 of the annotated permit was revised to read:

2. Identification of all known municipal storm sewer system outfalls discharging to waters of the state or other municipal separate storm sewer systems. Major outfalls shall be **categorized and priority outfalls for illicit discharge detection and elimination shall be identified.**”]

Mr. Hahn drew the attention of the Group to Part III-Section H of the annotated permit. He stated that the annual reporting requirement for the permit could be changed to reporting on a two-year cycle. Mr. Hartsook responded that he is interested in doing this. He noted that reporting on a two-year cycle is allowed under Chapter NR 216 of the *Wisconsin Administrative Code*. He indicated that this could be put into the permit as an option, with the group report on the public education and outreach program being submitted annually. Mr. Thur responded that, because of the need to get information from other departments, it is easier for him to assemble the information and report it annually. Mr. Grisa responded that the information could be assembled internally on an annual basis and held for reporting on a two-year cycle. Mr. Thur replied that once the information is assembled, he might as well submit it. Mr. Hartsook stated that he does not want the permit language to preclude reporting on a two-year cycle.

[Secretary's Note: The first sentence of the first paragraph of Part III-Section H of the annotated permit was revised to read:

"H. ANNUAL REPORT: Each municipality shall submit an annual report for each calendar year unless the Department authorizes biannual reporting to be submitted the 2nd and 4th year of the permit term pursuant to s. NR 216.07(8) Wis. Adm. Code."]

Mr. Newport stated that Part III-Section H-3-b should be removed from the annotated permit and language should be added to the group conditions about submitting the report on public education and outreach activities as an annual group report. Mr. Grisa asked whether the word "areas" in Part III-Section H-3-b means components. Mr. Hahn replied that it does.

[Secretary's Note: Part III-Section H-3-b was removed from the annotated permit and Sections H-3-c through H-3-h were renumbered accordingly. The requirement of a group report on education and outreach was previously described in the fourth Secretary's Note in the section of these summary notes reviewing the summary notes of the January 24, 2012, meeting of the Group.]

Mr. Hahn noted that in his January 20, 2012, e-mail, Mr. Bischke asked whether annual reports should be submitted to the WDNR's Milwaukee office or to its Waukesha office. Mr. Hartsook replied that they should be submitted to him at the Waukesha office.

[Secretary's Note: The last sentence of Part III-Section H-8 of the annotated permit was revised to read:

"A signed copy of the annual report and other required reports should be submitted to the Water Resources Engineer, DNR Waukesha Satellite Center, 141 NW Barstow Street Room 180, Waukesha, WI 53188."]

Mr. Hahn noted that the compliance schedule given in Part IV of the annotated permit needs to be updated and made consistent with the changes the Group has made to the permit. Mr. Hartsook stated that he anticipates that this section will be shorter than the one in the initial Menomonee River Group permit because the municipalities have all developed their stormwater programs.

[Secretary's Note: Part IV of the annotated permit was revised to read:

"PART IV. COMPLIANCE SCHEDULE

The Menomonee River Watershed Permittees shall comply with the specific permit conditions contained in Parts II. and III. in accordance with the following schedule:

Part II. GROUP CONDITIONS

A. PUBLIC EDUCATION AND OUTREACH: A **joint** public education and outreach program **report** shall be submitted to the Department by **March 31st of each year. Survey results or other appropriate method for tracking behavioral change due to public education and outreach activities shall be submitted along with the joint report at least once during the permit term.**

E. ANALYSIS PROCEDURE FOR IDENTIFYING OUTFALLS LIKELY TO BE DISCHARGING SANITARY WASTEWATER: An analysis procedure for identifying outfalls that have a stronger likelihood of discharging sanitary wastewater due to screening factors determined by the Menomonee River Permittees shall be submitted to the Department by March 31, 2014. Outfall screening according to the identified procedure shall be implemented within six months after receiving Department approval.

PART III. INDIVIDUAL CONDITIONS

B. CONSTRUCTION SITE POLLUTANT CONTROL:

Each municipality shall submit a proposed **updated** construction site pollutant control ordinance to the Department by **October 1, 2013** for the Department's review and approval. Each municipality shall adopt the construction site pollutant control ordinance by **April 1, 2014**. Existing construction site pollutant control ordinances shall be enforced until Department approved ordinances are adopted.

C. POST-CONSTRUCTION STORM WATER POLLUTION MANAGEMENT:

Each municipality shall submit a proposed **updated** post-construction storm water management ordinance to the Department by **October 1, 2013** for the Department's review and approval. Each municipality shall adopt the post-construction storm water management ordinance by **April 1, 2014**. Existing post-construction storm water management ordinances shall be enforced until the Department approved ordinances are adopted.

F. STORM WATER QUALITY MANAGEMENT:

If applicable, the long-term storm water management plan to achieve a 20 percent reduction of total suspended solids, including any updated pollutant loading analyses, must be submitted to the Department by October 1, 2013.

G. STORM SEWER SYSTEM MAP:

Each municipality shall submit an updated storm sewer system map to the Department with the Annual Report by **March 31st of each year.**

H. ANNUAL REPORT:

Each municipality shall submit an annual report for the preceding calendar year by March 31st of each year. The first annual report (for calendar year **2012**) shall be submitted to the Department by **March 31, 2013.**"

The compliance schedule summary table was deleted from the annotated permit.]

Mr. Hahn opened discussion of potential group projects to meet the group conditions of the watershed-based permit. He said that Mr. Hartsook has proposed a means of addressing group projects under the watershed-based permit, and asked him to explain this proposal.

Mr. Hartsook proposed adding a watershed projects section to the watershed-based permit that lays out a process for proposing, implementing, and evaluating projects. He noted that projects would then be submitted to the WDNR for review. He continued that the process would include identifying which group conditions are met by the project. He stated that participation in a group project by a municipality would count as meeting the group conditions addressed by that project, whether the project is conducted within or outside the municipality's boundaries. He added that this participation would mean that the municipality would not need to separately address the condition within its boundaries. He indicated that he is drafting language related to this proposal for inclusion in the annotated permit.

[Secretary's Note: The following section was added as a new Part IV to the annotated permit and the subsequent parts of the annotated permit were renumbered, including the Part IV in the previous Secretary's note (bold text is intended to be bold in the annotated permit):

"Part IV. WATERSHED PROJECTS

The Menomonee River Watershed Permittees have the option of collaborating on joint projects designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River Watershed. Completion of these projects may satisfy any number of permit conditions identified under Parts II and III of this permit even if the participating municipality is not the owner and operator of the municipal storm sewer discharge directly affected by implementation of the watershed project.

A. PROJECT PROPOSALS: For each watershed project proposed, the participating Menomonee River Watershed Permittees shall submit the following items to the Department for review and approval prior to implementation:

1. A project description including the scope, project budget and potential funding source(s), project schedule, anticipated water quality benefits from the project, and a description of how the project will satisfy compliance with other permit conditions.
2. A scientifically credible method estimating pollutant reductions that will be achieved.
3. Signed letters of support and/or all inter-municipal agreements identifying participation in the project.

Note: Existing watershed restoration plans have been developed by Watershed Action Teams (WATs) in cooperation with the Southeastern Wisconsin Watersheds Trust, Inc. (SWWT) that identify priority project lists for implementation in the Menomonee River Watershed. Watershed data and recommendations from SEWRPC's Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds as well as stakeholder involvement were used to develop the WAT plans. The Menomonee River Watershed Restoration plan can be accessed at <http://www.swwtwater.org/home/publications.cfm>

B. PROJECT EVALUATION: The participating Menomonee River Permittees shall evaluate the effectiveness of the project through quarterly progress reports to be submitted to the Department until project completion. If multiple projects are being implemented concurrently, then progress may be documented through a single quarterly report if desired.”]

Mr. Newport asked how a project that only contributes to meeting, but does not fully meet, a group condition would be treated. Mr. Hartsook replied that that would be addressed through potential projects being submitted to the Department for review.

Mr. Martinka asked for an example of the sort of project that might qualify under this proposal. Mr. Hartsook replied that one example would be a program to install a large number of rain barrels and rain gardens in a 100 acre development.

Mr. Hahn commented that there could be two possible approaches to group projects. One approach would be to require a project within each MS4 during each five-year permit term, and the other would be to implement a lesser number of projects during each permit term with the intent that projects would be conducted in each municipality over multiple permit terms.

Mr. Hahn noted that having this process in the watershed-based permit provides an incentive to municipalities to participate in a watershed-based permit that would not be available under individual or group permits. Mr. Grisa concurred, noting that Mr. Hartsook’s proposal is consistent with treating the watershed as one large MS4 system. He added that there is nothing in this proposal that precludes municipalities from doing things on their own in order to meet permit conditions.

Mr. Newport stated that the language laying out this approach to meeting group conditions should be written in such a way that nontraditional projects, such as streambank restorations, could be considered as potential projects.

Mr. Martinka asked how the incentive system for municipalities would work under Mr. Hartsook’s proposal. Mr. Grisa replied that if a municipality spends money in another municipality, they get credit for it. Mr. Hartsook added that this also allows communities to pool resources to get a bigger effect.

Mr. Thur commented that even with this language, the municipalities will still need to meet the TMDLs. Mr. Hartsook replied that this approach might make implementation of the TMDLs more fluid. Mr. Fratrack noted that the TMDL WLAs will be issued by stream reach. He added that these reaches may run through multiple municipalities and that this might spur a desire by communities to work together. Mr. Thur responded that he does not think that implementing a small number of projects called for in the permit will meet the TMDLs.

Mr. Newport commented that this approach would give a practice run for dealing with the TMDLs. Mr. Grzezinski said that it would help the Group examine the question of how doing things in the watershed, rather than doing things in their individual communities, affects the whole picture. Mr. Grisa stated that Mr. Thur’s comments were well taken, noting that the TMDLs are going to drive MS4 actions in the future. He stated that Mr. Hartsook’s proposal may serve as a framework for addressing the TMDLs. He reiterated that this approach does not preclude any community from taking actions within their own boundaries. He continued that it also does not force contributions from municipalities for particular projects. He added that communities can participate in those projects that they wish to, without having to go through the work of water quality trading.

Ms. Gayan stated that the proposal leaves open how group projects will be funded, noting that funding can come from sources such as municipal funds, grants, and other sources.

Mr. Shafer asked whether everyone would get credit if a municipality implements a project along a particular stream reach. Mr. Grisa replied that credit would only be given to the municipalities that participate in the project.

Mr. Shafer asked whether municipalities would get credit for Milwaukee Metropolitan Sewerage District (MMSD) flood control projects. Mr. Hartsook noted that there are two ways to “get credit”: 1) credit for meeting permit conditions and 2) credit for TSS reductions. He noted that assessing credit for meeting permit conditions should be fairly easy. He suggested looking at additional methods to assess TSS reductions, noting that this would allow giving credit for projects addressing problems that cannot be assessed using the SLAMM or P8 modeling approaches, such as projects addressing streambank erosion.

Ms. Gayan stated that if the municipalities are doing a major project, they should capture what the benefits will be and submit the information to the Department. Mr. Hartsook added that the code allows municipalities to submit evidence of meeting the TSS performance standard by using either SLAMM or P8 modeling or by using an equivalent methodology approved by the Department. He continued that if a project is going to result in a quantifiable reduction of TSS, the communities conducting the project should submit the information and put the responsibility for evaluating the equivalent method in the Department’s hands. Ms. Gayan noted that the Department has never received a request to do this for a TSS reduction.

Ms. Justus asked how many projects would need to be completed during the permit term. Mr. Hartsook answered that it depends upon the scope of the projects. He added that it is important that all of the permit conditions be satisfied in some manner. Mr. Grisa suggested not putting a minimum number into the permit, and Mr. Hartsook concurred.

Mr. Grisa asked Mr. Hartsook to modify what he has written regarding his proposal based upon the Group’s discussion and to submit it to Mr. Hahn.

Mr. Hahn asked the Group whether there were any suggestions for potential Group projects under the watershed-based permit. Ms. Morgan and Mr. Meyer suggested updating the 2005 MMSD audit of municipal codes and ordinances that place barriers to the implementation of green infrastructure. Ms. Morgan explained that this could be used to identify where ordinance changes to allow greater use of green infrastructure could be used to address pollution hot spots in the watershed. Mr. Sokol suggested including review of the State building codes in such an audit. He added that the WDNR could discuss this with the State Department of Safety and Professional Services. Mr. Grisa noted that the USEPA’s Green Partner program includes evaluation of ordinances with respect to their impact on implementation of green infrastructure. He suggested that a watershed-based permit group could partner with USEPA on this. Ms. Sands noted that the District is partnering with USEPA to do this using the Menomonee River watershed as a pilot. She explained that this is a three-phase project. She added that the intended approach for the first phase is to request technical support from USEPA to evaluate ordinances using two methodologies—one developed by USEPA and another developed by the Center for Watershed Protection. Mr. Newport said that he thought this is a good project idea, noting that it may be possible to achieve economies of scale in installing green infrastructure on a watershed-scale and that it may be possible to harmonize ordinances across communities. Mr. Hartsook suggested that it may be better to develop an “escape hatch” process within ordinances rather than developing new ordinances. Ms. Sands noted that in the 2005 audit of municipal codes, communities indicated that they did not want to adopt common language.

Ms. DeBruine suggested that the Granville dog park bank stabilization project could be a group project, noting that the first phase is grant-funded.

Mr. Hartsook suggested a potential schedule for development, submission, and implementation of group projects under the watershed-based permit. He suggested that the municipalities should meet within the first six months of the permit cycle and submit a project proposal to the Department within the first 12 months of the permit cycle. He continued that the Department would have two months to review the proposal. He added that the last six months of the permit term would be reserved for reviewing implementation of the project. Mr. Grisa responded that he was hesitant to place a schedule in the permit for group projects, since under this approach the group projects are opportunities for collaboration rather than requirements. He asked that the communities be allowed to

develop the projects on their own schedule. He noted that if a project is not implemented over the permit term, no credit is given for that project. He added that credit may be given for the project in the next permit cycle, if it is implemented during that cycle. It was agreed not to include a schedule for the group project in the permit.

Mr. Shafer stated that recommendations and projects described in the watershed restoration plan for the Menomonee River watershed could be used as a source of potential group projects. Mr. Hahn noted that the project matrix developed by Mr. Hartsook lists several projects from the watershed restoration plan. Mr. Hartsook indicated that a note will be added to the annotated permit that refers to the watershed restoration plan as a potential source of projects.

[Secretary's Note: The project matrix referred to in the last paragraph was attached to the summary notes from the January 12, 2012 meeting of the Group as Exhibit E. The text added to the annotated permit as described in the previous Secretary's Note references the watershed restoration plan as a source of potential group projects.]

REVIEW OF RESULTS OF THE MARCH 20, 2012 SUBGROUP MEETING REGARDING EDUCATION AND OUTREACH ASPECTS OF THE PERMIT FRAMEWORK

At Mr. Grisa's request, Mr. Hartsook reported on the March 20, 2012 meeting of a subgroup of the Watershed-Based Permit Framework Group regarding education and outreach aspects of the framework.

Mr. Hartsook stated that he had revised the language in Part II-Section A of the annotated permit to give the section a more parallel structure.

[Secretary's Note: Part II-Sections A-1 through A-11 were revised to read:

"1. Illicit discharges from municipal separate storm sewer systems and associated water quality impacts.

2. Sources of pollutant loadings and habitat degradation—such as sedimentation, thermal alterations, and increased flashiness of flows—in the watershed, including stormwater.

3. Storm water runoff from residential properties and potential pollutant sources such as pet waste, hazardous household waste, automobile care, and lawn care.

4. Storm water runoff from commercial properties and, where appropriate, educate specific businesses such as lawn care companies, golf courses, carwashes, and restaurants on storm water pollution prevention planning to reduce pollutant sources.

5. Beneficial onsite reuse or proper management of leaves and grass clippings.

6. Restorative and protective management of streambanks and shorelines by riparian landowners to minimize erosion and restore and enhance the ecological value of waterways.

7. Infiltration and beneficial onsite reuse of residential storm water runoff from rooftops, driveways, and sidewalks through implementation of green infrastructure best management practices such as rain barrels, rain gardens, and permeable pavements.

8. **Proper design, installation, and maintenance of erosion and sediment control best management practices to minimize, with the intent of eliminating, sediment transport from construction sites. The program shall highlight the potential harmful effects on the environment from sediment in construction site runoff and shall target construction companies, individual operators, and developers as key audiences.**

9. **Routine inspection and maintenance of storm water best management practices by homeowner associations.**

10. **Watershed education and the contributions of point and non-point source pollution on waterbody and waterway impairments.**

11. **Best management practices for snow and ice removal and informing specific audiences such as snow removal/deicing companies, private residences, industrial and commercial facilities, and residents about resources that provide further information on methods of reducing application of chemical deicers while maintaining public safety.”]**

In reference to the elements of the public education and outreach program set forth in Part II-Sections A-1 through A-11 of the annotated permit, Ms. Morgan suggested separating them into those elements that are to be addressed on a group basis versus those elements that are to be addressed on an individual municipal basis. Mr. Hartsook noted that this was discussed at the Public Education and Outreach Subgroup meeting. He indicated that he preferred to not separate these out, in order to keep the language and approach simple. Mr. Grisa noted that the current language of the annotated permit allows the municipalities to address any of the elements of the public education and outreach program individually, if it works better. He stated that the current language give the municipalities the flexibility they want.

[Secretary’s Note: No modifications were made to the annotated permit based upon the discussion documented in the previous paragraph.]

Ms. Justus asked whether the requirement that a minimum of three elements of the public education and outreach program be implemented each year means that a minimum of three elements must be implemented each year by the municipalities as a group or that each municipality must implement a minimum of three elements each year. Mr. Hartsook indicated that he would clarify this.

[Secretary’s Note: The fourth sentence of the first paragraph of Part II-Section A of the annotated permit was revised to read:

“All topics shall be addressed at least once during the permit term with a minimum of **3** topics being addressed, **either collectively or individually**, each year.”]

In reference to Part II-Section A-10, Mr. Sokol commented that it may be unfair to assume that the schools will cooperate with outreach activities. Mr. Hartsook replied that he will not define the target audience in the revised text. Mr. Grisa asked him to submit the revised text to Mr. Hahn.

[Secretary’s Note: See the first Secretary’s Note in this section, which includes a revised Part II-Section A-10.]

Ms. Morgan asked which section of the annotated permit contains the language regarding the municipalities submitting a group annual report on education and outreach activities. Mr. Hartsook replied that this would be

under annual reporting. He added that he may also need to add a specific reference to this under the individual conditions section.

[Secretary's Note: The group report was previously described in the fourth Secretary's Note in the section of these summary notes reviewing the summary notes of the January 24, 2012 meeting of the Group.]

REVIEW OF WRITTEN COMMENTS SUBMITTED BY BRIONNE BISCHKE, GERMANTOWN VILLAGE ENGINEER

Mr. Hahn informed the Group that on March 20, 2012, he received an e-mail message from Brionne Bischke, Village of Germantown Engineer, which presented four questions on the annotated permit.

[Secretary's Note: A copy of the March 20, 2012, e-mail from Mr. Bischke is attached herein as Exhibit B.]

Mr. Hahn explained that Mr. Bischke is looking ahead for quantitative information to provide to local governing bodies considering participation in a watershed-based permit. He stated that he cannot provide a quantitative answer to the first two questions, which ask how much money and how many employee hours a watershed-based permit would save in contrast to an individual permit. He noted that these questions may be answerable at the local level as a watershed-based permit is implemented. He added that in constructing the watershed-based permit framework, staff tried not to add additional burdens to the municipalities' responsibilities.

Mr. Newport reminded the Group that another part of the grant for developing the watershed-based permit framework was for outreach, including development of a generic fact sheet that each community could adapt to take to its council or board. Mr. Grisa added that by highlighting things that have been previously done on a Group basis, such as partnering with MMSD to do water quality monitoring, the fact sheet could show the advantages of a watershed-based permit approach. Mr. Hahn stated that SEWPRC staff, in concert with WDNR and USEPA staffs, would develop summaries of 1) the overall MS4 permit improvements that were formulated under the watershed-based permit framework process and 2) the advantages of, and incentives related to, participation in a watershed-based permit. Mr. Martinka said that the brief proposal to develop a watershed-based permit which was prepared by Sweet Water and MMSD very early in the framework development process would provide helpful information regarding the benefits of a watershed-based permit.

[Secretary's Note: These will be provided to the Group at the May 15, 2012 meeting of the Group.]

Ms. Justus pointed out that many of the advantages have already been attained under the existing group permit structure.

Mr. Grisa stated that if the USEPA and WDNR believe that the watershed-based permit structure is appropriate for municipal stormwater discharge permits, then the permit fee should be reduced. He noted that it would not necessarily need to be a large fee reduction. Mr. Hartsook replied that he calculated a potential permit fee for a single MS4 with an equivalent population to the Menomonee River watershed and applied it to the watershed. He stated he found that most of the permitted municipalities would save about \$2,000 under such an approach. He noted that he suggested to WDNR policy staff that the Department take this approach to assessing permit fees for a watershed-based permit. He indicated that the policy staff replied that this cannot be done because it would require a change in the *Wisconsin Administrative Code*. Mr. Hahn added that WDNR Central Office staff also indicated that they did not want to reduce the resources available to support the municipal stormwater program. Ms. Justus commented that a reduction in the permit fee could make the difference as to whether Germantown participates in a watershed-based permit. Ms. Gayan indicated that she and Mr. Hartsook would continue to discuss this with WDNR Central Office staff.

[Secretary's Note: Ms. Gayan and Mr. Hartsook have continued discussions on this topic with WDNR Central Office staff and are currently awaiting a response.]

Mr. Hartsook noted that WDNR staff is also trying to modify grant application scoring so that municipalities covered under a watershed-based permit would receive additional points when applying for urban nonpoint source and stormwater management grants, planning grants, and construction grants.

Ms. DeBruine asked whether the municipalities will have the option of renewing the current group permit. Mr. Hartsook stated that this could be done, and he said that many of the changes in permit language that the Group has discussed would be included in such a group permit. Mr. Newport noted as an example that the changes in the illicit discharge detection and elimination procedure provide an improved way to approach finding and eliminating discharges. He continued that these improvements may be incorporated into individual permits.

Mr. Hahn stated that he cannot provide a quantitative answer to Mr. Bischke's third question, which asks whether a watershed-based permit will achieve watershed quality goals more quickly than individual permits. He noted that, while there are too many variables that affect this issue to permit quantification, the watershed-based permit does offer the potential of producing improvements more rapidly.

Mr. Hahn indicated that Mr. Bischke's fourth question was how investing in capital projects in another community will better benefit the residents of his community when they can invest in capital projects within their own community. Mr. Hahn stated that this is addressed through rotating projects through communities and by the cost-share for projects being commensurate with benefits to the contributing municipalities.

SUMMARY OF STATE WATER QUALITY TRADING LEGISLATION

Mr. Hahn distributed a copy of 2011 Wisconsin Act 151 to the Group. He noted that this Act has been signed into law by the Governor. He explained that this Act changes the State law regarding water quality credit trading from a pilot project approach to a statewide approach. He added that it also removes the five-year time limit on trades.

[Secretary's Note: A copy of the Act is attached herein as Exhibit C.]

Mr. Grisa commented that the impact of this change depends upon the rules that are issued by the WDNR regulating trading. Ms. Gayan indicated that it could take at least three years to develop such rules. Mr. Hahn asked whether trades could occur prior to the issuance of rules. Mr. Fratrack replied that he thought that they could. Mr. Boxhorn asked whether the Natural Resources Board has approved the Department's draft trading framework. Mr. Fratrack replied that they have. Ms. Gayan noted that the Department has an internal workgroup that is currently working on additional development of the trading framework.

TOPICS AND DATE FOR NEXT MEETING

The Group set the next meeting for 9:00 a.m. to noon on May 15, 2012 at the Brookfield City Hall.

Mr. Hahn stated that a clean copy of the draft permit that incorporates the changes the Group has made will be provided for the next meeting. He indicated that the Group municipalities will soon need to indicate their level of interest in participating in a watershed-based permit. He added that as the communities are considering whether to participate, staff would like to know their questions, concerns, and objections so that an effort can be made to accommodate them. He stated that he appreciates everyone's effort and participation through this long process.

Mr. Grisa thanked the attendees for their participation.

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 12:15 p.m.

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Exhibit A

Table 2. TEMPLATE FOR MS4 WASTE LOAD ALLOCATIONS BY MUNICIPALITY

Municipality	Reach	Waterbody Name	Waterbody Extents	Annual TSS Waste Load Allocation (tons)
MCD Name	Reach No.	Local Name	Stream Mile to Mile	tons
MCD Name	Reach No.	Local Name	Stream Mile to Mile	tons
MCD Name	Total			tons

#203972
300-1099
JEB/pk
05/08/12

Exhibit B

192

Hahn, Michael G.

From: Hahn, Michael G.
Sent: Wednesday, March 21, 2012 11:46 AM
To: 'Lauren Justus'
Subject: RE: Watershed-based permitting working group meeting

Lauren,

Thanks for passing these questions along. We will address them at the April 4 full Group meeting. I think that will work well since these are issues that each community should think about.

We will also update the Group based on the discussion at today's Work Group meeting.

Mike

Michael G. Hahn, P.E., P.H.
Chief Environmental Engineer
Southeastern Wisconsin Regional Planning Commission
P.O. Box 1607
W239 N1812 Rockwood Drive
Waukesha, WI 53187-1607
Phone: (262) 547-6722 Ext. 243
Fax: (262) 547-1103
E-mail: mhahn@sewrpc.org
Web site: www.sewrpc.org

From: Lauren Justus [<mailto:ljustus@village.germantown.wi.us>]
Sent: Tuesday, March 20, 2012 3:39 PM
To: Hahn, Michael G.
Cc: Hartsook, Bryan D - DNR
Subject: Watershed-based permitting working group meeting

Hi Mike,

I just wanted to let you know I will not be able to make tomorrow's meeting. I've attached an email from Brionne discussing some of the outstanding questions we still have. If time allows tomorrow could you please discuss the following questions or consider a time to discuss them. I think these are going to be important items to discuss before municipalities are faced with the decision to commit to a watershed based permit.

I apologize for the late notice, I thought I sent you an email when you first noticed the meeting.

Lauren Justus
Engineer Tech II
Village of Germantown
(262) 250-4723

From: Brionne Bischke
Sent: Tuesday, March 20, 2012 3:19 PM
To: Lauren Justus
Cc: Dan Ludwig
Subject: Watershed-based permitting

After asking the usual who, what, where, when, why and how questions, we can easily categorize the recent work on the permit framework under the “what” question. Eventually, potential permit participants will need to present the permit framework to their committees and boards who will all ask “why”. Answers to “why” should be both qualitative and quantitative. Potential permit participants commonly agree on the qualitative answers to “why” but should now translate them into quantitative answers.

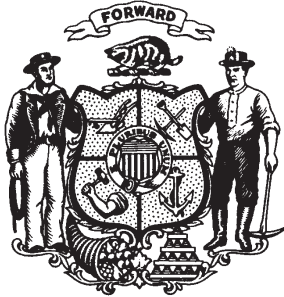
I foresee our committees and boards asking benefit vs. cost questions, for example:

- How much money will the watershed-based permitting save us vs. an individual permit?
- How many employee hours will the watershed-based permitting save us vs. an individual permit?
- Will a watershed-based permit achieve watershed quality goals faster than an individual permit?
- How will investing in capital projects in another community better benefit the residents of our community when we can invest our money on capital projects in our community that our residents can see direct benefit?

As potential permit participants wind down on developing the framework of the watershed-based permit (i.e., the answer to “what”), on a sidetrack they also need to develop the framework that they can present to their committees and boards justify the watershed-based permit over the individual permit using both qualitative and quantitative benefit vs. cost comparisons (i.e., the answer to “why”).

Brionne R. Bischke, P.E.
Village Engineer
Village of Germantown
N112 W17001 Mequon Rd.
P.O. Box 337
Germantown, WI 53022-0337
W: 262-250-4724; F: 262-253-8355; M: 414-975-4699

State of Wisconsin



2011 Senate Bill 557

Date of enactment: **March 23, 2012**

Date of publication*: **April 6, 2012**

2011 WISCONSIN ACT 151

AN ACT *to repeal* 283.84 (1m) (c), 283.84 (2) and (3) and 283.84 (5); *to amend* 20.370 (4) (ag), 20.370 (4) (as), 283.84 (1), 283.84 (1m) (intro.), (a) and (b), 283.84 (3m) and 283.84 (4); and *to create* 283.84 (1) (d), 283.84 (1) (e), 283.84 (1m) (d), 283.84 (3r) and 283.84 (6) of the statutes; **relating to:** trading of water pollution credits, granting rule-making authority, and making an appropriation.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. 20.370 (4) (ag) of the statutes is amended to read:

20.370 (4) (ag) *Water resources — pollution credits.* From the general fund, all moneys received under s. 283.84 (1) (c) for activities to reduce water pollution in pilot project areas, as provided in agreements under s. 283.84 (1) (c).

SECTION 2. 20.370 (4) (as) of the statutes is amended to read:

20.370 (4) (as) *Water resources — trading water pollution credits.* As a continuing appropriation, from the environmental fund, the amounts in the schedule for the water pollution credit trading pilot projects program under s. 283.84.

SECTION 3. 283.84 (1) of the statutes is amended to read:

283.84 (1) The department shall administer at least one pilot project to evaluate a program for the trading of water pollution credits. The department may only administer a pilot project if the pilot project that is consistent with the federal Water Pollution Control Act, 33 USC 1251 to 1387. Subject to sub. (1m), a pilot project under

the program the department may authorize a person required to obtain a permit to increase the discharge of pollutants above levels that would otherwise be authorized in the permit if the person does one of the following:

(a) Reaches an a binding, written agreement with another person who is required to obtain a permit under which the other person agrees to reduce the discharge of pollutants in the project area below the levels that would otherwise be authorized in the other person's permit.

(b) Reaches an a binding, written agreement with another person who is not required to obtain a permit under which the other person agrees to reduce the amount of water pollution that it causes in the project area below the levels of water pollution that it causes in the project area when the agreement is reached.

(c) Reaches an a binding, written agreement with the department or a local governmental unit, as defined in s. 16.97 (7), under which the person pays money to the department or local governmental unit and the department or local governmental unit uses the money to reduce water pollution in the project area or to provide cost-sharing, for the purposes of s. 281.16 (3) (e) or (4), for projects to reduce water pollution.

SECTION 4. 283.84 (1) (d) of the statutes is created to read:

* Section 991.11, WISCONSIN STATUTES 2009-10 : Effective date of acts. "Every act and every portion of an act enacted by the legislature over the governor's partial veto which does not expressly prescribe the time when it takes effect shall take effect on the day after its date of publication as designated" by the secretary of state [the date of publication may not be more than 10 working days after the date of enactment].

283.84 (1) (d) Reaches a binding, written agreement with the department under which the person reduces the discharge of pollutants under another permit that the person holds below the levels that would otherwise be authorized in the other permit.

SECTION 5. 283.84 (1) (e) of the statutes is created to read:

283.84 (1) (e) Reaches a binding, written agreement with the department under which the person constructs a project or implements a plan that results in reducing the amount of water pollution from sources other than the source covered by the permit.

SECTION 6. 283.84 (1m) (intro.), (a) and (b) of the statutes are amended to read:

283.84 (1m) (intro.) ~~-A pilot project~~ Under the program, the department may authorize a person to increase a discharge of pollutants above levels that would otherwise be authorized in the permit only if all of the following apply:

(a) The agreement under sub. (1) ~~(a), (b) or (c)~~ results in an improvement in water quality.

(b) The ~~authorized~~ increase in pollutants and the reduction in ~~pollution~~ pollutants provided for in the agreement under sub. (1) ~~(a), (b) or (c)~~ involve the same pollutant or the same water quality standard.

SECTION 7. 283.84 (1m) (c) of the statutes is repealed.

SECTION 8. 283.84 (1m) (d) of the statutes is created to read:

283.84 (1m) (d) The increase in pollutants and the reduction in pollutants occur within the same basin or portion of a basin, as determined by the department.

SECTION 9. 283.84 (2) and (3) of the statutes are repealed.

SECTION 10. 283.84 (3m) of the statutes is amended to read:

283.84 (3m) A person engaged in mining, as defined in s. 293.01 (9), prospecting, as defined in s. 293.01 (18), or nonmetallic mining, as defined in s. 295.11 (3), may not enter into an agreement under sub. (1) ~~(a), (b) or (c)~~.

SECTION 11. 283.84 (3r) of the statutes is created to read:

283.84 (3r) The department shall include terms and conditions related to agreements under sub. (1) in new and reissued permits.

SECTION 12. 283.84 (4) of the statutes is amended to read:

283.84 (4) The department shall ~~amend~~ modify the permits of persons entering into agreements under sub. (1) to enable the agreements to be implemented and to include terms and conditions related to the agreements.

SECTION 13. 283.84 (5) of the statutes is repealed.

SECTION 14. 283.84 (6) of the statutes is created to read:

283.84 (6) The department may promulgate rules for the administration of this section.

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Appendix G

**SUMMARY NOTES
MAY 15, 2012 MEETING**

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SUMMARY NOTES OF THE MAY 15, 2012 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The May 15, 2012, meeting of the Menomonee River Watershed-Based Permit (WBP) Framework Group was convened at the Brookfield City Hall at 9:03 a.m. The meeting was called to order by Tom Grisa, City of Brookfield Director of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Maggie Anderson	Civil Engineer, City of Wauwatosa
Solomon Bekele	Civil Engineer, City of Milwaukee
Charles Boehm	Senior Engineer, AECOM (representing the City of Greenfield)
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Theresa Caven	Project Engineer, City of Brookfield
Cindi V. DeBruine	Senior Water Resources Engineer, R.A. Smith National, Inc. (representing the Villages of Butler and West Milwaukee)
James Fratrack	Water Resources Management Specialist, Wisconsin Department of Natural Resources
Sharon L. Gayan	Runoff Management Supervisor, Wisconsin Department of Natural Resources
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Dennis Grzezinski	Senior Counsel, Midwest Environmental Advocates
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Stevan M. Keith	Environmental Engineer, Milwaukee County Division of Environmental Services
Laura L. Kletti	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Lauren Justus	Engineering Assistant, Village of Germantown
Jeff Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water)
Ezra Meyer	Water Specialist, Clean Wisconsin
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Cheryl Nenn	Riverkeeper, Milwaukee Riverkeeper
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Robert Newport	Water Division, Region 5, U.S. Environmental Protection Agency
Melissa Scanlan	Water Law and Policy Scholar, University of Wisconsin Law School and University of Wisconsin-Milwaukee School of Freshwater Sciences
Richard Sokol	Director of Neighborhood Services, City of Greenfield
Timothy J. Thur	Chief Sewer Design Manager, City of Milwaukee Department of Public Works
Bill Wehrley	City Engineer, City of Wauwatosa

Mr. Grisa welcomed the attendees to the meeting and thanked them for their participation. He asked everyone to introduce themselves.

REVIEW OF SUMMARY NOTES OF THE APRIL 4, 2012 MEETING OF THE WATERSHED-BASED PERMIT FRAMEWORK GROUP

At Mr. Grisa's request, Mr. Hahn reviewed the summary notes of the April 4, 2012, meeting of the Group.

Mr. Hahn stated that there are some differences between the summary notes and the latest version of the draft permit that was provided to the Group because Mr. Hartsook had done some restructuring and reorganizing of the draft permit since the April 4 meeting. He noted that the third item on the agenda for this meeting is a review of these changes.

Mr. Hahn stated that the Secretary's Note on the bottom of page 3 clarifies that once an approved TMDL is included in the permit, MS4s will have up to three permit terms in which to comply with TMDL waste load allocations.

Mr. Hahn indicated that the Secretary's Note that begins on page 4 and continues onto page 5 documents permit language provided by Mr. Hartsook related to the submission of a joint annual work plan and a joint annual report for to public education and outreach programming. He noted that this language also addresses the evaluation of this program.

Mr. Hahn called the Group's attention to the Secretary's Note at the bottom of page 7, continuing onto page 8. He noted that it refers to Table 2, which is shown in Exhibit A and which illustrates how TMDL waste load allocations will be listed in the permit. He proposed adding a column to this table which would describe each stream reach by reference to landmarks.

[Secretary's Note: A revised Table 2 incorporating a column describing the stream reaches is attached herein as Exhibit A.]

Mr. Hahn stated that the goal of completely eliminating discharges of pollutants to impaired waterbodies as stated in the first full paragraph of the Secretary's Note on page 8 is not completely practical or essential in order for the waterbody to meet water quality criteria. He acknowledged that this note contains language that is already in the permit, though not in this section. He suggested changing the language to reducing discharges to levels at which the waterbody would no longer be impaired.

[Secretary's Note: The first paragraph of Part III-Section F of the draft permit was revised to read (text in bold is included here to denote language changed or added onto the text. Text will not be bold in the annotated permit):

"If a permittee's MS4 discharges to an impaired water body, the permittee shall include a written section in its storm water management program that discusses the management practices and control measures it will implement as part of its program to reduce the discharge of pollutants of concern that contribute to the impairment of the water body. This section of the permittee's program shall specifically identify control measures and practices that will collectively be used to **reduce** the MS4's discharge of pollutant(s) of concern that contribute to impairment of the water body **to levels at which the water body would no longer be impaired** and explain why these control measures and practices were chosen as opposed to other alternatives. Pollutant(s) of concern means a pollutant that is causing impairment of a water body."]

Mr. Hahn drew the Group's attention to the third full paragraph in the Secretary's Note on page 8. He stated that a new or increased discharge causing a receiving waterbody to meet a water quality standard seems counterintuitive. Mr. Hartsook suggested changing this condition so it refers to the concentration of pollutant in

the effluent being less than the applicable water quality standard. He added that this would be enforced by reference to existing performance standards. Mr. Grisa commented that, while he likes the concept behind the proposed change, he is concerned about the emphasis on concentration. He explained that his concern is due to the fact that TMDLs are based on loads contributed in effluent rather than effluent concentration. He noted that a short-duration, high-concentration discharge might have no impact on water quality while a continual discharge of lower concentration might have considerable impact.

Mr. Hahn suggested tying the language into performance standards and said that is how this would be looked at in practice. Mr. Newport noted that the language should also address the effects of new development on stormwater. Mr. Grisa suggested changing the language to “not further degrade stream water quality.” Mr. Hartsook suggested using language from the 303(d) listing and adding a note. Mr. Hahn noted that when the TMDLs are issued, it will be necessary to go beyond the conditions in this section and that this should be recognized in the note. Mr. Fratrack asked whether the wording needs to address the TMDLs, since the MS4s will not be bound by the TMDLs in this permit.

Mr. Wehrley asked whether the reference to “concentration” in Mr. Hartsook’s proposed revision was intended to refer to pollutant concentration in the discharge or in the waterbody. Mr. Hahn replied that it referred to the concentration in the discharge. Mr. Wehrley commented that this language may rule out upstream mitigation as an option.

Mr. Wehrley asked whether the requirement in this language would be triggered by a new outfall. Mr. Grisa replied that there are two cases. He explained that in the first case a new or enlarged pipe is installed but the land use is not changed. This he noted does not constitute a new source. He continued that in the second case, the land use is changed. This he noted constitutes a new source. Mr. Wehrley asked whether an increased discharge is defined based upon the volume discharged or the pollutant load. Mr. Hartsook and Mr. Newport replied that this is based upon the mass of pollutant discharged.

Mr. Hartsook indicated that he would provide revised language for this section.

[Secretary’s Note: Draft language to clarify Part III-Section F-2 of the permit was shared with the WDNR stormwater program attorney, Jane Landretti. Ms. Landretti and Dennis Grzezinski will discuss the language and any recommendations will be brought forth at the June 12, 2012 meeting of the Group.]

Mr. Hahn next drew the Group’s attention to the Secretary’s Note that begins on page 9 and continues onto page 10. He noted that the last full sentence in Section F-1 was included in the permit to prevent backsliding. He added that the date referenced is the date of the State budget bill that eliminated the requirement of a 40 percent reduction in total suspended solids (TSS).

Mr. Hahn stated that Section F-1 in the Secretary’s Note that begins on page 9 requires that MS4s not achieving at least a 20 percent reduction in TSS prepare and submit a stormwater management plan to achieve such a reduction. He noted that Section F-1-d indicates that such a plan includes a cost-effectiveness analysis of alternatives, and he suggested clarification of how that analysis addresses redevelopment or reconstruction projects. He added that this cost-effectiveness analysis may include an analysis of affordability. Mr. Hartsook explained that the language in this paragraph in the permit is taken from the revised Chapter NR 151, *Runoff Management*, in the *Wisconsin Administrative Code*. He noted that in the *Code* this language is applied to the 40 percent reduction standard. He suggested removing it from the permit, noting that the Wisconsin Department of Natural Resources (WDNR) may not want to determine affordability. Mr. Grisa replied that affordability is an important consideration and that the sentence should be retained. Mr. Newport noted that in combined sewer overflow cases, the U.S. Environmental Protection Agency uses 2 percent of a community’s median annual income as a measure of affordability. He noted that when the costs exceed this threshold, the community is given

additional time to meet the requirement. Mr. Grzezinski commented that the language is permissive rather than mandatory and that this does allow for the inclusion of useful information.

[Secretary's Note: The consensus of the Group was to retain the sentence allowing MS4s to include an analysis of affordability as part of the required cost-effectiveness analysis of the stormwater management plan.]

[Secretary's Note: To clarify how the cost-effectiveness analysis addresses redevelopment or reconstruction projects, the second sentence in Part III-Section F -1-d was revised to read:

“This analysis shall take into account anticipated redevelopment or reconstruction projects and the cost to retrofit **existing practices** versus the cost to install practices during redevelopment or reconstruction.”]

Ms. DeBruine noted that under the revised Section F, reductions in TSS from existing practices in one community cannot be used to offset TSS in another community and asked as of what date practices may be used to do this offset. Mr. Hartsook replied July 1, 2011.

In reference to the note contained within the first partial Secretary's Note on page 10, Mr. Grisa asked whether riparian land that drains directly to a waterbody should be excluded from the TSS reduction requirement. He explained that this is an issue relative to claiming credit for installation of best management practices (BMPs). Mr. Hartsook and Mr. Boehm replied that it is optional to include these non-MS4 areas in the MS4 modeling. Mr. Grisa noted that direct draining riparian lands were excluded in the TMDL. Mr. Hahn replied that the TMDL may include a load allocation for these areas. Mr. Grisa stated that since these areas are not covered by any permit, their load allocations may not be enforceable. Mr. Hahn noted that this could be addressed by installing a BMP and getting credit for it, relative to TSS reduction. Mr. Newport added that credit could be obtained under TMDL through water quality trading. Mr. Grisa asked whether these load allocations would be added to the MS4's base. He explained that his concern is that addressing “low hanging fruit” by placing BMPs in these riparian areas may be good under the watershed-based permit, but might not be usable under the TMDL. Ms. Gayan replied that this may need to be worked out in the TMDL discussion. She indicated that she would inquire about this.

[Secretary's Note: In watersheds in other parts of the State where TMDLs are already approved, wasteload allocations were calculated for each permitted municipality based on the relative contribution of pollutant loading and runoff volume generated from the urban areas within each MS4-permitted municipal boundary as compared to the receiving stream's flow. Facilities covered by a general permit, the Wisconsin Department of Transportation highway system, and riparian lands not draining to MS4 were all lumped together into the MS4 WLA's. Implementation of the TMDL may lead to reallocating the contributions of pollutant loading and runoff volume from the areas that are not the responsibility of the permitted MS4. Under the reallocated loads scenario, the MS4 may implement a treatment practice in a riparian area to reduce the pollutant load to offset its own WLA. This would be considered a pollutant trade between a nonpoint and point source.]

In reference to the first paragraph of Section F in the Secretary's Note that begins on page 9, Mr. Grisa stated that he is not convinced that reducing TSS loads to the goals established in the permit will reduce total phosphorus loads enough to enable impaired waterbodies to achieve their designated uses. He asked that this be removed from the permit. Mr. Hartsook replied that this was placed in the permit by the Group as a way to indicate that TSS was being used as a surrogate for phosphorus. He stated that there needs to be something in the permit indicating how phosphorus is being addressed.

[Secretary's Note: The second sentence in first paragraph of Part III-Section E of the permit was revised to read:

"Since much of the phosphorus found in urban runoff is adsorbed to soil particles, it is reasonable to expect that implementation of actions under this permit that reduce total suspended solids loads will also reduce phosphorus **proportionally with the intent** to achieve designated use conditions in impaired waterways."

In order to keep the wording consistent, the last sentence of the last paragraph of Part III-Section F-1 of the permit was revised to read:

"Since much of the phosphorus found in urban runoff is adsorbed to soil particles, it is reasonable to expect that implementation of actions under this permit that reduce total suspended solids loads will also reduce phosphorus **proportionally with the intent** to achieve designated use conditions in impaired waterways."]

Mr. Hahn stated that the compliance schedule for the permit is given in the Secretary's Note that begins on page 11 and continues onto page 12. He suggested changing the deadlines for municipalities to adopt updated construction site pollutant control and post-construction stormwater pollution management ordinances from April 1, 2014 to March 31, 2014. Mr. Grisa asked whether the *Wisconsin Administrative Code* specifies how long the Department has to review these ordinances once the municipalities have submitted them. Mr. Hartsook replied that this is not specified in the code. He suggested having a 60-day review period.

[Secretary's Note: Part V-Section Part III-B of the permit was revised to read:

"Each municipality shall submit a proposed updated construction site pollutant control ordinance to the Department by October 1, 2013 for the Department's review and approval. **The Department shall provide the municipality the results of its review within 60 days of submission.** Each municipality shall adopt the construction site pollutant control ordinance by **March 31, 2014**. Existing construction site pollutant control ordinances shall be enforced until Department approved ordinances are adopted."

Part V-Section Part III-C of the permit was revised to read:

"Each municipality shall submit a proposed updated post-construction storm water management ordinance to the Department by October 1, 2013 for the Department's review and approval. **The Department shall provide the municipality the results of its review within 60 days of submission.** Each municipality shall adopt the post-construction storm water management ordinance by **March 31, 2014**. Existing post-construction storm water management ordinances shall be enforced until Department approved ordinances are adopted."]

Mr. Hahn drew the Group's attention to the Secretary's Note that begins on page 13 and continues onto page 14. He said that this note adds a new Part IV to the permit describing the procedure for conducting watershed projects. He asked Mr. Hartsook to explain this new part of the permit. Mr. Hartsook said that this part of the permit lays out a process for proposing and conducting watershed projects. He noted that it does not require that a project be completed. He added that the required submission of a scientifically credible method of estimating pollution reductions in proposals for projects opens the door for ways to evaluate these reductions other than using the P8 or SLAMM models.

Mr. Hahn said that the note in the new watershed projects part of the permit replaces the project matrix that the Group had discussed. Mr. Hartsook explained that the project matrix was intended to illustrate examples of potential projects. He noted that some of the projects in the matrix were not related to stormwater runoff. Mr. Grisa suggested adding the note to the fact sheet. Mr. Hartsook said that this could be done. Ms. Nenn asked whether this would mean that the note would be removed from the permit. Mr. Hartsook said that the note would remain in the permit.

[Secretary's Note: The note was retained and will also be included in the fact sheet.]

Mr. Hahn noted that the project evaluation section of the watershed projects part requires the submission of quarterly progress reports. Mr. Nettesheim and Mr. Grisa commented that this was too frequent. Mr. Hartsook asked what cycle is currently being used for reporting on projects. Mr. Grisa answered that it depends on what is being reported. He noted that if the purpose of the report is to determine if the goals of the project were met, reporting could be done annually. Mr. Nettesheim pointed out that the language says "evaluate the effectiveness of the project." He noted that this sort of evaluation can only be done once the project is completed. Mr. Grzezinski suggested changing the wording to "report on the status."

Mr. Grisa asked what the Department's rationale was for the reporting requirement. Mr. Hartsook responded that he is looking to track compliance with the permit. He added that if a problem arises with a watershed project, he would like to know about it sooner than halfway through the project. He indicated that the Department could be more prescriptive as to what is to be reported.

Ms. Gayan suggested submitting progress reports as part of the annual report, unless the project is not going well. Mr. Grisa replied that if the Department approves a project, it is to the MS4s' advantage to inform the Department about problems with the project as soon as possible. He noted that not informing the Department constitutes a violation of the permit. He asked why the reporting on the projects should be treated differently from reporting on illicit discharge detection and elimination. Mr. Hartsook replied that he is placing more importance on this aspect in order to make implementation work.

Mr. Fratrack asked what the appropriate time frame for reporting would be. Mr. Grzezinski suggested every six months. Mr. Boxhorn suggested tying the reporting interval to the anticipated length of the project, with shorter intervals being required for projects that are anticipated to be completed over shorter periods. Mr. Grzezinski indicated that he disagreed with this approach because longer-duration projects may need more frequent reporting. Ms. Gayan suggested deciding upon the amount of reporting when the project life is known. Mr. Newport suggested making a tracking and reporting method a part of each proposal. Mr. Thur suggested including reporting on projects as part of the annual report, noting that the Department can contact the MS4s conducting the project for interim reports. It was agreed to make reporting part of the annual report.

[Secretary's Note: Part IV-Section B of the permit was revised to read:

"B. PROJECT EVALUATION: The participating Menomonee River permittees shall report on the status of the project through submittal of the annual report, or annual if on a two-year reporting cycle, until project completion."]

In reference to the Secretary's Note that begins on page 16 and continues onto page 17, Mr. Grisa asked that the word "proper" be removed from Part II-Section A-5 of the permit.

[Secretary's Note: This change to this item is documented in a Secretary's Note under the next agenda item in these summary notes.]

REVIEW OF PERMIT CHANGES/RESTRUCTURING BY BRYAN HARTSOOK, WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Mr. Grisa reiterated that Mr. Hartsook did some restructuring and reorganizing of the draft permit. He asked Mr. Hartsook to review the changes to the permit that resulted from this. Mr. Hartsook indicated that he would highlight the changes.

Mr. Hartsook noted that the footnote to Table 1 on page 5 of the permit was added to address unknown pollutants contributing to impairments.

Mr. Hartsook indicated that he shortened Part I-Section C of the permit. He stated that a typographical error in the first sentence of this section will be corrected.

[Secretary's Note: The first sentence of Part I-Section C of the permit was revised to read:

“This permit is a **multi-party** watershed-based permit, meaning the Menomonee River Watershed Permittees, while being individually responsible for satisfying the permit conditions within their respective MS4 service areas, will also have the option of collaborating on WATERSHED PROJECTS designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River Watershed.”]

Mr. Hartsook noted that he moved the section on impaired waters and TMDLs from Part I of the permit which deals with applicability of the permit to Part III which deals with individual conditions. He indicated that it now is located immediately after the stormwater quality section in Part III.

Mr. Hartsook noted that he modified language in Part I-Section J-2 on pages 9 and 10 of the permit in order to accommodate watershed projects. He indicated that he also added Part I-Section J-4 to the permit for the same purpose.

Mr. Hartsook indicated that he moved the section on public involvement and participation from the individual conditions part of the permit to the group conditions part of the permit. He continued that the section is now Part II-Section A of the permit. He explained that he did this because this section complements and is related to the public education and outreach section which immediately follows it in the new location. Mr. Grisa noted that the requirements of this section are not included in the compliance schedule. Mr. Hartsook replied that there is no due date for this requirement because he does not see this as a unique program. He continued that he sees this requirement as having a supporting role to public education and outreach.

Ms. Nenn noted that the stormwater monitoring and planning section of Part II will be deleted from the permit. Mr. Hartsook explained that this section has been replaced by the group projects part (Part IV). Mr. Newport added that there is no monitoring requirement. He continued that the potential projects listed in this section were included in earlier drafts to illustrate potential group projects. Mr. Hartsook added that these potential projects could be moved to the fact sheet. Ms. Nenn commented that the outfall bacteria monitoring project that is included in this section is important. Mr. Hartsook responded that the illicit discharge detection and elimination section of the permit has been modified to address this. Ms. Nenn asked how progress will be addressed without monitoring, noting that MMSD's monitoring program is always on the chopping block. Mr. Hahn agreed regarding the importance of monitoring. He said that MMSD has a robust monitoring program and that the U.S. Geological Survey is also conducting monitoring in the watershed. He concluded that, at this time, the monitoring program is sufficient and does not need to be addressed through a permit condition.

Mr. Hartsook indicated that he reorganized Part III-Section A of the permit which contains the language on illicit discharge detection and elimination. He noted that his preference would be for the municipalities to customize

their screening methods. Ms. Nenn suggested that this may be an issue on which the Sweet Water Science Committee should be consulted. She continued that researchers at the Great Lakes WATER Institute (GLWI) have found that ammonia concentrations in outfall samples do not correlate well with bacteria counts. Ms. Gayan added that Sandra McLellan at the GLWI thought that phosphorus might be a better indicator than ammonia. Mr. Hartsook replied that this addresses the second tier of analysis, noting that the first tier is to find outfalls that are discharging things other than stormwater.

Mr. Grisa stated that the second paragraph of Part I-Section B of the permit states that 11.7 miles of stream are listed as impaired. He noted that the stream lengths listed in Table 1 of the permit do not added up to this total and asked why they differ. Ms. Gayan explained that the 2008 303(d) list is the most recently submitted list that has been approved by the U.S. Environmental Protection Agency (USEPA). She added that the lists submitted by the Department in 2010 and 2012 are currently pending approval by USEPA. Mr. Boxhorn stated that the status of the listings may be clearer in Table A-1 in Appendix A of the permit. Mr. Hartsook suggested replacing the last column of Table 1 with the last column of Table A-1. Mr. Grzezinski suggested referring to the 2008 303(d) list in Part I-Section B of the permit.

[Secretary's Note: A revised version of Table 1 is attached herein as Exhibit B. The second sentence of the second paragraph of Part I-Section B of the permit was revised to read:

"The 2008 303(d) list, which is the most recent one approved by the U.S. Environmental Protection Agency, lists 11.7 miles of stream as being impaired."]

In reference to Part I-Section K of the permit, Mr. Grisa commented that he is uncomfortable with the use of the word "will" in the first sentence. He explained that this language has the appearance of a requirement for the MS4s to work together, while much of the permit gives the MS4s the option of working alone. He noted that he does not want this language to be a stumbling block for participation by some municipalities. Mr. Boxhorn suggested changing "will" to "intend to." Mr. Hartsook replied that while a large incentive of the permit is the flexibility it offers to the MS4, he is concerned that offering too many options and too much flexibility could result in the permit effectively reverting to individual permits. He added that he does not want to lose the element of collaborative effort from the permit. Mr. Grisa responded that if the WDNR allows the MS4 to elect whether to be covered under the watershed-based permit, the municipalities will have this choice anyway. He added that the language should be written to allow for the widest possible participation by MS4s based upon the incentives in the permit being strong enough to encourage group actions. Mr. Fratrack suggested that it might be helpful for the municipalities to give this issue further consideration. Mr. Sokol commented that the language is satisfactory, noting that this section of the permit presents a broad concept that is clarified in later sections.

Mr. Thur suggested adding a provision to this section that if a community does not meet a condition of Part II of the permit through collective action, it must meet it individually. Mr. Hartsook suggested adding the provision, "unless a co-permittee elects to satisfy a condition under Part II of this permit individually." Mr. Grisa noted that the watershed project is not an element of Part II of the permit. He continued that the conditions covered in this part of the permit are the joint information and education programming, the annual meeting of the permittees, and development of the illicit discharge detection and elimination procedure. He suggested retaining the current language in Part I-Section K of the permit for the time being and reconsidering it, if discussions with municipalities indicate that it may be a stumbling block. The consensus of the Group was to retain the existing language.

In reference to the first paragraph of Part II, Mr. Grisa suggested that since the permit allows municipalities to take actions within their jurisdictions, the phrase "that were developed under previous permit terms" should be removed. Mr. Hartsook concurred. Mr. Grzezinski suggested changing the word "implement" in this paragraph to "develop and implement."

[Secretary's Note: The second sentence of the first paragraph of Part II of the permit was revised to read:

“This does not prohibit the Menomonee River Permittees from continuing to **develop and** implement unique programs within their respective jurisdictional municipal boundaries.”]

Mr. Grisa asked that the word “proper” be removed from Part II-Section A-5 of the permit. He also asked that the language be made consistent between this section and Part III-Sections D-3 and D-5 of the permit. Mr. Hahn noted that the wording of Part III-Section D-5 had been developed by the Group in a previous meeting. Mr. Hartsook suggested repeating that language in Part III-Section A-5.

[Secretary's Note: Part II-Section A-5 of the permit was revised to read:

“5. Management of leaves and grass clippings, **which may include beneficial reuse and/or collection.**”

Part III-Section D-3 was revised to read:

“3. **Management and** disposal of street sweeping and catch basin waste.”]

In reference to Part III-Section A-5 of the permit, Ms. Nenn commented that *Escherichia coli* may be a better indicator to use rather than fecal coliform bacteria.

[Secretary's Note: The last sentence of the first paragraph of Part III-Section A-5 of the permit was deleted. The reference in the second sentence of the first paragraph of Part III-Section A-5 of the permit was changed Part III-Sections A-2 a and b. The following note was added at the end of Part III-Section A-5 of the permit:

“Note: The purpose of Part II-Section E is to identify sanitary cross connections or inflow and infiltration from aging sanitary sewer systems into the MS4. While fecal contamination from nonhuman sources in storm water runoff does pose a threat to water quality and human health, it is not considered an illicit discharge. However, the municipality may want to screen for fecal coliform to address concerns with contamination from nonhuman sources.”]

In reference to Part III-Section A-7 of the permit, Ms. Nenn stated that removing a remediated outfall from further screening was alright as long as the remediation was confirmed by rescreening.

[Secretary's Note: Part III-Section A-5 of the permit was revised to read:

“7. Once the source of an illicit discharge is detected, remediated, **and confirmed by screening**, no further field screening at the affected outfall(s) will be required during the permit term.”]

In reference to the compliance schedule, Mr. Grisa asked whether public involvement and participation should be linked to public education and outreach. Mr. Hartsook replied that these items are addressed separately in the *Wisconsin Administrative Code*. He noted that a deadline for public involvement and participation could be added to the compliance schedule. Mr. Grisa noted that he does not oppose the lack of a date in the compliance schedule. He suggested adding a sentence to Part II-Section A of the permit indicating that the task can be incorporated into the public education and outreach requirement under Part II-Section B. Mr. Boehm noted that the code includes a feedback component for public involvement and participation and that because of this it should remain separate in

the permit. Mr. Hartsook suggested removing the reference to implementing a program and the last sentence of Part II-Section A.

[Secretary's Note: Part II-Section A of the permit was revised to read:

“A. PUBLIC INVOLVEMENT AND PARTICIPATION: The Menomonee River Permittees shall notify the public of activities required by this permit and to encourage input and participation from the public requiring these activities.”]

Ms. Nenn asked why the compliance schedule table had been removed from the permit. Mr. Hartsook answered that the schedule is simple enough that a table is not necessary. He added that a table showing compliance deadlines could be included in the fact sheet. Mr. Grzezinski stated that this would be useful.

REVIEW OF LISTS OF PERMIT IMPROVEMENTS RESULTING FROM THE WATERSHED-BASED PERMIT FRAMEWORK PROCESS, INCENTIVES FOR MS4S TO PARTICIPATE IN A WATERSHED-BASED PERMIT, AND DISCUSSION OF OUTREACH TO MUNICIPAL LEADERSHIP

At Mr. Grisa's request, Mr. Hahn distributed a preliminary draft of a list of permit improvements resulting from the watershed-based permit framework process and incentives for MS4s to participate in a watershed-based permit.

[Secretary's Note: A copy of these lists is attached herein as Exhibit C.]

Mr. Hahn explained that this list is a first draft and that he is looking for input from the Group. He noted that this list could be used as a basis from which to create materials to educate municipal leadership.

Ms. Gayan stated that on May 14, 2012 she, Mr. Hartsook, and Mr. Fratrack met with SEWRPC staff, USEPA staff, and WDNR administration staff to discuss the watershed-based permit. She added that there is good support for the watershed-based permit format from WDNR administrative staff. She noted that the WDNR Southeast District staff is writing and submitting briefs to WDNR administration for Item 7 under the list of incentives.

Mr. Hahn noted that item 9 under the list of incentives was added at the suggestion of WDNR administrative staff.

Mr. Grzezinski noted that collaborative projects may have higher priority for third-party funding and suggested adding this to the list of incentives. He also noted that participating in a watershed-based permit may provide experience in collaborating on the implementation of new types of pollution controls that could be beneficial in meeting future TMDL requirements. Mr. Martinka noted that this second suggestion was an enhancement of the Item 2 in the list. Mr. Grisa suggested placing these incentives in a table, with columns indicating whether each would result in lower costs to MS4s, consistency across the Region, improved effectiveness for water quality improvement, and whether such an incentive would be available under an individual or group permit.

[Secretary's Note: A table with the incentives indicating which would result in reduced cost, improved efficiencies and other factors is attached herein as Exhibit D.]

Ms. Anderson asked for clarification regarding the incentive that MS4s could address reductions in pollutant loads at a watershed level without executing water quality trades between MS4s and without accounting for trading ratios. Mr. Hahn said that under guidelines for water quality trading, because of uncertainties regarding pollutant transport from the site of the practice to a downstream location of an entity purchasing credits, it was generally considered necessary to achieve a greater reduction in the pollutant of interest than would be credited to the purchaser. Mr. Hahn asked Ms. Gayan for confirmation that only MS4 to MS4 trades would qualify under this

incentive, while MS4 to agricultural trades would still require application of trading ratios. She said that was the case.

Mr. Grisa asked whether any municipalities still have concerns about the watershed-based permit. Mr. Hahn added that he would like to get a sense of which communities will participate and would like to hear any concerns. Mr. Thur replied that this is a hard question to answer. He explained that both the City Engineer and the Commissioner of Public Works are aware of the process. He noted that they may want more information at a later time. He indicated that he will discuss the permit with them.

Ms. DeBruine indicated that she is comfortable with the watershed-based permit. She indicated that the communities she represents will want to know how and why the watershed-based permit is different from the current group permit. She added that it will be helpful if they are given background on this. Mr. Hahn asked who would be the best representative to talk to the communities—staff, consultants, or members of the Group. Ms. DeBruine replied that Mr. Hartsook might be the best one to provide this information.

Mr. Martinka noted that he would work with staff to reformat the lists of improvements and incentives and to come up with ways to present this to municipal officials.

TOPICS AND DATE FOR NEXT MEETING

Mr. Hahn stated that the next meeting of the Group should resolve the remaining issues. He noted that staff will provide a revised version of the permit prior to that meeting. He indicated that the municipalities will be asked whether they will participate in the watershed-based permit at the next meeting. He added that he would like any municipalities that indicate that they may not participate to give their reasons why. He explained that this would give staff an opportunity to work with them to address their reservations.

The Group set the next meeting for 9:00 a.m. to noon on June 12, 2012 at the Brookfield City Hall.

Mr. Grisa thanked the attendees for their participation.

COMMENTS ON THE DRAFT WATERSHED-BASED PERMIT PROVIDED BY MR. THOMAS GRISA, CITY OF BROOKFIELD DIRECTOR OF PUBLIC WORKS, FOLLOWING THE MAY 15, 2012 GROUP MEETING

Subsequent to the May 15, 2012 meeting of the Group, Mr. Grisa provide a comment to Mr. Hahn and Mr. Hartsook via electronic mail (see Exhibit E) suggesting removing the necessity of receiving approval from the WDNR for using certain alternative parameters in field screening of stormwater outfalls as part of the illicit discharge detection and elimination procedure. After discussion through e-mail it was agreed to revise the language in the permit.

[Secretary's Note: Part III-Section A-3-b of the permit was revised to read:

“b. Field Analysis – If flow is observed, field analysis shall be conducted to determine the presence of non-storm water discharges or illegal dumping. The field analysis shall include **sampling of indicator parameters derived by the Menomonee River Permittees to have the greatest potential for detecting the presence of illicit discharges. When selecting indicator parameters, the Menomonee River Watershed Permittees shall consider land use characteristics, history of known spills or illicit connections, and locations and characteristics of WPDES permitted discharges. Parameters may include, but are not limited to,**

pH, total copper, total phenol, detergents, ammonia, fluoride, total chlorine, potassium, and bacteria.

Note: The Department has written a guidance document to assist municipalities with development of field screening programs to determine the presence of illicit discharges from MS4 outfalls. The guidance can be found on the Departments website at:

[http://dnr.wi.gov/topic/stormwater/documents/MS4 IDDE Guidance 3-2012.pdf](http://dnr.wi.gov/topic/stormwater/documents/MS4_IDDE_Guidance_3-2012.pdf)

Part III-Sections A-3-b-i through A-3-b-iii remain unchanged in the permit.”]

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 12:10 p.m.

