

Appendix G Response to Comments:

A public hearing regarding the TMDL was held on November 15, 2016. Written comments were accepted through December 9, 2016. A complete listing of comments received during the public comment period is provided below as well as a response to the comment. Comments have been sorted into topic categories and have been numbered for reference. In most cases, the actual text submitted is used; however, in some cases what was submitted has been shortened to reflect the actual comments.

General Comments:

1. While we are supportive of the TMDLs, we are also concerned about the long-timelines for implementation of wasteload allocations and load allocations, and about some of the parties exempted from receiving load reductions. We recognize that many of the issues raised in these comments could be addressed through development of Implementation Plans that include accountability and adaptability, and that are actively implemented.

In addition, most facilities, with the exception of a few that have easy fixes to meet phosphorus reductions; will have very long compliance schedules of up until 2025 to make technological fixes. This is a prime example of how long compliance schedules eschew the goals of the TMDLs. Without implementing stringent phosphorus load reductions on the POTWs as originally contemplated, it is hard to understand how this TMDL is changing the status quo and achieving water quality standards. (Milwaukee River Keeper)

Response: TMDLs rely on existing regulatory programs for implementation. The time needed to implement individual best management practices or treatment technologies is site-specific and dependent on the methods chosen. For example where wastewater effluent limits are becoming more stringent, compliance schedules are given that set site-specific deadlines for compliance. Compliance schedules are available only to facilities that cannot immediately achieve compliance with a new, more stringent effluent limit. By rule, compliance schedules must be site-specific and lead to compliance as soon as is possible (see s. NR 217.17, Wis. Adm. Code). Phosphorus regulations in ch. NR 217 allow compliance options such as adaptive management and water quality trading, in addition to installing treatment technologies. Extended compliance schedules for phosphorus (those lasting longer than a 5 year permit term) are only available to facilities that must meet extremely low phosphorus limits by installing advanced treatment technologies.

It appears, based on the comment, that there is a belief that further reductions on wastewater sources will have a disproportionate impact on the receiving waters. The TMDL analysis does not support this conclusion. The impact of reductions assigned to POTWs beyond those laid out in the TMDL would be masked by the loads from other sources.

2. When the TMDL was being conceived, there was an underlying assumption that to be able to achieve water quality standards, many POTWs, in particular, would need to have phosphorus load reductions that would exceed the 2010 State approved phosphorus standards. According to the draft TMDL, however, this is not the case. All POTWs will only have to meet state standards and not more stringent standards. (Milwaukee River Keeper)

Response: The TMDL, per both state and federal requirements, is designed to meet water quality standards - including the 2010 approved phosphorus water quality criteria. The TMDL evaluates the allowable load and the sources of pollutants of concern, and then sets allocations based on each source's relative contribution. Effluent limits below water quality criteria are not needed to meet water quality standards.

Water Quality Standards and TMDL Targets:

3. The TMDL used a target of 12 mg/L of TSS to establish goals for wasteload and load allocations, but the current standard for TSS is a narrative, not a numeric, standard. (Milwaukee River Keeper)

Response: The TSS and sedimentation standard contained in NR 102.04(1) is narrative. As explained in the TMDL report, the narrative standard was translated into a numeric target that could be used in the TMDL analysis. DNR worked with USGS to develop a numeric target that could be used in the TMDL analysis. The USGS method is consistent with the breakpoint analysis method used for the development of Wisconsin's phosphorus criteria. See Section 3.2.2 of the TMDL report for additional background on how 12 mg/l was selected as a water quality target.

4. Fecal coliform is a poor indicator. Despite EPA's 2012 Recreational Use Standard Guidance, which encourages states to adopt an E. coli or Enterococcus based recreational use water quality standard, Wisconsin still uses a fecal coliform standard for rivers and an E. coli standard for beaches. Regardless of whether Wisconsin is required to adopt a newer standard in the future, this TMDL should focus on how to best address the impairment, which is the recreational use restriction. It is well-known that human-associated bacteria is more likely to make people sick and causes a more significant public health risk. To achieve removal of the recreational use restriction impairment, we need to rely on indicators such as Bacteroides and Lachnospiracea that have human-specific indicators. (Milwaukee River Keeper)

Response: Allocations were set for fecal coliform or E.coli corresponding with the listed pollutant (see Table 1-1) and existing regulations. TMDL allocations must be developed to meet existing standards and cannot be based on alternative standards until those standards are promulgated. However, the use of other indicators such as human-associated indicator bacteria can be used during implementation of the TMDL to better identify sewage contamination.

Baseline and Reserve Capacity:

5. The Department should use the same basis for baseline load calculations for all point source dischargers. The Department should use the design flow for industrial dischargers, as is used for municipal dischargers. The Department should also use the 1.0 mg/L TP concentration and the 30 mg/L TSS concentration consistently for all point source dischargers covered by individual permits, unless the permit limits are less. Using the average annual flow for industrial dischargers may bias the flow rate based on a number of factors: (1) the operations and discharges at the facility during the three-year period used for the TMDL study may differ from the operations and discharges occurring now at the facility (e.g., if facility expansions or retirements have been completed, if maintenance outages or system shut-downs have occurred, or if economic conditions, which in turn impact facility operations, have shifted); (2) WPDES permits that only require facilities to estimate flow on a quarterly or annual basis have limited data to derive the annual averages; and (3) facilities whose discharge occurs only intermittently will have smaller annual average flows, though the flow on a specified day may be closer to the design flow rate. For example, for We Energies Germantown, the TMDL Study report lists the Outfall 001 design flow rate as 0.005 MGD. Since this outfall discharges intermittently and the WPDES Permit only requires flow to be estimated on a quarterly basis, the annual average flow rate is derived from a limited data set (approximately four estimates per year). We Energies Germantown Outfall 001 discharges effluent from an oil/water separator which has a design flow rate of 0.216 MGD. Thus, the design flow is over 43 times the highest annual average flow used in the TMDL Study to derive baseline loads and wasteload allocations. (We Energies)

Response: The TMDL baseline loads are based on the maximum flow and concentration values used in permits, where applicable. The standard flow values used to set effluent limits in permits are the annual average design flow for municipal WWTPs and the highest average annual flow over three years for non-municipals. Municipal design flows are based on ratings assigned to the treatment works when it is built and are based on the maximum amount of wastewater that can be effectively treated by the system. Industrial facilities often do not have treatment plants in the traditional sense – the type and size of treatment that is needed (if present) is dependent on the type of wastewater being discharged and the pollutants expected to be present. Since the effluent flows typically used to set limits in wastewater permits for industrial facilities are calculated using the highest average annual flow from the last three years of production, this same design flow was used when determining baseline loads for the TMDL.

The concentration values used when setting baseline loads for the TMDL were also based on permitted limitations. Municipal and industrial permittees that discharge above thresholds set in ch. NR 217, Subchapter II, Wis. Adm. Code, must meet a technology-based effluent limit (TBEL) for phosphorus of 1.0 mg/l. Most municipal dischargers also have TBELs of 30 mg/L for TSS. This 30 mg/l limit is a categorical treatment standard for secondary

treatment of municipal wastewater and is not an appropriate TBEL for industry. Because of the differences in waste types and treatment technologies, TBELs for industrial dischargers of TSS vary by category (see chs. NR 220-299, Wis. Adm. Code). Where P and TSS limits were not present in permits (e.g., for permittees that discharge below thresholds set in NR 217 or those that are in discharge categories where TSS TBELs do not apply), TMDL baseline loads were set using actual concentration data for the facility.

6. The TMDL Study report indicates that for dischargers using City of Milwaukee water, a TP concentration of 0.515 mg/L was assumed. However, data from 2011 –2015 water quality reports showed median phosphorus concentrations ranging instead from 0.58 to 0.705 mg/L. The Milwaukee Water Works may also increase its concentration of orthophosphate (phosphoric acid) added to the water supply to reduce the consumer's exposure to lead and copper from building plumbing. We request that, at a minimum, the TP concentration attributed to City of Milwaukee water be updated to 0.705 mg/L, and that additional discussions be held between the Department and the Milwaukee Water Works to determine if the TP concentration needs to be further adjusted upward based on projected rates of phosphoric acid addition. (We Energies)

Response: The concentration of phosphorus used in the TMDL reflects data available during the development of the TMDL. Where available, discharger monitoring data was used. For facilities that did not have discharge monitoring data, a value of 0.515 mg/L was used based on the concentration of phosphorus in the water supply. The Milwaukee Water Utility provided DNR with a conversion factor to convert residual phosphorus in the distribution system from phosphate (PO₄) to phosphorus. While the Milwaukee Water Works may use a higher concentration as an additive, the residual value consistent with a discharge is lower and the TMDL is for phosphorus and not phosphate.

If rates of phosphoric acid addition increase to maintain safe drinking water, reserve capacity could be made available to provide an offset.

7. Table 4-1 – Permitted Point Sources in the Milwaukee River Basin TMDLs. Data entered into Table 4-1 for We Energies facilities was incorrectly calculated and should be corrected. Baseline flow and concentration data entered for We Energies Germantown and Milwaukee Heating Plant facilities should be updated to more accurately depict the design conditions at the facilities. For We Energies Germantown Outfall 001, the baseline flow should be updated to 0.216 MGD, the baseline TP concentration should be updated to 1.0 mg/L, and the baseline TSS concentration should be updated to 30 mg/L. Absent sufficient monitoring data, the technology-based effluent limitation (TBEL) concentrations should be used as the baseline concentrations. Using the updated flow and baseline concentrations, the baseline TP load should be updated to 54.8 lbs/month and the baseline TSS load should be updated to 1644 lbs/month. (We Energies)

Response: See the response to comment #1 above, related to the appropriate flow and concentration values used for industrial discharges.

8. We request that the Department update the baseline flow for We Energies Germantown Outfall 003 to 0.003 MGD and the note on Table 4-1 to match the note specified for Arkema, Inc. We request that the Department update the baseline flow for We Energies Milwaukee Heating Plant outfalls as follows, and work with us to determine the appropriate baseline TP concentrations. The design flow rate for Outfalls 001, 002, and 003 is 0.108 MGD; for Outfall 004 is 0.072 MGD; and for Outfall 006 is 0.1296 MGD. (We Energies)

Response: The We Energies Germantown Outfall 003 has not had any discharge and any potential future discharge from this outfall is unlikely to leave the site as described in the permit. The TMDL and note on Table 4-1 is consistent with the permit. The note used for Arkema, Inc. is not applicable to outfall 003. Arkema's permit regulates a groundwater remediation system and a small amount of cooling water from groundwater. Arkema did not receive an allocation.

The baseline for the Milwaukee Heat Plant Outfalls, flow and concentration, is consistent with the baseline condition for the TMDL which corresponds to the highest 12-month average of actual discharge data collected during the modeled period of 2008 – 2012. If process changes or flows have increased beyond the baseline, reserve capacity can be used to adjust allocations as outlined in Section 6.6 of the report.

9. The UWM-School of Freshwater Sciences, at the Great Lakes WATER Institute, is in the final discussions with the Wisconsin DNR on our WPDES permit renewal (WI-0045942-06-0). Contributing to the permit evaluation and relevant to the TMDL report are the improvements and construction that have occurred since our last permit was issued and that are not reflected in the draft TMDL report. During State funded construction of a major addition to the existing building (DFD project 10E3H) the entire water supply system for fisheries research was upgraded. New dechlorination, heating, and chilling equipment was installed which now has a maximum design limit of 1200 gpm (1.73 MGD). It was anticipated that the new design will accommodate SFS fisheries research growth for 20+ years.

Our current combined discharge flow for outfalls 001 and 002 is around 0.6 MGD, which is less than was projected, partly as result of significant State budget cuts. We do expect our fisheries research to continue to expand, however, and the soon to be completed aquaculture research and training and laboratory (DFD project 14B2Q) will come on line April-May, 2017 and should result in a 50% increase in discharge flow. Thus, we expect our combined discharge flow for outfalls 001, 002, and the new 003 will be around 0.9 MGD. Many of the discussions with the Wisconsin DNR have been related to the ramifications of this additional laboratory discharge on our WPDES permit. In light of the recently completed SFS laboratory addition with the increased flow capacity for fisheries research and the impending completion of the aquaculture research and training laboratory we request that the baseline flow information for the Great Lakes WATER Institute be updated to reflect flows that will be present under the new discharge permit and the design limits for the

system. Adjusting the projected flows will prevent a future need for a written notice of interest for reserve capacity. (University of Wisconsin-Milwaukee School of Freshwater Sciences, Great Lakes WATER Institute)

Response: The additions to the system and fluctuations in flow have been accounted for in the TMDL baseline conditions. For industrial dischargers, actual flow and loading rates were used to reflect current operations. If flows from the facility increase over what was assumed in the TMDL baseline condition, reserve capacity, as outlined in the TMDL, can be requested to offset increases in discharge.

10. It is pertinent to note that we use City of Milwaukee water as the water source for our fisheries research. Based on data supplied as part of our permit renewal in 2013, over 90% of the phosphorus present in our discharge is a result of the phosphorus in the incoming water supply. Absent this contribution, our discharge concentrations would be well below projected limits necessary to meet the draft TMDL limits. Thus, any reduction in phosphorus cannot occur by alteration to our use of the water but would require treatment prior to discharge. (University of Wisconsin-Milwaukee School of Freshwater Sciences, Great Lakes WATER Institute)

Response: The TMDL report acknowledges polyphosphate additives in the City of Milwaukee water supply. The City of Milwaukee adds polyphosphate to the water supply in order to sequester metals in drinking water. Although this is an important additive to protect human health, it is an anthropogenic source of phosphorus that can enter surface water and impact surface water quality. When developing the TMDL, DNR evaluated the existing phosphorus load (which included the contribution of phosphorus from the water supply) and worked to develop a balanced approach that is protective of surface water quality and standards. Facilities are ultimately responsible to control phosphorus within their effluent to ensure compliance with their TMDL-derived limitations. Several compliance alternatives are potentially available including treatment options, alternative water sources, and water quality trading.

11. The Kettle Moraine Springs State Fish Hatchery (WPDES Permit No. WI-0026255) is in planning for a complete rebuild of existing infrastructure (groundbreaking planned for 2018). A Pre-Design Study is being finalized and includes recommendations for a new fish species hatchery aquaculture system, water supply facilities, wastewater treatment facilities, utilities, and buildings. As a result, the anticipated discharge flow rate is to be increased to 2.88 MGD, compared to the 1.2 MGD flow rate currently utilized in the draft Milwaukee River TMDL document. We are requesting that the baseline flow information for outfall 001 be updated with the projected flow rate before the TMDL report is finalized. Updating the flow will accommodate the planned facilities flow rate, will likely prevent the need to submit a written notice of interest for reserve capacity, and will allow for a new or increased wasteload allocation. (MSA Professional Services, Inc.)

Response: As of the drafting of the TMDL, plans for the Kettle Moraine facility have not been finalized. Potential flows for the facility range from potentially below what is assumed in the TMDL to the 2.88 MGD referenced in the comment. Consistent with TMDL development and reserve capacity practices, if the Kettle Moraine Springs Fish Hatchery does expand its discharge flows beyond the baseline assumptions used in the TMDL in the future, the facility can request reserve capacity as outlined in the TMDL.

12. Over the past three years, our team, consisting of individuals from Winrock International, Delta Institute, and Sand County Foundation, have been working on a project that uses field-specific modeling of agricultural practices to estimate phosphorus losses before and after implementation of field management changes. Based on our results of field-scale phosphorus losses, in addition to a review of relevant Wisconsin-specific literature, we are concerned that the data used to develop the TMDL may not be representative of nonpoint source loading from the agricultural sector.

We understand that estimates of P loading from agriculture are the result of different measurement periods, locations, weather variability, and other factors. However, the results of both our work and the work of researchers from USDA ARS and the University of Wisconsin-Madison and Platteville indicates that the baseline for total phosphorus loss from agriculture for the West Branch used in the TMDL (0.32 lbs P/ac/year; 8,864.74 lbs P over an estimated 27,750 agricultural acres in the West Branch) is low. Below is a summary of recent results from our work and from the references listed below:

- The average P loss from 12 farms participating in our project, covering 14% of the agricultural land in the West Branch watershed, is **1.8 lbs P/acre**.
- Whole-farm P loss on grazing dairy farms in WI, estimated using the APLE model, ranged from **1.2-2.4 lbs P/acre** (Vadas, 2014).
- Results of edge-of-field monitoring of winter runoff at Pioneer Farm at the University of Wisconsin-Platteville found a mean annual P loss of **1.5 lbs/acre** (Mentz et al., 2011).
- The median P loss from 86 agricultural site-years in Wisconsin from 2003 - 2008 was **0.8 lbs/acre** with a range of **0-16.9 lbs/acre** (Good et al., 2012).

For the reasons stated above, we respectfully request that the baseline P loss values for agriculture in Wisconsin's TMDL be revised with additional input from researchers and modelers. (Winrock International and Delta Institute)

Response: In the TMDL, both the allocation and baseline conditions listed in the TMDL represent a delivered load to the bottom of each TMDL reachshed. As supported by this comment, loads calculated at the edge of the field will be higher than delivered loads that account for fate and transport mechanisms. The SnapPlus and APLE models do not provide for the delivery to the bottom of the TMDL reachshed. The TMDL was developed with SWAT and HSPF accounting for delivery mechanisms. As indicated in the comment, this does create issues of parity between the loads expressed in the TMDL and the loads that will be

calculated using implementation tools such as SnapPlus. DNR has developed methods to translate TMDL allocations to an edge of field mass expressed in pounds per acre that can be used for assessing implementation of management practices. DNR will work with implementation groups and outline methods in the implementation plan needed to equate allocations and edge of field determinations.

Reserve Capacity and new dischargers:

13. If reserve capacity is used to facilitate a new or increased discharge, then it is a way to again get around the CWA 303d prohibitions. This framework creates a loophole to the 303d prohibitions and will allow for new discharges to impaired waters instead of reducing pollution loads. That is in direct contravention of the intention of the TMDL and the CWA. (Milwaukee River Keeper)

Response: The TMDL allocations are calculated with the inclusion of the reserve capacity ensuring that water quality standards are attained with the use of the reserve capacity. This is consistent with federal requirements:

$$\text{TMDL Allowable Load} = \text{WLA} + \text{LA} + \text{MOS} + \text{RC}$$

Where WLA = wasteload allocation, LA = load allocation, MOS = margin of safety, RC = reserve capacity.

14. According to the Clean Water Act (CWA), there should be no new or increased discharges of pollution into impaired waters or 303(d) listed waters. TMDLs are created in order to help impaired waters meet water quality standards and achieve their designated uses, but TMDLs also allow for new and increased discharges by including reserve capacity for future or new discharges and by hypothetically ratcheting down pollution on other sources to still achieve standards. There is a foreseeable problem with this approach. When entities do not ratchet down pollution enough or meet wasteload or load allocation reductions in a timely way (e.g., the long timelines for compliance), and new discharges or increased discharges of pollution (e.g., new development) are allowed, pollution reduction efforts are stifled. In other words, the long compliance timelines included in the draft TMDLs allow for permittees to continue discharging pollution loads to impaired waters while new dischargers are also adding new loads at the same time, thereby violating the CWA rules that prohibit increased discharges of pollution into impaired waters. The TMDL needs to have a quick enough feedback loop—with milestones and an accountability framework to ensure that anti-degradation requirements are met and water quality does not backslide. Please respond to this concern and provide confirmation that the TMDLs as proposed will not cause backsliding in water quality or violate the CWA provisions. (Milwaukee River Keeper)

Response: See comment #1 directly above, related to reserve capacity. Please also refer to Section 6.6 of the TMDL report for an explanation of factors evaluated when determining

the use of reserve capacity. Regulations allow for new discharges to impaired waters when a demonstration can be made that the discharge is either not contributing to the impairment or when a WLA (including reserve capacity) is provided for in an EPA-approved TMDL. For new dischargers of phosphorus, ch. NR 217.13(8), Wis. Adm. Code, lays out these requirements for a new phosphorus discharge to a 303(d)-listed impaired water.

See comment #1 on page 1 (under the “General” category) related to the allowance for compliance schedules when permittees receive new and more restrictive limits.

15. We want to better understand how the proposed TMDLs will be the “game changer” in achieving clean water and the designated uses set out for our rivers, because it is not evident. (Milwaukee River Keeper)

Response: The TMDL identifies the reductions that are needed to meet water quality standards, by determining the total allowable load for each reach, accounting for all sources of the pollutants of concern in that reach, and then setting allocations for each source based on their relative contribution. The TMDL lays out a roadmap for future implementation by accounting for all sources of pollution in the watershed and determining the level of reduction needed from each to achieve water quality standards. TMDL implementation will have to include wasteload allocation-based limits for permitted dischargers, implementation of existing regulations for nonpoint sources, and other actions throughout the watershed intended to get sources to where they need to be to meet TMDL allocations.

