A PROSPECTUS FOR A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE

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4.4 SOURCES OF POLLUTION

The proposed RWQMPU will include a comparison of current point and nonpoint sources of pollution in the Region to the historical sources evaluated in PR-30 and PR-50. Commission staff will identify general pollutant sources, determine best management practices and state-of-the art methods for pollution reduction, and evaluate opportunities to optimize their implementation to improve regional water quality.

Nonpoint sources will be grouped into two main categories. Sources such as stormwater runoff from parking lots, streets, rooftops, lawns, and construction sites as well as leachate from landfills will be classified as urban nonpoint sources of pollution. Pollutants in runoff from sources such as livestock operations, cropland or agricultural lands, natural areas (woodlands, wetlands, prairies), and septic systems will be classified as rural nonpoint sources.

Point sources of pollution include discrete discharge locations that will be identified by conducting a review of discharge permits. Point sources will be categorized into three main types: public or private WWTP discharges, separate or combined sanitary sewer overflows, and industrial discharges.

Pollutant Source Identification

All or portions of seven major watersheds in southeastern Wisconsin currently have approved total maximum daily loads (TMDLs). The Rock River TMDL report, completed in 2011, established TMDLs addressing total phosphorus (TP) and total suspended solids (TSS) for lakes and streams within the Rock

River watershed.[1] The Milwaukee River Basin TMDL report, completed in 2018, established TMDLs for TP, TSS, and *E. coli* within the Milwaukee River, Menomonee River, and Kinnickinnic River watersheds.[2] The Northeast Lakeshore TMDL report, completed in 2023, addressed TP and TSS and only included small portions of the southeastern Wisconsin Region including northern portions of the Lake Michigan direct drainage area and the Sauk Creek and Sheboygan River watersheds.[3] Additionally, the Fox River and Des Plaines River watersheds are the focus of the pending Fox-Illinois TMDLs that address TP and TSS. The Fox-Illinois TMDL report is slated for completion and approval by USEPA in fall 2026. The major watersheds with existing or proposed TMDLs are shown on Map 4.4. For the proposed RWQMPU, Commission staff will leverage existing TMDL pollutant loading calculations and watershed plan data as a framework to estimate TP and TSS contributions from various point and nonpoint sources.

The proposed RWQMPU will focus on TP and TSS, as these are the parameters uniformly included in TMDLs throughout the Region. Each of the TMDLs provides estimated loads for TP and TSS for individual stream reaches and their contributing subbasins. Commission staff will compile data from each of the TMDL reports to determine the annual allocated TP and TSS loads (in pounds per year) for the nonpoint and point sources in each subbasin. These allocations will then be used to estimate the proportion (percentage) of the total annual load contributed by the various sources within each subbasin. The proposed RWQMPU will display TP and TSS contributions (in percentages) for various point and nonpoint sources by each subbasin and their larger watershed. Point sources will include WWTPs, MS4s, permitted industrial sites, and general permitted activities. Nonpoint sources will include agricultural lands, non-permitted urban lands, and background contributions from natural sources.

Furthermore, for areas of the Region that do not have a TMDL in place, load calculations for subbasins detailed in the most recent Fox-Illinois TMDL will be paired with 2020 land use data to develop source contribution estimates for subbasins with similar land uses. These areas include the Oak Creek, Root River, and Pike River watersheds as well as portions of the Lake Michigan direct drainage area that were not captured in the Northeast Lakeshore TMDLs (see Map 4.4). Commission staff will also review completed

[1] *The Cadmus Group, Inc.,* Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Rock River Basin*, July 2011*.

[2] *CDM Smith,* Total Maximum Daily Loads for Total Phosphorus, Total Suspended Solids, and Fecal Coliform Milwaukee River Basin, Wisconsin, *March 2018*.

[3] *Wisconsin Department of Natural Resources,* The Northeast Lakeshore TMDL: Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids*, October 2023*.

USEPA-approved Nine Key Element plans to support pollutant source estimates and management recommendations for these watersheds, which include the Oak Creek Watershed Restoration Plan (2021), the Root River Watershed Restoration Plan (2014), and the Pike River Watershed-Based Plan (2013).[4]

Emerging Contaminants

The RWQMPU will also include an evaluation of emerging contaminants. Unfortunately, there is minimal monitoring data for emerging contaminants for the lakes, streams, and groundwater in the Region. To address these data limitations, Commission staff will supplement available data with a comprehensive literature review of select contaminant sources, their associated land uses, and their interactions with surface water and groundwater. Commission staff can then compare those relationships to the Region's 2020 land use inventory to assess whether these contaminants are likely to be present in specific areas. This evaluation will specifically focus on the latest literature and water quality research for 6PPD-quinone, PFAS, and pharmaceuticals. Furthermore, for neonicotinoids and herbicides, Commission staff will conduct an inventory of regional crop types and their locations to determine likely application areas and the potential for pollution from these sources in each watershed based on current application practices. More detailed information about the regional agricultural practices inventory to be included in the RWQMPU can be found in Section 4.3 of this Prospectus.

