Southeastern Wisconsin

Regional Planning Commission

Regional Water Quality Management Plan Update

Prospectus

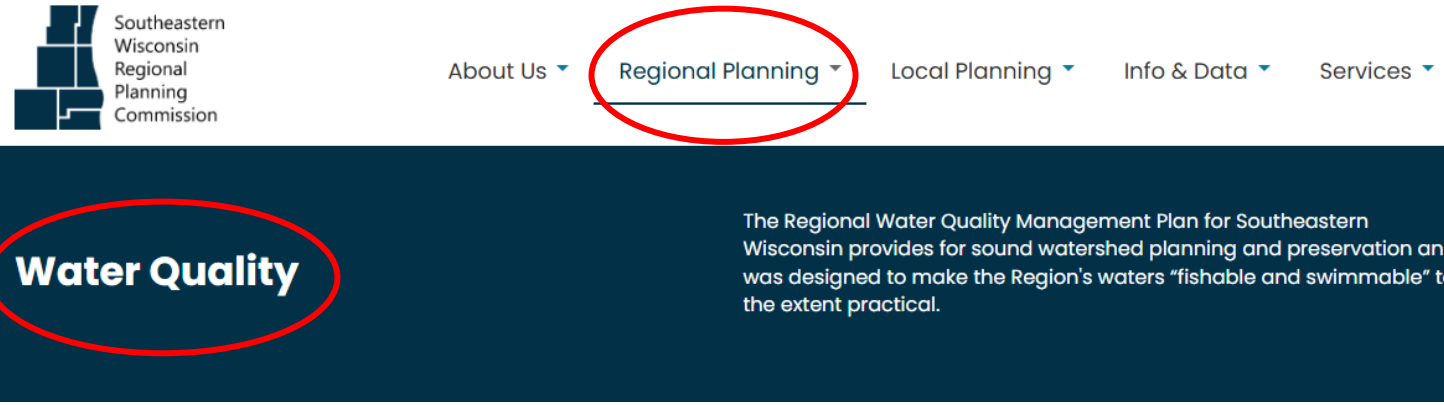
Technical Advisory Committee Meeting
September 11, 2026

#00281873

Meeting Agenda

1. **Review May 8, 2026 Meeting Summary Notes**
2. **Review Prospectus Draft Chapters**
    - Chapter 1 – Introduction
    - Chapter 2 – Purpose of Prospectus
    - Chapter 3 – Needs for RWQMPU
    - Chapter 4 – Work Program (Inventories)
3. **Next Steps**

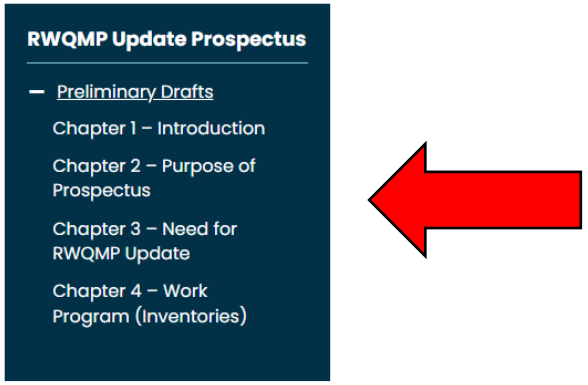
Document Location



Summary Notes

Regional Water Quality Management Plan Update – Prospectus

The Commission has begun work on a Prospectus to update the Regional Water Quality Management Plan (RWQMP). This effort will be supported by a Technical Advisory Committee to develop a scope, schedule, and budget to update the RWQMP. Efforts to be considered include inventories and analyses related to wastewater treatment and stormwater runoff and their impacts to water quality in the Region.