16. In addition, the draft TMDL stated those industries discharging phosphorus that were used for the baseline loads but then stopped discharging to the rivers would not get a wasteload allocation. Instead, that portion of the load would be set aside as reserve capacity for the river reach. It is not clear who qualifies to use reserve capacity. (Milwaukee River Keeper)

Response: For facilities that are no longer permitted to discharge but were included in the TMDL baseline and allocation process, their resulting wasteload allocation is placed into reserve capacity. Please refer to Section 6.6 of the TMDL report which outlines the use of reserve capacity.

Allocations:

17. Section 6.4.1 – Wasteload Allocations for Permitted Point Source Dischargers. The TMDL Study report should better explain the basis for the wasteload allocations. The report does not adequately explain how the monthly wasteload allocations were derived. The report states that “individually permitted point source discharges received allocations proportional to their contribution to the total baseline load,” which lacks specificity as to what concentrations were used to derive the wasteload allocations. The report further states how the monthly allocations were converted to daily allocations and mentions that TSS mass allocations will be expressed as a concentration with a floor of 12 mg/L monthly average. It is not intuitive how the monthly wasteload allocations for TP and TSS presented

in Tables A.17 and A.19 were derived, and it does not appear that the mass TSS allocations correspond to concentrations greater than or equal to 12 mg/L. For instance, for the months of July through October, it appears that the monthly TSS concentrations used to derive the monthly TSS waste load allocations for We Energies Germantown Outfall 001 ranged from 3-6 mg/L. We request that the TMDL Study report better explain how monthly waste load allocations were derived, and if a TSS floor concentration is intended to be used as is currently specified in the report), that the waste load allocations for the We Energies facilities be recalculated. (We Energies)

Response: The allocation process is explained in Section 6 of the TMDL report, with supporting information presented in Sections 4 and 5. Baseline flows, concentrations, and loads are presented in Table 4-1. These baseline conditions were proportionally reduced, based on the relative contribution of each pollutant source, to the total load reductions needed to meet the assimilative capacity of the receiving waters.

Section 3.2.2 of the TMDL report explains that the 12 mg/l TSS water quality target was designed to address both sedimentation and turbidity impairments caused by point and nonpoint discharges of solids. Language has been added to this section to further clarify how this target will be applied to wastewater discharges:

“Since standard wastewater treatment processes such as grit removal and primary and secondary clarification, which are necessary to reduce wastewater TSS levels to 12 mg/l, will have removed settleable material that would contribute to sedimentation, wastewater discharges at or below 12 mg/L will not contribute to sediment impairments. Contributions to turbidity, a condition which is related to concentration and not mass, will also be absent at 12 mg/l effluent concentrations. Therefore, wastewater dischargers will not be required to meet effluent limits lower than 12 mg/l (including equivalent mass limits) in order to comply with the water quality targets developed for this TMDL.”

Language has also been added to Section 7.2.3 of the TMDL report to clarify how TSS limits are intended to be implemented in wastewater permits:

“For solids, the mass allocation contained in the TMDL will be expressed as a mass limit for TSS, unless the equivalent concentration is \leq 12 mg/l. In those cases, the limit will be expressed as a monthly average concentration of 12 mg/L TSS.”

18. There are large portions of the Menomonee without TSS allocations. Is this because the TSS allocations are included in the MS4 baselines? For example, there is no TSS allocation on the Menomonee from the Estuary to the confluence with Honey Creek. It is also confusing that “GP-other” is included for General Permits, but that loads are not assigned there—instead being included in the MS4 baseline or in “non-permitted urban” in areas outside of a MS4. If this is the case, then why include it in the tables? (Milwaukee River Keeper)

Response: Table A.13 includes allocations for each reach including MN-16 which covers the Menomonee River from the Estuary to Honey Creek. For areas where “General Permits –

Other” is left blank, the allocation for the general permits is included in the permitted MS4 allocation. The allocation tables use a consistent format so in some reaches allocation categories maybe left blank if that category is not applicable to the reach.

19. The report states that for the Milwaukee River that flows were calculated “parametrically” for each reach. TMDLs for the Menomonee and Kinnickinnic Rivers were calculated using the 4th lowest flow, which is the 25% design condition; however, for the Milwaukee 33.3% was used, presumably to allow for less stringent and more realistic wasteload and load allocations for bacteria in the Milwaukee River system. Please explain this in greater detail. (Milwaukee River Keeper)

Response: The parametric calculation approach was used for the Milwaukee calculations to allow for the application of adjustment factors to the flows to address limitations in the WQI flow model calibration to account for wetlands and other flow issues found in the Milwaukee WQI models. The parametric calculated flows are equivalent to the 4th lowest flows; however, a parametric approach better fit the data for the Milwaukee. The approach does allow for more realistic allocations since the flows are more accurately represented, but this does not necessarily mean the resulting allocations are less stringent.

20. It is unclear why there are “agricultural” loads for parts of Honey Creek and Underwood Creek for P and TSS. There were also some “agricultural” bacteria load provided for Underwood Creek. Please explain. (Milwaukee River Keeper)

Response: Please see Tables A.10 and A.11. Honey Creek does not have allocations assigned to agricultural sources for either TSS or TP. Portions of Underwood Creek have small areas of agricultural land use and have thus been assigned allocations.

21. Another significant concern with the draft TMDLs is that it does not have loads assigned to several major sources of pollution, and no wasteload reductions or load reductions allocated to those sources as a result. These major sources include the Wisconsin Department of Transportation (WisDOT), confined animal feeding operations (CAFOs), non-contact cooling water (NCCW) dischargers, and combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs). (Milwaukee River Keeper)

Response: Allocations for WisDOT are included in the permitted MS4 allocations. Please refer to guidance that outlines implementation of the allocations for WisDOT and MS4s (http://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html).

As discussed in section 4.3.2.3 in the TMDL report, non-contact cooling water (NCCW) discharges were evaluated during TMDL development, in order to determine whether individual wasteload allocations were necessary to meet water quality standards. Once this evaluation was completed, it was determined that the NCCW contribution was a mere 0.83% of the total wastewater point source load. Since it was determined that individual

allocations were not necessary to achieve TMDL goals, the NCCW general permittees were assigned a group WLA in the TMDL.

Allocations established in TMDLs cannot exceed previously established permits and regulations. CAFOs, CSOs, and SSOs were assigned a WLA of zero in this TMDL, because discharges from these sources are not allowed.

As stated in section 4.3.2.7 of the TMDL report, WPDES permits for CAFO facilities require no discharge of pollutants from the production area, unless caused by an extreme storm event (24-hour storm duration exceeding the 25-year recurrence interval). Therefore, baseline loads and wasteload allocations for the 12 regulated CAFOs in the Basin were set at zero. Manure from CAFO operations used for agronomic purposes in the watershed is considered a nonpoint source of bacteria and phosphorus. Manure spreading loads are included in the modeled nonpoint source loads used for the TMDL calculations.

CSOs and SSOs are discussed multiple times in the TMDL report. See Sections 4.3.2.5 and 4.3.2.6, Section 6.2, Sections 6.4.5 and 6.4.6, and Sections 7.2.3.3 and 7.2.3.4.

22. The information related to the wasteload allocations for bacteria that is currently presented in the narrative portion of the TMDL report can be clarified by explaining the content of the tables, rather than only referring to the tables. It is not clear which of the load duration curves (low, dry, mid, moist, high) is the target wasteload allocation for permittees, or if the daily or monthly limits are expected to be met. (Ruekert & Mielke, Inc.)

Response: Please see the sections that discuss the flow duration curves for Fecal Coliform. Daily and monthly allocations are summarized in tables and are expressed as billions of cells per day for each of the five flow regimes. The reported allocation represents the mean value for each flow regime. The flow duration curves provide the non-exceedance probability against the fecal coliform load under the different flow regimes and can be used to help target implementation efforts.

23. Section 6.4, Wasteload Allocations, 6.4.4, Municipal Separate Storm Sewer System Permittees: the 4th paragraph includes information specific to the percent reductions that were calculated for TSS and phosphorus for the permittees, but it does not explain whether there is a percent reduction method for bacteria, and if not, why a different method is used. This paragraph also does not explain which of the 5 percentiles listed in Tables A.26 and A.27 represent the target wasteload allocation for bacteria for the permittee. (Ruekert & Mielke, Inc.)

Response: Compliance for bacteria consists of a two prong approach; (1) use the flow duration curves to help target different flow conditions such as high loads during low flow conditions may indicate the presence of illicit connections. The daily and monthly allocations provided in Tables A.26 and A.27 provides the target mass; however, percent

reductions were not provided because unlike TP and TSS, a well-defined baseline condition from which to measure a percent reduction does not exist.

24. It would also be helpful for readers if the units used to explain the bacteria aspects of the TMDL report remained consistent throughout the report, the tables, the load duration curves, the example formulas, etc. The draft report includes the cells/day in some areas, and the cells/month in others. (Ruekert & Mielke, Inc.)

Response: The usage of cells/day, as with the daily expressions used for TSS and TP, reflect Federal CWA requirements that the TMDL have a daily expression for pollutant loads. The expression of monthly and annual allocations reflects the implementation timescales that will be used.

WisDOT:

25. Even though the TMDL documents state that the pollution load for highways is incorporated into municipal loads, this does not provide any meaningful control over discharges because our municipalities do not regulate or control WisDOT. Indeed, many municipalities have tried to challenge highway expansion and receive funds for stream restoration, stormwater management, or watercourse work, however, in our experience and typically, these efforts are not successful. Trying to achieve reductions from WisDOT through municipalities is problematic and setup for failure. The burden of addressing these discharges should not be placed on municipalities and counties given not only their lower bargaining power, but also the scarce funding resources that local municipalities face. To achieve the goals of the TMDLs, we recommend that the WisDOT be responsible for its stormwater management as part of doing business, and further that wasteload reductions be allocated to WisDOT for planned and ongoing projects (e.g., I-94 expansion, I41/I45 expansion, I43 expansion). (Milwaukee River Keeper)

Response: WisDOT is not currently regulated by a WPDES permit and therefore cannot be assigned a wasteload allocation. The MS4 TMDL guidance http://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html allows for municipalities to include or exclude sources that drain through their MS4 system. Municipalities and other dischargers are encouraged to form agreements, if beneficial agreements can be reached, to address comingled flows; however, if the municipality chooses to exclude these areas from their study area, a portion of the WLA will be carved out, as necessary, to cover the discharger. The discharger will be responsible for meeting their WLA. Once permitted, WisDOT will be responsible for their MS4. Please refer to the guidance document referenced above.

CAFOS:

26. Under Wisconsin law, CAFOs are not allowed to discharge pollutants to waters of the State. However, most of the CAFOs in the Milwaukee River Basin conduct manure spreading on

2,000-3,000+ acres of their own land or rented fields. Per a recent permit, one CAFO spread manure on lands in all 4 subwatersheds of the Milwaukee River Watershed. It is unreasonable to assume that manure does not run off into the rivers or that applicators are inspecting all fields after rain events and self-reporting. In addition, many of these fields have drain tiles, and are likely main-lining this pollution directly into our river systems. While assigning loads to these facilities may raise some complexities, ignoring this significant source is not going to achieve the goals of the TMDLs or bring our rivers closer to meeting water quality standards. (Milwaukee River Keeper)

[Response: See response to question #5 \(Allocations\) above. Manure spreading loads from CAFOs are included in the baseline loads and load allocations assigned by the TMDL.](#)

Non-contact Cooling Water:

27. Likewise, non-contact cooling water dischargers with general permits were largely exempted from meeting the phosphorus TMDL, because they mostly discharge city water that has phosphorus based anti-corrosion inhibitors added and are discharging phosphorus loads through no fault of their own. This load was also deemed to be minimal; however, this assumption could change since phosphorus loads will be tracked by watershed and allocations could be given in the future. At any rate, it is unclear whether larger facilities with NCCW discharges are being given wasteload reductions for phosphorus. This was not well explained in the TMDL document. For example, by looking at the tables, one would assume there are no NCCW discharges in the lower Menomonee River Watershed, when there are, in fact, significant numbers of these facilities. In the draft TMDL, these facilities are included in the individual permittees category rather than under the NCCW category. We request that a strict timeline of perhaps 2-5 years be included to reassess the general permittees that are discharging NCCW to area waters to determine whether they should be included in future TMDL revisions. (Milwaukee River Keeper)

[Response: See response to question #5 \(Allocations\) above. General permittees are accounted for either in the group wasteload allocation set aside for these permit holders or as part of the MS4 that they are located within. The grouped amount set aside was estimated based on the information available to the DNR at the time of TMDL development. Steps are underway now to develop an electronic reporting system for general permittees, which will make effluent data from individual facilities more readily available. Once this effort is completed and data is available from these discharges, the Department will be able to compare discharge information to the amount set aside in the TMDL and, if necessary, assign reserve capacity to account for any additional load that is coming from these sources. More details related to these future implementation steps could be spelled out in the TMDL implementation plan.](#)

28. There is also one component of the TMDL that states that the We Energies Valley Power Plant was not given a phosphorus baseline because its discharge either goes to MMSD or is due to the source water (cooling water taken in from the Menomonee River itself).

However, the processes used at the facility, including reverse osmosis, concentrate phosphorus levels. Therefore, this facility should receive a phosphorus baseline and wasteload reduction if this is still the case. We Energies is also discharging phosphorus back to the river in a super-heated condition, which contributes to nuisance algae problems. These types of scenarios by all NCCW dischargers should be included in the TMDL. (Milwaukee River Keeper)

Response: The portion of the discharge from We Energies that employs reverse osmosis (previously referred to as outfall 005) is no longer being discharged directly to a surface water. This discharge is being sent to the city for further treatment. The only discharge being sent to the river at this time is once-through cooling water, which is the discharge, accounted for in the TMDL WLA. Compliance with thermal water quality standards are covered via temperature limits in the WPDES permit for this discharge.

29. Section 4.3.2.3 – Non-Contact Cooling Water General Permits. The Department should use the design flow rate to calculate baseline loads and wasteload allocations for general permittees, as for all other point source dischargers. Also, the Department should update the TP concentration attributed to City of Milwaukee water. Similar to the discussion in Section 4.3.2.1, the draft TMDL Study report indicates that phosphorus baseline loads for noncontact cooling water general permittees were based on the design flow, which is further explained as being the highest average annual flow over three years rather than the actual design flow. Using the average annual flow may bias the flow rate, as described in our comments regarding Section 4.3.2.1. Moreover, it is unclear which three-year period was used to set this flow value, making it difficult to determine whether the baseline flow and load values are accurate. We Energies Milwaukee Heating Plant Outfalls 001, 002, 003, 004, and 006 discharge condensate intermittently from the heating steam system that runs throughout downtown Milwaukee. Annual flow rates can vary significantly from year to year, whereas the design flow rate provides a more consistent basis for calculations. The Department should use design flows when calculating baseline loads and wasteload allocations for general permittees. (We Energies)

Response: See the response to comment #1 (Baseline and Reserve Capacity) above, related to the appropriate flow and concentration values used for industrial discharges.

The three-year period in the TMDL represented the highest average annual flow rate over the period of record used. In most cases the period record is derived from monitoring records prior to 2012.

Noncontinuous (seasonal) discharges are addressed in Section 6.4.3 of the TMDL report. Permit limits for these discharges will be determined on a case-by-case basis. It may be appropriate to express WLA-derived mass limits by season or on a total annual basis, depending on site-specific conditions.

30. Wasteload Allocations by Source for TP and TSS. The tables contain erroneous data for We Energies facilities and should be corrected. For We Energies Milwaukee Heating Plant, it is not clear how the wasteload allocations for the individual outfalls were derived. Moreover, the implications of potentially incorrect allocations are unclear. The TMDL Study report indicates that, while individual mass allocations have been assigned to noncontact cooling water (NCCW) general permitted facilities, the allocations will be grouped by watershed. The report goes on to explain that monitoring data will be used to track the total mass allocation used by NCCW general permitted facilities in each watershed and, if it is determined that the allocation is insufficient, facilities will be switched to individual permits. It is not clear whether facility-specific monitoring data will be compared to facility-specific allocations or whether the monitoring data in aggregate for NCCW permitted facilities will be compared to the total allocation set aside for NCCW permits. We request that the Department assist us in understanding how the wasteload allocations for the We Energies Milwaukee Heating Plant facilities were derived and how the monitoring data will be used for tracking purposes. (We Energies)

Response: See response to question #3 above, related to future electronic reporting requirements for NCCW and other general permit holders. Monitoring data will be examined on a reach-by-reach basis to determine if the group WLA for the reach is enough to cover facilities. If it is not, adjustments can be made through either accessing reserve capacity to cover shortfalls or if needed applying reductions to NCCW facilities. In either case, such adjustments will be made through the permit and subject to public notice and input.

31. For We Energies Germantown, there are a number of inaccuracies leading to incorrect wasteload allocations. As a starting point, NR 102.06(6), Wisconsin Administrative Code, excludes certain waters from the otherwise applicable phosphorus water quality criteria in NR 102.06. Specifically, NR 102.06(6)(c) provides that “wetlands, including bogs,” are not subject to the phosphorus water quality criterion. All outfalls at We Energies Germantown discharge to a wetland. Specifically, Outfalls 001 and 002 discharge to a “S3/E1K” wetland and Outfall 003 discharges to an “E1K” wetland, as classified on Wisconsin’s Wetlands Inventory (viewable on WDNR’s Surface Water Data Viewer). Wastewater discharges from these outfalls travel anywhere from 0.2 – 0.5 miles before entering an unnamed tributary (classified as an intermittent stream). The unnamed tributary flows to the Menomonee River. The distance from the outfalls to the Menomonee River ranges from 0.7 miles to 0.9 miles. See Attachment 1. Since the facility is not subject to a phosphorus water quality criterion, we do not believe that phosphorus limits or TMDL phosphorus wasteload allocations are warranted. (We Energies)

Response: If We Energies Germantown is not assigned an allocation, no discharge will be permitted. Section NR 217.12(1)(a), Wis. Adm. Code, specifies that water quality based effluent limitations shall be included in a permit whenever the Department determines that “the discharge from a point source contains phosphorus at concentrations or loadings which will cause, has the reasonable potential to cause or contribute to an exceedance of

the criteria in s. NR 102.06, Wis. Adm. Cod, in either the receiving water or downstream waters...” Without an allocation, any discharge through the intermittent stream to the Menomonee River would be a violation of the permit if the permit has a zero allocation.

SSOs and CSOs:

32. We recognize that MMSD has made huge improvements in reducing sewer overflows in past decades. Nonetheless, CSOs and SSOs still constitute a significant source of pollution. It is important to note that many municipalities in the watershed that are tributary to MMSD and 10 other publically owned treatment works (POTWs) and 2 private treatment plants also have SSOs. In terms of bacteria loading, especially, these facilities are a major source of the existing load and should have a big part to play in reducing future loads. Unfortunately, the draft TMDLs do not allocate a load to these sources. (Milwaukee River Keeper)

Response: CSOs and SSOs are not permitted. The TMDL cannot give allocations that exceed established permits and regulations.

Point Sources:

33. The State phosphorus rules were the driver before the TMDL, and now, unless changes are made, they will remain the driver, as no facilities are receiving stricter limits. This directly implicates the efficacy of the proposed multi-sector discharge variance for phosphorus, as well. Under the TMDL, will the phosphorus variance allow facilities to receive even longer compliance timelines? (Milwaukee River Keeper)

Response: See response to comment #1 (General) above, related to compliance schedules.

A variance to a water quality standard (whether an individual variance or the multi-discharger variance for P) is not a compliance option. Instead, it is a temporary change to the water quality standard which establishes a time-limited set of requirements that apply instead of the water quality-based effluent limit (WQBEL). These temporary requirements are only in effect for the life of the variance and must reflect the “highest attainable condition” during the time that the variance is in effect. Once the variance period is over, the permittee will have to meet the WQBEL. A TMDL also does not change whether a permittee is eligible for a WQS variance; eligibility is determined on a site-specific basis and depends on the economic factors present for the given permittee.