4.5 PLAN OUTCOMES AND MANAGEMENT RECOMMENDATIONS

The management recommendations in PR-30 and PR-50 were divided into major planning categories. Elements of the 1979 RWQMP detailed in PR-30 included a Land Use Plan, Point Source Pollution Abatement Plan, Nonpoint Source Pollution Abatement Plan, Sludge Management Plan, and Water Quality Monitoring Plan. The RWQMP update for the Milwaukee area watersheds in 2007, outlined in PR-50, included a Land Use Plan, Surface Water Quality Plan, and Groundwater Management Plan. The proposed RWQMPU will follow a similar format, with a Land Use Plan, Surface Water Quality Management Plan, Groundwater Quality Management Plan, and Water Quality Monitoring Plan. Additionally, significant consideration will be given to tying the four plan elements together and to emphasizing the interconnected nature of land use, surface water, and groundwater management planning. Figure 4.1 illustrates the interconnected relationships

[4] *SEWRPC Community Assistance Planning Report No. 330*, A Restoration Plan for the Oak Creek Watershed, *December 2021*; *SEWRPC Community Assistance Planning Report No. 316*, A Restoration Plan for the Root River Watershed, *July 2014; Applied Ecological Services, Inc.*, Pike River Watershed-based Plan, A Guide to Restoring and Protecting Watershed Health, Kenosha and Racine Counties, Wisconsin, *August 2013*.

between each of the RWQMPU elements. Regional land use directly influences both surface water and groundwater quality by driving sources of pollution within a watershed, surface water and groundwater are deeply interconnected, and water quality monitoring serves as a crucial tool for tracking pollution from point sources, assessing surface water and groundwater quality conditions and trends over time, and measuring progress of plan implementation. The plan elements are discussed in more detail below.

Land Use Plan

The Land Use Plan will feature recommendations related to sustainable urban development and the preservation of the natural resource base and prime agricultural land in the Region. These recommendations will be based on RWQMPU inventories and analyses of current and projected land use. They will be closely linked to the impacts of land use on surface water and groundwater, as well as future conditions for the year 2050. Furthermore, the plan will use population and land use trends, alongside precipitation and temperature projections, to guide regional planning that protects and improves water quality.

Surface Water Quality Management Plan

The Surface Water Quality Management Plan (Surface Water Plan) recommendations will rely heavily on stream, inland lake, and Lake Michigan inventories and data analyses to identify water quality trends and prioritize both waterbodies and water quality parameters of greatest concern. New or revised water quality standards for specific constituents may be recommended based on the findings of the water quality inventories and assessments. Additionally, the plan will highlight how existing TMDLs and Nine-Key Element Plans can be better implemented to achieve water quality standards and the goal of fishable and swimmable waters where these conditions are not currently being met.

Furthermore, the Surface Water Plan element will outline strategies for addressing both point and nonpoint pollution sources, focusing on the major contributors in the Region. For instance, this plan element may suggest combining or abandoning certain WWTPs, upgrading wastewater treatment technologies and processes based on current best management practices, or adopting additional management measures for nonpoint sources such as urban stormwater or agricultural runoff. The Surface Water Plan may also include recommendations related to wastewater sludge disposal methods and alternative methods for nutrient management through water quality trading, adaptive management, or multi-discharger variance programs. Sanitary sewer service area (SSSA) planning will also be addressed in the Surface Water Plan, with specific recommendations for the SSSA amendment process, the sanitary sewer extension process for new

development, and for septic systems. These strategies will also be integrated with the Groundwater Quality Management Plan to intentionally bridge surface water and groundwater management and reflect the interconnected nature of these resources.

In alignment with the Land Use Plan, the Surface Water Plan will incorporate future conditions by linking water quality recommendations to projected land use changes and anticipated impacts from increasing precipitation and temperature trends in the Region. It will also identify opportunities to utilize modern platforms and tools for sharing water quality data, facilitating better public understanding and smoother information exchange between various agencies.

Finally, the Surface Water Plan will highlight regional success stories, identifying projects, programs, and initiatives that have proven to be beneficial to water quality improvement or protection. The plan will look to these case studies for example techniques that will help guide management recommendations. Such success stories may include restoration projects to improve fish passage, adaptive management strategies to meet phosphorus reductions, or examples of best management practices that have successfully addressed pollution from nonpoint sources in the Region.