Chapter One

INTRODUCTION

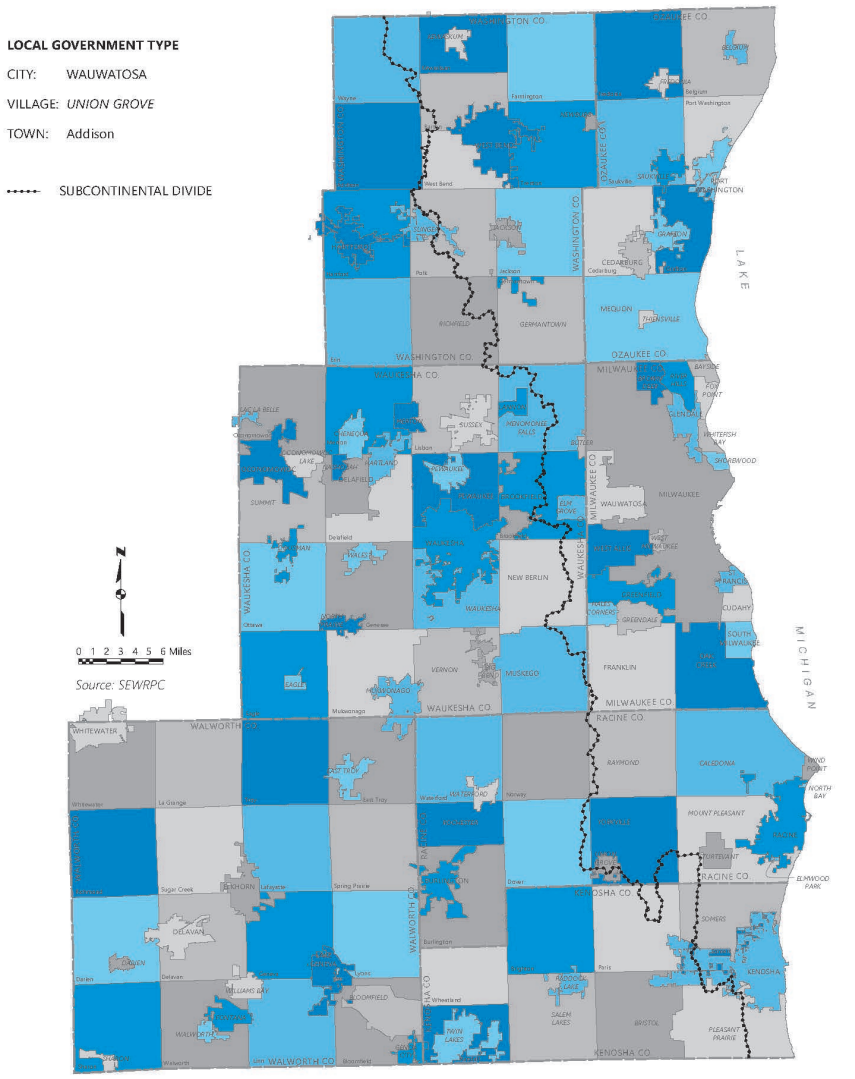
Chapter 1 - Introduction

About the Commission

- Official areawide planning agency for the southeastern region
  - Seven Counties
  - 2,689 square miles
  - 29 cities, 67 villages, 50 towns
  - 12 Watersheds

- State-designated and federally recognized areawide water quality management planning agency for southeastern Wisconsin