34. Several recent permits issued for West Bend and Grafton have given phosphorus limits of 1 mg/L and .8 mg/L, respectively, which are essentially the same technology-based phosphorus standards that have been in permits for over a decade. Since 2010, there has been little progress in ratcheting down phosphorus limits. We fear that given the proposed long compliance schedules, it is unlikely the TMDL will be a game changer in reducing

phosphorus levels. Put another way, in essence, the TMDL does not seem to provide any additional incentive to ratchet down limits for phosphorus. (Milwaukee River Keeper)

Response: Permits reissued since the statewide phosphorus criteria became effective in 2010 have included phosphorus WQBELs, as required by ch. NR 217, Wis. Adm. Code. Extended compliance schedules (> 5 but ≤ 9 years) have only been given in situations where permittees must meet stringent limits (0.1 mg/l or less), in order to allow the permittee time to assess and implement their compliance options (installation of advanced treatment technologies, adaptive management, trading, etc.). Interim limits (like those referenced above for West Bend and Grafton) are placed in the permit in these cases, in order to insure that no backsliding occurs while the permittee is working towards meeting the more stringent limit. Once the TMDL is approved, subsequent permits must also include a limit based on the mass allocation, consistent with the assumptions in the TMDL. Please see ch. NR 217 and specifically ch. NR 217.16 to better understand how the TMDL mass allocations for phosphorus are implemented in permits.

35. At a TMDL implementation meeting at SEWRPC, when DNR staff was asked why there were no POTWs with proposed phosphorus discharge limits less than the State water quality standard, DNR staff inferred that the incremental reduction in phosphorus loading was essentially not worth the fight. We beg to differ. Deferring more of the phosphorus load to other sources that are harder to control or that are not receiving allocation reductions is counter-productive. As stated above, most NCCW dischargers will not have to meet any reductions. (Milwaukee River Keeper)

Response: The comment does not accurately characterize the DNR response during the meeting or the analysis that was conducted during the development of the TMDL. TMDL allocations, as with water quality based effluent (discharge) limits calculated through ch. NR. 217 are set to meet water quality standards; however, TMDLs examine different sources of phosphorus and provide allocations to sources based on the timing and magnitude of the loads emanating from the source. TMDL modeling showed that without attaining the allocations specified for other sources, reductions below criteria will not result in attainment of water quality standards nor can needed reductions from other sources simply be shifted to point sources given the timing and magnitude of other phosphorus sources.

Please see response to question #5 (Allocations) above, related to NCCW discharges. NCCW facilities are accounted for by individual allocations (if individually permitted) or via the group WLA for general permits (if general permittees).

36. In addition, given our regulatory framework, agriculture will not receive any enforceable load allocation reductions for phosphorus. (Milwaukee River Keeper)

Response: Ch. NR 151.005 allows for the promulgation of more stringent performance standards to meet TMDL allocations; however, this process must be conducted through rule making. The TMDL cannot circumvent the rule making process.

37. The TMDL used a target of 12 mg/L of TSS to establish goals for wasteload and load allocations, but the current standard for TSS is a narrative, not a numeric, standard. This goal is not being used for POTW compliance, as the document states that most POTWs have clarification or filtration and so are presumed to have solids removed and thus discharges lower than 12 mg/L are not required. Assuming this is the case, why not put the 12 mg/L limit in the permits anyway? This would ensure if there is any variability from facility to facility, ways to reduce that load can be addressed uniformly. (Milwaukee River Keeper)

Response: See the response to question #1 (Allocations) above, related to the 12 mg/l target and expression of these limits in wastewater permits.

38. It is unclear how the TMDL for TSS will be applied to industrial discharges. Will they have numeric or narrative limits? (Milwaukee River Keeper)

Response: See the response to question #1 (Allocations) above, related to the 12 mg/l target and expression of these limits in wastewater permits. Industrial facilities will receive numeric limits consistent with their TMDL wasteload allocations.

39. The TMDL states that if there is TSS in the source water for an industry then that industry does not have to remove it from their discharge. However, this does not address those situations where TSS is added during production at the facility or where TSS is concentrated before discharge. Tightening up this standard to address these scenarios is requested. (Milwaukee River Keeper)

Response: Credit is only given to permittees (for any pollutant of concern) related to the amount that is passed through from the source water. WLAs in the TMDL were calculated to address this. If the pollutant is added or concentrated before discharge, the permittee will be responsible for removing that additional amount as necessary to stay in compliance with their WLA-derived effluent limit.

40. It appears that several dischargers maybe located within the Milwaukee Harbor Estuary; however, allocation tables list the facilities as discharging in the river reaches. The location of the discharge may impact the discharger's allocations since the estuary reductions seem less than the reductions for the river reach.

Response: The Milwaukee Harbor Estuary is defined in Section 2.1.4 of the report and is consistent with historic defined extents of the Harbor Estuary. For the Milwaukee River and Menomonee River the historic extent of the estuary was set by the locations of the former North Avenue Dam and former Falk Corporation Dam respectively. With the removal of the dams, which had provided a very exact delineation for the estuary, the demarcation

provided by the dams has been replaced by a mixing zone that can vary depending on wind, river flow, water level in the estuary, and barometric pressure. For implementation of allocations for permitted sources, allocations will be assigned consistent with the TMDL; however, if there are any inconsistencies with discharge locations between the TMDL and permits, allocations can be adjusted using reserve capacity for discharges determined to be located in the estuary instead of the river reach.

MS4s and Stormwater Permits:

41. Overall, the TMDL places a large wasteload allocation reduction for phosphorus on municipalities which is expensive and difficult to remove. (Milwaukee River Keeper)

Response: The allocations and corresponding reductions are based on a proportional allocation method and reflect the load discharged by the municipality related to other sources discharging to the reach. In many reaches, municipal stormwater is the largest contributor of TSS and phosphorus. TMDL modeling shows that without attaining the allocations specified for municipal stormwater, reductions to other sources will not result in attainment of water quality standards. Reductions to municipal stormwater cannot be shifted to other sources given the magnitude of other phosphorus sources relative to the municipal stormwater contribution.

42. We are also concerned that if municipalities continue to only report pollutant reductions with existing models (used by NR 216, NR 151) and approaches, then we will not change the status quo. Many municipalities are doing everything required of them (e.g., have met their 20% TSS reductions), and yet water quality is getting worse. Thus, our existing models are either not modelling pollutant reductions accurately, or municipalities are not doing the right things effectively or enough. We need a new approach to modeling and monitoring municipal stormwater efforts. (Milwaukee River Keeper)

Response: While monitoring data shows mixed results with efforts implemented to date it is important to note that the 20% TSS reduction and other requirements implemented by municipalities to date may not be collectively at levels sufficient to meet water quality standards. The TMDL set allocations necessary to meet water quality standards and equated the allocations to the reduction format and models used in NR 151 and NR 216. It is not as much an issue with the modelling or that municipalities are not doing the right things effectively enough but rather the magnitude of reduction efforts has not been sufficient enough to monitor changes in water quality sufficient to meet water quality standards.

43. Regarding other sources of bacteria, we agree more needs to be done to reduce bacteria from stormwater runoff and agricultural uses. There is little explanation of the bacteria load from stormwater runoff from paved surfaces. One section of the TMDL noted that the General Mitchell Airport, which is likely one of the largest areas of impervious surface in the

watershed, has no bacteria load allocation reductions, because there is no bacteria “beyond stormwater runoff and so no reductions are necessary.” This conclusion should be further explained. Fecal coliform load coming off paved surfaces can be very high and before being dismissed as a non-source or non-issue, in essence, the stormwater should be tested. (Milwaukee River Keeper)

Response: Section 1.1.3.3 addresses bacteria loads for urban and paved sources. General Mitchell Airport does not require additional reductions for bacteria beyond those already assigned for stormwater through the permitted MS4 allocation. The individual permit for General Mitchell Airport covers deicing and other practices while stormwater runoff is addressed through the MS4 allocations. The note in the Table A.21 is meant to convey that additional bacteria reductions do not need to be applied in the individual permit.

Nonpoint Sources of Pollution:

44. It’s also unclear how the TSS TMDL will be addressed on the non-point side other than existing standards for NR216 and NR151. (Milwaukee River Keeper)

Response: The TMDL does not create new regulatory requirements but relies on existing regulatory frameworks for implementation. Ch. NR 151.005 does allow for the promulgation of more stringent performance standards to meet TMDL allocations; however, this process must be conducted through rule making. The TMDL cannot circumvent the rule making process.

Margin of Safety:

45. The TMDL document stated that there was no margin of safety provided for in this TMDL because conservatism was built into the allocations. This needs to be better explained or addressed. Given climate change, extreme variability in weather and increased rate of severe wet weather events over the last several years alone, and given the fact that the TMDL was developed using fairly old data at this point (from 1988 to 1997), it is essential to include a fairly large margin of safety. Predicting future weather events based on past experience is unreliable; please explain the reasoning behind not including a margin of safety. (Milwaukee River Keeper)

Response: As explained in Section 6.5, the MOS is implicit in the TMDL allocation process because of the conservative assumptions. This is documented in both the TMDL and WQI modeling reports. WQI reports are available through MMSD and SEWRPC – (http://www.sewrpc.org/SEWRPCFiles/Publications/pr/pr-050_part-1_water_quality_plan_for_greater_mke_watersheds.pdf). The climate data period used to develop the TMDL was selected because it is representative of the overall climate record for the region. As such, additional margin of safety is not necessary.

Seasonality:

46. The importance of the seasonality of the bacteria limits could be simplified in the narrative portion of the report by explaining whether a permittee must meet the WLAs throughout the year or only during the May-September months, when previous sampling efforts have determined the waterways are impaired for recreational uses. (Ruekert & Mielke, Inc.)

Response: The TMDL uses the recreational season of May through September when setting baselines and allocations, in order to account for the critical period for protection of human health and the recreational use designation. Additional language was added to Sections 6.4.1 and 7.2.3 to clarify how these limits will be expressed in municipal wastewater permits:

“For bacteria, no reductions will be required for municipal wastewater dischargers that already employ disinfection. Limits for fecal coliform will continue to be expressed as 400 cfu/100 mL from May through September, in order to provide protection from human health impacts during the recreation season.”

Reductions are needed from municipal and agricultural stormwater sources. It is expected that many of the management practices employed to address TSS and phosphorus will also help reduce bacteria; however, additional and targeted measures will also need to be employed such as elimination of human sewage in storm sewer systems.

Implementation:

47. The approach and framework for addressing TSS in the draft TMDL is passive. While an active implementation plan may be able to fill in some of these apparent gaps, setting up the system in an ancillary way to merely reduce sediment levels to achieve related reductions in phosphorus does not bode well for success. (Milwaukee River Keeper)

Response: While it is expected that practices to address TSS may reduce TP, and vice versa, the allocations and reductions for both are calculated independently to meet water quality standards.

48. Outside of the POTWs, it is not clear how the bacteria TMDLs will be enforced or how load reductions will be monitored or modeled, especially when allocations are in the billion cells/day or per month. (Milwaukee River Keeper)

Response: The implementation plan can explore different implementation options. The TMDL MS4 Guidance does provide a framework for MS4s relying on monitoring for and eliminating illicit connections. Models such as SLAMM can be used to evaluate urban storm water management practices and surface water monitoring is used to ultimately delist a waterbody.

49. Moreover, it is critical that the Implementation Plan and TMDL better address the responsibility of municipalities to better quantify, identify and address human discharges of bacteria through their storm sewer infrastructure, which is a major and largely ignored source of bacteria to our area waterways. While municipalities that are MS4s have illicit discharge detection and elimination programs, these were not set up to deal with bacteria, but rather with industrial and other illicit discharges. Municipalities should be required to test for bacteria as part of their routine storm sewer monitoring programs, in a cost-effective and easy way. The TMDL should include specific requirements so that when municipalities begin to prepare for a stormwater permit, the goals and requirements are clear. (Milwaukee River Keeper)

[Response: Comment does not pertain to the TMDL report or allocations. These issues can be addressed in the implementation planning process.](#)

50. Regarding agricultural runoff, while load allocation reductions were given, they are not enforceable under current state law. While there are complexities around monitoring the load coming off many of these fields and tying the load to an individual farmer (especially when multiple farms and municipalities are spreading on the same fields), the TMDL should include clarity and requirements around addressing bacteria runoff from stormwater—both from agriculture and urban sources. As it stands, it seems unlikely that the draft TMDL for non-point source bacteria loads will achieve improved water quality absent a very strong and enforceable implementation plan. (Milwaukee River Keeper)

[Response: TMDLs do not create new regulatory requirements but rather rely on existing regulations and permit programs for implementation. Ch. NR 151.005 does allow for the promulgation of more stringent performance standards to meet TMDL nonpoint load allocations; however, this process must be conducted through rule making. The TMDL cannot circumvent the rule making process.](#)

51. As a community, development of a robust and active implementation plan for these TMDLs is critical. DNR has stated that it wants an implementation plan for reasonable assurances and to state authority and provide guidance for its staff in assuring reductions on the point and non-point source side. While that is a needed element, the Plan should also guide the work of permittees, community organizations, government agencies, and other stakeholders that will implement many of the needed projects, policies, and programs to meet the water quality goals for our rivers and streams in the Milwaukee River Basin. (Milwaukee River Keeper)

[Response: The comment does not pertain to the TMDL report or allocations. These issues can be addressed in the implementation planning process.](#)

52. We have learned from other colleagues across the country with more established TMDLs that having a strong, practical and enforceable plan is paramount to ensuring achievement of water quality goals. For example, the Chesapeake Bay TMDL has 2-year milestones in its

Watershed Implementation Plan. It is important that WDNR and EPA mandate enforceability, transparency, and accountability as part of the TMDL implementation process. (Milwaukee River Keeper)

[Response: The comment does not pertain to the TMDL report or allocations. These issues can be addressed in the implementation planning process.](#)

53. If things are not working, the plan needs to be able to adjust. For example, if targets are not being met, DNR could decide to include unregulated stormwater sources or to add further reductions needed to achieve targets. This would create incentives to drive more action on the part of permittees. (Milwaukee River Keeper)

[Response: Permitted sources are addressed through modifications and requirements placed in permits. For municipal stormwater sources that are not permitted, Ch. NR 216.025 allows for designation of sources to be covered under a permit if it is determined to be needed to meet water quality standards. For nonpoint agricultural sources, NR 151.005 does allow the promulgation of targeted performance standards if needed to meet the allocations contained in the TMDL. In addition, TMDLs are also not set in stone and may be adjusted through an adaptive management process as it is determined what is working and what is not. Additional guidance may be included in the implementation planning documents.](#)

54. There could be demonstrable improvements in certain portions of the Milwaukee River Basin that could result in delisting of certain waters. Regular oversight, assessing milestones, and adaptive management also allows for the things going well to be celebrated. These are important goals to be included in any implementation plan. (Milwaukee River Keeper)

[Response: The comment does not pertain to the TMDL report or allocations. These issues can be addressed in the implementation planning process.](#)

55. It is generally assumed that the Implementation Plan listed in Section 7 is not a comprehensive plan to direct a permittee through the activities needed for successful implementation of the TMDL. However it does provide information that can be used to start implementation efforts for TSS and phosphorus reducing measures in the Milwaukee River Basin. Information on general management strategies and funding opportunities to tackle the reductions of bacteria loads that have been identified in this TMDL report should be added to this section to provide permittees and other readers of the report with a general idea of the resources available to implement these measures. (Ruekert & Mielke, Inc.)

[Response: The Implementation Plan in Section 7 is not intended to be comprehensive, but rather a starting point for future planning. A more comprehensive planning process will follow approval of the TMDL.](#)

Monitoring:

56. The long-term sampling stations and other monitoring data that was used to develop the Milwaukee River Basin TMDL should be included in the report. The current draft includes references to previous monitoring efforts, but it is unclear where these monitoring stations were located, whether on-going monitoring is still conducted at these locations, and when/how long the monitoring occurred. Providing information on these sampling sites will give readers a better understanding of the local data that was used to develop the TMDL and the wasteload allocations for the individual reaches. This information will also allow permittees and other partners to determine whether future, renewed monitoring efforts should be conducted in coordination with the previous monitoring efforts. (Ruekert & Mielke, Inc.)

Response: A comprehensive explanation of the monitoring data can be found in the WQI modeling reports and through the MMSD website which can provide access to both current and historical records. <http://www.mmsd.com/waterquality/wq-monitoring-data>

Non-TMDL Comments (comments on presentation handouts):

57. Table "Allocations: Average Monthly Phosphorus Limits." The table erroneously contains data for We Energies Valley Power Plant Outfall 005. This table is not referenced in the TMDL Study report, but is located on the Department's website with the TMDL Study materials. The table includes calculated monthly TP Permit Limits (lbs/day) and calculated equivalent concentrations in mg/L using Monthly TP Permit Limit at Design Flow for various facilities, including We Energies Valley Power Plant Outfall 005. The Valley Power Plant WPDES Permit was recently modified (with a modified permit effective date of October 1, 2016) and Outfall 005 was removed from the permit as reverse osmosis system reject no longer discharges to a surface water body. Instead, seasonal reverse osmosis system reject, along with other process wastewaters, discharge to the sanitary sewer system for treatment. (We Energies)

Response: The table referenced in the comment was created to help facilities better understand their allocations and are illustrative only. The table was created prior to the modified outfall; however, this comment does not impact the TMDL. The regulatory requirements for your facility will be outlined in the permit, as referenced in the comment.



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December 9, 2016

Submitted Electronically

Wisconsin Department of Natural Resources

Attn: Kevin Kirsch

101 S. Webster Street, PO Box 7291

Madison, WI 53707-7921

DNRMilwaukeeBasinTMDL@wisconsin.gov

RE: Comments on Milwaukee Basin Total Maximum Daily Load Study

Dear Mr. Kirsch:

Wisconsin Electric Power Company (d.b.a. We Energies), a subsidiary of WEC Energy Group, Inc., submits these comments on the draft Milwaukee Basin Total Maximum Daily Load Study (TMDL Study).

We Energies serves approximately one million electric customers in southeast Wisconsin and operates facilities that are affected by the TMDL Study. Specifically, Valley Power Plant (WPDES Permit No. WI-0000931) and Germantown Power Plant, listed in the TMDL Study report as “We Energies Germantown” (WPDES Permit No. WI-0042757), are power generating stations with individual WPDES permits that are located in the TMDL Study area. We Energies also has steam condensate outfalls (listed in the TMDL Study report as “We Energies Milwaukee Heating Plant”) that are covered by the WPDES General Permit for Noncontact Cooling Water or Condensate and Boiler Water.

Section 4.3.2.1 – Individual Permits. The Department should use the same basis for baseline load calculations for all point source dischargers. For wastewater point sources covered by individual permits, the draft TMDL Study report indicates that phosphorus and total suspended solids baseline loads were based on the concentration limit and design flow. The report further explains that the flow used for municipal wastewater dischargers was the annual average design flow, whereas the flow used for industrial dischargers was the highest average annual flow over three years. It is unclear which three-year period was used to set this flow value. The report further states that all baseline Total Phosphorus (TP) loads were set to an effluent concentration limit of 1.0 mg/L, unless the individual permittee’s TP limit was less than

1.0 mg/L, in which case the lower limit was used. If a limit did not exist, measured data from the facility was used in place of the concentration limit to determine the baseline load. The baseline Total Suspended Solids (TSS) loads were set based on a 30 mg/L concentration for municipal dischargers but were set based on the actual discharge amount for industrial dischargers. The Department should use the design flow for industrial dischargers, as is used for municipal dischargers. The Department should also use the 1.0 mg/L TP concentration and the 30 mg/L TSS concentration consistently for all point source dischargers covered by individual permits, unless the permit limits are less. Using the average annual flow for industrial dischargers may bias the flow rate based on a number of factors: (1) the operations and discharges at the facility during the three-year period used for the TMDL study may differ from the operations and discharges occurring now at the facility (e.g., if facility expansions or retirements have been completed, if maintenance outages or system shut-downs have occurred, or if economic conditions, which in turn impact facility operations, have shifted); (2) WPDES permits that only require facilities to estimate flow on a quarterly or annual basis have limited data to derive the annual averages; and (3) facilities whose discharge occurs only intermittently will have smaller annual average flows, though the flow on a specified day may be closer to the design flow rate. For example, for We Energies Germantown, the TMDL Study report lists the Outfall 001 design flow rate as 0.005 MGD. Since this outfall discharges intermittently and the WPDES Permit only requires flow to be estimated on a quarterly basis, the annual average flow rate is derived from a limited data set (approximately four estimates per year). We Energies Germantown Outfall 001 discharges effluent from an oil/water separator which has a design flow rate of 0.216 MGD. Thus, the design flow is over 43 times the highest annual average flow used in the TMDL Study to derive baseline loads and wasteload allocations.