Groundwater Quality Management Plan

Groundwater Quality Management Plan (Groundwater Plan) recommendations will rely on municipal well data and analyses to identify water quality trends and prioritize specific locations or pollutants of greatest concern. Aligned with both the Surface Water and the Land Use Plan elements, the Groundwater Plan will also consider future conditions, basing recommendations on expected land use changes and anticipated impacts from precipitation and temperature projections. These recommendations will also explicitly connect to the Surface Water Plan, further underscoring the link between groundwater and surface water conditions.

The Groundwater Plan will outline strategies for addressing nonpoint pollution sources, focusing on the major contributors to groundwater pollution in the Region from both urban and agricultural sources. To address nonpoint source pollution to groundwater, several effective practices may be recommended. In agricultural settings, this may include using precision techniques to apply fertilizers and pesticides only where needed, adopting cover crops to reduce runoff, or managing animal waste to prevent contaminant leaching. For urban or residential sources, possible recommendations could include minimizing lawn chemicals, implementing stormwater BMPs, or establishing wellhead protection zones to protect

groundwater resources. Groundwater recharge and depth to groundwater inventories conducted for the proposed RWQMPU will also help prioritize locations for where these recommended strategies should be implemented.

Water Quality Monitoring Plan

The surface water and groundwater quality inventories conducted for the RWQMPU will help highlight which locations and constituents lack monitoring data. Many waterbodies have older, historical data but little to no recent information, making it difficult to identify long-term trends in water quality. Additionally, data on emerging contaminants or other less-frequently monitored parameters are inconsistent across the Region, leaving significant gaps and complicating the detection of potential threats to water quality.

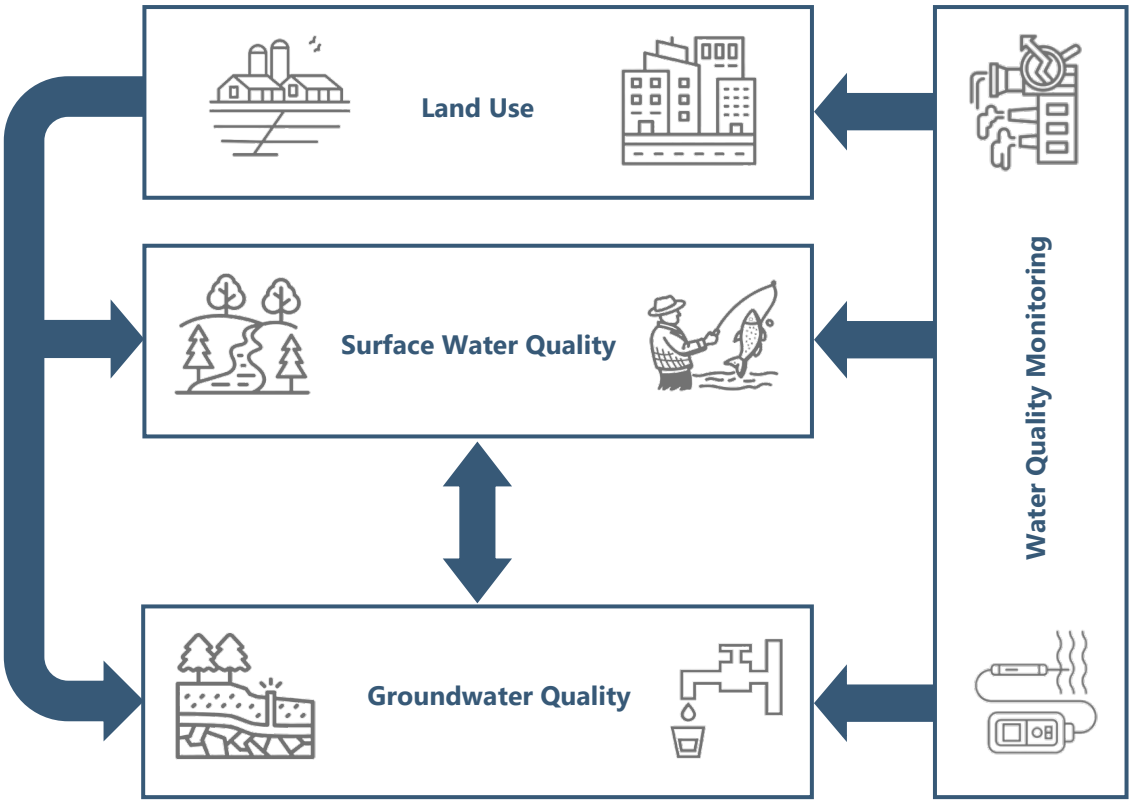
To address these knowledge gaps, the Water Quality Monitoring Plan will establish a detailed, regional strategy for collecting data for both surface water and groundwater. It will use the previously discussed inventories to determine which constituents should be prioritized for monitoring, where this data should be collected, and the necessary monitoring frequency for assessing various physical, biological, and chemical water quality parameters. Furthermore, the plan will identify the specific data needed to monitor for the occurrence of certain global trends, such as the browning and acidification of lakes or the growing risk of harmful algal blooms with rising temperature projections.

