



July 17, 2014

Ms. Tinka Hyde
Water Division Director-USEPA-Region 5
WW-16J
77 W. Jackson Blvd.
Chicago IL 60604-3590

Subject: Waukesha Return Flow

Dear Ms. Hyde:

The Wisconsin Department of Natural Resources (WDNR) is currently reviewing the City of Waukesha's application for a Great Lakes water supply. As part of the WDNR's technical review to determine if the application meets requirements of the *Great Lakes-St. Lawrence River Basin Water Resources Compact* (Compact), *Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement* (Agreement) and Wisconsin's Compact implementing legislation (2007 Wisconsin Act 227), return flow to Lake Michigan must meet applicable state and federal water quality standards and discharge requirements.

The City of Waukesha's proposal is to return treated wastewater to a potential discharge location on the Root River near river mile 25.5 in the City of Franklin. The proposed outfall location falls within a Root River segment (miles 20.48 – 43.95) listed on Wisconsin's §303(d) List for excessive phosphorus and total suspended solids. This discharge to the Root River from Waukesha's current Wastewater Treatment Plant (WWTP) is considered a "new" discharge (NR 106.93, Wis. Adm. Code). There is no approved Total Maximum Daily Load (TMDL) for the Root River.

The WDNR is reviewing the proposed return flow options and requests USEPA-Region 5 review and respond accordingly to the five items outlined below. Each item refers to the City's preferred discharge location, the Root River, unless otherwise noted. Other return flow options are being reviewed as part of our technical review and environmental impact analysis.

- (1) Improvement in Water Quality: Under NR 217.13(8)(b) a new discharge of phosphorus is allowed to an impaired water if the discharger can demonstrate that the new discharge of phosphorus will improve water quality. To show an improvement in water quality the facility can either discharge at an effluent concentration 'well below' the criteria or perform an analysis showing that water quality criteria is being improved or attained. The facility discharging well below the criteria is a conservative assumption, in lieu of any analysis, ensuring that the discharge does not cause or contribute to an existing impairment and the discharge actually improves water quality. An effluent limit well below the criteria is supported in EPA's approval letter of NR 217 (dated 7/25/2012).

The definition of 'well below' the criterion is narrative and subject to interpretation; however, DNR has considered an approach to provide an effluent limit to the City of Waukesha, based upon the document used to set the numeric phosphorus criterion (USGS Professional Paper 1722). Two regionalized schemes were compared to help quantify the phosphorus concentration targets in streams across Wisconsin, based on 1)

level III ecoregions, and 2) environmental phosphorus zones (EPZ), which are largely driven by inherent soil. The Root River watershed largely falls in the Southeastern Wisconsin Till Plains (SWTP) ecoregion, and EPZ3. A multiple linear-regression approach will be used to characterize reference conditions with upper 95% confidence limits. We believe that effluent concentration the *approach* reference conditions based on the ecoregion scheme, or environmental phosphorus zone scheme, will be appropriate to meet the “well below” definition..

An alternative method to an effluent limit well below the criteria would be for the regulated entity to develop a numeric effluent limit based upon a TMDL-type of analysis. EPA wrote in the NR 217 approval letter that “EPA expects that the permittee will demonstrate that its discharge will result in a decrease in the phosphorus concentration or loading in the receiving water”. The TMDL type analysis should be developed to meet water quality criteria; not just reduce the measured value. Waukesha should include a comprehensive evaluation of all phosphorus sources and provide load allocations for each source to meet water quality standards. This would include the non-point source impacts. This will avoid a future TMDL needing to be developed for the impaired reaches resulting in a potential additional ratcheting down of effluent limits to meet water quality criteria.

