



September 12, 2022

The Honorable Shawn Reilly
201 Delafield Street
Waukesha WI 53188

Subject: 2022 Documentation of Reporting Requirements for City of Waukesha Diversion Approval

Dear Mayor Reilly:

On April 28, 2022, the Department of Natural Resources (DNR) received the City of Waukesha's (City) report related to the City's approval for a diversion of Great Lakes water.

The DNR issued the diversion approval on June 29, 2021, that requires the City to submit annual reporting information to the DNR by March 1st of the following year. Below, the DNR highlights the reporting requirements in italics, followed with a summary of our review of the City's annual report.

1. *The City shall summarize that the diversion was implemented consistent with the requirements of the Council Decision. The total amount of water purchased daily, monthly, and annually from the City of Milwaukee, including the location(s) of the water meter used to determine the amount of water purchased.*
The City has not started to divert Great Lakes water as of December 31, 2021. It is planned to begin before September 2023.
2. *The total amount of water sold monthly to each category of customer within the approved diversion area.* The City sold a total of 1,852,986,050 gallons of water in 2021 (5.08 million gallons per day). All water sold by the City was withdrawn from the City's groundwater wells. (See table on page one and two of the Report)
3. *The daily, monthly, and annual volume of treated wastewater discharge returned to the Root River and the daily, monthly, and annual volume of treated wastewater discharge returned to the Fox River.* The City will not discharge treated wastewater to the Root River until the diversion begins. The City sent 2,480,668,000 gallons of water to the wastewater treatment plant that was then discharged to the Fox River (see the second table, page two of the Report).
4. *The total consumptive use as defined in Wis. Stat. §281.346(1)(e).*
In 2021, Waukesha Water Utility had thirteen (13) ratepayers that had measured consumptive use, or water used during production. The total consumptive use associated with production in 2021 was 39,500,600 gallons.

Once the City begins a diversion of Lake Michigan water, the City should estimate consumptive use on an annual basis using two methods: the Winter Base-Rate (WBR) method, as described in a 2009 United States Geological Survey's (USGS) Report¹ to describe the consumptive use of the water system, and calculation of

¹ Schaffer, K.H., Variations in Withdrawal, Return Flow, and Consumptive Use of Water in Ohio and Indiana, with Selected Data from Wisconsin, 1999-2004, USGS Scientific Investigations Report No. 2009-5096 (2009)

consumptive use from Lake Michigan by comparing the water purchased from the City of Milwaukee and the water returned to the Root River.

Winter Based Method

The WBR method primarily focuses on outdoor water use (lawn and landscape watering, car washing, pools) and assumes the majority of consumptive use in municipal water supply systems is due to evapotranspiration. Given that the City's water use peaks in summer months, the department believes this is an acceptable method to calculate domestic consumptive use. The "annual withdrawal" would be equal to the amount of water the City purchases from the City of Milwaukee.

The WBR method calculates consumptive use according to the following equation:

$$\text{Annual Consumptive Coefficient(Percent)} = \frac{\left(\frac{\text{Total Annual Withdrawal}}{12}\right) - \left(\frac{\text{Sum of Winter Withdrawals}}{3}\right)}{\left(\frac{\text{Total Annual Withdrawal}}{12}\right)} \times 100$$

The sum of winter withdrawals or "winter months" refers to December through February. Withdrawn water that is not returned to the Lake Michigan basin would be due primarily to consumptive use due to evaporative losses (calculated by the WBR method). However, the City should also include consumptive use from any industry that uses water (food processing, beverage processing) and also add in distribution system losses (such as distribution system water losses reported to the WPCS (e.g. water main breaks, service leaks, faulty pressure valve).

To summarize, the City's total consumptive use = consumptive use (WBR) + water loss (WPCS) + water used by industry (water incorporated into product).

Lake Michigan Consumptive use

$$= \frac{\text{Lake Michigan Annual Consumptive Coefficient (Percent)}}{\left(\frac{\text{Total Water Purchased from City of Milwaukee} - \text{Total Wastewater Return to Root River}}{\text{Total Water Purchased from City of Milwaukee}}\right)} \times 100$$

5. *Water use intensity metrics.*

For quantifiable impacts of conservation and efficiency measures, the Report includes three water use intensity metrics: total per capita water use, the ratio of maximum day to average day water use, and the average day water use per residential equivalent unit. The total per capita water use per day was 70.22 gallons per person per day (this calculated using the total water sale divided by the estimated population divided by 365 days). The residential per capita water use was 50.0 gallons per person per day (calculated by summing residential water use for customer classes: residential, residential-2 family, residential-3 family, multi-family, divided by the estimated population divided by 365 days). The ratio of maximum day to average day water use was 1.59 in 2021. The average day water use per residential equivalent unit was 187 gallons per day per residential equivalent unit.