Section 4.3.2.3 – Non-Contact Cooling Water General Permits. The Department should use the design flow rate to calculate baseline loads and wasteload allocations for general permittees, as for all other point source dischargers. Also, the Department should update the TP concentration attributed to City of Milwaukee water. Similar to the discussion in Section 4.3.2.1, the draft TMDL Study report indicates that phosphorus baseline loads for non-contact cooling water general permittees were based on the design flow, which is further explained as being the highest average annual flow over three years rather than the actual design flow. Using the average annual flow may bias the flow rate, as described in our comments regarding Section 4.3.2.1. Moreover, it is unclear which three-year period was used to set this flow value, making it difficult to determine whether the baseline flow and load values are accurate. We Energies Milwaukee Heating Plant Outfalls 001, 002, 003, 004, and 006 discharge condensate intermittently from the heating steam system that runs throughout downtown Milwaukee. Annual flow rates can vary significantly from year to year, whereas the design flow rate provides a more consistent basis for calculations. The Department should use design flows when calculating baseline loads and wasteload allocations for general permittees.

In the same section, the TMDL Study report indicates that for dischargers using City of Milwaukee water, a TP concentration of 0.515 mg/L was assumed. However, data from 2011 – 2015 water quality reports showed median phosphorus concentrations ranging instead from 0.58 to 0.705 mg/L. The Milwaukee Water Works may also increase its concentration of orthophosphate (phosphoric acid) added to the water supply to reduce the consumer's exposure to lead and copper from building plumbing. We request that, at a minimum, the TP concentration attributed to City of Milwaukee water be updated to 0.705 mg/L, and that additional discussions be held between the Department and the Milwaukee Water Works to determine if the TP concentration needs to be further adjusted upward based on projected rates of phosphoric acid addition.

Table 4-1 – Permitted Point Sources in the Milwaukee River Basin TMDLs. Data entered into Table 4-1 for We Energies facilities was incorrectly calculated and should be corrected. Baseline flow and concentration data entered for We Energies Germantown and Milwaukee Heating Plant facilities should be updated to more accurately depict the design conditions at the facilities.

For We Energies Germantown Outfall 001, the baseline flow should be updated to 0.216 MGD, the baseline TP concentration should be updated to 1.0 mg/L, and the baseline TSS concentration should be updated to 30 mg/L. Using the design flow of 0.216 MGD, as opposed to the annual average flow, is consistent with NR 106.06(4)(d)3., Wis. Adm. Code, which allows for the effluent flow to be determined on a case by case basis for other unusual discharge situations. As indicated earlier, We Energies Germantown Outfall 001 discharges effluent from an oil/water separator, with a design flow rate of 0.216 MGD. Since a majority of the flow to the oil/water separator is from facility storm water runoff, the discharge is intermittent and highly dependent on precipitation events. Moreover, the Germantown Outfall 001 discharge is indicated as being seasonal, occurring from May through October or November; however, the discharge at that outfall can (and often does) occur year-round. Since the WPDES Permit does not require monitoring or set limits for phosphorus or total suspended solids, it is unclear how the baseline TP concentration and baseline TSS concentration were derived. Absent sufficient monitoring data, the technology-based effluent limitation (TBEL) concentrations should be used as the baseline concentrations. Using the updated flow and baseline concentrations, the baseline TP load should be updated to 54.8 lbs/month and the baseline TSS load should be updated to 1644 lbs/month.

For We Energies Germantown Outfall 002, the baseline flow should be updated to 0.15 MGD, the baseline TP concentration should be updated to 1.0 mg/L, and the baseline TSS concentration should be updated to 30 mg/L. We Energies Germantown Outfall 002 is the outlet from a site detention basin which collects intermittent discharges from the inlet air cooling system (including evaporative condenser blowdown, cooling coil condensate, and ice-water storage tank

discharge). The inlet air cooling system was taken out of service in November 2009 and is currently in long-term layup. The inlet air cooling system may be placed back into service if the electric system demand requires its usage, in which case the intermittent wastewater discharges to the detention basin would resume. Even with the inlet air cooling system in operation, discharge from the detention basin may or may not occur depending on the volume, duration, antecedent conditions and other concurrent processes discharging to the detention basin. It is possible that the flow can be as high as 0.72 MGD occasionally if the ice water storage tanks are drained to perform maintenance. Typically, though, the flow is more on the order of 0.15 MGD, which represents the design flows of the evaporative condenser blowdown and the cooling coil condensate. Moreover, the note on Table 4-1 for We Energies Germantown Outfall 002 indicates that the intermittent discharge is seasonal, operating *May* through *November*; yet the table only specifies baseline flow, concentrations, and loads *May* through *October*. Also, flow can occur as early as *April* if ice-making begins then to prepare the ice water storage tanks for use during the warmer months. Therefore, the baseline flow, concentrations, and loads should be updated to indicate that they occur *April* through *November*. Since the WPDES Permit does not require monitoring or set limits for phosphorus or total suspended solids, it is unclear how the baseline TP concentration and baseline TSS concentration were derived. Absent sufficient monitoring data, the TBEL concentrations should be used as the baseline concentrations. Using the updated flow and baseline concentrations, the baseline TP load should be updated to 38.1 lbs/month and the baseline TSS load should be updated to 1142 lbs/month.

We Energies Germantown Outfall 003 consists of partially demineralized (purified) groundwater. While the TMDL Study report incorrectly used a baseline flow of 0 MGD for Outfall 003 (the design flow rate should be 0.003 MGD), we agree that the baseline loads for TP and TSS should continue to be 0 lbs/month. This would be consistent with how the Department calculated baseline loads for Arkema, Inc (WPDES Permit Number 0027731). As described in Table 4-1 for the TMDL Draft Report for Arkema, Inc.:

“Water supply is from a groundwater source per WDNR. Background TP and TSS are present in the effluent from the source water. Point source is not contributing TP or TSS beyond that which is present in the water supply. For these reasons, no TP or TSS reductions are necessary to meet TMDL targets.”

We request that the Department update the baseline flow for We Energies Germantown Outfall 003 to 0.003 MGD and the note on Table 4-1 to match the note specified for Arkema, Inc.

For We Energies Milwaukee Heating Plant entries in Table 4-1, the baseline flow and TP concentration entries could not be reproduced using data from discharge monitoring reports submitted over the past eight years (for 2008 – 2015 monitoring years). The baseline flows used were much lower – in some cases ten times lower – than the highest annual average flows

reported during that timeframe, and were tens or even hundreds of times lower than the maximum design flow rates. We request that the Department update the baseline flow for We Energies Milwaukee Heating Plant outfalls as follows, and work with us to determine the appropriate baseline TP concentrations. The design flow rate for Outfalls 001, 002, and 003 is 0.108 MGD; for Outfall 004 is 0.072 MGD; and for Outfall 006 is 0.1296 MGD.

Section 6.4.1 – Wasteload Allocations for Permitted Point Source Dischargers. The TMDL Study report should better explain the basis for the wasteload allocations. The report does not adequately explain how the monthly wasteload allocations were derived. The report states that “individually permitted point source discharges received allocations proportional to their contribution to the total baseline load,” which lacks specificity as to what concentrations were used to derive the wasteload allocations. The report further states how the monthly allocations were converted to daily allocations and mentions that TSS mass allocations will be expressed as a concentration with a floor of 12 mg/L monthly average. It is not intuitive how the monthly wasteload allocations for TP and TSS presented in Tables A.17 and A.19 were derived, and it does not appear that the mass TSS allocations correspond to concentrations greater than or equal to 12 mg/L. For instance, for the months of July through October, it appears that the monthly TSS concentrations used to derive the monthly TSS waste load allocations for We Energies Germantown Outfall 001 ranged from 3-6 mg/L. We request that the TMDL Study report better explain how monthly waste load allocations were derived, and if a TSS floor concentration is intended to be used (as is currently specified in the report), that the waste load allocations for the We Energies facilities be recalculated.

Section 6.4.1 – Permitted Point Source Dischargers. The Department should use the same basis for baseline load calculations for all point source dischargers. The report reiterates the basis for baseline load calculations, which was explained in Section 4.3.2.1. See the comment made previously regarding Section 4.3.2.1.

Section 6.4.2 – General Permitted Dischargers. The Department should update the TP concentration attributed to City of Milwaukee water. See the comment made previously regarding the TP concentration in Section 4.3.2.3.

Tables A.16 – A.19 – Wasteload Allocations by Source for TP and TSS. The tables contain erroneous data for We Energies facilities and should be corrected. For We Energies Milwaukee Heating Plant, it is not clear how the wasteload allocations for the individual outfalls were derived. Moreover, the implications of potentially incorrect allocations are unclear. The TMDL Study report indicates that, while individual mass allocations have been assigned to non-contact cooling water (NCCW) general permitted facilities, the allocations will be grouped by watershed. The report goes on to explain that monitoring data will be used to track the total mass allocation used by NCCW general permitted facilities in each watershed and, if it is

determined that the allocation is insufficient, facilities will be switched to individual permits. It is not clear whether facility-specific monitoring data will be compared to facility-specific allocations or whether the monitoring data in aggregate for NCCW permitted facilities will be compared to the total allocation set aside for NCCW permits. We request that the Department assist us in understanding how the wasteload allocations for the We Energies Milwaukee Heating Plant facilities were derived and how the monitoring data will be used for tracking purposes.

For We Energies Germantown, there are a number of inaccuracies leading to incorrect wasteload allocations. As a starting point, NR 102.06(6), Wisconsin Administrative Code, excludes certain waters from the otherwise applicable phosphorus water quality criteria in NR 102.06.

Specifically, NR 102.06(6)(c) provides that “wetlands, including bogs,” are not subject to the phosphorus water quality criterion. All outfalls at We Energies Germantown discharge to a wetland. Specifically, Outfalls 001 and 002 discharge to a “S3/E1K” wetland and Outfall 003 discharges to an “E1K” wetland, as classified on Wisconsin’s Wetlands Inventory (viewable on WDNR’s Surface Water Data Viewer). Wastewater discharges from these outfalls travel anywhere from 0.2 – 0.5 miles before entering an unnamed tributary (classified as an intermittent stream). The unnamed tributary flows to the Menomonee River. The distance from the outfalls to the Menomonee River ranges from 0.7 miles to 0.9 miles. See Attachment 1. Since the facility is not subject to a phosphorus water quality criterion, we do not believe that phosphorus limits or TMDL phosphorus wasteload allocations are warranted.

If the Department proceeds with including TP wasteload allocations for We Energies Germantown, we request that the allocations be revised to accurately account for the design conditions of the facility. In addition, the TSS concentration used should be greater than or equal to 12 mg/L, consistent with the methodology described in Section 6.4.1. For Outfall 001, the design flow rate of 0.216 MGD should be used and discharge occurs year-round. For Outfall 002, the design flow rate of 0.15 MGD should be used and discharge occurs from April through November. For Outfall 003, the TP and TSS waste load allocations and notes should be updated to match the wasteload allocations and notes used for Arkema, Inc. For additional details, see the comments made previously regarding Table 4-1 and Section 6.4.1.

Revised tables depicting baseline loads and waste load allocations for We Energies Germantown are provided in Attachment 2.

Table “Allocations: Average Monthly Phosphorus Limits.” The table erroneously contains data for We Energies Valley Power Plant Outfall 005. This table is not referenced in the TMDL Study report, but is located on the Department’s website with the TMDL Study materials. The table includes calculated monthly TP Permit Limits (lbs/day) and calculated equivalent concentrations in mg/L using Monthly TP Permit Limit at Design Flow for various facilities, including We Energies Valley Power Plant Outfall 005. The Valley Power Plant

WPDES Permit was recently modified (with a modified permit effective date of October 1, 2016) and Outfall 005 was removed from the permit as reverse osmosis system reject no longer discharges to a surface water body. Instead, seasonal reverse osmosis system reject, along with other process wastewaters, discharge to the sanitary sewer system for treatment.

We appreciate the opportunity to comment on the draft Milwaukee Basin Total Maximum Daily Load Study being completed by the Department. If you have any questions or need additional information, please contact Elizabeth Hellman, Principal Environmental Engineer, at 414-221-3235 or by email at Elizabeth.Hellman@we-energies.com.

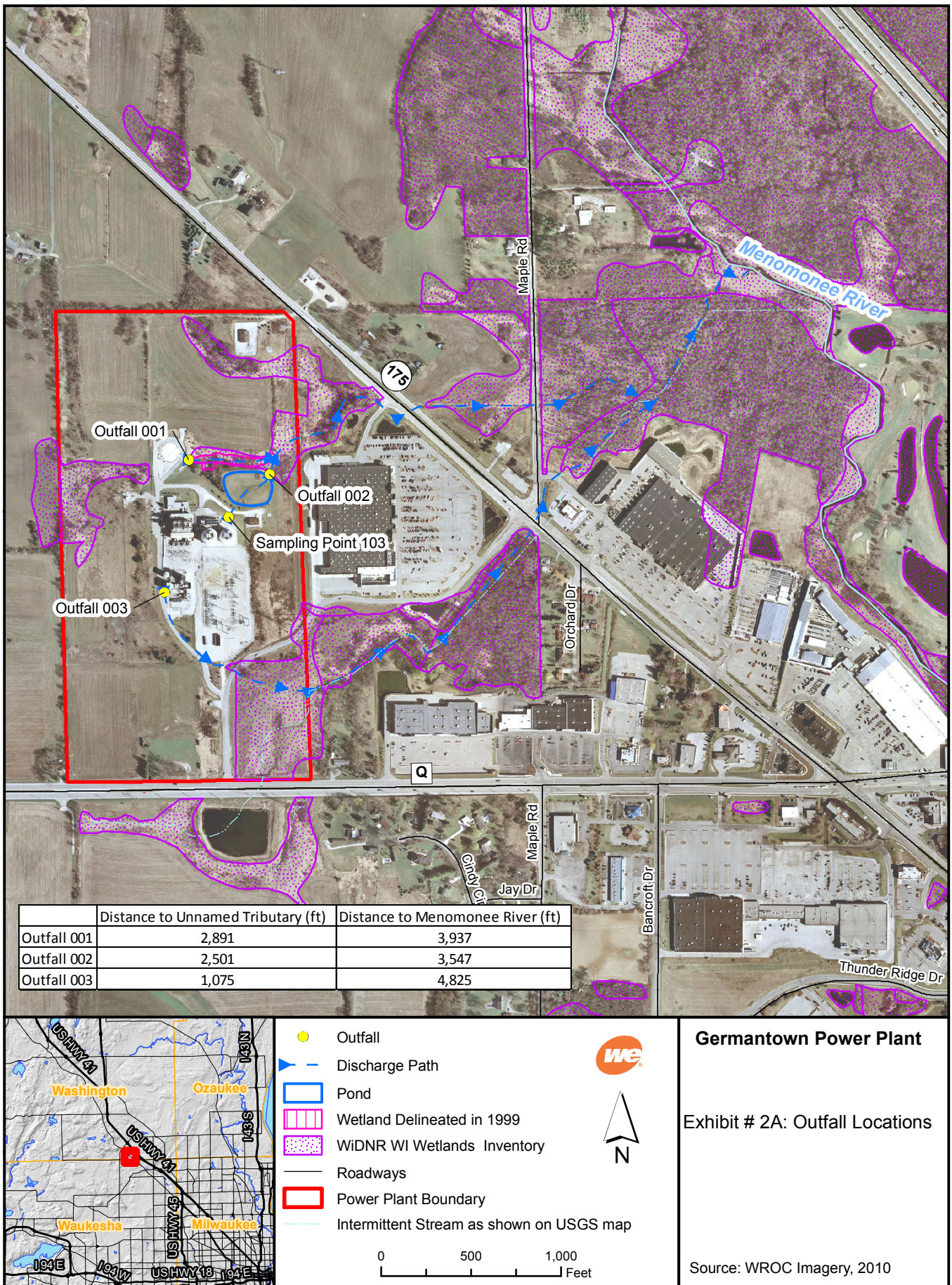
Sincerely,

A handwritten signature in black ink, appearing to read "Bruce W. Ramme", with a long horizontal flourish extending to the right.

Bruce W. Ramme, Ph.D., P.E.

Attachments

Attachment 1 – We Energies Germantown Outfalls Discharging to Wetlands



Germantown Power Plant
 Exhibit # 2A: Outfall Locations

Source: WROC Imagery, 2010

Attachment 2 – Revised Tables Depicting Baseline Loads and Wasteload Allocations for We Energies Germantown

Cells shaded in yellow reflect revisions.

Table 4-1 – Permitted Point Sources in the Milwaukee River Basin TMDLs

| Facility Name | Permit Number | Outfall Number | Permit Type | TMDL Reach | Baseline Flow (MGD) | Baseline TP Concentration (mg/L) | Baseline TP Load (lbs/month) | Baseline TSS Concentration (mg/L) | Baseline TSS Load (lbs/month) | Baseline FC Concentration (cells/100 mL) | Baseline FC Load (cells/month) | Notes | Map Number |
|------------------------|---------------|----------------|-------------|------------|---------------------|----------------------------------|------------------------------|-----------------------------------|-------------------------------|--|--------------------------------|---|------------|
| We Energies Germantown | 0042757 | 001 | Individual | MN-01 | 0.216 | 1.00 | 54.8 | 30 | 1644 | 0 | 0 | Intermittent discharge operates year round. Oil/Water Separator. Flow from permit application (oil/water separator design flow) | 167 |
| We Energies Germantown | 0042757 | 002 | Individual | MN-01 | 0.15 (April – Nov) | 1.00 (April – Nov) | 38.1 (April – Nov) | 30 (April – Nov) | 1142 (April – Nov) | 0 | 0 | Intermittent discharge, operates April through November. Evaporative condenser blowdown, cooling coil condensate, ice water storage tanks. Flow represents design flow for the normal discharges of evaporative condenser blowdown and cooling coil condensate. | 168 |
| We Energies Germantown | 0042757 | 003 | Individual | MN-01 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0 | Discharge of partially demineralized groundwater from portable demineralizers temporarily located onsite. Water supply is from a groundwater source. Background TP and TSS are present in the effluent from the source water. Point source is not contributing TP or TSS beyond that which is present in the water supply. For these reasons, no TP or TSS reductions are necessary to meet TMDL targets. | 169 |

Note: The Baseline Load was calculated as follows:

$$\text{Baseline Load (lbs/month)} = \text{Baseline Flow (MGD)} \times 30.4 \text{ days/month} \times \text{Baseline Concentration (mg/L)} \times 8.34$$

Table A.7 (MN) – Baseline Point Source Flows and Loads

| Facility Name | Permit Number | Permit Type | Outfall Number | TMDL Reach | Month | Flow (MGD) | Flow (cfs) | TP Conc (mg/L) | TP Load (lbs/month) | TSS Conc (mg/L) | TSS Load (lbs/month) | Fecal Coliform Conc (cfu/100mL) | Fecal Coliform Load (billion cells/month) | Notes |
|------------------------|---------------|-------------|----------------|------------|------------------------|------------|------------|----------------|---------------------|-----------------|----------------------|---------------------------------|---|---|
| We Energies Germantown | 0042757 | Individual | 001 | MN-01 | All | 0.216 | 0.334 | 1.00 | 54.8 | 30 | 1644 | 0 | 0 | Intermittent discharge operates year round. Oil/Water Separator. Flow from permit application (oil/water separator design flow) |
| | | | 002 | MN-01 | April through November | 0.15 | 0.232 | 1.00 | 38.1 | 30 | 1142 | 0 | 0 | Intermittent discharge, operates April through November. Evaporative condenser blowdown, cooling coil condensate, ice water storage tanks. Flow represents design flow for the normal discharges of evaporative condenser blowdown and cooling coil condensate. |
| | | | 003 | MN-01 | All | 0.003 | 0.005 | 0 | 0 | 0 | 0 | 0 | 0 | Discharge of partially demineralized groundwater from portable demineralizers temporarily located onsite. Water supply is from a groundwater source. Background TP and TSS are present in the effluent from the source water. Point source is not contributing TP or TSS beyond that which is present in the water supply. For these reasons, no TP or TSS reductions are necessary to meet TMDL targets. |

Note: The Load was calculated as follows:

$$\text{Load (lbs/month)} = \text{Flow (MGD)} \times 30.4 \text{ days/month} \times \text{Concentration (mg/L)} \times 8.34$$

Table A.16 (MN) – Daily Total Phosphorus Wasteload Allocation by Permitted Point Source

| Facility Name | Permit Number | Outfall Number | Permit Type | Reach | Daily TP Waste Load Allocation (lbs/day) | | | | | | | | | | | | Annual Load Allocation (lbs/year) |
|------------------------|---------------|----------------|-------------|-------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------------------------|
| | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| We Energies Germantown | 0042757 | 001 | Individual | MN-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| We Energies Germantown | 0042757 | 002 | Individual | MN-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| We Energies Germantown | 0042757 | 003 | Individual | MN-01 | # | # | # | # | # | # | # | # | # | # | # | # | # |

Background P is present in the effluent from the source water. The point source is not contributing P beyond that which is present in the intake, therefore no P reductions are necessary to meet TMDL targets.