00204096.DOC
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06/07/12

Exhibit A

#00204113.DOC
300-1099
MGH/JEB/pk
05/15/12

Table 2. TEMPLATE FOR MS4 WASTE LOAD ALLOCATIONS BY MUNICIPALITY

Municipality	Reach	Water Body Name	Water Body Extents	Reach Description	Annual TSS Waste Load Allocation (tons)
MCD Name	Reach No.	Local Name	Stream Mile to Mile	Landmark to Landmark	tons
MCD Name	Reach No.	Local Name	Stream Mile to Mile	Landmark to Landmark	tons
MCD Name	Total				tons

Exhibit B

#00204410.DOC
300-1099
MGH/JEB/pk
05/23/12

Table 1. Menomonee River Watershed – Waterway Impairments

Waterway Name	Segment Length (miles)	County(ies)	Pollutant of Concern	Impairment ⁺	Listing Date
Goldendale Creek	3.5	Washington	Fecal Coliform	+	Proposed 2010
Honey Creek	8.96	Milwaukee	Fecal Coliform	+	Proposed 2010
	8.96	Milwaukee	Total Phosphorus	●	Proposed 2012
Little Menomonee Creek	3.9	Ozaukee	Fecal Coliform	+	Proposed 2010
Little Menomonee River	9	Milwaukee, Ozaukee	Total Phosphorus	●	Proposed 2012
	9	Milwaukee, Ozaukee	Creosote	△	1998
	9	Milwaukee, Ozaukee	Fecal Coliform	+	Proposed 2010
Menomonee River	2.67	Milwaukee	Total Phosphorus	▲	1998
	2.67	Milwaukee	PCBs	■	1998
	2.67	Milwaukee	Fecal Coliform	+	Proposed 2010
	2.67	Milwaukee	E. coli	+	1998
	2.67	Milwaukee	Unspecified Metals	△	1998
	3.61	Milwaukee	Fecal Coliform	+	Proposed 2010
Milwaukee River	2.9	Milwaukee	Total Phosphorus	▲	1998
	2.9	Milwaukee	E. coli	+	1998
	2.9	Milwaukee	Unspecified Metals	■	1998
	2.9	Milwaukee	PCBs	■	1998
Underwood Creek	2.84	Milwaukee	Fecal Coliform	+	Proposed 2010
	2.84	Milwaukee	Total Phosphorus	●	Proposed 2012
	5.7	Milwaukee, Waukesha	Fecal Coliform	+	Proposed 2010
	5.7	Milwaukee, Waukesha	Unknown Pollutant*	●	Proposed 2012
South Branch of Underwood Creek	1	Milwaukee, Waukesha	Total Phosphorus	●	Proposed 2012
West Branch Menomonee River	2.45	Washington	Fecal Coliform	+	Proposed 2010
Butler Ditch	2.9	Waukesha	Fecal Coliform	+	Proposed 2010
Lilly Creek	4.7	Waukesha	Fecal Coliform	+	Proposed 2010
Nor-X-Way Channel	4.9	Ozaukee, Washington, Waukesha	Fecal Coliform	+	Proposed 2010
Willow Creek	2.8	Washington, Waukesha	Fecal Coliform	+	Proposed 2010

⁺ Key: Recreational Restrictions – Pathogens (+); Degraded Biological Community (●); Low DO (▲); Contaminated Fish Tissue or Sediment (■); Chronic Aquatic Toxicity (△)

*Federal regulations, specifically 40 CFR section 130.7(b)(1), provide that water bodies included on State section 303(d) lists are those water bodies for which pollution controls required by local, State, or Federal authority are not stringent enough to meet water quality standards applicable to such waters. In addition, 40 CFR section 130.7(b)(4) requires States to identify, in each section 303(d) list submitted to EPA, the "pollutants causing or expected to cause violations of the applicable water quality standards." These regulatory provisions apply even if the cause of the impairment or source of the pollutant cannot be identified at the time of listing. Therefore, water bodies that are biologically impaired by an unknown cause or source are included on the Wisconsin's section 303(d) lists. WDNR anticipates that the unknown pollutant will be identified when a Total Maximum Daily Load (TMDL) study is initiated. Supplemental data collected during a TMDL study should assist in identifying the impairing pollutant so that the TMDL can be established.

Exhibit C

Menomonee River Watershed-Based Permit Framework May 15, 2012 Group Meeting

MS4 Permit Improvements Resulting from the Framework Process

1. Clarification of public education and outreach requirements
2. Option to submit annual report on a two-year cycle
3. Analysis of affordability for provision of 20 percent TSS control
4. Illicit discharge detection and elimination (IDDE) program designed to focus efforts on eliminating sources of wastewater contamination to surface waters, by targeting end-of-pipe monitoring on locations where contamination is most likely

Incentives for MS4s to Participate in a Watershed-Based Permit

1. Ability to undertake collaborative watershed projects that could reduce costs to MS4s and could meet multiple individual and group permit conditions
2. Flexibility in addressing total maximum daily load wasteload allocations in multiple-municipality stream reaches
3. Development of a joint analysis procedure for prioritizing and targeting outfalls for IDDE monitoring
4. Joint report on public education and outreach
5. Can address reductions in pollutant loads at a watershed level without executing water quality trades between MS4s and without accounting for trading ratios (available for TSS under a group permit or within a 10-digit hydrologic unit code, but not for phosphorus and bacteria), rather than addressing reductions as an individual municipality needing a) to provide its own treatment and/or b) to execute water quality trades
6. Options for cooperative public education and outreach (also available under a group permit)
7. **Possibility** of participant(s) in a watershed-based permit receiving substantive additional points on State Urban Nonpoint Source and Storm Water Management grants
8. **Possibility** of stable (rather than increasing) permit fees
9. Reduction in transaction costs

Exhibit D

214
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05/24/12, 05/29/12

Table [Number]

INCENTIVES FOR MS4S TO PARTICIPATE IN A WATERSHED-BASED MS4 PERMIT

Watershed-based Permit Incentive	Reduced Costs	Promotes Consistency Across Region	Improves Effectiveness for Water Quality Improvement	Available under Group Permit	Available under Individual Permit
Ability to undertake collaborative watershed projects that could meet multiple individual and group permit conditions	Y		Y	N	N
Flexibility in addressing TMDL WLAs in multiple-municipality stream reaches, including developing experience in collaborating on the implementation of new types of pollution controls	Y		Y	Y	N
Development of a joint analysis procedure for prioritizing and targeting outfalls for IDDE monitoring	Y		Y	N	N
Joint report on public education and outreach	Y		Y	N	N
Options for cooperative public education and outreach	Y		Y	Y	Y
Can address reductions in pollutant loads at watershed level without executing water quality trades					
TSS	Y		Y	Y	N
Phosphorus	Y		Y	N	N
Bacteria	Y		Y	N	N
Possibility of receiving substantive additional points on State Urban Nonpoint Source and Storm Water Management Grants	Y		Y	N	N
Grant applications for collaborative projects undertaken by members of a watershed-based permit may be assigned higher priorities by public and private grant institutions	Y		Y	N	N
Reduction in transaction costs	Y		Y	N	N

Source: SEWRPC.

Exhibit E

Boxhorn, Joseph E.

From: Hahn, Michael G.
Sent: Monday, May 21, 2012 9:25 AM
To: Boxhorn, Joseph E.
Subject: FW: WSB permit question

-----Original Message-----

From: Hartsook, Bryan D - DNR [<mailto:Bryan.Hartsook@wisconsin.gov>]
Sent: Friday, May 18, 2012 7:45 AM
To: Grisa@ci.brookfield.wi.us
Cc: Hahn, Michael G.; Gayan, Sharon L - DNR
Subject: RE: WSB permit question

Bacteroides testing is mentioned in the IDDE guidance. I'd like to try to limit the amount of permissive language in the condition and leave it for the notes or guidance.

-Bryan

-----Original Message-----

From: Grisa@ci.brookfield.wi.us [<mailto:Grisa@ci.brookfield.wi.us>]
Sent: Thursday, May 17, 2012 3:32 PM
To: Hartsook, Bryan D - DNR
Cc: Hahn, Michael G.; Gayan, Sharon L - DNR
Subject: RE: WSB permit question

That's fine with me, provided the potassium and bacteria parameters do not become requirements. Should we also reference that human bacteroides testing is an option as well once a bacteria source is detected? That would help refine the search and could be included in paragraph 5 on page 17, in a note similar to the note in paragraph 3. b.

Thomas M. Grisa, P.E., F.ASCE
Director of Public Works
City of Brookfield
2000 N. Calhoun Road
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Ph. (262) 796-6644
Fax (262) 782-1323

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From: "Hartsook, Bryan D - DNR" <Bryan.Hartsook@wisconsin.gov>
To: "Grisa@ci.brookfield.wi.us" <Grisa@ci.brookfield.wi.us>
Cc: "Hahn, Michael G." <MHAHN@SEWRPC.org>, "Gayan, Sharon L - DNR" <Sharon.Gayan@wisconsin.gov>
Date: 05/17/2012 03:04 PM
Subject: RE: WSB permit question

Sounds good. What about the listing at the end of the condition?

"...The field analysis shall include sampling of indicator parameters derived by the Menomonee River Watershed Permittees to have the greatest potential for detecting the presence of illicit discharges. When selecting indicator parameters, the Menomonee River Watershed Permittees shall consider land use characteristics, history of known spills or illicit connections, and locations and characteristics of WPDES permitted discharges. Parameters may include, but are not limited to, pH, total copper, total phenol, detergents, ammonia, fluoride, total chlorine, potassium, and bacteria."

-----Original Message-----

From: Grisa@ci.brookfield.wi.us [<mailto:Grisa@ci.brookfield.wi.us>]
Sent: Thursday, May 17, 2012 2:48 PM
To: Hartsook, Bryan D - DNR
Cc: Hahn, Michael G.; Gayan, Sharon L - DNR
Subject: RE: WSB permit question

Thanks Bryan. One thing however, I would not want to see the recommended testing parameters or alternative parameters be removed from the permit. It's nice to have that in the permit (saves looking up stuff) and serves as an indicator to some that bacteria might be worth checking. Otherwise it could get missed in the midst of a larger document. So, given your language, could we still include the above as listed currently in addition to your language?

Thomas M. Grisa, P.E., F.ASCE
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From: "Hartsook, Bryan D - DNR" <Bryan.Hartsook@wisconsin.gov>

To: "Hahn, Michael G." <MHAWN@SEWRPC.org>,
"Grisa@ci.brookfield.wi.us" <Grisa@ci.brookfield.wi.us>

Cc: "Gayan, Sharon L - DNR" <Sharon.Gayan@wisconsin.gov>

Date: 05/17/2012 02:02 PM

Subject: RE: WSB permit question

Tom,

I agree that additional approval seems unnecessary given that even including it as an option in the permit seems to implicitly grant DNR's review and approval of using alternative parameters. The question is whether or not the permit itself can serve as "concurrence" obtained by the permittee to perform alternative sampling as allowed through NR 216.07 (3)i.3. I'd say yes, and suggest the language in the permit to be revised as follows:

Part III.A.2.

If flow is observed, field analysis shall be conducted to determine the presence of illicit non-storm water discharges or illegal dumping. The field analysis shall include sampling of indicator parameters derived by the Menomonee River Watershed Permittees to have the greatest potential for detecting the presence of illicit discharges. When selecting indicator parameters, the Menomonee River Watershed Permittees shall consider land use characteristics, history of known spills or illicit connections, and locations and characteristics of WPDES permitted discharges.

Note: The Department has written a guidance document to assist municipalities with development of field screening programs to determine the presence of illicit discharges from MS4 outfalls. The guidance can be found on the Department's website at http://dnr.wi.gov/topic/stormwater/documents/MS4_IDDE_Guidance_3-2012.pdf

-- End revision --

This may get bumped in legal review, but I would prefer for this revision to stick. Sharon and I will see if we can get DNR Administration to provide their opinion before including it as a secretary's note in the minutes.

Thanks for the suggestion.

Bryan

-----Original Message-----

From: Hahn, Michael G. [<mailto:MHAHN@SEWRPC.org>]

Sent: Thursday, May 17, 2012 11:33 AM

To: 'Grisa@ci.brookfield.wi.us'

Cc: Hartsook, Bryan D - DNR; Gayan, Sharon L - DNR

Subject: RE: WSB permit question

OK with me, but the final call is Bryan's and Sharon's.

Mike

Michael G. Hahn, P.E., P.H.

Chief Environmental Engineer

Southeastern Wisconsin Regional Planning Commission P.O. Box 1607

W239 N1812 Rockwood Drive

Waukesha, WI 53187-1607

Phone: (262) 547-6722 Ext. 243

Fax: (262) 547-1103

E-mail: mhahn@sewrpc.org

Web site: www.sewrpc.org

-----Original Message-----

From: Grisa@ci.brookfield.wi.us [<mailto:Grisa@ci.brookfield.wi.us>]

Sent: Thursday, May 17, 2012 9:36 AM

To: Hahn, Michael G.

Cc: Bryan.Hartsook@wisconsin.gov

Subject: WSB permit question

Mike and Bryan,

On page 16 of the revised permit, under Section III. A. 3. a. the DNR allows for us to use bacteria or potassium as an alternative marker for IDDE, but this requires DNR approval. Why not just allow it as an option in the permit and not make us seek special permission? That's another hurdle to cross which in my opinion is unnecessary given the acceptance of these other parameters as useful options. I am not asking the DNR require these, but don't make us seek a special approval either. What say ye?

Thomas M. Grisa, P.E., F.ASCE
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Appendix H

**SUMMARY NOTES
JUNE 12, 2012 MEETING**

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SUMMARY NOTES OF THE JUNE 12, 2012 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The June 12, 2012, meeting of the Menomonee River Watershed-Based Permit (WBP) Framework Group was convened at the Brookfield City Hall at 9:00 a.m. The meeting was called to order by Tom Grisa, City of Brookfield Director of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Solomon Bekele	Civil Engineer, City of Milwaukee
Brionne Bischke	Village Engineer, Village of Germantown
Charles Boehm	Senior Engineer, AECOM (representing the City of Greenfield)
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Joseph Burtch	Assistant City Engineer, City of West Allis
Cindi V. DeBruine	Senior Water Resources Engineer, R.A. Smith National, Inc. (representing the Villages of Butler and West Milwaukee)
Mike Flaherty	Director, Village of Elm Grove Department of Public Works
Sharon L. Gayan	Runoff Management Supervisor, Wisconsin Department of Natural Resources
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Dennis Grzezinski	Senior Counsel, Midwest Environmental Advocates
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Rob Hutter	Engineer, City of West Allis
Brock Janikowsik	Legal Intern, Midwest Environmental Advocates
Stevan M. Keith	Environmental Engineer, Milwaukee County Division of Environmental Services
Kevin Kirsch	Water Resources Engineer, Wisconsin Department of Natural Resources
Laura L. Kletti	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Lauren Justus	Engineering Assistant, Village of Germantown
Mike Maki	Stormwater Engineer, City of Wauwatosa
Jeff Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water)
Ezra Meyer	Water Specialist, Clean Wisconsin
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Cheryl Nenn	Riverkeeper, Milwaukee Riverkeeper
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Robert Newport	Water Division, Region 5, U.S. Environmental Protection Agency
Karen Sands	Manager of Sustainability, Milwaukee Metropolitan Sewerage District
Tim Schaefer	Legal Intern, Midwest Environmental Advocates
Kevin Shafer	Executive Director, Milwaukee Metropolitan Sewerage District
Richard Sokol	Director of Neighborhood Services, City of Greenfield
Timothy J. Thur	Chief Sewer Design Manager, City of Milwaukee Department of Public Works

Mr. Grisa welcomed the attendees to the meeting. He stated that he appreciates everyone's continued participation in the process. He asked everyone to introduce themselves.

REVIEW OF SUMMARY NOTES OF THE MAY 15, 2012 MEETING OF THE WATERSHED-BASED PERMIT FRAMEWORK GROUP

At Mr. Grisa's request, Mr. Hahn reviewed the Summary Notes of the May 15, 2012, meeting of the Group.

Mr. Hahn stated that the Group will need one more meeting to discuss a completed draft permit and to discuss continuing participation and endorsement by the MS4s. He indicated that his review of the Summary Notes will focus on highlights, many of which relate to agenda items for today's meeting. He noted that there have been ongoing discussions regarding the draft permit since the May 15, 2012, meeting. He stated that these include a set of comments on the draft permit submitted by Midwest Environmental Advocates (MEA), Milwaukee Riverkeeper, and Clean Wisconsin. He indicated that he will point out items in the Summary Notes that relate to these discussions.

[Secretary's Note: The comments submitted by MEA, Milwaukee Riverkeeper, and Clean Wisconsin are attached herein as Exhibit A.]

Mr. Hahn stated that the last Secretary's Note on page 2 documents a suggested change to Part III-Section F of the permit related to new or increased discharges into impaired waters. He noted that the Secretary's Note on page 3 indicates that the suggested language was shared with Jane Landretti, stormwater program attorney with the Wisconsin Department of Natural Resources (WDNR), and that she and Mr. Grzezinski discussed that language. Mr. Hahn indicated that their conclusion was that the original language was consistent with requirement of the Federal Clean Water Act (CWA). He noted that in their view, the proposed revision is not. He stated that this means that the change indicated in the last Secretary's Note on page 2 will not be made. Mr. Hahn noted that this issue was also the subject of the seventh comment on the list submitted by MEA *et al.*

[Secretary's Note: Based upon the considerations described in the last paragraph, the change to the first paragraph of Part III-Section F of the draft permit that was described in the last Secretary's Note on page 2 of the Summary Notes from the May 15, 2012 meeting of the Group was not made.]

Mr. Hahn stated that the third Secretary's Note on page 9 addresses a comment Ms. Nenn made at the May 15, 2012, meeting of the Group. He indicated that the reference to fecal coliform bacteria being an appropriate indicator in some sewersheds was removed from the draft permit. He added that a note was added to the draft permit to still offer the option of screening using fecal coliform bacteria to address concerns with contamination from nonhuman sources.

Mr. Hahn stated that the last Secretary's Note on page 9 addresses a comment Ms. Nenn made at the May 15, 2012 meeting of the Group that is also the fifth comment on the list submitted by MEA *et al.* He indicates that the added text should address the comment.

Mr. Hahn called the Group's attention to the last Secretary's Note on page 10. He indicated that Exhibit D lists the incentives for MS4s to participate in a watershed-based permit. He noted that the columns indicate the nature of each incentive and whether it is present under other types of municipal MS4 permits. He stated that there were difficulties with classifying the incentive on the basis of whether they promote consistency across the Region. He commented that we may not be looking for this consistency and suggested striking this column from the table. Mr. Grisa concurred with striking this column.

[Secretary's Note: The third column was removed from the table in Exhibit D of the May 15, 2012 Summary Notes. A revised version of the table is attached herein as Exhibit B.]

Mr. Hahn stated that following the May 15, 2012, meeting, Mr. Grisa provided a comment to Mr. Hahn and Mr. Hartsook suggesting removing the requirement that MS4s receive approval from the WDNR for using certain alternative parameters in field screening of stormwater outfalls as a part of the illicit discharge detection and elimination procedure. He noted that the second comment on the list submitted by MEA *et al.* also suggested eliminating the need to seek approval for the use of some parameters for screening. He indicated that the Secretary's Note that begins on page 11 and continues onto page 12 documents a change to be made to the draft permit as a result of this comment. Mr. Hahn indicated that, based on information provided by WDNR following distribution of the Summary Notes for the May 15 meeting, this change cannot be made to the draft permit because Chapter NR 216 of the *Wisconsin Administrative Code* specifies the parameters to be used for screening and requires approval by the Department of any use of alternative screening parameters. Mr. Hartsook noted that he asked WDNR policy staff whether the use of alternative parameters could be written into the permit. He indicated that the reply he received was that it could not be and that policy staff wants MS4s to seek approval prior to using alternative screening parameters. Mr. Hartsook noted that the use of alternative screening parameters could be easily addressed during implementation of the watershed-based permit.

[Secretary's Note: Based upon the considerations described in the last paragraph, the change to Part III-Section A-3 of the draft permit that was described in the Secretary's Note that begins on page 11 and continues on page 12 of the Summary Notes from the May 15, 2012, meeting of the Group was not made. The note regarding the IDDE screening guidance document issued by the WDNR in the last paragraph of the Secretary's Note was added to draft permit.]

Mr. Hahn noted that the Secretary's Note that begins on page 11 and continues onto page 12 makes reference to the guidance document that the WDNR has prepared to assist MS4s with the development of their field screening programs. He indicated that a copy of this document was included in the materials provided for this meeting.

[Secretary's Note: A copy of the guidance document is attached herein as Exhibit C.]

Mr. Hahn asked whether there were any additional comments or corrections to the Summary Notes from the May 15, 2012 meeting of the Group. There were none. The Summary Notes from the May 15, 2012, meeting of the Group were approved by unanimous consent.

SUMMARY OF PARTICIPANT COMMENTS FROM MAY 21, 2012, SWEET WATER POLICY COMMITTEE AND MAY 29, 2012, SWEET WATER SCIENCE COMMITTEE MEETINGS AND FROM MIDWEST ENVIRONMENTAL ADVOCATES, MILWAUKEE RIVERKEEPER, AND CLEAN WISCONSIN

Mr. Hahn stated that he made presentations regarding the watershed-based permit framework process to the Sweet Water Policy Committee on May 21, 2012, and the Sweet Water Science Committee on May 29, 2012. He indicated that members of these committees made comments regarding the watershed-based permit at these meetings. He added that on June 8, 2012, he received an electronic mail communication from Mr. Grzezinski in which Mr. Grzezinski submitted comments regarding the draft permit on behalf of MEA, Milwaukee Riverkeeper, and Clean Wisconsin. He noted that these comments were similar to the comments made at the Sweet Water committee meetings.

[Secretary's Note: As previously noted, the comments submitted on behalf of MEA, Milwaukee Riverkeeper, and Clean Wisconsin are attached herein as Exhibit A.]

Mr. Hahn asked Mr. Grzezinski to introduce and summarize the comments. Mr. Grzezinski stated that the comments were offered in the hope of resolving a number of questions regarding the draft permit.

Mr. Grzezinski stated that the first comment that he submitted was that the permit should require the communities' illicit discharge detection and elimination (IDDE) efforts consider and make use of information from third parties that provides evidence of human contamination in discharges from outfalls or portions of their storm sewer systems. Mr. Grisa responded that he had discussed this issue with Cheryl Nenn from Milwaukee Riverkeeper. He noted that the way the current permits are written, the MS4s are required to screen only major outfalls. He indicated that the proposed permit requires consideration of a broader group of outfalls. He stated that this should provide the MS4s with a strong incentive to consider such information, since the data obtained by Riverkeeper was not restricted to major outfalls.

Mr. Newport suggested adding a note to the permit or to the fact sheet stating that one of the sources of information for prioritizing and selecting outfalls for follow up is data from external sources such as the Milwaukee Metropolitan Sewerage District (MMSD) or Milwaukee Riverkeeper. Mr. Hartsook responded that such a note could be added to Part II-Section C of the draft permit and that this could be expanded upon in the fact sheet. He stated that the language in both the current group permit and the proposed watershed-based permit allow the use of such information. Mr. Grzezinski indicated that a note that includes a reference with examples is acceptable.

Mr. Bischke expressed concerns about placing a note in the permit. He explained that he is concerned about future WDNR personnel interpreting a note in the permit as being a requirement. He stated that he wants the right to screen data submitted by third parties. Mr. Hartsook responded that a note is not legally binding. Mr. Newport suggested that the note include a reference to screening of data. He added that the actual draft permit will be available for the next meeting of the Group. Mr. Hartsook stated that the note will mention consideration of such third party data. He indicated that he will show the proposed note to Mr. Grzezinski.

[Secretary's Note: The following note was added at the end of Part II-Section E of the draft permit:

"Note: In partnership with the UW-Milwaukee Great Lakes Water Institute, Milwaukee Riverkeeper has monitored bacterial levels in storm sewer discharges to waterways in the Menomonee River watershed. This research has led to identifying sewersheds with a high likelihood of inflow and infiltration from failing sanitary sewer infrastructure and private sanitary laterals to municipal storm sewer systems as represented by the human strains of *Bacteroides* found in the monitored effluent. This kind of information, along with ongoing monitoring and research conducted by the Milwaukee Metropolitan Sewerage District, can assist the municipalities in refining the analysis approach and prioritizing areas for implementation. More information can be found at: <http://www.milwaukeeiverkeeper.org/content/bacteria-testing>."] "

Mr. Grzezinski noted that the second comment that he submitted, having the permit authorize the use of bacteria as a screening parameter without seeking approval from the WDNR, was addressed in the review of the Summary Notes of the May 15, 2012, meeting of the Group. He added that, based on the preceding discussion it is clear that this WDNR approval would be required and that the issue will have to be addressed after the permit takes effect.

Mr. Hahn suggested that it might be better to discuss the fourth comment prior to discussing the third comment. Mr. Grzezinski replied that this was acceptable.

Mr. Grzezinski stated that the fourth comment that he submitted asks for the municipalities to commit to having stakeholder input, including nongovernmental organizations, Sweet Water committees, and local experts, into the development of the group IDDE procedure. Mr. Bischke commented that the municipalities are the ones who hold the permit. He said that the nongovernmental organizations could be a great resource, and he suggested that a note could be added to the draft permit that encourages participation. Mr. Shafer suggested that a note would not need to specify who is encouraged to participate. He added that the MS4 meetings on developing the analysis procedure could be open to the public and interested parties could attend and provide input. Mr. Hahn noted that

under this suggestion the analysis procedure would not be taken to the Sweet Water committees, but members of the committees could attend the permit group's meetings. Mr. Grisa commented that while he feels that the Permittee's should encourage input into the process, he is hesitant to write a requirement into the process. He noted that the development of the analysis procedure is already subject to oversight by the WDNR.

Mr. Boxhorn commented that the third and fourth comments might be working at cross purposes. He noted that the fourth comment implies a more involved process for developing the analysis procedure while the third comment suggests taking less time to develop it. Mr. Grzezinski replied that the fourth comment does not suggest adding a requirement to the permit. He added that it was asking for a commitment from the MS4s to welcome input. He noted that the third comment is not a suggestion to shorten the time. Instead, he continued, it asks the MS4s to think about whether the amount of time that the draft permit allows is more than enough. Mr. Grisa commented that words such as "require" and "commit" are strong words when compared to "encourage" and "suggest," especially in the context of a permit. He said that the municipalities will need the time to develop the analysis procedure. Mr. Grzezinski indicated that this was fine.

[Secretary's Note: The following note was added at the end of Part II-Section F of the draft permit:

"Note: The Menomonee River Watershed Permittees are encouraged to solicit comments and participation from nongovernmental organizations and other interested parties during the development and coordination of public education and outreach activities, illicit discharge detection and elimination analysis procedures, and preliminary planning of watershed projects."]

Mr. Grzezinski stated that the other part of the third comment that he submitted was that the draft permit requires the development of procedures for IDDE by both the group and the individual MS4s, but includes no time frame for the development of the individual MS4 procedures. He indicated that the permit should include explicit language on testing of outfalls over the interim period until the individual MS4s' procedures are in place. Mr. Hartsook responded that the language in the draft permit regarding this is confusing. He explained that the reference to developing a program in Part III-Section A of the permit is a carryover from the original permit, which required the initial development of these programs. He indicated that the reference to developing the program should be removed.

[Secretary's Note: The first sentence of the first paragraph of Part III-Section A of the draft permit was revised to read (text in bold is included here to denote language changed or added to the text. Text will not be bold in the draft permit):

"A. ILLICIT DISCHARGE DETECTION AND ELIMINATION: Each municipality shall **continue to** implement a program to detect and remove illicit connections and discharges to the municipal separate storm sewer system."]

Mr. Hartsook explained that as of the first day that the MS4s are operating under the draft permit, they are required to screen major outfalls as indicated in Part III-Sections A-2-a and A-2-b of the draft permit. Mr. Grisa asked whether the MS4s would be continuing to implement the IDDE programs from the previous permit. Mr. Hahn responded that the conditions set forth in Sections A-2-a and A-2-b are different from those in the previous permit. Mr. Hartsook noted that the screening mandated under these two sections of the permit does not require any planning or the development of any new document. He indicated that he would draft revised language for Part III-Section A that clarifies that screening under Sections A-2-a and A-2-b is required as of the initial date of coverage under the permit and that screening under Section A-2-c will also be required within six months of the WDNR's approval of the analysis procedure for identifying outfalls developed under Part II-Section E of the permit.

[Secretary's Note: Part III-Section A-2-a of the draft permit was revised to read:

“a. **Effective immediately at the start of permit coverage** – All major outfalls which showed no indication of illicit discharges during the previous permit term. In any single year at least one fifth of such major outfalls shall be screened on a rolling basis such that at the end of the permit term all major outfalls which showed no indication of illicit discharges during the previous term have been screened.”

Part III-Section A-2-b of the draft permit was revised to read:

“b. **Effective immediately at the start of permit coverage** – All major outfalls which showed evidence of illicit discharges during the last two samplings under the preceding permit term shall be evaluated annually, at a minimum one time per year.”

Part III-Section A-2-c of the draft permit was revised to read:

“c. **Within 6 months of receiving approval by the Department for the analysis procedure described in Part II-Section E** – Other outfalls, regardless of size, identified for illicit discharge screening under Part II-Section E, shall be evaluated on an ongoing basis, at a minimum one time per year or at an increased frequency as deemed appropriate by the municipality.”]

Mr. Grzezinski stated that the fifth comment that he submitted, a comment regarding the need for confirmation of remediation of illicit connections prior to removal of outfalls from the priority list, was addressed in the discussion of the Summary Notes of the May 15, 2012, meeting of the Group. He indicated that the addition to the language documented in the Summary Notes was acceptable.

Mr. Grzezinski said that the sixth comment he submitted expresses concerns over the elimination of the stormwater monitoring and planning section as one of the requirements of the permit. He noted that there needs to be some level of continued monitoring of surface water. Mr. Newport responded that MMSD's discharge permit is currently in the renewal process. He indicated that this permit will continue to include a requirement for monitoring surface water. Mr. Grisa commented that the legal reference in the comment refers to point sources and is not applicable to MS4s. He continued that municipalities are not responsible for the quality of surface waters; they are responsible for the quality of the water delivered through their MS4s to the surface waters. Mr. Hahn noted that it was always the intent that surface water quality monitoring would continue and that when the draft permit was written, staff knew that it would continue. Mr. Grzezinski indicated that since MMSD's monitoring will continue, the elimination of the stormwater monitoring and planning section is not important since MMSD will continue to monitor.

Mr. Grzezinski stated that the seventh comment he submitted, regarding the language change related to new and increased discharges to impaired waters was addressed in the Summary Notes of the May 15, 2012, meeting of the Group. He noted that the existing language from the initial group permit meets the requirements of the CWA.

Mr. Grisa asked what this language means in a practical sense. Mr. Hahn elaborated on this question by asking how new development draining to an existing MS4 outfall would be treated and how a new MS4 outfall would be treated under this language. After considerable discussion it was agreed that, while it would be helpful for USEPA, WDNr, and MEA to clarify what this means—including providing examples of what it would and would not restrict—resolution of this question is beyond the scope of the watershed-based permit framework process.

Mr. Grzezinski stated that the eighth comment he submitted suggests including a mandatory provision in individual MS4 permits that the permits be reopened upon issuance of a TMDL in order to incorporate wasteload allocations (WLAs) from the TMDL. He noted that the *Code of Federal Regulations* authorizes modifying permits based on new information. He acknowledged that it has not been the general practice to reopen permits

when TMDLs are issued. He indicated that including this provision in individual permits would provide an incentive to municipalities to participate in a watershed-based permit.

Mr. Boxhorn responded that he had two concerns about this proposal. He reminded the Group that watershed-based permitting is an experimental approach. He noted that we have high hopes for it, but we do not know whether it will work. He continued that given this uncertainty, it is appropriate to use carrots to encourage participation by municipalities, but it is not appropriate to use sticks. He said that his second concern was that this proposal would treat municipalities seeking individual permits differently based upon the watersheds in which they are located. He explained that he viewed this as a potential equity issue.

Mr. Kirsch commented that if a reopener provision were added to individual MS4 permits, it may then be have to be added to other point source discharge permits. He noted that the Department may not have the authority to do this. Mr. Newport commented that the flexibility in addressing TMDL WLAs referred to in the Table in Exhibit D of the May 15, 2012, Summary Notes is a huge advantage in the watershed-based permit and offers a significant incentive for municipalities to participate. He indicated that he agreed that there is a big equity issue if individual permittees are treated differently in how the WLAs are incorporated into their permits.

Mr. Hartsook stated that from the WDNR's perspective, if a mandatory reopener is in a permit, the Department has to reopen the permit upon issuance of a TMDL. He noted that there may be reasons to not reopen a permit. He cited the synchronization of permit dates as an example. He added that reopening a permit could also interfere with projects being conducted under an individual permit.

Mr. Grzezinski said that what he was hearing was that this suggestion was not a good idea.

[Secretary's Note: The consensus of the Group was to not pursue adding a mandatory reopener provision in individual MS4 permits.]

Mr. Meyer noted that an MS4 that has an individual permit with a renewal date of 2013 or later would gain time in which to comply with TMDL WLAs by participating in the watershed-based permit. He added that this is an incentive that should be added to the table in Exhibit D of the May 15, 2012 Summary Notes. Mr. Hahn replied that this would be added to the table.

[Secretary's Note: This incentive was added to the table in Exhibit D of the May 15, 2012, Summary Notes. As indicated previously, a revised version of the table is attached herein as Exhibit B. The incentive would benefit the Cities of Milwaukee, New Berlin, and West Allis.]

Mr. Grzezinski said that the ninth comment he submitted states that the permit should reflect the fact that TMDLs are being developed for the Menomonee River watershed and will affect the prioritization of work to be done. Mr. Grisa responded that the MS4s all know that this is going on, noting that they have all received invitations to TMDL meetings. Mr. Bischke stated that he agreed with Mr. Grisa's response. Mr. Hartsook noted that the permit already addresses this in Part III-Section F, including a note and the table indicating how WLAs are likely to be incorporated into the permit. Mr. Grzezinski indicated that this issue was resolved.

Mr. Grzezinski stated that the tenth comment he submitted is that the permit should require some level of participation in watershed projects. Mr. Grisa noted that this topic is the fourth item on the agenda for this meeting and asked that discussion be deferred until then.

[Secretary's Note: The discussion of this topic was deferred and can be found under the item "Review of Issue Brief on Group Projects" that follows this section of the Summary Notes.]

Mr. Grzezinski stated that the eleventh comment he submitted states that the draft permit does not specifically address the preparation of stormwater pollution prevention plans by the permittees, as mandated by the CWA. Mr. Grisa responded that his understanding is that the stormwater pollution prevention plan requirement applies to specific properties and facilities, such as a municipal public works facility. Mr. Hartsook indicated that he agreed with Mr. Grisa's interpretation of the requirement. He added that the MS4 permit and all of the procedural and process documents effectively constitute a stormwater pollution prevention plan for a municipality. Mr. Grzezinski indicated that this was acceptable.

Mr. Grzezinski stated that the twelfth comment he submitted pertains to the removal of silt fences and other temporary best management practices (BMPs) from construction sites after construction has been completed. He indicated that the comment suggests that the watershed permit should specifically note the permittees' duty to assure that such BMPs are removed and to establish inspection programs or other methods of doing so. Ms. Nenn added that she finds silt fences all along the rivers in the Milwaukee area. She noted that these items are barriers to reptiles and amphibians. She indicated that they are very difficult to remove once the vegetation is up.

Mr. Grisa responded that this is important to emphasize. He noted that this is typically part of a municipal code of ordinances for erosion control, which is covered under the permit. He stated that this may need to be enforced by the building inspectors. Mr. Grzezinski replied that he assumes that the ordinances require removal. He indicated that in many cases, these BMPs are not being removed. He stated that he is not sure whether this issue should be dealt with under the watershed-based permit, but emphasized that it should be addressed in some form.

Ms. Gayan suggested that this could be added to information and education efforts targeting contractors. Mr. Grzezinski suggested adding a note highlighting the importance of post-construction inspection to ensure removal of these measures. Mr. Hartsook indicated that a reminder could be added to the permit in Part III-Section B-1 or B-2. He indicated that he would draft this.

[Secretary's Note: The following condition was added to the end of Part III-Section B:

“8. Enforce permit coverage termination requirements for landowners of construction sites equivalent to those contained in s. NR 216.55, Wis. Adm. Code including removal of all temporary erosion and sediment control best management practices and complete site restoration with perennial vegetative cover.”]

Mr. Grisa asked whether there was any other discussion of the comments submitted by Mr. Grzezinski on behalf of MEA, Milwaukee Riverkeeper, and Clean Wisconsin. There was no further discussion.

REVIEW OF ISSUE BRIEF ON GROUP PROJECTS

Mr. Grisa asked Mr. Hartsook to review the issue brief on group projects. He noted that discussion of this issue brief also addresses the tenth comment submitted by Mr. Grzezinski on behalf of MEA, *et al.*

[Secretary's Note: A copy of the issue brief is attached herein as Exhibit D.]

Mr. Hartsook explained that the issue brief is meant to open discussion about a requirement for a watershed project. He indicated that participation in a watershed project was originally set as optional, with participation providing an alternative means of MS4s complying with minimum control measures. He explained that this was done to provide an incentive for the municipalities to participate in the watershed-based permit. He noted that there has recently been discussion regarding requiring at least one watershed project as a permit condition and requiring participation by municipalities that are covered under the permit. He added that there has also been some discussion of including a specific list of projects in the permit. He indicated that he would prefer not to do this, noting that this could lead to some potentially useful projects being excluded. He stated that his preference would be to include a list of example projects in the fact sheet.

Mr. Thur suggested that the permit give each MS4 the option to choose not to participate in the watershed project. He added that when an MS4 chooses not to participate, the permit should require that the MS4 conduct its own project. He noted that the governing boards of municipalities may be unwilling to spend money on projects located outside of their communities. Mr. Hartsook replied that rather than requiring an individual project, the permit should allow the MS4s that do not participate in a watershed project to seek out other partners. Mr. Boxhorn suggested that the requirement be worded to require that each MS4 participate in at least one watershed project. He noted that this provides the communities with flexibility in meeting this requirement.

Mr. Martinka asked what constitutes a project. Mr. Newport replied that examples include riparian restoration projects, pilot projects involving BMPs that address bacteria or chlorides, and projects on the list from the watershed restoration plan. He added that potential projects should relate to water quality. Mr. Grisa added that a project does not necessarily need to be a brick and mortar project. He noted that possible projects could include conducting a relevant study. He added that there are many entities MS4s could work with in developing and implementing projects. Mr. Shafer noted that MMSD is conducting several projects that the MS4s could sign on to as partners.

Mr. Hartsook noted that a major focus of the annual meeting of the permittees is to discuss ideas for watershed projects. He added that some language in the draft permit may need to be modified to provide a timeline for municipalities that do not participate in the watershed project to develop their alternative. Mr. Grisa responded that there may not be a need to change much language. He noted that, once a project is proposed, municipalities should decide fairly quickly whether or not they would participate. He suggested not giving an MS4 additional time if they choose not to participate. Mr. Hartsook noted that the draft permit already contains milestones.

[Secretary's Note: The first sentence of the first paragraph of Part IV of the draft permit was revised to read:

“The Menomonee River Watershed Permittees **must participate in at least one joint project** designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River Watershed.”

No further deadlines for project completion are recommended for the revised permit. The language requires participation in at least one project during the term of the permit. The ultimate deadline is the end of the permit cycle. No interim deadlines are proposed at this time.]

Ms. DeBruine asked how pollution reduction credits and monetary contributions by communities for watershed projects will be established. Mr. Grisa indicated that the permittees would decide the financial contributions as a group. He noted that it is likely to follow a proportional scheme similar to what has been applied in the past. He added that municipalities have the option to not participate in a project if they disagree with how monetary contributions are established. Mr. Hartsook noted that assessing permit compliance is a relatively simple matter.

Mr. Hartsook stated that under the TMDL, there will be one WLA for the watershed. Ms. Gayan noted that the WLAs will be issued by reach along the river system. Mr. Grzezinski asked whether this means that those communities that are in a reach share a WLA. Mr. Grisa answered that this will be the case and noted that these communities can address this without having to go through water quality trading. Ms. Gayan noted that this means that there will be no requirements for trading ratios and no trading time frames.

Mr. Thur asked how issuance of WLAs will work for communities that are not covered under the watershed-based permit. Mr. Kirsch replied that each individual permittee will be given a WLA.

[Secretary's Note: Under a TMDL, WLAs are assigned for each point source per pollutant per reach. For the Milwaukee TMDL, all point sources will be assigned three individual WLAs for each part of their system discharging to a reach: TSS, total phosphorus, and bacteria. Since the Menomonee River Watershed Permittees will be a single permitted entity, for the purposes of TMDL development they can be considered as a single point source, and therefore could be assigned a single "bulk" WLA per pollutant per reach. Municipalities electing not to participate in the watershed permit would receive individual WLAs per pollutant per reach.

For the next permit cycle, the TMDL will likely be presented in the permit as WLAs per pollutant per reach with individual MS4s' contributing MS4 areas identified for each reach. Identifying the individual MS4 area within each reach-shed will assist with implementation.]

Mr. Grisa suggested modifying the table in Exhibit D of the May 15, 2012 Summary Notes by adding some subheadings under water quality trading that would address the details of how water quality trading would work under the watershed-based permit. Mr. Hahn replied that such additions would be made.

[Secretary's Note: The suggested subheadings were added to the table in Exhibit D of the May 15, 2012, Summary Notes. As indicated previously, a revised version of the table is attached herein as Exhibit B.]

Ms. Nenn asked whether there were any limitations on trading regarding bacteria. Mr. Kirsch replied that a community with its own WLA may need to explain why it is putting practices elsewhere. Mr. Newport noted that there is a need for controls related to bacteria throughout the watershed.

REVIEW OF FACT SHEET

At Mr. Grisa's request, Mr. Hartsook reviewed the draft fact sheet on the watershed-based permit.

[Secretary's Note: A copy of the draft fact sheet is attached herein as Exhibit E.]

Mr. Hartsook indicated that he will send copies of the draft fact sheet to the Group after the meeting. He noted that it is a work in progress. He stated that material has been placed into the draft fact sheet or moved from the draft permit to the fact sheet throughout the permit framework development process. Mr. Grisa noted that the Group has previously seen some of the text that is now contained in the draft fact sheet.

Mr. Newport explained that the fact sheet presents the logic of the permit and requirements. He noted that it summarizes key permit conditions. Mr. Grisa noted that the fact sheet is not the same as the permit. He explained that the fact sheet is an explanatory document and is not enforceable. He added that the permit is the document that is enforceable.

DISCUSS MS4 INTEREST IN PARTICIPATION IN THE WATERSHED-BASED PERMIT

Mr. Grisa indicated that the discussion on MS4 interest in participation in the watershed-based permit will be deferred until the next meeting. He stated that he would welcome comments and concerns now and would like to get a sense of which communities may participate.

Mr. Sokol asked how much time the municipalities would have to decide on making a commitment once they have the draft of the watershed-based permit. Mr. Hahn replied that the discussion of participation will occur at the next meeting which will be about five weeks from now. He indicated that there would not be many changes to the draft permit. He noted that at the next meeting, he will not be looking for official resolutions from the

municipalities. He continued that what he will be looking for a commitment that municipal staff is willing to take this forward. He added that he would like to have any objections or concerns from staff by two weeks before the next meeting.

Mr. Sokol suggested presenting the draft permit to local decision makers, council members, and elected officials at a combined session at one location. He noted that the final permit and fact sheet will need to be taken to the elected officials. Mr. Shafer suggested taking the permit to the Intergovernmental Cooperation Council of Milwaukee County (ICC), which consists of the chief elected officials of all the municipalities of the County. He added that the chief elected officials of the Menomonee River watershed communities that are not located in Milwaukee County could be invited to this meeting. Mr. Sokol responded that this will also need to be presented to city councils and village boards. Mr. Shafer said that both these efforts could be done. Mr. Hahn noted that the project scope includes a task for development of outreach materials for local decision makers and that those could be tailored to individual municipalities needs.

Mr. Shafer asked what date the WDNR hoped would be the effective date of the watershed-based permit. Ms. Gayan replied that she hoped that the permit could be issued in fall 2012. Mr. Shafer replied that this suggests that it would be useful to approach the mayors and village presidents prior to presenting the permit to the aldermen and village trustees.

Mr. Bischke stated that he was willing to take the final draft to the Village of Germantown's Board.

Mr. Thur stated that the City of Milwaukee is continuing to entertain the watershed-based permit.

Mr. Burtch stated that the City of West Allis is interested in taking advantage of the opportunities offered by the watershed-based permit.

Ms. DeBruine stated that the Villages of Butler and West Milwaukee are both interested in participating in the watershed-based permit.

Mr. Hahn said that, based on previous discussions with Mark Lloyd, Deputy Director of Public Works for the City of Mequon, who had attended some previous Group meetings, the City was inclined to not be a party to the group permit, although it was still interested in certain group activities in the future. He said he could personally contact Mr. Lloyd once more.

Mr. Maki stated that the City of Wauwatosa has no major issues with the watershed-based permit.

Mr. Keith stated that Milwaukee County is interested in watershed-based permit.

Mr. Grisa asked about the Wisconsin Professional Baseball Park District and State Fair Park. Mr. Hartsook responded that State Fair Park was invited to participate in the framework development process, but was not interested. He noted that it is such a unique system that it may not benefit from participating in a watershed-permit. He added that he would ask them again.

Mr. Grisa suggested providing each municipality in the watershed with a copy of the final permit. Mr. Hahn noted that the municipalities have been receiving all of the materials throughout the process and indicated that they would each receive a copy.

Mr. Martinka offered to have Sweet Water make presentations to elected officials at individual city and village halls. Mr. Grisa noted that it will be critically important to have local staff present at any presentation to elected officials.

Mr. Hartsook said that the current list of municipalities on the fact sheet is a place holder and will be changed when he knows which communities will participate in the watershed-based permit. Mr. Grisa asked whether it would be better to list no communities or all of the communities in the watershed on the permit and fact sheet in the interim. Mr. Kirsch suggested listing all of the municipalities as potential permittees. Mr. Grzezinski suggested having the permit and fact sheet indicate that the permit is available to a group of communities and listing those communities. Mr. Hahn said that listing all potential permittees may create confusion since some of those municipalities have not been participating in the watershed-based framework process. Mr. Boxhorn suggested indicating that the municipalities to be covered are to be determined.

[Secretary's Note: The list of communities on the first page of the draft permit and on the cover page of the fact sheet was revised to read:

“(Municipalities covered under this permit are to be determined.)”]

UPDATE ON 1000 FRIENDS OF WISCONSIN PROJECT PROPOSAL FOR REVIEW OF CURRENT CODES/ORDINANCES THAT INHIBIT USE OF GREEN INFRASTRUCTURE

At Mr. Grisa's request Ms. Morgan provided the Group an update on the status of the project proposed by 1000 Friends of Wisconsin to review and audit local municipal codes for ordinances that discourage the installation and use of green infrastructure.

Ms. Morgan thanked all of the persons who responded to her email regarding this project. She stated that 1000 Friends of Wisconsin was invited to submit a full proposal for this project to the Fund for Lake Michigan, and that 1000 Friends of Wisconsin, the City of Milwaukee, and Sweet Water submitted that proposal on June 11, 2012. She added that this project depends on MMSD receiving a technical assistance grant. Mr. Shafer indicated that the District has applied to USEPA for a technical assistance grant; however, a decision has been delayed. Mr. Newport stated that USEPA hopes to make a decision on this request within the next two weeks.

Ms. Morgan stated that nine communities have signed on to the project. She said that these include all eight communities that are covered under the existing Menomonee River group MS4 permit—the Cities of Brookfield, Greenfield, and Wauwatosa and the Villages of Butler, Elm Grove, Germantown, Menomonee Falls, and West Milwaukee—plus the City of Milwaukee. She noted that this is a pilot project. She added that if the pilot is successful, funds could be sought to expand it to other communities in the watershed.

Ms. Morgan indicated that the project will develop a strategy to address codes and ordinances that currently discourage the use of green infrastructure.

TOPICS AND DATE FOR NEXT MEETING

Mr. Hahn said that three topics will be addressed at the next meeting. He indicated that a final version of the watershed-based permit will be reviewed and discussed at this meeting. He indicated that the municipalities will be asked for a staff-level decision as to whether they will participate in the watershed-based permit. He added that he would like any municipalities that indicate that they may not participate to give their reasons why. He indicated that there would be a discussion of outreach to decision makers.

The Group set the next meeting for 9:00 a.m. to noon on July 18, 2012 at the Brookfield City Hall.

Mr. Grisa thanked the attendees for their participation, and indicated his appreciation of all the work that has gone into this project.

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 11:17 a.m.

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Exhibit A

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Boxhorn, Joseph E.

From: Dennis Grzezinski [dennisg@midwestadvocates.org]
Sent: Friday, June 08, 2012 5:32 PM
To: Hahn, Michael G.; 'Hartsook, Bryan D - DNR'
Cc: Gayan, Sharon L - DNR; Boxhorn, Joseph E.; jeffreymartinka@yahoo.com; Jeff Martinka; grisa@ci.brookfield.wi.us; Kate morgan(kmorgan@1kfriends.org); ksands@mmsd.com; Bob Newport (newport.bob@epa.gov); Cheryl Nenn; Ezra Meyer; pmcavoy11@gmail.com; Jane.Landretti@wis.gov
Subject: RE: Comments on Men River WBPermit
Attachments: comments on draft of Menomonee R watershed stormwater permit 2012 06 08.docx

Hello all: Here are some comments and concerns about the draft Menomonee River watershed based permit, submitted on behalf of Clean Wisconsin, Milwaukee Riverkeeper, and Midwest Environmental Advocates.

If anyone has questions, or is interested in discussing these comments in before Tuesday's working meeting, please don't hesitate to contact me.

-- Dennis
Dennis M Grzezinski
Senior Counsel
Midwest Environmental Advocates
1845 N. Farwell Avenue, Suite 202
Milwaukee, WI 53202
414 455-0739
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Comments on the current draft of the Menomonee River watershed municipal stormwater permit,
submitted on behalf of Midwest Environmental Advocates, Milwaukee Riverkeeper, and Clean
Wisconsin.

June 8, 2012

We appreciate the current effort of those participating in the watershed permitting framework meetings to reach out between people and organizations to achieve our common goals of improving water quality in the Menomonee River watershed in the coming years in a cost-effective manner, and doing so by encouraging and supporting collaborative efforts among municipalities in the watershed. Much of the discussion has noted the need to balance including innovative provisions with the potential to provide water quality benefits, while providing municipalities with incentives to choose to participate in the watershed permit rather than requesting an individual permit. Here are some points we've noted, and questions or concerns that have arisen from those conversations, including the discussions of the status of the watershed permitting framework at recent meetings of the SWWT Policy Committee and the SWWT Science Committee:

1. It is important that the watershed permit require that communities' IDDE efforts consider and make use of information from third parties that provides evidence of human contamination in discharges from particular outfalls or in portions of their storm sewer systems, including for example monitoring data from MMSD or from citizen science efforts like those of Milwaukee Riverkeeper.
2. As discussed at previous framework and SWWT meetings, the permit should authorize use of sampling for bacteria as an approved parameter for IDDE screening or sampling, without the need for municipalities to separately request and obtain DNR approval to use that parameter.
3. The draft watershed permit calls for the permittees as a group to develop an analysis procedure to identify outfalls which are most likely to be contaminated with sanitary wastewater and to be screened for illicit discharges, and to thereafter sample their outfalls in accordance with the procedure. We wonder whether the municipalities need as much time to develop their new analysis procedure as provided in the current draft, and would urge them to consider whether the timeline can be shortened without limiting their ability to do the work that is required.
The permit also imposes a requirement upon permittees individually to develop and implement an improved program for IDDE for DNR approval. The permit should include a deadline for developing the program, and should also explicitly require the permittees to continue IDDE sampling in accordance with their current (prior) permit requirements up until the time that DNR approves a new procedure, but it should also explicitly identify use of the third party information referred to in item 1 as being required upon permit issuance, not only after a new procedure is approved.
4. We suggest that the municipal permittees commit to having stakeholder input into the development of the group IDDE analysis procedure -- including SWWT's science and policy committees, as well as experts from MMSD, local universities and stakeholders such as Milwaukee Riverkeeper.
5. The draft permit may need more specific language to ensure that the "correction" of suspected illicit connections is confirmed by end of pipe sampling after the fix, before the outfall or pipe segment is removed from the high priority group.
6. We are concerned about the elimination of the Stormwater Monitoring and Planning section of the permit as one of the requirements of the watershed permit, and making it one of the totally optional watershed projects to be identified in the Fact Sheet. Without continued and improved monitoring, it will be very difficult, if not impossible, to evaluate whether the watershed permit is having its intended effect of improving water quality conditions in the watershed. It should be noted that 40 CFR 122.44(i) requires permits to require and specify the monitoring necessary to determine compliance with effluent limitations. An ongoing program of monitoring of surface water quality would seem to be needed.
7. The permit language at III.F.2 regarding new or increased discharges of a pollutant of concern to an impaired waterbody needs to comply with the Clean Water Act's prohibition on new or increased discharges of pollutants of concern to an impaired waterbody. The language of the 4/26/12 draft, while grammatically awkward, was

consistent with the CWA's requirements. However, at the May 15, 2012 working meeting, the final clause of that section was tentatively removed, potentially to be replaced by some other language. The standard expressed in the 4/26/2012 draft needs to be retained, either by returning to the language of the 4/26/2012 draft, or other equivalent language.

(40 C.F.R. 122.4(i) and 40 C.F.R. 122.44(d)1, which have the primary purpose of ensuring that impaired waters are not further degraded before a TMDL is complete. Enacted in the early 1980s, these regulations fulfill the Clean Water Act objective to restore and maintain the chemical, physical, and biological integrity of the nation's waters. 40 C.F.R. § 122.4(i) prohibits the net increase of any pollutant that will cause or contribute to a numeric or narrative water quality standard violation, 40 C.F.R. § 122.44(d) requires effluent limits in permits to ensure discharges do not cause, have a reasonable potential to cause, or contribute to the violation of a numeric or narrative water quality standard. **New facilities** proposing a discharge of a pollutant for which a downstream impairment exists may be affected by 40 CFR § 122.4(i). Facilities are affected: If the proposed discharge contains a pollutant of concern that would impact an identified impairment, and if no approved TMDL is in place for the pollutant of concern. If an approved TMDL is in place for the pollutant of concern, the facility must meet the conditions of the TMDL.

Existing facilities determined to have reasonable potential to cause or contribute to an immediate or downstream impairment and expanding facilities proposing additional discharge to or upstream of an impaired surface water may be affected by 40 CFR § 122.44(d)1. Facilities are affected: If the proposed discharge contains a pollutant of concern that would cause or contribute to an identified impairment, and if no approved TMDL is in place for the pollutant of concern. If an approved TMDL is in place for the pollutant of concern, the facility must meet the conditions of the TMDL.)

8. The note following section II.F.2 proposes that municipalities subject to the watershed-based permit will not become subject to requirements necessary to achieve the TMDL wasteload allocation for their MS4 system until the permit is reissued in the next permit cycle, after expiration of its 5 year term. 40 CFR 122.44(b) mandates that all permits be consistent with the requirements of Section 303 of the Clean Water Act, including the provisions regarding impaired water bodies and TMDLs. 40 CFR 122.62(a) authorizes permits to be modified based on "new information," which could include establishment of wasteload allocations under a TMDL. There are conflicting views on whether permits **must** be reopened before they expire to impose more strict limitations during a permit term once those TMDL allocations are established. However, it is certainly the case that a reopener provision **can** be included when a permit is issued that will require a permittee to take steps to comply with a TMDL that is approved before a new permit is issued. **If a decision to include such a reopener provision in individual MS4 stormwater permits is made, then the delay in becoming subject to TMDL requirements under the watershed-based permit would become a much larger incentive for individual MS4s to participate in that permit.** Such an incentive could justify requiring municipalities' participation in some amount of activities like the watershed projects that were made optional in the most recent draft.
9. In any event, the watershed permit needs to include language that reflects that TMDLs are being done, and that the results of the TMDLs are expected to affect the prioritization of permittees' work in later years of the permit term.
10. One of the primary innovative elements of earlier drafts of the watershed permit was the provision regarding joint watershed projects to be undertaken by the permittees. The recent draft eliminated any requirement for participating in joint watershed projects, making participation entirely optional. We believe some level of participation in completing such projects should be required, and discussion needs to occur regarding how to determine what is appropriate.
11. The Clean Water Act mandates that stormwater permits include preparation of a stormwater pollution prevention plan, which does not seem to be specifically addressed in the draft watershed permit.
12. Failure to remove construction site silt fences and other temporary BMPs after construction has been completed can have harmful impacts on habitat as well as on wildlife mobility and survival. The watershed permit should specifically note permittees' duty to assure that such BMPs are removed, and to establish inspection programs or other methods of doing so. Since construction, and construction permitting occurs on a municipality by municipality basis, this requirement seems appropriate to be viewed as an individual rather than a group item; however, if municipalities believed there were economies of scale from conducting a watershed-wide inspection effort, rather than performing numerous individual efforts, that requirement could become a group activity.

Exhibit B

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06/18/12

INCENTIVES FOR MS4S TO PARTICIPATE IN A WATERSHED-BASED MS4 PERMIT

Watershed-based Permit Incentive	Reduced Costs	Improves Effectiveness for Water Quality Improvement	Available under Group Permit	Available under Individual Permit
Ability to undertake collaborative watershed projects that could meet multiple individual and group permit conditions	Y	Y	N	N
Flexibility in addressing TMDL WLAs in multiple-municipality stream reaches, including developing experience in collaborating on the implementation of new types of pollution controls	Y	Y	Y	N
Development of a joint analysis procedure for prioritizing and targeting outfalls for IDDE monitoring	Y	Y	N	N
Joint report on public education and outreach	Y	Y	N	N
Options for cooperative public education and outreach	Y	Y	Y	Y
Can address reductions in pollutant loads at watershed level without executing water quality trades				
TSS	Y	Y	Y	N
Phosphorus	Y	Y	N	N
Bacteria	Y	Y	N	N
Not subject to trading ratios	Y	Y	Y/N ^a	N
Possibility of receiving substantive additional points on State Urban Nonpoint Source and Storm Water Management Grants	Y	Y	N	N
Grant applications for collaborative projects undertaken by members of a watershed-based permit may be assigned higher priorities by public and private grant institutions	Y	Y	N	N
Reduction in transaction costs	Y	Y	N	N
MS4 with permit renewal date in or after 2013 would gain time to comply with TMDL wasteload allocations by participating in the watershed-based permit ^b	Y	Y	N	N

^aThis is available under the group permit for TSS but not for phosphorus or bacteria.

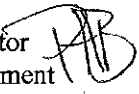
^bThis would benefit the Cities of Milwaukee, New Berlin, and West Allis.

Source: SEWRPC.

CORRESPONDENCE/MEMORANDUM

DATE: March 15, 2012

TO: SW Program Staff

FROM: Pam Biersach – Bureau Director
Bureau of Watershed Management 

SUBJECT: Program Guidance #3800-2012-01

Illicit Discharge Detection and Elimination

March 2012

3800-2012-01

This document is intended solely as guidance, and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

A. Statement of Problem Being Addressed

Limited information is available to assist municipalities with the development of an effective program to determine the presence of illicit discharges from storm sewer system outfalls.

B. Background

State and federal storm water discharge regulations require permitted municipal separate storm sewer systems (MS4s) to develop, implement and enforce a program to detect and remove illicit connections and discharges to the MS4. In Wisconsin, this requirement is established in s. NR 216.07(3), Wis. Adm. Code. The program must include routine dry weather field screening at storm sewer system outfalls and procedures for locating the source of known or suspected illicit discharges. If flow is observed, a combination of sensory observations and indicator parameter sampling must be used to determine the presence of illicit discharges and assist in the tracking, location and elimination of sources.

C. Discussion

Section NR 216.07(3)(i), Wis. Adm. Code, requires that field screening is conducted at all major outfalls and any additional outfalls designated by the municipality or Department. Field screening must include the following when flow is observed:

- Narrative descriptions of color, odor, turbidity, oil sheen, surface scum, flow rate and other relevant observations.
- Sampling for pH, total chlorine, total copper, total phenol and detergents unless Department



approval has been obtained for alternative parameters such as ammonia, potassium or bacteria.

The combination of sensory and indicator parameters is intended to provide insight regarding the presence and potential sources of illicit discharges. However, ch. NR 216, Wis. Adm. Code does not identify specific discharge limits, action levels or other criteria that should be used to determine if an illicit discharge is either present or absent. In addition, ch. NR 216, Wis. Adm. Code does not address the following:

- Selection of outfalls for on-going field screening after the initial major outfall field screening has been completed.
- Frequency and timing of outfall field screening activities.
- Outfalls with baseflow consisting of groundwater and other non-illicit discharges.
- Submerged, enclosed, or otherwise inaccessible outfalls.
- Outfalls from pumped storm water systems.
- Outfalls from swale conveyance systems and storm water treatment practices.
- Proper documentation and evaluation of outfall field screening activities.

The purpose of this guidance document is to provide supplemental information that can be used by MS4 owners and operators to maximize the efficiency and effectiveness of illicit discharge detection and elimination programs.

D. Guidance

Outfall Selection

Currently, MS4 permits include a requirement that field screening is initially conducted at all major outfalls¹. However, a more targeted approach to illicit discharge detection and elimination (IDDE) is recommended. Outfalls should be prioritized based on illicit discharge potential in the contributing drainage area rather than solely on pipe or drainage area size. Outfalls selected for on-going field screening based on illicit discharge potential are considered "priority outfalls". Contributing drainage area characteristics or land uses that should be considered when selecting priority outfalls include:

- History of known or suspected illicit discharges reported within the last five years
- Sections of storm sewer and/or sanitary sewer infrastructure that have exceeded or are approaching their design/useful life.
- Contributing drainage areas with 80 or more percent imperviousness.

¹ "Major outfall" means a municipal separate storm sewer system outfall that meets one of the following criteria:

(a) A single pipe with an inside diameter of 36 inches or more, or from an equivalent conveyance which is associated with a drainage area of more than 50 acres.

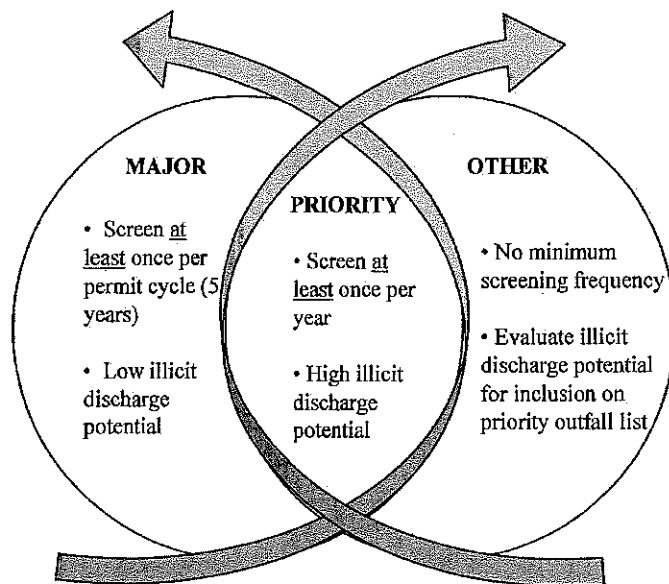
(b) A single pipe with an inside diameter of 12 inches or more, or from an equivalent conveyance which receives storm water runoff from lands zoned for industrial activity with 2 or more acres of industrial activity.

- Business or industrial parks with frequent changes in property ownership or operations.
- Schools or other institutional facilities.
- Commercial or industrial operations that generate wastewater or wash water including food processing, metal plating or machining shops, auto and scrap recyclers, commercial car washes and chemical manufactures or users.

Frequency

The recommended approach to outfall field screening frequency is depicted in Figure 1. All priority outfalls should be screened at least once per year. In some cases, it may be appropriate to conduct more than one field screening per year at a particular priority outfall depending on initial screening results or illicit discharge potential. All other major outfalls not identified as priority outfalls should be screened at least once during each MS4 permit cycle (i.e., 5 years). The priority outfall list should be reviewed and modified if necessary during an annual program evaluation.

Figure 1 - Outfall Field Screening Frequency



Timing

Outfall field screening must be conducted during dry weather periods to minimize potential interference from non-illicit sources including runoff and groundwater. In general, field screening should not be conducted within 48 hours after a precipitation event that produces runoff. However, it may be necessary to wait longer than 48 hours after precipitation events depending on contributing drainage area characteristics, the presence of extended discharges from stormwater facilities or the size of the event. Field screening during periods of high groundwater, such as the early spring, should be avoided. However, spring or fall screening may be necessary if outfall access is significantly obstructed by vegetation.

Sensory Parameters

Obvious illicit discharges can potentially be identified by color, odor or other physical characteristics such as sheen or foam. However, proper interpretation of sensory observations can be complicated by the fact that some sources are naturally occurring (e.g., iron bacteria) or non-illicit (e.g., dye testing).

Chapter 11 of the Center for Watershed Protection's guidance manual for illicit discharge detection and elimination includes photos of common physical indicators for illicit and non-illicit sources. The entire manual can be downloaded from the USEPA website at http://www.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

Indicator Parameters

Indicator parameter sampling is necessary to confirm sensory observations or distinguish illicit from non-illicit discharges. The following parameters are recommended for all observed discharges: **Ammonia, Detergents, pH and Total Chlorine**. Based on MS4 or outfall specific conditions, the following additional parameters should be considered:

- **Total Copper** in areas where industrial facilities that use or manufacture copper-based products are present.
- **Phenol** in areas where industrial facilities that utilize phenol in processes or products are present.
- **Potassium** when discharges of industrial wastewater or sanitary sewage are suspected.
- **Fluoride** when discharges with a drinking water supply component are suspected.
- **E. coli or Bacteriodes** when discharges of sanitary sewage are suspected.

The recommended parameters for all observed discharges are a deviation from the parameter lists identified in ch. NR 216, Wis. Adm Code and MS4 permits. Permitted MS4s should submit modified parameter list proposals to the Department for approval prior to implementation.

Test Methods

In order to provide relatively rapid results, indicator parameters should be analyzed using field test kits. However, field test kits should be used by staff with appropriate training and experience. Laboratory analysis is necessary for some parameters (e.g., E. coli, Bacteriodes) and recommended in cases where enforcement action may be necessary to eliminate illicit discharges or connections.

Action Levels

Recommended action levels for indicator parameters are found in Table 1. Sample results above these levels suggest the presence of an illicit discharge is likely. However, illicit discharges or connections should not be automatically ruled out in cases where parameters are detected below the recommended action levels. In some instances, illicit discharges can be masked by non-illicit sources depending on the time of the year, recent precipitation events, or other conditions, especially at outfalls with large

contributing drainage areas. With this in mind, the recommended action levels should be considered as starting points for decision making. Ultimately, identifying outliers to expected or past levels may be more important when determining if further investigation should be initiated. To determine when an outlier has been detected, each MS4 should maintain a database (or equivalent record) of indicator parameter test results for individual outfalls or groups of outfalls.

TABLE 1 – Indicator Parameters Action Levels

Parameter	Action Level	Illicit Sources	Non-Illicit Sources
Ammonia	0.1 mg/l	Sanitary sewage and industrial wastewater	Pets, wildlife and potentially WPDES permitted discharges
Detergents	0.5 mg/l	Industrial cleansers, commercial wash water and sanitary sewage	Residential car washing
pH	Less than 6 or greater than 9	Industrial wastewater and concrete truck wash-out	Groundwater and WPDES permitted discharges
Total Chlorine	Detection or positive test unless associated with a WPDES permitted discharge at background water supply levels	Industrial wastewater, swimming pools and sanitary sewage	WPDES permitted discharges
Total Copper	0.1 mg/l	Copper-based product use and manufacturing	WPDES permitted discharges
Phenol	Detection or positive test	Chemical, textile, paint, resin, tire, plastic, electronics and pharmaceutical manufacturing	None
Fluoride	Detection above background groundwater or water supply levels	Commercial and industrial wastewaters with a water supply component	Groundwater and WPDES permitted discharges
Potassium	10 mg/l	Sanitary sewage and industrial wastewater	Groundwater and WPDES permitted discharges
E. coli	10,000 MPN/100 mL	Sanitary sewage	Wildlife and pets
Human Bacteriodes	Detection or positive test	Sanitary sewage	None

Additional considerations for some of the indicator parameters are as follows:

- Field test methods for **detergents** are generally considered qualitative (i.e., positive or negative) tests. Some detergent test methods produce bubbles or a gel like substance that can be misinterpreted as a positive test for detergents. In addition, specific detergent test methods, such as the MBAS method, may not be capable of detecting all classes of detergents. Another potential

issue with detergent testing is distinguishing non-illicit discharges associated with residential car washing from illicit discharges.