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FIGURES

Figure 4.1
Relationships Between Regional Water Quality Management Plan Elements



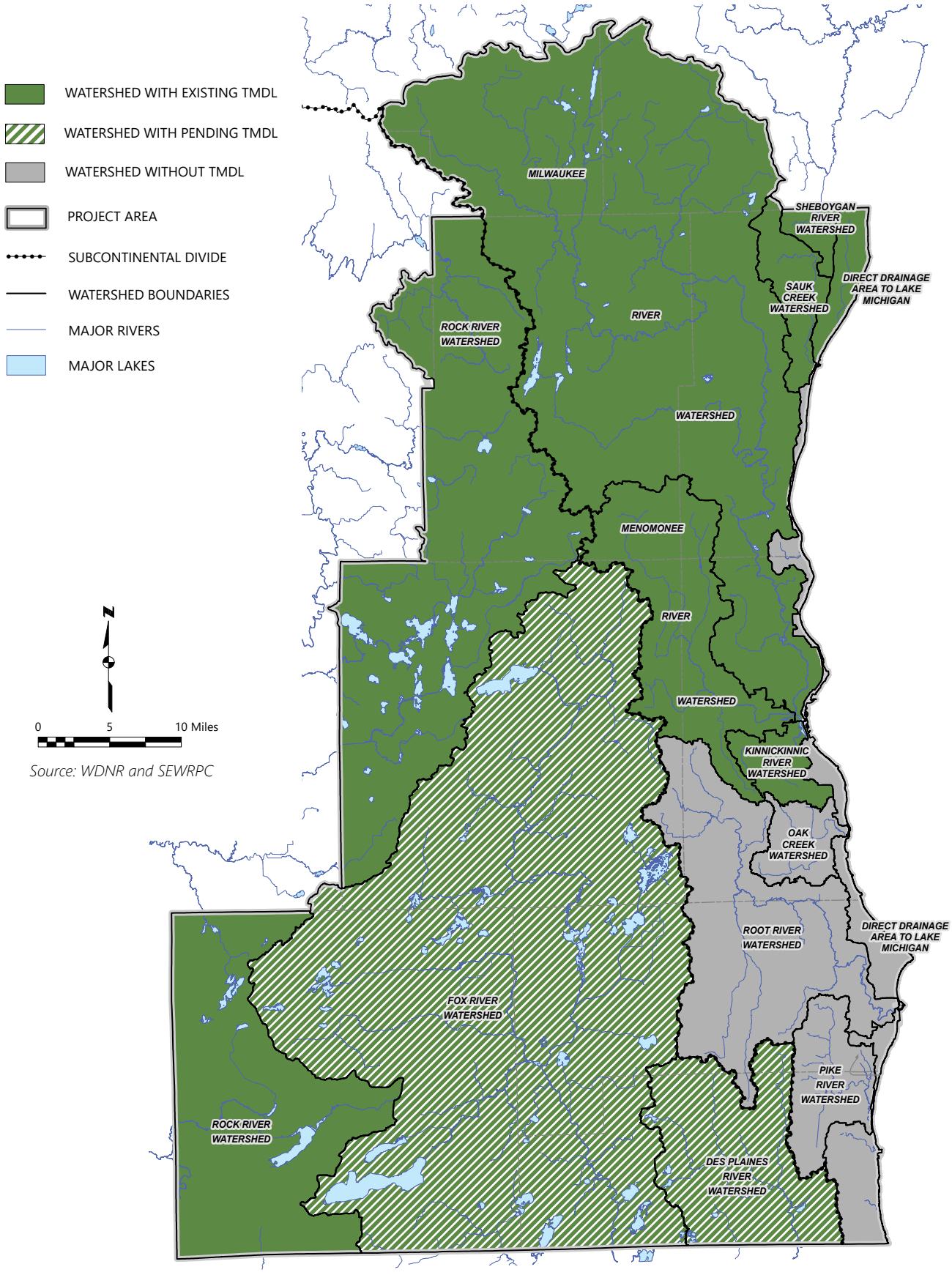
Source: SEWRPC

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MAPS

Map 4.4
Watersheds Within the Project Area With Total Maximum Daily Loads



Source: WDNR and SEWRPC