-- Outfall discharges to a wetland, which is excluded from phosphorus water quality criteria in NR 102.06(6)(c).

Table A.17 (MN) – Monthly Total Phosphorus Wasteload Allocation by Permitted Point Source

| Facility Name | Permit Number | Outfall Number | Permit Type | Reach | Monthly TP Waste Load Allocation (lbs/month) | | | | | | | | | | | | Annual Load Allocation (lbs/year) |
|------------------------|---------------|----------------|-------------|-------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------------------------|
| | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| We Energies Germantown | 0042757 | 001 | Individual | MN-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| We Energies Germantown | 0042757 | 002 | Individual | MN-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| We Energies Germantown | 0042757 | 003 | Individual | MN-01 | # | # | # | # | # | # | # | # | # | # | # | # | # |

Background P is present in the effluent from the source water. The point source is not contributing P beyond that which is present in the intake, therefore no P reductions are necessary to meet TMDL targets.

-- Outfall discharges to a wetland, which is excluded from phosphorus water quality criteria in NR 102.06(6)(c).

Table A.18 (MN) – Daily Total Suspended Solids Wasteload Allocation by Permitted Point Source

| Facility Name | Permit Number | Outfall Number | Permit Type | Reach | Daily TSS Waste Load Allocation (lbs/day) | | | | | | | | | | | | Annual Load Allocation (lbs/year) |
|------------------------|---------------|----------------|-------------|-------|---|------|------|------|------|------|------|------|------|------|------|------|-----------------------------------|
| | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| We Energies Germantown | 0042757 | 001 | Individual | MN-01 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 51.7 | 7,890 |
| We Energies Germantown | 0042757 | 002 | Individual | MN-01 | 0 | 0 | 0 | 35.9 | 35.9 | 35.9 | 35.9 | 35.9 | 35.9 | 35.9 | 35.9 | 0 | 3,663 |
| We Energies Germantown | 0042757 | 003 | Individual | MN-01 | # | # | # | # | # | # | # | # | # | # | # | # | # |

Background TSS is present in the effluent from the source water. The point source is not contributing TSS beyond that which is present in the intake, therefore no P reductions are necessary to meet TMDL targets.

Note: These waste load allocations were derived using the formula in Section 6.4.1 of the TMDL Study report and the revised monthly waste load allocations in Table A.19. Please note, the monthly waste load allocations were derived using a minimum TSS concentration of 12 mg/L. The waste load allocations may be even higher based on the TSS concentrations used.

Table A.19 (MN) – Monthly Total Suspended Solids Wasteload Allocation by Permitted Point Source

| Facility Name | Permit Number | Outfall Number | Permit Type | Reach | Monthly TSS Waste Load Allocation (lbs/month) | | | | | | | | | | | | Annual Load Allocation (lbs/year) |
|------------------------|---------------|----------------|-------------|-------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------------------|
| | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| We Energies Germantown | 0042757 | 001 | Individual | MN-01 | 670.14 | 605.28 | 670.14 | 648.52 | 670.14 | 648.52 | 670.14 | 670.14 | 648.52 | 670.14 | 648.52 | 640.14 | 7,890 |
| We Energies Germantown | 0042757 | 002 | Individual | MN-01 | 0 | 0 | 0 | 450.37 | 465.37 | 450.37 | 465.37 | 465.37 | 450.36 | 465.37 | 450.36 | 0 | 3,663 |
| We Energies Germantown | 0042757 | 003 | Individual | MN-01 | # | # | # | # | # | # | # | # | # | # | # | # | # |

Background TSS is present in the effluent from the source water. The point source is not contributing TSS beyond that which is present in the intake, therefore no P reductions are necessary to meet TMDL targets.

Note: These waste load allocations were derived using the revised design flow rate from Table A.7 and a minimum TSS concentration of 12 mg/L. The waste load allocations may be even higher based on the TSS concentrations used.



November 30, 2016

Kevin Kirsch
Wisconsin Department of Natural Resources
101 S Webster Street
Madison, WI 53703

Re: Milwaukee River TMDL Report – Public Comment
WI DNR Kettle Moraine State Fish Hatchery – Pre-Design Study Projected Flows and Loads

Dear Kevin:

The Kettle Moraine Springs State Fish Hatchery (WPDES Permit No. WI-0026255) is in planning for a complete rebuild of existing infrastructure (groundbreaking planned for 2018). A Pre-Design Study is being finalized and includes recommendations for a new fish species hatchery aquaculture system, water supply facilities, wastewater treatment facilities, utilities, and buildings. As a result, the anticipated discharge flow rate is to be increased to 2.88 MGD, compared to the 1.2 MGD flow rate currently utilized in the draft Milwaukee River TMDL document.

We are requesting that the baseline flow information for outfall 001 be updated with the projected flow rate before the TMDL report is finalized. Updating the flow will accommodate the planned facilities flow rate, will likely prevent the need to submit a written notice of interest for reserve capacity, and will allow for a new or increased wasteload allocation.

Note that on October 21, 2016 an effluent limits request was submitted to the Wisconsin DNR. The request included proposed flow rates at the existing outfall location (branches of Melius Creek, a tributary to the North Branch of the Milwaukee River). On November 23, 2016 effluent limits were completed by the DNR. Their memorandum indicates that the calculated phosphorus limit according to ch. NR 217.13, Wis. Adm. Code is set equal to the total phosphorus water quality method of 0.075 mg/L for which treatment could reasonably be implemented. The effluent limits request and the DNR correspondence/memorandum are attached to this document.

Please contact us if you have any question or if you would like to discuss the project.

Sincerely,

MSA Professional Services, Inc.

A handwritten signature in blue ink that reads "Matt Castillo".

Matt Castillo, P.E.
Project Engineer

CC: Nick Lent, DNR; Jacob Zimmerman, DNR

Offices in Illinois, Iowa, Minnesota, and Wisconsin

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March 2018

Milwaukee River TMDL Report – Public Comment
November 30, 2016

ATTACHMENTS

CORRESPONDENCE/MEMORANDUM

DATE: November 23, 2016

FILE REF: 3200

TO: Jake Zimmerman – SER

FROM: Nick Lent – SER

SUBJECT: Water Quality-Based Effluent Limitations for design planning purposes at WI DNR Kettle Moraine Springs Fish Hatchery, WPDES Permit No. WI-0026255-09 in Sheboygan County

The Kettle Moraine Springs Fish Hatchery is in planning for a complete rebuild and upgrade. The following memo is in response to your request for an evaluation of the need for water quality-based effluent limitations using Chapters NR 102, 105, 106, 207, 210 and 217 of the Wisconsin Administrative Code (where applicable), for an increased discharge from the WI DNR Kettle Moraine Springs Fish Hatchery in Sheboygan County. The existing outfall discharges to an unnamed tributary to Melius Creek, located in the North Branch Milwaukee River Watershed in the Milwaukee River Basin. This discharge is included in the draft Milwaukee River TMDL. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis. These limits shall be considered those necessary to meet water quality standards of the direct and downstream waters.

Outfall 001: Expansion to 2.88 MGD as 12-month average

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Six-Month Average | Footnotes |
|------------------|---------------|---------------|----------------|-----------------|-------------------|-----------|
| BOD ₅ | | | | | | |
| May – Oct | 5.0 mg/L | | 5.0 mg/L | 5.0 mg/L | | |
| Nov – April | 10 mg/L | | 10 mg/L | 10 mg/L | | |
| TSS | | | | | | 1,2 |
| pH | 9.0 su | 6.0 su | | | | |
| Ammonia Nitrogen | | | | | | |
| May – Sep | 2.6 mg/L | | | 2.6 mg/L | | |
| Oct – April | 2.1 mg/L | | | 2.1 mg/L | | |
| Phosphorus | | | | | | 1,2 |
| Temperature | | | | | | 3, 4 |

Footnotes:

1. Best management practices are recommended in order to minimize the concentration and mass of total suspended solids and total phosphorus discharged to the receiving water.
2. A third party (Milwaukee Metropolitan Sewerage District) Total Maximum Daily Load (TMDL) is being developed for the Milwaukee, Menomonee, and Kinnickinnic Rivers. The TMDL will address phosphorus, TSS, and Fecal Coliform water quality impairments within these watersheds and provide waste load allocations (WLA) required to meet water quality standards. Projected mass limits for phosphorus and TSS based on the draft TMDL are provided on pages 8 and 10 of the attached report. An allocation for Fecal Coliform is not provided in the draft TMDL, and effluent limits are not needed, because the discharge does not contain sanitary waste and the discharge of bacteria is not expected in this type of discharge.
3. Monitoring only.
4. Best management practices recommended to limit temperature increase before discharge.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nick Lent at (414) 263 - 8623 or Nicholas.Lent@wisconsin.gov.

Attachment: Planning Limits for the Upgraded WI DNR Kettle Moraine Springs Fish Hatchery

PREPARED BY: Nick Lent – Wastewater Engineer, Effluent Limits Calculator

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**Water Quality-Based Effluent Limitations for
WI DNR Kettle Moraine Springs Fish Hatchery****WPDES Permit No. WI-0026255**

Prepared by: Nick Lent

PART 1 – BACKGROUND INFORMATION

Facility Description: The Wisconsin Department of Natural Resources is in planning for a replacement and upgrade of the existing facilities at the Kettle Moraine Springs Fish Hatchery (KMSFH). Due to detection of VHS disease a number of years ago, rearing of Skamania-strain of rainbow trout has been halted. Currently, only Chambers Creek and Ganaraska-strain rainbow trout spawn are collected for hatching and rearing at the Winton Farm. All egg incubation is currently done at the KMSFH Annex, located several miles away. Groundbreaking for the construction of a significant upgrade (completely new, all in one building and footprint) near Winton Farm Hatchery Building # 3 is tentatively planned for July 2018. Creation of a biosecure isolation brood stock facility would allow improved Great Lakes Species handling at KMSFH, including resumed Skamania production. Some chinook salmon have been raised in recent experimentation, and more will likely be raised in the future facility. The KMSFH has been identified as an important coldwater species production facility for the attainment of Wisconsin's stocking needs in the Lake Michigan basin. Aging infrastructure and water supply issues point to the need for a rehabilitation and upgrade of the source water treatment and supply, hatchery infrastructure, and wastewater treatment system.

Wastewater Description: The wastewater consists of cleaning water, continuous flow (topping water), and harvesting discharge. These discharges are treated in a four pond wastewater treatment system. The first two ponds are settling ponds. The third pond has one aerator and three rolls of plastic media similar to plastic snow fence, which function as a fixed film biological treatment system. The plastic media is periodically removed and pressure washed to reduce calcium buildup. The fourth pond allows for any final clarification and is impounded by a V-notch weir for effluent flow measurement. The effluent is discharged to an unnamed tributary which, along with other spring flow, forms the headwaters of Melius Creek. Effluent discharge flow rate has averaged about 540 gpm, or 0.78 MGD over the last 10 years. A small amount of the flow is recycled from pond # 4 back to the head of the raceways.

Future Upgrades: HDR Engineering Inc. has completed a study detailing the need for increased capacity and infrastructure rehabilitation or replacement at a number of the Department's hatcheries. Considering the range of aquatic environments in the state, Wisconsin's stocking needs are diverse. The KMSFH has been identified as prime for a replacement and upgrade to meet the states coldwater stocking needs, primarily for Great Lakes species. In order to meet anticipated needs, production at the KMSFH is slated to increase by approximately five or six times the current levels. Supplemental wells and improved flow recycling technology is anticipated in order to allow for the increase in production capability.

A consultant has requested that effluent limits be calculated and presented for an increased rate of discharge rate to the same point of the unnamed tributary. The increased discharge would be a result of a full scale replacement and upgrade of the existing facility, including additional groundwater sources from newly drilled wells.

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Existing Permit Limitations: For reference, the existing permit (issued July 2005) includes the following effluent limitations for outfall 001 at the Winton Farm.

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Monitoring Only |
|---|----------------------|---------------|---|----------------------|-----------------|
| BOD ₅ May – Oct Nov – April | | | 6.2 mg/L (59 lbs/day) 10 mg/L (98 lbs/day) | | |
| TSS | 20 mg/L | | | 10 mg/L | |
| pH | 9.0 su | 6.0 su | | | |
| Ammonia Nitrogen May – Sept Oct - April | 6.3 mg/L 6.3 mg/L | | | 3.6 mg/L 3.7 mg/L | |
| Formaldehyde | 2.1 mg/L | | | | |
| Diquat dibromide | 1.7 mg/L | | | | |
| Potassium Permanganate | 15.5 mg/L | | | | |
| Temperature | | | | | X |

Receiving Water Information:

- Name: Unnamed Tributary (WBIC 3000002) to Melius Creek & North Branch Milwaukee River.
- Location: T13N, R20E, SE ¼, NE ¼, NE ¼ of Section 10
- Classification: Coldwater, Great Lakes Basin – Melius Creek is a Class II trout stream. Effluent limits for ammonia nitrogen were previously calculated using coldwater criteria for the unnamed tributary, which is believed to be appropriate due to its spring fed base flow and demonstrated temperature recorded at the v notch wier situated in the direct flow path from westward upgradient springs.
- Low flow: effluent limits have previously been calculated using low flow rates equal to the estimated spring box flow rate (1000gpm at Winton used in 1994 memo). However because the final settling pond is situated in the flow path from westward upgradient springs, and compliance samples are collected at the discharge from the v notch wier; the receiving water low flow is set equal to zero in the appropriate conservation of mass equations. This sets the calculated water quality based effluent limits equal to the water quality criteria (most or all of which are being met).
In somewhat comparable situations, a receiving stream withdrawal factor (“f”) can be used in the mass balance approach to account for the fraction of the recorded discharge rate that would still have made it downstream. However in this case, the recorded flow at the v notch wier has only been about 44% of the previous spring flow estimate of 1000 gpm, which suggests spring flow has either reduced or was never that much in the first place. Additionally, the ponds are operated as a continuous flow through system, and flow is only monitored from pond 4, so there is no clear way to obtain a 100% distinction between wastewater and natural streamflow water quality recorded at the wier.
- Hardness as CaCO₃: Expected to be equal to discharge concentration (~300 mg/L), but not needed because no toxics are known or expected to in effluent with criteria affected by hardness.
- Background toxics concentrations: Not applicable. No upstream environment. Low flow = 0 cfs.
- Multiple dischargers: The Village of Random Lake and Cascade also discharge within the North Branch Milwaukee River watershed, but KMSFH is the only discharger to the unnamed tributary.

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Effluent Information:

- Flow rates: The anticipated discharge flow rates are limited by the anticipated yields of wells on the property. Increased water recycling is planned for the new facility (70 – 90 %) in order ensure sufficient water supply. The following rates were included in the October 2016 effluent limit request:
 - Peak Flow = 3,000 gpm (4.32 MGD) ; used as a maximum day
 - Average Flow = 2,000 gpm (2.88 MGD) ; used as a maximum 12 month average
 - Minimum Flow = 500 gpm (0.72 MGD) ; not used
 For reference, the average flow reported from May 2011 – April 2016 was 0.64 MGD, or 444 gpm and the maximum 12-month average flow previously used for limit calculation was 1.2 MGD.
- Hardness as CaCO₃: ~300 mg/L
- Acute dilution factor used: This facility does not have an approved Zone of Initial Dilution (ZID).
- Effluent characterization: Effluent monitoring required for outfall 001 in the existing permit includes ammonia nitrogen, biological oxygen demand (5-day), temperature, temperature maximum, total suspended solids, total phosphorus, and flow rate. Due to available data, effluent monitoring for maximum temperature and total phosphorus was waived in the permit application for outfall 001. It is important to note that some effluent results may or may not reflect pass through concentrations. Chemical specific monitoring of the water supply may be needed to more accurately predict pollutant loading and generation from the aquaculture operations. A summary of available effluent data (collected at point of discharge) is listed in the following table:

| Parameter | # data points | # non detects | Average | Range |
|--------------------|---------------|---------------|------------|-------------------|
| NH ₃ -N | 127 | 0 | 0.16 mg/L | 0.019 -0.526 mg/L |
| BOD ₅ | 127 | 121 | 0.15 mg/L | < 2.0 - 7.7 mg/L |
| TSS | 66 | 40 | 1.35 mg/L | < 2.0 - 8.0 mg/L |
| Total P | 13 | 0 | 0.062 mg/L | 0.043 -0.08 mg/L |
| Temperature | 128 | 0 | 47.5 F | 38 - 60 F |

Averages were computed using a zero in place of non-detects.

- Water Source: Currently, several wells and artesian springs make up the water source for operation. A new, deeper well has been drilled near building 1. The ultimate water supply for the increased discharge will continue to come from wells and artesian springs.
- Additives: The existing permit includes limitations for formaldehyde (formalin), diquat dibromide, and potassium permanganate, however these additives haven't been required in recent years due to improved husbandry. The potential use of formalin is discussed in Part 7.

PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

With the exclusion of ammonia nitrogen, the discharge water from the fish hatchery's processes is not expected to contain substances in toxic amounts with criteria listed in ch. NR 105, Wis. Adm. Code. Effluent monitoring data in the past at similar hatcheries has shown that concentrations of toxics at a level of concern are uncommon. Copper data collected at KMSFH, for example, has shown the effluent concentration is less than the level of detection. For these reasons, there is no need to evaluate the necessity of water quality-based effluent limitations for toxic substances, besides ammonia nitrogen, which is discussed in Part 3.

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**PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR AMMONIA NITROGEN**

As stated earlier, with a receiving water low flow set equal to zero cfs, the water quality based effluent limit is set equal to the available and appropriate water quality criteria found in ch. NR 102 and 105 of Wis. Adm. Code. Due to recently promulgated code changes, daily maximum limits for toxic substances may be calculated using the receiving water low flow instead of the 2 X ATC approach if it is determined that the 2 X ATC method is not protective of the fish and aquatic life uses in the receiving water. Because the water passing through the v-notch wier constitutes 100 % of the stream flow at the point of discharge, it appears necessary to recalculate the daily maximum and monthly average ammonia nitrogen limits using the receiving water low flow of zero cfs (calculated limits then equal available criteria).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC):

Daily maximum limitations are based on acute toxicity criteria, which are a function of the effluent pH and the receiving water classification. The acute toxicity criterion (ATC) for ammonia is calculated using the following equation.

$$\text{ATC in mg/L} = [A \div (1 + 10^{(7.204 - \text{pH})})] + [B \div (1 + 10^{(\text{pH} - 7.204)})]$$

Where:

A = 0.275 and B = 39.0 for a Coldwater Category 1 fishery, and
pH (su) = maximum reasonably expected pH of the effluent

The current daily maximum of 6.2 mg/L limit was based on a maximum reasonably expected effluent pH of 8.3 s.u. (as a 99th upper percentile value from the previous permit term (-08)) and the 2 X ATC daily maximum effluent limit calculation method.

A review of 74 daily maximum effluent pH results from October through April in the past 10 years indicates the 1-day P₉₉ of winter effluent pH is 8.57 s.u. Since pH data is only reported using one decimal place, and only two of the 74 data points were above 8.57 s.u., a value of 8.5 s.u. is believed to represent the maximum reasonably expected winter effluent pH, and therefore most appropriate for determining winter daily maximum limitations for ammonia nitrogen. Substituting a value of 8.5 into the equation above yields an ATC = 2.14 mg/L (2.1 mg/L using two significant digits).

A review of 74 daily maximum effluent pH results from May through September in the past 10 years indicates the 1-day P₉₉ of summer effluent pH is 8.46 s.u. Since pH data is only reported using one decimal place, and only two of the 74 data points were above 8.46 s.u., a value of 8.4 s.u. is believed to represent the maximum reasonably expected summer effluent pH, and therefore most appropriate for determining summer daily maximum limitations for ammonia nitrogen. Substituting a value of 8.4 into the equation above yields an ATC = 2.59 mg/L (2.6 mg/L using two significant digits).

Looking at available effluent data, it does not appear that there is much risk of ammonia concentrations being higher than the aforementioned daily maximum limits corresponding to the maximum reasonably expected effluent pH. However, presented below is a table of daily maximum limitations corresponding to various effluent pH values. Use of this table is not necessarily recommended in the permit, but it is presented herein for informational purposes.