- **Chlorine** residuals are typically short lived in the environment. Detection of chlorine at an outfall generally indicates a source that is relatively close to the outfall. However, chlorine detected at an outfall can be from an illicit or non-illicit source if chlorinated municipal drinking water supply is a component of the discharge (see "Non-Illicit Sources").
- Leaching of **copper** from plumbing systems can be a source of copper even in areas where copper-based product use or manufacturing does not occur.
- Municipal drinking water supply systems that add **fluoride** typically maintain levels between 1 and 1.5 mg/l.
- **E. coli** is a commonly used sanitary sewage indicator. However, dry weather flow outfall monitoring in Wisconsin and other states indicates that *E. coli* levels are highly variable and can be produced by naturally occurring, non-illicit sources in the environment such as raccoons in storm sewers. Elevated dry weather *E. coli* levels in conjunction with detection of other indicator parameters (e.g., detergents, total chlorine) may be more indicative of the presence of sanitary sewage.
- The ratio of human **Bacteriodes** to total Bacteriodes may be particularly useful in determining sanitary sewage sources. However, the availability of Bacteriodes testing may be limited.

Non-Illicit Sources

Indicator parameters can be detected from non-illicit sources such as groundwater inflows, non-contact cooling water discharges or other WPDES permitted discharges from commercial and industrial facilities:

- **Groundwater:** Flow rates associated with groundwater inflows can vary seasonally due to fluctuations in groundwater elevations. Groundwater inflows are typically highest in the early spring and lowest in the late summer. In some areas, groundwater inflows will also include natural levels of fluoride. Baseline conditions for outfalls with groundwater inflows can be established by documenting seasonal flow rates and/or fluoride levels over time. If baseline conditions have been established for an outfall, sampling for other indicator parameters can be avoided if flow rates and/or fluoride levels are consistent with the established baseline values.
- **Permitted Facilities:** In some areas, WPDES permitted industrial facilities are allowed to discharge wastewater to MS4s as long as discharge limits are met. These discharges can produce continuous or nearly continuous flows at outfalls. WPDES permitted discharges are considered non-illicit but can include one or more of the indicator parameters at detectable levels. In many cases, municipal drinking water supply is a component of WPDES permitted discharges and it may be difficult to distinguish non-illicit from illicit sources in these areas. However, establishing baseline flow rates and parameter levels for outfalls with WPDES permitted discharges is recommended. If necessary, the Department can assist in the identification and characterization of WPDES permitted discharge, including discharge limits.

The Department maintains a listing of current WPDES permit holders online:

- **WPDES Wastewater Permittees**
<http://dnr.wi.gov/org/water/wm/ww/permlists.htm>
- **WPDES Industrial Storm Water Permittees**
<http://dnr.wi.gov/runoff/stormwater/industrial/>

Submerged & Enclosed Outfalls

It may be difficult or impossible to conduct outfall field screening activities at outfalls that are fully or partially submerged by receiving waters or located within enclosed waterways. For these cases, field screening activities should be conducted at appropriate upstream manholes. On-site illicit connection inspections should be considered for any high risk facilities that can potentially discharge to the MS4 between the outfall and field screening manholes. Another option to consider is televising the storm sewer segments located between field screening manholes and the outfall.

Physically Interconnected Systems

One MS4 that discharges directly to a second MS4 is considered physically interconnected. The point of interconnection is considered an outfall from the upstream or discharging MS4. Although field screening activities should be conducted by the upstream MS4 at the point of interconnection, it may be appropriate for interconnected MS4s to coordinate and potentially consolidate field screening activities.

Pump Stations

For pumped storm water systems, field screening activities should be conducted at appropriate manholes located upstream from the pump station or intake. If the first upstream manhole from the pump station is submerged, the pump should be operated if possible to remove accumulated water from the storm sewer system prior to conducting field screening activities.

Swales Conveyance Systems

For swale conveyance systems, it may be appropriate to conduct a visual or "windshield" survey within the swale area in conjunction with or as an alternative to field screening at the outfall. Locations where piped systems discharge to swales should be targeted during windshield surveys.

Storm Water Practices

Wet detention basins and other storm water treatment practices can potentially mask the presence of illicit discharges from the storm sewer system. Field screening activities should be conducted at inlets to storm water treatment practices rather than from the outlet. However, the size and location of practices can be considered when determining if field screening at inlets is necessary.

Documentation and Program Evaluation

Written or electronic documentation of all outfall screening activities should be kept. At minimum, the documentation should identify the following items for each outfall:

- Outfall location & description
- Inspector name
- Date of inspection
- Date & amount of last rainfall
- Weather conditions
- Narrative description of all sensory observations and flow rate estimates
- Test results for all indicator parameter sampling
- Narrative description of potential or confirmed illicit discharge sources and actions taken to track and eliminate sources.
- Additional comments or observations

As suggested in the "Action Level" section, it is important to develop and maintain a field screening database (or equivalent) to track changes and establish trends over time. Each permitted MS4 should conduct an annual evaluation of the field screening data and priority outfall list. Program modifications should be made as needed based on the annual evaluation.

APPROVED:

Mary Anne Townsend 3/19/2012
Section Chief Date

APPROVED:

Joe R. Zantetti 3/19/2012
Staff Attorney Date

DISCUSSED OR APPROVED:

PMT Approved on 3/15/2012
Date

Exhibit D

MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK ISSUE BRIEF FOR DISCUSSION

June 12, 2012

Drafted May 24, 2012

Problem Statement:

The current language under Part IV of the draft Menomonee River Watershed-Based Permit (WBP) provides an option for the Menomonee River Watershed Permittees to collaborate on joint projects (termed “watershed projects”), and by participating in a watershed project, the Department will deem the municipality in compliance with any number of group or individual permit conditions that are addressed by the joint project.¹ The ‘spatial’ extent of compliance will apply to the participating municipality’s political boundary even if the project does not directly address the MS4 discharge for which the municipality is the owner and operator thereof.

Leaving the participation as optional does not guarantee that a watershed project will be completed under the permit.

Background:

A primary objective of the watershed-based permit is to target specific needs and concerns that have been identified for the Menomonee River Watershed. Much of the language from the existing Menomonee River group permit has been modified to better target planning and implementation of the existing six minimum control measures, and encourage collaboration wherever possible. However, the working group has expressed interest in utilizing recommendations made in existing watershed planning efforts to more precisely address water quality concerns in the watershed, and in by doing so, the participating municipalities will share resources (economy and experience) to have a greater impact than what they may otherwise achieve on their own. Joint-implementation of watershed project(s) would benefit the resource, grow partnerships and foster a shared accountability between municipalities, and provide an attractive economic incentive for participating in the WBP.

Topic for Discussion:

The permit language should be reviewed for potential changes to require planning and implementation of at least one watershed project. The participation requirement, planning process, Department review process, reporting, and project examples are specific elements to be reviewed and discussed. Some ideas for permit language and watershed projects have already been raised. Please bring your ideas to the meeting.

¹ A few questions have come up about what individual or group requirements could potentially be satisfied via a watershed project. The group can have some discussion on this topic as well during the June meeting.

Fact Sheet for Public Notice
WDES Permit No. WI-XXXXXXX-X
August 2012

MENOMONEE RIVER WATERSHED-BASED PERMIT

**For Municipal Separate Storm Sewer System (MS4) Discharges
Owned and Operated by the Menomonee River Watershed Permittees:**

City of Brookfield, 2000 N. Calhoun Rd, Brookfield, WI 53005
Village of Butler, 12621 W. Hampton Ave, Butler, WI 53007
Village of Elm Grove, 13600 Juneau Blvd, Elm Grove, WI 53122
Village of Germantown, N112 W17001 Mequon Rd, Germantown, WI 53022
City of Greenfield, 7325 W. Forest Home Ave, Greenfield, WI 53220
Village of Menomonee Falls, W156 N8480 Pilgrim Rd, Menomonee Falls, WI 53051
City of Wauwatosa, 7725 W. North Ave, Wauwatosa, WI 53213
Village of West Milwaukee, 4755 W. Beloit Rd, West Milwaukee, WI 53214

(Gap left for other participants)

Background and Rationale

The Wisconsin Department of Natural Resources (the Department) is proposing to issue Wisconsin Pollutant Discharge Elimination System (WPDES) permit No. WI-XXXXXXX-X, for existing and new discharges of storm water to waters of the state from the Menomonee River Watershed Permittees municipal separate storm sewer systems (MS4's). [JEB1] Permitted discharges from MS4's may consist of runoff from rain events and/or snow melt. Pollutants often found in MS4 discharges include organic materials, suspended solids, metals, nutrients, bacteria, pesticides, fertilizer, and traces of toxic materials. The proposed permit requirements are intended to restore and maintain the chemical, physical, and biological integrity of the waters of the state, specifically within the Menomonee River Watershed, through a combination of individual and collaborative planning and implementation efforts.

General Description of Operations Covered

In 1976, the USEPA delegated the authority for issuing NPDES permits in Wisconsin to the Department. The Department exercises its storm water permitting authority through the Wisconsin Pollutant Discharge Elimination System (WPDES), authorized under ch. NR 216, Wis. Adm. Code and ch. 283, Wis. Stats. Currently, there are 218 municipalities, counties, or special units of government in the state required to have a MS4 permit under subchapter I of NR 216, Wis. Adm. Code. In the eight counties comprising the Department's Southeast District, there are 90 permitted entities, including Wisconsin State Fair Park and the Southeastern Wisconsin Professional Baseball District (Miller Park). All permitted MS4's are required through this permit program to develop and implement storm water best management practices to reduce the contribution of pollutants from the MS4 areas to waters of the state. The baseline requirements are referred to as the six minimum control measures and are outlined below. To date, the primary geographic scale for planning and implementation was based on the permitted entity's political boundary with focus on meeting the permit requirements individually for their respective MS4 discharge.

Six Minimum Control Measures

- | | |
|--|--|
| • <i>Public Education and Outreach</i> | • <i>Construction Site Pollutant Control</i> |
| • <i>Public Involvement and Participation</i> | • <i>Post-Construction Site Storm Water Management</i> |
| • <i>Illicit Discharge Detection and Elimination</i> | • <i>Pollution Prevention</i> |

This permit builds from the efforts completed under past individual permits, including the existing Menomonee Group individual permit (WPDES Permit No. WI-S050130-1), and encourages collaboration and promotes shared accountability under a multi-source watershed permit scheme. The Menomonee River Watershed Permittees, through satisfying the permit requirements, will continue to address their own MS4 discharges as appropriate while coordinating as a group to target specific concerns identified for the Menomonee River Watershed through past watershed planning efforts.

The Menomonee River Watershed

The Menomonee River watershed covers approximately 136 square miles of urban and rural landscape which is home to a population of about 322,000 people. There are portions of the watershed in Washington, Ozaukee, Waukesha, and Milwaukee Counties. The River originates in the Village of Germantown and the City of Mequon and flows in a southeasterly direction for about 32 miles before it meets the Milwaukee and Kinnickinnic Rivers in the Milwaukee Harbor prior to flowing into Lake Michigan. The watershed contains 96 total stream miles and over 6,780 wetland acres. Perhaps the most visible indications that the Menomonee River and its tributaries have been highly modified can be seen in sections of watershed where both the stream bed and banks are lined with concrete. About 14.5 miles of the streams in the watershed are concrete-lined or enclosed.

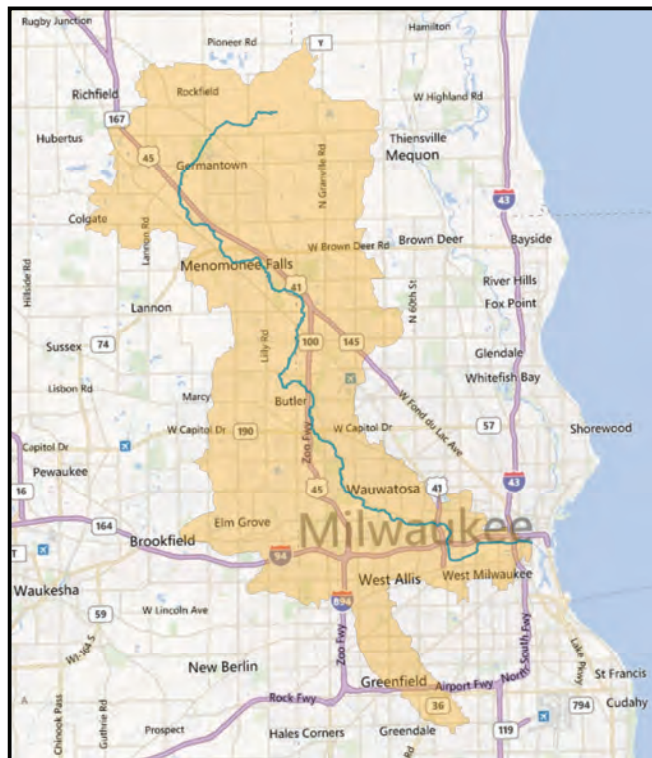
The watershed is characterized by small to medium sized warm water streams that exhibit flashy flow patterns. This means they often run very high and fast when it rains, and very low and slow when the weather is dry. These problems are rooted in historic channel modifications and growing urban land uses. The high flows in wet weather cause erosion of the streambanks and substrate (in unaltered sections of the River), causing releases of sediment and degrading habitat for fish and macroinvertebrates. The impervious surfaces in the watershed, which reduce groundwater infiltration and stream baseflow, are key factors reducing stream flows in dry

weather conditions; the low flow volumes and associated higher temperatures are also stressors for biological communities.¹

In addition to the flashy flow patterns, certain pollutants have been identified as contributing to use impairments in the watershed. Wisconsin DNR and collaborating organizations conduct monitoring of the waters of the State; where waters are found to be not meeting State water quality standards, the water bodies are categorized as “impaired.” Impairments have been identified in the Menomonee watershed related to bacteria (which is associated with recreational uses and human health) and total phosphorus. Much of the phosphorus found in urban runoff is adsorbed in soil particles, particularly in the smaller textured silt and clay soils. It is reasonable to expect that implementation actions under this permit that reduce total suspended solids (TSS) loads will also reduce phosphorus proportionally with the intent to achieve designated use conditions in impaired waterways.[JEB3]

The fishery in the watershed has been and continues to be dominated by species that can tolerate low concentrations of dissolved oxygen and other water quality impairments. The proportions of pollution-tolerant fish species have all increased over the last 100 years. Most notable is the exotic invasive common carp species, which has increased from being found at 2 percent of the sites surveyed over the period 1900 to 1974 to being found at nearly 40 percent of the sites sampled over the period 1998 to 2004. Carp are likely having a negative effect on the overall fishery in the watershed by destroying habitat and competing with native fish species for food and spawning areas. There has been a decrease in the percent of native fishes in the Menomonee River watershed. Most notable losses include several pollution-intolerant species including the blacknose shiner and spottail shiner, the least darter and redbelly dace, which are species of special concern in the State of Wisconsin, and the greater redhorse which is a threatened species in the State of Wisconsin. Additional species that have not been observed since 1975 include the southern redbelly dace, northern redbelly dace, and grass pickerel.

The adjacent watersheds face similar water quality issues. There are identified water quality impairments related to total phosphorus in the Milwaukee River, Kinnickinnic River, Root River, and Fox River [JEB4] watersheds and/or the Milwaukee harbor estuary area. Water quality impairments related to bacteria have been identified in the Milwaukee River, Kinnickinnic River, and Root River watersheds and in the Milwaukee harbor estuary area. In addition, there are identified water quality impairments related to dissolved oxygen in the Root River watershed.



The Menomonee River flows north to south for 32 miles before meeting the Milwaukee and Kinnickinnic Rivers. The Menomonee River Watershed lies within the Milwaukee River Basin.

¹SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007 Milwaukee Metropolitan Sewerage District, Menomonee River Watershed Restoration Plan, April 2010.

Applicability

The municipal boundaries of the Menomonee River Watershed Permittees are located within the **urbanized area** [JEB5] as identified by the U.S. Census Bureau's 2010 decennial census. The urbanized area (UA) is a mapped boundary that encloses centrally populated and their densely settled surrounding areas that together have a total residential population of at least 50,000 and an overall population density of 1,000 people per square mile.

This permit covers all areas within the jurisdiction of the Menomonee River Watershed Permittees, including those areas which do not drain to the Menomonee River Watershed.

Watershed-Based Permit Structure

The permitted minimum control measures are separated into two groups – **Group Conditions** and **Individual Conditions**. Each municipality is required to contribute to the planning and implementation of programs carried out under group conditions. The group conditions are intended to ensure that efforts in the Menomonee River Watershed are prioritized and implemented in a consistent manner and that a uniform message is being received by the public. Implementation of the group conditions will be conducted on a *watershed-based scale*. The individual conditions are required to ensure that each municipality is continuing to operate its own unique programs developed under past permit cycles and to address discharges from their own MS4. Implementation of the individual conditions will be on a *municipality-based scale*.

The Menomonee River Watershed Permittees will also have the option to participate in the planning and implementation of **Watershed Projects**. Participation in these joint projects will provide the permittees with the opportunity to satisfy any number of permit conditions that are addressed by the projects, group and individual, through the successful planning, implementation, and completion of a project depending on the scope of work. **The permit requires at least one watershed project to be completed by the end of the five year permit term.** [JEB6] The permit specifies the process by which projects are proposed and evaluated. The Department must review and approve the project.

Individual Responsibility

Each Menomonee River Watershed Permittee is responsible for compliance with the conditions of the permit relating to discharges from those portions of the municipal separate storm sewer system where the municipality is the owner or operator. Each permittee is responsible for participating in group meetings and maintaining an active role in implementing management practices under the group conditions. If a municipality elects to participate in a watershed project, then they must be an active participant in all phases of the project.

Shared Responsibility

Group conditions under this permit will be satisfied through the collective efforts put forth by the Menomonee River Watershed Permittees. The permittees may partner with other regulated MS4s or other groups or organizations to satisfy group conditions.

Permit Requirements

Part II. Group Conditions

A. Public Involvement and Participation & B. Public Education and Outreach

There are 11 topics required to be addressed by the end of the five year permit term. They include a range of topics targeted to address different sources of pollutants and audiences such as general education on the effects of point and non-point source pollution on the Menomonee River Watershed, the benefits of restoring riparian areas, and the effects of heavy salt use during winter road maintenance operations. The Menomonee River Watershed Permittees are required to focus on at least 3 topics each year, and may repeat topics if desired.

C. Illicit Discharge Notification

Each municipality is responsible for contacting downstream municipalities upon detection of an illicit discharge from their MS4.

D. Analysis Procedure for Identifying Outfalls Likely to be Discharging Sanitary Wastewater Annual Meeting

A combination of in-stream monitoring and storm sewer outfall sampling and research conducted by other entities including the Milwaukee Metropolitan Sewerage District (MMSD), the Great Lakes WATER Institute at the University of Wisconsin-Milwaukee School of Freshwater Sciences, and Milwaukee Riverkeeper has identified a need to address long-term problems with aging sanitary and storm sewer infrastructure in the Greater Milwaukee Area. The research indicates that inflow and infiltration (I&I) of sanitary wastewater from the old sanitary sewer pipes into the storm sewer system contributes to discharges from the storm sewer system that are contaminated with sanitary wastewater. In some instances there may be direct cross connections between private sanitary systems and the storm sewer system. In either case, bacteria from human sources are being introduced into surface waters through storm sewers.

In order to address this issue, the Menomonee River Watershed Permittees are required to develop an analysis procedure for identifying those outfalls that are most likely to be conveying water contaminated with sanitary wastewater and which should be screened for human bacteria indicators. This analysis procedure shall take into account what is known about the age and condition of the sanitary and storm sewer systems, historical water quality data within receiving waters, and other available information the permittees consider relevant. [JEB7] This screening protocol will be implemented in addition to the ongoing illicit discharge field screening conducted for identifying other non-storm water discharges. The Department must review and approve the procedure by March 31, 2014 and the screening protocol shall be implemented within [JEB8] 6 months after approval is granted.

Part III. Individual Conditions

A. Illicit Discharge Detection and Elimination

The purpose of the Illicit Discharge Detection and Elimination (IDDE) program is to develop and implement a process for the evaluation of MS4 outfalls for the presence of non-storm water discharges. Illicit discharges are

those discharges that are not composed entirely of storm water, are not permitted discharges, and are not the result of what could be considered normal outside water use, such as residential car washing and lawn watering.

Under previous permit terms, the municipalities were required to screen all major outfalls annually through the term of the permit. Major outfalls included all outfalls with a diameter 36 inches or greater or outfalls draining an area of 50 acres or larger. Outfalls associated with an area of industrial activity 2 acres or more were also classified as major outfalls. **This permit does not limit screening to major outfalls** This permit also provides the permittees with flexibility to use different sampling parameters and screening frequencies to more effectively detect illicit discharges. The screening requirements for **all outfalls** are summarized below.

Major outfalls

- No indication of illicit discharge through pervious permit term's screening –
At least one-fifth of all outfalls per year on a rolling basis, with each outfall in this category being screened at least once during the five-year permit term.
- Last two samplings conducted show evidence of illicit discharge –
A minimum of once per year

All other outfalls identified for screening under Part II.D. of the permit

A minimum of once per year or at an increased frequency deemed appropriate by the municipality

Outfalls identified for annual screening shall be screened each year until no evidence for an illicit discharge is found for two consecutive years.

Outfalls with indeterminate sources and non-storm water discharges shall continue to be screened annually.

Upon detection of an illicit discharge, the municipality must immediately begin an investigation of the sewershed in an attempt to find and eliminate the source of the discharge. If the source cannot be found, then a minimum of 3 separate screenings must be conducted at the outfall within a 6 month period.

The Department has developed guidance to assist municipalities with implementing the Illicit Discharge Detection and Elimination permit requirement. The guidance is available for download at:
http://dnr.wi.gov/topic/stormwater/documents/MS4_IDDE_Guidance_3-2012.pdf

B. Construction Site Pollutant Control

Each municipality must update its local construction site erosion control ordinance(s) and inspection and enforcement procedures to be as least as restrictive as the revised NR 151, Wis. Adm. Code requirements by the end of the first year of the permit term.

C. Post-Construction Storm Water Management

Each municipality must update its local post-construction storm water management ordinance(s) and inspection and enforcement procedures to be as least as restrictive as the revised NR 151, Wis. Adm. Code requirements by the end of the first year of the permit term.

An overview of the changes made to NR 151 can be accessed at:
http://dnr.wi.gov/topic/stormwater/documents/NR-151_non-ag_overview_3-28-2012.pdf

D. Pollution Prevention

The pollution prevention requirement is a component of the permittee's MS4 storm water management program that includes the operation and maintenance of structural best management practices, management of runoff at municipally owned facilities such as public works yards, and ongoing education of municipal staff and officials.

E. Storm Water Quality Management

The developed urban area performance standard under NR 151.13(2) requires the treatment of storm water runoff collected by the MS4. The treatment standard is identified as a percent reduction of Total Suspended Solids (TSS) in runoff treated by best management practices as compared to what would be entering surface waters without treatment. The Department uses TSS as the regulatory criteria for evaluating the effects of urban runoff quality on receiving waters because it is a surrogate pollutant, meaning that other pollutants such as phosphorus and heavy metals are adsorbed to soil particles in runoff. Wisconsin Act 32 repealed and recreated s. 281.16 to specify that no more than a 20 percent reduction in total suspended solids can be required for any regulated MS4 point source. In addition, s. 281.16(2)(am)3. requires maintenance of all best management practices that were implemented on or before July 1, 2011 to achieve the standard.

This section of the permit was updated to reflect these recent statute changes. It also requires a storm water management planning requirement for municipalities currently achieving less than a 20 percent reduction from its MS4. The plan must be submitted to the Department for review and approval within the first year of the permit term. The plan shall include a current pollutant loading analysis, any long term maintenance agreements for individual facilities or agreements with other permitted municipalities within the same 10 digit hydrologic unit code (HUC) level to regionally treat runoff, and a cost-effectiveness analysis.

F. Impaired Waterbodies And Total Maximum Daily Load Requirements

It is expected that Total Maximum Daily Loads (TMDL's) will be developed and approved for implementation by EPA in the Milwaukee River Basin during the term of this permit. All point sources, including MS4's, will receive waste load allocations for individual stream reaches or water bodies which will identify the maximum daily mass of a pollutant of concern the MS4 can discharge to a particular water body or stream. The TMDL will account for the relative contributions of volume and pollutants generated from both non-point and point source runoff.

A table identifying the impaired waterways and their impairments is provided in **Appendix A** of the permit and is also included at the end of this fact sheet for reference.

G. Storm Sewer System Map

Each municipality covered under this permit has already under previous permit terms developed an MS4 map showing its storm sewer network, outfalls and contributing drainage areas, impaired waterways, and other relevant information to assist in storm water management planning and IDDE efforts. The municipalities are responsible for updating this map as needed and should make this map available for the public or other regulated municipalities when requested.

H. Annual Report

Each municipality is responsible for submitting an annual report of activities undertaken to comply with the permit during the course of a calendar year. A change over previous permit terms, a municipality has the option of submitting biannual reports on the 2nd and 4th year of the permit term. The annual report must be made available to the public for review and comment.

Part IV. Watershed Projects

This section has been included in the permit to provide the municipalities an alternative means to comply with a set of group and/or individual permit conditions while targeting a specific pollutant, source, or geographic area within the Menomonee River Watershed. The permit does not specify a project, but does permit the process for proposing and evaluating a project. All project proposals must be submitted the Department for review and approval prior to implementation.

Examples of watershed projects may include:

- An outfall monitoring program for dry and wet weather chemical sampling for *E.coli*, *Enterococci*, and *Bacteroides*.
- An investigation into the performance of BMPs (structural and nonstructural) in reducing bacteria loadings, including a demonstration project with monitoring/measurement of the results/effects.
- An investigation into systems and practices for reducing chloride loadings. This may include discussion forums, webinars/workshops for municipal staff and private applicators, and research on de-icing or anti-icing alternatives. Potential demonstration sites where alternative practices are employed and monitored may be included as well.
- A comparative watershed analysis to document the effectiveness/performance of green infrastructure in residential neighborhoods and commercial development.

Watershed restoration plans have been developed by Watershed Action Teams (WATs) in cooperation with the Southeastern Wisconsin Watersheds Trust, Inc. (SWWT) that identify priority project lists for implementation in the Menomonee River Watershed. Watershed data and recommendations from SEWRPC's Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds as well as stakeholder involvement were used to develop the WAT plans. The Menomonee River Watershed Restoration plan can be accessed at <http://www.swwtwater.org/home/publications.cfm>

Table 1 on the following page was developed as an initial planning tool to assist municipalities in prioritizing project ideas. Inclusion of the table is here only to present project examples and to represent how projects would target certain pollutants and potentially comply with other permit conditions.

Table 1. Menomonee River Watershed-Based Permit Conditions Matrix

Projects and Control Measures		BMP Category			Targeted Pollutant	Implementation Scale	
		Structural	Non-Structural	Source Reduction		Watershed-Based	Municipality-Based
Existing Permitted Control Measures							
Group Conditions	Public Education and Outreach		●		▲ ■ ● +	●	
	Public Involvement and Participation		●		▲ ■ ● +	●	
	Joint analysis procedure for identifying outfalls likely to be discharging sanitary wastewater			●	●	●	
Individual Conditions	Illicit Discharge Detection and Elimination		●	●	●		●
	Construction Site Pollutant Control		●		▲ ■		●
	Post-Construction Storm Water Management		●		▲ ■		●
	Pollution Prevention	●	●	●	▲ ■ +		●
	Storm Water Quality Management (20% TSS Reduction Urbanized Area Performance Standard / "Maintenance of Effort" pursuant to s. 281.16)	●			▲ ■		●
Menomonee River Watershed Priority Project List*							
	Green Infrastructure Development in Targeted Subwatersheds	●			▲ ■	●	
	Compile salt-use data, promote alternative practices, develop consistency among municipalities		●	●	+	●	
	Riparian Buffer Restoration / Habitat Improvement	●	●		▲ ■	●	
	Evaluate SWWT Household Survey Results and Develop Targeted I&E Plan		●		▲ ■ ● +	●	
	Integrate Storm Sewer Mapping for Multi-Jurisdictional IDDE Screening		●		●	●	
	Supplemental bacteroides sampling at outfalls in sewersheds determined to have significant human contributions of bacteria (MMSD and GLWI data)		●		●	●	
	Recreation Access Improvements		●			●	
Six Minimum Control Measures under NR 216		▲ Sediment ■ Phosphorus ● Bacteria + Chlorides					

Part V. Schedule

Location in Permit	Permit Requirement	Due Date
Part II. A	Joint public education and outreach program report	March 31st of each year
Part II. E	Analysis procedure for identifying outfalls likely to be discharging sanitary wastewater	March 31, 2014. Implement within 6 months of receiving Department approval.
Part III. B	Update local construction site pollutant control (erosion control) ordinance	October 1, 2013 Adopt by April 1, 2014
Part III. C	Update local post-construction storm water management ordinance	October 1, 2013 Adopt by April 1, 2014
Part III. F	Storm water management plan to meet developed urban area performance standard (20% TSS reduction)	October 1, 2013
Part III. G	Update storm sewer system map (if applicable)	March 31st of each year
Part III. H	Annual Report	March 31st of each year
Part V.	Watershed Project Proposal	
Part V. B	Watershed project evaluations	Updates submitted with annual report March 31st of each year
Part V.	Watershed Project Completion	

Appendix A

Table A-1

IMPAIRED WATERS WITHIN THE MENOMONEE RIVER WATERSHED: 2012

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Butler Ditch	Recreational restrictions-pathogens	0-2.9	Fecal coliform bacteria	Proposed 2010
Goldendale Creek	Recreational restrictions-pathogens	0-3.5	Fecal coliform bacteria	Proposed 2010
Honey Creek	Degraded biological community	0-8.96	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-10	Fecal coliform bacteria	Proposed 2010
Lilly Creek	Recreational restrictions-pathogens	0-4.7	Fecal coliform bacteria	Proposed 2010
Little Menomonee Creek	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	Proposed 2010
Little Menomonee River	Chronic aquatic toxicity	0-9	Creosote	1998
	Degraded biological community	0-9	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	Proposed 2010
Menomonee River	Low dissolved oxygen	0-2.67	Total phosphorus	1998
	Chronic aquatic toxicity	0-2.67	Unspecified metals	1998
	Contaminated fish tissue	0-2.67	PCBs	1998
	Recreational restrictions-pathogens	0-2.67	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-2.67	Fecal coliform bacteria	Proposed 2010
	Recreational restrictions-pathogens	2.67-6.27	Fecal coliform bacteria	Proposed 2010
Nor-X-Way Channel	Recreational restrictions-pathogens	0-4.9	Fecal coliform bacteria	Proposed 2010
South Branch Underwood Creek	Degraded biological community	0-1	Total phosphorus	Proposed 2012
Underwood Creek	Degraded biological community	0-2.84	Total phosphorus	Proposed 2012
	Degraded biological community	2.84-8.54	Unknown pollutant	Proposed 2012
	Recreational restrictions-pathogens	0-8.54	Fecal coliform bacteria	Proposed 2010
West Branch Menomonee River	Recreational restrictions-pathogens	0-2.45	Fecal coliform bacteria	Proposed 2010
Willow Creek	Recreational restrictions-pathogens	0-2.8	Fecal coliform bacteria	Proposed 2010

Source: Wisconsin Department of Natural Resources.

Table A-2

**IMPAIRED WATERS IN MENOMONEE RIVER WATERSHED MUNICIPALITIES
LOCATED IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED: 2012**

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Fox River Watershed				
Deer Creek	Degraded habitat	0-8.09	Elevated water temperature	2008
	Degraded habitat	0-8.09	Sediment/total suspended solids	2008
	Excess algal growth	0-8.09	Total phosphorus	1998
Fox River	Contaminated fish tissue	151.34-196.64	PCBs	1998
	Contaminated fish tissue	151.34-180.1	PCBs	1998
	Contaminated fish tissue	175.32-176.13	Mercury	1998
	Degraded biological community	113.24-151.34	Total phosphorus	Proposed 2012
	Degraded habitat	171.45-175.32	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Total phosphorus	1998
	Low dissolved oxygen	171.45-175.32	Total phosphorus	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Sediment/total suspended solids	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Total phosphorus	1998
Lannon Creek	Degraded habitat	0-5.48	Sediment/total suspended solids	1998
Master Disposal Drainage Channel	Chronic aquatic toxicity	0-.99	Unknown pollutant	1998
Poplar Creek	Low dissolved oxygen	0-8.06	Unknown pollutant	1998
Kinnickinnic River Watershed				
Cherokee Creek	Recreational restrictions-pathogens	0-1.6	Fecal coliform bacteria	Proposed 2010
Holmes Avenue Creek	Recreational restrictions-pathogens	0-1.8	Fecal coliform bacteria	Proposed 2010
Kinnickinnic River	Low dissolved oxygen	0-2.83	Total phosphorus	1998
	Contaminated fish tissue	0-2.83	PCBs	1998
	Chronic aquatic toxicity	0-2.83	Metals	1998
	Degraded biological community	2.84-9.94	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-2.83	<i>Escherichia coli</i>	1998
Lyons Park Creek	Recreational restrictions-pathogens	0-9.61	Fecal coliform bacteria	Proposed 2010
	Recreational restrictions-pathogens	0-1.5	Fecal coliform bacteria	Proposed 2010
South 43rd Street Ditch	Degraded biological community	0-1.16	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-1.16	Fecal coliform bacteria	Proposed 2010

Table A-2 (continued)

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Kinnickinnic River Watershed (continued)				
Villa Mann Creek	Recreational restrictions-pathogens	0-1.2	Fecal coliform bacteria	Proposed 2010
Wilson Park Creek	Recreational restrictions-pathogens	0-5.5	Fecal coliform bacteria	Proposed 2010
Milwaukee River Watershed				
Beaver Creek	Chronic aquatic toxicity	0-2.69	Unknown pollutant	1998
Lincoln Creek	Chronic aquatic toxicity	0-9.0	Unspecified metals	1998
	Chronic aquatic toxicity	0-9.0	PAHs	1998
	Degraded biological community	0-9.7	Total phosphorus	Proposed 2012
	Degraded habitat	8.5-9.0	Sediment/total suspended solids	1998
	Elevated water temperature-degraded habitat	0-8.5	Sediment/total suspended solids	1998
	Low dissolved oxygen	0-9.0	Total phosphorus	1998
Milwaukee River	Contaminated fish tissue/contaminated sediment	0-2.9	PCBs	1998
	Contaminated fish tissue	2.9-19.35	PCBs	1998
	Contaminated sediment	0-2.9	Unspecified metals	1998
	Low dissolved oxygen	0-2.9	Total phosphorus	1998
	Recreational restrictions-pathogens	0-19.35	<i>Escherichia coli</i>	1998
Oak Creek				
Oak Creek	Chronic aquatic toxicity	0-13.32	Unknown pollutant	1998
	Degraded biological community	0-13.32	Total phosphorus	Proposed 2012
Root River Watershed				
Root River	Low dissolved oxygen	20.48-43.95	Sediment/total suspended solids	1998
	Low dissolved oxygen	20.48-43.95	Total phosphorus	1998

Source: Wisconsin Department of Natural Resources.

Appendix I

**SUMMARY NOTES
JULY 18, 2012 MEETING**

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SUMMARY NOTES OF THE JULY 18, 2012 MEETING OF THE MENOMONEE RIVER WATERSHED-BASED PERMIT FRAMEWORK GROUP

INTRODUCTION

The July 18, 2012, meeting of the Menomonee River Watershed-Based Permit (WBP) Framework Group was convened at the Brookfield City Hall at 9:03 a.m. The meeting was called to order by Thomas Grisa, City of Brookfield Director of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Thomas M. Grisa, Chairman	Director, City of Brookfield Department of Public Works
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Maggie Anderson	Civil Engineer, City of Wauwatosa
Solomon Bekele	Civil Engineer, City of Milwaukee
Brionne Bischke	Village Engineer, Village of Germantown
Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Joseph Burtch	Assistant City Engineer, City of West Allis
Theresa Caven	Project Engineer, City of Brookfield
Cindi V. DeBruine	Senior Water Resources Engineer, R.A. Smith National, Inc. (representing the Villages of Butler and West Milwaukee)
Mike Flaherty	Director, Village of Elm Grove Department of Public Works
Nancy Greifenhagen	Engineering Technician, Village of Menomonee Falls
Dennis Grzezinski	Senior Counsel, Midwest Environmental Advocates
Bryan D. Hartsook	Water Resources Engineer, Wisconsin Department of Natural Resources
Stevan M. Keith	Environmental Engineer, Milwaukee County Division of Environmental Services
Laura L. Kletti	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Lauren Justus	Engineering Assistant, Village of Germantown
Jeff Martinka	Executive Director, Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water)
Ezra Meyer	Water Specialist, Clean Wisconsin
Kate Morgan	Water Policy Director, 1000 Friends of Wisconsin
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Karen Sands	Manager of Sustainability, Milwaukee Metropolitan Sewerage District
Timothy J. Thur	Chief Sewer Design Manager, City of Milwaukee Department of Public Works

Mr. Grisa welcomed the attendees to the meeting. He thanked everyone present for their continued participation in the process, and asked those in attendance to introduce themselves.

REVIEW OF SUMMARY NOTES OF THE JUNE 12, 2012, MEETING OF THE WATERSHED-BASED PERMIT FRAMEWORK GROUP

At Mr. Grisa's request, Mr. Hahn reviewed the Summary Notes of the June 12, 2012, meeting of the Group.

Mr. Hahn stated that because the agenda for this meeting includes review of the fact sheet, the draft watershed-based permit, and the watershed-based permit framework narrative, and because the summary notes did not

address significant new issues that had not already been discussed at the June 12 meeting, he would not conduct a detailed review of the June 12, 2012, summary notes. He asked whether there were any questions or comments on or corrections to the summary notes. None were offered by the Group. The Summary Notes from the June 12, 2012, meeting of the Group were approved by unanimous consent.

REVIEW OF THE WATERSHED-BASED PERMIT FACT SHEET

At Mr. Grisa's request, Mr. Hartsook reviewed the permit fact sheet. He stated that some changes have been made in sections of the draft permit related to illicit discharge detection and elimination (IDDE) and watershed projects. He explained that the changes in the IDDE language in Part III-Section A of the permit clarify that the permittees are required to screen major outfalls effective at the start of permit coverage and to screen other outfalls identified by the analysis procedure within six months of receiving approval of the analysis procedure from the Wisconsin Department of Natural Resources (WDNR). He indicated that a note was added to Part II-Section D of the permit noting the availability of third party data to assist in developing the group IDDE analysis procedure. He stated that a requirement for all covered municipal separate storm sewer systems (MS4s) to participate in at least one watershed project was added to Part IV of the permit. He indicated that the fact sheet will be revised to reflect these changes in the permit. Mr. Grisa suggested that the change to the fact sheet regarding the note on third party data should be fairly generic.

[Secretary's Note: The changes in the draft permit that Mr. Hartsook referred to are documented in the summary notes of the June 12, 2012, meeting of the Group.]

Mr. Hartsook drew the attention of the Group to Part IV of the fact sheet, which relates to group projects. He asked whether there was a need to add anything to this section. He noted that this section includes several examples of possible projects and asked whether some of these should be replaced or whether there should be more examples added. He asked the group to send him other examples of potential projects that can be added to the fact sheet.

Ms. Morgan noted the proposal to review and audit municipal codes of ordinances to identify barriers to the use of green infrastructure. She reminded the Group that an application for funding from the Fund for Lake Michigan is pending and that a decision on whether this project receives funding should be made in August.

Ms. DeBruine stated that the Village of Butler is considering doing a streambank restoration project at the Village park.

Mr. Grisa stated that an issue was raised at the last statewide MS4 TMDL meeting that may offer a potential project. He said that various alternatives for addressing total suspended solids and total phosphorus to meet TMDL waste load allocations were discussed at this meeting. He noted that these alternatives have come out of the research of Roger Bannerman of the WDNR. He indicated that one possible project might be to participate in a WDNR research project examining these alternatives.

Ms. Sands asked whether there was a deadline for submitting examples of project ideas for incorporation into the fact sheet. Mr. Hartsook replied that, to be incorporated into the fact sheet, they should be submitted to him prior to the end of August 2012. Mr. Grisa noted that the ideas listed in the fact sheet are examples of potential projects and do not obligate or limit the communities in what they decide to do.

[Secretary's Note: The potential projects relating to integrating storm sewer mapping and recreation access improvements were removed from Table 1 of the fact sheet. Potential projects relating to reviewing codes and ordinances to remove barriers to green infrastructure and implementation of urban practices to reduce phosphorus in runoff were added to Table 1 of the fact sheet. A copy of the revised Table 1 is attached hereto as Exhibit A.]

Mr. Hartsook asked whether Section F on page 7 of the fact sheet dealing with impaired waterbodies and TMDLs needs any clarification. Mr. Grzezinski replied that the section is accurate as written and does not require anything more.

Mr. Hartsook noted that Appendix A of the fact sheet lists the impaired waterbodies. Ms. DeBruine asked whether there is a map that shows the impaired waterbodies and the length of stream listed for each impairment. Mr. Hartsook replied that this can be found in two places on the WDNR website. He explained that the impaired waterbodies can be displayed on the Department's Surface Water Data Viewer. He added that the impaired water pages on the website link to better maps. He said that the fact sheet would be revised to include a link to the impaired water pages. Ms. Caven asked him to e-mail the link to the members of the Group. Mr. Hartsook replied that he would do this.

[Secretary's Note: The following paragraph was added at the end of the text box at the end Part II-Section F of the fact sheet:

"The Department maintains a searchable database of impaired waterways. This publicly accessible database is available at:

<http://dnr.wi.gov/water/impairedSearch.aspx>"

The second paragraph of Part III-Section F-1 of the permit was turned into a note. The following paragraph was added to the permit at the end of Part III Section F-1:

"The Department maintains a searchable database of impaired waterways. This publicly accessible database is available at:

<http://dnr.wi.gov/water/impairedSearch.aspx>"]

REVIEW OF THE WATERSHED-BASED MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT

At Mr. Grisa's request, Mr. Hartsook reviewed the watershed-based permit. He stated that changes documented in the summary notes of the June 12, 2012, meeting of the Group had been made. These include changes in sections of the draft permit related to IDDE and watershed projects. He reiterated his previous comments regarding 1) clarifications made to the IDDE outfall screening requirements, and 2) third party outfall monitoring data. He stated that a requirement for all covered municipal separate storm sewer systems (MS4s) to participate in at least one watershed project was added to the permit.

Mr. Grisa asked Mr. Hartsook to point out the locations of these changes in the permit. Mr. Hartsook replied that the changes clarifying the times when different elements of the IDDE screening requirements go into effect are located in the section of the permit that begins at line 35 on page 11 of the permit.

Mr. Hartsook indicated that the note encouraging the use of third party data in developing and implementing the analysis procedure for identifying priority outfalls for IDDE screening begins on line 38 on page 9 of the permit. He added that as a note, it is not legally binding. Mr. Hahn asked Mr. Grisa whether he thought the language of the note should be made more general, as Mr. Grisa suggested earlier in the meeting during review of the permit fact sheet. Mr. Grisa replied that, after further consideration, he thought the language in the note was acceptable. The Group agreed by consensus to accept the language of this note.

Mr. Hartsook stated that he added a note to the permit encouraging the MS4s to solicit comments and participation from nongovernmental organizations and interested parties during their annual meetings. He indicated that this note begins on line 7 on page 10 of the permit.

Mr. Hartsook stated that the language requiring the permittees to participate in a watershed project during the term of the permit begins on line 33 of page 20. He added that it lists no other deadlines related to these projects. Ms. Morgan asked whether the language requires that there be one joint project. Mr. Hartsook replied that the intent is that each municipality will participate in at least one project over the permit term. Mr. Grisa commented that the language does not make this clear. He added that the language as written requires every MS4 to participate in a single project. He suggested changing the word “joint” to “joint or individual” and placing the phrase in parentheses. Mr. Boxhorn suggested changing the beginning of this sentence to “Each permittee.” Mr. Grzezinski suggested using the phrase “Each of the Menomonee River Watershed Permittees.” Mr. Grisa responded that this was acceptable; however, he proposed keeping parentheses around the phrase “joint or individual.” Mr. Grzezinski suggested adding the phrase “preferably joint.” Mr. Grisa replied that this should be put into the fact sheet rather than the permit.

[Secretary’s Note: The first sentence of the first paragraph of Part IV of the permit was revised to read (text in bold is included here and in subsequent Secretary’s notes to denote language changed or added to the text. Text will not be bold in the draft permit):

“Each of the Menomonee River Watershed Permittees must participate in at least one project (joint or individual) designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River Watershed.”

The first sentence of Part IV-Section A of the permit was revised to read:

“A. PROJECT PROPOSALS: For each watershed project proposed, the participating Menomonee River Watershed Permittee(s) shall submit the following items to the Department for review and approval prior to implementation:”

The last sentence of the fourth full paragraph on page 4 of the fact sheet was revised to read (underlined and bold text are underlined in the fact sheet. The added material is in parentheses):

“The permit requires each municipality to participate in at least one individual or joint (preferably joint) watershed project to be completed by the end of the five year permit term.”]

Mr. Hartsook noted that there will need to be similar language changes to Part I of the permit in the sentences referring to watershed projects at lines 10 and 20 on page 5. Mr. Grisa replied that the sentence on line 10 does not need to be changed. He suggested adding the phrase “and completion of an individual project under Section IV” to the end of the sentence at line 20. Mr. Grzezinski suggested adding the word “joint” before the reference to a watershed project in line 21 of page 5.

[Secretary’s Note: The second sentence of the second paragraph of Part I-Section C of the permit was revised to read:

“Should a municipality elect not to participate in the planning, implementation, and evaluation of a joint watershed project, then it will be responsible for individual compliance with the individual conditions under Section III and completion of an individual watershed project under Section IV.”]

Ms. Justus asked whether the suggested language requires that MS4s who do not participate in a group project participate in two projects. Mr. Hartsook replied that it does not. He added that if a community does not

participate in a group project it must either find a different group project to participate in or conduct its own project.

Mr. Hartsook stated that he added an additional individual condition to the construction site pollution control section in Part III-Section B of the permit. He continued that this condition begins on line 35 on page 14 and requires the municipalities to enforce permit termination requirements for land owners of construction sites including removal of temporary erosion and sediment control best management practices (BMPs). Mr. Bischke asked whether a municipality covered under the permit would be cited if a developer refuses to remove the temporary BMPs. Mr. Hartsook replied that as long as the municipality is enforcing its ordinance, the Department will not fine them for violation of this condition.

Mr. Grisa asked whether the Group had reached consensus that concerns about the permit have been addressed. The Group indicated that there was consensus.

FINAL REVIEW OF THE WATERSHED-BASED PERMIT FRAMEWORK NARRATIVE DOCUMENT

At Mr. Grisa's request, Mr. Hahn reviewed the draft of the watershed-based permit framework narrative document. He reminded the Group that they had reviewed an earlier version of this narrative at the August 24, 2011, and October 12, 2011, meetings. He stated that the blue highlighting in the draft indicates text that has been added or revised since the review of the earlier version. He noted that the additions and revisions reflect the results of the Group's deliberations. He explained that much of the narrative examines issues related to the development of a watershed-based permit. He continued that much of the new material discusses the resolution of these issues.

Mr. Hahn reminded the Group that the version of the narrative document they had previously reviewed included a summary of water quality conditions. He indicated that this has been moved to an appendix in the narrative.

Mr. Hahn distributed copies of a revised version of the table describing incentives for MS4s to participate in a watershed-based permit. He indicated that this table will be Appendix L in the narrative document. He explained that after a meeting of the Southeastern Wisconsin Watersheds Trust (Sweet Water) Policy Committee, Maureen McBroom of the WDNR staff offered some suggestions that made the table clearer. He noted that the version of the table that he distributed incorporates Ms. McBroom's suggestions.

[Secretary's Note: A copy of the draft Appendix L is attached herein as Exhibit B.]

Mr. Grisa asked what was meant by footnote "b" in the table. Mr. Hahn explained that the footnote indicates that, because their individual MS4 permits expire in 2013 and TMDL wasteload allocations are scheduled to be issued at the end of 2012, the Cities of Milwaukee, New Berlin, and West Allis would gain some additional time in which to comply with the TMDL by participating in the watershed-based permit.

Mr. Hahn stated that the narrative document will be published as SEWRPC Memorandum Report No. 204. He noted that this report will contain several appendices, including the water quality summary and the incentives table. He added that all of the Summary Notes from meetings of this Group will be included as appendices in order to document the process of developing the watershed-based permit.

Mr. Grisa asked whether the Memorandum Report will be more appropriate for other communities interested in developing watershed-based permits than for members of this Group. Mr. Hahn replied that the report is intended to document the process for other groups seeking to develop a watershed-based permit, but will also be useful to members of this Group if they need to review the reasoning behind elements of the permit.

Mr. Hartsook suggested including an internet link to the report in the fact sheet, with a reference explaining that the report documents the process of developing the watershed-based permit. Mr. Hahn that such a link could be provided, although it may be a dummy link until a final draft of the report is completed.

[Secretary's Note: The following paragraph was added after the first paragraph of the fact sheet:

“This permit was developed as a collaborative effort between municipal representatives; non-governmental organizations; the Southeastern Wisconsin Watersheds Trust, Inc.; the Milwaukee Metropolitan Sewerage District; the Southeastern Wisconsin Regional Planning Commission (SEWRPC); the U.S. Environmental Protection Agency; and the Department. Supporting technical memoranda along with documentation outlining the decision making process for development of this watershed-based permit can be found on SEWRPC's website at:

<http://www.sewrpc.org/SEWRPCFiles/Publications/mr/mr-204-wshed-based-stormwater-permit-menomonee-river.pdf>”]

DISCUSSION OF THE NEXT STEPS IN THE PERMITTING PROCESS

At Mr. Grisa's request, Mr. Hartsook outlined what the next steps will be in the permitting process. Mr. Hartsook stated that final draft versions of the permit and the fact sheet will be issued with the summary notes from this meeting. He said that the draft permit would be submitted to the WDNR and U.S. Environmental Protection Agency (USEPA) for their review in early- to mid-October. He said he anticipates issuing a public notice of the permit in the first or second week of November.

Mr. Grisa asked whether Bob Newport of the USEPA, was confident that USEPA's review will result in minimal or no additional comments or concerns. (Mr. Newport did not attend the meeting.) Mr. Hartsook replied that he was not sure. He noted that the largest block of time in the process is set aside to allow the municipalities' governing boards to consider whether to participate. Mr. Grisa asked whether the permit and fact sheet could be submitted to the WDNR and USEPA prior to local consideration so that local consideration could proceed on a parallel track with WDNR and USEPA review. Mr. Hartsook replied that he will submit the permit and fact sheet to WDNR and USEPA upon completion of the summary notes and revisions.

Mr. Grzezinski asked who should coordinate with Mr. Newport regarding the USEPA review. Mr. Hartsook replied that he would schedule a meeting between WDNR staff and USEPA staff to establish review procedures.

Mr. Grzezinski stated that he would contact Mr. Newport to tell him that the draft permit and fact sheet would be coming and ask if he could expedite the review by USEPA. Ms. Sands indicated that Kevin Shafer, MMSD Executive Director, may also discuss this with Mr. Newport.

Mr. Bischke stated that he plans to follow a two-step process for approval by his Village Board of participation in the watershed-based permit. He indicated that he will seek to have participation authorized by a Board vote. He continued that he will return to the Board for a resolution after completion of the review of the permit by the WDNR and USEPA. He noted that to do this, he will be taking the permit to committee on August 7, 2012, and will need the permit and fact sheet by August 1. Mr. Boxhorn responded that SEWRPC staff and WDNR staff would coordinate to finish revisions and get the draft permit out quickly.

DISCUSSION OF MS4 STAFF COMMITMENT TO PURSUING AUTHORIZATION FOR MUNICIPAL PARTICIPATION IN THE WATERSHED-BASED PERMIT

Mr. Hahn distributed a table summarizing the responses from MS4s regarding their preferences for approaches to conducting outreach to local elected officials. He explained that under Option 1 local staff would present the

watershed-based permit to local elected officials and under Option 2 local staff would present the watershed-based permit to local elected officials with assistance from Sweet Water, WDNR, and/or SEWRPC.

[Secretary's Note: A copy of the table is attached herein as Exhibit C.]

Mr. Hahn noted that there were a few communities that had either not responded or had expressed no preference as to which option they would prefer. Mr. Keith indicated that Milwaukee County would prefer Option 2. He added that it is unlikely that many County Supervisors would attend a large group meeting. Ms. Anderson indicated that the City of Wauwatosa would prefer Option 2. Ms. DeBruine stated that the Village of West Milwaukee would prefer Option 1.

Mr. Hahn explained that in tallying the responses to the question of whether local officials would attend a large group meeting, he counted those communities that indicated that only one or two officials would attend as "no's." He said that Richard Sokol, City of Greenfield Director of Neighborhood Services, who offered to host a large group meeting at the June 12, 2012, Menomonee River Watershed Group meeting, has subsequently indicated in an e-mail message that there was not a great deal of interest in a large group meeting on the part of City of Greenfield elected officials, although the idea had not been completely ruled out. Given that situation, and since only two communities responded yes to this question, it was concluded that it is unlikely that a large group meeting will be held.

Mr. Hahn indicated that he, Mr. Hartsook, and Mr. Martinka would be the staff who would be available to assist with presentations for those MS4s who desire assistance in presenting the permit to local elected officials. He asked that the staff from those communities who desire assistance in presenting e-mail him, Mr. Hartsook, and Mr. Martinka and indicate the date and time of the meeting, what sort of assistance they want, and how much time they will have for a presentation.

DISCUSSION OF OUTREACH TO LOCAL ELECTED OFFICIALS

Mr. Martinka said that he had written a one-page fact sheet on the watershed-based permit that can be used in outreach efforts to local elected officials. He continued that this is intended as a tool that the communities can use as they see fit. He noted that local communities can use it as is, put it onto their letterhead, or otherwise customize it for their use.

[Secretary's Note: A copy of the one-page fact sheet is attached herein as Exhibit D.]

Mr. Martinka reviewed the outreach activities that are currently scheduled. He stated that Mr. Hahn and Mr. Hartsook will make a presentation to the MMSD Technical Advisory Team on July 19, 2012. He noted that the August meeting of the Milwaukee County Intergovernmental Cooperation Council was cancelled, and said that he, Mr. Hartsook, and Mr. Hahn will make a presentation at the Council's September meeting.

Ms. DeBruine asked whether there was a PowerPoint presentation available for local staff to use. Mr. Hahn replied that he could provide the full presentation that he and Mr. Hartsook have previously used so that local staff could use it as they see fit.

Mr. Keith noted that for presentation to the County Board, the watershed-based permit would be viewed from a totally different perspective if the presentation is for information only and no vote is needed. He indicated that this will make it more likely that action on the permit will move quickly.

Ms. DeBruine asked what will be needed from the municipal governing bodies to indicate participation. Mr. Hahn replied that that is up to each municipality. Mr. Grisa commented that he likes the process Mr. Bischke described in which the Council or Board first makes a commitment of interest through a vote and later passes a resolution.

Mr. Hartsook indicated that this was acceptable, noting that he can change the list of communities that are covered under the watershed-based permit until the day before the public notice is issued.

Mr. Grisa asked whether a more formal application process would be appropriate from a perspective of the permit framework. Mr. Hahn replied that it is a matter of whatever local officials need to feel comfortable with the process. Mr. Grisa suggested characterizing the commitment process as an application. Mr. Hartsook indicated that he could send a formal letter to the communities asking for a response by a deadline. He added that he would do this after he has received comments on the watershed-based permit from the WDNR and USEPA, probably in late August or early September. Mr. Grisa stated that these letters should be sent to all MS4s in the watershed.

Mr. Hahn thanked the participants for their effort and contributions during the permit development process.

Mr. Martinka stated that the Respect Our Waters (ROW) information and education campaign has conducted outreach at events in several communities. He indicated that they are available to conduct outreach at additional community events and asked that members of the Group let them know about upcoming events. He noted that they also have four more opportunities for quasi-news television events. He said that he needs ideas for these.

Mr. Martinka indicated that the ROW campaign is also asking nongovernmental organizations to put information and links to the ROW website on their websites, and that this could also be done by municipalities. Mr. Meyer asked whether the ROW website links to municipal websites. Ms. Morgan replied that it does not, but links could be added if the municipalities want them on the site. Mr. Hartsook indicated that he would try to get a link to the ROW site added to the WDNR website.

Ms. DeBruine asked what the response has been to the online/television advertising campaign. Mr. Martinka replied that he does not have a tally of the number of hits that the ROW website has received, but he has heard from people who have seen the commercials.

Mr. Hartsook thanked everyone for their work and time commitment. He commented that he found the process very valuable. He said that upper management at the WDNR recognizes everyone's involvement.

REVISIONS MADE TO THE DRAFT FACT SHEET AND WATERSHED-BASED PERMIT BY BRYAN HARTSOOK, WDNR, SUBSEQUENT TO THE JULY 18, 2012, MEETING OF THE GROUP

Following the July 18 meeting of the Group, Mr. Hartsook submitted several revisions to the draft fact sheet and watershed-based permit. These changes reflect editorial considerations and updating of information.

Editorial changes were made to Part II-Section D of the fact sheet.

[Secretary's Note: The first two sentences of the first paragraph of Part II-Section D (renumbered to Part II-Section C) of the fact sheet were revised to read:

“A combination of in-stream monitoring and storm sewer outfall sampling and research conducted by other entities including the Milwaukee Metropolitan Sewerage District (MMSD), **UW-Milwaukee Great Lakes Water Institute**, and Milwaukee Riverkeeper has identified a need to address long-term problems with aging sanitary and storm sewer infrastructure in the Greater Milwaukee Area. The research indicates that infiltration and inflow (I&I) of sanitary wastewater into the storm sewer system contributes to discharges from the storm sewer system that are contaminated with sanitary wastewater.”

The following paragraph was added after the last paragraph in Part II-Section D of the fact sheet:

“More information on this topic can be found at <http://www.milwaukeekeeper.org/content/bacteria-testing>”]

To make Part I-Section A of the permit consistent with the cover page of the permit, the list of communities in this part was removed.

[Secretary’s Note: The list of municipalities covered under the permit in Part I-Section A of the permit was deleted and replaced by the following sentence:

“(Municipalities covered under this permit are yet to be determined)”]

EDITORIAL REVISIONS MADE TO THE WATERSHED-BASED PERMIT BY SEWRPC STAFF SUBSEQUENT TO THE JULY 18, 2012, MEETING OF THE GROUP

Following the July 18 meeting of the Group, SEWRPC staff made several revisions to the watershed-based permit to correct typographical and other errors.

[Secretary’s Note: The second sentence of the last paragraph of Part I-Section B was revised to read:

“Lined streams provide almost no habitat and also degrade conditions in unlined downstream **stream** sections by creating highly erosive flow velocities during wet weather conditions and excessively warm water during low flow conditions.”]

[Secretary’s Note: The fourth paragraph in Part III-Section A-3-b-iii of the permit was revised to read:

“iii. Consideration shall be given to hydrological conditions, total drainage area of the site, population density of the site, traffic density, age of the structures or **buildings** in the area, history of the areas and land use types.”]

[Secretary’s Note: The first sentence of the Part III-Section E-1 of the permit was revised to read:

“1. If applicable, a storm water management plan that identifies a schedule for implementing best management practices necessary to achieve a **20 percent** reduction in the average mass of total suspended solids discharging from the MS4 to waters of the state as compared to no controls.”]

[Secretary’s Note: On page 26 of the permit, “Part VI. Definitions” was retitled “Part VII. Definitions.”]

EDITORIAL REVISIONS MADE TO THE FACT SHEET BY SEWRPC STAFF SUBSEQUENT TO THE JULY 18, 2012, MEETING OF THE GROUP

Following the July 18 meeting of the Group, SEWRPC staff made the following revision to the fact sheet to correct a typographical error.

[Secretary’s Note: On the first page of the fact sheet, the second line of the title was changed to read:

“WPDES Permit No. WI-XXXXXXX-X”]

ADJOURNMENT

There being no further business, the meeting was adjourned by unanimous consent at 10:20 a.m.

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Exhibit A

Table 1. Menomonee River Watershed-Based Permit Conditions Matrix

Projects and Control Measures		BMP Category			Targeted Pollutant	Implementation Scale	
		Structural	Non-Structural	Source Reduction		Watershed-Based	Municipality-Based
Existing Permitted Control Measures							
Group Conditions	Public Education and Outreach		●		▲ ■ ● +	●	
	Public Involvement and Participation		●		▲ ■ ● +	●	
	Joint analysis procedure for identifying outfalls likely to be discharging sanitary wastewater			●	●	●	
Individual Conditions	Illicit Discharge Detection and Elimination		●	●	●		●
	Construction Site Pollutant Control		●		▲ ■		●
	Post-Construction Storm Water Management		●		▲ ■		●
	Pollution Prevention	●	●	●	▲ ■ +		●
	Storm Water Quality Management (20% TSS Reduction Urbanized Area Performance Standard / "Maintenance of Effort" pursuant to s. 281.16)	●			▲ ■		●
Menomonee River Watershed Priority Project List							
	Green Infrastructure Development in Targeted Subwatersheds	●			▲ ■	●	
	Compile salt-use data, promote alternative practices, develop consistency among municipalities		●	●	+	●	
	Riparian Buffer Restoration / Habitat Improvement	●	●		▲ ■	●	
	Evaluate SWWT Household Survey Results and Develop Targeted I&E Plan		●		▲ ■ ● +	●	
	Review of codes and ordinances to remove barriers to developing Green Infrastructure		●		▲ ■ ●	●	
	Supplemental bacteroides sampling at outfalls in sewersheds determined to have significant human contributions of bacteria (MMSD and GLWI data)		●		●	●	
	Implementation of urban practices to reduce phosphorus in runoff	●			▲ ■	●	
Six Minimum Control Measures under NR 216					▲ Sediment ■ Phosphorus ● Bacteria + Chlorides		

Exhibit B

Appendix L

INCENTIVES FOR MS4s TO PARTICIPATE IN A WATERSHED-BASED PERMIT

PRELIMINARY DRAFT

Watershed-Based Permit Incentive	Watershed-Based Approach		Traditional Approaches	
	Reduced Costs	Increased Effectiveness of Water Quality Improvement	Also Available under Group Permit?	Also Available under Individual Permit?
Ability to undertake collaborative watershed projects that could meet multiple individual and group permit conditions	Y	Y	N	N
Flexibility in addressing TMDL WLAs in multiple-municipality stream reaches, including developing experience in collaborating on the implementation of new types of pollution controls	Y	Y	Y	N
Development of a joint analysis procedure for prioritizing and targeting outfalls for IDDE monitoring	Y	Y	N	N
Joint report on public education and outreach	Y	Y	N	N
Options for cooperative public education and outreach	Y	Y	Y	Y
Can address reductions in pollutant loads at watershed level without executing water quality trades				
TSS	Y	Y	Y	N
Phosphorus	Y	Y	N	N
Bacteria	Y	Y	N	N
Not subject to trading ratios	Y	Y	Y/N ^a	N
Possibility of receiving substantive additional points on State Urban Nonpoint Source and Storm Water Management Grants	Y	Y	N	N
Grant applications for collaborative projects undertaken by members of a watershed-based permit may be assigned higher priorities by public and private grant institutions	Y	Y	N	N
Reduction in transaction costs	Y	Y	N	N
MS4 with permit renewal date in or after 2013 would gain time to comply with TMDL wasteload allocations by participating in the watershed-based permit ^b	Y	Y	N	N

^aThis is available under the group permit for TSS but not for phosphorus or bacteria.

^bThis would benefit the Cities of Milwaukee, New Berlin, and West Allis.

Source: SEWRPC.

Exhibit C

MnR WBP

MS4 RESPONSES RE: OUTREACH TO LOCAL ELECTED OFFICIALS

00205802 MnR WBP - Local Preferences for Elected Official Outreach

7/18/2012

MS4	Option 1 Pres Solely by Local Staff	Option 2 Presentation by Local Staff with Assistance from SWWT, WDNR, SEWRPC	Large Group Meeting
Milwaukee County	--	X	No
City of Brookfield	X	--	1 or 2 attend
City of Greenfield	X	--	No
City of Milwaukee	X	X (Public Works Committee)	No
City of Wauwatosa	No preference stated	No preference stated	Yes, but not in August
City of West Allis	X	--	No response
Village of Butler	X	--	No
Village of Elm Grove	--	X	No
Village of Germantown	X	--	Maybe 1 would attend
Village of Menomonee Falls	--	X	No
Village of West Milwaukee	No preference stated	No preference stated	Yes
Summary of Responses	6	4	No: 8 Yes: 2

Exhibit D

DRAFT

Fact Sheet: Menomonee River Watershed-Based Stormwater Permit: *Cost-effectively achieving cleaner water*

Federal and state rules require municipalities to comply with stormwater permits in order to reduce water pollution. In the past, municipalities often worked separately to meet permit requirements. A new approach creates the opportunity to achieve large water quality benefits in a more cost effective way.

Building from an Existing Group

Eight Menomonee River watershed municipalities are currently participating in a group stormwater permit and the remaining municipalities have individual permits. As an alternative to the current group and individual permits, municipalities and key partners in the Menomonee River watershed are developing a regional stormwater permit for the entire watershed, linking governments together in an approach that more effectively targets specific water quality problems in the region. This new approach is supported by the EPA as a model for cost-effective innovation among governmental permit holders.

For municipalities, there are many benefits to participating in a watershed-based permit for the entire Menomonee River watershed, including:

- ***Save taxpayer dollars** by sharing costs of regional pollution control measures that improve water quality and satisfy permit conditions for all participating municipalities, eliminating overlap of local governments in water quality efforts, and saving staff hours by issuing a single watershed-based report on public education and outreach.

- ***Gain greater flexibility in achieving new Total Maximum Daily Load (TMDL) mandated pollution reduction requirements** through collaboration with neighboring municipal partners, without being restricted to pollutant trading guidelines which can place limitations on time, locations of best management practices, and accounting (trade ratios). Participating in joint permits gives governments the flexibility to meet the standards set in the new TMDLs collectively by treating the permit group as a single point source.

- ***Improve water quality**, as joint permits can more effectively reduce stormwater pollution by ending the piecemeal approach to stormwater control and allowing all stakeholders in a watershed to share ideas and information.