- (2) TMDL Analysis: NR 217.13(8)(a) allows for a new discharge of phosphorus if it is allocated as part of the reserve capacity or part of the wasteload allocation in a US EPA approved TMDL. As such, another option available to a new discharger is to perform a formal TMDL analysis. In addition, a TMDL analysis can be used to meet the requirements under NR 213.13(8)(b) as outlined above. The TMDL will need to be approved by both DNR and EPA. The TMDL needs to be developed consistent with the requirements contained in 40 CFR 130.7 and, if applicable, for impaired waters in the Great Lakes Basins the additional requirements stipulated under 40 CFR 132, Appendix F, Procedure 23 may apply. In the case of Waukesha, a TMDL needs to address the impaired reach of the Root River where Waukesha’s proposed discharge is located, as well as all upstream contributing areas.
- (3) Demonstrate compliance through a phosphorus trade: Per NR 217.13(8)(c), a new discharger can demonstrate that the new phosphorus load will be offset through a phosphorus trade with other dischargers of phosphorus. The trade must be consistent with DNR water quality trading guidance and EPA trading policy. As originally drafted, this offset could be the difference between the mass of the proposed phosphorus discharge and a zero mass discharge. However, after further consideration, the offset could also be used to meet the difference between the mass of the proposed discharge and the effluent limits arrived at under NR 217.13(8)(a) or (b).
- (4) Background Level of Arsenic in Lake Michigan: The preferred return flow location is the Root River, a tributary to Lake Michigan, however other alternatives being reviewed include discharge directly to Lake Michigan, or through an existing wastewater system. Recently, DNR has monitored naturally high arsenic concentrations above water quality standards for arsenic in Lake Michigan. This would result in restrictive arsenic limitations for discharges to Lake Michigan. Since the Root River and Underwood Creek are tributaries to Lake Michigan, would return flow to the tributaries be subject to Lake Michigan arsenic limits?

If restrictive arsenic limitations are needed, it may be possible to consider intake levels in the calculation of these water quality-based effluent limitations because arsenic in the intake water is above or high in relation to the respective water quality criterion and limitations. In order to meet intake credit requirements, the permittee must demonstrate that the intake water is drawn from the same body of water into which the discharge is made, or that no environmental degradation will result from the discharge. Given the physical and chemical difference between Lake Michigan and the tributaries to Lake Michigan, DNR believes that only a direct discharge back to Lake Michigan would meet the definition of “same body of water”. Is this interpretation consistent with federal regulations? DNR also requests EPA clarification on the definition and application of “no environmental degradation”.

In addition, DNR seeks EPA confirmation that the return flow would not demonstrate reasonable potential to exceed a water quality based effluent limitation for arsenic if all of the following conditions are met:

1. The permittee withdraws 100 percent of the intake water containing the substance from the same waterbody into which the discharge is made.
2. The permittee does not contribute any additional mass of the identified intake substance to its wastewater.
3. The permittee does not alter the identified intake substance chemically or physically in a manner that would cause adverse water quality impacts to occur that would not occur if the substance were left in-stream.
4. The permittee does not increase the identified intake substance concentration, as defined by the department, at the edge of the mixing zone or at the point of discharge if a mixing zone is not allowed, as compared to the concentration of the substance in the intake water.
5. The timing and location of the discharge would not cause adverse water quality impacts to occur that would not occur if the identified intake substance were left in the receiving waterbody.

DNR has been working with EPA to develop a multi-discharge arsenic variance to address permitting issues surrounding the naturally high background concentrations of arsenic in Lake Michigan. DNR seeks an EPA determination on the return flow for the City of Waukesha's application, whether this new discharge would or would not qualify for this variance or other individual variances.

- (5) Antidegradation: DNR believes that the return flow would cause a significant lowering of water quality as defined in 40 CFR Part 132, Appendix E, II.A, due to increases in mercury and other pollutants to that receiving water. Given this, Waukesha would need to complete a full antidegradation evaluation before the return flow discharge could be authorized.

DNR requests EPA confirmation for the five areas detailed above.

We will work with you to ensure the most efficient use of all our staff time on these complex issues. We appreciate your willingness to collaboratively work through this effort together. Thank you for your consideration.

Sincerely,



Russell A. Rasmussen, Administrator
Water Division

Cc: Jill Jonas
Susan Sylvester