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Daily Maximum NH₃-N Limits for Various Effluent pH – Coldwater

| Effluent pH - su | NH ₃ -N Limit – mg/L | Effluent pH - su | NH ₃ -N Limit – mg/L |
|------------------|---------------------------------|------------------|---------------------------------|
| pH ≤ 7.1 | ≥ 22, calculate | 8.0 < pH ≤ 8.1 | 4.6 |
| 7.1 < pH ≤ 7.2 | 20 | 8.1 < pH ≤ 8.2 | 3.8 |
| 7.2 < pH ≤ 7.3 | 18 | 8.2 < pH ≤ 8.3 | 3.2 |
| 7.3 < pH ≤ 7.4 | 15 | 8.3 < pH ≤ 8.4 | 2.6 |
| 7.4 < pH ≤ 7.5 | 13 | 8.4 < pH ≤ 8.5 | 2.1 |
| 7.5 < pH ≤ 7.6 | 11 | 8.5 < pH ≤ 8.6 | 1.8 |
| 7.6 < pH ≤ 7.7 | 9.6 | 8.6 < pH ≤ 8.7 | 1.5 |
| 7.7 < pH ≤ 7.8 | 8.1 | 8.7 < pH ≤ 8.8 | 1.2 |
| 7.8 < pH ≤ 7.9 | 6.8 | 8.8 < pH ≤ 8.9 | 1.0 |
| 7.9 < pH ≤ 8.0 | 5.6 | 8.9 < pH ≤ 9.0 | 0.9 |

Weekly Average & Monthly Average Limits based on Chronic Toxicity Criteria (CTC):

The ammonia limit calculation also warrants evaluation of weekly and monthly average limits based on chronic toxicity criteria for ammonia, since those limits relate to the assimilative capacity of the receiving water. Ammonia limits were last calculated in 2005. The updated effluent and receiving water low flows are used to re-calculate limits using the procedure in s. NR 106.32, Wis. Adm. Code.

Weekly average and monthly average limits for Ammonia Nitrogen are based on chronic toxicity criteria. The 30-day chronic toxicity criterion (CTC) for ammonia in waters classified for a Coldwater fishery is calculated by the following equation.

$$CTC = E \times \{ [0.0676 \div (1 + 10^{(7.688 - pH)})] + [2.912 \div (1 + 10^{(pH - 7.688)})] \} \times C$$

Where:

pH = the pH (su) of the receiving water,

E = 0.854,

C = the minimum of 2.85 or $1.45 \times 10^{(0.028 \times (25 - T))}$,

T = the temperature (°C) of the receiving water

The 4-Day criterion is simply equal to the 30-Day criterion multiplied by 2.5. Because the receiving water low flow is equal to zero cfs, the weekly and monthly average limits are set equal to the calculated criteria. The inputs relative to calculation are shown in the following table:

| Chronic Exposure Ammonia Nitrogen Water Quality Based Effluent Limitations | Summer | Winter | |
|---|----------------------------------|-----------|------|
| | May-Sep | Oct-April | |
| Background Information (effluent data used where appropriate): | 7-Q ₁₀ low flow (cfs) | 0.0 | 0.0 |
| | 7-Q ₂ low flow (cfs) | 0.0 | 0.0 |
| | Ammonia (mg/L) – no effect. | 0.1 | 0.1 |
| | Temperature (°C) – effluent. | 15 | 3 |
| | pH (su) – geometric mean effl. | 7.82 | 7.92 |
| | % of low flow used – no effect. | N/A | N/A |
| | Reference Weekly Flow (cfs) | 0.0 | 0.0 |
| | Reference Monthly Flow (cfs) | 0.0 | 0.0 |
| Criteria mg/L: | 4-Day Chronic | 7.52 | 6.81 |
| | 30-Day Chronic | 3.01 | 2.72 |

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| | | | |
|----------------------------------|-----------------|------|------|
| Effluent Limits mg/L: | Weekly Average | 7.52 | 6.81 |
| | Monthly Average | 3.01 | 2.72 |

Conclusions and Recommendations:

Note that the daily maximum limits based upon the ATC are more restrictive than those based on the CTC throughout the entire year. Chapter NR 106.07, Wis. Adm. Code, requires that permits include daily maximum and monthly average effluent limitations where any given limit is considered necessary to protect water quality.

Therefore, consistent with s. NR 106.07, Wis. Adm. Code, **monthly average effluent limitations set equal to the calculated daily maximum effluent limitations would also be needed.**

Although weekly average effluent limit calculations are available, they would not serve a purpose as the daily maximum limits are more restrictive

Although KMSFH is proposing an increased discharge, the calculated effluent limits are not subject to an Antidegradation review in ch. NR 207, Wis. Adm. Code, because the calculated limits based upon the updated flows and input information is more restrictive than the existing limitations which were previously determined to be sufficiently protective of water quality.

In summary, after rounding to two significant figures, the following effluent limitations for Ammonia Nitrogen are recommended for the increased discharge to the unnamed tributary from Kettle Moraine Springs Fish Hatchery. No mass limitations are recommended in accordance with s. NR 106.32(5), Wis. Adm. Code.

| Months Applicable | Daily Maximum | Monthly Average |
|-------------------|---------------|-----------------|
| May-Sep | 2.6 mg/L | 2.6 mg/L |
| Oct-April | 2.1 mg/L | 2.1 mg/L |

PART 4 –PHOSPHORUS**Technology Based Limit (TBL)**

Section NR 217.04(1)(a)2, Wis. Adm. Code requires a total phosphorus technology based limit of 1.0 mg/L for industrial facilities which have exceeded a 60 lb/month threshold. To date, it appears that this threshold has not been exceeded. Based upon the current effluent total phosphorus concentration 0.07 mg/L and proposed discharge flow rates at the existing facility, it still appears as if the 60 lb/month threshold won't be exceeded, so a technology based limit for total phosphorus is not recommended for the upgraded facility (0.07 mg/L total phosphorus X 2.88 MGD X 8.34 X 30 days/month = < 60 lbs/month). However, the need for a more restrictive effluent limit based upon local water quality criteria for total phosphorus must also be considered.

Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to ch. NR 102 (s. NR 102.05), which establish phosphorus standards for

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surface waters. Revisions to ch. NR 217 (s. NR 217, Subchapter III) establish procedures for determining water quality based effluent limits for phosphorus, based on the applicable standards in ch. NR 102.

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names reaches of rivers for which a phosphorus criterion of 0.1 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), s. NR 102.06(3)(b) specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.075 mg/L applies for the unnamed tributary and nearby downstream waters such as Melius Creek and the North Branch Milwaukee River.

The limit calculation formula is described in s. NR 217.13 (2)(a), Wis. Adm. Code, for phosphorus water quality based effluent limitations (WQBELs):

$$\text{Limitation} = [(WQC)(Q_s + (1-f)Q_e) - (Q_s - fQ_e)(C_s)]/Q_e$$

Where:

WQC = 0.075 mg/L for unnamed tributary and nearby downstream waters

Q_s = 100% of the 7-Q₂ (in cfs) of 0.0 cfs

C_s = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d)

Q_e = effluent flow rate (in MGD)

f = the fraction of effluent withdrawn from the receiving water = 0

Because the receiving water low flow is equal to zero cfs, the calculated water quality based effluent limit is equal to the water quality criterion. In practical terms this means that a discharge equal to or less than the water quality criteria will not cause or contribute to an exceedance of the water quality standard based upon the mass balance approach specified in code.

An evaluation of available total phosphorus data (n=37) shows that the average total phosphorus discharge concentration of the current setup is 0.057 mg/L. The 30-day P₉₉, which is an estimate of the maximum 30-day concentration based upon the variability and characteristics of the available data set, is 0.066 mg/L. Considering existing data, it appears that water quality based effluent limits for total phosphorus based upon s. NR 217.13 (2)(a), Wis. Adm. Code, may not be needed because the concentrations of this type of waste stream don't appear to exceed the calculated limit.

TMDL Under Development

A third party (Milwaukee Metropolitan Sewerage District) Total Maximum Daily Load (TMDL) is being developed for the Milwaukee, Menomonee, and Kinnickinnic River watersheds. The TMDL will address phosphorus, TSS, and Fecal Coliform water quality impairments within these watersheds and provide waste load allocations (WLA) required to meet water quality standards.

Monthly average total phosphorus (Total P) effluent limits in lbs/day are calculated based on the draft monthly phosphorus wasteload allocation (WLA) given in pounds per month as suggested in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs* dated April 15, 2013. The draft WLA for this facility is found in the *Total Maximum Daily Loads for Total Phosphorus, Total Suspended Solids and Fecal Coliform Milwaukee River Basin, Wisconsin* draft report dated July 21, 2016.

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Total Phosphorus Effluent Limitations

| Month | Monthly Total P WLA¹ (lbs/month) | Days Per Month | Monthly Ave Total P Effluent Limit² (lbs/day) |
|--------------|--|-----------------------|---|
| Jan | 23.27 | 31 | 0.75 |
| Feb | 21.02 | 28 | 0.75 |
| March | 23.27 | 31 | 0.75 |
| April | 22.52 | 30 | 0.75 |
| May | 23.27 | 31 | 0.75 |
| June | 22.52 | 30 | 0.75 |
| July | 23.27 | 31 | 0.75 |
| Aug | 23.27 | 31 | 0.75 |
| Sept | 23.52 | 30 | 0.78 |
| Oct | 23.27 | 31 | 0.75 |
| Nov | 22.52 | 30 | 0.75 |
| Dec | 23.27 | 31 | 0.75 |

Footnotes:

1- Mikwaukke River TMDL Table A.17 (MI). Monthly Total Phosphorus Allocations by Permitted Point Source (p. 70-71)

2- monthly average Total P effluent limit (lbs/day) = monthly Total P WLA (lbs/month) ÷ days per month

The limits are equivalent to concentrations of 0.075 mg/L at the current facility design flow of 1.2 MGD. At an increased effluent flow rate of 2.88 MGD this would be equal to an equivalent effluent concentration of 0.031 mg/L. **Following EPA approval of the Milwaukee River TMDL monthly average mass effluent limits in accordance with the above table would be recommended for inclusion in the permit and the subsequent reissuance. Additional wasteload allocations above the allocations in an approved TMDL would need to be obtained through water quality trading or from reserve capacity.**

PART 5 – BOD₅, DO, and TSS

Biochemical Oxygen Demand, and Dissolved Oxygen - In establishing biochemical oxygen demand (BOD₅) limitations, the primary intent is to prevent a lowering of dissolved oxygen (DO) levels in the receiving water below water quality standards as specified in ss. NR 102.04(4)(a) and (b), Wis. Adm. Code. The 26-lb method is the most frequently used approach for calculating BOD₅ limits when resources are not available to develop a detailed water quality model. This simplified model was developed in the 1970's by the Wisconsin Committee on Water Pollution on the Fox, Wisconsin, Oconto, and Flambeau Rivers. Further studies throughout the 1970's proved this model to be relatively accurate. The model has since then been used by the Department on many occasions when resources are not available to perform a site-specific model. The "26" value stems from the following equation:

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$$\frac{26 \text{ lbs/day}}{\text{ft}^3/\text{sec}} * \frac{1 \text{ day}}{86,400 \text{ sec}} * \frac{454,000 \text{ mg}}{\text{lbs}} * \frac{1 \text{ ft}^3}{28.32 \text{ L}} = 4.8 = 2.4 * 2 \text{ mg/L}$$

The 4.8 has been calculated by taking 2.4 which is the number one receives when converting 26 lbs of BOD/day/cfs into mg/L, multiplied by 2.0 which is the change in the DO level. A typical background DO level for Wisconsin waters is 7 mg/L, so a 2 mg/L decrease is allowed in order to meet the 5 mg/L standard for warm water streams. The above relationship is temperature dependent and an appropriate temperature correction factor is applied. The 26-lb method is based on a typical 24° C summer value for warm water streams. Adjustments for temperature are made using the following equation:

$$k_t = k_{24} (0.967^{(T-24)})$$

Where k_{24} = 26 lbs of BOD/day/cfs

$$\text{Limitation (mg / L)} = 2.4 (DO_{\text{stream}} - DO_{\text{std}}) \left(\frac{(7 Q_{10} + Q_{\text{eff}})}{Q_{\text{eff}}} \right) (0.967^{(T-24)})$$

Where:

Q_{eff} = effluent design flow = 2.88 MGD

DO_{stream} = background dissolved oxygen = 7 mg/L

DO_{std} = dissolved oxygen criteria from s. NR 102.04(4) = 5.0 mg/L

7- Q_{10} = 0 cfs

T = temperature

Because the 7- Q_{10} low flow of the receiving water is 0.0 cfs, the calculated limits are the lowest that the Department typically gives to facilities. Consistent with available guidance and other effluent dominated discharge permit requirements, **the recommended BOD₅ effluent limitations are 5 mg/L as a weekly average from May through October and 10 mg/L as a weekly average November through April** (rounded to two significant digits). The Department normally doesn't include BOD₅ mass limits in permits when the concentration limits are this low, therefore, **no mass limits are needed**. Because of recently promulgated requirements in ch. NR 106, Wis. Adm. Code, the weekly average concentration limits shall also be expressed as daily maximum and monthly averages. If the once per month monitoring frequency is unchanged, there is no need to adjust the daily maximum limit upwards.

Given the fact that these limits are equal to or less than the limits in the current permit, this doesn't meet the definition of a new or increased discharge in ch. NR 207 and an antidegradation evaluation is not needed.

As there is no dilution available under low-flow conditions, **a DO limit of 7.0 mg/L as a daily minimum is also recommended**. This limit is needed to ensure the assumptions of the 26 lb method are met.

Total suspended solids – Total suspended solids (TSS) limitations are primarily given to maintain, or improve water clarity, and are not water quality-based. The current effluent TSS limits are 10 mg/L as a monthly average and 20 mg/L as a daily maximum, as a previous best professional judgement for this type of discharge. These limits appear to be consistent with available guidance for fish hatchery WPDES

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permits from the 1990's, however the Department is in the process of reevaluating and updating the approaches specified in guidance. As there are no water quality based or categorical effluent TSS limitations specified for hatchery wastewater, **best management practices are recommended in order to minimize the concentration and mass of total suspended solids discharged to the unnamed tributary.**

TMDL Limits – TSS

As mentioned earlier, a TMDL is in development for the Milwaukee River Basin. The TMDL will address phosphorus, TSS, and Fecal Coliform water quality impairments within these watersheds and provide waste load allocations (WLA) required to meet water quality standards. The TMDL will likely result in phosphorus, TSS and fecal coliform mass limitations that must be included in WPDES permits. In reference to TSS conditions in the Milwaukee River Basin, a target concentration of 12 mg/L (or less) expressed as a median of monthly samples collected between May and October was established by the WDNR TMDL technical team for the analysis. A summary of basis for this target is provided in 3.2.2 of the draft TMDL report available on the internet. The draft wasteload allocations for the existing facility are a product of the calculated baseline loading (permit limit or average concentration * maximum 12 month flow) and the specified reduction necessary to meet the water quality target in the near and downstream waters.

For an industrial discharge, the limits for TSS must be expressed as daily maximums and monthly averages.

Total Suspended Solids Effluent Limitations

| Month | Monthly TSS WLA ¹ (lbs/month) | Days Per Month | Monthly Ave TSS Effluent Limit ² (lbs/day) |
|-------|--|----------------|---|
| Jan | 1639.57 | 31 | 52.89 |
| Feb | 1188.87 | 28 | 42.46 |
| March | 1135.3 | 31 | 36.62 |
| April | 1060.96 | 30 | 35.37 |
| May | 1659.18 | 31 | 53.52 |
| June | 1848.07 | 30 | 61.60 |
| July | 1757.47 | 31 | 56.69 |
| Aug | 1609.16 | 31 | 51.91 |
| Sept | 1836.52 | 30 | 61.22 |
| Oct | 1959.89 | 31 | 63.22 |
| Nov | 2461.1 | 30 | 82.04 |
| Dec | 1832.31 | 31 | 59.11 |

| Month | Daily TSS WLA ³ (lbs/day) | Daily Max TSS Effluent Limit ⁴ (lbs/day) |
|-------|--------------------------------------|---|
| Jan | 126.41 | 126.41 |
| Feb | 101.48 | 101.48 |
| March | 87.53 | 87.53 |
| April | 84.52 | 84.52 |
| May | 127.92 | 127.92 |
| June | 147.23 | 147.23 |
| July | 135.49 | 135.49 |
| Aug | 124.06 | 124.06 |
| Sept | 146.31 | 146.31 |
| Oct | 151.10 | 151.10 |
| Nov | 196.07 | 196.07 |
| Dec | 141.27 | 141.27 |

Footnotes:

1- Table A.19 Monthly Total Suspended Solids Allocations by Permitted Point Source (p.73)

2- Monthly average TSS effluent limit (lbs/day) = maximum monthly TSS WLA (lbs/month) ÷ days per month

3-Table A.18 Daily Total Suspended Solids Allocations by Permittee Point Source (p.72)

4- Daily maximum TSS effluent limit (lbs/day) = daily TSS WLA (lbs/month)

Attachment #1

Following EPA approval of the Milwaukee River TMDL **monthly average and daily maximum mass effluent limitations should be included in the permit according to the tables above.** For reference, the mass limits are equivalent to concentrations ranging from 3.53 – 8.20 mg/L as a monthly average and 8.45 – 19.59 mg/L as a daily maximum, at the flow rate of 1.2 MGD. At an increased effluent flow rate of 2.88 MGD this would be equal to an equivalent to concentrations ranging from 1.47 – 3.42 mg/L as a monthly average and 3.52 – 8.16 mg/L as a daily. **Additional wasteload allocations above the allocations in an approved TMDL would need to be obtained through water quality trading or from reserve capacity.**

Limits based on a WLA should be given in a permit regardless of reasonable potential. However, for informational purposes, the following table lists the statistics for Total Suspended Solids discharge as both a concentration and a mass, reported in the SWAMP system and additional data available in SWIMS from 2005 to current. The mass was calculated using the observed average flow rate of 0.64 MGD.

| Sample Type | TSS (mg/L) | TSS (lbs/day) |
|------------------------|------------|---------------|
| 1-day P ₉₉ | 6.07 | 32.40 |
| 4-day P ₉₉ | 2.70 | 14.41 |
| 30-day P ₉₉ | 1.25 | 6.67 |
| Mean (detects only) | 3.36 | 17.93 |
| Mean (all data) | 0.45 | 2.40 |
| Std | 1.78 | |
| Sample Size | 83 | |
| # of non-detects | 72 | |
| Range | 2 – 8 | 10.68 – 42.70 |

PART 6 – THERMAL**Water Quality Based Effluent Limits for Temperature:**

New surface water quality standards for temperature took effect on October 1, 2010. These new regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Per the procedure in the code, the calculated effluent limits shown in the table on the next page are set equal to criteria because the receiving water low flow is zero cfs. Effluent flow rates do not effect the calculation.

Attachment #1
COLDWATER STREAM TEMPERATURE LIMITS

| Month | Representative Highest Effluent Temperature (existing facility) | | Calculated Effluent Limit | |
|-------|---|---------------|------------------------------------|-----------------------------------|
| | Weekly Maximum | Daily Maximum | Weekly Average Effluent Limitation | Daily Maximum Effluent Limitation |
| | (°F) | (°F) | (°F) | (°F) |
| JAN | 45 | 48 | 47 | 68 |
| FEB | 48 | 48 | 47 | 68 |
| MAR | 47 | 47 | 51 | 69 |
| APR | 50 | 50 | 57 | 70 |
| MAY | 52 | 52 | 63 | 72 |
| JUN | 52 | 52 | 67 | 72 |
| JUL | 56 | 56 | 67 | 73 |
| AUG | 55 | 55 | 65 | 73 |
| SEP | 52 | 52 | 60 | 72 |
| OCT | 50 | 50 | 53 | 70 |
| NOV | 50 | 50 | 48 | 69 |
| DEC | 46 | 46 | 47 | 69 |

A review of demonstrated effluent temperatures from the final settling pond shows that the discharge temperature of the existing system is relatively stable and below the coldwater criteria at most times of the year. Apparent exceedances in February and November may be due to only one daily value being collected for the week, or above normal air temperatures. The difference from the water supply temperature from the settling pond discharge may be attributed to influxes of infrared radiation from the sun or geothermal energy from the earth surface.

The newly drilled 1000' deep well near the existing building #1 has a reported temperature of 56 °F, which is several degrees warmer than existing sources. In terms of fishery production at the hatchery, the slightly warmer source water temperature is not expected to negatively effect operation, and may actually increase cellular activity rates in the process. However in terms of the discharge, it is unclear if the change in discharge temperature would be proportional to the change in source water temperature. If the treatment system of the future facility also utilizes settling ponds, it is expected that the discharge temperature will be relatively similar to what has been exhibited in the past.