- ***Improve chances of winning grants** through collaborative projects, which are typically looked on more favorably by both public and private funders. Group permit holders will possibly receive additional points on Urban Nonpoint Source and Storm Water Management grant applications to the Wisconsin DNR.

Bottom Line: Participating in a watershed-based permit allows municipalities to more efficiently and cost-effectively achieve reductions in water pollution.

For more information, please contact Wisconsin DNR Water Resources Engineer Bryan Hartsook at 262-574-2129 or at Bryan.Hartsook@wisconsin.gov

Appendix J

SURFACE WATER QUALITY INVENTORY

INTRODUCTION

A watershed-based stormwater permit offers the potential advantage of tailoring permit conditions to conditions in the watershed. Under this approach, permit requirements can be structured in a coordinated manner to address the water quality problems that are occurring in the receiving waters, emphasizing those stressors that are contributing to the water quality problems. This tailoring of permit conditions in a coordinated manner will assist dischargers in setting priorities for potential solutions, such as determining which pollutants and which sources to focus on first to achieve the greatest water quality improvements. The end result would be implementation of strategies and approaches that could generate both cost savings and improved environmental conditions.

To tailor permit conditions to the situation in the Menomonee River watershed, a thorough understanding of existing conditions in the watershed is needed. This involves being able to answer a number of questions regarding water quality conditions in the watershed, such as:

- To what extent are the surface waters of the Menomonee River watershed able to achieve the uses for which they are designated by the State of Wisconsin pursuant to the Federal Clean Water Act?
- If these waters are not fully supporting these uses, what pollutants are acting as stressors to reduce water quality?
- To what extent are these stressor pollutants being contributed through discharges from municipal separate storm sewer systems (MS4s)?

In addressing these questions, an analysis of water quality conditions in the Menomonee River watershed will provide a focus in which to select and prioritize permit conditions for MS4 discharges.

Such an analysis is complicated by the fact that municipal boundaries are generally drawn without regard to watershed boundaries. Most of the municipalities and all of the counties that are permitted to discharge stormwater through MS4 systems in the Menomonee River watershed are located within portions of more than one watershed. As shown in Table 1, only three Menomonee River watershed municipalities are located entirely within the Menomonee River watershed. The boundaries of nine Menomonee River watershed municipalities encompass portions of two watersheds. There are three municipalities whose boundaries encompass portions of more than two watersheds. The boundaries of the City of Milwaukee show the greatest degree of overlap with watershed boundaries. The City contains portions of five watersheds. Similarly, the boundaries of each of the four

counties that contain portions of the Menomonee River watershed encompass portions of three to five watersheds.¹ This overlapping of watershed boundaries by municipal and county boundaries indicates that many of these MS4s are discharging to receiving waters in more than one watershed. This will need to be taken into account in some manner in the permitting process. Because of this, the inventory will also need to examine surface water quality conditions in, and downstream, of those surface waters in the watersheds adjacent to the Menomonee River watershed that are contained within Menomonee River watershed municipalities.

Geographical Setting and Scope of the Inventory

The Menomonee River watershed is located in the east-central portion of the Southeastern Wisconsin Region and covers an area of approximately 136 square miles. The Menomonee River originates in southeastern Washington County and flows approximately 28 miles through the northeastern corner of Waukesha County and through the western and central portions of Milwaukee County to its confluence with the Milwaukee River in the Milwaukee Harbor estuary. The stream systems that comprise the Menomonee River watershed are part of the Lake Michigan drainage system, lying east of the subcontinental divide, which drains to the Laurentian Great Lakes System.

Tributary streams to the Menomonee River include Little Menomonee Creek and the Little Menomonee River, which is located in southwestern of Ozaukee County and northwestern Milwaukee County; Honey Creek, which is located in south-central Milwaukee County; Underwood Creek, Dousman Ditch, and Butler Ditch, which are located in east-central Waukesha County and west-central Milwaukee County; Willow Creek, which is located in southeastern Washington County; and the Nor-X-Way Channel which is located in the Ozaukee-Washington County border area. There are no major lakes—with surface areas of 50 acres or more—within the Menomonee River watershed.

The communities of the Menomonee River watershed also include lands draining to neighboring watersheds, including streams of the Fox River watershed, the Cedar Creek and Milwaukee River South subwatersheds of the Milwaukee River watershed, the Kinnickinnic River watershed, the Root River watershed, and the Oak Creek watershed, as shown in Table 1 and on Map J-1. Streams in the Fox River watershed that drain Menomonee River communities include the Fox River, Deer Creek, Lannon Creek, Mill Creek, Muskego Creek, and Poplar Creek. Streams in the Kinnickinnic River watershed that drain Menomonee River communities include the Kinnickinnic River, Cherokee Park Creek, Holmes Avenue Creek, Lyons Park Creek, the South 43rd Street Ditch, Villa Mann Creek, and Wilson Park Creek. Streams in the Milwaukee River watershed that drain Menomonee River communities include Kressin Branch and Little Cedar Creek in the Cedar Creek subwatershed and the Milwaukee River, Beaver Creek, Lincoln Creek, Pigeon Creek, Southbranch Creek, and Trinity Creek in the Milwaukee River South subwatershed. Streams in the Oak Creek watershed that drain Menomonee River communities include the Mitchell Field Drainage Ditch and North Branch Oak Creek. Streams in the Root River watershed that drain Menomonee River communities include the Root River, Dale Creek, Hale Creek, Tess Corners Creek, Whitnall Park Creek, and Wildcat Creek.

This inventory presents information on 1) the water use objectives and supporting water quality criteria, 2) the extent to which the surface waters of the Menomonee River watershed and surface waters immediately adjacent to the Menomonee River watershed meet those criteria, 3) those waters that are considered impaired pursuant to Section 303(d) of the Federal Clean Water Act (CWA), and 4) urban nonpoint source pollutant loads for these waters.

Designated Water Use Objectives and Water Quality Criteria

Section 281.15(1) of the *Wisconsin Statutes* requires that the WDNR prepare and adopt water use objectives and supporting water quality standards and criteria that apply to all surface waters of the State. Such authority is essential if the State is to meet the requirements of the CWA. The water use objectives and water quality

¹*This discussion does not include those areas that drain directly to Lake Michigan.*

CURRENT REGULATORY WATER USE CLASSIFICATIONS FOR SURFACE WATERS WITHIN THE MENOMONEE RIVER WATERSHED AND ADJACENT WATERSHEDS CONTAINED WITHIN MENOMONEE RIVER WATERSHED COMMUNITIES



standards and criteria promulgated by the WDNR are set forth in Chapters NR 102 through NR 105 of the *Wisconsin Administrative Code*. Relative to fish and aquatic life uses, the WDNR has currently developed the following water use objectives:

1. Great Lakes community,
2. Cold water community,
3. Warmwater sportfish community,
4. Warmwater forage fish community,
5. Limited forage fish community, and
6. Limited aquatic life community.

In addition, NR 104 establishes special variances for specifically designated surface waters. Because identical water quality criteria apply to them, the warmwater sportfish and warmwater forage fish categories are sometimes referred to “warmwater fish and aquatic life (FAL).” It is important to note that establishment of a stream water use objective other than coldwater or warmwater fish and aquatic life is not necessarily an indication of reduced water quality, since such stream reaches may be limited by flow or size, but may still be performing well relative to other functions. The WDNR has also established criteria for two recreational use categories: 1) full recreational use and 2) limited recreational use. For the purpose of the anti-degradation policy to prevent the lowering of existing water quality, the WDNR has classified some waters as outstanding or exceptional resource waters. These waters, listed in Sections NR 102.10 and NR 102.11 of the *Wisconsin Administrative Code*, are deemed to have significant value such as valuable fisheries, hydrologically or geographically unique features, outstanding recreational opportunities, and unique environmental settings, and are not significantly impacted by human activities. Any discharge that may be allowed to these waters can generally not be above background levels.

The water use classifications for the streams of the Menomonee River watershed and for those streams of other watersheds that are contained within Menomonee River watershed communities are shown on Map J-1. Within the Menomonee River watershed, most stream reaches are either classified as warmwater fish and aquatic life communities or are subject to special variances set forth in NR 104. Most of the streams in other watersheds that are contained within Menomonee River watershed communities are also classified as warmwater fish and aquatic life communities. There are several exceptions to this: In the Fox River watershed, Deer Creek and the reach of Poplar Creek between the wastewater treatment plant outfall at New Berlin West High School and the Canadian and Northwestern Railroad bridge are classified as limited aquatic life communities and Poplar Creek downstream from the Canadian and Northwestern Railroad bridge to the confluence with the Fox River is classified as a limited forage fish community. In the Kinnickinnic watershed, the mainstem of the Kinnickinnic River is subject to a special variance set forth in NR 104. In the Milwaukee River watershed, Lincoln Creek and the mainstem of the Milwaukee River downstream from the site of the former North Avenue dam are subject to special variances set forth in NR 104. In the Root River watershed, Tess Corners Creek and Whitnall Park Creek between the site of the former Hales Corners wastewater treatment plant and Whitnall Park Pond are classified as limited forage fish communities and Whitnall Park Creek upstream from the former Hales Corners wastewater treatment plant is classified as a limited aquatic life community. There are no Great Lakes or coldwater communities or outstanding or exceptional resource waters in the Menomonee River watershed or in or downstream of those portions of adjacent watersheds contained within Menomonee River watershed communities.

The applicable water quality criteria for all water uses designated in Southeastern Wisconsin are set forth in Tables J-1 and J-2. The water quality criteria are statements of the physical, chemical, and biological characteristics of the water that must be maintained if the water is to be suitable for the designated uses. Table J-1 shows the applicable water quality criteria for all designated uses for five water quality parameters—dissolved oxygen concentration, pH, fecal coliform bacteria concentration, total phosphorus, and chloride—and for limited aquatic life communities for temperature.

Table J-1

APPLICABLE WATER QUALITY CRITERIA FOR STREAMS

Water Quality Parameter	Designated Use Category ^a						Source
	Coldwater Community	Warmwater Fish and Aquatic Life	Limited Forage Fish Community (variance category)	Special Variance Category A ^b	Special Variance Category B ^c	Limited Aquatic Life (variance category)	
Temperature (°F)	See Table J-2						NR 102 Subchapter II
Dissolved Oxygen (mg/l)	6.0 minimum 7.0 minimum during spawning	5.0 minimum	3.0 minimum	2.0 minimum	2.0 minimum	1.0 minimum	NR 102.04(4) NR 104.04(3) NR 104.06(2)
pH Range (S.U.)	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0	6.0-9.0	NR 102.04(4) ^d NR 104.04(3)
Fecal Coliform Bacteria (MFFCC)	--	--	--	--	--	--	NR 102.04(5) NR 104.06(2)
Geometric Mean	200	200	200	1,000	1,000	200	
Maximum	400	400	400	2,000	--	400	
Total Phosphorus (mg/l)	--	--	--	--	--	--	NR 102.06(3)
Designated Streams ^e	0.100	0.100	0.100	0.100	0.100	0.100	NR 102.06(4)
Other Streams	0.075	0.075	0.075	0.075	0.075	--	NR 102.06(5) NR 102.06(6)
Chloride (mg/l)	--	--	--	--	--	--	NR 105.05(2)
Acute Toxicity ^f	757	757	757	757	757	757	NR 105.06(5)
Chronic Toxicity ^g	395	395	395	395	395	395	

^aNR 102.04(1) All surface waters shall meet the following conditions at all times and under all flow conditions: substances that will cause objectionable deposits on the shore or in the bed of a body of water, floating or submerged debris, oil, scum or other material, and materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the State. Substance in concentrations or combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant, or aquatic life.

^bAs set forth in Chapter NR 104.06(2)(a) of the Wisconsin Administrative Code.

^cAs set forth in Chapter NR 104.06(2)(b) of the Wisconsin Administrative Code.

^dThe pH shall be within the stated range with no change greater than 0.5 unit outside the estimated natural seasonal maximum and minimum.

^eDesignated in Chapter NR 102.06(3)(a) of the Wisconsin Administrative Code. In the Menomonee River watershed and adjacent watersheds designated streams and stream reaches include: the Fox River from the confluence with the Mukwonago River to the State line, excluding Tichigan Lake; the Kinnickinnic River from the confluence with Wilson Park Creek to the confluence with the Milwaukee River; the Menomonee River from the confluence with the Little Menomonee River to the confluence with the Milwaukee River; and the Milwaukee River from the confluence with Cedar Creek to the openings of the breakwaters at Lake Michigan.

^fThe acute toxicity criterion is the maximum daily concentration of a substance which ensures adequate protection of sensitive species of aquatic life from the acute toxicity of that substance and will adequately protect the designated fish and aquatic life use of the surface water if not exceeded more than once every three years.

^gThe chronic toxicity criterion is the maximum four-day concentration of a substance which ensures adequate protection of sensitive species of aquatic life from the acute toxicity of that substance and will adequately protect the designated fish and aquatic life use of the surface water if not exceeded more than once every three years.

Source: Wisconsin Department of Natural Resources and SEWRPC.

Table J-2 shows the water quality criteria for temperature for those streams that have a seven-day, 10-percent probability low flow (7Q10)² of less than 200 cubic feet per second.

In addition to the numerical criteria presented in the tables, there are narrative standards which apply to all waters. All surface waters must meet certain conditions at all times and under all flow conditions. Chapter NR 102 of the *Wisconsin Administrative Code* states that:

“Practices attributable to municipal, commercial, domestic, agricultural, land development or other activities shall be controlled so that all waters including the mixing zone and the effluent channel meet the following conditions at all times and under all flow conditions:

²Seven-day consecutive low flow with an annual probability of occurrence of 10 percent.

Table J-2

**AMBIENT TEMPERATURES AND WATER QUALITY CRITERIA FOR TEMPERATURE FOR NONSPECIFIC
WARM-WATER STREAMS WITH 7Q10 FLOWS LESS THAN 200 CUBIC FEET PER SECOND^{a,b}**

Month	Cold Water Communities			Large Warmwater Communities ^c			Small Warmwater Communities ^d			Limited Forage Fish Communities ^e		
	Ta ^{f,i}	SL ^{g,i}	A ^{h,i}	Ta ^{f,i}	SL ^{g,i}	A ^{h,i}	Ta ^{f,i}	SL ^{g,i}	A ^{h,i}	Ta ^{f,i}	SL ^{g,i}	A ^{h,i}
January	35	47	68	33	49	76	33	49	76	37	54	78
February	36	47	68	33	50	76	34	50	76	39	54	79
March	39	51	69	36	52	76	38	52	77	43	57	80
April	47	57	70	46	55	79	48	55	79	50	63	81
May	56	63	72	60	65	82	58	65	82	59	70	84
June	62	67	72	71	75	85	66	76	84	64	77	85
July	64	67	73	75	80	86	69	81	85	69	81	86
August	63	65	73	74	79	86	67	81	84	68	79	86
September	57	60	72	65	72	84	60	73	82	63	73	85
October	49	53	70	52	61	80	50	61	80	55	63	83
November	41	48	69	39	50	77	40	49	77	46	54	80
December	37	47	69	33	49	76	35	49	76	40	54	79

^aThe 7q10 flow is the seven-day consecutive low flow with a 10 percent annual probability of occurrence (10-year recurrence interval).

^bAs set forth in Section NR 102.25 of the Wisconsin Administrative Code.

^cWaters with a fish and aquatic life use designation of "warmwater sportfish community" or "warmwater forage fish community" and unidirectional 7Q10 flows greater than or equal to 200 cubic feet per second.

^dWaters with a fish and aquatic life use designation of "warmwater sportfish community" or "warmwater forage fish community" and unidirectional 7Q10 flows less than 200 cubic feet per second.

^eWaters with a fish and aquatic life use designation of "limited forage fish community."

^fTa indicates ambient temperature.

^gSL indicates sublethal temperature criteria.

^hA indicates acute temperature criteria.

ⁱThe ambient temperature, sublethal water quality criterion, and acute water quality criterion specified for any calendar month shall be applied simultaneously to establish the protection needed for each identified fish and other aquatic life use. The sublethal criteria are to be applied as the mean daily maximum temperature over a calendar week. The acute criteria are to be applied as the daily maximum temperatures. The ambient temperature is used to calculate the corresponding acute and sublethal criteria and for determining effluent limitations in discharge permits under the Wisconsin Pollutant Discharge Elimination System.

Source: Wisconsin Department of Natural Resources.

“(a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water shall not be present in such amounts as to interfere with public rights in the waters of the State.

“(b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in the waters of the State.

“(c) Materials producing color, odor, taste, or unsightliness shall not be present in such amounts as to interfere with public rights in the waters of the State.

“(d) Substances in concentrations or combinations which are toxic or harmful shall not be present in amounts found to be of public health significance, nor shall such substances be present in such amounts as to interfere with public rights in the waters of the State.”³

The State of Wisconsin has not promulgated numerical water quality criteria for some water quality constituents. Examples of this include total suspended solids and total nitrogen.

Evaluation of Surface Water Quality

Sources of Data and Methods of Evaluation

As noted previously, the communities of the Menomonee River watershed also include lands draining to neighboring watersheds. Thus, for this watershed-based permitting framework project, in addition to evaluating water quality conditions in the Menomonee River watershed, conditions were characterized in the Kinnickinnic, Milwaukee, and Root River watersheds and the Oak Creek watershed. That multi-watershed evaluation was done to determine whether a single, consistent set of permit conditions could be applied within multi-watershed municipalities.

Existing water quality conditions in streams in the Menomonee, Kinnickinnic, Milwaukee, and Root River watersheds and the Oak Creek watershed, were assessed under the 2007 update to the regional water quality management plan for the greater Milwaukee watersheds (RWQMPU).⁴ As part of this assessment, the achievement of water use objectives was evaluated for all streams in these watersheds through comparison of the available water quality data collected during the study’s baseline period with the water quality criteria supporting the applicable designated water use objective.⁵ The baseline period was initially set as 1998 through 2001. During the course of the study, more recent data were incorporated into analyses as they became available. The baseline period used for these assessments in the Menomonee River, Kinnickinnic River, and Oak Creek watersheds was 1998 through 2001. Because more recent data were available when the analyses were conducted for the Milwaukee and Root River watersheds, the baseline period used for those assessments was 1998 through 2004. This study did not assess the achievement of water use objectives in the Fox River watershed.

The water quality data used in the RWQMPU study came from several sources, including stream monitoring conducted by the Milwaukee Metropolitan Sewerage District (MMSD) and monitoring data contained in the U.S. Geological Survey’s (USGS) NWIS database and the U.S. Environmental Protection Agency’s (USEPA) STORET database. The data contained in the STORET database consisted mostly of data collected by the WDNR.

The most recent systematic evaluation of water quality in the Fox River watershed was conducted as part of a status report and updating of the regional water quality management plan for Southeastern Wisconsin.⁶ Water quality analyses in that report examined data collected over the period 1976 through 1993. While these are not recent data and may not completely reflect current conditions, they constitute the last systematic examination of water quality condition in the Fox River watershed.

³Wisconsin Administrative Code, *Section NR 102.04(1)*.

⁴*SEWRPC Planning Report No. 50*, op. cit.

⁵*SEWRPC Technical Report No. 39*, op. cit.

⁶*SEWRPC Memorandum Report No. 93*, A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report, *March 1995*.

As part of this inventory, the assessment of the achievement of water use objectives for streams in the Menomonee River watershed was updated to include data from the period 2002 to early 2011. This update made use of data from the same sources as were used in the RWQMPU. These data were supplemented with data collected by the University of Wisconsin-Extension's Water Action Volunteer's program and Milwaukee Riverkeeper's Volunteer Stream Monitoring program. In addition, continuously-recorded data collected by the WDNR and under a joint MMSD/USGS real-time monitoring program were incorporated into these analyses. In some cases, the continuously-recorded data consisted of measurements collected every hour. In other cases, measurements that were collected every five minutes were available in summarized form as daily maximum, minimum, and average values. In those instances where these summary data could definitively show that water quality criteria had or had not been exceeded on the day in question, they were included in this analysis.

The assessment was conducted using methods similar to those used in the RWQMPU. Five water quality constituents were examined: concentrations of dissolved oxygen, chloride, total phosphorus, fecal coliform bacteria, and temperature. For dissolved oxygen, the percentage of samples within a stream or stream reach in which dissolved oxygen concentration was equal to or greater than the applicable standard was calculated. For chloride, total phosphorus, and fecal coliform bacteria, the percentage of samples within a stream or stream reach in which the concentration was equal to or less than the applicable standard was calculated. The procedures for evaluating temperature are described in the next paragraph. For each individual assessment, the number of samples or measurements used to make the assessment was also listed.

The assessment of the achievement of water use objectives for streams in the Menomonee River watershed also takes into account the following two changes in Wisconsin's water quality criteria that have occurred since the publication of the RWQMPU:

- In 2011, the State's water quality criteria for total phosphorus concentration went into effect. Total phosphorus concentrations from samples in the Menomonee River watershed were compared to these criteria.
- In 2010, the State promulgated water quality-based criteria for temperature. This rule specifies three temperature criteria—ambient, acute, and sublethal—that are to be applied simultaneously.⁷ The ambient temperature is used to calculate corresponding values of the acute and sublethal criteria and for setting effluent limitations for discharge permits. The acute and sublethal criteria are used for assessment purposes and evaluation of the attainment of water use objectives. In accordance with this, where continuously recorded data were available, daily maximum water temperatures were compared to the applicable acute temperature criterion and the average of daily maximum temperatures over a calendar week were compared to the applicable sublethal temperature criterion.

The assessment of achievement of water use objectives also takes into account water quality criteria associated with special variances established in NR 104 for specifically designated surface waters. Several of these waters are located within the Menomonee River watershed or portions of adjacent watershed located in Menomonee River watershed communities. These variances establish water quality criteria for two water quality parameters: dissolved oxygen concentrations and concentrations of fecal coliform bacteria. For dissolved oxygen concentration, the criterion established under these variances is that "dissolved oxygen shall not be lowered to less than 2 milligrams per liter at any time." The mainstem of the Menomonee River, Burnham Canal, Honey Creek, South Menomonee Canal, and Underwood Creek below Juneau Boulevard in the Menomonee River watershed; the Kinnickinnic River in the Kinnickinnic River watershed; and the Milwaukee River downstream from the site

⁷Section NR 102.25(1)(a) states, "The ambient temperature, sub-lethal water quality criterion, and acute water quality criterion specified for any calendar month shall be applied simultaneously to establish the protection needed for each identified fish and aquatic life use."

of the former North Avenue dam and Lincoln Creek in the Milwaukee River watershed are subject to this variance criterion. For fecal coliform bacteria, Menomonee River, Honey Creek, and Underwood Creek below Juneau Boulevard in the Menomonee River watershed; the Kinnickinnic River in the Kinnickinnic River watershed; and Lincoln Creek in the Milwaukee River watershed are subject to a variance criterion in which “the membrane filter fecal coliform count [shall not] exceed 1,000 per 1,000 milliliters as a monthly geometric mean based on not less than five samples per month nor exceed 2,000 per 1,000 milliliters in more than 10 percent of all samples during any month.” In addition, Burnham Canal and South Menomonee Canal in the Menomonee River watershed and Milwaukee River downstream from the site of the former North Avenue dam in the Milwaukee River watershed are subject to a variance criterion in which the membrane filter fecal coliform count [shall not] exceed 1,000 per 1,000 milliliters as a monthly geometric mean based on not less than five samples per month.”

For the Menomonee River watershed, the comparison of water quality conditions to applicable water quality criteria was supplemented by additional analyses. As previously noted, the State of Wisconsin has not promulgated numerical water quality criteria for total suspended solids. Because of the importance of this constituent as a measure of water quality, distributions of total suspended solids data from sample stations along the mainstem of the Menomonee River were examined using box plots to illustrate changes among stations from upstream to downstream over five time periods between 1975 and 2011.⁸ Figure J-1 shows an example of the symbols used in box plots.⁹

For streams in the Kinnickinnic, Milwaukee, and Root River watersheds and the Oak Creek watershed, the assessments made in the RWQMPSU were used. It is important to note that in these assessments, the concentration of total phosphorus was compared to the planning standard of 0.100 milligrams per liter recommended by the Regional Planning Commission in the regional water quality management plan.¹⁰ For the Kinnickinnic River downstream from the confluence with Wilson Park Creek and for the Milwaukee River downstream from the confluence of Cedar Creek, this planning standard is identical to the State’s water quality criteria for phosphorus. For other streams in these watersheds, this planning standard is higher than the State criterion of 0.075 milligrams per liter. As a result, the assessment will overestimate the degree of achievement of the applicable criteria for these streams.

Water Quality of Streams in the Menomonee River Watershed

The comparison of water quality conditions in streams of the Menomonee River watershed to the applicable water quality criteria is presented in Table J-3. The assessment divides the mainstem of the Menomonee River into seven reaches, based upon the locations of major MMSD sampling stations. With one exception, tributary streams were assessed along their entire length. Underwood Creek was divided into two reaches—one reach comprised of

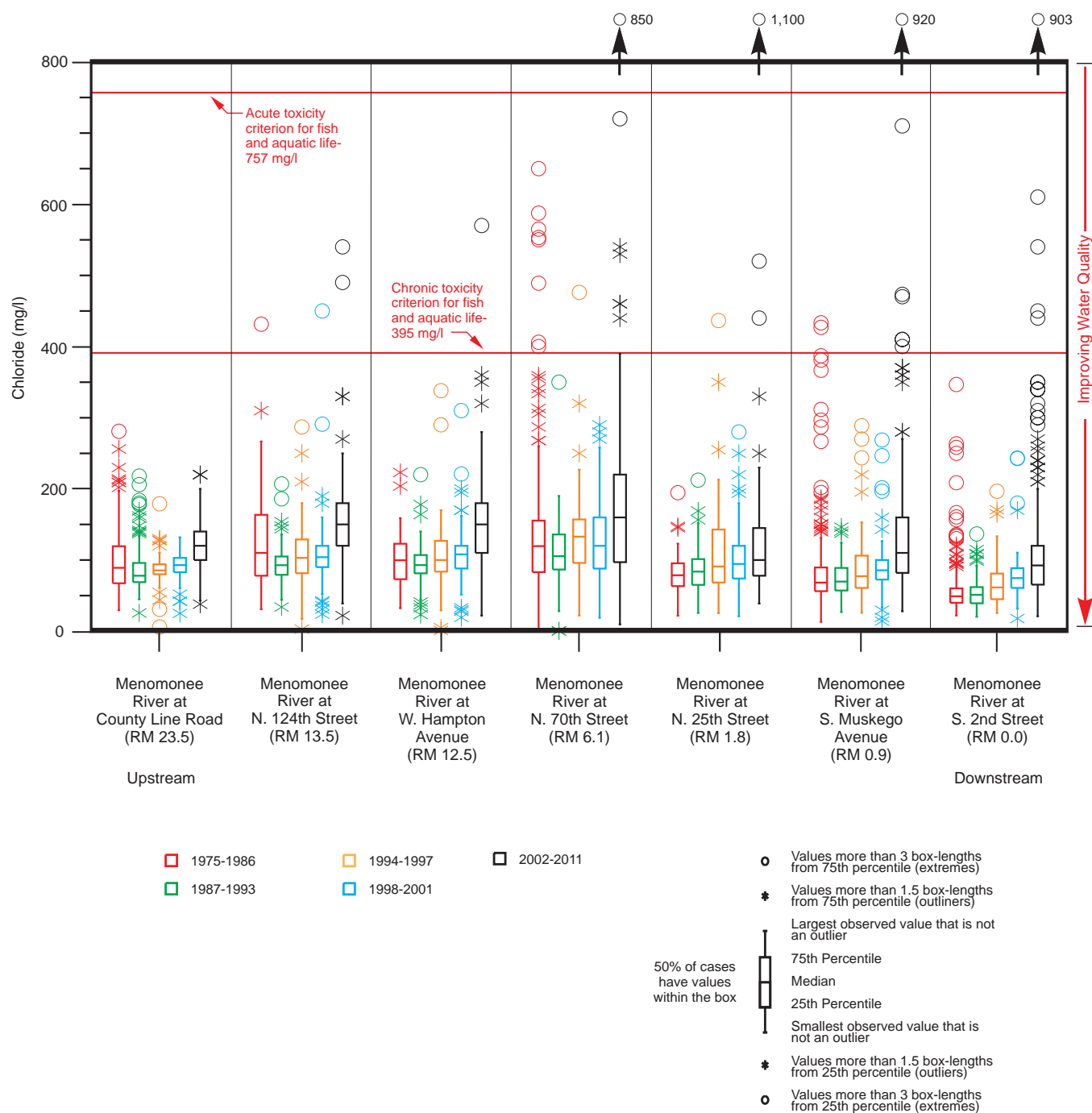
⁸*The first four time periods chosen are consistent with those used in the analyses conducted for the RWQMPSU and the rationale for their choice is given in SEWRPC TR No. 39, op. cit. The fifth period encompasses the time since the end of the base period used in the analyses in TR No. 39.*

⁹*In a box plot, the center line marks the location of the median—the point in the data above and below which half the instances lie. The length of the box shows the central 50 percent of instances. This is known as the interquartile range. The “whiskers” extending from the box show the range of the instances that are within 1.5 box-lengths of the interquartile range from the box. Stars indicate outliers that are more than 1.5 box-lengths but less than three box-lengths from the box, and open circles indicate extreme values that are farther than three box-lengths from the box. The stars and open circles represent the actual value of each outlier or extreme value. Box plots give a convenient means for comparing the features of distributions of all the data for a particular sampling station and time period.*

¹⁰*SEWRPC Planning Report No. 30, A Regional Water Quality Management Plan for Southeastern Wisconsin-2000, Volume One, Inventory Findings, September 1978; Volume Two, Alternative Plan, February 1979; and Volume Three, Recommended Plan, June 1979.*

Figure J-1

CHLORIDE CONCENTRATIONS AT SITES ALONG THE MAINSTEM OF THE MENOMONEE RIVER 1975-2011



Source, U.S. Geological Survey, U.S. Environmental Protection Agency, Wisconsin Department of Natural Resources, Milwaukee Metropolitan Sewerage District, and SEWRPC.

the section of the stream upstream from Juneau Road and a second reach comprised of the section of the stream downstream from Juneau Road—to reflect the fact that different water use objectives and supporting water quality criteria apply to these two sections of this stream. The table also indicates the codified water use objective for each stream or stream reach.

Table J-3

STREAM WATER QUALITY CHARACTERISTICS IN THE MENOMONEE RIVER WATERSHED: 1998-2011

Stream Reach	Stream Length (miles)	Codified Water Use Objective ^b	Percent of Samples Meeting Water Quality Criteria ^a (total number of samples indicated in parentheses)						
			Dissolved Oxygen	Temperature		Chloride		Total Phosphorus	Fecal Coliform Bacteria
				Sublethal	Acute	Chronic	Acute		
Menomonee River above County Line Road	4.5	FAL	87.1 (326)	--	--	100.0 (321)	100.0 (321)	55.0 (320)	52.6 (312)
Menomonee River from N. 124th Street County Line Road	10.0	FAL	99.9 (1,415)	91.7 (254)	100.0 (1,856)	97.5 (448)	99.6 (448)	33.8 (480)	34.5 (220)
Menomonee River from W. Hampton Avenue to N. 124th Street	1.0	FAL	98.7 (230)	--	--	98.7 (234)	100.0 (234)	34.9 (232)	35.0 (226)
Menomonee River from N. 70th Street to W. Hampton Avenue	4.5	FAL	99.9 (1,095)	92.3 (155)	99.9 (1,168)	91.0 (546)	97.3 (546)	46.4 (640)	20.9 (282)
Menomonee River from N. 25th Street to N. 70th Street	6.2	Variance Water (NR 104.06(2)(a)(7))	100.0 (171) ^c	95.2 (42)	99.0 (314)	97.1 (137)	98.5 (137)	24.5 (143)	58.1 (322) ^d
Menomonee River from Muskego Avenue to N. 25th Street	0.9	Variance Water (NR 104.06(2)(a)(7))	100.0 (485) ^c	--	--	94.6 (662)	98.8 (662)	46.4 (659)	49.6 (274) ^d
Menomonee River from confluence with Milwaukee River to Muskego Avenue	0.9	Variance Water (NR 104.06(2)(a)(7))	100.0 (499) ^c	--	--	98.8 (483)	99.8 (483)	58.0 (490)	69.8 (245) ^d
North Branch Menomonee River	10.0	FAL	--	--	--	--	--	--	--
West Branch Menomonee River	4.2	FAL	--	--	--	--	--	--	--
Willow Creek	2.8	FAL	97.4 (38)	100.0 (9)	100.0 (68)	100.0 (1)	100.0 (1)	61.1 (18)	16.7 (24)
Goldenthal Creek	3.9	FAL	--	100.0 (9)	100.0 (68)	--	--	--	--
Nor-X-Way Channel	3.1	FAL	--	--	--	--	--	--	--
Lilly Creek	4.7	FAL	71.4 (7)	100.0 (9)	100.0 (69)	100.0 (2)	100.0 (2)	100.0 (2)	--
Dretzka Park Creek	3.1	FAL	--	--	--	--	--	--	--
Butler Ditch	2.9	FAL	100.0 (6)	--	--	--	--	--	--
Little Menomonee Creek	3.9	FAL	--	100.0 (9)	100.0 (68)	--	--	17.6 (51)	--
Noyes Park Creek	2.5	FAL	100.0 (13)	81.0 (21)	99.3 (153)	--	--	--	--
Little Menomonee River	11.2	FAL	87.5 (1,239)	93.7 (189)	98.8 (501)	99.1 (114)	99.1 (114)	14.1 (269)	16.7 (24)
Grantosa Creek	1.4	FAL	100.0 (2)	--	--	--	--	--	--
Dousman Ditch	2.5	FAL	--	--	--	--	--	--	--

Table J-3 (continued)

Stream Reach	Stream Length (miles)	Codified Water Use Objective ^b	Percent of Samples Meeting Water Quality Criteria ^a (total number of samples indicated in parentheses)						
			Dissolved Oxygen	Temperature		Chloride		Total Phosphorus	Fecal Coliform Bacteria
				Sublethal	Acute	Chronic	Acute		
South Branch Underwood Creek	1.0	FAL	73.6 (34)	--	--	--	--	43.3 (30)	21.9 (32)
Underwood Creek concrete channel from confluence with Menomonee River to Juneau Boulevard	1.5	Variance Water (NR 104.06(2)(a)(1))	100.0 (601) ^c	63.2 (87)	93.3 (640)	90.4 (307)	97.3 (307)	19.9 (176)	63.0 (46) ^d
Underwood Creek from Juneau Boulevard to headwaters	7.4	FAL	78.3 (152)	--	--	89.4 (47)	100.0 (47)	40.9 (137)	32.9 (143)
Honey Creek	10.0	Variance Water (NR 104.06(2)(a)(6))	99.3 (1,130) ^c	92.3 (130)	100.0 (946)	80.8 (360)	95.0 (360)	12.2 (377)	39.5 (142) ^d
Wood Creek	0.5	FAL	--	--	--	--	--	--	--
South Menomonee Canal	0.4	Variance Water (NR 104.06(2)(b)(2))	--	--	--	--	--	--	--
Burnham Canal	1.2	Variance Water (NR 104.06(2)(b)(2))	100.0 (138)	--	--	97.8 (136)	99.3 (136)	25.0 (136)	86.0 (136)

^aNumber in parentheses shows number of samples.

^bFAL indicates warmwater fish and aquatic life.

^cA special variance standard for dissolved oxygen concentration of 2.0 milligrams per liter applies to the Menomonee River downstream from the confluence with Honey Creek, Honey Creek, and Underwood Creek from the confluence with the Menomonee River upstream to Juneau Boulevard.

^dA special variance standard for fecal coliform bacteria concentration applies to the Menomonee River downstream from the confluence with Honey Creek, Honey Creek, and Underwood Creek from the confluence with the Menomonee River upstream to Juneau Boulevard. Membrane filter fecal coliform counts shall not exceed 1,000 per 100 ml as a monthly geometric mean based on not less than five samples per month nor exceed 2,000 per ml in more than 10 percent of all samples in any month.

Source: Milwaukee Metropolitan Sewerage District, U.S. Geological Survey, Wisconsin Department of Natural Resources, U.S. Environmental Protection Agency, University of Wisconsin-Extension, Milwaukee Riverkeeper, and SEWRPC.

Dissolved Oxygen

The concentration of dissolved oxygen in water is a major determinant of the suitability of a waterbody as habitat for fish and other aquatic organism because most aquatic organisms require oxygen in order to survive. Though tolerances vary by species, most aquatic organisms have minimum oxygen requirements. Stormwater discharges may affect dissolved oxygen concentrations through at least two mechanisms. First, inputs of stormwater may act to increase temperatures in receiving waters. Since the solubility of most gases in water decreases with increasing temperature, this can reduce the amount of oxygen that the receiving water can contain. In addition, the metabolic demands of organisms and the rates of processes such as bacterial decomposition of organic matter increase with increasing temperature. This results in greater demands for oxygen within the receiving waters and can result in a lowering of ambient dissolved oxygen concentrations. Second, under certain circumstances stormwater may also transport organic materials into receiving waters. These materials are oxidized by microbial and chemical processes which require oxygen to proceed. As a result of these inputs, ambient concentrations of dissolved oxygen may be lowered.

As shown in Table J-3, concentrations of dissolved oxygen in most reaches of the mainstem of the Menomonee River were equal to or above the applicable water quality criteria in either all of the samples or almost all of the samples collected, indicating a high degree of compliance with criteria for dissolved oxygen. The one exception to this occurs in the reach that extends upstream from County Line Road to the headwaters of the River. While dissolved oxygen concentrations in this reach were usually equal to or above the applicable water quality criteria, they occasionally dropped below the 5.0 milligram per liter. Still, conditions in this reach were in compliance with the dissolved oxygen criterion in over 85 percent of samples.

Table J-3 also shows that data from 10 tributary streams in the Menomonee River watershed are available to evaluate compliance with the applicable criteria for dissolved oxygen. In four streams—Burnham Canal, Butler Ditch, Grantosa Creek, Noyes Park Creek—and in Underwood Creek downstream from Juneau Boulevard, dissolved oxygen concentrations in all samples collected were equal to or higher than the applicable criteria. Similarly, the concentrations of dissolved oxygen in almost all samples collected from Honey Creek and Willow Creek were equal to or above the applicable criteria. Thus, the data show compliance with the criteria in these six tributaries and in the downstream reach of Underwood Creek. It is important to note that the evaluations of dissolved oxygen conditions in Butler Ditch, Grantosa Creek, and Noyes Park Creek are based on small numbers of samples. For these streams, the data are suggestive rather than indicative of the level of compliance. In the Little Menomonee River, dissolved oxygen concentrations were usually equal to or above the applicable water quality criteria, indicating compliance with the dissolved oxygen criterion in over 85 percent of samples.

In two tributary streams—Lilly Creek and South Branch Underwood Creek—and in Underwood Creek upstream from Juneau Boulevard, dissolved oxygen concentrations were often below the applicable criteria, indicating frequent violations of the standard. It is important to note that the evaluation of dissolved oxygen conditions in Lilly Creek is based on a small number of samples. Because of this, the data for this stream should be considered suggestive rather than indicative of the degree of compliance.

No data were available to evaluate dissolved oxygen conditions in several tributary streams, including Dousman Ditch, Dretzka Park Creek, Goldenthal Creek, Little Menomonee Creek, the Nor-X-Way Channel, the North Branch Menomonee River, the South Menomonee Canal, the West Branch Menomonee River, and Wood Creek.

Based upon the available data, dissolved oxygen concentrations in most streams of the Menomonee River watershed appear to be in substantial compliance with the applicable water quality criteria. While it is possible that discharges of stormwater could be causing a few localized impacts relative to dissolved oxygen concentration in the Menomonee River watershed, they do not appear to be causing reductions of dissolved oxygen concentrations below the applicable water quality criteria in most of the watershed.

Water Temperature

Water temperature drives numerous physical, chemical, and biological processes in aquatic systems. Processes affected by temperature include the solubility of substances in water, the rates at which chemical reactions proceed, metabolic rates of organisms, and the toxicity of some substances. As noted above, the solubility of many gases in water decreases as water temperature increases. By contrast, the solubility of many solids in water increases as water temperature increases. Temperature is a major determinant of the suitability of waterbodies as habitat for fish and other aquatic organisms. Each species has a range of temperatures that it can tolerate and smaller range of temperatures that are optimal for growth and reproduction. These ranges are different for different species. As a result, very different biological communities may be found in similar waterbodies experiencing different temperature regimes. Especially during warm weather, the temperature of stormwater discharges may be greater than temperatures in receiving water. Depending upon the amount of stormwater discharged and the temperature difference between the stormwater and receiving water, stormwater discharges may act to increase temperatures in receiving waters.

Table J-3 shows comparisons of water temperatures in the streams of the Menomonee River watershed to two criteria: the acute and the sublethal. As previously described, daily maximum water temperatures were compared to the applicable acute temperature criterion and the average of daily maximum temperatures over a calendar week was compared to the applicable sublethal temperature criterion.

Continuous temperature data suitable for evaluating achievement of the acute and sublethal temperature criteria are available from three reaches along the mainstem of the Menomonee River. In all three reaches, maximum daily temperatures were almost always below the applicable acute temperature criteria. Similarly, in all three reaches, the calendar week averages of maximum daily temperatures were usually below the applicable sublethal temperature criteria. Based on available data, water temperatures in the mainstem of the Menomonee River show a high degree of compliance with the acute and sublethal temperature criteria.

Continuous temperature data suitable for evaluating achievement of the acute and sublethal temperature criteria are available for eight tributary streams in the Menomonee River watershed. In seven of these streams—Goldenthal Creek, Honey Creek, Lilly Creek, Little Menomonee Creek, the Little Menomonee River, Noyes Park Creek, and Willow Creek—maximum daily temperatures were almost always below the applicable acute temperature criteria. In the reach of Underwood Creek downstream of Juneau Boulevard, maximum daily temperatures were usually below the applicable acute temperature criteria.

In four tributary streams—Goldenthal Creek, Lilly Creek, Little Menomonee Creek, and Willow Creek—calendar week averages of maximum daily temperatures were always below the applicable sublethal temperature criteria. It is important to note that the evaluations of temperature conditions relative to the sublethal criteria in these streams are based on small numbers of samples. Because of this, these results should be considered suggestive rather than indicative of the degree of compliance. In Honey Creek, Little Menomonee Creek, and Noyes Park Creek, calendar week averages of maximum daily temperatures were usually below the applicable sublethal temperature criteria. In the reach of Underwood Creek downstream of Juneau Boulevard, calendar week averages of maximum daily temperatures were below the applicable acute temperature criteria in about 63 percent of the weeks over which compliance with this criterion was evaluated. It is important to note that portions of this reach are channelized, lined with concrete, and tend to be broad and shallow. These factors act to increase temperatures in streams. Thus, stormwater discharges may not be the major contributor to the exceedences of the sublethal temperature criterion in this reach of Underwood Creek, especially considering the fact that this reach is usually in compliance with the acute criterion.

No data were available to evaluate water temperature conditions relative to the State's temperature criteria in several tributary streams, including Butler Ditch, Burnham Canal, Dousman Ditch, Dretzka Park Creek, Grantosa Creek, the Nor-X-Way Channel, the North Branch Menomonee River, the South Menomonee Canal, the West Branch Menomonee River, and Wood Creek.

Based upon the available data, temperature conditions in most streams of the Menomonee River watershed appear to be in substantial compliance with the applicable water quality criteria. While it is possible that discharges of stormwater could be causing a few localized impacts relative to temperature conditions in the watershed, they do not appear to be causing exceedences of the applicable water quality criteria in most of the watershed.

Chloride

Chlorides of commonly occurring elements are highly soluble in water and are present in some concentration in all surface waters. Chloride is not decomposed, chemically altered, or removed from the water as a result of natural processes. Natural chloride concentrations in surface water reflect the composition of the underlying bedrock and soils, and deposition from precipitation events. Waterbodies in southeastern Wisconsin typically have very low natural chloride concentrations due to the limestone and dolomite bedrock found in the Region. These rocks are rich in carbonates and contain little chloride. Because of this, the sources of chloride to surface waters in southeastern Wisconsin are largely anthropogenic, including sources such as salts used on streets, highways, and parking lots for winter snow and ice control; salts discharged from water softeners; and salts from sewage and animal wastes. Because of the high solubility of chloride in water, if chloride is present, stormwater discharges are likely to transport it to receiving waters. High concentrations of chloride can affect aquatic plant growth and pose a threat to aquatic organisms. Impacts from chloride contamination begin to manifest at a concentration of about 250 milligrams per liter and become severe at concentrations in excess of 1,000 milligrams per liter.¹¹

As shown in Table J-3, concentrations of chloride in most reaches of the mainstem of the Menomonee River were equal to or below the acute toxicity criterion (see Table J-1) in all or almost all of the samples collected. In addition, concentrations of chlorides in these reaches were equal to or below the chronic toxicity criterion (see Table J-1) in the vast majority of the samples collected. Table J-3 also shows that data from six tributary streams in the Menomonee River watershed—Burnham Canal, Honey Creek, Lilly Creek, the Little Menomonee River, Underwood Creek, and Willow Creek—are available to evaluate compliance with the acute and chronic criteria for chloride. In all of these streams concentrations of chlorides in these reaches were equal to or below the acute toxicity criterion in all or almost all of the samples collected and equal to or below the chronic toxicity criterion in the vast majority of the samples collected. It is important to note that the assessments for Lilly and Willow Creek are based on very few samples.

While these results suggest that a high degree of compliance with the criteria for chloride, they should be interpreted with caution. Most of the data used were collected as part of the ongoing MMSD sampling program. Since 1986, the District has generally not collected water quality samples during winter months, usually December, January, and February. Thus, the data do not reflect the time of year when salt is most likely to be applied for snow and ice control. Because of this, the evaluations shown in Table J-3 probably represent an overestimate of the degree to which chloride concentrations in the Menomonee River and its tributaries are in compliance with the acute and chronic toxicity criteria.

Figure J-1 shows trends in concentrations of chloride at sampling stations along the mainstem of the Menomonee River. In order for the data to be comparable among periods, the figure shows data collected during the months March through November. Despite the removal of samples collected during the winter, the figure shows that chloride concentrations have been increasing over time. The analyses conducted as part of the RWQMPU indicated the presence of statistically significant trends toward increasing chloride concentrations at sampling

¹¹*Frits van der Leeden, Fred L. Troise, and David Keith Todd, The Water Encyclopedia, Second Edition, Lewis Publishers, Inc., 1990.*

stations along the Menomonee River over the period 1975-2001.¹² Similar trends have been detected in many surface waters within southeastern Wisconsin.¹³

Between 2000 and 2005, MMSD examined chloride concentrations in 494 stormwater samples collected from 18 storm sewer outfalls in its service area. Seven of these outfalls were located in and discharged to streams in the Menomonee River watershed. Chloride concentrations in these samples were between 0.8 and 5,100 milligrams per liter, with a mean concentration of 79.4 milligrams per liter.¹⁴ The range of concentrations shown in these samples suggests that stormwater with high concentrations of chloride is being discharged into surface waters of the Menomonee River watershed, at least occasionally.

Measurements of specific conductance may act as a useful surrogate for measurements of chloride concentration. Conductance measures the ability of water to conduct an electric current. Because this ability is affected by water temperature, conductance values are corrected to a standard temperature of 25 degrees Celsius (77 degrees Fahrenheit). This corrected value is referred to as specific conductance. Pure water is a poor conductor of electrical currents and exhibits low values of specific conductance.¹⁵ The ability of water to carry a current depends upon the presence of ions in the water, and on their chemical identities, total concentration, mobility, and electrical charge. Solutions of many inorganic compounds, such as salts, are relatively good conductors. As a result, specific conductance gives a measure of the concentration of dissolved solids in water, with higher values of specific conductance indicating higher concentrations of dissolved solids.

Under certain circumstances, measurements of specific conductance may be able to give indications of chloride concentrations in receiving waters. Analysis of data collected by the USGS suggests that there is a linear relationship between specific conductance and chloride concentration at higher values of conductance and chloride concentration.¹⁶ This suggests that during periods when chloride is being carried into receiving waters by discharges of stormwater or snowmelt, ambient chloride concentrations could be estimated using specific conductance. The advantage to this is that specific conductance can be measured inexpensively in the field using a hand-held meter. Measurements of chloride concentrations require chemical analysis.¹⁷

Available data on chloride concentrations in the Menomonee River watershed show a high degree of compliance with the State's acute and chronic toxicity criteria for chloride. It is likely that these data overstate the degree of compliance because samples are rarely collected during the winter deicing season, when the greatest inputs of chlorides into surface waters is likely to occur. This is supported by the fact that samples collected during

¹²*SEWRPC Technical Report No. 39, op. cit.*

¹³*Ibid.*

¹⁴*Puripus Soonthornnonda and Erik R. Christensen, Final Report: Milwaukee Metropolitan Sewerage District (MMSD) Stormwater Monitoring Program, MMSD Contract No. M03002P17, 2005.*

¹⁵*For example, distilled water produced in a laboratory has a specific conductance in the range of 0.5 to 3.0 microSiemens per centimeter, a very low value.*

¹⁶*Steven R. Corsi, David J. Graczyk, Steven W. Geis, Nathaniel L. Booth, and Kevin D Richards, "A Fresh Look at Road Salt: Aquatic Toxicity and Water-Quality Impacts on Local, Regional, and National Scales," Environmental Science & Technology, Volume 44, 2010.*

¹⁷*Continued collection of both conductance and chloride data could be helpful in refining this relationship. Such a refinement could potentially allow for the substitution of conductance monitoring for some chloride monitoring with a potential cost savings.*

February and March 2007 from 17 Wisconsin streams, including 13 in the Milwaukee area, showed high concentrations of chloride. Concentrations in many samples exceeded 1,000 milligrams per liter and in some samples exceeded 5,000 milligrams per liter.¹⁸ In addition, high concentrations of chloride are occasionally found in samples of discharge from stormwater outfalls. The trend toward increasing chloride concentrations in the Menomonee River suggests that it would be prudent to continue monitoring chloride concentrations, either directly or through a suitable surrogate measure.

Total Phosphorus

Phosphorus is a nutrient needed for plant and algal growth. Typically, plant and algal growth and biomass in a waterbody are limited by the availability of the nutrient present in the lowest amount relative to the organisms' needs. This nutrient is referred to as the limiting nutrient. Additions of the limiting nutrient to the waterbody typically result in additional plant or algal growth. Phosphorus is usually, though not always, the limiting nutrient in freshwater systems. Phosphorus can be contributed to waterbodies from a variety of point and nonpoint sources. In urban settings, phosphorus from lawn fertilizers and other sources may be discharged through MS4 systems. It should also be noted that the State of Wisconsin has adopted a turf management standard limiting the application of lawn fertilizers containing phosphorus within the State.¹⁹ This would be expected to reduce the amount of phosphorus discharge from MS4 systems.

As indicated in Table J-1, the mainstem of the Menomonee River downstream from the confluence with the Little Menomonee River is subject to a water quality criterion in which total phosphorus is not to exceed 0.100 milligrams per liter. The Menomonee River upstream from the confluence with the Little Menomonee River and the other streams in the watershed are subject to a water quality criterion in which total phosphorus is not to exceed 0.075 milligrams per liter.

As shown in Table J-3, concentrations of total phosphorus at sampling stations along the mainstem of the Menomonee River commonly exceeded the applicable water quality criteria. Over the entire length of the mainstem, total phosphorus concentrations in about 45 percent of the samples collected were at or below the applicable water quality criteria. Table J-3 also shows that data from eight tributary streams—Burnham Canal, Honey Creek, Lilly Creek, Little Menomonee Creek, the Little Menomonee River, South Branch Underwood Creek, Underwood Creek, and Willow Creek—were available to evaluate compliance with the water quality criteria for total phosphorus. In most of these streams, total phosphorus concentrations were commonly to usually higher than the applicable criteria. There was one exception to this. In all of the samples collected from Lilly Creek, total phosphorus concentrations were below the criterion; however, this is based on a small number of samples. Because of this, the data from Lilly Creek should be considered suggestive, rather than indicative, of compliance with the criterion.

Between 2000 and 2005, MMSD examined total phosphorus concentrations in 998 stormwater samples collected from 18 storm sewer outfalls in its service area. Seven of these outfalls were located in and discharged to streams in the Menomonee River watershed. Total phosphorus concentrations in these samples were between 0.01 and 110 milligrams per liter, with a mean concentration of 0.92 milligrams per liter.²⁰ The high mean concentration relative to the water quality criteria for total phosphorus suggests that urban stormwater discharges may constitute a major source of phosphorus inputs to the surface waters of the Menomonee River watershed. This is supported

¹⁸*Corsi and others, 2010 op. cit. See especially Figure S1 in the supporting material.*

¹⁹*On April 14, 2009, 2009 Wisconsin Act 9 created Section 94.643 of the Wisconsin Statutes relating to restrictions on the use and sale of fertilizer containing phosphorus in urban areas throughout the State of Wisconsin.*

²⁰*Soonthornnonda and Christensen, op. cit.*

Table J-4

AVERAGE ANNUAL LOADS OF POLLUTANTS IN THE MENOMONEE RIVER WATERSHED^a

Pollutant	Point Sources ^b	Percent of Total Load	Urban Nonpoint Sources ^c	Percent of Total Load	Rural Nonpoint Sources	Percent of Total Load	Total	Percent of Total Load
Total Suspended Solids (pounds)	275,290	1.5	15,738,270	87.6	1,950,230	10.9	17,963,790	100.0
Total Phosphorus (pounds)	20,010	37.7	29,040	54.7	4,070	7.6	53,120	100.0
Biochemical Oxygen Demand (pounds)	183,460	13.6	993,390	73.4	175,850	13.0	1,352,700	100.0
Fecal Coliform Bacteria (trillions of cells)	2,368	14.0	14,112	83.7	393	2.3	16,873	100.0
Total Nitrogen (pounds)	68,490	17.3	209,340	52.8	118,410	29.9	396,240	100.0
Copper (pounds)	57	3.0	1,768	91.6	106	5.4	1,931	100.0

^aLoads from groundwater are included. The results are annual averages based on simulation of year 2000 land use conditions and approximated current point source loads and wastewater conveyance, storage, and treatment system operating conditions. The simulations were made using meteorological data from 1988 through 1997, which is a representative rainfall period for the study area.

^bPoint sources include industrial dischargers, sanitary sewer overflows, and combined sewer overflows. No municipal or private wastewater treatment plants discharge into streams of the Menomonee River watershed.

^cUrban nonpoint source loads are roughly equivalent to the contributions of municipal separate storm sewer systems.

Source: Tetra Tech, Inc.

by estimates of phosphorus loading made in the RWQMPS. Table J-4 shows average annual loads of pollutants in the Menomonee River watershed. On average, urban nonpoint sources contribute over 29,000 pounds of total phosphorus to the streams of the Menomonee River watershed each year. By contrast, point sources and rural nonpoint sources contribute about 20,000 pounds and 4,100 pounds, respectively. The high proportion of total phosphorus load contributed by urban nonpoint sources indicates that a substantial portion of the load of total phosphorus to the watershed is being contributed through discharges of urban stormwater.

Available data indicate the total phosphorus concentrations in streams of the watershed were usually above the applicable water quality criteria. Only about 38 percent of samples collected from streams in the watershed complied with the applicable standard. Stormwater monitoring data and estimates of phosphorus loading suggest that urban stormwater management systems may constitute a major source of phosphorus to the surface waters of the watershed.

Fecal Coliform Bacteria

The suitability of surface water for recreational uses is assessed by examining water samples for the presence and concentrations of organisms indicating fecal contamination. A variety of disease-causing organisms can be transmitted through water contaminated with fecal material. These organisms include bacteria, such as those that cause cholera and typhoid fever; viruses, such as those that cause poliomyelitis and infectious hepatitis; and protozoa, such as *Giardia* and *Cryptosporidium*. Under Wisconsin's water quality criteria, the suitability of surface waters for recreational uses is assessed using fecal coliform bacteria.²¹ All warm-blooded animals have these bacteria in their feces. Because of this, the presence of high concentrations of fecal coliform bacteria in water indicates a high probability of fecal contamination. Most strains of this bacterial group have a low

²¹Under the Federal Beach Act of 2000, assessment of sanitary quality of water at Great Lakes beaches is assessed using the bacterium *Escherichia coli*, a member of the fecal coliform group of bacteria.

probability of causing illness. Instead, they act as indicators of the possible presence of other pathogenic agents in water. While the presence of high concentrations of these indicator bacteria does not necessarily indicate the presence of pathogenic agents, they are generally found when the pathogenic agents are found.

Stormwater discharges may carry fecal coliform bacteria and pathogenic agents into receiving waters. These bacteria and pathogens may come from several sources. Feces from pet waste and urban wildlife can wash into stormwater systems. Cross-connections between sanitary sewers and storm sewers can result in sanitary sewage entering stormwater systems. Illicit discharges into storm sewers may result in sanitary wastes entering stormwater systems.

As shown in Table J-3, counts of fecal coliform bacteria at sampling stations along the mainstem of the Menomonee River were commonly to usually greater than the applicable water quality criteria. On average, about 46 percent of samples collected from stations along the mainstem of the River were in compliance with the applicable standard. Downstream reaches tend to show higher percentages of compliance than upstream reaches. In part, this higher level of compliance reflects the fact that these reaches are subject to a special variance under which the applicable water quality criterion for fecal coliform bacteria counts is higher than that in the criterion that applies to upstream reaches.

Table J-3 also shows that data from six tributary streams—Burnham Canal, Honey Creek, the Little Menomonee River, South Branch Underwood Creek, Underwood Creek, and Willow Creek—were available to evaluate compliance with the water quality criteria for fecal coliform bacteria. In most of these tributaries, counts of fecal coliform bacteria were commonly to usually greater than the applicable water quality criteria. Burnham Canal was an exception to this generalization. Counts of fecal coliform bacteria were equal to or lower than the applicable criterion in 86 percent of the samples collected. It should be noted that this tributary is subject to a special variance criterion. Similarly, the higher rate of compliance in the downstream reach of Underwood Creek reflects, in part, that this reach of the Creek is subject to a special variance.

Between 2000 and 2005, MMSD examined fecal coliform bacteria concentrations in 1,008 stormwater samples collected from 18 storm sewer outfalls in its service area. Seven of these outfalls were located in and discharged to streams in the Menomonee River watershed. Fecal coliform bacteria concentrations in these samples were between 10 and 2,400,000 colony forming units per 100 milliliter, with a mean concentration of 149,000 colony forming units per 100 milliliter.²² A subsequent study examined concentrations of *Escherichia coli* (*E. coli*), a member of the fecal coliform bacteria group, in samples collected from storm sewer outfalls and inline storm sewer locations.²³ Because this species is one member of the fecal coliform group of bacterial species, counts of *E. coli* represent a lower limit to the number of fecal coliform bacteria that may be present. While the concentration of fecal coliform bacteria cannot be lower than the concentration of *E. coli*, it may be higher. Mean concentrations of *E. coli* in samples collected from 15 locations that discharge into the Menomonee River ranged between 6,400 and 238,000 colony forming units per 100 milliliter. Mean concentrations of *E. coli* in samples collected from 16 locations that discharge into Honey Creek ranged between 3,560 and 223,000 colony forming units per 100 milliliter. Mean concentrations of *E. coli* in samples collected from eight locations that discharge into Underwood Creek ranged between 4,300 and 219,000 colony forming units per 100 milliliter.

The high concentrations of fecal coliform bacteria in samples collected from urban stormwater discharges and inline storm sewer locations indicate that discharges of urban stormwater may be a major contributor of fecal coliform bacteria to surface waters of the Menomonee River watershed. This is supported by the estimates of fecal

²²Soonthornnonda and Christensen, op. cit.

²³Sandra L. McLellan and Elizabeth P. Sauer, Greater Milwaukee Watersheds Pathogen Source Identification Report: March 1, 2006 to July 28, 2009, MMSD Contract No. M03016P02, November 2, 2009.

coliform bacteria loading made as part of the RWQMPS. Table J-4 shows average annual loads of pollutants in the Menomonee River watershed. On average, urban nonpoint sources contribute over 14,000 trillion cells to the streams of the Menomonee River watershed each year. By contrast, point sources and rural nonpoint sources contribute about 2,400 trillion cells and 400 trillion cells, respectively. The high proportion of the fecal coliform bacteria load contributed by urban nonpoint sources indicates that a substantial portion of the load of these bacteria to the watershed is being contributed through discharges from urban storm sewers.

As previously discussed, fecal coliform bacteria is not in itself a pollutant of concern. Instead, it acts as a surrogate measure indicating the likelihood that surface waters are contaminated with fecal wastes and may contain disease-causing agents. These wastes can originate from several sources, including sanitary sewage, agricultural and barnyard wastes, and wastes from domestic pets and wild animals. Fecal pollution from different sources will carry different pathogens; however, fecal pollution from sanitary sewage generally constitutes a more serious public health risk because multiple human pathogens including bacteria, viruses, and protozoa can be present in high concentrations. Because of this, assessments of the source of waste—specifically microbial source tracking assessments that can determine whether stormwater contains fecal wastes of human origin—can provide important information for prioritizing action when high concentrations of fecal coliform bacteria are detected in stormwater discharges.²⁴

Available data show the concentrations of fecal coliform bacteria in surface waters of the Menomonee River watershed are usually above the applicable water quality criteria for recreational use. Stormwater monitoring data and estimates of fecal coliform bacteria loading suggest that urban stormwater management systems constitute a major source of indicator bacteria to the surface waters of the watershed.

Total Suspended Solids

Suspended material in surface waters consists of particles of sand, silt, and clay; planktonic organisms; and fine organic and inorganic debris. The composition of suspended material varies with characteristics of the watershed and pollution sources. In streams, for example, higher concentrations and larger and denser particles are associated with higher water velocities—both in fast-moving sections of streams and during high flow periods. If water velocities are great enough, they may cause resuspension of sediment from the bed or erosion from the bed and banks of the stream. By contrast, deposition of suspended material may occur in slow-moving streams or during periods of low flow, with progressively smaller and lighter particles being deposited with decreasing water motions. High concentrations of suspended material can cause several impacts in waterbodies. High turbidity is a result of high concentrations of suspended material, with associated poor light penetration. This can result both in reductions in photosynthesis and increases in temperature in the waterbody. High concentrations of suspended material can clog the gills of fish and other aquatic organisms, stressing them physiologically—in some cases fatally. Deposition of sediments may alter the substrate, making it unsuitable as habitat for aquatic organisms or changing channel characteristics. In addition, as a result of physical and chemical interactions, other materials such as nutrients or toxic organic compounds may adsorb to particles suspended in water.

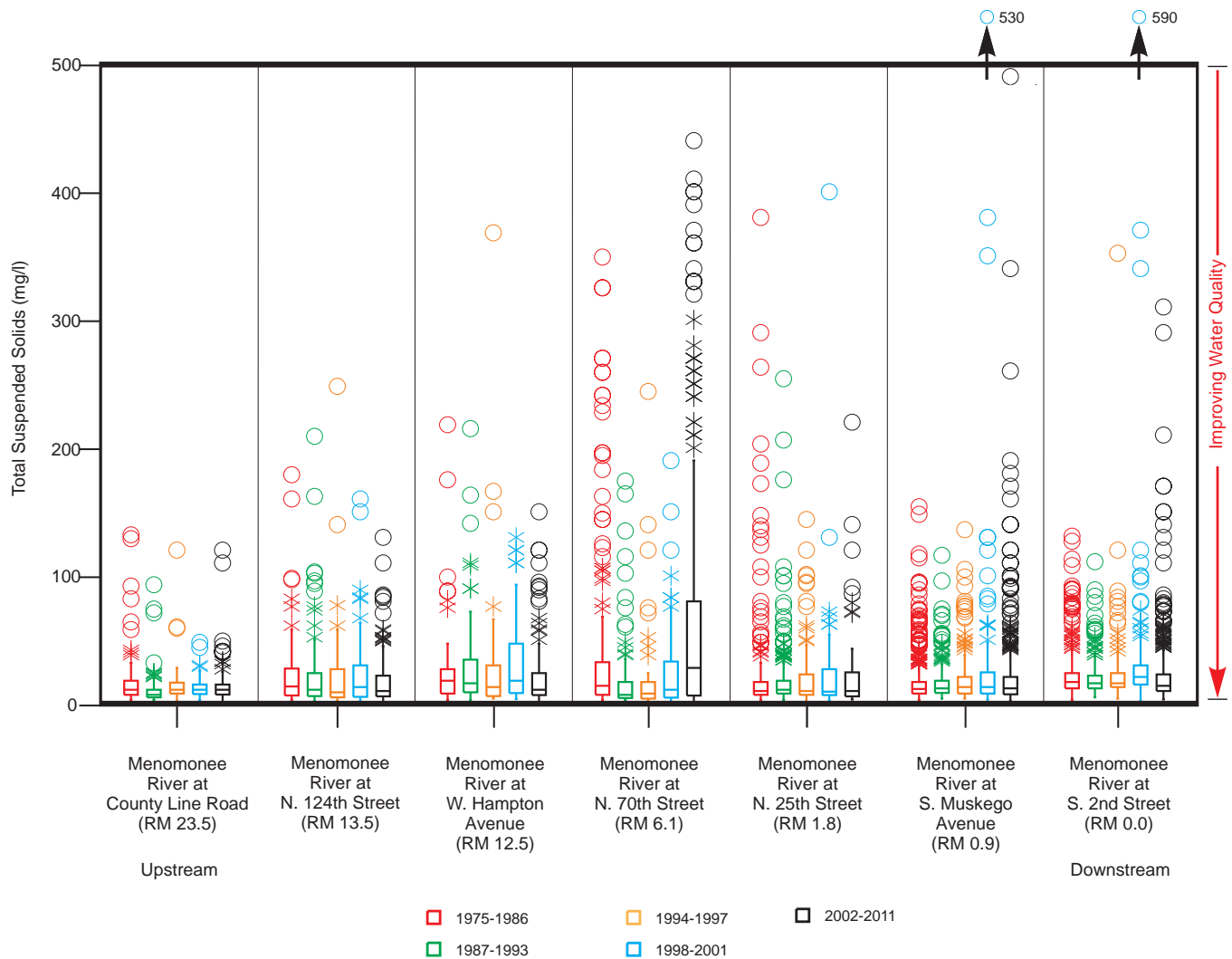
Suspended materials can also be contributed by point and nonpoint pollution sources within the watershed. Examples of point sources include sewage treatment plants and industrial discharges. A variety of nonpoint sources can also contribute suspended materials to waterbodies. Suspended solids are a commonly found pollutant in urban stormwater discharges.

As previously noted, the State of Wisconsin has not promulgated water quality criteria for total suspended solids. Because of this, it was not possible to evaluate conditions related to total suspended solids in surface waters of the Menomonee River watershed through an assessment of compliance with water quality criteria. Instead, conditions were assessed through an examination of concentrations of total suspended solids in the Menomonee River.