6. *A summary of the impacts of the implementation of conservation and efficiency measures.* Attachment A of the report includes the water conservation and efficiency report submitted to the Public Service Commission of Wisconsin.

Required CEM	2022 Activity
PWS-1 Water Use Audit	The Waukesha Water Utility performs and documents water use audits on a monthly basis in accordance with PSC 185. Page 115-116 provides a summary of the water audit for 2021. The Waukesha Water Utility reported 2.4% water loss in 2021 ² .
PWS-2 Leak Detection and Repair Program	In 2021, the Waukesha Water Utility surveyed 1,174 hydrants for leaks and performed necessary repairs. The Waukesha Water Utility also replaced 8,393 feet of water main in 2021.
PWS-3 Information and Education Outreach	<p>Waukesha Water Utilities information and outreach program includes the following:</p> <ul style="list-style-type: none"> • My Brown Lawn is Green Yard Sign Campaign (for all customer classes) • Waukesha Rain Barrel Promotion Program (for all customer classes) • Outdoor Conservation Tips (for all customer classes) • Why it's Important To Conserve & What You Can Do (for all customer classes) • How Much Water Do You Use? & Things to do to Lower Your Bill (all customer classes) • Program on Finding & Fixing Leaks (for all customers) • Web Based Consumption History and Comparisons Available (for all customers) <p>In 2021, summer water use was at a 15-year low. Details on all Waukesha Water Utility conservation and efficiency education and outreach activities are provided in Attachment A.</p>
PWS-4 Source Measurement	The Waukesha Water Utility measures water withdrawals daily and meters all customer connections. The Waukesha Water Utility complies with PSC 185 meter flow testing and accuracy requirements.
PWS-R1 Distribution System Pressure Management	The Waukesha Water Utility conducted an analysis of distribution system pressure management in 2006.
PWS-R2 Residential Demand Management Program	<ul style="list-style-type: none"> • Toilet Rebate – In 2021, the Waukesha Water Utility processed 297 toilet rebates (including 211 from apartment complexes). • Showerhead Rebate – In 2021, the Waukesha Water Utility processed 12 showerhead rebates. • Rainbarrel Rebate – In 2021, the Waukesha Water Utility processed 14 rain barrel rebates. • Sprinkling Ordinance (for all customer classes) – The sprinkling ordinance was enacted in 2006. Customers are allowed to irrigate twice a week. Street signs and mailers provide information on the sprinkling ordinance. Fines are also in place. One violation was reported in 2021. • Irrigation Ordinance (for all customer classes) The Waukesha Water Utility adopted an ordinance in 2015 requiring permits for landscape irrigation

² Water loss in relation to the Water Use Audit includes unauthorized consumption, meter inaccuracies, data handling errors, main breaks, leakage and overflows at towers, and service breaks. PSC 185 requires water utilities with a percentage water loss that exceeds 15 percent to develop a water loss control plan. Note that water loss in the context a PSC water audit is different than “consumptive use,” which means a use of water that results in the loss of or failure to return some or all of the water to the basin from which the water is withdrawn due to evaporation, incorporation into products, or other processes.

	<p>systems to ensure irrigation systems are efficient. Three permits were issued in 2021.</p> <ul style="list-style-type: none"> • Audit Program (for residential & non-residential customers) The Waukesha Water Utility runs a report to determine high water consumption and sends a postcard to customers that may have a leak. In 2021, the Utility conducted 35 residential water audits and data logging reports. The Waukesha Water Utility also provides information on conducting home water audits and finding and fixing leaks.
PWS–R3 Commercial and Industrial Demand Management Program	<ul style="list-style-type: none"> • Grants for Innovative Site Specific Water Savings Measures – The Waukesha Water Utility mailed letter to the top 50 commercial, public and industrial sector water users. Airgas, LLC applied for a grant to install a new chiller system that should reduce city water use. The system was installed in December 2021. If the system is effective in reducing water use (evaluated in 2022) Waukesha Water Utility will send an incentive payout to Airgas. • Sprinkling Ordinance (for all customer classes) (See PWS-R2 for comments) • Irrigation Ordinance (for all customer classes) (See PWS-R2 for comments) • Pre-rinsed Spray Valves (for non-residential classes) – In 2015 the Waukesha Water Utility implemented a program to offer free pre-rinsed spray valves to large water using customers for free. Due to the pandemic, the Waukesha Water Utility did not change out any pre-rinsed spray valves. • Audit Program (for residential & non-residential customers) (See PWS-R2) In 2021, the Waukesha Water Utility conducted 11 data logging reports for public, commercial and industrial customers to evaluate for water leaks.
PWS–R4 Water Reuse	<p>The Waukesha Water Utility evaluated opportunities for water reuse in its 2012 Water Conservation Plan and did not find many opportunities. No further information provided in Appendix A.</p>
Tier 3 – Additional CEM's	<ul style="list-style-type: none"> • Inclining Rate Block Structure – Waukesha Water Utility implemented an inclining rate block structure for residential customers in 2007. From 2010 – 2021 (except 2020) the number of customers in the first block (using the least amount of water) has increased. • Monthly Billing (for all customer classes) – switch from quarterly billing to monthly billing in Spring 2021 • Irrigation Rates (for all customer classes) – In 2021, the irrigation rate increased to \$6.90 per thousand gallons and the utility received five applications. • Sewer Ordinance Change (for all customer classes) – In 2016 Waukesha revised their sewer credit meter ordinance to phase out all sewer credit meters. In 2021, 36 sewer credit meters were retired. Seventy sewer credit meters remain.