The demonstrated discharge temperatures during some times of the year are near the promulgated criteria for coldwater streams. **The design of the upgraded hatchery and wastewater treatment system should include consideration to ensure compliance with the calculated water quality based effluent limits for discharge to a zero flow coldwater stream.** A partially shaded outdoor settling pond may be one approach to help ensure that the effluent temperature does not exceed those typical of a spring fed coldwater stream. Similar best management practices may be appropriate in lieu of or addition to this one.

Attachment #1

PART 7 – WHOLE EFFLUENT TOXICITY (WET) and ADDITIVES

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. The Department has monitored WET testing data from the surface water discharges of the ten state owned hatcheries for several years, and has determined that there is a low-risk for toxicity in the average effluent. Toxicity may be more of a concern if one or more additives are being used. WET testing has historically been required when one or more additive is being used, however many hatcheries across the state have made strides in operation and husbandry which has reduced the need for additives and potential acute or chronic toxicity problems in the direct receiving water. This is the case for the KMSFH. The facility manager has stated the interest to restart the use of formalin to prevent fungal growth during the egg incubation process, or to develop a similar method using hydrogen peroxide. The potential use restrictions and need for WET testing will be determined in the formal water quality based effluent limits memo from the limit calculator to the permit drafter, and are not discussed in this design planning memo.



October 21, 2016

Brian Weigel, Ph.D.
Acting Wastewater Section Chief
Wisconsin Department of Natural Resources
Bureau of Water Quality
PO Box 7921
Madison, WI 53707-7921

Re: Wastewater Treatment Facility – Effluent Limits Request
Kettle Moraine Springs State Fish Hatchery, WI
WPDES Permit No. WI-0026255-08-0

Dear Brian Weigel,

As part of the facilities planning process, MSA Professional Services, Inc. submits the enclosed effluent limits request. The Kettle Moraine Springs State Fish Hatchery is proceeding with a Pre-Design Study which will develop the basic unit processes for the proposed hatchery facility and general site layout. Proposed facilities to be constructed will be the fish species hatchery aquaculture system, water supply facilities, wastewater treatment facilities, utilities, and buildings. The study will evaluate and recommend office space, a laboratory, up to 6 aquaculture hatchery units, process instrumentation and electrical controls, and water and wastewater treatment systems.

The existing wastewater treatment system discharges to two branches of Melius Creek, a tributary to the North Branch of the Milwaukee River. In the future, the WWTF outfall location is not expected to change. Refer to the Effluent Limits Request report for a map showing the approximate discharge location.

A summary of the preliminary design hydraulic loadings is presented below:

- Peak Flow 3,000 gpm (4.32 MGD)
- Average Flow 2,000 gpm (2.88 MGD)
- Minimum Flow 500 gpm (0.72 MGD)

Offices in Illinois, Iowa, Minnesota, and Wisconsin

1230 SOUTH BOULEVARD • BARABOO, WI 53913
(608) 356-2771 • (800) 362-4505 • FAX: (608) 356-2770
www.msa-ps.com



Effluent Limits Request
October 21, 2016

Please feel free to contact me by email at mcastillo@msa-ps.com or by phone at (608) 355-8929 if you have any questions or comments regarding the enclosed report, or if any additional information is required to complete the effluent limits request.

Sincerely,

MSA Professional Services, Inc.

A handwritten signature in blue ink, appearing to read "Matt Castillo".

Matt Castillo, P.E.
Project Engineer

Enclosures

cc: Tom Fitzwilliams, MSA
Scott Chilson, MSA
Greg Gunderson, MSA

Kettle Moraine Springs State Fish Hatchery

Wastewater Treatment Facility Effluent Limits Request

WPDES Permit WI-0026255-08-0

October 21, 2016

General Information

The Kettle Moraine Springs State Fish Hatchery is proceeding with a Pre-Design Study which will develop the basic unit processes for the proposed hatchery facility and general site layout. Proposed facilities to be constructed will be the fish species hatchery aquaculture system, water supply facilities, wastewater treatment facilities, utilities, and buildings. The study will evaluate and recommend office space, a laboratory, up to 6 aquaculture hatchery units, process instrumentation and electrical controls, and equipment for the water and wastewater treatment systems. *It is requested that the WDNR evaluate effluent limits for this facility based on preliminary design flows so that proposed effluent limits can be incorporated into the upcoming Pre-Design Study. Please provide all immediate and future pollutants of concern including, but not limited to, BOD, TSS, ammonia, pH, phosphorus, fecal coliform, and temperature.*

Note that this request is for the Pre-Design Study and proposed facilities have not been finalized. As the planning process continues, hydraulic loadings may change. If there are any changes to the preliminary design flows, the WDNR will be notified. Preliminary effluent limits will be used to guide the selection of the wastewater treatment process which will be determined as the planning process continues.

The existing wastewater treatment system consists of four ponds, operated in series. The first and second ponds allow for settle of suspended solids. The third pond provides some biological treatment and includes fixed film media and aeration. The fourth and final pond provides final clarification. Final effluent flows over a V-notch weir prior to discharging to two branches of Melius Creek, a tributary to the North Branch of the Milwaukee River.

Contact Information for Effluent Limits

Matt Castillo, P.E.
MSA Professional Services, Inc.
1230 South Blvd
Baraboo WI 53913
P: (608) 355-8929

Proposed Discharge Location (existing discharge location)

Town of Scott, Sheboygan County
1013N20E
Two branches of Melius Creek
See Figure 1

Receiving Water

Two branches of Melius Creek, tributary to North Branch, Milwaukee River

Proposed Discharge Conditions

Effluent Limits are requested for a year-round, continuous discharge.

Preliminary Design Flows

- Peak Flow 3,000 gpm (4.32 MGD)
- Average Flow 2,000 gpm (2.88 MGD)
- Minimum Flow 500 gpm (0.72 MGD)

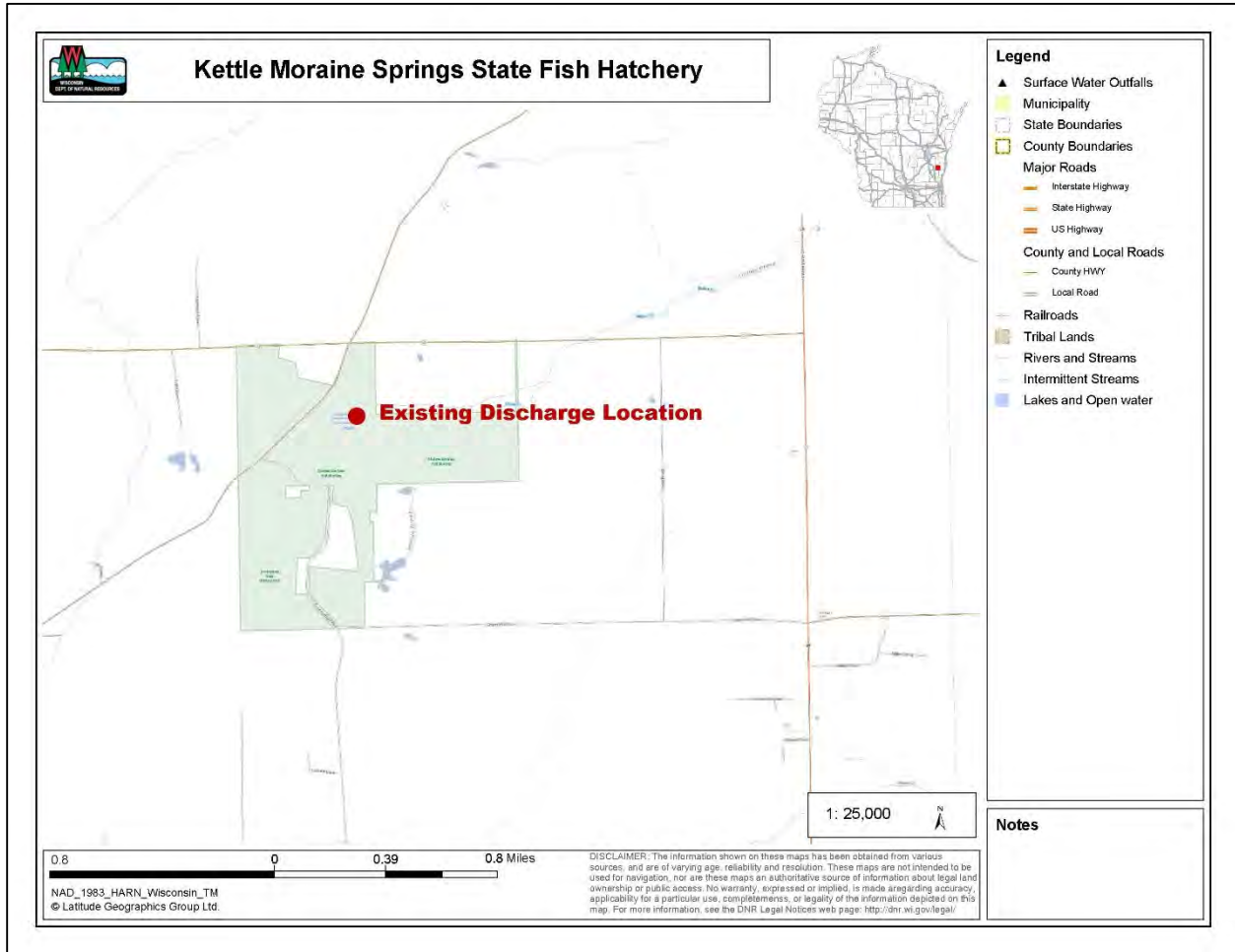


Figure 1. Kettle Moraine Springs State Fish Hatchery Outfall Location Map

Summary of Current Limits

The current WPDES permit for the Kettle Moraine State Fish Hatchery became effective July 1, 2005. The permit has an expiration date of June 30, 2010. The facility is still regulated from this permit as a new permit has not been reissued at the date of this memo. The following tables summarize the current WPDES permit effluent limits for the existing facility.

Table 1. Winton Farm Effluent Limits

| Parameter | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes |
|---------------------------------|-------------|-----------------|------------------|-------------|--|
| Flow Rate | | MGD | Monthly | Measure | |
| BOD5, Total | Weekly Avg | 6.2 mg/L | Monthly | 3-Hr Comp | May-Oct |
| | | 10 mg/L | | | Nov-Apr |
| BOD5, Total | Weekly Avg | 59 lbs/day | Monthly | Calc. | May-Oct |
| | | 98 lbs/day | | | Nov-Apr |
| Suspended Solids, Total | Monthly Avg | 10 mg/L | Monthly | 3-Hr Comp | See 2.2.1.1 below re pond harvest extra sampling |
| | Daily Max | 20 mg/L | | | |
| Nitrogen, Ammonia (NH3-N) Total | Daily Max | 6.3 mg/L | Monthly | 3-Hr Comp | Year round |
| | Monthly Avg | 3.6 mg/L | | | May – Sep |
| | Monthly Avg | 3.7 mg/L | | | Oct - April |
| Temperature | | Deg F | Monthly | Measure | Temperature monitoring not required Dec, Jan, Feb |
| pH Field | Daily Min | 6.0 su | Monthly | Grab | pH monitoring not required Dec, Jan, Feb |
| | Daily Max | 9.0 su | | | |
| Chronic WET | | RTUc | 1/ 6 Months | 3-Hr Comp | Once each in 2007, 2008 and 2009 during period of chemical addition. See 2.2.1.2 below |
| Formaldehyde | Daily Max | 2.1 mg/L | Annual | Calc. | Either a grab sample during maximum application period, or the calculated concentration based on highest daily application rate during the year. See 2.2.1.3 |
| Diquat dibromide | Daily Max | 1.7 mg/L | Annual | Calc. | Either a grab sample during maximum application period, or the calculated concentration based on highest daily application rate during the year. See 2.2.1.4 |
| Potassium Permanganate | Daily Max | 15.5 ug/L | Annual | Calc. | Either a grab sample during maximum application period, or the calculated concentration based on highest daily application rate during the year. See 2.2.1.5 |

Table 2. Peter Farm Effluent Limits

| Parameter | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes |
|---------------------------------|-------------|-----------------|------------------|-------------|--|
| Flow Rate | | MGD | Monthly | Estimated | |
| BOD5, Total | Weekly Avg | 5.0 mg/L | Monthly | 3-Hr Comp | May-Oct |
| | | 10 mg/L | | | Nov-Apr |
| BOD5, Total | Weekly Avg | 20 lbs/day | Monthly | Calculated | May-Oct |
| | | 42 lbs/day | | | Nov-Apr |
| Suspended Solids, Total | Monthly Avg | 10 mg/L | Monthly | 3-Hr Comp | Monthly from Oct-May |
| | Daily Max | 20 mg/L | | | |
| Suspended Solids, Total | Monthly Avg | 10 mg/L | 3/Month | 3-Hr Comp | 3/Month Jun-Sep |
| | Daily Max | 20 mg/L | | | |
| Nitrogen, Ammonia (NH3-N) Total | Daily Max | 6.3 mg/L | Monthly | 3-Hr Comp | Year round |
| | Monthly Avg | 3.3 mg/L | | | May - Sep |
| | Monthly Avg | 3.6 mg/L | | | Oct - April |
| pH Field | Daily Min | 6.0 su | Monthly | Grab | pH monitoring not required Dec, Jan, Feb |
| | Daily Max | 9.0 su | Monthly | Grab | |
| Temperature | | deg F | Monthly | Measure | |



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December 9, 2016

[Kevin Kirsch](#)

Wisconsin Department of Natural Resources
101 S. Webster St.
PO Box 7921
Madison, WI 53707-7921

Sent via Email to: DNRMilwaukeeBasinTMDL@wisconsin.gov

Re: Milwaukee Riverkeeper Comments on the Milwaukee River Basin TMDLs

Dear Mr. Kirsch,

On behalf of Milwaukee Riverkeeper, we submit the following comments on the Draft Milwaukee River Basin Total Maximum Daily Loads (TMDLs) for total suspended solids (TSS or sediment), total phosphorus (TP), and bacteria (fecal coliform). These comments support and supplement our verbal comments made at the Public Hearing for the TMDL on November 15th at the Wauwatosa Public Library. We are thankful for MMSD taking leadership to draft a third-party TMDL for these 3 pollutants of concern, and for all of the time and effort that DNR, consultants, SEWRPC, EPA, and other stakeholders have spent drafting and reviewing these TMDLs.

Ultimately, these TMDLs are designed to reduce sources of pollution to our impaired rivers and streams in the Milwaukee River Basin, thus enabling our rivers to meet water quality standards and Clean Water Act goals for clean, fishable, swimmable, drinkable waters. This goal is central to the mission at Milwaukee Riverkeeper and our comments contained herein focus on whether the proposed TMDL's will achieve that goal. While we are supportive of the TMDLs, we are also concerned about the long-timelines for implementation of wasteload allocations and load allocations, and about some of the parties exempted from receiving load reductions. We recognize that many of the issues raised in these comments could be addressed through development of Implementation Plans that include accountability and adaptability, and that are actively implemented. We look forward to working with the Wisconsin Department of Natural Resources (WDNR) and other partners to work toward creating strong, active implementation plans for these TMDLs. We are concerned, however, that any implementation plan should not rely on enforcement discretion too heavily as that will lead to passive implementation and trying to correct issues once damage has been done and it is too late.

Our comments are organized in categories starting with general comments that address certain classes of dischargers, then comments on specific TMDL parameters, and finally, the TMDL draft report itself.

General Comments

According to the Clean Water Act (CWA), there should be no new or increased discharges of pollution into impaired waters or 303(d) listed waters. TMDLs are created in order to help impaired waters meet water quality standards and achieve their designated uses, but TMDLs also allow for new and increased discharges by including reserve capacity for future or new discharges and by hypothetically ratcheting down pollution on other sources to still achieve standards. There is a foreseeable problem with this approach. When entities do not ratchet down pollution enough or meet wasteload or load allocation reductions in a timely way (e.g., the long timelines for compliance), and new discharges or increased discharges of pollution (e.g., new development) are allowed, pollution reduction efforts are stifled. In other words, the long compliance timelines included in the draft TMDLs allow for permittees to continue discharging pollution loads to impaired waters while new dischargers are also adding new loads at the same time, thereby violating the CWA rules that prohibit increased discharges of pollution into impaired waters. The TMDL needs to have a quick enough feedback loop—with milestones and an accountability framework to ensure that anti-degradation requirements are met and water quality does not backslide. Please respond to this concern and provide confirmation that the TMDLs as proposed will not cause backsliding in water quality or violate the CWA provisions. We want to better understand how the proposed TMDLs will be the “game changer” in achieving clean water and the designated uses set out for our rivers, because it is not evident.

Another significant concern with the draft TMDLs is that it does not have loads assigned to several major sources of pollution, and no wasteload reductions or load reductions allocated to those sources as a result. These major sources include the Wisconsin Department of Transportation (WisDOT), confined animal feeding operations (CAFOs), non-contact cooling water (NCCW) dischargers, and combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs). Failing to assign loads to these major sources now is a significant oversight, as well as a missed opportunity to make significant improvements through allocating wasteload or load reductions, and without having to rely on long timelines to achieve designated uses. In other words, upfront reductions allocated to these major sources could result in significant improvements without costing a great deal of time or money (e.g., low hanging fruit). We discuss each sector in turn, below.

WisDOT

Even though the TMDL documents state that the pollution load for highways is incorporated into municipal loads, this does not provide any meaningful control over discharges because our municipalities do not regulate or control WisDOT. Indeed, many municipalities have tried to challenge highway expansion and receive funds for stream restoration, stormwater management, or watercourse work, however, in our experience and typically, these efforts are not successful. Trying to achieve reductions from WisDOT through municipalities is problematic and setup for failure. The burden of addressing these discharges should not be placed on municipalities and counties given not only their lower bargaining power, but also the scarce funding resources that local municipalities face. To achieve the goals of the TMDLs, we recommend that the WisDOT be responsible for its stormwater management as part of doing business, and further that wasteload reductions be allocated to WisDOT for planned and ongoing projects (e.g., I-94 expansion, I41/I45 expansion, I43 expansion).

CAFOs

Under Wisconsin law, CAFOs are not allowed to discharge pollutants to waters of the State. However, most of the CAFOs in the Milwaukee River Basin conduct manure spreading on 2,000-3,000+ acres of their own land or rented fields. Per a recent permit, one CAFO spread manure on

lands in all 4 subwatersheds of the Milwaukee River Watershed. It is unreasonable to assume that manure does not run off into the rivers or that applicators are inspecting all fields after rain events and self-reporting. In addition, many of these fields have drain tiles, and are likely main-lining this pollution directly into our river systems. While assigning loads to these facilities may raise some complexities, ignoring this significant source is not going to achieve the goals of the TMDLs or bring our rivers closer to meeting water quality standards.

NCCW Dischargers

Likewise, non-contact cooling water dischargers with general permits were largely exempted from meeting the phosphorus TMDL, because they mostly discharge city water that has phosphorus based anti-corrosion inhibitors added and are discharging phosphorus loads through no fault of their own. This load was also deemed to be minimal; however, this assumption could change since phosphorus loads will be tracked by watershed and allocations could be given in the future. At any rate, it is unclear whether larger facilities with NCCW discharges are being given wasteload reductions for phosphorus. This was not well explained in the TMDL document. For example, by looking at the tables, one would assume there are no NCCW discharges in the lower Menomonee River Watershed, when there are, in fact, significant numbers of these facilities. In the draft TMDL, these facilities are included in the individual permittees category rather than under the NCCW category. We request that a strict timeline of perhaps 2-5 years be included to reassess the general permittees that are discharging NCCW to area waters to determine whether they should be included in future TMDL revisions.

SSOs and CSOs

We recognize that MMSD has made huge improvements in reducing sewer overflows in past decades. Nonetheless, CSOs and SSOs still constitute a significant source of pollution. It is important to note that many municipalities in the watershed that are tributary to MMSD and 10 other publically owned treatment works (POTWs) and 2 private treatment plants also have SSOs. In terms of bacteria loading, especially, these facilities are a major source of the existing load and should have a big part to play in reducing future loads. Unfortunately, the draft TMDLs do not allocate a load to these sources.