²⁴Ibid.

Figure J-2

**TOTAL SUSPENDED SOLIDS CONCENTRATIONS AT SITES ALONG
THE MAINSTEM OF THE MENOMONEE RIVER 1975-2011**



Source, U.S. Geological Survey, U.S. Environmental Protection Agency, Wisconsin Department of Natural Resources, Milwaukee Metropolitan Sewerage District, and SEWRPC.

Figure J-2 shows total suspended solids (TSS) concentrations at sampling stations along the mainstem of the Menomonee River. In order for the data to be comparable among periods, the figure shows data collected during the months March through November. While concentrations of TSS were below about 30 milligrams per liter in the majority of samples collected, a substantial number of samples had TSS concentrations that were considerably higher.²⁵ During the period 1998 through early 2011, concentrations of TSS in the Menomonee River ranged between 0 and 590 milligrams per liter, with a mean value 28.4 milligrams per liter. Mean concentrations over

²⁵This was a concentration below which most of the distribution of sample values was observed to fall. It does not represent a standard or criterion for establishing an acceptable TSS concentration.

Table J-5

**CONCENTRATIONS OF TOTAL SUSPENDED SOLIDS (TSS) IN THE
MENOMONEE RIVER AND THREE TRIBUTARY STREAMS: 2002-2011**

Stream	Minimum TSS Concentration (mg/l)	Maximum TSS Concentration (mg/l)	Mean TSS Concentration (mg/l)	Median TSS Concentration (mg/l)	Number of Samples
Menomonee River.....	0.0	490	28.6	13.0	2,015
Honey Creek.....	1.2	42	9.1	6.0	119
Little Menomonee River	0.0	1,100	132.5	53.0	143
Underwood Creek	1.6	1,200	67.9	14.0	297

Source: Milwaukee Metropolitan Sewerage District, U.S. Geological Survey, U.S. Environmental Protection Agency, Wisconsin Department of Natural Resources, and SEWRPC.

this period tended to increase from upstream to downstream, reaching their highest value at the sampling station at N. 70th Street. Downstream from this location, the mean concentrations decreased. This decrease probably reflects two influences. First, the three most downstream sampling stations are located within the Milwaukee Harbor estuary. Lower portions of the estuary act as a settling basin, with some suspended material dropping out of the water column. Second, these three sampling stations are located within the area served by combined sewers. Under most circumstances, there are much lower inputs of stormwater along these reaches of the River.

As shown in Figure J-2, concentrations were highly variable. This reflects the fact that the highest loads of TSS occur during wet weather. Daily average wet-weather loads of TSS were compared to daily average dry-weather loads using discharge and TSS concentration data collected at USGS flow gauge and the water quality sampling stations located along the mainstem of the Menomonee River at N. 70th Street. For the period 1998 through 2001, the mean estimated daily wet-weather load of TSS was about 400,300 pounds, about 133 times the mean estimated daily dry-weather load of about 3,020 pounds.²⁶ The higher TSS loads during wet weather reflect several influences, including resuspension of sediment from streambanks caused by higher water flows, erosion of streambeds and banks resulting from higher water flows, and inputs of TSS in stormwater entering the stream system.

Some data were also available to evaluate concentrations of TSS in three tributary streams in the Menomonee River watershed. Table J-5 compares TSS concentrations in samples collected from the mainstem of the Menomonee River, Honey Creek, the Little Menomonee River, and Underwood Creek between 2002 and early 2011. Mean and maximum concentrations of TSS were considerably higher during this period in the Little Menomonee River and Underwood Creek than they were in the Menomonee River. This may be partially the result of construction activities along these two streams related to the remediation of the Moss American Superfund Site along the Little Menomonee River and removal of concrete from the channel of Underwood Creek. The similarity of the value of median concentration of TSS detected in Underwood Creek to that detected in the mainstem of the Menomonee River suggests that extremely high concentrations of TSS in Underwood Creek were probably relatively rare events.

²⁶See discussion in SEWRPC Technical Report No. 39, op. cit.

Estimates of TSS loading made in the RWQMPS indicate that urban nonpoint sources constitute the major source of TSS to streams in the Menomonee River watershed. Table J-4 shows average annual loads of pollutants in this watershed. On average, urban nonpoint sources contribute over 15,700,000 pounds of TSS to the streams of the Menomonee River watershed each year. By contrast, point sources and rural nonpoint sources contribute about 275,000 pounds and 1,950,000 pounds, respectively. The high proportion of TSS load contributed by urban nonpoint sources indicates that a substantial portion of the load of TSS to the watershed is being contributed through discharges of urban stormwater.

Water Quality of Streams in Watersheds Adjacent to the Menomonee River Watershed

As previously discussed, the municipal boundaries of most of the municipalities that are located in the Menomonee River watershed include portions of adjacent watersheds. Because of this, this inventory also includes an examination of water quality conditions in streams located in Menomonee River watershed communities that are located in adjacent watersheds. For streams located in the Kinnickinnic, Milwaukee, and Root River watersheds and the Oak Creek watershed, this examination summarizes analyses developed as part of the RWQMPS.²⁷ For the Fox River watershed it draws upon the 1995 update and status report of the regional water quality management plan²⁸ and on other available sources.

The comparison of water quality conditions in streams of adjacent watersheds to the applicable water quality criteria is presented in Table J-6. For most of the streams examined, this evaluation was conducted along the entire length of the stream. There are several exceptions to this. The assessment divides the mainstems of the Kinnickinnic, Milwaukee, and Root Rivers and Lincoln and Southbranch Creeks into reaches, based upon the locations of major MMSD sampling stations. In addition, Poplar Creek in the Fox River watershed and Whitnall Park Creek in the Root River watershed were each divided into two reaches corresponding to sections of these streams in which different designated water use objective apply. The table also indicates the codified water use objective for each stream or stream reach.

Dissolved Oxygen

Table J-6 shows that dissolved oxygen concentrations in samples collected from the mainstems of the Kinnickinnic and Milwaukee Rivers were usually to almost always above the applicable water quality criteria. By contrast, dissolved oxygen concentrations collected from the mainstem of the Root River were often-to-usually below the applicable water quality criteria. Table J-6 also shows that data from three tributary streams—Pigeon, Lincoln, and Southbranch Creeks— were available to evaluate dissolved oxygen conditions. All of these streams are in the Milwaukee River watershed. Depending on sampling site, dissolved oxygen concentrations in these tributary streams were usually to always above the applicable water quality criteria. Because of the small number of samples used to evaluate conditions in Pigeon Creek, this statement should be considered suggestive rather than indicative of the degree of compliance. Dissolved oxygen concentrations in 17 samples collected from upper reaches of the mainstem of the Fox River during the period 1990-1993 were all above the applicable water quality criterion.²⁹

Based upon the available data, dissolved oxygen concentrations in most streams of the adjacent watersheds appear to be in substantial compliance with the applicable water quality criteria. While it is possible that discharges of stormwater could be causing a few localized impacts relative to dissolved oxygen concentration in these streams, they do not appear to be causing reductions of dissolved oxygen concentrations below the applicable water quality criteria at most locations where data are available. It should be noted that the data were not available for

²⁷Ibid.

²⁸SEWRPC Memorandum Report No. 93, op. cit.

²⁹Ibid.

Table J-6

**WATER QUALITY CHARACTERISTICS OF STREAMS IN MENOMONEE RIVER WATERSHED MUNICIPALITIES
LOCATED IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED**

Stream Reach	Stream Length (miles)	Codified Water Use Objective ^b	Percent of Samples Meeting Water Quality Criteria (total number of samples indicated in parentheses)						
			Dissolved Oxygen	Temperature		Chloride		Total Phosphorus	Fecal Coliform Bacteria
				Sublethal	Acute	Chronic	Acute		
Fox River Watershed									
Fox River		FAL	--	--	--	--	--	--	--
Lannon Creek	2.0	FAL	--	--	--	--	--	--	--
Poplar Creek from WWTP outfall at New Berlin West High School to C&NW Railroad Bridge	3.2	LAL	--	--	--	--	--	--	--
Poplar Creek from C&NW Railroad Bridge to confluence with the Fox River	3.5	LFF	--	--	--	--	--	--	--
Deer Creek	8.0	LAL	--	--	--	--	--	--	--
Mill Creek	4.0	FAL	--	--	--	--	--	--	--
Muskego Creek	7.0	FAL	--	--	--	--	--	--	--
Kinnickinnic River Watershed ^a									
Wilson Park Creek	5.5	FAL	--	--	--	--	--	70.5 (44) ^c	--
Holmes Avenue Creek	1.8	FAL	--	--	--	--	--	--	--
Villa Mann Creek	1.3	FAL	--	--	--	--	--	--	--
Cherokee Park Creek	1.6	FAL	--	--	--	--	--	--	--
Lyons Park Creek	1.5	FAL	--	--	--	--	--	--	--
South 43rd Street Ditch	1.1	FAL	--	--	--	--	--	--	--
Kinnickinnic River above S. 27th Street	3.1	Variance Water (NR 104.06(2)(a)(8) ^d	100.0 (67)	--	--	95.1 (61)	100.0 (61)	29.9 (67) ^c	30.3 (66)
Kinnickinnic River between S. 27th Street and S. 7th Street	2.1	Variance Water (NR 104.06(2)(a)(8) ^d	98.4 (63)	--	--	94.9 (59)	100.0 (59)	56.2 (64) ^c	50.8 (63)
Kinnickinnic River between S. 7th Street and S. 1st Street	1.4	Variance Water (NR 104.06(2)(a)(8) ^d	94.1 (68)	--	--	100.0 (61)	100.0 (61)	58.8 (68) ^c	58.2 (67)

Table J-6 (continued)

Stream Reach	Stream Length (miles)	Codified Water Use Objective ^b	Percent of Samples Meeting Water Quality Criteria (total number of samples indicated in parentheses)						
			Dissolved Oxygen	Temperature		Chloride		Total Phosphorus	Fecal Coliform Bacteria
				Sublethal	Acute	Chronic	Acute		
Kinnickinnic River Watershed ^a (continued)									
Kinnickinnic River between S. 1st Street and Greenfield Avenue (extended)	0.8	Variance Water (NR 104.06(2)(a)(8) ^d	100.0 (58)	--	--	100.0 (58)	100.0 (58)	74.1 (58) ^c	75.4 (57)
Kinnickinnic River between Greenfield Avenue (extended) and Jones Island Ferry	0.4	Variance Water (NR 104.06(2)(a)(8) ^d	100.0 (58)	--	--	100.0 (58)	100.0 (58)	74.1 (58) ^c	77.2 (57)
Cedar Creek Subwatershed of the Milwaukee River Watershed ^a									
Kressin Branch	4.7	FAL	--	--	--	--	--	--	--
Little Cedar Creek	6.0	FAL	--	--	--	--	--	--	--
Milwaukee River South Subwatershed of the Milwaukee River Watershed ^a									
Pigeon Creek	2.4	FAL	100.0 (5)	--	--	--	--	100.0 (6) ^c	--
Trinity Creek	3.1	FAL	--	--	--	--	--	--	--
Beaver Creek	2.6	FAL	--	--	--	--	--	--	--
Southbranch Creek above Bradley Road	0.1	FAL	100.0 (30)	--	--	100.0 (33)	100.0 (33)	3.3 (30) ^c	38.7 (31)
Southbranch Creek between Bradley Road and N. 55th Street	0.2	FAL	100.0 (39)	--	--	100.0 (31)	100.0 (31)	12.1 (33) ^c	32.4 (34)
Southbranch Creek between N. 55th Street and N. 47th Street	0.5	FAL	100.0 (36)	--	--	94.4 (36)	100.0 (36)	11.4 (35) ^c	22.2 (36)
Southbranch Creek between N. 47th Street and Teutonia Avenue	0.5	FAL	91.4 (35)	--	--	94.1 (34)	100.0 (34)	29.4 (34) ^c	8.6 (35)
Lincoln Creek above N. 60th Street	0.9	Variance Water (NR 104.06(2)(a)(8) ^d	100.0 (81)	--	--	93.8 (80)	100.0 (80)	57.5 (80) ^c	76.3 (80)
Lincoln Creek between N. 60th Street and N. 51st Street	1.5	Variance Water (NR 104.06(2)(a)(8) ^d	100.0 (79)	--	--	93.7 (79)	100.0 (79)	77.2 (79) ^c	47.5 (80)
Lincoln Creek between N. 51st Street and N. 55th Street	1.1	Variance Water (NR 104.06(2)(a)(8) ^d	100.0 (61)	--	--	95.1 (61)	100.0 (61)	81.7 (60) ^c	73.3 (80)
Lincoln Creek between N. 55th Street and N. 47th Street	2.5	Variance Water (NR 104.06(2)(a)(8) ^d	100.0 (100)	--	--	93.4 (76)	100.0 (76)	37.6 (93) ^c	34.5 (84)
Lincoln Creek between N. 47th Street and Green Bay Avenue	2.9	Variance Water (NR 104.06(2)(a)(8) ^d	97.6 (83)	--	--	93.4 (78)	100.0 (78)	14.6 (82) ^c	37.3 (83)

Table J-6 (continued)

Stream Reach	Stream Length (miles)	Codified Water Use Objective ^b	Percent of Samples Meeting Water Quality Criteria (total number of samples indicated in parentheses)						
			Dissolved Oxygen	Temperature		Chloride		Total Phosphorus	Fecal Coliform Bacteria
				Sublethal	Acute	Chronic	Acute		
Milwaukee River South Subwatershed of the Milwaukee River Watershed ^a (continued)									
Milwaukee River between Pioneer Road in Cedarburg and Brown Deer Road	11.3	FAL	100.0 (87)	--	--	100.0 (81)	100.0 (81)	44.8 (87) ^C	30.7 (88)
Milwaukee River between Brown Deer Road and Silver Spring Drive	6.5	FAL	100 0 (81)	--	--	100.0 (77)	100.0 (77)	42.5 (80) ^C	38.3 (81)
Milwaukee River between Silver Spring Drive and Port Washington Road	1.6	FAL	94.1 (85)	--	--	100.0 (76)	100.0 (76)	42.9 (84) ^C	30.6 (85)
Milwaukee River between Port Washington Road and Estabrook Park	0.3	FAL	100.0 (75)	--	--	100.0 (23)	100.0 (23)	42.4 (92) ^C	54.5 (11)
Milwaukee River between Estabrook Park and the former North Avenue Dam	3.6	FAL	98.6 (71)	--	--	100.0 (71)	100.0 (71)	37.1 (70) ^C	19.7 (71)
Milwaukee River between the former North Avenue Dam and Walnut Street	0.9	Variance Water (NR 104.06(2)(b)(1) ^e	100.0 (87)	--	--	100.0 (80)	100.0 (80)	39.5 (86) ^C	65.1 (83)
Milwaukee River between Walnut Street and Wells Street	0.8	Variance Water (NR 104.06(2)(b)(1) ^e	100.0 (84)	--	--	100.0 (81)	100.0 (81)	38.6 (83) ^C	69.9 (83)
Milwaukee River between Wells Street and Water Street	0.6	Variance Water (NR 104.06(2)(b)(1) ^e	100.0 (88)	--	--	100.0 (91)	100.0 (91)	37.5 (88) ^C	68.2 (88)
Milwaukee River between Water Street and the Union Pacific Railway	0.3	Variance Water (NR 104.06(2)(b)(1) ^e	100.0 (76)	--	--	100.0 (76)	100.0 (76)	64.5 (76) ^C	77.3 (75)
Milwaukee River between the Union Pacific Railway and the confluence with Lake Michigan	0.4	Variance Water (NR 104.06(2)(b)(1) ^e	100.0 (2)	--	--	100.0 (1)	100.0 (1)	75.0 (4) ^C	100.0 (3)
Oak Creek Watershed ^a									
Mitchell Field Drainage Ditch	5.8	FAL	--	--	--	--	--	45.5 (11) ^b	--
North Branch Oak Creek	3.3	FAL	--	--	--	--	--	--	--
Root River Watershed ^a									
Root River above W. Cleveland Avenue	1.1	FAL	46.4 (28)	--	--	100.0 (28)	100.0 (28)	64.3 (28) ^C	21.4 (28)
Root River between the intersection of W. National Avenue and W. Oklahoma Avenue and W. Cleveland Avenue	0.5	FAL	44.4 (27)	--	--	60.7 (28)	100.0 (28)	42.3 (26) ^C	7.4 (27)

Table J-6 (continued)

Stream Reach	Stream Length (miles)	Codified Water Use Objective ^b	Percent of Samples Meeting Water Quality Criteria (total number of samples indicated in parentheses)						
			Dissolved Oxygen	Temperature		Chloride		Total Phosphorus	Fecal Coliform Bacteria
				Sublethal	Acute	Chronic	Acute		
Root River Watershed ^a (continued)									
Root River between W. Cold Spring Road and the intersection of W. National Avenue and W. Oklahoma Avenue	0.8	FAL	53.6 (28)	--	--	96.4 (28)	100.0 (28)	67.9 (28) ^c	25.0 (28)
Root River between W. Grange Avenue and W. Cold Spring Road	2.5	FAL	79.5 (39)	--	--	85.7 (28)	100.0 (28)	78.9 (38) ^c	16.1 (31)
Hale Creek	1.0	FAL	--	--	--	--	--	--	--
Wildcat Creek	1.6	FAL	--	--	--	--	--	--	--
Whitnall Park Creek upstream from former Hales Corners WWTP	0.9	LAL	--	--	--	--	--	--	--
Whitnall Park Creek downstream from former Hales Corners WWTP to Whitnall Park Pond	1.1	LFF	--	--	--	--	--	--	--
Tess Corners Creek	4.0	LFF	--	--	--	--	--	--	--
Dale Creek	1.4	FAL	--	--	--	--	--	--	--

^aAssessment based upon data in SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007 (TR-39). For the Kinnickinnic River and Oak Creek watersheds, assessments reflect data collected between 1998 and 2001. For the Milwaukee River and Root River watersheds, assessments reflect data collected between 1998 and 2004.

^bFAL indicates a designated use objective of warmwater fish and aquatic life, LFF indicates a designated use objective of limited forage fish, LAL indicates a designated use objective of limited aquatic life.

^cIn TR-39, total phosphorus concentrations were assessed against a planning standard recommended by the Regional Planning Commission of 0.100 mg/l. For the Kinnickinnic River downstream from the confluence with Wilson Park Creek and the Milwaukee River downstream from the confluence with Cedar Creek, the value of this planning standard is identical to the State of Wisconsin phosphorus criteria.

^dThese waters shall meet the standard for fish and aquatic life except that the dissolved oxygen shall not be lowered to less than 2 mg/l at any time, nor shall the membrane filter fecal coliform count exceed 1,000 per 100 ml as a monthly geometric mean based on not less than five samples per month nor exceed 2,000 per 100 ml in more than 10 percent of all samples in any month.

^eThese waters shall meet the standard for fish and aquatic life except that the dissolved oxygen shall not be lowered to less than 2 mg/l at any time, nor shall the membrane filter fecal coliform count exceed 1,000 per 100 ml as a monthly geometric mean based on not less than five samples per month nor exceed 89°F at any time at the edge of the mixing zones established by the WDNR under s. NR 102.05(3).

Source: Milwaukee Metropolitan Sewerage District, U.S. Geological Survey, Wisconsin Department of Natural Resources, U.S. Environmental Protection Agency, and SEWRPC.

evaluating dissolved oxygen conditions in most of the tributary streams examined in the RWQMPU and that the samples used for examining conditions in the Fox River are about 20 years old and may not reflect existing conditions.

Temperature

As shown in Table J-6, at the time that analyses in the RWQMPU were conducted, few continuously recorded temperature records were available for evaluation in these watersheds. Because of this, it was not possible to evaluate the compliance with water quality criteria for temperature, based upon the RWQMPU analyses.

Chloride

As shown in Table J-6, concentrations of chloride in the reaches examined in the mainstems of the Kinnickinnic, Milwaukee, and Root Rivers were equal to or below the acute toxicity criterion in all of the samples collected. In the Milwaukee River, concentrations of chlorides were equal to or below the chronic toxicity criterion in all of the samples collected. In the Kinnickinnic River, concentrations of chlorides were equal to or below the chronic toxicity criterion in almost all of the samples collected. By contrast, while chloride concentrations collected at three sampling stations along the Root River were usually below the chronic toxicity criterion, they often exceeded this criterion at the sampling station at the intersection of W. National Avenue and W. Oklahoma Avenue.

Table J-6 also shows that data from two tributary streams in the Milwaukee River watershed—Lincoln Creek and Southbranch Creek—are available to evaluate compliance with the acute and chronic criteria for chloride. In both of these streams concentrations of chlorides were equal to or below the acute toxicity criterion in all of the samples collected and equal to or below the chronic toxicity criterion the vast majority of the samples collected.

During 1992 and 1993, seven samples collected from the upper Fox River were analyzed for chloride concentrations. In all of these samples, the concentrations were below both the acute and chronic toxicity criteria for chloride. It is important to note that the age of these samples is such that they may not be representative of current conditions in the Fox River.

While these results suggest that a high degree of compliance with the criteria for chloride, they should be interpreted with caution. Most of the data used were collected as part of the MMSDs ongoing sampling program. As noted previously, since 1986, the District has generally not collected water quality samples during winter months, usually December, January, and February. Thus, the data do not reflect the time of year when salt is most likely to be applied for snow and ice control. Because of this, the evaluations shown in Table J-6 probably represent an overestimate of the degree to which chloride concentrations in streams located in watersheds adjacent to the Menomonee River watershed are in compliance with the acute and chronic toxicity criteria.

Total Phosphorus

As previously described, the RWQMPU evaluations of water quality conditions in the Kinnickinnic River, Milwaukee River, Oak Creek, and Root River watersheds relative to water quality criteria were conducted prior to the promulgation of the State's water quality criteria for total phosphorus. Consequently, the evaluations in Table J-6 compare the concentration of total phosphorus to the planning standard of 0.100 milligrams per liter recommended by the Regional Planning Commission in the regional water quality management plan.³⁰ For the Kinnickinnic River downstream from the confluence with Wilson Park Creek and for the Milwaukee River downstream from the confluence of Cedar Creek, this planning standard is identical to the State's water quality criteria for phosphorus. For other streams in these watersheds, this planning standard is higher than the State criterion of 0.075 milligrams per liter. As a result, the assessment will overestimate the degree of achievement of the applicable criteria for these streams.

³⁰SEWRPC Planning Report No. 30, op. cit.

Table J-6 shows that concentrations of total phosphorus in the Kinnickinnic, Milwaukee, and Root Rivers were commonly to usually higher than the planning standard used in the evaluation. Over the entire length of the mainstem of the Kinnickinnic River, total phosphorus concentrations in about 58 percent of the samples collected were at or below the planning standard. In the portions of the Milwaukee and Root Rivers that were evaluated in Table J-6, total phosphorus concentrations in about 44 percent and 65 percent of the samples, respectively, were at or below the planning standard. Higher levels of compliance with the planning standard occurred in the two reaches of the Milwaukee River that are farthest downstream. This probably reflects the influence of water from Lake Michigan mixing with river water in these reaches.

Table J-6 also shows that data from five tributary streams—Wilson Park Creek in the Kinnickinnic River watershed; Lincoln Creek, Pigeon Creek, and Southbranch Creek in the Milwaukee River watershed; and the Mitchell Field Drainage Ditch in the Oak Creek watershed—were available to evaluate compliance with the planning standard for total phosphorus. With one exception, total phosphorus concentrations in a high proportion of samples were greater than the planning standard. In fact, in Southbranch Creek and the Mitchell Field Drainage Ditch, total phosphorus concentrations were higher than this standard in the majority of samples. The one stream in which total phosphorus concentrations did not exceed the planning standard was Pigeon Creek. In all of the samples collected from this stream, total phosphorus concentrations were below the planning standard. Because this evaluation is based on a very small number of samples and the planning standard is higher than the water quality criterion that this stream is subject to, this result should be taken as suggestive, rather than indicative, of phosphorus conditions in Pigeon Creek.

During 1992 and 1993, seven samples collected from the upper Fox River were analyzed for total phosphorus concentrations. Concentrations detected ranged between 0.07 and 0.25 milligrams per liter.³¹ This indicates that during the period when these samples were collected, phosphorus concentrations occasionally to often exceeded the current phosphorus criteria. It is important to note that the age of these samples is such that they may not be representative of current conditions in the Fox River.

The high degree of exceedence of the planning standard in the data examined indicates that total phosphorus concentrations in streams of the watersheds adjacent to the Menomonee River watershed that are located in Menomonee River communities often exceed the applicable water quality criteria for total phosphorus. In urban settings, phosphorus from lawn fertilizers and other sources may be discharged through MS4 systems. As previously discussed, Wisconsin's turf management standard limiting the application of lawn fertilizers containing phosphorus would be expected to reduce the amount of phosphorus discharge from MS4 systems.

Fecal Coliform Bacteria

Table J-6 shows a comparison of water quality conditions in streams of watersheds adjacent to the Menomonee River watershed to the water quality criteria for fecal coliform bacteria. Concentrations of fecal coliform bacteria in the Kinnickinnic and Milwaukee Rivers were commonly higher than the applicable water quality criteria. Over the entire length of the mainstem of the Kinnickinnic River, fecal coliform bacteria concentrations in about 70 percent of the samples collected were at or below the applicable water quality criteria. In the portion of the Milwaukee River that was evaluated, fecal coliform bacteria concentrations in slightly more than 50 percent of the samples were at or below the applicable water quality criteria. In the portion of the Root River that was evaluated, concentrations of fecal coliform bacteria were usually greater than the applicable water quality criteria. Fecal coliform concentrations were equal to or less than the applicable water quality criteria in less than 18 percent of the samples.

³¹SEWRPC Memorandum Report No. 93, op. cit.

Table J-6 also shows that data from two tributary streams—Lincoln Creek and Southbranch Creek in the Milwaukee River watershed—were available to evaluate for compliance with the water quality criteria for fecal coliform bacteria. Fecal coliform bacteria concentrations in Lincoln Creek were commonly greater than the applicable water quality criteria. In this stream, bacteria concentrations were equal to below the criteria in about 54 percent of samples. Fecal coliform bacteria concentrations in Southbranch Creek were usually greater than the applicable water quality criteria. In this stream, bacteria concentrations were equal to below the criteria in only 25 percent of samples.

In 19 samples collected between 1990 and 1993 from three sites along the mainstem of the upper Fox River, concentrations of fecal coliform bacteria ranged between 100 and 7,400 colony forming units per 100 milliliter. At one of these sampling sites, concentrations in all of the samples were greater than the applicable water quality criterion. Data were also available from three tributary streams—Deer Creek, Lannon Creek, and Poplar Creek. Concentrations of fecal coliform bacteria in five samples collected from Deer Creek in 1990 and in five samples from Lannon Creek in 1990 were greater than the applicable water quality criterion. In five samples collected in 1990 from Poplar Creek, concentrations of fecal coliform bacteria ranged between 170 and 2,300 colony forming units per 100 milliliter.³² These results indicate that during the period when these samples were collected, fecal coliform bacteria concentrations in the Fox River and its tributaries occasionally to often exceeded the applicable water quality criteria. It is important to note that the age of these samples is such that they may not be representative of current conditions in the Fox River and its tributaries.

Total Suspended Solids

Table J-7 compares TSS concentrations in samples collected from the mainstem of the Kinnickinnic River, the portions of the mainstems of the Milwaukee and Root Rivers that are located in Menomonee River watershed communities, Lincoln Creek, the Mitchell Field Drainage Ditch, and Southbranch Creek. Mean and median concentrations of TSS in these streams are similar to those observed in the Menomonee River. For all of these streams except the Mitchell Field Drainage Ditch, concentrations of TSS were below about 30 milligrams per liter in the majority of samples collected; however, a substantial number of samples from each stream had TSS concentrations that were considerably higher.³³ In the case of the Mitchell Field Drainage Ditch, the number of samples is insufficient to assess this aspect of the distribution of concentrations.

Daily average wet-weather loads of TSS were compared to daily average dry-weather loads using discharge and TSS concentration data collected at USGS flow gauges and the water quality sampling stations were made for the Kinnickinnic River at S. 11th Street, the Milwaukee River at Port Washington Avenue, and the Root River at Ryan Road.³⁴ The Root River station is several miles downstream from the portion of the Root River watershed that is contained within Menomonee River watershed communities. These comparisons are shown in Table J-8. At all three sampling stations, the mean wet-weather load is considerably larger than the mean dry-weather load, indicating that the bulk of the TSS tends to enter these streams and be present in the water during wet-weather conditions. As in the Menomonee River, the higher TSS loads during wet weather reflect several influences, including resuspension of sediment from streambanks caused by higher water flows, erosion of streambeds and banks resulting from higher water flows, and inputs of TSS in stormwater entering the stream system.

³²Ibid.

³³*This was a concentration below which most of the distribution of sample values was observed to fall. It does not represent a standard or criterion for establishing an acceptable TSS concentration.*

³⁴*SEWRPC Technical Report No. 39, op. cit.*

Table J-7

**CONCENTRATIONS OF TOTAL SUSPENDED SOLIDS (TSS) IN STREAMS OF
WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED: 1998-2004**

Stream	Minimum TSS Concentration (mg/l)	Maximum TSS Concentration (mg/l)	Mean TSS Concentration (mg/l)	Median TSS Concentration (mg/l)	Number of Samples
Kinnickinnic River ^a	0.8	1,200	20.1	10.0	599
Milwaukee River	1.2	480	30.4	20.2	1,809
Root River	0.0	190	15.9	7.6	238
Lincoln Creek	0.0	370	16.0	8.0	576
Mitchell Field Drainage Ditch ^a	18.0	24	21.7	23.0	3
Southbranch Creek	0.0	120	12.3	5.8	219

^aData for the Kinnickinnic River and Mitchell Field Drainage Ditch are from 1998-2001.

Source: Milwaukee Metropolitan Sewerage District, U.S. Geological Survey, U.S. Environmental Protection Agency, Wisconsin Department of Natural Resources, and SEWRPC.

Table J-8

**COMPARISON OF WET-WEATHER LOADS OF TOTAL SUSPENDED SOLIDS (TSS) TO DRY-WEATHER
LOADS OF TSS IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED**

Parameter	Kinnickinnic River at S. 11th Street	Milwaukee River at Port Washington Road	Root River at Ryan Road
Period Examined	1998-2001	1998-2004	1998-2004
Mean Wet-Weather TSS Load (pounds)	85,060	761,300	122,000
Mean Dry-Weather TSS Load (pounds)	398	35,130	1,418
Ratio of Mean Wet-Weather Load to Mean Dry-Weather Load	214	22	29

Source: SEWRPC.

Pollutant Loadings

Modeled annual average point and nonpoint pollution loads to the Menomonee River watershed are summarized in Table J-4. The nonpoint source load estimates represent loads delivered to the modeled stream reaches after accounting for any trapping factors that would retain pollutants on the surface of the land. They include loads from groundwater. It is important to note that the stream channel pollutant loads may be expected to be different from the actual transport from the watershed, because physical, chemical, and/or biological processes may retain or remove pollutants or change their form during transport within the stream system. These processes include particle deposition or entrapment in floodplains, stream channel deposition or aggradation, biological uptake, and chemical transformation and precipitation. The total nonpoint source pollution loads set forth in Table J-4 are representative of the total annual quantities of potential pollutants moved from the Menomonee River watershed into stream channels, but are not intended to reflect the total amount of the pollutants moving from those sources through the entire hydrologic-hydraulic system.

Because nonpoint source pollution is delivered to streams in the watershed through many diffuse sources, including direct overland flow, numerous storm sewer and culvert outfalls, and swales and engineered channels, it would be prohibitively expensive and time-consuming to directly measure nonpoint source pollution loads to streams. Thus, a calibrated water quality model was applied to estimate average annual nonpoint source pollutant loads delivered to the streams in the watershed.³⁵

The numbers in Table J-4 indicate that urban nonpoint source pollution loads comprise from 53 to 92 percent of the total pollution load in the Menomonee River watershed, while rural nonpoint sources and point sources only account for 2 to 30 percent of the total load and 3 to 38 percent of the total load, respectively, depending on the pollutant. The distribution of total nonpoint source loads among the watersheds and average annual per acre loads for the subwatersheds are shown on Maps J-2 through J-13 (Maps H-13 through H-24 from SEWRPC Technical Report No. 39).

Table J-9 shows the average annual urban nonpoint source loads of pollutant by subwatershed and, for each pollutant, the percentage of the urban nonpoint source load contributed by each subwatershed. For all but one pollutant, five subwatersheds—the Lower Menomonee River, Underwood Creek, the Upper Menomonee River, Honey Creek, and the Little Menomonee River subwatershed—account for about 85 percent of the urban nonpoint source load. For fecal coliform bacteria, these five subwatersheds account for about 94 percent of the urban nonpoint source loads. The high portions of the urban nonpoint source loads contributed by these subwatersheds reflect both their sizes and degree of urbanization.

Table J-10 presents average annual urban nonpoint source loads for subwatersheds in watersheds adjacent to the Menomonee River watershed that contain portions of Menomonee River watershed communities. The loads presented for subwatersheds in the Kinnickinnic River, Milwaukee River, Oak Creek, and Root River watersheds were estimated as part of the same modeling effort as those for the Menomonee River watershed presented in Tables J-4 and J-9. The loads presented for the Fox River watershed were developed in the early 1990s as part of WDNR priority watershed projects. The percentages shown in Table J-10 reflect the percent of the total urban nonpoint source load that each subwatershed contributes to its respective watershed. It is important to note that the loads for the Fox River watershed were estimated using a different model and different assumptions from those used to estimate loads as part of the RWQMPS. Because of this, the loads for the Fox River watershed may not be directly comparable to the loads from the other watersheds examined.

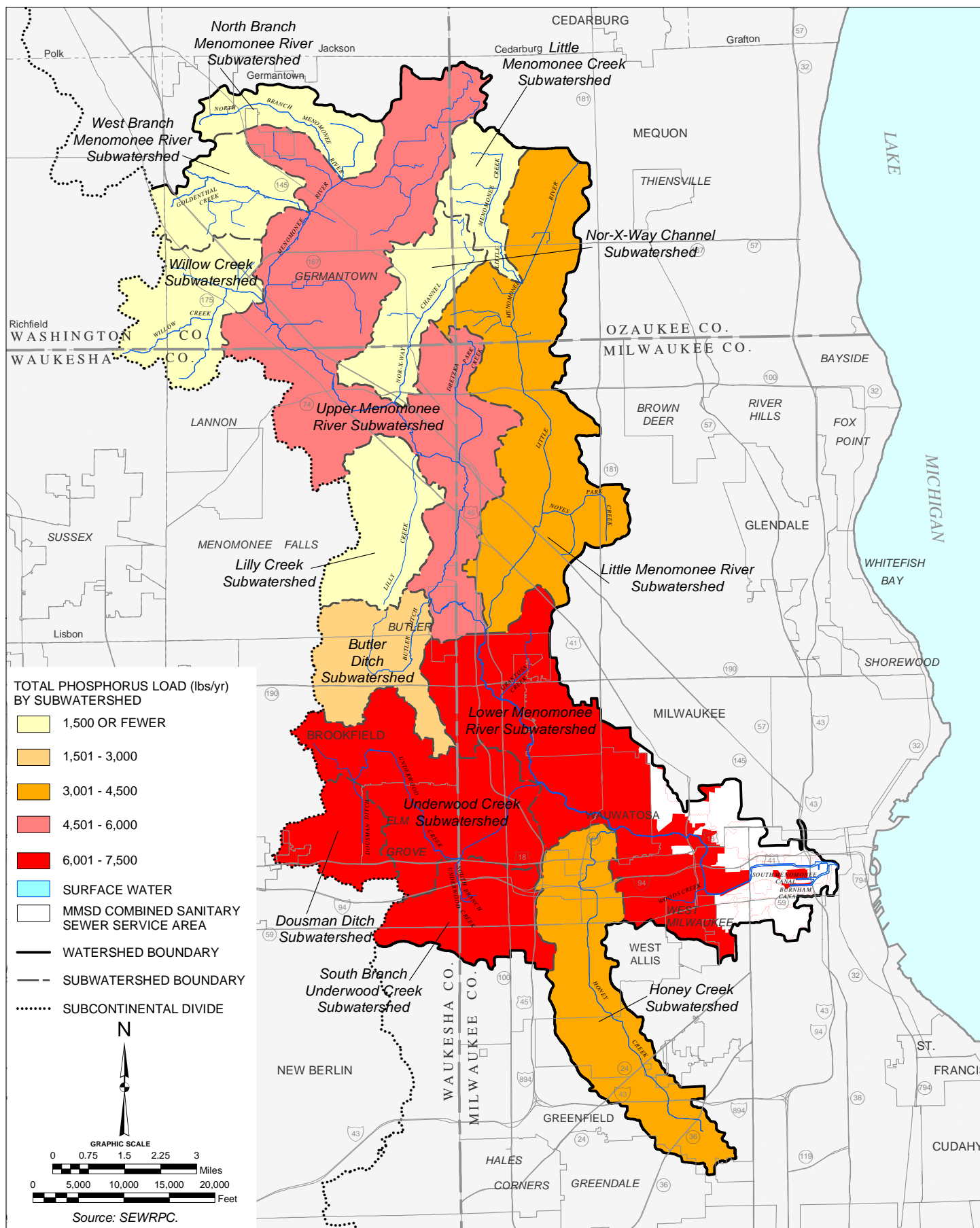
Impaired Waters

As defined by the CWA, impaired waters are those waters that are not meeting State water quality standards. Section 303(d) of the CWA requires that the states periodically submit a list of impaired waters to the USEPA for approval. The WDNR revises the list of impaired waters every two years. While Wisconsin most recently submitted this list in 2010, the most recent USEPA-approved list is the one submitted in 2008.

The approved and proposed impaired waters in the Menomonee River watershed are shown on Map J-14 and listed in Table J-11. Several impairments are present in the watershed. Based upon the previous discussion, discharges of urban stormwater may represent contributing factors for at least two sets of impairments. First, most of the stream reaches in the watershed that are listed or proposed for listing are considered impaired due to recreational restrictions resulting from high concentrations of bacteria indicative of fecal contamination. For most of these stream reaches, the indicator listed is fecal coliform bacteria; however, the reaches of the mainstem of the Menomonee River that are part of the Milwaukee Harbor estuary are also considered to have recreational restrictions resulting from fecal contamination as indicated by high concentrations of *E. coli*. Second, the reaches

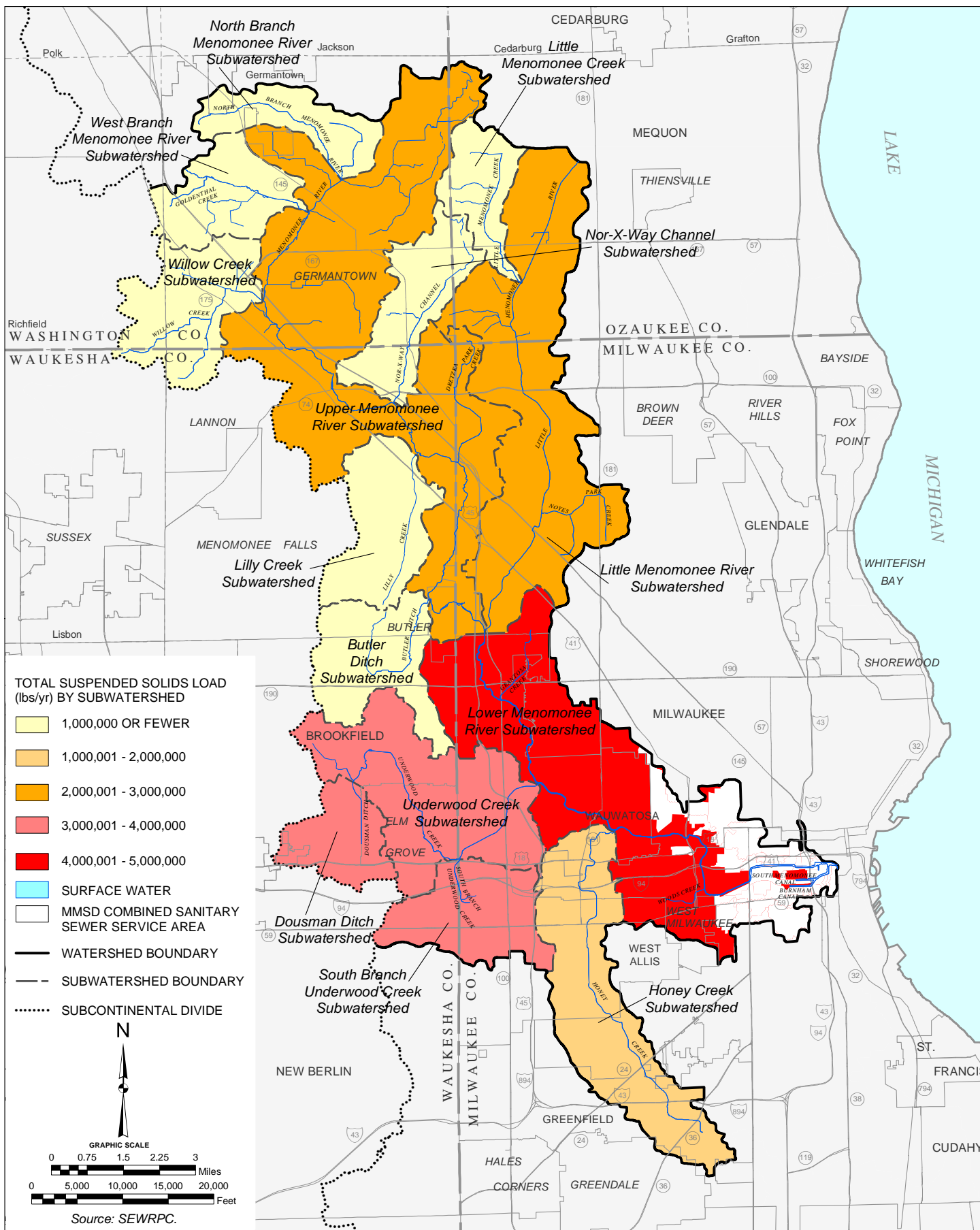
³⁵*The model is documented and general water quality modeling procedures are described in Chapter V of SEWRPC Planning Report No. 50, op. cit. More detailed results from the model are presented in SEWRPC Technical Report No. 39, op. cit.*

ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL PHOSPHORUS IN THE MENOMONEE RIVER WATERSHED

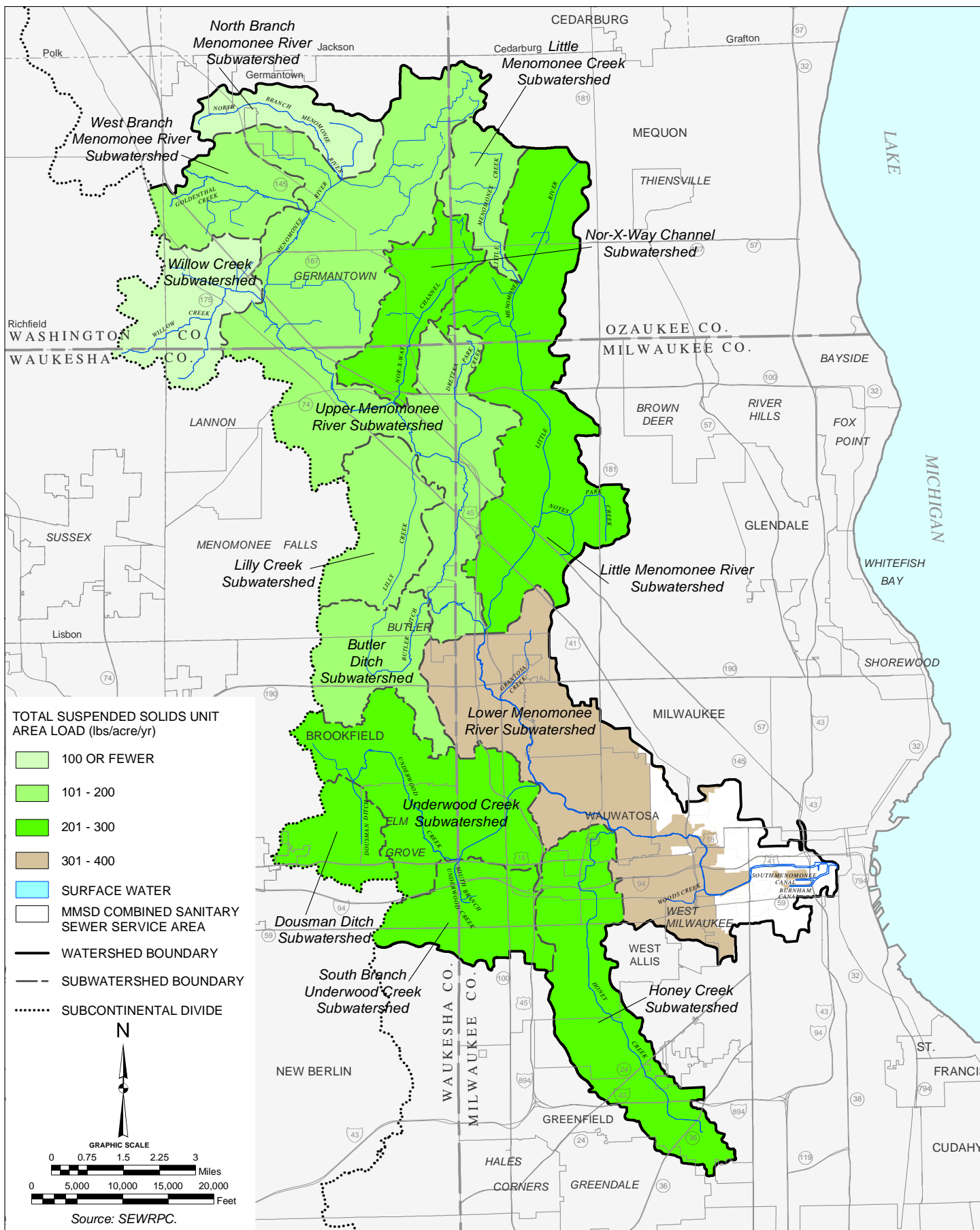




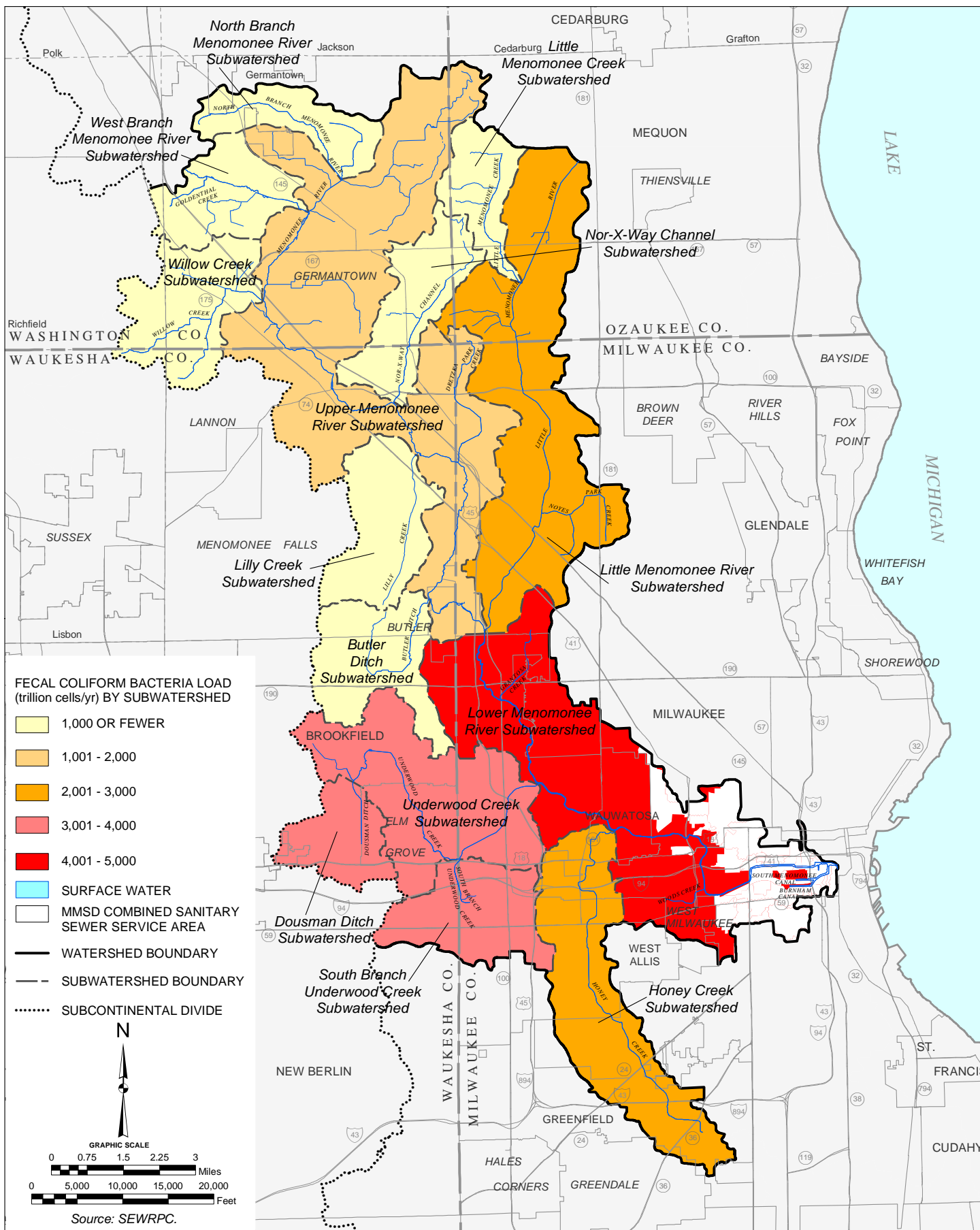
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF TOTAL SUSPENDED SOLIDS IN THE MENOMONEE RIVER WATERSHED



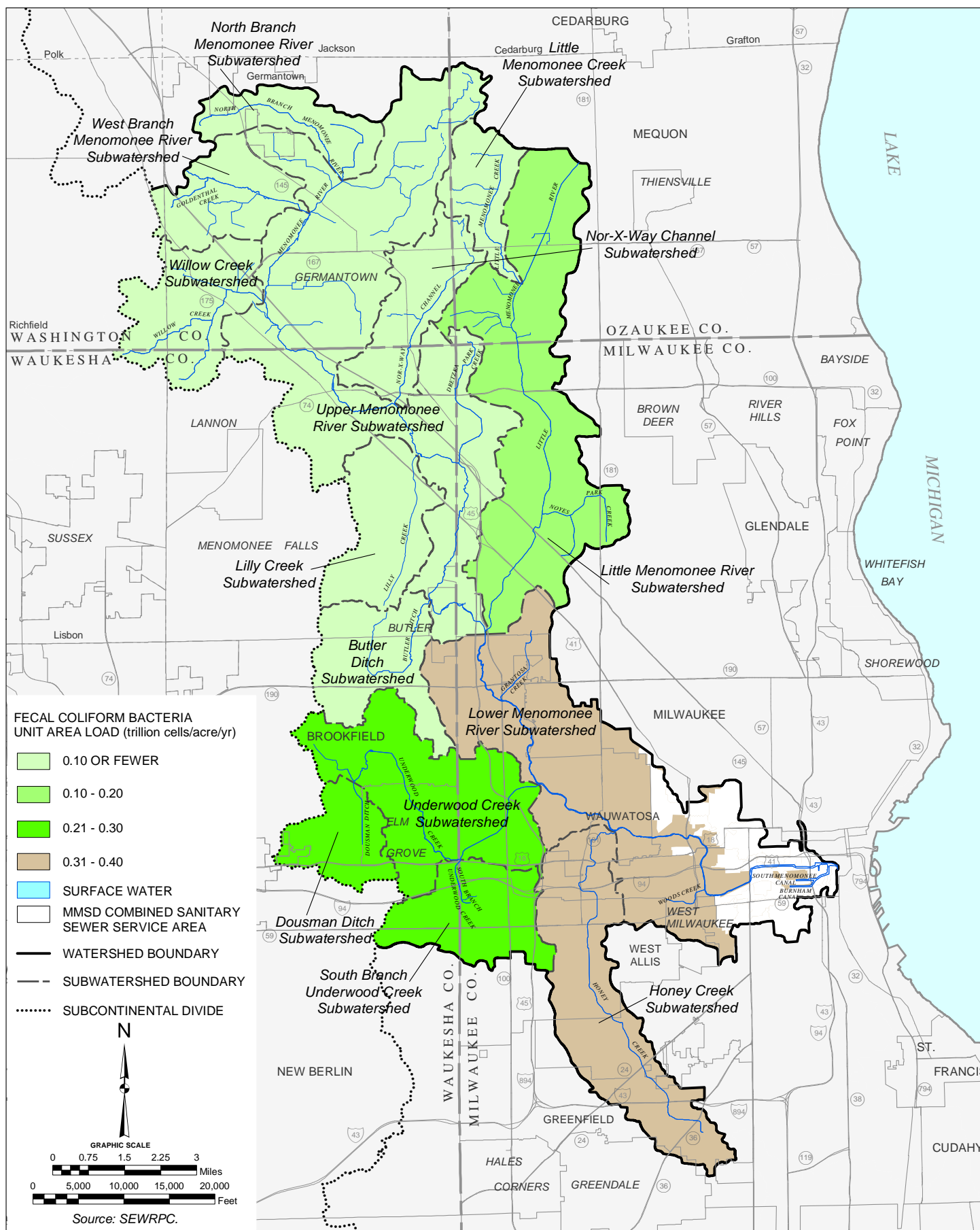
**ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF TOTAL SUSPENDED SOLIDS
IN THE MEMOMONEE RIVER WATERSHED**



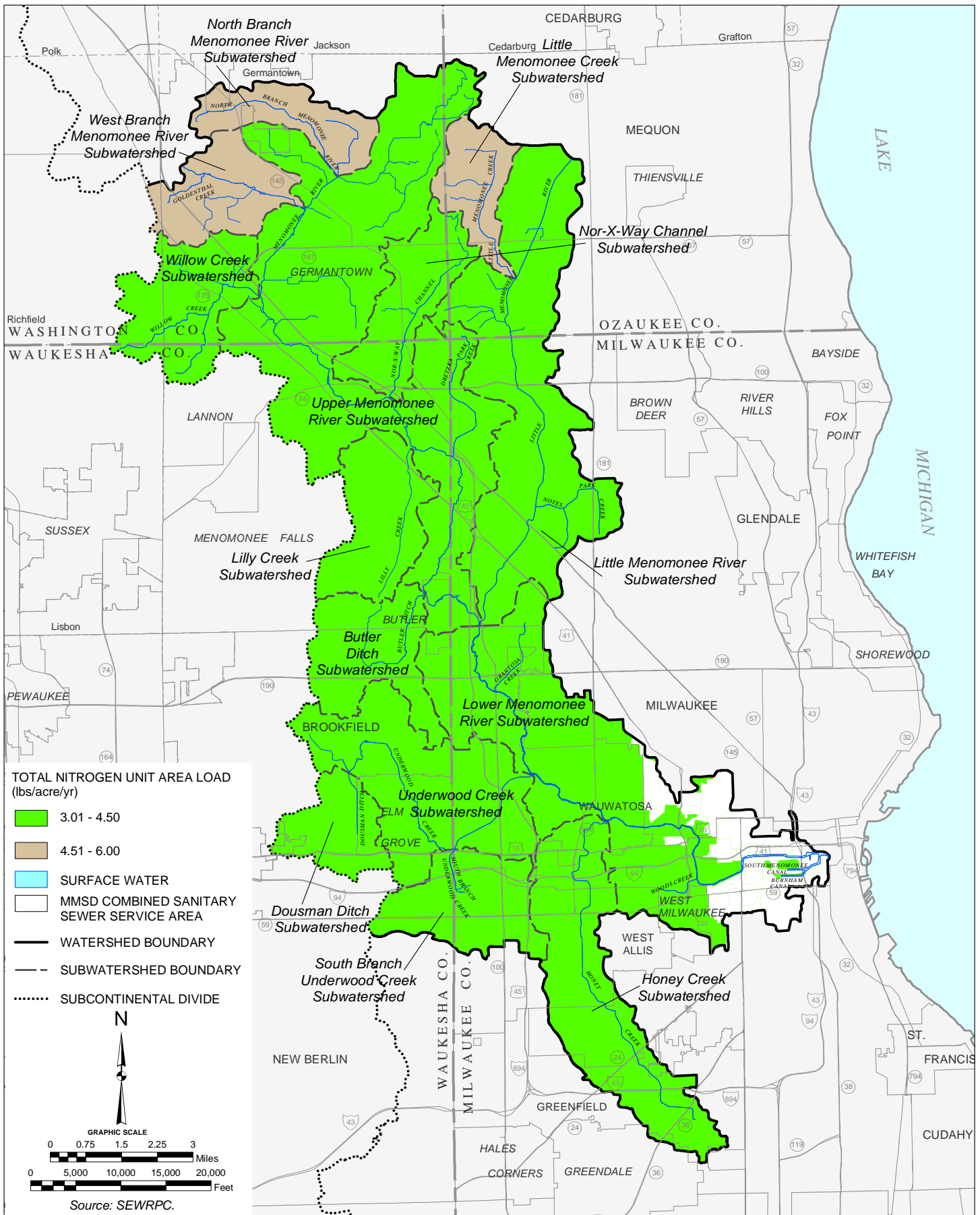
ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF FECAL COLIFORM BACTERIA IN THE MENOMONEE RIVER WATERSHED



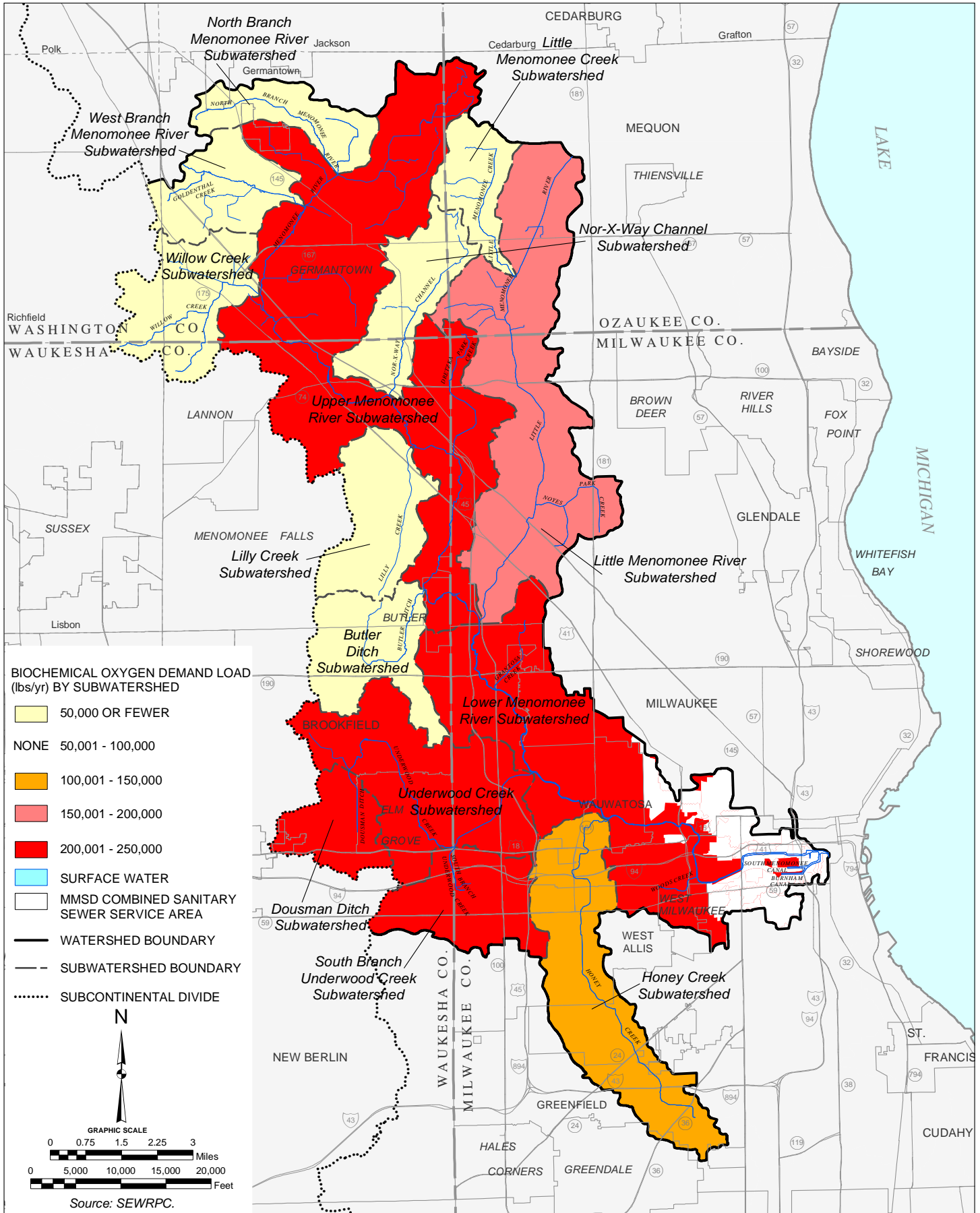
**ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF FECAL COLIFORM BACTERIA
IN THE MENOMONEE RIVER WATERSHED**



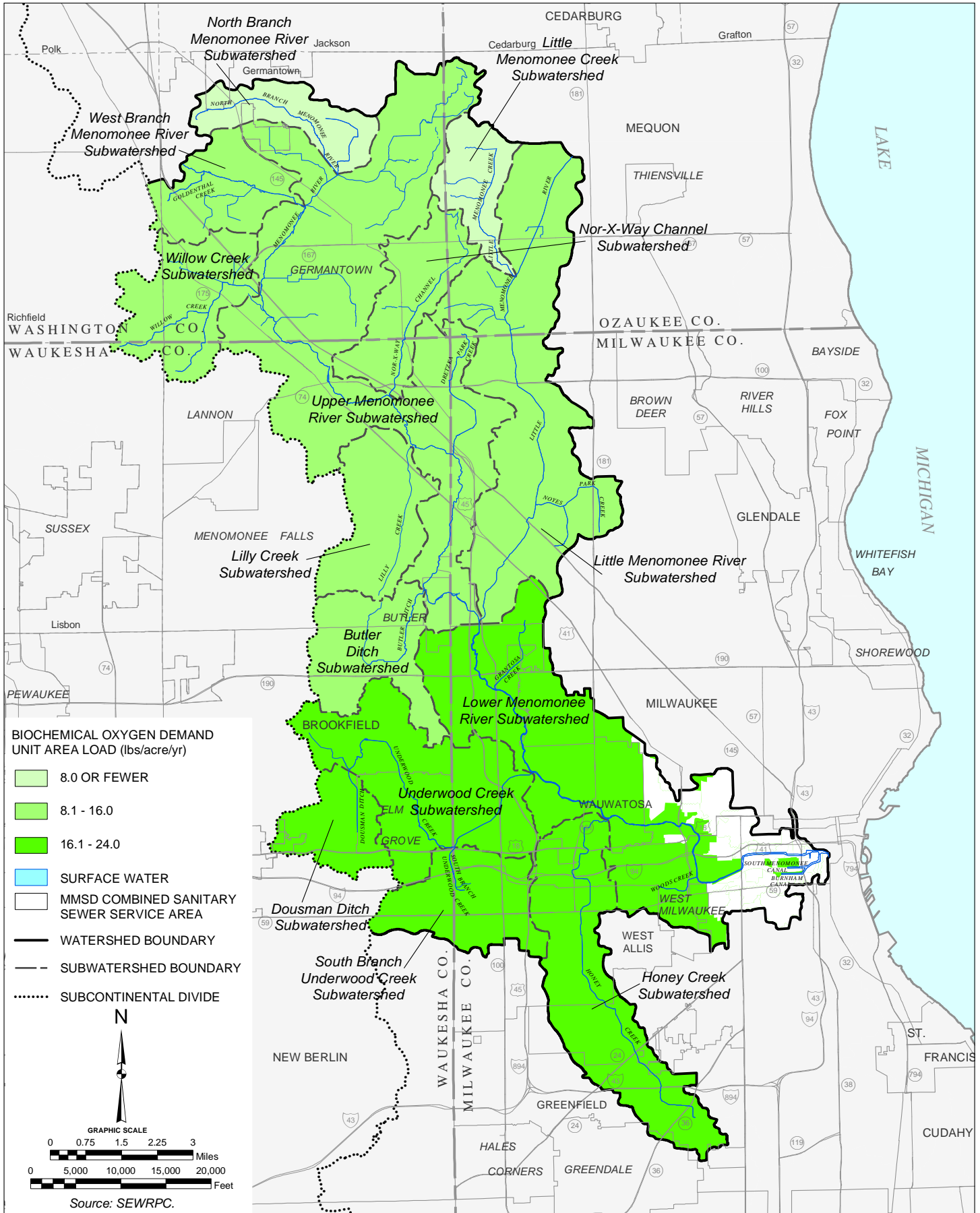




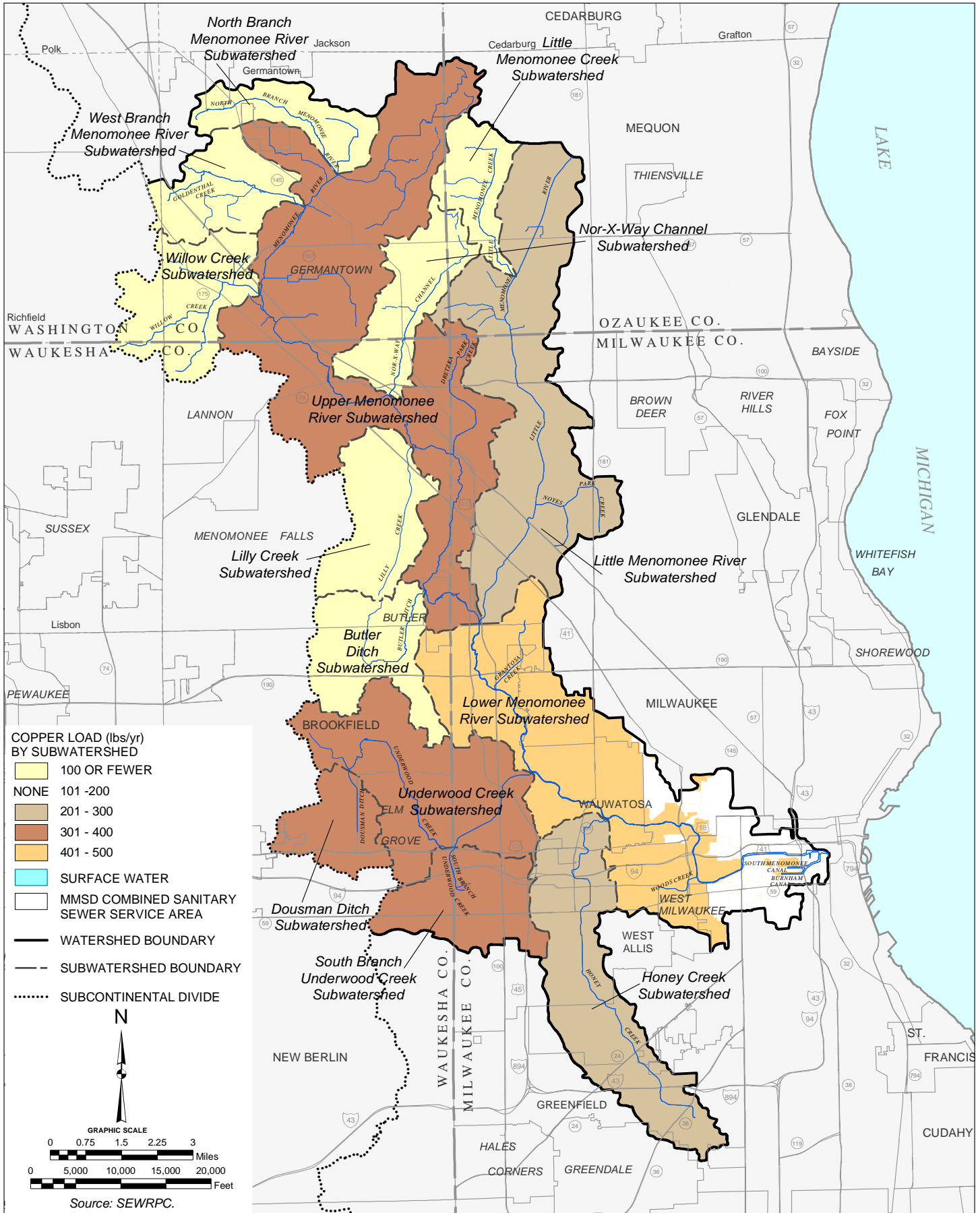
**ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF BIOCHEMICAL OXYGEN DEMAND
IN THE MENOMONEE RIVER WATERSHED**



ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF BIOCHEMICAL OXYGEN DEMAND IN THE MENOMONEE RIVER WATERSHED



**ESTIMATED AVERAGE ANNUAL NONPOINT SOURCE POLLUTION LOADS OF COPPER
IN THE MENOMONEE RIVER WATERSHED**



**ESTIMATED AVERAGE ANNUAL PER ACRE NONPOINT SOURCE POLLUTION LOADS OF COPPER
IN THE MENOMONEE RIVER WATERSHED**

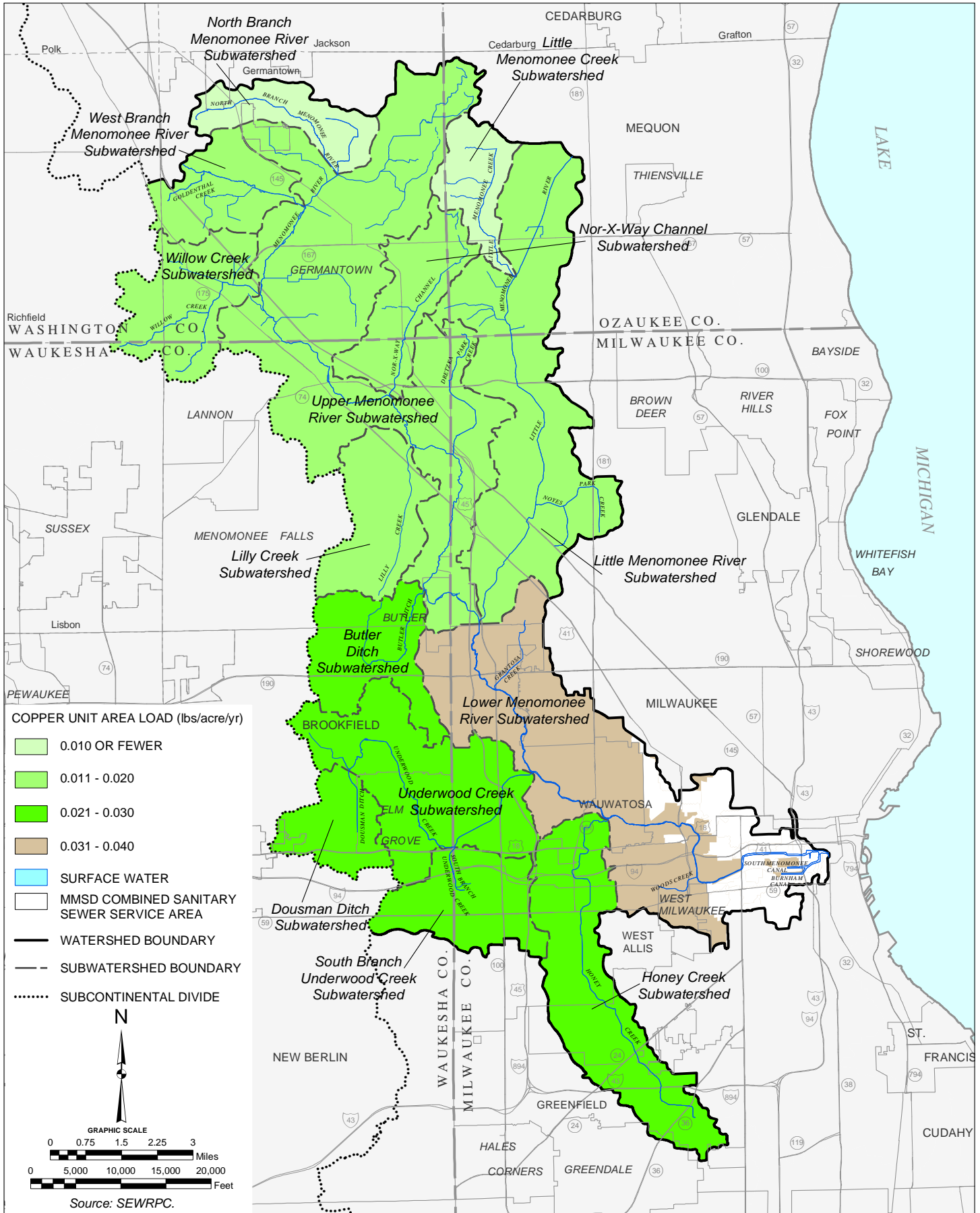


Table J-9

AVERAGE ANNUAL URBAN NONPOINT SOURCE LOADS OF POLLUTANTS IN THE MENOMONEE RIVER WATERSHED^a

Subwatershed	Total Suspended Solids		Total Phosphorus		Biochemical Oxygen Demand		Fecal Coliform Bacteria		Total Nitrogen		Copper	
	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load	Load (trillions of cells)	Percent of Total Urban Nonpoint Source Pollutant Load	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load
Butler Ditch.....	689,190	4.4	1,490	5.1	44,260	4.5	223.75	1.6	10,890	5.2	78	4.4
Honey Creek	1,874,860	11.9	3,900	13.4	119,400	12.0	2,342.61	16.6	27,300	13.0	211	11.9
Lilly Creek	666,000	4.2	1,200	4.1	42,390	4.3	199.31	1.4	9,530	4.6	73	4.1
Little Menomonee Creek.....	58,630	0.4	80	0.3	3,570	0.4	65.43	0.5	530	0.3	6	0.3
Little Menomonee River	1,976,270	12.6	3,300	11.4	126,650	12.7	2,097.81	14.9	25,150	12.0	224	12.7
Lower Menomonee River	4,001,330	25.3	7,180	24.6	236,620	23.8	4,067.91	28.8	49,520	23.6	428	24.1
North Branch Menomonee River.....	27,660	0.2	50	0.2	2,200	0.2	9.30	0.1	310	0.2	4	0.2
Nor-X-Way Channel.....	478,790	3.0	630	2.2	26,530	2.7	256.06	1.8	4,350	2.1	49	2.8
Underwood Creek	3,031,420	19.3	6,350	21.9	194,480	19.5	3,454.09	24.5	45,090	21.5	340	19.2
Upper Menomonee River	2,504,060	15.9	4,170	14.4	164,500	16.6	1,274.47	9.0	32,240	15.4	295	16.7
West Branch Menomonee River	232,070	1.5	370	1.3	18,000	1.8	62.41	0.4	2,500	1.2	33	1.9
Willow Creek	197,990	1.3	320	1.1	14,790	1.5	58.69	0.4	1,930	0.9	27	1.5
Total	15,738,270	100.0	29,040	100.0	993,390	100.0	14,111.84	100.0	209,340	100.0	1,768	100.0

^aLoads from groundwater are included. The results are annual averages based on simulation of year 2000 land used conditions. The simulations were made using meteorological data from 1988 through 1997, which is a representative rainfall period for the study area.