7. *A description of any additional conservation and efficiency measures implemented.* See table above. The City's Annual report documents that the total water use continues to decline, and the residential water use has declined steadily since 2006.
8. *A statement verifying that no customers outside of the diversion area were sold Lake Michigan water.* The City did not divert water in 2021, therefore this requirement is not applicable.
9. *A spatially explicit description of the properties served by the City's water utility, in the manner prescribed by the DNR.* The City provided a map of the properties served by the City's water utility.

10. *A report of any City wells filled and sealed or changed to emergency use status in the past year. A description of deep aquifer groundwater wells maintained for emergency use, as allowed under Wis. Admin. Code § NR 810.22, and use of these wells in the previous year.*

The City did not divert water in 2021, therefore this requirement is not applicable.

11. *A summary of the implementation of the pharmaceutical and personal care products recycling and reduction program in the past year.*

The City did not provide a summary of implementation of the plan submitted to the department May 2021. The plan is provided in Attachment C.

12. *For at least 10 years after the date the diversion begins, the City shall annually report the results of Root River monitoring to DNR. The report shall include a summary of the monitoring results and a summary of any impacts to the Root River from the City's wastewater discharge.*

The City did not divert water in 2021, therefore this requirement is not applicable.

13. *A statement of compliance with all applicable federal and state permits and approvals.*

The City provided a statement that it has complied with all applicable federal and state approvals.

The DNR requests you provide the GIS layer for all the properties served by the City's water utility.

For future reports, we ask you to provide the following:

1. For item 4 provide total consumptive use calculations as described above.
2. For item 5 provide the residential per capita per day water use, calculated by summing the residential, residential – 2 family, residential – 3 family, and residential – multi-family customer categories divided by the estimated population and the number of days in the year.
3. For item 6 provide a summary table based on NR 852 Tier 1, Tier 2, and Tier 3 CEMs. The DNR developed the table in this letter based on Appendix A as an example to use for future years. The table should highlight the City's conservation and efficiency measures that occurred in the year of the report. Provide a statement on the City's water utility's meter testing activities and any further efforts to evaluate or implement water reuse projects.
4. For item 11 provide a summary of the implementation of the pharmaceutical and personal care products reduction program in the past year indicating the activities in each of the areas identified in the plan.

Please also note that the diversion approval requires the following:

1. The City must update their water conservation and efficiency plan from 2012 by December 31, 2022. The updated plan must meet all requirements outlined in Wis. Admin. Code ch. NR 852.
2. The City must submit a Monitoring Plan with Quality Assurance Program Plan procedures consistent with the monitoring program proposal submitted to the department in November 2020 at least 90 days *prior* to beginning the diversion.

Thank you for submitting the required diversion reporting in compliance with your diversion approval. In addition to the reporting requirements above, the City has also submitted documentation demonstrating compliance with Tier 3 water conservation as required by section 6 of the Approval and ch. NR 852, Wis. Admin. Code. The information provided in the Report appears to meet the annual reporting requirements. The City's 2022 Annual Report is to be submitted to the DNR by March 1, 2023.

Please contact Shaili Pfeiffer, Shaili.pfeiffer@wisconsin.gov, (608) 219-2216, with any questions regarding your annual reporting.

Sincerely,

A handwritten signature in cursive script that reads "Adam Freihoefer".

Adam Freihoefer
Section Chief, Water Use Section
Bureau of Drinking Water and Groundwater

cc.

Dan Duchniak, General Manager, Waukesha Water Utility, (email only)
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