Comments by TMDL Parameter

Phosphorus

When the TMDL was being conceived, there was an underlying assumption that to be able to achieve water quality standards, many POTWs, in particular, would need to have phosphorus load reductions that would exceed the 2010 State approved phosphorus standards. According to the draft TMDL, however, this is not the case. All POTWs will only have to meet state standards and not more stringent standards. In addition, most facilities, with the exception of a few that have easy fixes to meet phosphorus reductions, will have very long compliance schedules of up until 2025 to make technological fixes. This is a prime example of how long compliance schedules eschew the goals of the TMDLs. Without implementing stringent phosphorus load reductions on the POTWs as originally contemplated, it is hard to understand how this TMDL is changing the status quo and achieving water quality standards. The State phosphorus rules were the driver before the TMDL, and now, unless changes are made, they will remain the driver, as no facilities are receiving stricter limits. This directly implicates the efficacy of the proposed multi-sector discharge variance for phosphorus, as well. Under the TMDL, will the phosphorus variance allow facilities to receive even longer compliance timelines? In addition, several recent permits issued for West Bend and Grafton have given phosphorus limits of 1 mg/L and .8 mg/L, respectively, which are essentially the same technology-based phosphorus standards that have been in permits for over a decade. Since 2010,

there has been little progress in ratcheting down phosphorus limits. We fear that given the proposed long compliance schedules, it is unlikely the TMDL will be a game changer in reducing phosphorus levels. Put another way, in essence, the TMDL does not seem to provide any additional incentive to ratchet down limits for phosphorus.

At a TMDL implementation meeting at SEWRPC, when DNR staff was asked why there were no POTWs with proposed phosphorus discharge limits less than the State water quality standard, DNR staff inferred that the incremental reduction in phosphorus loading was essentially not worth the fight. We beg to differ. Deferring more of the phosphorus load to other sources that are harder to control or that are not receiving allocation reductions is counter-productive. As stated above, most NCCW dischargers will not have to meet any reductions. In addition, given our regulatory framework, agriculture will not receive any enforceable load allocation reductions for phosphorus either.

Again, the framework under this draft TMDL does not promise to change anything from the status quo as far as reducing phosphorus. The exception would be that the TMDLs may provide more incentives for point source dischargers to engage in practices such as pollutant trading or adaptive management. However, this piecemeal approach would not amount to meaningful reductions or, arguably, improvements in water quality. Overall, the TMDL places a large wasteload allocation reduction for phosphorus on municipalities which is expensive and difficult to remove.

We are also concerned that if municipalities continue to only report pollutant reductions with existing models (used by NR 216, NR 151) and approaches, then we will not change the status quo. Many municipalities are doing everything required of them (e.g., have met their 20% TSS reductions), and yet water quality is getting worse. Thus, our existing models are either not modelling pollutant reductions accurately, or municipalities are not doing the right things effectively or enough. We need a new approach to modeling and monitoring municipal stormwater efforts.

In addition, the draft TMDL stated those industries discharging phosphorus that were used for the baseline loads but then stopped discharging to the rivers would not get a wasteload allocation. Instead, that portion of the load would be set aside as reserve capacity for the river reach. It is not clear who qualifies to use reserve capacity. If reserve capacity is used to facilitate a new or increased discharge, then it is a way to again get around the CWA 303d prohibitions. This framework creates a loophole to the 303d prohibitions and will allow for new discharges to impaired waters instead of reducing pollution loads. That is in direct contravention of the intention of the TMDL and the CWA.

There is also one component of the TMDL that states that the We Energies Valley Power Plant was not given a phosphorus baseline because its discharge either goes to MMSD or is due to the source water (cooling water taken in from the Menomonee River itself). However, the processes used at the facility, including reverse osmosis, concentrate phosphorus levels. Therefore, this facility should receive a phosphorus baseline and wasteload reduction if this is still the case. We Energies is also discharging phosphorus back to the river in a super-heated condition, which contributes to nuisance algae problems. These types of scenarios by all NCCW dischargers should be included in the TMDL.

TSS

The TMDL used a target of 12 mg/L of TSS to establish goals for wasteload and load allocations, but the current standard for TSS is a narrative, not a numeric, standard. This goal is not being used for

POTW compliance, as the document states that most POTWs have clarification or filtration and so are presumed to have solids removed and thus discharges lower than 12 mg/L are not required. Assuming this is the case, why not put the 12 mg/L limit in the permits anyway? This would ensure if there is any variability from facility to facility, ways to reduce that load can be addressed uniformly.

It is unclear how the TMDL for TSS will be applied to industrial discharges. Will they have numeric or narrative limits? It's also unclear how the TSS TMDL will be addressed on the non-point side other than existing standards for NR216 and NR151. TSS continues to get worse each year with more development of impervious surface in our watersheds, and is very harmful to water quality and aquatic habitat. The approach and framework for addressing TSS in the draft TMDL is passive. While an active implementation plan may be able to fill in some of these apparent gaps, setting up the system in an ancillary way to merely reduce sediment levels to achieve related reductions in phosphorus does not bode well for success.

There are large portions of the Menomonee without TSS allocations. Is this because the TSS allocations are included in the MS4 baselines? For example, there is no TSS allocation on the Menomonee from the Estuary to the confluence with Honey Creek. It is also confusing that "GP-other" is included for General Permits, but that loads are not assigned there—instead being included in the MS4 baseline or in "non-permitted urban" in areas outside of a MS4. If this is the case, then why include it in the tables? It also states that if there is TSS in the source water for an industry then that industry does not have to remove it from their discharge. However, this does not address those situations where TSS is added during production at the facility or where TSS is concentrated before discharge. Tightening up this standard to address these scenarios is requested.

Bacteria

Outside of the POTWs, it is not clear how the bacteria TMDLs will be enforced or how load reductions will be monitored or modeled, especially when allocations are in the billion cells/day or per month. In addition, fecal coliform is a poor indicator. Despite EPA's 2012 Recreational Use Standard Guidance, which encourages states to adopt an *E. coli* or *Enterococcus* based recreational use water quality standard, Wisconsin still uses a fecal coliform standard for rivers and an *E. coli* standard for beaches. Regardless of whether Wisconsin is required to adopt a newer standard in the future, this TMDL should focus on how to best address the impairment, which is the recreational use restriction.

It is well-known that human-associated bacteria is more likely to make people sick and causes a more significant public health risk. To achieve removal of the recreational use restriction impairment, we need to rely on indicators such as *Bacteroides* and *Lachnospiracea* that have human-specific indicators.¹

Moreover, it is critical that the Implementation Plan and TMDL better address the responsibility of municipalities to better quantify, identify and address human discharges of bacteria through their storm sewer infrastructure, which is a major and largely ignored source of bacteria to our area

¹ Milwaukee Riverkeeper has been working with Sandra McLellan and her colleagues at the University of Wisconsin-Milwaukee since 2008, after we learned of the large "unknown" source of bacteria during the Regional Water Quality Management Planning process, led by SEWRPC. Every stormwater outfall in a 10 mile "hot spot" along the lower Menomonee River was tested and almost every outfall in the Kinnickinnic River watershed, too. About half of these stormwater outfalls were positive for human sewage (see attached maps—to be updated through 2016 soon).

waterways. While municipalities that are MS4s have illicit discharge detection and elimination programs, these were not set up to deal with bacteria, but rather with industrial and other illicit discharges. Municipalities should be required to test for bacteria as part of their routine storm sewer monitoring programs, in a cost-effective and easy way. The TMDL should include specific requirements so that when municipalities begin to prepare for a stormwater permit, the goals and requirements are clear.

Regarding other sources of bacteria, we agree more needs to be done to reduce bacteria from stormwater runoff and agricultural uses. There is little explanation of the bacteria load from stormwater runoff from paved surfaces. One section of the TMDL noted that the General Mitchell Airport, which is likely one of the largest areas of impervious surface in the watershed, has no bacteria load allocation reductions, because there is no bacteria “beyond stormwater runoff and so no reductions are necessary.” This conclusion should be further explained. Fecal coliform load coming off paved surfaces can be very high and before being dismissed as a non-source or non-issue, in essence, the stormwater should be tested.

Regarding agricultural runoff, while load allocation reductions were given, they are not enforceable under current state law. While there are complexities around monitoring the load coming off many of these fields and tying the load to an individual farmer (especially when multiple farms and municipalities are spreading on the same fields), the TMDL should include clarity and requirements around addressing bacteria runoff from stormwater—both from agriculture and urban sources. As it stands, it seems unlikely that the draft TMDL for non-point source bacteria loads will achieve improved water quality absent a very strong and enforceable implementation plan.

The report states that for the Milwaukee River that flows were calculated “parametrically” for each reach. TMDLs for the Menomonee and Kinnickinnic Rivers were calculated using the 4th lowest flow, which is the 25% design condition; however, for the Milwaukee 33.3% was used, presumably to allow for less stringent and more realistic wasteload and load allocations for bacteria in the Milwaukee River system. Please explain this in greater detail.

Other Comments

The TMDL document stated that there was no margin of safety provided for in this TMDL because conservatism was built into the allocations. This needs to be better explained or addressed. Given climate change, extreme variability in weather and increased rate of severe wet weather events over the last several years alone, and given the fact that the TMDL was developed using fairly old data at this point (from 1988 to 1997), it is essential to include a fairly large margin of safety. Predicting future weather events based on past experience is unreliable; please explain the reasoning behind not including a margin of safety.

It is unclear why there are “agricultural” loads for parts of Honey Creek and Underwood Creek for P and TSS. There were also some “agricultural” bacteria load provided for Underwood Creek. Please explain.

Implementation Plan

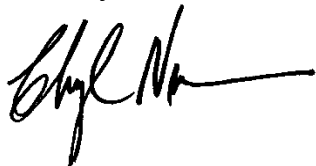
As a community, development of a robust and active implementation plan for these TMDLs is critical. DNR has stated that it wants an implementation plan for reasonable assurances and to state authority and provide guidance for its staff in assuring reductions on the point and non-point source side. While that is a needed element, the Plan should also guide the work of permittees,

community organizations, government agencies, and other stakeholders that will implement many of the needed projects, policies, and programs to meet the water quality goals for our rivers and streams in the Milwaukee River Basin.

We have learned from other colleagues across the country with more established TMDLs that having a strong, practical and enforceable plan is paramount to ensuring achievement of water quality goals. For example, the Chesapeake Bay TMDL has 2-year milestones in its Watershed Implementation Plan. It is important that WDNR and EPA mandate enforceability, transparency, and accountability as part of the TMDL implementation process. Flexibility and updating is important, too. If things are not working, the plan needs to be able to adjust. For example, if targets are not being met, DNR could decide to include unregulated stormwater sources or to add further reductions needed to achieve targets. This would create incentives to drive more action on the part of permittees. On a positive side, there could be demonstrable improvements in certain portions of the Milwaukee River Basin that could result in delisting of certain waters. Regular oversight, assessing milestones, and adaptive management also allows for the things going well to be celebrated. These are important goals to be included in any implementation plan.

Thank you for your consideration of these comments. If you have any questions, please contact me at cheryl_nenn@milwaukeekeeper.org or at (414) 287-0207 ext. 2.

Sincerely,

A handwritten signature in black ink, appearing to read "Cheryl Nenn", with a long horizontal flourish extending to the right.

Cheryl Nenn
Riverkeeper
Encl.

Cc: Jennifer Bolger Breceda, Executive Director Milwaukee Riverkeeper

December 9, 2016

Wisconsin DNR
Attn: Kevin Kirsch (DNRMilwaukeeBasinTMDL@wisconsin.gov)
101 S. Webster Street
PO Box 7921
Madison, WI 53707-7921

Re: Milwaukee Basin TMDL Public Comment

Dear Mr. Kirsch,

Over the past three years, our team, consisting of individuals from Winrock International, Delta Institute, and Sand County Foundation, has been working on a project funded by the Great Lakes Protection Fund located in the West Branch of the Milwaukee River watershed. The goal of the project is to pilot-test a pay-for-performance conservation program that uses field-specific modeling of agricultural practices to estimate phosphorus losses before and after implementation of field management changes and to incentivize the adoption of the most cost-effective P mitigation strategies on farms. Based on our results of field-scale phosphorus losses, in addition to a review of relevant Wisconsin-specific literature, we are concerned that the data used to develop the TMDL may not be representative of nonpoint source loading from the agricultural sector.

We understand that estimates of P loading from agriculture are the result of different measurement periods, locations, weather variability, and other factors. However, the results of both our work and the work of researchers from USDA ARS and the University of Wisconsin-Madison and Platteville indicates that the baseline for total phosphorus loss from agriculture for the West Branch used in the TMDL (**0.32 lbs P/ac/year**; 8,864.74 lbs P over an estimated 27,750 agricultural acres in the West Branch) is low. This is concerning for the agricultural community because reductions that must be made under the TMDL, starting from a baseline that is unrealistically low, would require larger “real world” reductions at the farm level that would pose a hardship on the agricultural community. Below is a summary of recent results from our work and from the references listed below:

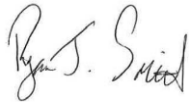
- The average P loss from 12 farms participating in our project, covering 14% of the agricultural land in the West Branch watershed, is **1.8 lbs P/acre**.
- Whole-farm P loss on grazing dairy farms in WI, estimated using the APLE model, ranged from **1.2-2.4 lbs P/acre** (Vadas, 2014).
- Results of edge-of-field monitoring of winter runoff at Pioneer Farm at the University of Wisconsin-Platteville found a mean annual P loss of **1.5 lbs/acre** (Mentz et al., 2011).
- The median P loss from 86 agricultural site-years in Wisconsin between 2003-2008 was **0.8 lbs/acre** with a range of **0-16.9 lbs/acre** (Good et al., 2012).

For the reasons stated above, we respectfully request that the baseline P loss values for agriculture in Wisconsin's TMDL be revised with additional input from researchers and modelers. An accurate TMDL baseline for P loss from agriculture is essential for both the attainment of water quality standards and the achievement of reasonable reductions from contributing sources. Our project team would welcome the opportunity to provide assistance to DNR in addressing this request.

Respectfully,



Kristin Fisher, Ph.D.
Winrock International



Ryan Smith
Delta Institute

References

Vadas, P. (2014). Whole-Farm Modeled Phosphorus Loss Low on Grazing Dairy Farms (Research Brief #94). Published by UW-Madison Center for Integrated Agricultural Systems. (<http://www.cias.wisc.edu/whole-farm-modeled-phosphorus-loss-low-on-grazing-dairy-farms-research-brief-94/>).

Mentz, R. S., McGinley, P. M., Penn, M. R., & Busch, D. L. (2011). Snowmelt Export of Phosphorus from Cropland: Edge-of-Field Runoff Monitoring: Results from Pioneer Farm in Southwest Wisconsin. *American Water Resources Association – Wisconsin Section Annual Meeting 2011*. (<http://state.awra.org/wisconsin/2011meeting/AWRAProgram2011.pdf>, page 37).

Good, L. W., Vadas, P., Panuska, J. C., Bonilla, C. A., & Jokela, W. E. (2012). Testing the Wisconsin Phosphorus Index with Year-Round, Field-Scale Runoff Monitoring. *Journal of Environment Quality*, 41(6). (<https://pubag.nal.usda.gov/pubag/downloadPDF.xhtml?id=59285&content=PDF>).

School of Freshwater Sciences

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9 December 2016

Kevin Kirsch
Wisconsin Department of Natural Resources
101 S Webster Street
Madison, WI 53703

Re: Milwaukee River TMDL Report – Public Comment
University of Wisconsin-Milwaukee School of Freshwater Sciences, Great Lakes WATER Institute: Current and Projected
Flows and Loads

Dear Kevin:

The UWM-School of Freshwater Sciences, at the Great Lakes WATER Institute, is in the final discussions with the Wisconsin DNR on our WPDES permit renewal (WI-0045942-06-0). Contributing to the permit evaluation and relevant to the TMDL report are the improvements and construction that have occurred since our last permit was issued and that are not reflected in the draft TMDL report.

During State funded construction of a major addition to the existing building (DFD project 10E3H) the entire water supply system for fisheries research was upgraded. Previously, the ability to conduct fisheries research (and the subsequent discharge flow) was limited by the aquatic life support water mechanical systems. New dechlorination, heating, and chilling equipment was installed which now has a maximum design limit of 1200 gpm (1.73 MGD). It was anticipated that the new design will accommodate SFS fisheries research growth for 20+ years.

Our current combined discharge flow for outfalls 001 and 002 is around 0.6 MGD, which is less than was projected, partly as result of significant State budget cuts. We do expect our fisheries research to continue to expand, however, and the soon to be completed aquaculture research and training and laboratory (DFD project 14B2Q) will come on line April-May, 2017 and should result in a 50% increase in discharge flow. Thus, we expect our combined discharge flow for outfalls 001, 002, and the new 003 will be around 0.9 MGD. Many of the discussions with the Wisconsin DNR have been related to the ramifications of this additional laboratory discharge on our WPDES permit.

It is pertinent to note that we use City of Milwaukee water as the water source for our fisheries research. Based on data supplied as part of our permit renewal in 2013, over 90% of the phosphorus present in our discharge is a result of the phosphorus in the incoming water supply. Absent this contribution, our discharge concentrations would be well below projected limits necessary to meet the draft TMDL limits. Thus, any reduction in phosphorus cannot occur by alteration to our use of the water but would require treatment prior to discharge.

In light of the recently completed SFS laboratory addition with the increased flow capacity for fisheries research and the impending completion of the aquaculture research and training laboratory we request that the baseline flow information for the Great Lakes WATER Institute be updated to reflect flows that will be present under the new discharge permit and the design limits for the system. Adjusting the projected flows will prevent a future need for a written notice of interest for reserve capacity.

Please contact me if you have any questions regarding this information.

Sincerely,



Robert Paddock
Assist. Dean-Facilities & Marine Operations

c: Nick Lent, DNR, Theera Ratarasarn, DNR

March 2018

December 8, 2016

Mr. Kevin Kirsch, P.E.
Water Resources Engineer
Wisconsin Department of Natural Resources
101 S. Webster Street
P.O. Box 7921
Madison, WI 53707-7921

Re: Comments on the Draft Milwaukee River Basin TMDL

Dear Mr. Kirsch:

The Milwaukee River Basin TMDL has been under development for many years, and is a very thorough report. Staff at Ruekert & Mielke, Inc. have identified a few items that have been addressed in the report, but could be clarified to make the report and how the TMDL was developed easier to understand.

1. Clarify the Wasteload Allocations for Bacteria: The information related to the wasteload allocations for bacteria that is currently presented in the narrative portion of the TMDL report can be clarified by explaining the content of the tables, rather than only referring to the tables. It is not clear which of the load duration curves (low, dry, mid, moist, high) is the target wasteload allocation for permittees, or if the daily or monthly limits are expected to be met. The importance of the seasonality of the bacteria limits could be simplified in the narrative portion of the report by explaining whether a permittee must meet the WLAs throughout the year or only during the May-September months, when previous sampling efforts have determined the waterways are impaired for recreational uses. It would also be helpful for readers if the units used to explain the bacteria aspects of the TMDL report remained consistent throughout the report, the tables, the load duration curves, the example formulas, etc. The draft report includes the cells/day in some areas, and the cells/month in others.
- A. Example: Section 6.4, Wasteload Allocations, 6.4.4, Municipal Separate Storm Sewer System Permittees: the 4th paragraph includes information specific to the percent reductions that were calculated for TSS and phosphorus for the permittees, but it does not explain whether there is a percent reduction method for bacteria, and if not, why a different method is used. This paragraph also does not explain which of the 5 percentiles listed in Tables A.26 and A.27 represent the target wasteload allocation for bacteria for the permittee.

2. It is generally assumed that the Implementation Plan listed in Section 7 is not a comprehensive plan to direct a permittee through the activities needed for successful implementation of the TMDL. However it does provide information that can be used to start implementation efforts for TSS and phosphorus reducing measures in the Milwaukee River Basin. Information on general management strategies and funding opportunities to tackle the reductions of bacteria loads that have been identified in this TMDL report should be added to this section to provide permittees and other readers of the report with a general idea of the resources available to implement these measures.
3. The long-term sampling stations and other monitoring data that was used to develop the Milwaukee River Basin TMDL should be included in the report. The current draft includes references to previous monitoring efforts, but it is unclear where these monitoring stations were located, whether on-going monitoring is still conducted at these locations, and when/how long the monitoring occurred. Providing information on these sampling sites will give readers a better understanding of the local data that was used to develop the TMDL and the wasteload allocations for the individual reaches. This information will also allow permittees and other partners to determine whether future, renewed monitoring efforts should be conducted in coordination with the previous monitoring efforts.

Thank you for considering these comments on the draft Milwaukee River Basin TMDL report.

Very truly yours,

RUEKERT & MIELKE, INC.



Maureen A. McBroom
Environmental Coordinator
mmcbroom@ruekert-mielke.com

MAM:sjs

cc: Bryan D. Hartsook, P.E., Wisconsin Department of Natural Resources
Steven C. Wurster, P.E., Ruekert & Mielke, Inc.
David W. Arnott, P.E., Ruekert & Mielke, Inc.
Mark B. Van Weelden, E.I.T., Ruekert & Mielke, Inc.
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