Source: Tetra Tech, Inc..

Table J-10

AVERAGE ANNUAL URBAN NONPOINT SOURCE LOADS OF POLLUTANTS IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED^a

Subwatershed	Total Suspended Solids		Total Phosphorus		Biochemical Oxygen Demand		Fecal Coliform Bacteria		Total Nitrogen		Copper	
	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load ^b	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load ^b	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load ^b	Load (trillions of cells)	Percent of Total Urban Nonpoint Source Pollutant Load ^b	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load ^b	Load (pounds)	Percent of Total Urban Nonpoint Source Pollutant Load ^b
Fox River Watershed												
Upper Fox River ^c	7,417,754	-- ^d	12,256	-- ^d	--	--	--	--	--	--	2,331	-- ^d
Wind Lake ^e	430,000	-- ^d	889	-- ^d	--	--	--	--	--	--	--	--
Kinnickinnic River Watershed												
Cherokee Park Creek.....	216,410	4.2	440	4.5	11,980	3.2	145.02	4.3	2,750	4.5	22	4.3
Holmes Avenue Creek	643,010	12.5	1,000	10.1	44,320	12.0	361.85	10.8	6,090	9.8	59	11.2
Kinnickinnic River.....	1,400,580	27.1	2,790	28.3	80,050	21.6	1,031.94	306.0	17,730	28.7	146	27.8
Lyons Park Creek.....	283,620	5.5	620	6.3	16,880	4.6	247.09	7.4	3,980	6.4	30	5.7
S. 43rd Street Ditch.....	557,400	10.8	890	9.0	30,730	8.3	327.94	9.8	5,570	9.0	57	10.9
Villa Mann Creek.....	380,220	7.4	730	7.4	20,320	5.5	247.97	7.4	4,480	7.2	37	7.0
Wilson Park Creek	1,681,280	32.5	3,390	34.4	165,660	44.8	996.39	29.7	21,270	34.4	174	33.1
Milwaukee River Watershed												
Cedar Creek.....	1,504,000	8.5	3,310	7.3	105,650	8.1	1,664.36	6.9	13,420	5.9	190	8.2
Lincoln Creek	2,778,000	15.7	7,870	17.4	216,100	16.6	4,178.24	17.3	42,420	18.6	380	16.5
Lower Milwaukee River	5,236,000	29.6	14,780	32.6	388,570	29.8	7,522.97	31.2	79,020	34.7	684	29.7
Oak Creek Watershed												
Mitchell Field Drainage Ditch	532,620	12.1	980	11.5	28,860	12.1	505.12	19.4	7,580	21.0	56	12.6
North Branch Oak Creek.....	1,558,560	35.3	2,650	31.2	79,090	33.3	735.48	28.3	8,790	24.3	148	33.3
Root River Watershed												
East Branch Root River.....	494,130	5.5	1,660	6.3	42,060	5.7	554.63	6.0	10,570	6.5	77	5.7
Upper Root River	1,918,200	21.4	6,000	22.6	169,850	23.1	2,202.96	23.9	38,610	23.8	305	22.6
Whitnall Park Creek	1,112,640	12.4	3,650	13.8	99,220	13.5	1,309.52	14.2	23,440	14.5	181	13.4

^aLoads from groundwater are included. Except as noted, the results are annual averages based on simulation of year 2000 land used conditions. The simulations were made using meteorological data from 1988 through 1997, which is a representative rainfall period for the study area.

^bPercent of total nonpoint source pollutant load represents the percentage of the pollutant load contributed to the watershed from the subwatershed. Because not all of the subwatersheds in any watershed are shown, the sum of the percentages shown within a watershed may not equal 100 percent.

^cLoads were computed by SLAMM modeling in Wisconsin Department of Natural Resources and others, Nonpoint Source Control Plan for the Upper Fox River Priority Watershed Project, Publication WR-366-94, June 1994.

^dEstimates were not available for the entire Fox River watershed.

^eEstimates from Wisconsin Department of Natural Resources and others, Nonpoint Source Control Plan for the Muskego-Wind Lakes Priority Watershed Project, Publication WR-366-94, October 1993.

Source: Tetra Tech, Inc. and Wisconsin Department of Natural Resources.

**IMPAIRED WATERS WITHIN THE MEMOMONEE RIVER WATERSHED AND ADJACENT
WATERSHEDS LOCATED IN MEMOMONEE RIVER WATERSHED COMMUNITIES: 2010**

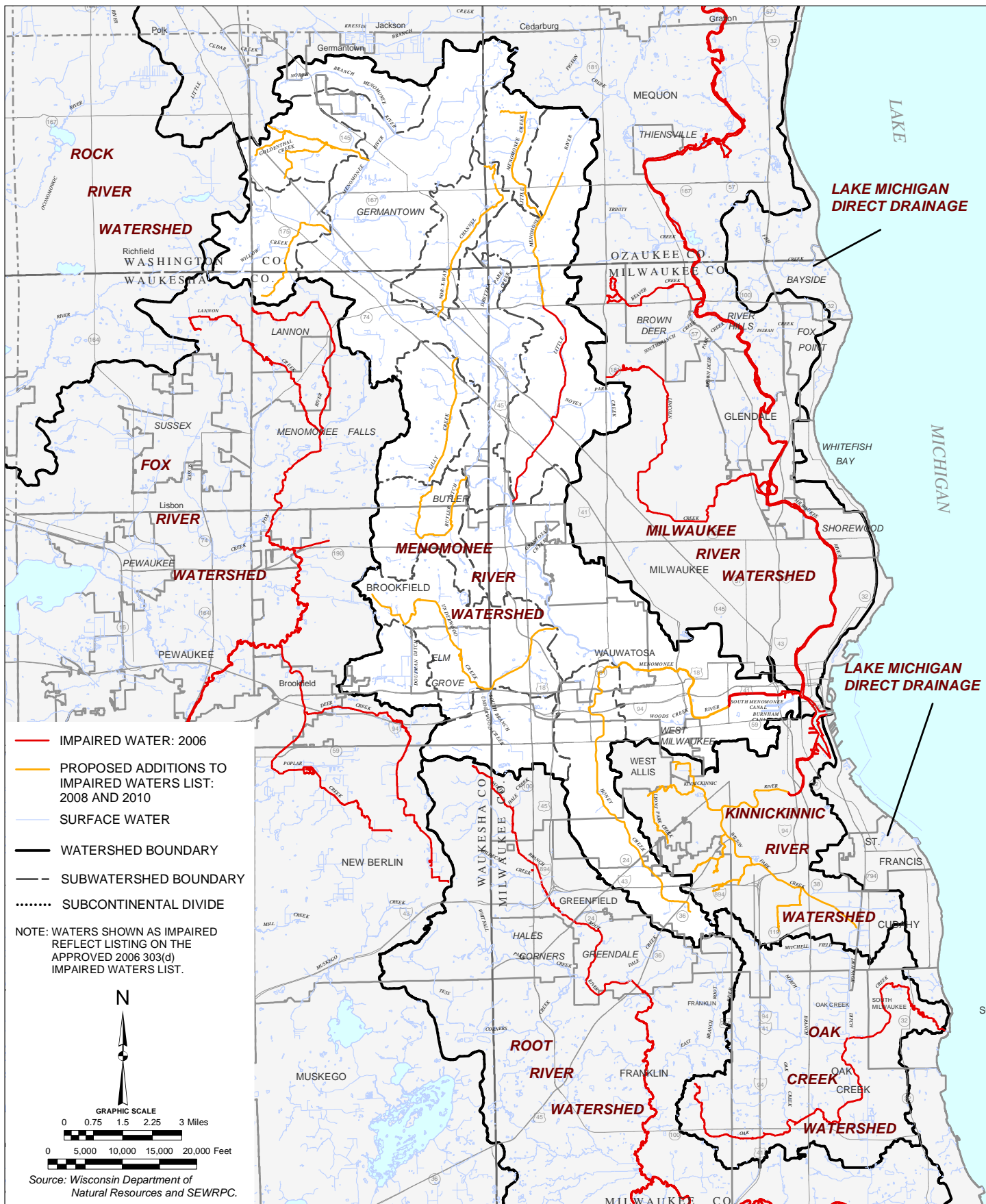


Table J-11

IMPAIRED WATERS WITHIN THE MENOMONEE RIVER WATERSHED: 2012

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Butler Ditch	Recreational restrictions-pathogens	0-2.9	Fecal coliform bacteria	Proposed 2010
Goldendale Creek	Recreational restrictions-pathogens	0-3.5	Fecal coliform bacteria	Proposed 2010
Honey Creek	Degraded biological community	0-8.96	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-10	Fecal coliform bacteria	Proposed 2010
Lilly Creek	Recreational restrictions-pathogens	0-4.7	Fecal coliform bacteria	Proposed 2010
Little Menomonee Creek	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	Proposed 2010
Little Menomonee River	Chronic aquatic toxicity	0-9	Creosote	1998
	Degraded biological community	0-9	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	Proposed 2010
Menomonee River	Low dissolved oxygen	0-2.67	Total phosphorus	1998
	Chronic aquatic toxicity	0-2.67	Unspecified metals	1998
	Contaminated fish tissue	0-2.67	PCBs	1998
	Recreational restrictions-pathogens	0-2.67	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-2.67	Fecal coliform bacteria	Proposed 2010
	Recreational restrictions-pathogens	2.67-6.27	Fecal coliform bacteria	Proposed 2010
Nor-X-Way Channel	Recreational restrictions-pathogens	0-4.9	Fecal coliform bacteria	Proposed 2010
South Branch Underwood Creek	Degraded biological community	0-1	Total phosphorus	Proposed 2012
Underwood Creek	Degraded biological community	0-2.84	Total phosphorus	Proposed 2012
	Degraded biological community	2.84-8.54	Unknown pollutant	Proposed 2012
	Recreational restrictions-pathogens	0-8.54	Fecal coliform bacteria	Proposed 2010
West Branch Menomonee River	Recreational restrictions-pathogens	0-2.45	Fecal coliform bacteria	Proposed 2010
Willow Creek	Recreational restrictions-pathogens	0-2.8	Fecal coliform bacteria	Proposed 2010

Source: Wisconsin Department of Natural Resources.

of the mainstem of the Menomonee River that are part of the Milwaukee Harbor estuary are considered impaired due to low concentrations of dissolved oxygen resulting from high inputs of total phosphorus.

The impairment related to chronic aquatic toxicity in the Little Menomonee River is related to legacy deposits of contaminated sediments at the Moss-American Superfund site. The instream contamination causing this impairment has been largely remediated. Urban stormwater discharges are not a factor in this impairment.

Similarly, the impairment related to contaminated fish tissue is largely related to legacy deposits of PCBs in sediments in several locations in the Lake Michigan basin, including the Milwaukee Harbor estuary and sites in the Kinnickinnic and Milwaukee River watersheds. Finally the impairment related to chronic aquatic toxicity is also largely related to legacy deposits of contaminated sediments, especially in the Milwaukee Harbor estuary.

Map J-14 also shows waters considered impaired pursuant to Section 303(d) of the CWA in the watersheds adjacent to the Menomonee River watershed. These are also listed in Table J-12.

In the Fox River watershed, discharges of urban stormwater are likely contributing factors to the impairments related to degraded habitat in the Fox River and Deer and Lannon Creeks, excess algal growth in Deer Creek, and low dissolved oxygen concentrations in the Fox River and Poplar Creek.

In the Kinnickinnic River watershed, discharges of urban stormwater are likely contributing factors to the impairments related to recreational restrictions throughout the watershed and low dissolved oxygen concentrations in the portion of the mainstem of the Kinnickinnic River that is within the Milwaukee Harbor estuary. As in the Menomonee River watershed the impairment related to contaminated fish tissue is largely related to legacy deposits of PCBs in sediments in several locations in the Lake Michigan basin and the impairment related to chronic aquatic toxicity is largely related to legacy deposits of contaminated sediments.

In the Milwaukee River watershed, discharges of urban stormwater are likely contributing factors to the impairments related to elevated water temperatures and degraded habitat in Lincoln Creek, low dissolved oxygen concentrations in the mainstem of the Milwaukee River and Lincoln Creek, and recreational restrictions in the Milwaukee River. As in the Menomonee River watershed the impairments related to contaminated fish tissue is largely related to legacy deposits of PCBs in sediments in several locations in the Lake Michigan basin, including sites in the Milwaukee River and some of its tributaries. The causes of and contributing factors to the chronic aquatic toxicity in Beaver and Lincoln Creeks have yet to be determined.

In the Oak Creek watershed, the causes of the impairment due to chronic aquatic toxicity have yet to be determined.

In the Root River watershed, discharges of urban stormwater are likely contributing factors to the impairments related to low dissolved oxygen.

Summary of Water Quality Problems in the Menomonee River Watershed and Adjacent Watersheds

At the beginning of this inventory, three questions were posed regarding the state of water quality in the Menomonee River watershed:

- To what extent are the surface waters of the Menomonee River watershed able to achieve the uses for which they are designated by the State of Wisconsin pursuant to the Federal Clean Water Act?
- If these waters are not fully supporting these uses, what pollutants are acting as stressors to reduce water quality in the surface waters that are not fully achieving their designated uses?
- To what extent are these stressor pollutants being contributed through discharges from municipal separate storm sewer systems (MS4s)?

These questions also apply to the analysis of water quality in the adjacent watersheds.

Consideration of the previous comparison of water quality conditions in these watersheds to the applicable water quality criteria provides a guide for answering these questions and points to those pollutants in urban stormwater for which controls may be required in order for surface waters of Menomonee River watershed communities to achieve their designated uses.

Table J-12

**IMPAIRED WATERS IN MENOMONEE RIVER WATERSHED MUNICIPALITIES
LOCATED IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED: 2010**

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Fox River Watershed				
Deer Creek	Degraded habitat	0-8.09	Elevated water temperature	2008
	Degraded habitat	0-8.09	Sediment/total suspended solids	2008
	Excess algal growth	0-8.09	Total phosphorus	1998
Fox River	Contaminated fish tissue	151.34-196.64	PCBs	1998
	Contaminated fish tissue	151.34-180.1	PCBs	1998
	Contaminated fish tissue	175.32-176.13	Mercury	1998
	Degraded biological community	113.24-151.34	Total phosphorus	Proposed 2012
	Degraded habitat	171.45-175.32	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Total phosphorus	1998
	Low dissolved oxygen	171.45-175.32	Total phosphorus	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Sediment/total suspended solids	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Total phosphorus	1998
Lannon Creek	Degraded habitat	0-5.48	Sediment/total suspended solids	1998
Master Disposal Drainage Channel	Chronic aquatic toxicity	0-.99	Unknown pollutant	1998
Poplar Creek	Low dissolved oxygen	0-8.06	Unknown pollutant	1998
Kinnickinnic River Watershed				
Cherokee Creek	Recreational restrictions-pathogens	0-1.6	Fecal coliform bacteria	Proposed 2010
Holmes Avenue Creek	Recreational restrictions-pathogens	0-1.8	Fecal coliform bacteria	Proposed 2010
Kinnickinnic River	Low dissolved oxygen	0-2.83	Total phosphorus	1998
	Contaminated fish tissue	0-2.83	PCBs	1998
	Chronic aquatic toxicity	0-2.83	Metals	1998
	Degraded biological community	2.84-9.94	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-2.83	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-9.61	Fecal coliform bacteria	Proposed 2010
Lyons Park Creek	Recreational restrictions-pathogens	0-1.5	Fecal coliform bacteria	Proposed 2010
South 43rd Street Ditch	Degraded biological community	0-1.16	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-1.16	Fecal coliform bacteria	Proposed 2010
Villa Mann Creek	Recreational restrictions-pathogens	0-1.2	Fecal coliform bacteria	Proposed 2010
Wilson Park Creek	Recreational restrictions-pathogens	0-5.5	Fecal coliform bacteria	Proposed 2010

Table J-12 (continued)

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Milwaukee River Watershed				
Beaver Creek	Chronic aquatic toxicity	0-2.69	Unknown pollutant	1998
Lincoln Creek	Chronic aquatic toxicity	0-9.0	Unspecified metals	1998
	Chronic aquatic toxicity	0-9.0	PAHs	1998
	Degraded biological community	0-9.7	Total phosphorus	Proposed 2012
	Degraded habitat	8.5-9.0	Sediment/total suspended solids	1998
	Elevated water temperature-degraded habitat	0-8.5	Sediment/total suspended solids	1998
	Low dissolved oxygen	0-9.0	Total phosphorus	1998
Milwaukee River	Contaminated fish tissue/contaminated sediment	0-2.9	PCBs	1998
	Contaminated fish tissue	2.9-19.35	PCBs	1998
	Contaminated sediment	0-2.9	Unspecified metals	1998
	Low dissolved oxygen	0-2.9	Total phosphorus	1998
	Recreational restrictions-pathogens	0-19.35	<i>Escherichia coli</i>	1998
Oak Creek				
Oak Creek	Chronic aquatic toxicity	0-13.32	Unknown pollutant	1998
	Degraded biological community	0-13.32	Total phosphorus	Proposed 2012
Root River Watershed				
Root River	Low dissolved oxygen	20.48-43.95	Sediment/total suspended solids	1998
	Low dissolved oxygen	20.48-43.95	Total phosphorus	1998

Source: Wisconsin Department of Natural Resources.

Dissolved Oxygen

With the exception of a few tributary locations, the Menomonee River and its tributaries were in substantial compliance with the applicable water quality criteria for dissolved oxygen. The streams of the Kinnickinnic and Milwaukee River watersheds show a similar high degree of compliance. While discharges of urban stormwater could be causing some localized impacts relative to dissolved oxygen concentrations, they do not appear to be causing wholesale problems throughout these watersheds. At this time, focusing control efforts on dissolved oxygen is probably not warranted. The exception to this conclusion occurs in the upper reaches of the Root River. Dissolved oxygen concentrations showed a lower degree of compliance with applicable water quality criteria in this stream. Because discharges of urban stormwater can transport organic materials into receiving waters, discharges into streams of this watershed may require control efforts.

Water Temperature

At all locations examined within the Menomonee River watershed, daily maximum water temperatures were almost always in compliance with the acute water quality criterion. At most of the locations that were examined, the calendar week averages of daily maximum temperature were usually to always in compliance with the sublethal water quality criterion. Two tributary streams—Noyes Park Creek and the section of Underwood Creek downstream from Juneau Avenue—were exceptions to this generalization. Both of these streams are channelized

and lined with concrete, which can significantly contribute to higher water temperatures. Thus, discharges of urban stormwater do not appear to be causing water temperatures in this watershed to exceed the applicable water quality criteria. At this time, focusing control efforts on water temperature is probably not warranted.

Chloride

Concentrations of chloride in streams of the Menomonee River watershed and adjacent watersheds were almost always in compliance with the State's acute and chronic toxicity criteria; however, the data used to make these evaluations may not encompass the entire range of chloride concentrations that occur in these streams. As noted above, few of the samples used to evaluate compliance with the toxicity criteria for chloride were collected during the winter deicing season when the highest inputs of chloride would be expected. Another study has shown very high chloride concentrations in Milwaukee area streams during this season.³⁶ In addition, high concentrations of chloride are occasionally found in samples of discharge from stormwater outfalls. Finally, chloride concentrations in surface waters throughout much of Southeastern Wisconsin have been increasing. Because of these considerations, it is likely that the evaluation in the inventory presented herein overestimates the degree of compliance with the toxicity criteria for chloride in streams of the Menomonee River watershed and adjacent watersheds. Given this, it would be prudent to continue monitoring chloride concentrations, either directly or through a suitable surrogate measure—especially during the winter deicing season. Such monitoring may show whether additional controls will be necessary in order for surface waters to meet the toxicity criteria during the winter deicing season.

Total Phosphorus

Concentrations of total phosphorus in streams of the Menomonee River watershed were commonly to usually greater than the applicable water quality criteria. In streams of the watersheds adjacent to the Menomonee River watershed, concentrations of total phosphorus were commonly to usually greater than the planning standard recommended in the regional water quality management plan—for most streams a less stringent standard than the applicable water quality criterion. Estimates of loads of total phosphorus indicate that a high proportion of the load of total phosphorus is being contributed through discharges of urban stormwater (see Table J-4). Additional controls related to phosphorus may be necessary in order for total phosphorus concentrations in these streams to comply with the applicable water quality criteria.

Fecal Coliform Bacteria

Fecal coliform bacteria concentrations in streams of the Menomonee River watershed and adjacent watersheds were commonly to usually greater than the applicable water quality criteria. Concentrations of these bacteria in samples collected from stormwater outfalls and estimates of loads indicate that a substantial portion of the loads of these bacteria are being contributed from urban stormwater systems (see Table J-4). Reductions in fecal coliform bacteria concentrations in these streams will be needed to comply with the applicable water quality criteria. However, as discussed above, these bacteria are not themselves a pollutant of concern. Instead, they act as an indicator of the possible presence of disease-causing agents. Therefore, targeting controls based upon assessments of whether stormwater contains fecal wastes of human origin may be a more viable method to protect human health than focusing purely on ambient concentrations of these bacteria.

Total Suspended Solids

With one exception, mean concentrations of total suspended solids in streams of the Menomonee River watershed and adjacent watersheds were below about 30 milligrams per liter.³⁷ Concentrations were highly variable and maximum concentrations were generally one to two orders of magnitude higher than average concentrations.

³⁶*Corsi and others, 2010 op. cit.*

³⁷*This was a concentration below which most of the distribution of sample values was observed to fall. It does not represent a standard or criterion for establishing an acceptable TSS concentration.*

Empirical estimates of instream loads showed that loads during wet weather were considerably higher than those during dry weather. Estimates of TSS loading indicate that urban nonpoint sources constitute the major source of TSS to streams in the Menomonee River watershed (see Table J-4). Much of the control efforts related to MS4 systems in Wisconsin have focused on reducing TSS in stormwater discharges. Given the regulatory nature of the watershed-based permit framework, and the fact that many other pollutants of concern are associated with TSS through chemical processes such as adsorption, these control efforts should continue.

Summary

Streams of the Menomonee River watershed and adjacent watersheds are not fully supporting their designated use objectives pursuant to the Federal Clean Water Act. At the minimum, total phosphorus, fecal coliform bacteria, and total suspended solids are causing water quality problems in these streams. In addition, it is likely that chloride may also be causing a problem during the winter deicing season; however, insufficient sampling has been conducted during this season to assess the magnitude of this problem. Discharges of urban stormwater accounts for a large portion of the load of these four pollutants. Reductions in the loads of these pollutants contained in stormwater discharged to receiving streams will likely be needed for these streams to support their designated uses.

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Appendix K

ACUTE TOXICITY OF SODIUM CHLORIDE TO FRESHWATER AQUATIC ORGANISMS

During review of the second part of the draft SEWRPC Staff Memorandum, “Development of a Framework for a Watershed-Based Municipal Stormwater Permit for the Menomonee River Watershed,” by the Menomonee River Watershed-Based Permit (WBP) Framework Group, a question arose as to what effects concentration spikes of chloride occurring during cold weather are likely to have upon aquatic biota within the Menomonee River watershed. This appendix presents the results of a literature review to address this question. Specifically, this appendix presents the results of a review of the literature regarding the acute toxicity of sodium chloride to freshwater aquatic organisms, compares the results of this review to estimates of chloride concentrations during the winter deicing season at locations within the Menomonee River watershed, and discusses whether aquatic organisms are likely to experience toxic effects in streams in the watershed.

Table K-1 presents data on the acute toxicity of sodium chloride to freshwater aquatic organisms. These results are taken from the toxicological and ecological literature. With two exceptions the tests use the LC50, the concentration at which 50 percent of the organisms die over the duration of the test, as the measure of acute toxicity.¹ A higher LC50 indicates lower toxicity to the organism, while a lower LC50 indicates greater sensitivity to the toxin. The table presents results for several exposure times; however, the majority of results listed come from 96-hour (four-day) acute toxicity tests. This is in keeping with standard toxicological procedures. The results are presented in terms of both the concentration of sodium chloride and an equivalent concentration of chloride. This was done to facilitate comparison of the toxicological data to estimates of chloride concentrations in streams and to the State’s acute toxicity criterion for fish and aquatic life. In the discussion that follows, the LC50s will be expressed in terms of chloride concentrations.

Some patterns are apparent in values presented in Table K-1. LC50 There is considerable variation in LC50 values. For 96-hour tests, they range from 425 milligrams of chloride per liter (mg Cl/l) for the mayfly, *Callibaetis coloradensis*, to 13,085 mg Cl/l for the American eel, *Anguilla rostrata*. With the exception of the LC50 value for *C. coloradensis*, these values are all higher than the State’s acute toxicity criterion for chloride of 757 milligrams per liter. LC50 values for fish species tend to be higher than those for many invertebrate species, suggesting that they are less sensitive to acute chloride toxicity. LC50 values also vary among tests for the same species. This may be due to several factors, including differences in test conditions, genetic variation within

¹The two exceptions occur in six-hour toxicity tests and use LC40 and LC47 endpoints. These reflect the concentrations at which 40 percent and 47 percent, respectively, of organisms die during the course of the test. LC50 values for these organisms in six-hour acute toxicity tests would be higher than the values shown.

Table K-1

ACUTE TOXICITY OF SALT (SODIUM CHLORIDE) TO FRESHWATER AQUATIC ORGANISMS

Species	Common Name	NaCl Concentration (mg/l)	Chloride Concentration (mg/l)	Exposure Time (hours)	Response ^a	Reference
<i>Salvelinus fontinalis</i>	Brook trout	50,000	30,330	0.25	LC50	Phillips, 1944
<i>Lepomis macrochirus</i>	Bluegill	20,000	12,132	6.00	LC47	Waller, <i>et al.</i> , 1996
<i>Oncorhynchus mykiss</i>	Rainbow trout	20,000	12,132	6.00	LC40	Waller, <i>et al.</i> , 1996
<i>Chironomus attenuatus</i>	Midge	9,995	6,063	6.00	LC50	Thornton and Sauer, 1972
<i>Lepomis macrochirus</i>	Bluegill	14,100	8,553	24.00	LC50	Doudoroff and Katz, 1953
<i>Daphnia magna</i>	Water flea	7,754	4,704	24.00	LC50	Cowgill and Milazzo, 1990
<i>Cirrhinus mrigalo</i>	Indian carp fry	7,500	4,550	24.00	LC50	Gosh and Pal, 1969
<i>Labeo rohito</i>	Indian carp fry	7,500	4,550	24.00	LC50	Gosh and Pal, 1969
<i>Catla catla</i>	Indian carp fry	7,500	4,550	24.00	LC50	Gosh and Pal, 1969
<i>Daphnia pulex</i>	Water flea	2,724	1,652	24.00	LC50	Cowgill and Milazzo, 1990
<i>Ceriodaphnia dubia</i>	Water flea	2,724	1,652	24.00	LC50	Cowgill and Milazzo, 1990
<i>Daphnia pulex</i>	Water flea	2,042	1,239	48.00	LC50	Gardner and Royer, 2010
<i>Daphnia pulex</i>	Water flea	1,812	1,099	48.00	LC50	Gardner and Royer, 2010
<i>Anguilla rostrata</i>	American eel, (black eel stage)	21,571	13,085	96.00	LC50	Hinton and Eversole, 1978
<i>Anguilla rostrata</i>	American eel, (black eel stage)	17,969	10,900	96.00	LC50	Hinton and Eversole, 1978
<i>Gambusia affinis</i>	Mosquito fish	17,500	10,616	96.00	LC50	Wallen, <i>et al.</i> , 1957
<i>Hydropsyche betteni</i>	Caddisfly	13,308	8,073	96.00	LC50	Kundman, 1998
<i>Lepomis macrochirus</i>	Bluegill	12,964	7,864	96.00	LC50	Trama, 1954
<i>Oncorhynchus mykiss</i>	Rainbow trout	11,112	6,743	96.00	LC50	Spehar, 1987
<i>Pimephales promelas</i>	Fathead minnow	10,831	6,570	96.00	LC50	Birge, <i>et al.</i> 1985
<i>Culex</i> sp.	Mosquito	10,254	6,222	96.00	LC50	Dowden and Bennett, 1965
<i>Lepomis macrochirus</i>	Bluegill	9,627	5,840	96.00	LC50	Birge, <i>et al.</i> 1985
<i>Gammarus pseudolimnaeus</i>	Scud	7,700	4,670	96.00	LC50	Blasius and Merritt, 2002
<i>Pimephales promelas</i>	Fathead minnow	7,681	4,659	96.00	LC50	Wisconsin State Laboratory of Health, 1995
<i>Pimephales promelas</i>	Fathead minnow	7,650	4,640	96.00	LC50	Adelman, <i>et al.</i> , 1976
<i>Carassius auratus</i>	Goldfish	7,341	4,453	96.00	LC50	Adelman, <i>et al.</i> , 1976
<i>Anaobolia nervosa</i>	Caddisfly	7,014	4,255	96.00	LC50	Sutcliffe, 1961

Table K-1 (continued)

Species	Common Name	NaCl Concentration (mg/l)	Chloride Concentration (mg/l)	Exposure Time (hours)	Response ^a	Reference
<i>Limnephilus stigma</i>	Caddisfly	7,014	4,255	96.00	LC50	Sutcliffe, 1961
<i>Daphnia magna</i>	Water flea	6,709	4,071	96.00	LC50	Wisconsin State Laboratory of Health, 1995
<i>Chironomus attenuatus</i>	Midge	6,637	4,026	96.00	LC50	Thornton and Sauer, 1972
<i>Hexagenia limbata</i>	Mayfly	6,300	3,822	96.00	LC50 at 18°C	Chadwick, 1997
<i>Daphnia magna</i>	Water flea	6,031	3,658	96.00	LC50	Cowgill and Milazzo, 1990
<i>Lepidostoma</i> sp.	Caddisfly	6,000	3,640	96.00	LC50	Williams, <i>et al.</i> , 2000
<i>Hydroptila angusta</i>	Caddisfly	5,526	3,352	96.00	LC50	Hamilton <i>et al.</i> , 1975
<i>Cricotopus trifascia</i>	Midge	5,192	3,149	96.00	LC50	Hamilton <i>et al.</i> , 1975
<i>Rana sylvatica</i>	Wood frog (tadpoles)	5,109	3,099	96.00	LC50	Sanzo and Hecnar, 2006
<i>Cirrhinus mrigalo</i>	Indian carp fry	4,980	3,021	96.00	LC50	Gosh and Pal, 1969
<i>Labeo rohito</i>	Indian carp fry	4,980	3,021	96.00	LC50	Gosh and Pal, 1969
<i>Catla catla</i>	Indian carp fry	4,980	3,021	96.00	LC50	Gosh and Pal, 1969
<i>Lirceus fontinalis</i>	Isopod	4,896	2,970	96.00	LC50	Birge, <i>et al.</i> , 1985
<i>Physa gyrina</i>	Snail	4,088	2,480	96.00	LC50	Birge, <i>et al.</i> , 1985
<i>Daphnia magna</i>	Water flea	3,939	2,390	96.00	LC50	Arambasic, <i>et al.</i> , 1995
<i>Pycnopsyche guttifer</i>	Caddisfly	3,526	2,140	96.00	LC50	Blasius and Merritt, 2002
<i>Pycnopsyche lepida</i>	Caddisfly	3,526	2,140	96.00	LC50	Blasius and Merritt, 2002
<i>Daphnia magna</i>	Water flea	3,054	1,853	96.00	LC50	Anderson, 1948
<i>Rana sylvatica</i>	Wood frog (tadpoles)	2,636	1,599	96.00	LC50	Sanzo and Hecnar, 2006
<i>Ceriodaphnia dubia</i>	Water flea	2,630	1,596	96.00	LC50	Wisconsin State Laboratory of Health, 1995
<i>Daphnia pulex</i>	Water flea	2,422	1,470	96.00	LC50	Birge, <i>et al.</i> , 1985
<i>Hexagenia limbata</i>	Mayfly	2,400	1,456	96.00	LC50 at 28°C	Chadwick, 1997
<i>Ceriodaphnia dubia</i>	Water flea	2,308	1,400	96.00	LC50	Cowgill and Milazzo, 1990
<i>Callibaetis coloradensis</i>	Mayfly	700	425	96.00	LC50	Wichard, 1975

^aLC50 is the concentration that is lethal to 50 percent of the test organisms. A higher LC50 value means lower toxicity of the chemical to the organism.

Source: SEWRPC.

species, and differences among statistical techniques used to calculate the LC50 value from the raw toxicology data.

Few data are available on the effects of temperature upon the acute toxicity of sodium chloride. The one study that examined this found that the mayfly *Hexigenia limbata* was more sensitive to chloride at a higher water temperature than at a lower temperature. It is important to note that the temperatures used in this study, 28°C and 18°C, were both higher than what would be expected to be observed in streams of the Menomonee River watershed during the winter deicing season.

With one exception, the most sensitive organisms listed in Table K-1 have LC50 values in 96-hour toxicity tests starting at about 1,400 mg Cl/l.² Based on this, it was decided to use 1,400 mg Cl/l as a threshold for acute toxicity effects in further analysis and discussion. It should be noted that this threshold is considerably higher than the State of Wisconsin's acute toxicity criterion for fish and aquatic life for chloride of 757 mg/l and represents a threshold at which substantial acute toxic effects would be expected to occur.

The LC50 values listed in Table K-1 are for toxicity associated with sodium chloride. The toxicity of chloride can vary depending upon the cations with which it is associated. Sodium chloride-based deicers were shown to have lower toxicity to rainbow trout, the water flea *Ceriodaphnia dubia*, and the alga *Selenastrum capricornatum* than other chloride-based deicers such as calcium chloride and magnesium chloride and acetate-based deicers.³ For example, the LC50 for sodium chloride for *C. dubia* was 6,583 mg/l. Lower LC50s were seen for this organisms for other chloride-based deicers with an LC50 for calcium chloride of 3,828 mg/l and LC50's for magnesium chloride ranging between 660 mg/l and 4,950 mg/l, depending on the particular deicer formulation. By comparison, LC50s for *C. dubia* for acetate-based deicers range between 660 mg/l and 4,670 mg/l.⁴

It is important to note that the LC50 values listed in Table K-1 reflect the toxicity of sodium chloride. Commercial deicers also contain trace amounts of metals and other substances. For example, one study found that sodium chloride-based deicers contained trace amounts of copper, zinc, cyanide, and sulfate.⁵ Some of these substances can cause acute toxicity in aquatic organisms at low concentrations. Toxic effects related to the presence of these substances in deicers are not reflected in the LC50 values in Table K-1.

LC50 values represents a substantial toxic effect to organism populations. While the LC50 values are useful measures of acute toxicity, they do not represent thresholds below which concentrations are safe or harmless in aquatic habitats. It should be kept in mind that appreciable acute toxic effects can be expected to occur at chloride concentrations that are lower than the LC50s. In addition, appreciable acute toxic effects can be expected to occur over shorter periods of time than the test period associated with a particular LC50. Because of this, it is important to recognize that evaluations of toxicity that utilize LC50s as an indicator of toxicity refer to concentrations at which substantial incidences of toxic effects are likely to be occurring, as opposed to concentrations at which toxic effects begin to appear.

²The LC50 of the one exception, the mayfly *Callibaetis coloradensis*, is below the range of chloride concentrations that can be calculated from specific conductance using the regression relationship described in the next section.

³B. Mussato and T. Guthrie, "Anti-icers: Chemical Analysis and Toxicity Test Results," Prepared for Insurance Corporation of British Columbia, 2000, cited in Colorado Department of Transportation, "Evaluation of Selected Deicers Based Upon a Review of the Literature," Report No. CDOT-DTD-R-2001-15, October 30, 2001.

⁴An important caution in interpreting these comparisons is that they do not take into account any differences in how they are used. It is possible that a more toxic deicer may produce fewer toxic effects in nature due to less of the deicer being required to remove ice from roads.

⁵Mussato and Guthrie, op. cit.

Table K-2

**CONTINUOUS SPECIFIC CONDUCTANCE DATA RECORDS
AVAILABLE IN THE MENOMONEE RIVER WATERSHED**

Location	Period of Record	Comments
Honey Creek at Wauwatosa (Honey Creek Parkway)	12/6/2008 – 8/26/2011	Six data gaps during winter deicing seasons totaling to 37 days without data
Little Menomonee River near Friestadt (downstream of W. Donges Bay Road)	11/8/2008 – 7/26/2011	One data gap during winter deicing season totaling four days without data
Little Menomonee River at USH 41	5/7/2010 – 9/28/2010, 5/5/2011 – 7/18/2011	No data collected during the winter deicing season
Menomonee River at N. 70th Street	11/5/2008 – 9/13/2010	Three data gaps during winter deicing seasons totaling nine days without data
Menomonee River at Pilgrim Road	11/8/2008 – 7/26/2011	- -
Underwood Creek at Wauwatosa (Gravel Sholes Park downstream of Mayfair Road)	2/12/2010 – 7/26/2011	One data gap during winter deicing season totaling two days without data

Source: Milwaukee Metropolitan Sewerage District, U.S. Geological Survey, and SEWRPC.

AMBIENT CHLORIDE CONCENTRATIONS IN STREAMS OF THE MENOMONEE RIVER WATERSHED DURING THE WINTER DEICING SEASON

Whether toxicity resulting from road salt constitutes a water quality problem within the Menomonee River watershed depends, in part, on whether concentrations of chloride in streams of the watershed reach the toxic levels identified in Table K-1 for appreciable periods of time during the winter deicing season. A reasonable hypothesis is that much of the chloride loading to these streams consists of pulses that occur either while deicing operations are conducted during winter storms or when ice melt and snowmelt during thaws carries accumulated salt into streams. Under this sort of scenario, it might be expected that chloride concentrations would spike fairly rapidly, followed by a rapid decrease to a relatively nontoxic level. If chloride loading during winter follows this sort of pattern, aquatic organisms might be exposed to high concentrations of chloride for relatively brief periods.

Unfortunately, chloride concentrations in streams of the Menomonee River watershed are rarely directly measured during the winter deicing season. Few data exist and those that do are not collected with enough frequency to allow characterization of the sort of spikes hypothesized in the previous paragraph. Because of this, measurements of specific conductance were chosen as a surrogate for chloride concentration.

Continuously-collected specific conductance data are available from six monitoring stations in the Menomonee River watershed which were established as part of a joint Milwaukee Metropolitan Sewerage District (MMSD)-U.S. Geological Survey (USGS) real-time water quality monitoring program. Under this program, real-time sensors measure specific conductance, dissolved oxygen concentration, turbidity, water temperature, flow, and river level at five-minute intervals under all weather conditions. The data are transmitted to MMSD and USGS offices. While the five-minute interval data are retained for only 120 days, summary data consisting of daily minimum, maximum, and mean values are archived and available from the USGS's NWIS database. Table K-2 lists the monitoring stations from this program that are located in the Menomonee River watershed and lists the periods of record for specific conductance monitoring at these stations. The table also identifies the extent of gaps in the records during the winter deicing season in which specific conductance data were not collected.

A regression model is available that relates specific conductance to chloride concentration in Wisconsin streams⁶. The model was developed using simultaneously collected measurements of specific conductance and chloride concentration from 17 Wisconsin streams, including several in the Milwaukee area. The equation developed in this model is:

$$Cl = 0.363 \times Sc - 271.$$

In this equation, Cl indicates chloride concentration in milligrams per liter and Sc indicates specific conductance in microSeimens per centimeter ($\mu S/cm$). Based on graphical examination of the data, it was determined that the relationship is valid for chloride concentrations greater than 230 mg Cl/l, which is equivalent to a specific conductance of 1,380 $\mu S/cm$. The regression has an R^2 value of 0.997, indicating that this relationship accounts for over 99 percent of the variation in the data within the valid range.

This regression model was used to estimate minimum, maximum, and mean daily chloride concentrations at monitoring stations in the Menomonee River watershed using the daily summary values of specific conductance collected as part of the MMSD-USGS real-time monitoring program. For all values of minimum, maximum, and mean daily specific conductance that were equal to or greater than 1,380 $\mu S/cm$, the concentration of chloride was estimated using the regression equation. For each monitoring station, the record of estimated chloride concentrations was examined to identify periods in which the daily minimum chloride concentration was equal to or greater than 1,400 mg Cl/l for four or more days. This value was chosen as the screening value because it both exceeds the State's acute toxicity criterion for fish and aquatic life for chloride and reflects the low end of the LC50 values identified for freshwater organisms in the 96-hour acute toxicity studies summarized in Table K-1.

There were two stations, one along Honey Creek and one in Underwood Creek, at which periods were detected when the daily minimum concentration of chloride exceeded 1,400 mg Cl/l for four or more days. These periods are summarized in Table K-3. At the monitoring station along Honey Creek, there were nine periods between November 2008 and March 2011 during which the daily minimum concentration of chloride exceeded 1,400 mg Cl/l for four or more days. The lengths of these periods ranged from four to 19 days. These periods often occurred in rapid succession. For example, four periods occurred during the time between December 22, 2010 and February 28, 2011, accounting for 42 out of 69 days. The summary statistics presented in Table K-3 suggest that chloride concentrations in Honey Creek were quite variable during these periods. For example, during the period December 22-25, 2010 the daily minimum chloride concentrations at the Honey Creek monitoring station ranged between 1,566 mg Cl/l and 5,718 mg Cl/l. Maximum daily chloride concentrations at this station during the same period ranged between 2,226 mg Cl/l and 7,933 mg Cl/l. The average chloride concentrations detected in these streams during these periods ranged between 1,917 mg Cl/l and 3,742 mg Cl/l. At the monitoring station along Underwood Creek, one period during which the daily minimum concentration of chloride exceeded 1,400 mg Cl/l for four or more days occurred between February 2010 and July 2011. Chloride concentrations at that station were above 1,400 mg Cl/l for nine consecutive days.

Daily minimum chloride concentrations at three other monitoring stations—the Little Menomonee River near Freistadt, the Menomonee River at Pilgrim Road, and the Menomonee River at N. 70th Street—did not exceed 1,400 mg Cl/l for periods of four or more days during the period of record.

Two conclusions emerge from this examination of winter deicing season chloride concentrations calculated from specific conductance. First, concentrations of chloride during the winter in Honey and Underwood Creeks, as calculated from specific conductance, achieve levels that are well within the range of chloride concentrations that

⁶Corsi, S.R., D.J. Graczyk, S.W. Geis, N.L. Booth, and K. D. Richards, "A Fresh Look at Road Salt: Aquatic Toxicity and Water-Quality Impacts on Local, Regional, and National Scales," Environmental Science & Technology, Volume 44, 2010.

Table K-3

**PERIODS WHEN CALCULATED CHLORIDE CONCENTRATION IN STREAMS OF THE MENOMONEE RIVER
WATERSHED EXCEEDED 1,400 MILLIGRAMS PER LITER FOR FOUR DAYS OR MORE: NOVEMBER 2008 TO JULY 2011**

Stream	Length (days)	Calculated Chloride Concentrations (milligrams per liter)						
		Lowest Daily Minimum	Highest Daily Minimum	Lowest Daily Maximum	Highest Daily Maximum	Lowest Daily Mean	Highest Daily Mean	Average over the Period
Honey Creek at Wauwatosa								
December 6, 2008-December 13, 2008.....	8	1,715	3,348	2,724	6,589	1,998	4,630	3,448
January 8, 2009-January 12, 2009	5	1,417	3,087	2,223	4,230	1,882	3,577	2,613
January 18, 2009-January 22, 2009	5	1,420	1,613	1,969	2,727	1,733	2,179	1,917
February 9, 2010-February 14, 2010	6	1,504	2,266	1,972	4,775	1,734	3,021	2,519
February 17, 2010-March 2, 2010.....	14	1,410	3,326	1,751	6,227	1,577	4,266	2,421
December 22, 2010-December 25, 2010.....	4	1,566	5,718	2,226	7,933	1,842	6,590	3,742
January 11, 2011-January 21, 2011	11	1,613	3,904	2,383	7,679	2,092	6,227	3,522
January 28, 2011-February 15, 2011.....	19	1,456	3,504	2,001	5,573	1,725	3,904	2,542
February 21, 2011-February 28, 2011	8	1,929	2,680	2,963	4,448	2,426	3,831	3,024
Underwood Creek at Wauwatosa ^b								
February 21, 2011-March 1, 2011.....	9	1,413	1,940	1,649	2,869	1,507	2,383	1,833

^aChloride concentrations were calculated from specific conductance using the regression equation from Corsi et al. (2010). The regression equation is based on data from 17 Wisconsin streams. The regression equation is $Cl = 0.363 \times Sc - 271$, where Cl is the concentration of chloride in milligrams per liter and Sc is the specific conductance in microSiemens per centimeter. This equation is considered valid for chloride concentrations greater than 230 milligrams per liter, which is equivalent to a specific conductance of 1,380 in microSiemens per centimeter.

^bPeriod of record at this site was February 12, 2010 through July 26, 2011.

Source: SEWRPC.

were found to result in the deaths of 50 percent of test organism in 96-hour toxicity tests. In both streams, chloride concentrations during the winter deicing season appear to remain at levels that are associated with acute toxic effects for extended periods of time. Thus, for these streams, the rapid-spike model previously hypothesized does not appear to give a good description of chloride concentrations during the winter.

Second, the results suggest that chloride concentrations probably reach higher levels in smaller streams that are located in highly urbanized areas than they do in larger streams and streams located in less urbanized areas. Comparisons of discharge at streamflow monitoring gauges in the Menomonee River watershed show that on average discharge at the monitoring stations along Honey and Underwood Creek account for 6 and 14 percent, respectively, of the discharge at the gauge along the Menomonee River at N. 70th Street.⁷ In addition, the subwatersheds drained by these streams are highly urbanized. By contrast, discharge at the gauge along the Menomonee River at Pilgrim Road—one of the sites where calculated chloride concentrations did not exceed 1,400 mg Cl/l for periods of four or more days during the period of record—accounts for 29 percent of the discharge at the gauge along Menomonee River at N. 70th Street. The higher volume of discharge at this station may result in greater dilution of chloride. In addition, rural land uses comprise a greater percentage of the areas upstream of this site than they do for the Honey Creek and Underwood Creek stations.

LIKELY EFFECTS OF POTENTIALLY TOXIC CONCENTRATIONS OF CHLORIDE TO ORGANISMS IN THE MENOMONEE RIVER

As described above, chloride concentrations in some streams of the Menomonee River watershed reach toxic levels during the winter deicing season for extended periods of time. The likelihood that toxic effects are occurring in these streams also depends upon what organisms are present in the streams during the winter deicing season. It should be noted that, to some extent, the organisms listed in Table K-1 for which the acute toxicity of sodium chloride has been characterized reflect species that are suitable for toxicity testing. These are organisms that are readily available, that can be maintained under laboratory conditions, and that have well-understood physiological and nutritional requirements. How much they reveal about potential toxic effects in streams of the Menomonee River watershed depends on at least two factors: 1) how representative these species are of the biota found in streams of the watershed, and 2) whether sensitive life history stages of these species are present in streams during the winter deicing season.

The species for which sodium chloride toxicity has been characterized, as listed in Table K-1, were compared to the species records reviewed as part of the analyses made for the recent update of the regional water quality management plan for the Greater Milwaukee watersheds.⁸ Four fish species listed in Table K-1—bluegill, brook trout, fathead minnow, and goldfish—have been detected in fisheries surveys of the watershed. In species other than fish, one frog species—wood frog—and two macroinvertebrate species—the scud *Gammarus pseudolimnaeus*, and the caddisfly *Hydropsyche betteni*—have also been reported as being present. In addition, organisms belonging to five additional macroinvertebrate genera—caddisflies in the genera *Hydroptila* and *Pycnopsyche*, mayflies of the genus *Callibaetis*, midges of the genus *Chironomus*, and snails of the genus *Physa*—have been collected from streams in the Menomonee River watershed. It is important to note that organisms were identified only to the level of genus in many of the macroinvertebrate surveys, so it is possible but not certain that these particular test species are also present in the watershed. At least seven to 12 of the species listed on Table K-1 have been reported as being present in streams of the Menomonee River watershed. Given this, Table K-1 can be held as including a reasonable representation of aquatic organism species typical of the Menomonee River watershed.

⁷See Map 32 in *SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007*.

⁸*SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007*.

A brief review of available literature regarding the life histories of the species listed in Table K-1 indicates that many of the species listed would be expected to be present in streams during the winter deicing season. Three of the fish species that are listed in the table and present in streams of the watershed—bluegill, brook trout, and goldfish—have life spans that last several years.⁹ While fathead minnows typically live for only one to two years, spawning occurs in the spring and eggs hatch within about a week of spawning.¹⁰ Thus, all four of these species may be present in streams as adults during the winter deicing season. The remaining vertebrate listed in the table—the wood frog—typically would not be present in streams during the winter deicing season. These animals normally hibernate in terrestrial and wetland forest habitats.¹¹

Life history information was available for some of the invertebrates listed in Table K-1. Two groups of caddisflies listed in the table, the species *Hydropsyche betteni* and members of the genus *Pycnopsyche*, overwinter in waterbodies as late-instar larvae.¹² In northern areas like Wisconsin, the mayfly *Hexagenia limbata* typically completes its life cycle over two years. While some populations may overwinter as eggs during the first winter, they are typically present in waterbodies as larvae during the second.¹³ The scud *Gammarus lacustris* has a 15-month lifespan with reproduction occurring in or around the month of February.¹⁴ Thus, this species is present in streams as adults for much of the winter. The isopod *Lirceus fontinalis* overwinters as adults or large juveniles.¹⁵ The water flea *Daphnia pulex* overwinters both as resting eggs and as adults in the water column.¹⁶

Some of the invertebrate species that are present in waterbodies during the winter may experience less exposure to dissolved chloride than would be indicated based on ambient concentrations either because they remove themselves from the water column or enter a diapause, or resting, stage during winter. Nymphs of mayflies in the

⁹George Becker, *Fishes of Wisconsin*, University of Wisconsin Press, 1983.

¹⁰Ibid.

¹¹A.H. Wright and A.A. Wright, *Handbook of Frogs and Toads of the United States and Canada*, 3rd edition, Cornell University Press, 1949.

¹²S. Alexander and L.A. Smock, "Life Histories and Production of Cheumatopsyche analis and Hydropsyche betteni, (Trichoptera: Hydropsychidae) in an Urban Virginia Stream, Northeastern Naturalist, Volume 12, 2005; R. J. Mackay, The Life Cycle and Ecology of Pycnopsyche gentilis (McLachlan), P. luculenta (Betten), and P. scabripennis (Rambur), (Trichoptera: Limnephilidae) in West Creek, Mont. St. Hilaire, Quebec, Ph.D. Dissertation, McGill University, Montreal, Quebec, April 1992.

¹³B.P. Hunt, "The Life History and Economic Importance of a Burrowing Mayfly, Hexagenia limbata in Southern Michigan Lakes," Michigan Conservation Department Bulletin of the Institute of Fisheries Research, No.4, 1953.

¹⁴H.B.N. Hynes and F. Harper, "The Life Histories of Gammarus lacustris and Gammarus pseudolimnaeus in Southern Ontario, Crustaceana, Supplement No. 3: Studies on Peracarida, 1972.

¹⁵X. Zhao, M.G. Fox, D.C. Lasenby, A.C. Armit, and D.N Kuthamale, "Substrate Selection and Seasonal Variation in Abundance and Size Composition of Isopod Lirceus fontinalis in Ontario Streams, Canada," Chinese Journal of Oceanography and Limnology, Volume 25, 2007.

¹⁶W. Lampert, K.P. Lampert, and P. Larsson, "Coexisting Overwintering Strategies in Daphnia pulex: A Test of Genetic Differences and Growth Responses," Limnology and Oceanography, Volume 55, 2010.

genus *Callibaetis* are thought move to areas of deeper water and overwinter in mats of vegetation.¹⁷ Larvae of midges of the genus *Chironomus* often overwinter in diapause.¹⁸

Based on the available life history information, it is likely that organisms are present in streams of the Menomonee River watershed during the winter deicing season. Given that concentrations of chloride in some streams of watershed appear to reach levels associated with substantial incidences of toxic effects as measured by LC50 concentrations for extended periods of time, it is likely that inputs of chlorides from deicers are causing some toxic effects to aquatic organisms in streams of the watershed.

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Appendix L

WATERSHED-BASED PERMIT AND PERMIT FACT SHEET

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STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE
WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 283, Wisconsin Statutes, and chs. NR 151 and NR 216, Wisconsin Administrative Code, the **Menomonee River Watershed Permittees**:

City of Brookfield	City of Milwaukee
Village of Butler	Milwaukee County
Village of Elm Grove	City of West Allis
Village of Germantown	Village of West Milwaukee
City of Greenfield	City of Wauwatosa
Village of Menomonee Falls	

are permitted to discharge storm water from

ALL PORTIONS OF THE MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Owned or operated by the **Menomonee River Watershed Permittees** to waters of the state in watersheds of the Menomonee River, Fox River, Kinnickinnic River, Root River, and Cedar Creek in accordance with the conditions set forth in this permit.

This permit takes effect on the date of signature.

This permit to discharge expires at midnight, December 1, 2017

To retain authorization to discharge after this expiration date, an application shall be filed for reissuance of this permit in accordance with the requirements of s. NR 216.09, Wis. Adm. Code, at least 180 days prior to this expiration date.

State of Wisconsin Department of Natural Resources

For the Secretary

By


Bryan Hartsook

Water Resources Engineer

11-30-2012

Date of Signature

EFFECTIVE DATE/START DATE: **November 30, 2012**

EXPIRATION DATE: **December 1, 2017**

Part I. APPLICABILITY

The Menomonee River Watershed Permittees own and operate municipal separate storm sewer systems that discharge to waters of the state. Permitted discharges from municipal separate storm sewer systems may consist of runoff from rain events or snow melt. Pollutants often found in municipal separate storm sewer system discharges include organic materials, suspended solids, metals, nutrients, bacteria, pesticides, fertilizer, and traces of toxic materials.

A. PERMITTED AREA: This WPDES permit regulates municipal separate storm sewer system (MS4) discharges from the following municipalities located fully or partially within the Menomonee River Watershed:

- City of Brookfield
- Village of Butler
- Village of Elm Grove
- Village of Germantown
- City of Greenfield
- Village of Menomonee Falls
- City of Milwaukee
- Milwaukee County
- City of West Allis
- Village of West Milwaukee
- City of Wauwatosa

In this permit these municipalities are referred to as the Menomonee River Watershed Permittees. This permit covers all areas within the jurisdiction of the Menomonee River Watershed Permittees, including areas of the communities which do not drain into the Menomonee River watershed. This permit is issued in accordance with chapter 283, Wis. Stats. and chs. NR 151 and NR 216, Wis. Adm. Code. The permit requirements are intended to restore and maintain the chemical, physical, and biological integrity of waters of the state through management and treatment of storm water runoff within the MS4 service area.

B. THE MENOMONEE RIVER WATERSHED: The Menomonee River watershed is located within the Milwaukee River Basin and covers approximately 136 square miles of urban landscape across portions of Washington, Ozaukee, Waukesha, and Milwaukee Counties. The watershed is home to a population of about 322,000 people. The Menomonee River originates in wetlands near the Village of Germantown and the City of Mequon and runs south, southeast for about 32 miles where it meets the Milwaukee and Kinnickinnic Rivers in the Milwaukee Harbor prior to flowing into Lake Michigan. Sixty-four percent of the land is covered by urban uses, 17 percent is covered by agriculture, and the remainder is covered by grassland, forested, or wetland areas. The watershed contains 96 total stream miles and over 6,780 wetland acres.¹

Stream and wetland modification, urban and rural runoff, construction site erosion and industrial point sources of pollution are the major contributors to degraded water and habitat quality within this watershed. The 2008 303(d) list, which is the most recent one approved by the U.S. Environmental Protection Agency, lists 11.7 miles of stream as being impaired. A water is considered impaired if a) the current water quality does not meet the numeric or narrative criteria in a water quality standard or b) the designated use that is described in Wisconsin Administrative Code is not achieved. A documented methodology called the Wisconsin Consolidated Assessment and Listing Methodology (WisCALM) describes the approach used to list waters as impaired. Table 1 shows the currently listed waters, as well as those proposed for listing based on new information for the 2012 Clean Water Act reporting cycle.

¹SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007; Wisconsin Department of Natural Resources, The State of the Milwaukee River Basin, August 2001.

Table 1. Menomonee River Watershed – Waterway Impairments

Waterway Name	Segment Length (miles)	Location Description <i>MS4(s)</i>	Pollutant of Concern	Impairment ⁺	Listing Date
Goldendale Creek	3.5	STH 41 to confluence with Menomonee River <i>Village of Germantown</i>	Fecal Coliform	+	2010
Honey Creek	8.96	43 rd St. north of Edgerton Ave to confluence with Menomonee River <i>Cities of Greenfield, West Allis, Milwaukee, and Wauwatosa</i>	Fecal Coliform	+	2010
	8.96		Total Phosphorus	●	Proposed 2012
Little Menomonee Creek	3.9	Highland Road south to confluence with Little Menomonee River north of Donges Bay Rd <i>City of Mequon</i>	Fecal Coliform	+	2010
Little Menomonee River	9	STH 167 south to confluence with Menomonee River at CTH EE <i>City of Milwaukee</i>	Total Phosphorus	●	Proposed 2012
	9		Creosote	△	1998
	9		Fecal Coliform	+	2010
Menomonee River	2.67	35 th St. east to confluence with Milwaukee River <i>City of Milwaukee</i>	Total Phosphorus	▲	1998
	2.67		PCBs	■	1998
	2.67		Fecal Coliform	+	2010
	2.67		E. coli	+	1998
	2.67		Unspecified Metals	△	1998
	3.61	72 nd St from confluence with Honey Creek to 35 th St. <i>Cities of Wauwatosa and Milwaukee</i>	Fecal Coliform	+	2010
Milwaukee River	2.9	North Avenue Dam to confluence with Kinnickinnic River <i>City of Milwaukee</i>	Total Phosphorus	▲	1998
	2.9		E. coli	+	1998
	2.9		Unspecified Metals	■	1998
	2.9		PCBs	■	1998
Underwood Creek	2.84	Bluemound Rd and UPS pedestrian bridge to confluence with Menomonee River south of North Ave. <i>City of Wauwatosa</i>	Fecal Coliform	+	2010
	2.84		Total Phosphorus	●	Proposed 2012
	5.7	Calhoun Rd to UPS pedestrian path/bridge at confluence with South Branch of Underwood Creek <i>City of Brookfield and Village of Elm Grove</i>	Fecal Coliform	+	2010
	5.7		Unknown Pollutant*	●	Proposed 2012
South Branch of Underwood Creek	1	Underwood Creek Pkwy to confluence with Underwood Creek at UPS pedestrian path/bridge <i>Cities of West Allis and Brookfield</i>	Total Phosphorus	●	Proposed 2012

(Table 1 Continued)

Waterway Name	Segment Length (miles)	Location Description MS4(s)	Pollutant of Concern	Impairment ⁺	Listing Date
West Branch Menomonee River	2.45	STH 41 Hubertus Rd to confluence with Goldendale Creek <i>Village of Germantown</i>	Fecal Coliform	+	2010
Butler Ditch	2.9	East of CTH YY and north of STH 190 south and east to confluence with Menomonee River south of CTH VV <i>City of Brookfield and Village of Menomonee Falls</i>	Fecal Coliform	+	2010
Lilly Creek	4.7	East of CTH YY and north of STH 190 north and east to confluence with Menomonee River north of STH 175 <i>City of Brookfield and Village of Menomonee Falls</i>	Fecal Coliform	+	2010
Nor-X-Way Channel	4.9	North of STH 167 south to confluence with Menomonee River south of STH 41 <i>City of Mequon and Villages of Germantown and Menomonee Falls</i>	Fecal Coliform	+	2010
Willow Creek	2.8	South of CTH Q north to confluence with Menomonee River south of STH 41 <i>Villages of Menomonee Falls and Germantown</i>	Fecal Coliform	+	2010

+ Key: Recreational Restrictions – Pathogens (✚); Degraded Biological Community (●); Low DO (▲); Contaminated Fish Tissue or Sediment (■); Chronic Aquatic Toxicity (△)

*Federal regulations, specifically 40 CFR section 130.7(b)(1), provide that water bodies included on State section 303(d) lists are those water bodies for which pollution controls required by local, State, or Federal authority are not stringent enough to meet water quality standards applicable to such waters. In addition, 40 CFR section 130.7(b)(4) requires States to identify, in each section 303(d) list submitted to EPA, the "pollutants causing or expected to cause violations of the applicable water quality standards." These regulatory provisions apply even if the cause of the impairment or source of the pollutant cannot be identified at the time of listing. Therefore, water bodies that are biologically impaired by an unknown cause or source are included on the Wisconsin's section 303(d) lists. WDNR anticipates that the unknown pollutant will be identified when a Total Maximum Daily Load (TMDL) study is initiated. Supplemental data collected during a TMDL study should assist in identifying the impairing pollutant so that the TMDL can be established.

In addition to pollutant stressors, many streams in this watershed have been concrete-lined, or straightened to convey floodwaters off the land faster. Lined streams provide almost no habitat and also degrade conditions in unlined downstream stream sections by creating highly erosive flow velocities during wet weather conditions and excessively warm water during low flow conditions. Constructed u-shaped channels can also contribute to flooding problems, as there is typically no floodplain to accommodate flows during extreme weather conditions. About 14.5 miles of streams in the watershed are concrete-lined or enclosed.

C. **WATERSHED-BASED PERMIT STRUCTURE:** This permit is a multi-party watershed-based permit, meaning the Menomonee River Watershed Permittees, while being individually responsible for satisfying the permit conditions within their respective MS4 service areas, will also have the option of collaborating on WATERSHED PROJECTS designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River watershed. The Department will deem a municipality in compliance with any number of permit conditions identified under Parts II and III of this permit for active participation in a watershed project dependent on the scope of work, projected goals, and successful completion of the project. The process for proposing watershed projects is identified under Part IV of the permit.

Implementation of the GROUP CONDITIONS under Section II will be on a watershed-based scale while implementation of the INDIVIDUAL CONDITIONS under Section III will be primarily on a municipality-based scale. Should a municipality elect not to participate in the planning, implementation, and evaluation of a joint watershed project, then it will be responsible for compliance with the individual conditions under Part III and completion of an individual watershed project under Part IV. A municipality meeting a group condition will be in compliance with the permit even if implementation does not directly address discharges from the municipal separate storm sewer systems for which the municipality is the owner or operator.

D. **AUTHORIZED DISCHARGES:** This permit authorizes storm water point source discharges to waters of the state from the municipal separate storm sewer systems in the permitted areas. This permit also authorizes the discharge of storm water commingled with flows contributed by process wastewater, non-process wastewater, and storm water associated with industrial activity, provided the discharges are regulated by other WPDES permits or are discharges which are not considered illicit discharges.

E. **WATER QUALITY STANDARDS**

1. This permit specifies the conditions under which storm water may be discharged to waters of the state for the purpose of achieving water quality standards contained in chs. NR 102 through 105 and NR 140, Wis. Adm. Code. For the term of this permit, compliance with water quality standards will be addressed by adherence to general narrative-type storm water discharge limitations and implementation of storm water management programs and practices.
2. This permit does not authorize water discharges that the Department, prior to authorization of coverage under this permit, determines will cause or have reasonable potential to cause or contribute to an excursion above any applicable water quality standards. Where such determinations have been made prior to authorization, the Department may authorize coverage under this permit where the storm water management programs required under this permit will include appropriate controls and implementation procedures designed to bring the storm water discharge into compliance with water quality standards.

F. **WETLANDS:** Each permittee's MS4 discharge to a wetland shall comply with the wetland water quality standards provisions in ch. NR 103, Wis. Adm. Code.

G. **ENDANGERED AND THREATENED RESOURCES:** Each permittee's MS4 discharge to an endangered or threatened resource shall comply with the endangered and threatened resource protection requirements of s. 29.604, Wis. Stats., and ch. NR 27, Wis. Adm. Code.

H. **HISTORIC PROPERTY:** No permittee's MS4 discharge may affect any historic property that is listed property, or on the inventory or on the list of locally designated historic places under s. 44.45, Wis. Stats., unless the Department determines that the MS4 discharge will not have an adverse effect on any historic property pursuant to s. 44.40 (3), Wis. Stats.

I. **GENERAL STORM WATER DISCHARGE LIMITATIONS:** The Menomonee River Watershed Permittees may not discharge the following substances from the municipal separate storm sewer systems in amounts that have an unreasonable effect on receiving water quality or aquatic life:

1. Solids that may settle to form putrescence or otherwise objectionable sludge deposits.
2. Oil, grease, and other floating material that form noticeable accumulations of debris, scum, foam, or sheen.
3. Color or odor that is unnatural and to such a degree as to create a nuisance.
4. Toxic substances in amounts toxic to aquatic life, wildlife, or humans.
5. Nutrients conducive to the excessive growth of aquatic plants and algae to the extent that such growths are detrimental to desirable forms of aquatic life, create conditions that are unsightly, or are a nuisance.
6. Any other substances that may impair, or threaten to impair, beneficial uses of the receiving water.

J. **INDIVIDUAL RESPONSIBILITY:** Each Menomonee River Watershed Permittee is responsible for:

1. Compliance with conditions of this permit relating to discharges from those portions of the municipal separate storm sewer system where the municipality is the owner or operator.
2. Storm water management program implementation, as required by this permit, on portions of the municipalities that drain to the municipal separate storm sewer system where it is the owner or operator, except where the Department has determined that participation in the development and implementation of a watershed project on a watershed-based scale as identified under Part IV of this permit is acceptable. This includes carrying out programs and activities as required under Part III of this permit.
3. Working collaboratively with the other co-permittees as a member of the Menomonee River Watershed Permittees to meet the Group Conditions as required under Part II of this permit.
4. Maintaining an active role in the planning, implementation, and evaluation of watershed projects where the municipality has elected to participate.

K. **SHARED RESPONSIBILITY:** The Menomonee River Watershed Permittees will work together to comply with the provisions of Part II of this permit. The Menomonee River Watershed Permittees' implementation of one or more of the conditions of this permit may incorporate cooperative efforts with other MS4 regulated permittees or efforts by other groups or organizations if the shared responsibility is approved by the Department.

L. **EXCLUSIONS:** The following are excluded from coverage under this permit:

1. **Combined Sewer and Sanitary Sewer Systems:**
Discharges of water from a wastewater treatment facility, sanitary sewer or a combined sewer system conveying both sanitary and storm water. These discharges are regulated under s. 283.31, *Wis. Stats.*, and require a separate individual permit.

2. **Agricultural Facilities and Practices:**
Discharges from “agricultural facilities” and “agricultural practices”. “Agricultural facility” means a structure associated with an agricultural practice. “Agricultural practice” means beekeeping; commercial feedlots; dairying; egg production; floriculture; fish or fur farming; grazing; livestock raising; orchards; poultry raising; raising of grain, grass, mint and seed crops; raising of fruits, nuts and berries; sod farming; placing land in federal programs in return for payments in kind; owning land, at least 35 acres of which is enrolled in the conservation reserve program under 16 USC 3831 to 3836; and vegetable raising.
3. **Other Excluded Discharges:**
Storm water discharges from industrial operations or land disturbing construction activities that require separate coverage under a WPDES permit pursuant to subchs. II or III of ch. NR 216, Wis. Adm. Code. For example, while storm water from industrial or construction activity may discharge from an MS4, this permit does not satisfy the need to obtain any other permits for those discharges. This exclusion does not apply to each permittee’s responsibility to regulate construction sites within its jurisdiction in accordance with Part III - Sections C and D of this permit.
4. **Indian Country:**
Storm water discharges within Indian Country. The federal Clean Water Act requires that owners and operators of storm water discharges within Indian Country to obtain permit coverage directly from the United States Environmental Protection Agency.

Part II. GROUP CONDITIONS

The Menomonee River Watershed Permittees intend to collaborate and satisfy these conditions collectively. This does not prohibit the Menomonee River Watershed Permittees from continuing to develop and implement unique programs within their respective jurisdictional municipal boundaries.

A. PUBLIC INVOLVEMENT AND PARTICIPATION: The Menomonee River Watershed Permittees shall notify the public of activities required by this permit and to encourage input and participation from the public requiring these activities.

B. PUBLIC EDUCATION AND OUTREACH: The Menomonee River Watershed Permittees shall implement a public education and outreach program to increase the awareness of how the combined actions of human behavior influence storm water pollution and its effects on the environment. The public education and outreach program may incorporate cooperative efforts with other entities not regulated by this permit provided a mechanism is developed and implemented to track the results of these cooperative efforts and reported annually.

1. The Menomonee River Watershed Permittees shall be responsible for prioritizing education topics each year at an annual meeting. All topics shall be addressed at least once during the permit term with a minimum of 3 topics being addressed, either collectively or individually, each year. Topics may be repeated as necessary. The program shall identify target audiences, establish measurable goals, develop and implement a mechanism for evaluating effectiveness and, at a minimum, address the following:
 - a. Illicit discharges from municipal separate storm sewer systems and associated water quality impacts.
 - b. Sources of pollutant loadings and habitat degradation—such as sedimentation, thermal alterations, and increased flashiness of flows—in the watershed, including stormwater.
 - c. Storm water runoff from residential properties and potential pollutant sources such as pet waste, hazardous household waste, automobile care, and lawn care.
 - d. Storm water runoff from commercial properties and, where appropriate, educate specific businesses such as lawn care companies, golf courses, carwashes, and restaurants on storm water pollution prevention planning to reduce pollutant sources.
 - e. Beneficial onsite reuse or proper management of leaves and grass clippings.
 - f. Restorative and protective management of streambanks and shorelines by riparian landowners to minimize erosion and restore and enhance the ecological value of waterways.
 - g. Infiltration and beneficial onsite reuse of residential storm water runoff from rooftops, driveways, and sidewalks through implementation of green infrastructure best management practices such as rain barrels, rain gardens, and permeable pavements.
 - h. Proper design, installation, and maintenance of erosion and sediment control best management practices to minimize, with the intent of eliminating, sediment transport from construction sites. The program shall highlight the potential harmful effects on the environment from sediment in construction site runoff and shall target construction companies, individual operators, and developers as key audiences.

- i. Routine inspection and maintenance of storm water best management practices by homeowner associations.
 - j. Watershed education and the contributions of point and nonpoint source pollution on waterbody and waterway impairments.
 - k. Best management practices for snow and ice removal and informing specific audiences such as snow removal/deicing companies, private residences, industrial and commercial facilities, and residents about resources that provide further information on methods of reducing application of chemical deicers while maintaining public safety.
2. The Menomonee River Watershed Permittees shall prepare and submit a joint report annually that includes the following:
 - a. Public education and outreach programs executed during the calendar year, including topics addressed, target audiences reached, and the status of meeting measurable goals.
 - b. A proposed work plan for public education and outreach programs to be conducted the following year. The work plan shall identify roles and responsibilities for each municipality.
 3. The Menomonee River Watershed Permittees shall evaluate the effects of the outreach program through an updated survey of residents in the watershed or using other appropriate methods, and will document the results of the evaluation in a future annual report within this permit cycle.

C. **ILLICIT DISCHARGE NOTIFICATION:** In the case of an illicit discharge which originates from any Menomonee River Watershed Permittee and which discharges directly to a storm sewer or property under the jurisdiction of any other Menomonee River Watershed Permittee, the municipality discovering the discharge shall notify the affected municipality within one working day.

D. **ANALYSIS PROCEDURE FOR IDENTIFYING OUTFALLS LIKELY TO BE DISCHARGING SANITARY WASTEWATER:** The Menomonee River Watershed Permittees will develop an analysis procedure to identify those outfalls which, based upon what is known about the age and condition of the associated stormwater conveyance systems and sanitary sewage conveyance systems, water quality conditions within receiving waters, and other available information the permittees consider relevant, are most likely to be conveying water contaminated with sanitary wastewater and should be screened for illicit discharges. This procedure shall address all known outfalls, regardless of size; however, all outfalls may not be identified for sampling. The permittees shall submit the procedure to the Department for its review and approval by March 31, 2014. Outfall screening according to the identified procedure shall be implemented within 6 months after receiving Department approval.

Note: In partnership with the UW-Milwaukee Great Lakes Water Institute, Milwaukee Riverkeeper has monitored bacterial levels in storm sewer discharges to waterways in the Menomonee River watershed. This research has led to identifying sewersheds with a high likelihood of inflow and infiltration from failing sanitary sewer infrastructure and private sanitary laterals to municipal storm sewer systems as represented by the human strains of *Bacteroides* found in the monitored effluent. This kind of information, along with ongoing monitoring and research conducted by the Milwaukee Metropolitan Sewerage District, can assist the municipalities in refining the analysis approach and prioritizing areas for implementation.

More information can be found at <http://www.milwaukeekeeper.org/content/bacteria-testing>.

E. **ANNUAL MEETING:** The Menomonee River Watershed Permittees will meet once within the first twelve months of the permit cycle and annually thereafter to exchange information and set group

priorities. Topics to be addressed at these meetings shall include setting annual priorities for the permittee's public education and outreach program; development, implementation, and modification of the permittee's framework for desktop analyses for targeting illicit discharge detection and elimination efforts; review of progress since the last meeting toward implementation of joint projects, and other such topics as the permittees deem appropriate for discussion.

Note: The Menomonee River Watershed Permittees are encouraged to solicit comments and participation from nongovernmental organizations and other interested parties during the development and coordination of public education and outreach activities, illicit discharge detection and elimination analysis procedures, and preliminary planning of watershed projects.

Part III. INDIVIDUAL CONDITIONS

The following permit conditions apply to each municipality in the Menomonee River Watershed Permittees:

A. **ILLICIT DISCHARGE DETECTION AND ELIMINATION:** Each municipality shall continue to implement a program to detect and remove illicit connections and discharges to the municipal separate storm sewer system. Each municipality's implementation of its program to detect and remove illicit connections and discharges may incorporate cooperative efforts with other MS4 regulated permittees or efforts by other groups or organizations if the shared responsibility is approved by the Department. The program shall include measurable goals and include all of the following:

1. An ordinance or other regulatory mechanism to prevent and eliminate illicit discharges and connections to the municipal separate storm sewer system. At a minimum, the ordinance or other regulatory mechanism shall:

- a. Prohibit the discharge, spilling or dumping of non-storm water substances or material into waters of the state or the storm sewer system.
- b. Identify non-storm water discharges or flows that are not considered illicit discharges. Non-storm water discharges that are not considered illicit discharges including water line flushing, landscape irrigation, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, firefighting and discharges authorized under a WPDES permit unless identified by the permittee as significant source of pollutants to waters of the state.
- c. Establish inspection and enforcement authority.

Note: Chapter NR 815, Wis. Adm. Code, regulates injection wells including storm water injection wells. Construction or use of a well to dispose of storm water directly into groundwater is prohibited under s. NR 815.11(5), Wis. Adm. Code.

2. Field screening during dry weather periods (typically 72 hours after any measurable rainfall) of the following municipal separate storm sewer system outfalls:
 - a. **Effective immediately at the start of permit coverage** – All major outfalls which showed no indication of illicit discharges during the previous permit term. In any single year at least one fifth of such major outfalls shall be screened, on a rolling basis such that at the end of the permit term all major outfalls which showed no indication of illicit discharges during the previous permit term have been screened.
 - b. **Effective immediately at the start of permit coverage** – All major outfalls which showed evidence of illicit discharges during the last two samplings under the preceding permit term shall be evaluated annually, at a minimum one time per year.
 - c. **Within 6 months of receiving approval by the Department for the analysis procedure described in Part II-Section E** – Other outfalls, regardless of size, identified for illicit discharge screening under Part II-Section E, shall be evaluated on an ongoing basis, at a minimum one time per year or at an increased frequency as deemed appropriate by the municipality.

3. At a minimum, field screening shall be documented and include:
- a. Visual Observation - A narrative description of visual observations including color, odor, turbidity, oil sheen or surface scum, flow rate and any other relevant observations regarding the potential presence of non-storm water discharges or illegal dumping. (include narrative in annual report)
 - b. Field Analysis - If flow is observed, field analysis shall be conducted to determine the presence of illicit non-storm water discharges or illegal dumping. The field analysis shall include sampling total copper, total phenol, detergent, ammonia, and either fluoride or total chlorine unless written concurrence is obtained from the Department allowing use of alternative indicator parameters to more effectively detect illicit discharges such as with potassium or bacteria.
- Note:** The Department has written a guidance document to assist municipalities with development of field screening programs to determine the presence of illicit discharges from MS4 outfalls. The guidance can be found on the Departments website at: http://dnr.wi.gov/topic/stormwater/documents/MS4_IDDE_Guidance_3-2012.pdf
- i. Field screening points shall, where possible, be located downstream of any source of suspected illegal or illicit activity.
 - ii. Field screening points shall be located where practicable at the farthest manhole or other accessible location downstream in the system. Safety of personnel and accessibility of the location shall be considered in making this determination.
 - iii. Consideration shall be given to hydrological conditions, total drainage area of the site, population density of the site, traffic density, age of the structures or building in the area, history of the area and land use types.
4. For those outfalls on an annual cycle, when evidence of illicit discharges is not found in two consecutive years, the outfall can be placed on the list for sampling once every five years. At a minimum, field screening shall be documented and include the visual observations and field analyses described under Part III-Section A-3.
5. Following approval of the analysis procedure described above in Part II-Section E, each municipality shall adapt the procedure to its local conditions. Each municipality shall screen those outfalls identified by the adapted analysis procedure using the procedures described in Part III-Section A-2-a and b.

For those outfalls for which bacterial testing indicates human fecal contamination the municipality, in consultation with the Department, shall initiate a systematic examination of the catchment area tributary to the outfall in an effort to determine and eliminate the source of the illicit discharge.

Note: The purpose of Part II-Section E is to identify sanitary cross connections or inflow and infiltration from aging sanitary sewer systems into the MS4. While fecal contamination from nonhuman sources in storm water runoff does pose a threat to water quality and human health, it is not considered an illicit discharge. However, the municipality may want to screen for fecal coliform to address concerns with contamination from nonhuman sources.

6. Procedures for responding to known or suspected illicit discharges. At a minimum, procedures shall be established for:
 - a. Immediately investigating portions of the municipal separate storm sewer system that, based on the results of field screening or other information, indicate a reasonable potential for containing illicit discharges or other sources of non-storm water discharges.
 - b. Responding to spills that discharge into and/or from the municipal separate storm sewer system including tracking the source of the spill if unknown.
 - c. Preventing and containing spills that may discharge into or are already within the municipal separate storm sewer system.
 - d. Immediately notifying the Department in accordance with ch. NR 706, Wis. Adm. Code, in the event that the permittee identifies a spill or release of a hazardous substance, which results in the discharge of pollutants into waters of the state. The Department shall be notified via the 24-hour toll free spill hotline at 1-800-943-0003. The permittee shall cooperate with Department in efforts to investigate and prevent such discharges from polluting waters of the state.
 - e. Identified illicit discharges or connections shall be eliminated to the maximum extent practicable. If neither the source nor the non-stormwater discharge has been identified or observed within 6 months of beginning the investigation, then the municipality must maintain written documentation of the actions undertaken for review by the Department. A minimum of 3 separate investigations to observe and sample flow at the identified outfall must be made within the 6 month period. Outfalls with indeterminate sources and non-stormwater discharges shall continue to be screened annually.

Once an illicit discharge is identified, the investigating municipality must contact the Department within 24 hours.
 - f. To the maximum extent practicable, eliminating or minimizing leakage from sanitary conveyance systems into the municipal separate storm sewer system.
 - g. Providing the Department with advance notice of the time and location of dye testing within a MS4. (Because the dye may get reported to the Department as an illicit discharge, the Department requires prior notification of dye testing.)
 - h. In the case of an illicit discharge that originates from the municipality's permitted area and that discharges directly to a storm sewer system or property under the jurisdiction of another municipality, the first municipality shall notify the affected municipality within one working day.
 - i. The name, title, and phone number of the individual(s) responsible for responding to reports of illicit discharges and spills shall be included in the illicit discharge response procedure and submitted to the Department in accordance with Part V.B.3.
7. Once the source of an illicit discharge is detected and remediated, and confirmed by screening, no further field screening at the affected outfall(s) will be required during the permit term.

B. CONSTRUCTION SITE POLLUTANT CONTROL: The permittee shall continue to implement and enforce a program that establishes measurable goals and reduces the discharge of sediment and

construction materials from construction sites. The permittee through implementation of this program shall:

1. Conduct plan reviews to ensure site erosion control plans are in accordance with design, installation, and maintenance standards and specifications that meet or exceed the Department's technical standards or permittee's ordinance.
2. Conduct erosion control inspections at all sites within the permittee's jurisdiction following the frequency and actions outlined in the permittee's construction site pollutant control program. The permittee shall contact the Department if there are significant or repeat violations at a site, or if there are threats or impacts to waters of the state.
3. Maintain records of site inspections, including any follow up necessary on sites out of compliance with their site-specific erosion control plans, as identified in the permittee's program.
4. Notify landowners who apply for local construction or land disturbance permits of the possible applicability of Subchapter III of NR 216, Wis. Adm. Code, *Construction Site Storm Water Discharge Permits*, or other Department waterway and wetland permits.
5. Enforce construction site performance standards equivalent to, or more restrictive than, those in ss. NR 151.11, Wis. Adm. Code on all sites including municipal projects applicable under the permittee's ordinance.
6. Enforce erosion and sediment control plan requirements for landowners of construction sites equivalent to those contained in s. NR 216.46, Wis. Adm. Code including municipal projects applicable under the permittee's ordinance.
7. Maintain and enforce the municipal ordinance regarding construction site storm water discharges. Within 12 months of the effective date of this permit, the municipal ordinance shall be updated to include all erosion and sediment control planning requirements, sediment control performance standards, and preventative measures promulgated January 1, 2011 under s. NR 151.11(6m), Wis. Adm. Code.

Note: The County has identified in their permit application that in lieu of a County ordinance, the County defers to the applicable municipal construction erosion control ordinance for all county projects. Construction activities undertaken by Milwaukee County, as well as all other construction activities occurring on Milwaukee County owned lands, are required to follow the construction erosion control ordinance of the applicable municipality that the project is within.

8. Enforce permit coverage termination requirements for landowners of construction sites equivalent to those contained in s. NR 216.55, Wis. Adm. Code including removal of all temporary erosion and sediment control best management practices and complete site restoration with perennial vegetative cover.

C. POST-CONSTRUCTION STORM WATER MANAGEMENT. Each municipality shall continue to implement and enforce a program to control the quantity and quality of discharges from areas of new development and redevelopment, after construction is completed. The program shall include:

1. An ordinance or other regulatory mechanism to regulate post-construction storm water discharges from new development and re-development. Within 12 months of the effective date of this permit, the municipal ordinance shall be updated to include all post-construction

performance standard requirements promulgated January 1, 2011 under ss. NR 151.121 through NR 151.125, Wis. Adm. Code.

Note: The County has identified in their permit application that in lieu of a County ordinance, the County defers to the applicable municipal post-construction storm water discharge ordinance for all county projects. Construction activities undertaken by Milwaukee County, as well as all other construction activities occurring on Milwaukee County owned lands, are required to follow the post-construction storm water discharge ordinance of the applicable municipality that the project is within. To fulfill this permit requirement, the County can submit to the Department a declaration or other written policy that identifies this procedure.

At a minimum, the ordinance or other regulatory mechanism shall establish or include:

- a. Applicability and jurisdiction that shall apply to construction sites with one acre or more of land disturbance, and sites of less than one acre if they are part of a larger common plan of development or sale within the jurisdiction of the permittee. To the extent possible, the jurisdiction shall include any adjacent developing areas that are planned to have a minimum density of 500 people per square mile, the urbanized area, and developing areas whose runoff will connect to the MS4.
- b. Design criteria, standards and specifications equivalent to the Wisconsin Storm Water Manual or other technical standards approved by the Department. The Technical Standards takes precedence over the Storm Water Manual. The Wisconsin Storm Water Manual and other Department approved technical standards are available at <http://dnr.wi.gov/topic/stormwater/standards/index.html>
- c. Post-construction performance standards equivalent to or more restrictive than those in ss. NR 151.121 through 151.125, Wis. Adm. Code.
- d. Storm water plan requirements for landowners of construction sites equivalent to those contained in s. NR 216.47, Wis. Adm. Code.
- e. Permitting requirements, procedures and fees.
- f. Long-term maintenance requirements for landowners and other persons responsible for long-term maintenance of post-construction storm water control measures.
- g. Inspection and enforcement authority.

2. Procedures that will be used to for site planning which incorporate consideration of potential water quality impacts.

3. Procedures that will be used to ensure the long-term maintenance of storm water management facilities.

D. POLLUTION PREVENTION: Each municipality shall develop and implement a pollution prevention program that establishes measurable goals for pollution prevention. The program shall include:

1. Routine inspection and maintenance of municipal owned or operated structural storm water management facilities to maintain their pollutant removal operating efficiency.

2. Street sweeping and catch basin cleaning where appropriate. The program proposal shall identify the frequency of street sweeping and catch basin cleaning activities at specific locations in the municipality.
3. Management and disposal of street sweeping and catch basin cleaning waste.
4. If road salt or other deicers are applied by the permittee, no more shall be applied than necessary to maintain public safety.

Note: The Wisconsin Department of Transportation (DOT) “Highway Maintenance Manual”, chapter 35, contains guidance on application of road salt and other deicers that can be used to determine whether or not application is necessary and what application rate is appropriate for deicing and ice prevention. This information is held on a secured server and users must first register with the state of Wisconsin to obtain an ID and password. You can learn more about getting connected to this secured server at: <http://www.dot.wisconsin.gov/business/extranet/> The Wisconsin Department of Transportation (DOT) highway salt storage requirements are contained in ch. Trans 277, Wis. Adm. Code.

5. Management of leaves and grass clippings, which may include beneficial reuse and/or collection.
6. Storm water pollution prevention planning for municipal garages, storage areas and other municipal sources of storm water pollution, including quarterly inspections of these facilities.
7. Application of lawn and garden fertilizers on municipally controlled properties, with pervious surfaces over 5 acres each, no more frequently than a site-specific nutrient application schedule based on soil tests.
8. Education of appropriate municipal and other personnel involved in implementing this program.
9. Measures to reduce municipal sources of storm water contamination within source water protection areas. Wisconsin’s source water assessment program information is available at: <http://dnr.wi.gov/topic/drinkingwater/swap.html>

E. **STORM WATER QUALITY MANAGEMENT:** Each municipality shall develop and implement a municipal storm water management program that controls the discharge of total suspended solids from the MS4 system to waters of the State. Since much of the phosphorus found in urban runoff is adsorbed to soil particles, it is reasonable to expect that implementation of actions under this permit that reduce total suspended solids loads will also reduce phosphorus proportionally with the intent to achieve designated use conditions in impaired waterways. The storm water management program shall achieve compliance with the developed urban area performance standards of s. NR 151.13(2), Wis. Adm. Code, for those areas of the municipality that were not subject to the post-construction performance standards of s. NR 151.12 or 151.24, Wis. Adm. Code. (Note: projects prior to Oct. 1, 2004). The program shall include:

1. If applicable, a storm water management plan that identifies a schedule for implementing best management practices necessary to achieve a 20 reduction in the annual average mass of total suspended solids discharging from the MS4 to waters of the state as compared to no controls. The municipality may elect to meet the 20 percent total suspended solids standard on a watershed or regional basis by working with other permittee(s) to provide regional treatment or other

measures that collectively meets the standard. Municipalities currently not achieving at least a 20 percent reduction must prepare and submit this plan to the Department within 12 months of the permit start date. Existing controls that collectively contribute to a given MS4 achieving greater than a 20 percent reduction in TSS loads from areas of existing development as of July 1, 2011, shall not be applied to increase the level of compliance of an MS4 with a level of reduction below 20 percent. The plan shall include the following:

- a. Assessment of compliance with s. NR 151.13(2), Wis. Adm. Code must include an updated pollutant loading analysis using a model such as SLAMM, P8 or equivalent methodology approved by the Department.
- b. Any agreements with an adjacent municipality, or with municipalities within a 10 digit hydrologic unit code level, to implement the required total suspended solids reduction.
- c. Any long-term maintenance agreements with owners of non-public control measures where credit for the total suspended solids reduction is included in the analysis.
- d. A cost-effectiveness analysis including the systematic comparison of alternatives to meet the 20 percent total suspended solids reduction based on the cost per pound of pollutant removed. This analysis shall take into account anticipated redevelopment or reconstruction projects and the cost to retrofit existing practices versus the cost to install practices during redevelopment or reconstruction. The analysis shall consider the cost to ensure long term maintenance of nonpublicly owned control practices for which the municipality is taking credit as well as publicly owned control practices, the source of funding for installation and maintenance of control measures, and competing interests for that funding source. The municipality may include an analysis of affordability in the cost-effectiveness analysis. The analysis shall consider the feasibility and commensurate increase in cost of installing a control measure where there are competing issues such as human safety and welfare, endangered and threatened resources, historic properties, and geographic features.

Note: Pursuant to s. NR 151.13(2), Wis. Adm. Code, the total suspended solids reduction requirements are applied to runoff from areas of urban land use and are not applicable to agricultural or rural land uses and associated roads. Additional MS4 modeling guidance for modeling the total suspended solids control is given on the Department's Internet site at: <http://dnr.wi.gov/topic/stormwater/standards/index.html>

2. To the maximum extent practicable, continued operation and maintenance of all best management practices implemented on or before July 1, 2011 to achieve a total suspended solids reduction of more than 20 percent as compared to no controls.

F. IMPAIRED WATERBODIES AND TOTAL MAXIMUM DAILY LOAD REQUIREMENTS: Each municipality shall determine whether any part of its MS4 discharges to an impaired water body listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC 1313(d)(1)(C), and the implementing regulation of the US Environmental Protection Agency, 40 CFR 130.7(c)(1). Impaired waters are those that are not meeting applicable water quality standards.

1. If a permittee's MS4 discharges to an impaired water body, the permittee shall include a written section in its storm water management program that discusses the management practices and control measures it will implement as part of its program to reduce, with the goal of eliminating, the discharge of pollutants of concern that contribute to the impairment of the water body. This section of the permittee's program shall specifically identify control measures and practices that

will collectively be used to try to eliminate the MS4's discharge of pollutant(s) of concern that contribute to the impairment of the water body and explain why these control measures and practices were chosen as opposed to other alternatives. Pollutant(s) of concern means a pollutant that is causing impairment of a water body.

Note: Tables showing identified impairments in the Menomonee, Fox, Kinnickinnic, Milwaukee, and Root River watersheds; the Oak Creek watershed; and the estuary area are included in Appendix A. There are 303(d) listings for bacteria and Total Phosphorus, along with certain other pollutants. Work is currently underway on TMDLs which will address the bacteria and phosphorus-related impairments in the Menomonee, Milwaukee, and Kinnickinnic River watersheds and the estuary area. Since much of the phosphorus found in urban runoff is adsorbed to soil particles, it is reasonable to expect that implementation of actions under this permit that reduce total suspended solids loads will also reduce phosphorus proportionally with the intent to achieve designated use conditions in impaired waterways.

The Department maintains a searchable database of impaired waterways. This publicly accessible database is available at <http://dnr.wi.gov/water/impairedSearch.aspx>

2. After a permittee's start date of coverage under this permit, the permittee may not establish a new MS4 discharge of a pollutant of concern to an impaired water body or increase the discharge of a pollutant of concern to an impaired water body unless the new or increased discharge causes the receiving water to meet applicable water quality standards.

Note: Once the Department approves a TMDL for an impaired water body to which the permittee discharges, the Department anticipates that when this permit is reissued in the next permit cycle it will include requirements necessary to achieve the TMDL wasteload allocation for the MS4. Approved TMDLs are listed on the Department Internet site at <http://dnr.wi.gov/topic/tmdls/tmdlreports.html>

Table 2 provides an example of the way that wasteload allocations may be presented in the next permit cycle.

Table 2. TEMPLATE FOR MS4 WASTE LOAD ALLOCATIONS BY MUNICIPALITY

Municipality	Reach	Water Body Name	Water Body Extents	Reach Description	Annual TSS Waste Load Allocation (tons)
MCD Name	Reach No.	Local Name	Stream Mile to Mile	Landmark to Landmark	tons
MCD Name	Reach No.	Local Name	Stream Mile to Mile	Landmark to Landmark	tons
MCD Name	Total				tons

G. STORM SEWER SYSTEM MAP: Each municipality shall develop and maintain a municipal separate storm sewer system map. The municipal storm sewer system map shall include:

1. Identification of waters of the state, watershed boundaries, name and classification of receiving waters, identification of whether the receiving water is listed as an impaired water under s. 303 (d) of the Clean Water Act, stormwater drainage basin boundaries for each MS4 outfall and municipal separate storm sewer conveyance systems.
2. Identification of all known municipal storm sewer system outfalls discharging to waters of the state or other municipal separate storm sewer systems. Major outfalls shall be categorized and priority outfalls for illicit discharge detection and elimination shall be identified.

3. Location of any known discharge to the municipal separate storm sewer system that has been issued a WPDES permit by the Department. A list of WPDES permit holders in the permittee's area may be obtained from the Department.
4. Location of municipally owned or operated structural storm water facilities including detention basins, infiltration basins, and manufactured treatment devices. If the permittee will be taking credit for pollutant removal from privately-owned facilities they must be identified.
5. Identification of publicly owned parks, recreational areas and other open lands.
6. Location of municipal garages and other public works facilities.
7. Identification of streets.

H. ANNUAL REPORT. Each municipality shall submit an annual report for each calendar year unless the Department authorizes biannual reporting to be submitted the 2nd and 4th year of the permit term pursuant to s. NR 216.07(8) Wis. Adm. Code. The municipal governing body, interest groups and the general public shall be encouraged to review and comment on the annual report. The annual report shall include:

1. The status of implementing the permit requirements identified under Sections III and IV, including the status of meeting measurable program goals and compliance with permit schedules.
2. Updated storm sewer system maps, where necessary, to identify any new outfalls, structural controls, or other noteworthy changes.
3. A summary describing:
 - a. The number and nature of inspections and enforcement actions conducted to ensure compliance with the required ordinances.
 - b. Spill responses.
 - c. Street sweeping frequency and the amount collected.
 - d. Catch basin cleaning frequency and the amount collected.
 - e. Department of Public Works yard inspections.
 - f. Pollutant Loading removal rates and status of meeting performance standards.
 - g. Any other activities that have measurable results.
4. A summary of revisions made to the storm water management plan.
5. Proposed revisions to the storm water management plan.
6. A fiscal analysis which includes the annual expenditures and budget for the reporting year, and the proposed budget for the next year.

7. Identification of any known or perceived water quality improvements or degradation in the receiving water to which the permittee's MS4 discharges. Where degradation is identified, identify why and what actions are being taken to improve the water quality of the receiving water.
8. A duly authorized representative of each municipality shall sign and certify the annual report and include a statement or resolution that the municipal governing body or delegated representatives have reviewed or been appraised of the content of the annual report. A signed copy of the annual report and other required reports should be submitted to Bryan Hartsook, DNR Waukesha Service Center, 141 NW Barstow Street Room 180, Waukesha, WI 53188.

Part IV. WATERSHED PROJECTS

Each Menomonee River Watershed Permittee must participate in at least one project (joint or individual) designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River watershed. Completion of these projects may satisfy any number of permit conditions identified under Parts II and III of this permit even if the participating municipality is not the owner and operator of the municipal storm sewer discharge directly affected by implementation of the watershed project.

A. **PROJECT PROPOSALS:** For each watershed project proposed, the participating Menomonee River Watershed Permittee(s) shall submit the following items to the Department for review and approval prior to implementation:

1. A project description including the scope, project budget and potential funding source(s), project schedule, anticipated water quality benefits from the project, and a description of how the project will satisfy compliance with other permit conditions.
2. A scientifically credible method estimating pollutant reductions that will be achieved.
3. Signed letters of support and/or all inter-municipal agreements identifying participation in the project.

Note: Watershed restoration plans have been developed by Watershed Action Teams (WATs) in cooperation with the Southeastern Wisconsin Watersheds Trust, Inc. (SWWT) that identify priority project lists for implementation in the Menomonee River Watershed. Watershed data and recommendations from SEWRPC's Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds as well as stakeholder involvement were used to develop the WAT plans. The Menomonee River Watershed Restoration plan can be accessed at <http://www.swwtwater.org/home/publications.cfm>

B. **PROJECT EVALUATION:** The participating Menomonee River Watershed Permittees shall report on the status of the project through submittal of the annual report, or annually if on a two-year reporting cycle, until project completion.

Part V. COMPLIANCE SCHEDULE

The Menomonee River Watershed Permittees shall comply with the specific permit conditions contained in Parts II. and III. in accordance with the following schedule:

PART II. GROUP CONDITIONS

A. PUBLIC EDUCATION AND OUTREACH: A joint public education and outreach program report shall be submitted to the Department by **March 31st of each year**. Survey results or other appropriate method for tracking behavioral change due to public education and outreach activities shall be submitted along with the joint report at least once during the permit term.

D. ANALYSIS PROCEDURE FOR IDENTIFYING OUTFALLS LIKELY TO BE DISCHARGING SANITARY WASTEWATER: An analysis procedure for identifying outfalls that have a stronger likelihood of discharging sanitary wastewater due to screening factors determined by the Menomonee River Watershed Permittees shall be submitted to the Department by **March 31, 2014**. Outfall screening according to the identified procedure shall be implemented within 6 months after receiving Department approval.

PART III. INDIVIDUAL CONDITIONS

B. CONSTRUCTION SITE POLLUTANT CONTROL: Each municipality shall submit a proposed updated construction site pollutant control ordinance to the Department by **December 1, 2013** for the Department's review and approval. The Department shall provide the municipality the results of its review within 60 days of submission. Each municipality shall adopt the construction site pollutant control ordinance by **March 31, 2014**. Existing construction site pollutant control ordinances shall be enforced until Department approved ordinances are adopted.

C. POST-CONSTRUCTION STORM WATER MANAGEMENT: Each municipality shall submit a proposed updated post-construction storm water management ordinance to the Department by **December 1, 2013** for the Department's review and approval. The Department shall provide the municipality the results of its review within 60 days of submission. Each municipality shall adopt the post-construction storm water management ordinance by **March 31, 2014**. Existing post-construction storm water management ordinances shall be enforced until Department approved ordinances are adopted.

E. STORM WATER QUALITY MANAGEMENT: If applicable, the long-term storm water management plan to achieve a 20 percent reduction of total suspended solids, including any updated pollutant loading analyses, to the Department by **December 1, 2013**.

G. STORM SEWER SYSTEM MAP: Each municipality shall submit an updated storm sewer system map to the Department with the Annual Report by **March 31st of each year**.

H. ANNUAL REPORT: Each municipality shall submit an annual report for the preceding calendar year by March 31st of each year. The first annual report (for calendar year 2012) shall be submitted to the Department by **March 31, 2013**.

Part VI. STANDARD CONDITIONS

The conditions in s. NR 205.07(1) and (3), Wis. Adm. Code, are incorporated by reference in this permit. The Menomonee River Watershed Permittees shall meet these requirements. Some of these requirements are outlined below in paragraph A. through R.. Requirements not specifically outlined below can be found in s. NR 205.07(1) and (3), Wis. Adm. Code.

- A. **DUTY TO COMPLY:** The municipalities shall comply with all conditions of the permit. Any permit noncompliance is a violation of the permit and is grounds for enforcement action, permit revocation or modification, or denial of a permit reissuance application.
- B. **COMPLIANCE SCHEDULES:** Reports of compliance or noncompliance with interim and final requirements contained in any compliance schedule of the permit shall be submitted in writing within 14 days after the schedule date, except that progress reports shall be submitted in writing on or before each schedule date for each report. Any report of noncompliance shall include the cause of noncompliance, a description of remedial actions taken, and an estimate of the effect of the noncompliance on the municipality's ability to meet the remaining schedule dates.
- C. **NONCOMPLIANCE NOTIFICATION:**
 - 1. Upon becoming aware of any permit noncompliance that may endanger public health or the environment, each municipality shall report this information by a telephone call to the Department within 24 hours. A written report describing the noncompliance shall be submitted to the Department within 5 days after the municipality became aware of the noncompliance. The Department may waive the written report on a case-by-case basis based on the oral report received within 24 hours. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.
 - 2. Reports of any other noncompliance not covered under General Condition's B, C.1, or E shall be submitted with the annual report. The reports shall contain all the information listed in General Condition C.1.
- D. **DUTY TO MITIGATE:** Each municipality shall take all reasonable steps to minimize or prevent any adverse impact on the waters of the state resulting from noncompliance with the permit.
- E. **SPILL REPORTING:** Each municipality shall immediately notify the Department, in accordance with ch. NR 706, Wis. Adm. Code, in the event of a spill or accidental release of hazardous substances which results in a discharge of pollutants into waters of the state. The Department shall be notified via the 24-hour spill hotline (1-800-943-0003).
- F. **PROPER OPERATION AND MAINTENANCE:** Each municipality shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the municipality to achieve compliance with the conditions of the permit and the storm water management plan. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with conditions of this permit.

- G. **BYPASS:** Each municipality may temporarily bypass storm water treatment facilities if necessary for maintenance, or due to runoff from a storm event which exceeds the design capacity of the treatment facility, or during an emergency.
- H. **DUTY TO HALT OR REDUCE ACTIVITY:** Upon failure or impairment of best management practices identified in the storm water management program, each municipality shall, to the extent practicable and necessary to maintain permit compliance, modify or curtail operations until the best management practices are restored or an alternative method of storm water pollution control is provided.
- I. **REMOVED SUBSTANCES:** Solids, sludges, filter backwash or other pollutants removed from or resulting from treatment or control of storm water shall be stored and disposed of in a manner to prevent any pollutant from the materials from entering the waters of the state, and to comply with all applicable Federal, State, and Local regulations.
- J. **ADDITIONAL MONITORING:** If a municipality monitors any pollutant more frequently than required by the permit, the results of that monitoring shall be recorded and reported in accordance with this chapter. Results of this additional monitoring shall be included in the calculation and reporting of the data submitted in the annual report.
- K. **INSPECTION AND ENTRY:** Each municipality shall allow an authorized representative of the Department, upon the presentation of credentials, to:
1. Enter upon the municipal premises where a regulated facility or activity is located or conducted, or where records are required under the conditions of the permit.
 2. Have access to and copy, at reasonable times, any records that are required under the conditions of the permit.
 3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under the permit.
 4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance, any substances or parameters at any location.
- L. **DUTY TO PROVIDE INFORMATION:** Each municipality shall furnish the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking or reissuing the permit or to determine compliance with the permit. Each municipality shall also furnish the Department, upon request, copies of records required to be kept by the municipality.
- M. **PROPERTY RIGHTS:** The permit does not convey any property rights of any sort, or any exclusive privilege. The permit does not authorize any injury or damage to private property or an invasion of personal rights, or any infringement of federal, state or local laws or regulations.
- N. **DUTY TO REAPPLY:** If any of the Menomonee River Watershed Permittees wish to continue an activity regulated by the permit after the expiration date of the permit, the municipality shall apply for a new permit at least 180 days prior to the expiration date of the permit. If a timely and complete application for a new permit is filed and the permit is not reissued by the time the existing permit expires, the existing permit remains in effect until the application is acted upon.
- O. **OTHER INFORMATION:** Where a municipality becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the department, it shall promptly submit such facts or correct information to the department.

- P. **RECORDS RETENTION:** Each municipality shall retain records of all monitoring information, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 5 years from the date of the sample, measurement, report or application. The Department may request that this period be extended by issuing a public notice to modify the permit to extend this period.
- Q. **PERMIT ACTIONS:** As provided in s. 283.53, Wis. Stats., after notice and opportunity for a hearing the permit may be modified or revoked and reissued for cause. If a municipality files a request for a permit modification, revocation or reissuance, or a notification of planned changes or anticipated noncompliance, this action by itself does not relieve the municipalities of any permit condition.
- R. **SIGNATORY REQUIREMENT:** All applications, reports or information submitted to the Department shall be signed for by a ranking elected official, or other person authorized by them who has responsibility for the overall operation of the municipal separate storm sewer system and storm water management program activities regulated by the permit. The representative shall certify that the information was gathered and prepared under their supervision and based on inquiry of the people directly under their supervision that, to the best of their knowledge, the information is true, accurate, and complete.
- S. **ENFORCEMENT ACTION:** The Department is authorized under s. 283.89 and 283.91, Wis. Stats., to use citations or referrals to the Department of Justice to enforce the conditions of this permit. Violation of a condition of this permit is subject to a fine of up to \$10,000 per day of violation.
- T. **ATTAINMENT OF WATER QUALITY STANDARDS AFTER AUTHORIZATION:** Except for situations where a TMDL has been approved by US EPA during the term of this permit, at any time after authorization, the Department may determine that the discharge of storm water from a permittee's MS4 may cause, have the reasonable potential to cause, or contribute to an excursion of any applicable water quality standard. If such determination is made, the Department may require the permittee to do one of the following:
1. Develop and implement an action plan to address the identified water quality concern to the satisfaction of the Department.
 2. Submit valid and verifiable data and information that are representative of ambient conditions to demonstrate to the Department that the receiving water or groundwater is attaining the water quality standard.

Part VII. DEFINITIONS

Definitions for some of the terms found in this permit are as follows:

Controls Condition means a pollutant-loading analysis that includes pollutant reductions from storm water management practices.

Department means Department of Natural Resources.

Erosion means the process by which the land's surface is worn away by the action of wind, water, ice or gravity.

Hazardous substance means any substance which may pose a substantial present or potential hazard to human health or the environment because of its quantity, concentration or physical, chemical or infectious characteristics.

Illicit Connection means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer system.

Illicit Discharge means any discharge to a municipal separate storm sewer system that is not composed entirely of storm water except discharges authorized by a WPDES permit or other discharge not requiring a WPDES permit such as water line flushing, landscape irrigation, individual residential car washing, firefighting and similar discharges.

Infiltration means the entry and movement of precipitation or runoff into or through soil.

Infiltration system means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.

Jurisdiction means the area where the permittee, or co-permittee, has authority to enforce its ordinance(s) or otherwise has authority to exercise control over a particular activity of concern.

Land Disturbing Construction Activity means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover that may result in storm water runoff and lead to increased soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes, but is not limited to, clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

Major Outfall means a municipal separate storm sewer outfall that meets one of the following criteria:

1. A single pipe with an inside diameter of 36 inches or more or equivalent conveyance (cross sectional area of 1,018 square inches) which is associated with a drainage area of more than 50 acres.
2. A single pipe with an inside diameter of 12 inches or more or equivalent conveyance (cross sectional area of 113 square inches) which receives runoff from land zoned for industrial activity and is associated with a drainage area of more than 2 acres.

Maximum Extent Practicable means a level of implementing management practices in order to achieve a performance standard or other goal which takes into account the best available technology, cost

effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features.

Municipal Separate Storm Sewer System or MS4 means a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

1. Owned or operated by a municipality.
2. Designed or used for collecting or conveying storm water.
3. Which is not a combined sewer conveying both sanitary and storm water.

No Controls Condition means a pollutant-loading analysis that does not include pollutant reductions from storm water management practices.

Outstanding and Exceptional Resource Waters are listed in ss. NR 102.10 and 11, Wis. Adm. Code.

Outfall means the point at which storm water is discharged to waters of the state or leaves one municipality and enters another.

Permittee means the owner or operator, or a group of owners or operators, of a municipal separate storm sewer system authorized to discharge storm water into waters of the state.

Permitted Area refers to the areas of land under the jurisdiction of the Menomonee River Watershed municipalities that drains into their MS4, which is regulated under a permit issued pursuant to subch. I of NR 216, Wis. Adm. Code.

Redevelopment means areas where development is replacing older development.

Riparian Landowners are the owners of lands bordering lakes and rivers.

Sediment means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

Storm Water Management Practice means structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.

Storm Water Pollution Prevention Planning refers to the development of a site-specific plan that describes the measures and controls that will be used to prevent and/or minimize pollution of storm water.

Structural Storm Water Management Facilities are engineered and constructed systems that are designed to provide storm water quality control such as wet detention ponds, constructed wetlands, infiltration basins and grassed swales.

Waters of the State include surface waters, groundwater and wetlands.

WPDES Permit means a Wisconsin Pollutant Discharge Elimination System permit issued pursuant to ch. 283, Wis. Stats.

Appendix A

Table A-1

IMPAIRED WATERS WITHIN THE MENOMONEE RIVER WATERSHED: 2012

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Butler Ditch	Recreational restrictions-pathogens	0-2.9	Fecal coliform bacteria	2010
Goldendale Creek	Recreational restrictions-pathogens	0-3.5	Fecal coliform bacteria	2010
Honey Creek	Degraded biological community	0-8.96	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-10	Fecal coliform bacteria	2010
Lilly Creek	Recreational restrictions-pathogens	0-4.7	Fecal coliform bacteria	2010
Little Menomonee Creek	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	2010
Little Menomonee River	Chronic aquatic toxicity	0-9	Creosote	1998
	Degraded biological community	0-9	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	2010
Menomonee River	Low dissolved oxygen	0-2.67	Total phosphorus	1998
	Chronic aquatic toxicity	0-2.67	Unspecified metals	1998
	Contaminated fish tissue	0-2.67	PCBs	1998
	Recreational restrictions-pathogens	0-2.67	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-2.67	Fecal coliform bacteria	2010
	Recreational restrictions-pathogens	2.67-6.27	Fecal coliform bacteria	2010
Nor-X-Way Channel	Recreational restrictions-pathogens	0-4.9	Fecal coliform bacteria	2010
South Branch Underwood Creek	Degraded biological community	0-1	Total phosphorus	Proposed 2012
Underwood Creek	Degraded biological community	0-2.84	Total phosphorus	Proposed 2012
	Degraded biological community	2.84-8.54	Unknown pollutant	Proposed 2012
	Recreational restrictions-pathogens	0-8.54	Fecal coliform bacteria	2010
West Branch Menomonee River	Recreational restrictions-pathogens	0-2.45	Fecal coliform bacteria	2010
Willow Creek	Recreational restrictions-pathogens	0-2.8	Fecal coliform bacteria	2010

Source: Wisconsin Department of Natural Resources.

Table A-2

**IMPAIRED WATERS IN MENOMONEE RIVER WATERSHED MUNICIPALITIES
LOCATED IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED: 2012**

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Fox River Watershed				
Deer Creek	Degraded habitat	0-8.09	Elevated water temperature	2008
	Degraded habitat	0-8.09	Sediment/total suspended solids	2008
	Excess algal growth	0-8.09	Total phosphorus	1998
Fox River	Contaminated fish tissue	151.34-196.64	PCBs	1998
	Contaminated fish tissue	151.34-180.1	PCBs	1998
	Contaminated fish tissue	175.32-176.13	Mercury	1998
	Degraded biological community	113.24-151.34	Total phosphorus	Proposed 2012
	Degraded habitat	171.45-175.32	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Total phosphorus	1998
	Low dissolved oxygen	171.45-175.32	Total phosphorus	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Sediment/total suspended solids	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Total phosphorus	1998
Lannon Creek	Degraded habitat	0-5.48	Sediment/total suspended solids	1998
Master Disposal Drainage Channel	Chronic aquatic toxicity	0-.99	Unknown pollutant	1998
Poplar Creek	Low dissolved oxygen	0-8.06	Unknown pollutant	1998
Kinnickinnic River Watershed				
Cherokee Creek	Recreational restrictions-pathogens	0-1.6	Fecal coliform bacteria	2010
Holmes Avenue Creek	Recreational restrictions-pathogens	0-1.8	Fecal coliform bacteria	2010
Kinnickinnic River	Low dissolved oxygen	0-2.83	Total phosphorus	1998
	Contaminated fish tissue	0-2.83	PCBs	1998
	Chronic aquatic toxicity	0-2.83	Metals	1998
	Degraded biological community	2.84-9.94	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-2.83	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-9.61	Fecal coliform bacteria	2010
Lyons Park Creek	Recreational restrictions-pathogens	0-1.5	Fecal coliform bacteria	2010
South 43rd Street Ditch	Degraded biological community	0-1.16	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-1.16	Fecal coliform bacteria	2010

Table A-2 (continued)

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Kinnickinnic River Watershed (continued)				
Villa Mann Creek	Recreational restrictions-pathogens	0-1.2	Fecal coliform bacteria	2010
Wilson Park Creek	Recreational restrictions-pathogens	0-5.5	Fecal coliform bacteria	2010
Milwaukee River Watershed				
Beaver Creek	Chronic aquatic toxicity	0-2.69	Unknown pollutant	1998
Lincoln Creek	Chronic aquatic toxicity	0-9.0	Unspecified metals	1998
	Chronic aquatic toxicity	0-9.0	PAHs	1998
	Degraded biological community	0-9.7	Total phosphorus	Proposed 2012
	Degraded habitat	8.5-9.0	Sediment/total suspended solids	1998
	Elevated water temperature-degraded habitat	0-8.5	Sediment/total suspended solids	1998
	Low dissolved oxygen	0-9.0	Total phosphorus	1998
Milwaukee River	Contaminated fish tissue/contaminated sediment	0-2.9	PCBs	1998
	Contaminated fish tissue	2.9-19.35	PCBs	1998
	Contaminated sediment	0-2.9	Unspecified metals	1998
	Low dissolved oxygen	0-2.9	Total phosphorus	1998
	Recreational restrictions-pathogens	0-19.35	<i>Escherichia coli</i>	1998
Oak Creek				
Oak Creek	Chronic aquatic toxicity	0-13.32	Unknown pollutant	1998
	Degraded biological community	0-13.32	Total phosphorus	Proposed 2012
Root River Watershed				
Root River	Low dissolved oxygen	20.48-43.95	Sediment/total suspended solids	1998
	Low dissolved oxygen	20.48-43.95	Total phosphorus	1998

Source: Wisconsin Department of Natural Resources.

Fact Sheet
WPDES Permit No. WI-S050156-1

November 2012

Menomonee River Watershed-Based Permit

**For Municipal Separate Storm Sewer System (MS4) Discharges
Owned and Operated by the Menomonee River Watershed Permittees:**

City of Brookfield
Village of Butler
Village of Elm Grove
Village of Germantown
City of Greenfield
Village of Menomonee Falls
City of Milwaukee
Milwaukee County
City of West Allis
Village of West Milwaukee
City of Wauwatosa

Background and Rationale

The Wisconsin Department of Natural Resources (the Department) is proposing to issue Wisconsin Pollutant Discharge Elimination System (WPDES) permit No. WI- S050156-1, for existing and new discharges of storm water to waters of the state from the Menomonee River Watershed Permittees municipal separate storm sewer systems (MS4's). Permitted discharges from MS4's may consist of runoff from rain events and/or snow melt. Pollutants often found in MS4 discharges include organic materials, suspended solids, metals, nutrients, bacteria, pesticides, fertilizer, and traces of toxic materials. The proposed permit requirements are intended to restore and maintain the chemical, physical, and biological integrity of the waters of the state, specifically within the Menomonee River Watershed, through a combination of individual and collaborative planning and implementation efforts.

This permit was developed as a collaborative effort between municipal representatives; non-governmental organizations; the Southeastern Wisconsin Watersheds Trust, Inc.; the Milwaukee Metropolitan Sewerage

District; the Southeastern Wisconsin Regional Planning Commission (SEWRPC); the U.S. Environmental Protection Agency; and the Department. Supporting technical memoranda along with documentation outlining

the decision making process for development of this watershed-based permit can be found on SEWRPC's website at <http://www.sewrpc.org/SEWRPC/Environment/MenomoneeRiverWBPFramework.htm>

General Description of Operations Covered

In 1973, the USEPA delegated the authority for issuing NPDES permits in Wisconsin to the Department. The Department exercises its storm water permitting authority through the Wisconsin Pollutant Discharge Elimination System (WPDES), authorized under ch. NR 216, Wis. Adm. Code and ch. 283, Wis. Stats. Currently, there are 218 municipalities, counties, or special units of government in the state required to have a MS4 permit under subchapter I of NR 216, Wis. Adm. Code. In the eight counties comprising the Department's Southeast District, there are 90 permitted entities, including Wisconsin State Fair Park and the Southeastern Wisconsin Professional Baseball District (Miller Park). All permitted MS4's are required through this permit program to develop and implement storm water best management practices to reduce the contribution of pollutants from the MS4 areas to waters of the state. The baseline requirements are referred to as the six minimum control measures and are outlined below. To date, the primary geographic scale for planning and implementation was based on the permitted entity's political boundary with focus on meeting the permit requirements individually for their respective MS4 discharge.

Six Minimum Control Measures

- | | |
|--|--|
| • <i>Public Education and Outreach</i> | • <i>Construction Site Pollutant Control</i> |
| • <i>Public Involvement and Participation</i> | • <i>Post-Construction Site Storm Water Management</i> |
| • <i>Illicit Discharge Detection and Elimination</i> | • <i>Pollution Prevention</i> |

This permit builds from the efforts completed under past individual permits, including the existing Menomonee Group individual permit (WPDES Permit No. WI-S050130-1), and encourages collaboration and promotes shared accountability under a multi-source watershed permit scheme. The Menomonee River Watershed Permittees, through satisfying the permit requirements, will continue to address their own MS4 discharges as appropriate while coordinating as a group to target specific concerns identified for the Menomonee River Watershed through past watershed planning efforts.

The Menomonee River Watershed

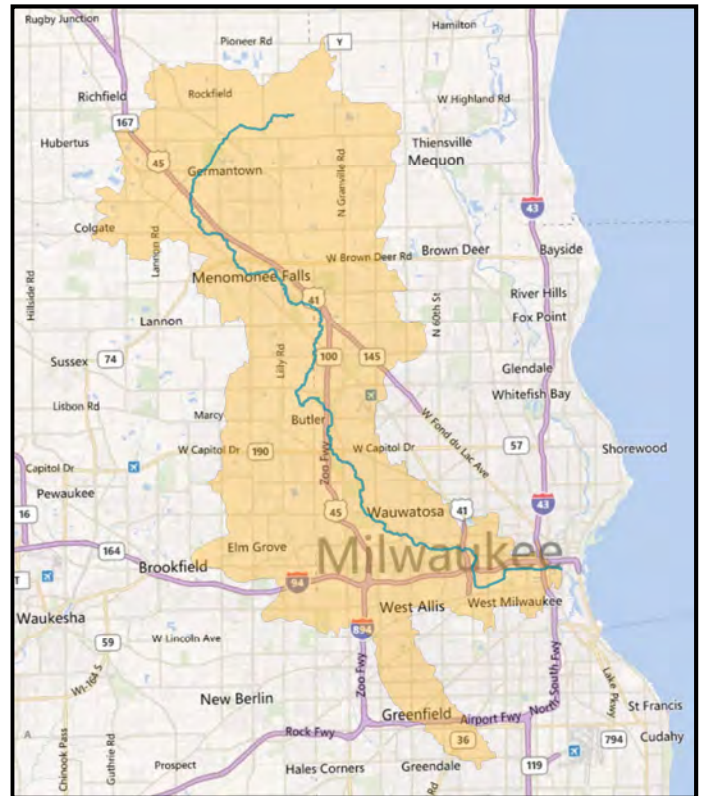
The Menomonee River watershed covers approximately 136 square miles of urban and rural landscape which is home to a population of about 322,000 people. There are portions of the watershed in Washington, Ozaukee, Waukesha, and Milwaukee Counties. The River originates in the Village of Germantown and the City of Mequon and flows in a southeasterly direction for about 32 miles before it meets the Milwaukee and Kinnickinnic Rivers in the Milwaukee Harbor prior to flowing into Lake Michigan. The watershed contains 96 total stream miles and over 6,780 wetland acres. Perhaps the most visible indications that the Menomonee River and its tributaries have been highly modified can be seen in sections of watershed where both the stream bed and banks are lined with concrete. About 14.5 miles of the streams in the watershed are concrete-lined or enclosed.

The watershed is characterized by small to medium sized warm water streams that exhibit flashy flow patterns. This means they often run very high and fast when it rains, and very low and slow when the weather is dry. These problems are rooted in historic channel modifications and growing urban land uses. The high flows in wet weather cause erosion of the streambanks and substrate (in unaltered sections of the River), causing releases of sediment and degrading habitat for fish and macroinvertebrates. The impervious surfaces in the watershed, which reduce groundwater infiltration and stream baseflow, are key factors reducing stream flows in dry weather conditions; the low flow volumes and associated higher temperatures are also stressors for biological communities.¹

In addition to the flashy flow patterns, certain pollutants have been identified as contributing to use impairments in the watershed. Wisconsin DNR and collaborating organizations conduct monitoring of the waters of the State; where waters are found to be not meeting State water quality standards, the water bodies are categorized as “impaired.” Impairments have been identified in the Menomonee watershed related to bacteria (which is associated with recreational uses and human health) and total phosphorus. Much of the phosphorus found in urban runoff is adsorbed in soil particles, particularly in the smaller textured silt and clay soils. It is reasonable to expect that implementation actions under this permit that reduce total suspended solids (TSS) loads will also reduce phosphorus proportionally with the intent to achieve designated use conditions in impaired waterways.

The fishery in the watershed has been and continues to be dominated by species that can tolerate low concentrations

of dissolved oxygen and other water quality impairments. The proportions of pollution-tolerant fish species have all increased over the last 100 years. Most notable is the exotic invasive common carp species, which has increased from being found at 2 percent of the sites surveyed over the period 1900 to 1974 to being found at nearly 40 percent of the sites sampled over the period 1998 to 2004. Carp are likely having a negative effect on the overall fishery in the watershed by destroying habitat and competing with native fish species for food and spawning areas. There has been a decrease in the percent of native fishes in the Menomonee River watershed. Most notable losses include several pollution-intolerant species including the blacknose shiner and spottail shiner, the least darter and redbelly dace, which are species of special concern in the State of Wisconsin, and the greater redhorse which is a threatened species in the State of Wisconsin. Additional species that have not been observed since 1975 include the southern redbelly dace, northern redbelly dace, and grass pickerel.



The Menomonee River flows north to south for 32 miles before meeting the Milwaukee and Kinnickinnic Rivers. The Menomonee River Watershed lies within the Milwaukee River Basin.

¹SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007; Milwaukee Metropolitan Sewerage District, Menomonee River Watershed Restoration Plan, April 2010.

The adjacent watersheds face similar water quality issues. There are identified water quality impairments related to total phosphorus in the Milwaukee River, Kinnickinnic River, Root River, and Fox River watersheds

and/or the Milwaukee harbor estuary area. Water quality impairments related to bacteria have been identified in the Milwaukee River, Kinnickinnic River, and Root River watersheds and in the Milwaukee harbor estuary area. In addition, there are identified water quality impairments related to dissolved oxygen in the Root River watershed.

Applicability

The municipal boundaries of the Menomonee River Watershed Permittees are located within the urbanized area as identified by the U.S. Census Bureau's 2010 decennial census. The urbanized area (UA) is a mapped boundary that encloses centrally populated and their densely settled surrounding areas that together have a total residential population of at least 50,000 and an overall population density of 1,000 people per square mile.

This permit covers all areas within the jurisdiction of the Menomonee River Watershed Permittees, including those areas which do not drain to the Menomonee River Watershed.

Watershed-Based Permit Structure

The permitted minimum control measures are separated into two groups – **Group Conditions** and **Individual Conditions**. Each municipality is required to contribute to the planning and implementation of programs carried out under group conditions. The group conditions are intended to ensure that efforts in the Menomonee River Watershed are prioritized and implemented in a consistent manner and that a uniform message is being received by the public. Implementation of the group conditions will be conducted on a *watershed-based scale*. The individual conditions are required to ensure that each municipality is continuing to operate its own unique programs developed under past permit cycles and to address discharges from their own MS4. Implementation of the individual conditions will be on a *municipality-based scale*.

The Menomonee River Watershed Permittees will also participate in the planning and implementation of **Watershed Projects**. Participation in these joint projects will provide the permittees with the opportunity to satisfy any number of permit conditions that are addressed by the projects, group and individual, through the successful planning, implementation, and completion of a project depending on the scope of work. **The permit requires each municipality to participate in at least one individual or joint watershed project to be completed by the end of the five year permit term.** The permit specifies the process by which projects are proposed and evaluated. The Department must review and approve the project.

Individual Responsibility

Each Menomonee River Watershed Permittee is responsible for compliance with the conditions of the permit relating to discharges from those portions of the municipal separate storm sewer system where the municipality is the owner or operator. Each permittee is responsible for participating in group meetings and maintaining an active role in implementing management practices under the group conditions. If a municipality elects to participate in a watershed project, then they must be an active participant in all phases of the project.

Shared Responsibility

Group conditions under this permit will be satisfied through the collective efforts put forth by the Menomonee River Watershed Permittees. The permittees may partner with other regulated MS4s or other groups or organizations to satisfy group conditions.

Permit Requirements

Part II. Group Conditions

A. Public Involvement and Participation & B. Public Education and Outreach

There are 11 topics required to be addressed by the end of the five year permit term. They include a range of topics targeted to address different sources of pollutants and audiences such as general education on the effects of point and non-point source pollution on the Menomonee River watershed, the benefits of restoring riparian areas, green infrastructure development, and the effects of heavy salt use during winter road maintenance operations. The Menomonee River Watershed Permittees are required to focus on at least 3 topics each year, and may repeat topics if desired.

C. Illicit Discharge Notification

Each municipality is responsible for contacting downstream municipalities upon detection of an illicit discharge from their MS4.

D. Analysis Procedure for Identifying Outfalls Likely to be Discharging Sanitary Wastewater Annual Meeting

A combination of in-stream monitoring and storm sewer outfall sampling and research conducted by other entities including the Milwaukee Metropolitan Sewerage District (MMSD), UW-Milwaukee Great Lakes Water Institute, and Milwaukee Riverkeeper has identified a need to address long-term problems with aging sanitary and storm sewer infrastructure in the Greater Milwaukee Area. The research indicates that inflow and infiltration (I&I) of sanitary wastewater from into the storm sewer system contributes to discharges from the storm sewer system that are contaminated with sanitary wastewater. In some instances there may be direct cross connections between private sanitary systems and the storm sewer system. In either case, bacteria from human sources are being introduced into surface waters through storm sewers.

In order to address this issue, the Menomonee River Watershed Permittees are required to develop an analysis procedure for identifying those outfalls that are most likely to be conveying water contaminated with sanitary wastewater and which should be screened for human bacteria indicators. This analysis procedure shall take into account what is known about the age and condition of the sanitary and storm sewer systems, historical water quality data within receiving waters, and other available information the permittees consider relevant. This screening protocol will be implemented in addition to the ongoing illicit discharge field screening conducted for identifying other non-storm water discharges. The Department must review and approve the procedure by March 31, 2014 and the screening protocol shall be implemented within 6 months after approval is granted.

More information on this topic can be found at <http://www.milwaukeekeeper.org/content/bacteria-testing>

Part III. Individual Conditions

A. Illicit Discharge Detection and Elimination

The purpose of the Illicit Discharge Detection and Elimination (IDDE) program is to develop and implement a process for the evaluation of MS4 outfalls for the presence of non-storm water discharges. Illicit discharges are those discharges that are not composed entirely of storm water, are not permitted discharges, and are not the result of what could be considered normal outside water use, such as residential car washing and lawn watering.

Under previous permit terms, the municipalities were required to screen all major outfalls annually through the term of the permit. Major outfalls included all outfalls with a diameter 36 inches or greater or outfalls draining an area of 50 acres or larger. Outfalls associated with an area of industrial activity 2 acres or more were also classified as major outfalls. **This permit does not limit screening to major outfalls.** This permit also provides the permittees with flexibility to use different sampling parameters and screening frequencies to more effectively detect illicit discharges. The screening requirements for **all outfalls** are summarized below.

Major outfalls

- No indication of illicit discharge through previous permit term's screening –
At least one-fifth of all outfalls per year on a rolling basis, with each outfall in this category being screened at least once during the five-year permit term.
- Last two samplings conducted show evidence of illicit discharge –
A minimum of once per year

All other outfalls identified for screening under Part II.D. of the permit

A minimum of once per year or at an increased frequency deemed appropriate by the municipality

Outfalls identified for annual screening shall be screened each year until no evidence for an illicit discharge is found for two consecutive years.

Outfalls with indeterminate sources and non-storm water discharges shall continue to be screened annually.

Upon detection of an illicit discharge, the municipality must immediately begin an investigation of the sewershed in an attempt to find and eliminate the source of the discharge. If the source cannot be found, then a minimum of 3 separate screenings must be conducted at the outfall within a 6 month period.

The Department has developed guidance to assist municipalities with implementing the Illicit Discharge Detection and Elimination permit requirement. The guidance is available for download at:
http://dnr.wi.gov/topic/stormwater/documents/MS4_IDDE_Guidance_3-2012.pdf

B. Construction Site Pollutant Control

Each municipality must update its local construction site erosion control ordinance(s) and inspection and enforcement procedures to be as least as restrictive as the revised NR 151, Wis. Adm. Code requirements by the end of the first year of the permit term.

C. Post-Construction Storm Water Management

Each municipality must update its local post-construction storm water management ordinance(s) and inspection and enforcement procedures to be as least as restrictive as the revised NR 151, Wis. Adm. Code requirements by the end of the first year of the permit term.

An overview of the changes made to NR 151 can be accessed at:

http://dnr.wi.gov/topic/stormwater/documents/NR-151_non-ag_overview_3-28-2012.pdf

D. Pollution Prevention

The pollution prevention requirement is a component of the permittee's MS4 storm water management program that includes the operation and maintenance of structural best management practices, management of runoff at municipally owned facilities such as public works yards, and ongoing education of municipal staff and officials.

E. Storm Water Quality Management

The developed urban area performance standard under NR 151.13(2) requires the treatment of storm water runoff collected by the MS4. The treatment standard is identified as a percent reduction of Total Suspended Solids (TSS) in runoff treated by best management practices as compared to what would be entering surface waters without treatment. The Department uses TSS as the regulatory criteria for evaluating the effects of urban runoff quality on receiving waters because it is a surrogate pollutant, meaning that other pollutants such as phosphorus and heavy metals are adsorbed to soil particles in runoff. Wisconsin Act 32 repealed and recreated s. 281.16 to specify that no more than a 20 percent reduction in total suspended solids can be required for any regulated MS4 point source. In addition, s. 281.16(2)(am)3. requires maintenance of all best management practices that were implemented on or before July 1, 2011 to achieve the standard.

This section of the permit was updated to reflect these recent statute changes. It also requires a storm water management planning requirement for municipalities currently achieving less than a 20 percent reduction from its MS4. The plan must be submitted to the Department for review and approval within the first year of the permit term. The plan shall include a current pollutant loading analysis, any long term maintenance agreements for individual facilities or agreements with other permitted municipalities within the same 10 digit hydrologic unit code (HUC) level to regionally treat runoff, and a cost-effectiveness analysis.

F. Impaired Waterbodies And Total Maximum Daily Load Requirements

It is expected that Total Maximum Daily Loads (TMDL's) will be developed and approved for implementation by EPA in the Milwaukee River Basin during the term of this permit. The TMDL will account for the relative contributions of volume and pollutants generated from both non-point and point source runoff. All point sources, including MS4's, will receive waste load allocations for individual stream reaches or water bodies. Waste load allocations establish the level of effluent quality necessary to protect water quality in the receiving water and to ensure attainment of water quality standards. Once allowable loadings have been developed through WLAs for specific pollution sources, limits will be incorporated into the following WPDES permit term.

A table identifying the impaired waterways and their impairments is provided in **Appendix A** of the permit and is also included at the end of this fact sheet for reference.

The Department maintains a searchable database of impaired waterways. This publicly accessible database is available at <http://dnr.wi.gov/water/impairedSearch.aspx>

G. Storm Sewer System Map

Each municipality covered under this permit has already under previous permit terms developed an MS4 map showing its storm sewer network, outfalls and contributing drainage areas, impaired waterways, and other relevant information to assist in storm water management planning and IDDE efforts. The municipalities are responsible for updating this map as needed and should make this map available for the public or other regulated municipalities when requested.

H. Annual Report

Each municipality is responsible for submitting an annual report of activities undertaken to comply with the permit during the course of a calendar year. A change over previous permit terms, a municipality has the option of submitting biannual reports on the 2nd and 4th year of the permit term. The annual report must be made available to the public for review and comment.

Part IV. Watershed Projects

This section has been included in the permit to provide the municipalities an alternative means to comply with a set of group and/or individual permit conditions while targeting a specific pollutant, source, or geographic area within the Menomonee River watershed. The permit does not specify a project, but does permit the process for proposing and evaluating a project. All project proposals must be submitted the Department for review and approval prior to implementation.

Examples of watershed projects may include:

- An outfall monitoring program for dry and wet weather chemical sampling for *E.coli*, *Enterococci*, and *Bacteroides*.
- An investigation into the performance of BMPs (structural and nonstructural) in reducing bacteria loadings, including a demonstration project with monitoring/measurement of the results/effects.
- An investigation into systems and practices for reducing chloride loadings. This may include discussion forums, webinars/workshops for municipal staff and private applicators, and research on de-icing or anti-icing alternatives. Potential demonstration sites where alternative practices are employed and monitored may be included as well.
- A comparative watershed analysis to document the effectiveness/performance of green infrastructure in residential neighborhoods and commercial development.

Watershed restoration plans have been developed by Watershed Action Teams (WATs) in cooperation with the Southeastern Wisconsin Watersheds Trust, Inc. (SWWT) that identify priority project lists for implementation in the Menomonee River Watershed. Watershed data and recommendations from SEWRPC's *Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds* as well as stakeholder involvement were used to develop the WAT plans. The Menomonee River Watershed Restoration plan can be accessed at <http://www.swwtwater.org/home/publications.cfm>

Table 1 on the following page was developed as an initial planning tool to assist municipalities in prioritizing project ideas. Inclusion of the table is here only to present project examples and to represent how projects would target certain pollutants and potentially comply with other permit conditions.

Table 1. Menomonee River Watershed-Based Permit Conditions Matrix

Projects and Control Measures		BMP Category			Targeted Pollutant	Implementation Scale	
		Structural	Non-Structural	Source Reduction		Watershed-Based	Municipality-Based
Existing Permitted Control Measures							
Group Conditions	Public Education and Outreach		●		▲ ■ ● +	●	
	Public Involvement and Participation		●		▲ ■ ● +	●	
	Joint analysis procedure for identifying outfalls likely to be discharging sanitary wastewater			●	●	●	
Individual Conditions	Illicit Discharge Detection and Elimination		●	●	●		●
	Construction Site Pollutant Control		●		▲ ■		●
	Post-Construction Storm Water Management		●		▲ ■		●
	Pollution Prevention	●	●	●	▲ ■ +		●
	Storm Water Quality Management (20% TSS Reduction Urbanized Area Performance Standard / "Maintenance of Effort" pursuant to s. 281.16)	●			▲ ■		●
Menomonee River Watershed Priority Project List							
	Green Infrastructure Development in Targeted Subwatersheds	●			▲ ■	●	
	Compile salt-use data, promote alternative practices, develop consistency among municipalities		●	●	+	●	
	Riparian Buffer Restoration / Habitat Improvement	●	●		▲ ■	●	
	Evaluate SWWT Household Survey Results and Develop Targeted I&E Plan		●		▲ ■ ● +	●	
	Review of codes and ordinances to remove barriers to developing Green Infrastructure		●		▲ ■	●	
	Supplemental bacteroides sampling at outfalls in sewersheds determined to have significant human contributions of bacteria (MMSD and GLWI data)		●		●	●	
	Implementation of urban practices to reduce phosphorus in runoff	●			▲ ■	●	
Six Minimum Control Measures under NR 216		▲ Sediment ■ Phosphorus ● Bacteria + Chlorides					

Part V. Schedule

Location in Permit	Permit Requirement	Due Date
Part II. A	Joint public education and outreach program report	March 31st of each year
Part II. E	Analysis procedure for identifying outfalls likely to be discharging sanitary wastewater	March 31, 2014. Implement within 6 months of receiving Department approval.
Part III. B	Update local construction site pollutant control (erosion control) ordinance	December 1, 2013 Adopt by April 1, 2014
Part III. C	Update local post-construction storm water management ordinance	December 1, 2013 Adopt by April 1, 2014
Part III. F	Storm water management plan to meet developed urban area performance standard (20% TSS reduction)	December 1, 2013
Part III. G	Update storm sewer system map (if applicable)	March 31st of each year
Part III. H	Annual Report	March 31st of each year (or March 31 st of 2 nd and 4 th year permit term for biannual reporting)
Part V.	Watershed Project Proposal	
Part V. B	Watershed project evaluations	Updates submitted with annual report March 31st of each year
Part V.	Watershed Project Completion	

Appendix A

HUY 5 1% IMPAIRED WATERS WITHIN THE MENOMONEE RIVER WATERSHED: 2012

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Butler Ditch	Recreational restrictions-pathogens	0-2.9	Fecal coliform bacteria	2010
Goldendale Creek	Recreational restrictions-pathogens	0-3.5	Fecal coliform bacteria	2010
Honey Creek	Degraded biological community	0-8.96	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-10	Fecal coliform bacteria	2010
Lilly Creek	Recreational restrictions-pathogens	0-4.7	Fecal coliform bacteria	2010
Little Menomonee Creek	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	2010
Little Menomonee River	Chronic aquatic toxicity	0-9	Creosote	1998
	Degraded biological community	0-9	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-3.9	Fecal coliform bacteria	2010
Menomonee River	Low dissolved oxygen	0-2.67	Total phosphorus	1998
	Chronic aquatic toxicity	0-2.67	Unspecified metals	1998
	Contaminated fish tissue	0-2.67	PCBs	1998
	Recreational restrictions-pathogens	0-2.67	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-2.67	Fecal coliform bacteria	2010
	Recreational restrictions-pathogens	2.67-6.27	Fecal coliform bacteria	2010
Nor-X-Way Channel	Recreational restrictions-pathogens	0-4.9	Fecal coliform bacteria	2010
South Branch Underwood Creek	Degraded biological community	0-1	Total phosphorus	Proposed 2012
Underwood Creek	Degraded biological community	0-2.84	Total phosphorus	Proposed 2012
	Degraded biological community	2.84-8.54	Unknown pollutant	Proposed 2012
	Recreational restrictions-pathogens	0-8.54	Fecal coliform bacteria	2010
West Branch Menomonee River	Recreational restrictions-pathogens	0-2.45	Fecal coliform bacteria	2010
Willow Creek	Recreational restrictions-pathogens	0-2.8	Fecal coliform bacteria	2010

Source: Wisconsin Department of Natural Resources

Table A-2

**IMPAIRED WATERS IN MENOMONEE RIVER WATERSHED MUNICIPALITIES
LOCATED IN WATERSHEDS ADJACENT TO THE MENOMONEE RIVER WATERSHED: 2012**

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Fox River Watershed				
Deer Creek	Degraded habitat	0-8.09	Elevated water temperature	2008
	Degraded habitat	0-8.09	Sediment/total suspended solids	2008
	Excess algal growth	0-8.09	Total phosphorus	1998
Fox River	Contaminated fish tissue	151.34-196.64	PCBs	1998
	Contaminated fish tissue	151.34-180.1	PCBs	1998
	Contaminated fish tissue	175.32-176.13	Mercury	1998
	Degraded biological community	113.24-151.34	Total phosphorus	Proposed 2012
	Degraded habitat	171.45-175.32	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Sediment/total suspended solids	1998
	Low dissolved oxygen	176.13-187.16	Total phosphorus	1998
	Low dissolved oxygen	171.45-175.32	Total phosphorus	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Sediment/total suspended solids	1998
	Low dissolved oxygen/turbidity	175.32-176.13	Total phosphorus	1998
Lannon Creek	Degraded habitat	0-5.48	Sediment/total suspended solids	1998
Master Disposal Drainage Channel	Chronic aquatic toxicity	0-.99	Unknown pollutant	1998
Poplar Creek	Low dissolved oxygen	0-8.06	Unknown pollutant	1998
Kinnickinnic River Watershed				
Cherokee Creek	Recreational restrictions-pathogens	0-1.6	Fecal coliform bacteria	2010
Holmes Avenue Creek	Recreational restrictions-pathogens	0-1.8	Fecal coliform bacteria	2010
Kinnickinnic River	Low dissolved oxygen	0-2.83	Total phosphorus	1998
	Contaminated fish tissue	0-2.83	PCBs	1998
	Chronic aquatic toxicity	0-2.83	Metals	1998
	Degraded biological community	2.84-9.94	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-2.83	<i>Escherichia coli</i>	1998
	Recreational restrictions-pathogens	0-9.61	Fecal coliform bacteria	2010
Lyons Park Creek	Recreational restrictions-pathogens	0-1.5	Fecal coliform bacteria	2010
South 43rd Street Ditch	Degraded biological community	0-1.16	Total phosphorus	Proposed 2012
	Recreational restrictions-pathogens	0-1.16	Fecal coliform bacteria	2010

Table A-2 (continued)

Stream	Impairment	Extent (river mile)	Contributing Pollutants	Listing Date
Kinnickinnic River Watershed (continued)				
Villa Mann Creek	Recreational restrictions-pathogens	0-1.2	Fecal coliform bacteria	2010
Wilson Park Creek	Recreational restrictions-pathogens	0-5.5	Fecal coliform bacteria	2010
Milwaukee River Watershed				
Beaver Creek	Chronic aquatic toxicity	0-2.69	Unknown pollutant	1998
Lincoln Creek	Chronic aquatic toxicity	0-9.0	Unspecified metals	1998
	Chronic aquatic toxicity	0-9.0	PAHs	1998
	Degraded biological community	0-9.7	Total phosphorus	Proposed 2012
	Degraded habitat	8.5-9.0	Sediment/total suspended solids	1998
	Elevated water temperature-degraded habitat	0-8.5	Sediment/total suspended solids	1998
	Low dissolved oxygen	0-9.0	Total phosphorus	1998
Milwaukee River	Contaminated fish tissue/contaminated sediment	0-2.9	PCBs	1998
	Contaminated fish tissue	2.9-19.35	PCBs	1998
	Contaminated sediment	0-2.9	Unspecified metals	1998
	Low dissolved oxygen	0-2.9	Total phosphorus	1998
	Recreational restrictions-pathogens	0-19.35	<i>Escherichia coli</i>	1998
Oak Creek				
Oak Creek	Chronic aquatic toxicity	0-13.32	Unknown pollutant	1998
	Degraded biological community	0-13.32	Total phosphorus	Proposed 2012
Root River Watershed				
Root River	Low dissolved oxygen	20.48-43.95	Sediment/total suspended solids	1998
	Low dissolved oxygen	20.48-43.95	Total phosphorus	1998

Source: Wisconsin Department of Natural Resources.

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Appendix M

FACT SHEET FOR LOCAL ELECTED OFFICIALS

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Fact Sheet: Menomonee River Watershed-Based Stormwater Permit: ***Cost-effectively achieving cleaner water***

Federal and state rules require municipalities to comply with stormwater permits in order to reduce water pollution. In the past, municipalities often worked separately to meet permit requirements. A new approach creates the opportunity to achieve large water quality benefits in a more cost-effective way.

Building from an Existing Group

Eight Menomonee River watershed municipalities are currently participating in a group stormwater permit and the remaining municipalities have individual permits. As an alternative to the current group and individual permits, municipalities and key partners in the Menomonee River watershed are developing a regional stormwater permit for the entire watershed, linking governments together in an approach that more effectively targets specific water quality problems in the region. This new approach is supported by the EPA as a model for cost-effective innovation among governmental permit holders.

For municipalities, there are many benefits to participating in a watershed-based permit for the entire Menomonee River watershed, including:

- **Save taxpayer dollars** by sharing costs of regional pollution control measures that improve water quality and satisfy permit conditions for all participating municipalities, eliminating overlap of local governments in water quality efforts, and saving staff hours by issuing a single watershed-based report on public education and outreach.
- **Gain greater flexibility in achieving new Total Maximum Daily Load (TMDL) mandated pollution reduction requirements** through collaboration with neighboring municipal partners, without being restricted to pollutant trading guidelines which can place limitations on time, locations of best management practices, and accounting (trade ratios). Participating in joint permits gives governments the flexibility to meet the standards set in the new TMDLs collectively by treating the permit group as a single point source.
- **Improve water quality**, as joint permits can more effectively reduce stormwater pollution by ending the piecemeal approach to stormwater control and allowing all stakeholders in a watershed to share ideas and information.
- **Improve chances of winning grants** through collaborative projects, which are typically looked on more favorably by both public and private funders. Group permit holders will possibly receive additional points on Urban Nonpoint Source and Storm Water Management grant applications to the Wisconsin DNR.

Bottom Line: Participating in a watershed-based permit allows municipalities to more efficiently and cost-effectively achieve reductions in water pollution.

For more information, please contact Wisconsin DNR Water Resources Engineer Bryan Hartsook at 262-574-2129 or at Bryan.Hartsook@wisconsin.gov

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Appendix N

INCENTIVES FOR MS4s TO PARTICIPATE IN A WATERSHED-BASED PERMIT

Watershed-Based Permit Incentive	Watershed-Based Approach		Traditional Approaches	
	Reduced Costs	Increased Effectiveness of Water Quality Improvement	Also Available under Group Permit?	Also Available under Individual Permit?
Ability to undertake collaborative watershed projects that could meet multiple individual and group permit conditions	Y	Y	N	N
Flexibility in addressing TMDL WLAs in multiple-municipality stream reaches, including developing experience in collaborating on the implementation of new types of pollution controls	Y	Y	Y	N
Development of a joint analysis procedure for prioritizing and targeting outfalls for IDDE monitoring	Y	Y	N	N
Joint report on public education and outreach	Y	Y	N	N
Options for cooperative public education and outreach	Y	Y	Y	Y
Can address reductions in pollutant loads at watershed level without executing water quality trades				
TSS	Y	Y	Y	N
Phosphorus	Y	Y	N	N
Bacteria	Y	Y	N	N
Not subject to trading ratios	Y	Y	Y/N ^a	N
Possibility of receiving substantive additional points on State Urban Nonpoint Source and Storm Water Management Grants	Y	Y	N	N
Grant applications for collaborative projects undertaken by members of a watershed-based permit may be assigned higher priorities by public and private grant institutions	Y	Y	N	N
Reduction in transaction costs	Y	Y	N	N

^aThis is available under the group permit for TSS but not for phosphorus or bacteria.

Source: SEWRPC.

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Appendix O

OUR WATERS NEWSLETTER

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OUR WATERS

The waters of Southeastern Wisconsin are vast but vulnerable. We depend on our waters for drinking water, irrigation, industry, transportation, power production, recreation and scenic beauty. Understanding our region's water-related issues and future challenges can help us protect clean, abundant water for generations to come.

Southeast Wisconsin and Watershed-Based Permitting

By Nancy Frank, University of Wisconsin – Milwaukee, and Sahana Goswami, University of Wisconsin – Milwaukee

Watershed Approach

Every stream, lake, and pond is part of a watershed—the area of land that drains to a body of water. Within the watershed, the land and water are intimately connected. Upstream waters flow downstream. Surface water seeps through the soil and becomes groundwater. And groundwater flows into streams, creating the baseflow that keeps the stream flowing even in dry weather. It is all connected.

These connections pose a challenge for managing waters affected by human activities, but they also pose opportunities. The challenge is that pollutants discharged onto the land move toward streams and can pollute streams even when the discharge is far from the body of water. Upstream activities can stress water quality in downstream reaches. This becomes even more challenging because as water moves—downhill across the land, downstream, and downward into the ground—it often crosses multiple government boundaries (see Figure 3 on page 3).

A watershed approach to managing water resources recognizes these connections, overcoming the challenges and creating opportunities to work across government boundaries. Achieving clean water is easier when polluters work together rather than each acting independently, without paying attention to the connections.

In the last decade, the US Environmental Protection Agency (EPA) has developed guidance to promote a watershed approach in water resources planning and management. One tool for undertaking a watershed approach is watershed-based permitting.

Watershed-Based Permitting

Water discharge permits (known as WPDES permits in Wisconsin) can be issued in several ways. Traditionally, single permits were issued to each individual discharger. This could be a traditional point source, like a municipal wastewater treatment plant or a factory, or a collection of point sources, like a municipal storm sewer system (MS4).

A second approach combines the individual discharges into a group permit. Eight municipalities in the Menomonee River watershed have operated under a group stormwater discharge permit since 2007. Unlike an individual permit, the group permit promotes collective action among the eight municipalities, but still leaves the responsibility of complying with the permit to each individual discharger. This limits the extent of collaboration because the shared accountability is limited to planning and information sharing. Implementation is still carried out individually.

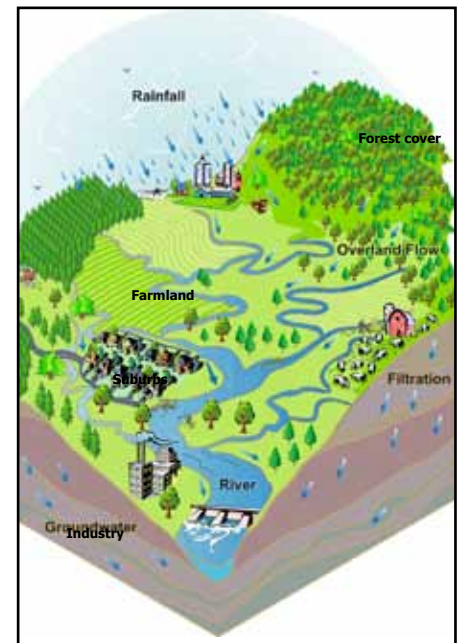


Figure 1. Watershed: activities and impacts

All connected surface waters that flow towards a single geographic point define a watershed. The boundaries of watersheds are high points like hills, ridges or mountains. Pollutants entering the water upstream can impact downstream reaches.

Southeast Wisconsin and Watershed Based Permitting

A third approach is a watershed-based permit, in which a single permit is issued to a group of dischargers within a watershed and allows “several point sources within a watershed to apply for and obtain coverage under the same permit” (U.S. EPA, 2003a, p. 1). Unlike the group permit, the watershed-based permit treats the individual discharges as one integrated source, which allows most permit conditions to be implemented anywhere in the watershed.

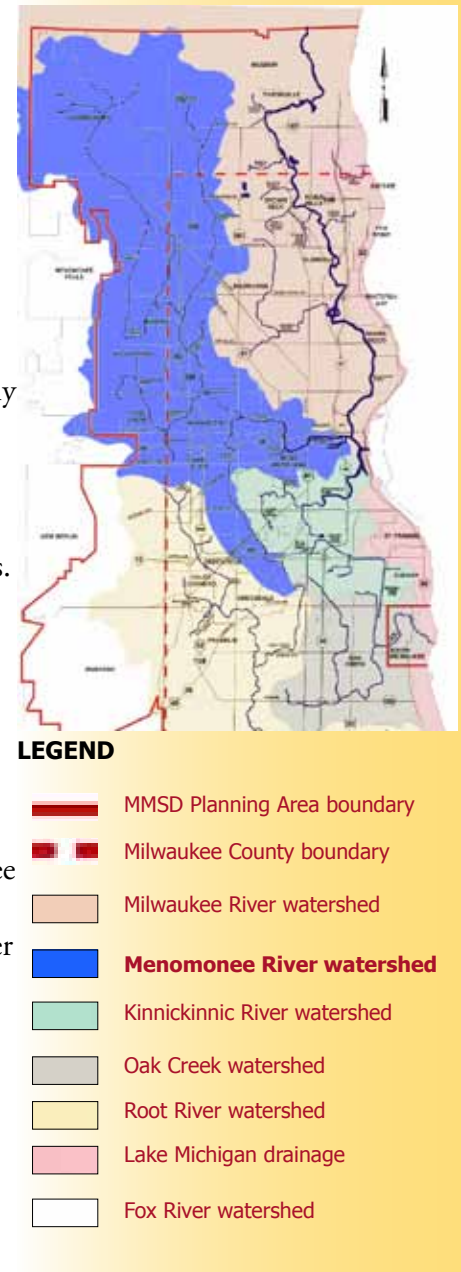
The watershed approach involves developing requirements that are specific to the particular conditions in the watershed. WPDES permits developed using a watershed approach will not look the same in any two watersheds. Because the permit is tailored to the watershed conditions, implementation funds can be targeted more specifically on the critical areas in that watershed. By targeting the specific challenges within a watershed, improvement may be achievable at lower cost than under a regulatory structure that does not directly recognize the inter-relationships within a watershed.

A Watershed-Based Permit in Southeast Wisconsin

An important first step in adopting a watershed approach to improving water quality is developing a plan to make recommendations and set priorities. This task was accomplished in 2007 when the Southeastern Wisconsin Regional Planning Commission (SEWRPC) published a regional water quality management plan for the greater Milwaukee watersheds and when the Milwaukee Metropolitan Sewerage District (MMSD) issued its 2020 facilities plan. The coordinated effort that produced those plans was called the Water Quality Initiative. It showed that urban stormwater was a major source of pollutants in the watersheds, including the Menomonee.

Now, ten municipalities in the Menomonee River watershed and Milwaukee County have agreed to participate in a watershed-based permit covering stormwater issues. The DNR issued the watershed-based permit on November 30, 2012. Development of the framework and specific language for the permit was carried out by SEWRPC in coordination with the municipalities and county. This work was supported by MMSD in coordination with the Southeastern Wisconsin Watersheds Trust, Inc. (Sweet Water) and other partners. Together, the partners secured a Great Lakes Restoration Initiative (GLRI) grant to support the watershed-based permit, one of three such pilot efforts in the nation. Figure 4 (on page 4) summarizes the differences between an individual permit, a group permit, and a watershed-based permit.

Figure 2. Greater Milwaukee Area Watersheds to Lake Michigan



Benefits of Watershed-Based Permits

When communities work together on achieving water quality improvements, additional benefits can accrue to both the environment and to communities.

First, communities can save taxpayer dollars by working together within the watershed. Costs can be shared and bigger projects can be undertaken than any individual municipality could afford to do on its own. Costs can also be shared for monitoring, reporting to the DNR, and conducting public education about how citizen action can help to achieve the requirements of the permit.

Second, municipalities get greater flexibility in how they achieve mandated pollutant reductions. Action can be taken in those places where the greatest impact can be achieved for the least cost without going through the regulatory hurdles needed without a watershed-based permit. Through collaboration, communities may be able to find the most cost-effective actions to clean up the whole watershed, rather than focusing only on what is possible

Clean Water Permitting

The EPA, through state water quality programs, sets limits on pollution discharged into streams. To enforce the regulations, permits are approved for industrial facilities, municipal wastewater plants, and stormwater pipes discharging into lakes and streams.

These permits are called National Pollutant Discharge Elimination System (NPDES) permits or, in Wisconsin, **the Wisconsin Pollutant Discharge Elimination System (WPDES) permits**. A permit may set the maximum concentration and total pounds of a pollutant that can be discharged, consistent with state standards for the “in-stream” concentrations of the pollutant. The permits may also establish monitoring requirements, and are reviewed and re-approved at regular intervals by the Wisconsin Department of Natural Resources (WDNR).

Watershed Permit Provisions

Individual Conditions specify the conditions and actions that each individual municipality will need to meet within its municipal boundaries under the watershed-based permit.

Group Conditions specify activities that the watershed-based permittees will undertake collectively, through collaborative planning and implementation throughout the watershed.

within their own political boundaries. For example, together they might develop a procedure to identify those stormwater outfalls that have a high probability of improper connections of sanitary sewer pipes to stormwater pipes. Municipalities might jointly fund a monitoring program that could assist in documenting progress toward achieving water-quality goals. Finally, a watershed approach can also promote ecosystem benefits, such as the creation and protection of fish migration passages or protection of wetlands within the watershed.

In short, by working together, municipalities may be able to achieve additional benefits for the environment without needing to invest additional funds. The “per pound” cost of removing pollutants goes down compared to what could be achieved by each municipality working independently and exclusively within its own boundaries. This is a win-win.

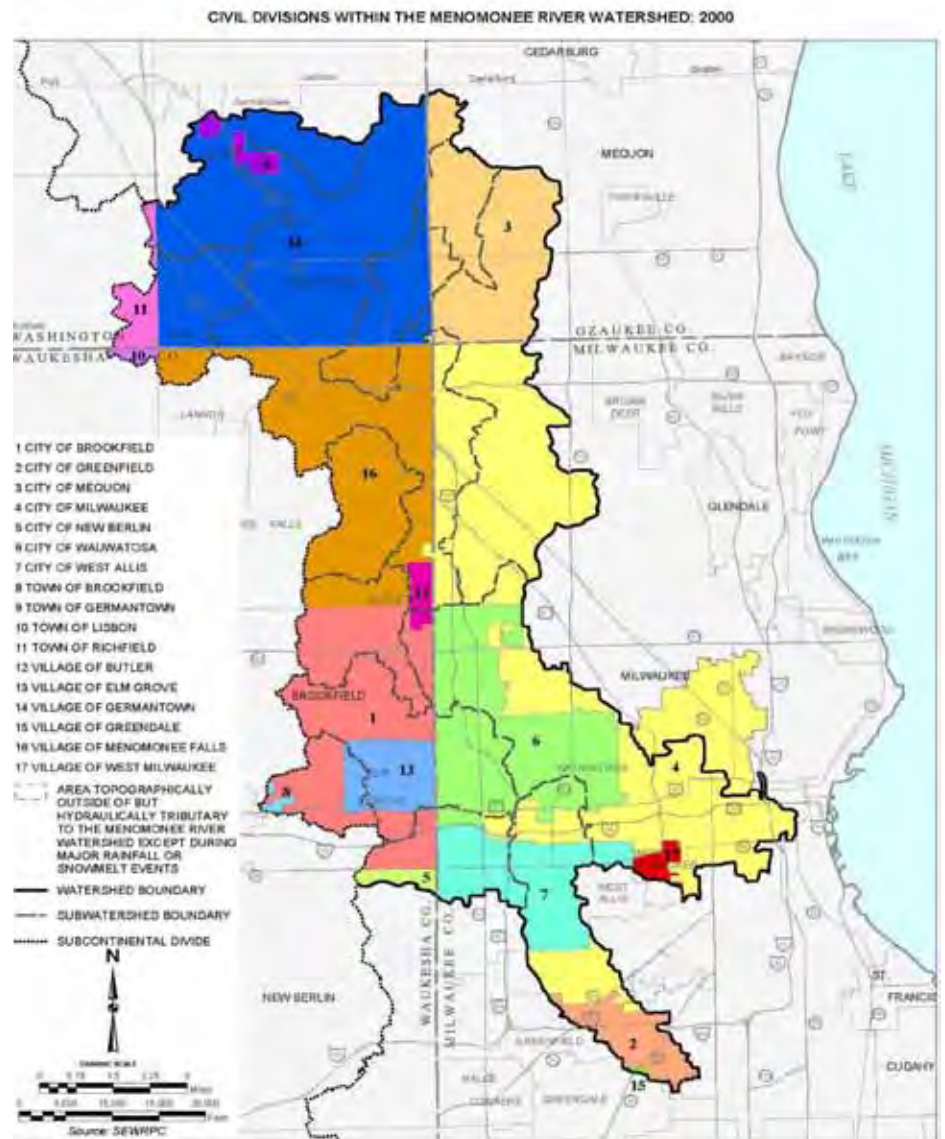


Figure 3. Municipalities lying within the Menomonee River Watershed

Seventeen communities lie within the Menomonee River Watershed. The Menomonee River has its headwaters in Washington County and flows through Waukesha County and Milwaukee County, before eventually merging with the Milwaukee River in the Milwaukee Harbor Estuary.

Southeast Wisconsin and Watershed Based Permitting

Figure 4

Opportunities for Collaboration, Joint Action, and Flexibility	Individual Permit	Group Permit	Watershed-Based Permit
Ability to undertake collaborative watershed projects that could meet multiple individual and group permit conditions	No	No	Yes
Flexibility in addressing TMDL requirements in multiple-municipality stream reaches	No	Yes	Yes
Development of a joint analysis procedure for prioritizing and targeting outfalls for illicit discharge monitoring	No	No	Yes
Options for cooperative public education and outreach	Yes	Yes	Yes
Can address reduction in pollutant loads for total suspended solids (TSS), phosphorus, and bacteria at watershed level without executing water quality trades and without being subject to trading ratios	No	Yes ^a	Yes
Possibility of receiving additional points on State Urban Nonpoint Source and Storm Water management grants	No	No	Yes
Grant applications for collaborative projects undertaken by members of a watershed-based permit may be assigned higher priorities by public and private grant institutions	No	No	Yes
Reduction in transaction costs	No	No	Yes
MS4 with permit renewal data in or after 2013 would gain time to comply with TMDL wasteload allocations	No	No	Yes

^aOnly for TSS.

Source: Appendix L. Prepared by the Menomonee River Watershed-Based Permit Group.

Stormwater Permittees in the Menomonee Watershed-Based Permit

Cities	Villages
Brookfield	Butler
Greenfield	Elm Grove
Milwaukee	Germantown
Wauwatosa	Menomonee Falls
West Allis	West Milwaukee

Milwaukee County

Sources

U.S. EPA, Watershed-Based NPDES Permitting: Rethinking Permitting as Usual, National Service Center for Environmental Publications, 2003a.

U.S. EPA, Watershed-Based National Pollutant Discharge Elimination System (NPDES) Permitting Implementation Guidance, 2003b.

Mehan, Tracy G., The watershed approach and strategies for implementation, Watershed Planning Conference, Milwaukee, 2009.

For a summary of the SEWRPC Regional Water Quality Plan Update, 2007, see also [Inside the Greater Milwaukee Watersheds](#) on the Sweet Water website.

Image Credits

Prairie Rivers Network: Watershed diagram

SEWRPC: Maps of watersheds in southeast Wisconsin region and the Menomonee River watershed

DEFINITIONS

Ecosystem benefits are the resource and economic payback that human beings derive from a flourishing ecosystem. These benefits range from provision of clean drinking water and food, to the natural decomposition of wastes. The notion of ecosystem benefits was formalized by a 2005 report called Millennium Ecosystem Assessment (MEA) released by the United Nations.

Fish migration passages refer to the aquatic paths followed by fish through streams and waterways to spawn, feed, grow and seek refuge from predators—all part of the natural life cycle of various fish species. Progressive human intervention into waterways (building of dams, concrete lining of waterways) have led to increased disruption of these migratory passages and drastically decreased fish species in local waters.

Stormwater refers to all water occurring in natural precipitation events. Stormwater runoff (all the water that does not seep into the ground after a precipitation event) can be a major source of water pollution and is one of the primary issues that planners and engineers must tackle, both in an urban and rural context.

TMDL (Total Maximum Daily Load) is a regulatory term established by the US Clean Water Act of 1972, and it defines the total quantity of pollutant that can enter a stream or water body per day, without deteriorating the water quality or impacting the natural ecosystem of the stream.

Watershed refers to the connected land areas where the surface waters drain toward a single point to merge into another water body. Watersheds are separated by topographic features such as hills or ridges.

Thanks to . . .

The Brico Fund for supporting the preparation of this document.

Michael Hahn (SEWRPC) and Bryan Hartsook (DNR) for reviewing the draft for accuracy.

Appendix P

**PRESENTATION TO MMSD
TECHNICAL ADVISORY TEAM
JULY 19, 2012**

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Watershed-Based Permitting in the Menomonee River Watershed: Status Update

Presentation to MMSD
Technical Advisory Team
July 19, 2012

Michael G. Hahn, P.E., P.H.
SEWRPC Chief Environmental Engineer

Bryan Hartsook, WDNR Water Resources Engineer



205835

Background

- 135 square-mile drainage area
- Four counties
- 17 cities, villages, and towns (16 with MS4 permits)
 - Eight cities and villages have had a group permit since 2007
- Two special units of government

CITIES, VILLAGES, AND TOWNS IN THE MENOMONEE RIVER WATERSHED



Stakeholder Involvement

- Series of working group meetings facilitated by SEWRPC and City of Brookfield
- Municipalities within the watershed
- USEPA
- MMSD, Sweet Water, WDNR, 1000 Friends of Wisconsin, and Midwest Environmental Advocates (MEA)
- Sweet Water and 1000 Friends are handling information and education efforts, including outreach to local officials following completion of the framework.
- MEA is providing advice on legal issues.



Challenges and Issues

- Municipalities straddle multiple watersheds. (Conditions generic enough to meet minimum control measures across entire permitted area, but also specific enough to target watershed concerns)
- Participation in the WBP is voluntary. (Need majority to be effective)
- Need to create incentives that aren't available under existing group permit.
- Tie into future TMDL implementation and pollutant trading



Challenges and Issues

- The critical challenge is how to draft a permit that:
 - Is tailored to watershed conditions and needs,
 - Deals with some key pollutant issues, and
 - Provides features that are beneficial and attractive to MS4 communities

Illicit Discharge Detection and Elimination

- Proposed Watershed-Based Permit (WBP)
 - Flexibility to choose screening parameters, subject to WDNR approval
 - Establishes two outfall categories:
 - Major outfalls: 36-inch diameter and larger
 - Minor outfalls: < 36-inch diameter
 - Allows for consideration of outfall sampling data collected and analyzed by others (MMSD, Milwaukee Riverkeeper, UW-M Great Lakes WATER Institute)
 - Parties to WBP develop an analysis procedure to identify outfalls, regardless of size, that are more likely to be discharging sanitary wastewater

WBP Permit Structure

- Compliance through completion of “watershed projects” was found to be the best approach to date to address critical issues
 - Opens the door for greater flexibility in implementation
 - Provides new opportunities for achieving compliance with six minimum control measures
 - **Lays groundwork for inter-municipal partnerships and project coordination necessary for future TMDL implementation**
 - Adds extra incentive to work with external partners to implement watershed-scale projects identified using existing watershed restoration plans
 - Builds on group permit work from previous permit terms

MS4 Permit Improvements Resulting from the Framework Process

- Clarification of public education and outreach requirements
- Option to submit annual report on a two-year cycle
- Analysis of affordability for provision of 20 percent TSS control
- Illicit discharge detection and elimination (IDDE) program designed to focus efforts on eliminating sources of wastewater contamination to surface waters by targeting end-of-pipe monitoring on locations where contamination is most likely

Incentives for MS4s to Participate in a Watershed-Based Permit

- Ability to undertake collaborative watershed projects that could reduce costs to MS4s and could meet multiple individual and group permit conditions
- Flexibility in addressing total maximum daily load (TMDL) wasteload allocations in multiple-municipality stream reaches. Also, participating MS4s will be able to develop experience in collaborating on the implementation of new types of pollution controls that could be beneficial in meeting future TMDL requirements.
- Development of a joint analysis procedure for prioritizing and targeting outfalls for IDDE monitoring
- Joint report on public education and outreach
- Can address reductions in pollutant loads at a watershed level without executing water quality trades between MS4s and without accounting for trading ratios
- Options for cooperative public education and outreach (also available under a group permit)
- **Possibility** of participant(s) in a watershed-based permit receiving substantive additional points on State Urban Nonpoint Source and Storm Water Management grants
- Grant applications for collaborative projects undertaken by members of a watershed-based permit group may be assigned higher priorities by public and private grant institutions
- Reduction in transaction costs
- MS4 with permit renewal date in 2013 (Cities of Milwaukee and West Allis) would gain time to comply with TMDL wasteload allocations

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Appendix Q

LOCAL ELECTED OFFICIALS PRESENTATION TEMPLATE

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Watershed-Based Permitting in the Menomonee River Watershed

Presentation to

_____, 2012



Background

- Over **50** stream miles of impaired waterways
- 2000 Land Use
 - 64% Urban
 - 36% Rural
- Milwaukee River TMDL Development
 - TSS, TP, Bacteria



Background

- 135 square-mile drainage area
- Four counties
- 17 cities, villages, and towns (16 with MS4 permits)
 - Eight cities and villages have had a group permit since 2007
- Two special units of government

CITIES, VILLAGES, AND
TOWNS IN THE
MENOMONEE RIVER WATERSHED



Background

- \$100,000 EPA Cooperative Agreement Grant managed by MMSD with support by Sweet Water
- MMSD contracted with SEWRPC to work with permitted MS4s in the Menomonee River Watershed to develop watershed-based permitting framework for
- Identified need to integrate permit schedules, collaborate on existing and future projects, and explore opportunities to cost-effectively improve water quality through better-targeted detection and elimination of illicit discharges and through green infrastructure development

Stakeholder Involvement

- Series of working group meetings facilitated by SEWRPC and City of Brookfield
- Municipalities within the watershed that are planning to participate in the watershed-based permit: Milwaukee County, Cities of Brookfield, Greenfield, Milwaukee, Wauwatosa, and West Allis and Villages of Butler, Elm Grove, Germantown, Menomonee Falls, West Milwaukee
- USEPA
- MMSD, Sweet Water, WDNR, 1,000 Friends of Wisconsin, and Midwest Environmental Advocates (MEA)
- Sweet Water and 1000 Friends are handling information and education efforts, including outreach to local officials following completion of the framework.
- MEA is providing advice on legal issues.

Municipalities of the Menomonee River Watershed



Watershed-Based Permit Framework Process

- Work began in July 2011
- Seven group meetings held from August 2011 through July 2012
- Working from existing group permit language.
- Develop framework as a standalone document to as a tool for use in future watershed-based permitting efforts.
- Framework essentially complete and will be finalized after municipalities brief local elected officials.

Watershed-Based Permit Framework Process

- Two main tasks:
 - Document framework process: SEWRPC Memorandum Report :
 - Part 1 - Issue identification and resolution
 - Part 2 – Water quality considerations
 - Develop permit framework:
 - Annotation of current Menomonee River Group SWDP
 - Follow “Multisource Watershed-based Permit” model described in USEPA WBP Technical Guidance
 - General/individual permit hybrid

Challenges and Issues

- Drafted a watershed-based permit that:
 - Is tailored to watershed conditions and needs,
 - Deals with some key pollutant issues, and
 - Provides features that are beneficial and attractive to MS4 communities

WBP Permit Structure

C. WATERSHED-BASED PERMIT STRUCTURE: This permit is a multi-party watershed-based permit, meaning the Menomonee River Watershed Permittees, while being individually responsible for satisfying the permit conditions within their respective MS4 service areas, will also have the option of collaborating on WATERSHED PROJECTS designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River Watershed. The Department will deem a municipality in compliance with any number of permit conditions identified under Sections II and III of this permit for active participation in a watershed project dependent on the scope of work, projected goals, and successful completion of the project. The process for proposing watershed projects is identified under Part IV of the permit.

Implementation of the GROUP CONDITIONS under Section II will be on watershed-based scale while implementation of the INDIVIDUAL CONDITIONS under Section III will be primarily on a municipality-based scale. Should a municipality elect not to participate in the planning, implementation, and evaluation of a watershed project, then it will be responsible for individual compliance with the individual conditions under Section III. A municipality meeting a group condition will be in compliance with the permit even if implementation does not directly address discharges from the municipal separate storm sewer systems for which the municipality is the owner or operator.

WBP Permit Structure

Part II. GROUP CONDITIONS

The Menomonee River Permittees intend to collaborate and satisfy these conditions collectively. This does not prohibit the Menomonee River Permittees from continuing to implement unique programs within their respective jurisdictional municipal boundaries that were developed under previous permit terms.

A. PUBLIC INVOLVEMENT AND PARTICIPATION: The Menomonee River Permittees shall implement a program to notify the public of activities required by this permit and to encourage input and participation from the public regarding these activities. The program shall comply with applicable state and local public notice requirements.

B. PUBLIC EDUCATION AND OUTREACH: The Menomonee River Permittees shall implement a public education and outreach program to increase the awareness of how the combined actions of human behavior influence storm water pollution and its effects on the environment. The public education and outreach program may incorporate cooperative efforts with other entities not regulated by this permit provided a mechanism is developed and implemented to track the results of these cooperative efforts and reported annually.

WBP Permit Structure

Part III. INDIVIDUAL CONDITIONS

The following permit conditions apply to each municipality in the Menomonee River Watershed Permittees:

A. ILLICIT DISCHARGE DETECTION AND ELIMINATION: Each municipality shall develop and implement a program to detect and remove illicit connections and discharges to the municipal separate storm sewer system. Each Municipality's implementation of its program to detect and remove illicit connections and discharges may incorporate cooperative efforts with other MS4 regulated permittees or efforts by other groups or organizations if the shared responsibility is approved by the Department. The program shall include measurable goals and include all of the following:

Part IV. WATERSHED PROJECTS

The Menomonee River Watershed Permittees **have the option of collaborating on joint projects** designed to target specific stakeholders, pollutants, and/or geographic areas or land uses to meet the needs and characteristics of the Menomonee River Watershed. Completion of these projects may satisfy any number of permit conditions identified under Parts II and III of this permit even if the participating municipality is not the owner and operator of the municipal storm sewer discharge directly affected by implementation of the watershed project.

A. PROJECT PROPOSALS: For each watershed project proposed, the participating Menomonee River Watershed Permittees **shall submit the following items to the Department for review and approval prior to implementation:**

1. A project description including the scope, project budget and potential funding source(s), project schedule, anticipated water quality benefits from the project, **and a description of how the project will satisfy compliance with other permit conditions.**
2. If applicable, a scientifically credible method estimating pollutant reductions that will be achieved.
3. Signed letters of support and/or all inter-municipal agreements identifying participation in the project.

Note: Existing watershed restoration plans have been developed by Watershed Action Teams (WATs) in cooperation with Southeastern Wisconsin Watersheds Trust, Inc. (SWWT) that identify priority project lists for implementation in the Menomonee River Watershed. Watershed data and recommendations from SEWRPC's Regional Water Quality Management Plan Update for the Milwaukee River Watershed as well as stakeholder involvement were used to develop the WAT plans. The Menomonee River Watershed Restoration plan can be accessed at <http://www.swwtwater.org/home/publications.cfm>

WBP Permit Structure

- Compliance through completion of “watershed projects” was found to be the best approach to date to address critical issues
 - Opens the door for greater flexibility in implementation
 - Provides new opportunities for achieving compliance with six minimum control measures
 - **Lays groundwork for inter-municipal partnerships and project coordination necessary for future TMDL implementation**
 - Adds extra incentive to work with external partners to implement watershed-scale projects identified using existing Menomonee River watershed restoration plan
 - Builds on group permit work from previous permit term

MS4 Permit Improvements Resulting from the Framework Process

- Clarification of public education and outreach requirements
- Option to submit annual report on a two-year cycle
- Analysis of affordability of meeting regulatory requirement to reduce total suspended solids loads by 20 percent
- Illicit discharge detection and elimination (IDDE) program focused on eliminating sources of wastewater contamination to surface waters by targeting monitoring to storm sewer outfalls where contamination is most likely

Incentives for MS4s to Participate in a Watershed-Based Permit

- Ability to undertake collaborative watershed projects that could reduce costs to MS4s and could meet multiple individual and group permit conditions
- Flexibility in addressing total maximum daily load (TMDL) wasteload allocations in multiple-municipality stream reaches. Also, participating MS4s will be able to develop experience in collaborating on the implementation of new types of pollution controls that could be beneficial in meeting future TMDL requirements.
- Development of a joint analysis procedure for prioritizing and targeting outfalls for IDDE monitoring
- Joint report on public education and outreach
- Can address reductions in pollutant loads at a watershed level without executing water quality trades between MS4s and without accounting for trading ratios
- Options for cooperative public education and outreach (also available under a group permit)
- **Possibility** of participant(s) in a watershed-based permit receiving substantive additional points on State Urban Nonpoint Source and Storm Water Management grants
- Grant applications for collaborative projects undertaken by members of a watershed-based permit group may be assigned higher priorities by public and private grant institutions
- Reduction in transaction costs

Appendix R

SAMPLE WDNR LETTER REGARDING MS4 REVIEW OF DRAFT WATERSHED-BASED PERMIT

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September 19, 2012

Mr. Timothy J. Thur, Chief Sewer Design Manager
City of Milwaukee Department of Public Works
841 North Broadway St.
Milwaukee, WI 53202

Subject: Menomonee River Watershed-Based Permit Participation

Dear Mr. Thur:

This letter is being sent to all communities currently regulated under a Municipal Separate Storm Sewer System (MS4) discharge permit lying wholly or partially within the Menomonee River watershed.

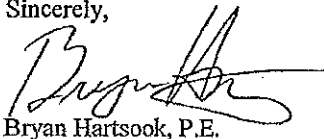
Just over a year ago, the Milwaukee Metropolitan Sewerage District (MMSD) was awarded a \$100,000 Cooperative Agreement Grant from EPA to fund the development of a watershed-based permit framework for the Menomonee River watershed. Since then, a series of working group meetings were held including staff and representatives from MS4s in the watershed, non-governmental organizations, the Department of Natural Resources (Department), the Environmental Protection Agency, MMSD, and Southeastern Wisconsin Regional Planning Commission (SEWRPC). This collaborative effort resulted in the drafting of the Menomonee River Watershed-Based Permit which presents a unique, flexible approach to implementing municipal storm water runoff permit requirements to meet targeted water quality goals.

Involvement throughout this process was kept voluntary, and as such, we have yet to identify a listing of municipalities to be regulated as co-permittees under this permit. At this time, we are requesting that you review the enclosed draft permit and fact sheet and indicate your participation by written response to this letter by October 12, 2012, or as soon as necessary board review and approvals are able to be obtained.

The draft permit and accompanying fact sheet are currently being reviewed by DNR and EPA staff. We anticipate that this review process will be concluded by October 12, 2012, with a formal 30-day public comment period to start soon thereafter. Ultimately, we would like to have the permit issued by the end of November 2012.

Thank you for your time and consideration in this matter. If you have any questions, then please feel free to contact me by phone at (262) 574-2129 or by email at Bryan.Hartsook@wisconsin.gov.

Sincerely,



Bryan Hartsook, P.E.

Cc: Sharon Gayan – WDNR
Lloyd Eagan – WDNR
Mike Hahn – SEWRPC
Kevin Shafer – MMSD

Encl: DRAFT Menomonee River Watershed-Based Permit
DRAFT Menomonee River Watershed-Based Permit Fact Sheet

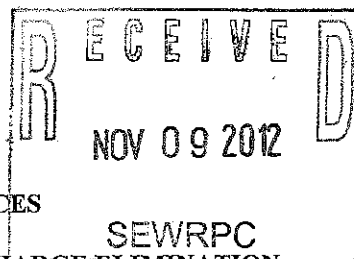
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Appendix S

WDNR-ISSUED PUBLIC NOTICE

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STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES



**NOTICE OF INTENT TO ISSUE WISCONSIN POLLUTANT DISCHARGE ELIMINATION
SYSTEM (WPDES) MUNICIPAL STORM WATER DISCHARGE PERMIT NO. WI-S050156-1**

The City of Brookfield, Village of Butler, Village of Elm Grove, Village of Germantown, City of Greenfield, Village of Menomonee Falls, City of Mequon, City of Milwaukee, Milwaukee County, City of West Allis, Village of West Milwaukee, and City of Wauwatosa all own and operate municipal separate storm sewer systems that discharge to surface waters within the Menomonee River watershed and in the adjacent watersheds of the Fox River, Cedar Creek, Kinnickinnic River, Root River, Milwaukee River, and Lake Michigan. Discharges from their municipal separate storm sewer systems include runoff from rain events, snow and ice melt, discharges from other WPDES permittees, spills and fluids from illicit connections or activities. Pollutants of concern in discharges from a municipal separate storm sewer system include, but are not limited to, organic materials, suspended solids, metals, nutrients, bacteria, pesticides, fertilizer, and traces of toxic materials.

Municipal Permittees:

City of Brookfield 2000 Calhoun Road Brookfield, WI 53005	City of Greenfield 4551 S. 52 nd Street Greenfield, WI 53220	Milwaukee County 2711 W. Wells Street, Room 216 Milwaukee, WI 53208
Village of Butler 12621 W. Hampton Avenue Butler, WI 53007	Village of Menomonee Falls W156 N 8480 Pilgrim Road Menomonee Falls, WI 53051	City of West Allis 7525 W. Greenfield Avenue West Allis, WI 53214
Village of Elm Grove 13600 Juneau Boulevard Elm Grove, WI 53122	City of Mequon 11333 N. Cedarburg Road Mequon, WI 53092	Village of West Milwaukee 4517 W. Beloit Road West Milwaukee, WI 53214
Village of Germantown P.O. Box 337 Germantown, WI 53022	City of Milwaukee 841 N. Broadway Street Milwaukee, WI 53202	City of Wauwatosa 7725 W. North Avenue Wauwatosa, WI 53213

Discharge Location: From the municipal separate storm sewer systems of the City of Brookfield, Village of Butler, Village of Elm Grove, Village of Germantown, City of Greenfield, Village of Menomonee Falls, City of Mequon, City of Milwaukee, Milwaukee County, City of West Allis, Village of West Milwaukee, and City of Wauwatosa.

Receiving Watersheds: Menomonee River, Fox River Cedar Creek, Root River, Milwaukee River, and Lake Michigan.

Preliminary Determination: The Department has tentatively decided to issue a watershed-based WPDES municipal storm water discharge permit for the City of Brookfield, Village of Butler, Village of Elm Grove, Village of Germantown, City of Greenfield, Village of Menomonee Falls, City of Mequon, City of Milwaukee, Milwaukee County, City of West Allis, Village of West Milwaukee, and City of Wauwatosa. Appropriate special conditions are included in the proposed permit in accordance with ch. 283, Wis. Stats., and ch. NR 216, Wis. Adm. Code, which regulate storm water discharges. This permit will continue to regulate the discharge of storm water from their municipal separate storm sewer systems as required by s. NR 216.07, Wis. Adm. Code. Permit requirements are intended to reduce the amount of pollutants entering storm water runoff or otherwise entering the storm sewer systems. Pollution prevention efforts are emphasized and preferred over runoff treatment. Major components of the permit include a storm water management program to address pollutant sources, public education and outreach, ordinance enforcement,

905 20 100

and an annual report to summarize and assess compliance with permit requirements. Implementation of the permit conditions are intended to be focused on the Menomonee River watershed.

Proposed Permit Expiration Date: November 30, 2017

Permit Drafter: Bryan Hartsook, Waukesha Service Center, Department of Natural Resources, 141 NW Barstow St., Room 180, Waukesha, WI 53188. (262) 574-2129. bryan.hartsook@wisconsin.gov.

NOTICE IS HEREBY GIVEN that, pursuant to s. 283.39, Wis. Stats., and s. NR 203.02, Wis. Adm. Code, persons wishing to comment on or object to the application or proposed permit may write to the Permit Drafter. All written comments or suggestions received no later than 30 days after the publication date of this notice will be considered along with other information on file in making a final decision regarding the permit. The U.S. Environmental Protection Agency is allowed up to 90 days to submit comments or objections regarding this permit issuance.

A public informational hearing may be held pursuant to ch. 283, Wis. Stats., if response to this notice indicates significant public interest, or if a petition requesting a hearing is received no later than 30 days after the publication date of this notice from 5 or more persons. Requests for a public informational hearing should state the following: the name and address of the person(s) requesting the hearing; the interest in the proposed permit of the person(s) requesting the hearing; the reasons for the request; and the issues proposed to be considered at the hearing.

Additional Information; Fact Sheet: Information on file for this application and proposed permit may be inspected and copied Monday through Friday (except legal holidays) between 9:00 a.m. and 3:30 p.m. at the Department's Waukesha Service Center located at 141 NW Barstow St., Room 180, Waukesha, WI 53188. A Fact Sheet and other information on this permit may also be obtained by calling Bryan Hartsook at (262) 574-2129, or by writing to the Department at the Waukesha Service Center address. Reasonable costs will be charged for copies of documents in the file other than this notice and the Fact Sheet. Information is also available on the internet at: <http://dnr.wi.gov/topic/wastewater/PublicNotices.html> and <http://dnr.wi.gov/topic/stormwater/municipal/>. Pursuant to the Americans with Disabilities Act, reasonable accommodation, including the provision of informational material in an alternative format, will be made available to qualified individuals upon request.

Publishing Newspaper: Milwaukee Journal Sentinel, PO Box 661, Milwaukee, WI 53201-0661
Issued: October 30, 2012

Appendix T

**MENOMONEE RIVER WATERSHED-BASED PERMIT
RECOGNITION EVENT PRESS RELEASE
12-18-2012**

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Municipalities Honored for First-of-its-Kind Effort to Clean Up Menomonee River

Work marks new era in fight to clean up area rivers

For Immediate Release: December 18, 2012

Contact: Jeff Martinka, Sweet Water, 414-477-1156

STEERING COUNCIL

Nancy Frank, *Chair*
University Of Wisconsin-Milwaukee

Tom Grisa, P.E., *Vice Chair*
City of Brookfield

David Lee, P.E., *Secretary, Treasurer*
We Energies

Preston Cole
City of Milwaukee

Sharon Gayan, Wisconsin Department of
Natural Resources (non-voting advisor)

Susan Greenfield
Root-Pike Watershed Initiative Network

Michael G. Hahn, P.E., P.H.
Southeastern Wisconsin Regional
Planning Commission

Andy Holschbach
Ozaukee County

J. Scott Mathie
Metropolitan Builders Association

Peter McAvoy
UWM School of Freshwater Sciences

Neil Palmer
Village of Elm Grove

Karen Schapiro
Milwaukee Riverkeeper

Kevin Shafer, P.E.
Milwaukee Metropolitan Sewerage District

Dan Stoffel
Washington County

Brett Wallace, P.E.
Wisconsin Department of Transportation

STAFF

Jeff Martinka, Executive Director

600 East Greenfield Avenue
Milwaukee, WI 53204-2944

(414) 382-1766

www.sweetwater.org

MILWAUKEE – The Southeastern Wisconsin Watershed Trust honored 11 municipalities today for their work to improve water quality in the Menomonee River by formally adopting Wisconsin's first watershed-based stormwater permit.

"Today is a day to celebrate the work of 11 municipalities who are making history by joining together in the fight to clean up the Menomonee River," said Nancy Frank, Chair of Sweet Water - the Southeastern Wisconsin Watershed Trust, Inc. "For decades our permitting system has been limited by arbitrary political boundaries. By adopting Wisconsin's first watershed-based permit, these communities will not only improve the quality of the Menomonee River, but also set an innovative model for communities across our state."

According to Eric Nitschke, Southeast Region Director of the WDNR, "A watershed-based permit offers a promising geographically-based approach for permitting discharges of storm. We hope that our support of this successful pilot project, one of just three in the country, offers new cost-effective water quality alternatives for Menomonee River communities."

The Clean Water Act requires municipalities to operate with a stormwater permit, a document approved by the Department of Natural Resources (DNR) that creates a plan for reducing pollution running off of city streets and urban areas during rain events. As opposed to the traditional permit system where each municipality works alone to reduce pollution, a watershed-based permit allows communities to work together and pool resources to more cost-effectively reduce pollution.

Joyce Foundation Program Officer Molly Flanagan said the partnership affirms the Foundation's commitment to watershed protection work in the Milwaukee area. "We applaud these 11 local governments for taking this key step forward and look forward to their continued success," said Flanagan. "We believe that lessons learned in the Menomonee River watershed could be applied to efforts to protect and restore waters throughout the Great Lakes and the nation."

Representatives from the 11 municipalities joined the DNR, Joyce Foundation, Milwaukee Metropolitan Sewerage District (MMSD), Sweet

Water, the Southeastern Wisconsin Regional Planning Commission, and other supporters at MMSD headquarters in Milwaukee this morning to celebrate the accomplishment.

“By signing onto the watershed-based permit, we’re confident that we can improve water quality in the Menomonee River and help save taxpayer dollars by reducing costs,” said City of Brookfield Public Works Director Tom Grisa. “It’s a win-win.”

Sweet Water, the Southeastern Wisconsin Watersheds Trust, Inc., is a unique partnership established in 2008 to achieve healthy and sustainable water resources throughout the 1,100 square mile Greater Milwaukee watersheds through coordinated, collaborative efforts. Its partners include independent units of government, special purpose districts, non-profit organizations, local residents and representatives of business and academia, all sharing common goals for our shared waters. Sweet Water partners have unified to address the issues facing our rivers and Lake Michigan through a basin-wide approach, an approach exactly like that proposed to the EPA in this project.

For more information on Sweet Water, visit www.swwtwater.org or contact Jeff Martinka, Executive Director, at 414-382-1766 or via martinka@swwtwater.org.

###

Appendix U

**MENOMONEE RIVER WATERSHED-BASED PERMIT
RECOGNITION EVENT MEDIA NOTICE
12-18-12**

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MEDIA ADVISORY

For Immediate Release:

December 17, 2012

Contact: Jeff Martinka, Sweet Water Executive Director, 414-477-1156

STEERING COUNCIL

Nancy Frank, *Chair*
University Of Wisconsin-Milwaukee

Tom Grisa, P.E., *Vice Chair*
City of Brookfield

David Lee, P.E., *Secretary, Treasurer*
We Energies

Preston Cole
City of Milwaukee

Sharon Gayan, Wisconsin Department of
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Southeastern Wisconsin Regional
Planning Commission

Andy Holschbach
Ozaukee County

J. Scott Mathie
Metropolitan Builders Association

Peter McAvo
UWM School of Freshwater Sciences

Neil Palmer
Village of Elm Grove

Karen Schapiro
Milwaukee Riverkeeper

Kevin Shafer, P.E.
Milwaukee Metropolitan Sewerage District

Dan Stoffel
Washington County

Brett Wallace, P.E.
Wisconsin Department of Transportation

STAFF

Jeff Martinka, Executive Director

600 East Greenfield Avenue
Milwaukee, WI 53204-2944
(414) 382-1766

www.sweetwater.org

MEDIA INVITED TO RECEPTION HONORING FIRST-OF-ITS KIND WORK TO CLEAN UP MENOMONEE RIVER

The media is invited to a reception honoring 11 municipalities for their work to improve water quality in the Menomonee River by formally adopting Wisconsin's first watershed-based stormwater permit. Leaders from the Joyce Foundation, Wisconsin Department of Natural Resources (DNR), Milwaukee Metropolitan Sewerage District (MMSD), Sweet Water, and the Southeastern Wisconsin Regional Planning Commission will gather to recognize this achievement and celebrate the great promise it holds for cleaning up our rivers and Lake Michigan.

When: Tuesday, December 18, at 9 a.m.

Where: Milwaukee Metropolitan Sewerage District Headquarters, 260 W Seeboth St., Milwaukee, WI, 53204.

What: Jeff Martinka and Nancy Frank from Sweet Water will present representatives from the 11 municipalities participating in the watershed-based permit with an award for this first-of-its kind achievement.

Municipalities to receive awards include the cities of Brookfield, Milwaukee, Greenfield and Wauwatosa; the Villages of Butler, Elm Grove, Germantown, West Milwaukee and Menomonee Falls, and Milwaukee County.

Additional remarks will be given by:

- Molly Flanagan, The Joyce Foundation, Chicago, IL
- Eric Nitschke, Southeast Regional Director of the Wisconsin DNR
- Kevin Shafer, Executive Director of MMSD

Visuals: Representatives from municipalities, including several mayors, accepting awards for their work to protect the Menomonee River.

Background: On November 30, Wisconsin's first watershed-based permit officially went into effect for 11 municipalities in the Menomonee River Basin. This innovative approach allows communities to work together and pool resources to more cost-effectively reduce pollution running off of city streets and urban areas. Using this new tool will allow communities to reduce costs, save taxpayer dollars, and improve water quality in the Menomonee River.