Map 1.1
Civil Divisions in the Southeastern Wisconsin Region: 2020



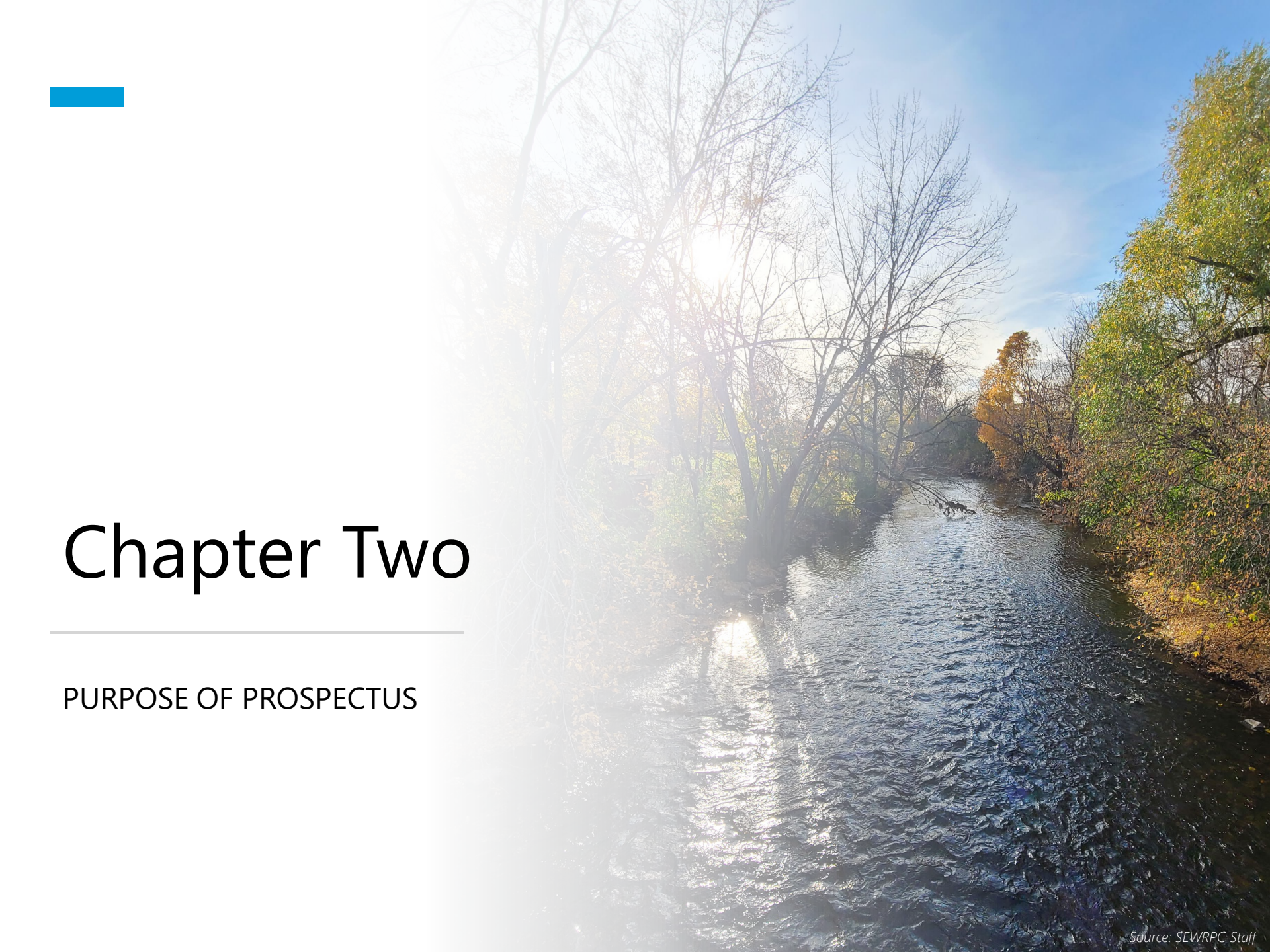
Chapter 1 - Introduction

➢ Regional Water Quality Management Plan (RWQMP)

- First published in 1979 (SEWRPC PR-30)
- Foundation for all of the Commission's environmental, water quality, sewage treatment, and sanitary sewer planning work
- Summarizes essential data and information about the health of our Region's waters
- Provides data-informed recommendations with the goal of achieving fishable and swimmable waters
- In accordance with WI Administrative Code NR-121
  - Policies, procedures, and requirements for areawide water quality management planning under WDNR

Chapter Two

PURPOSE OF PROSPECTUS



Source: SEWRPC Staff

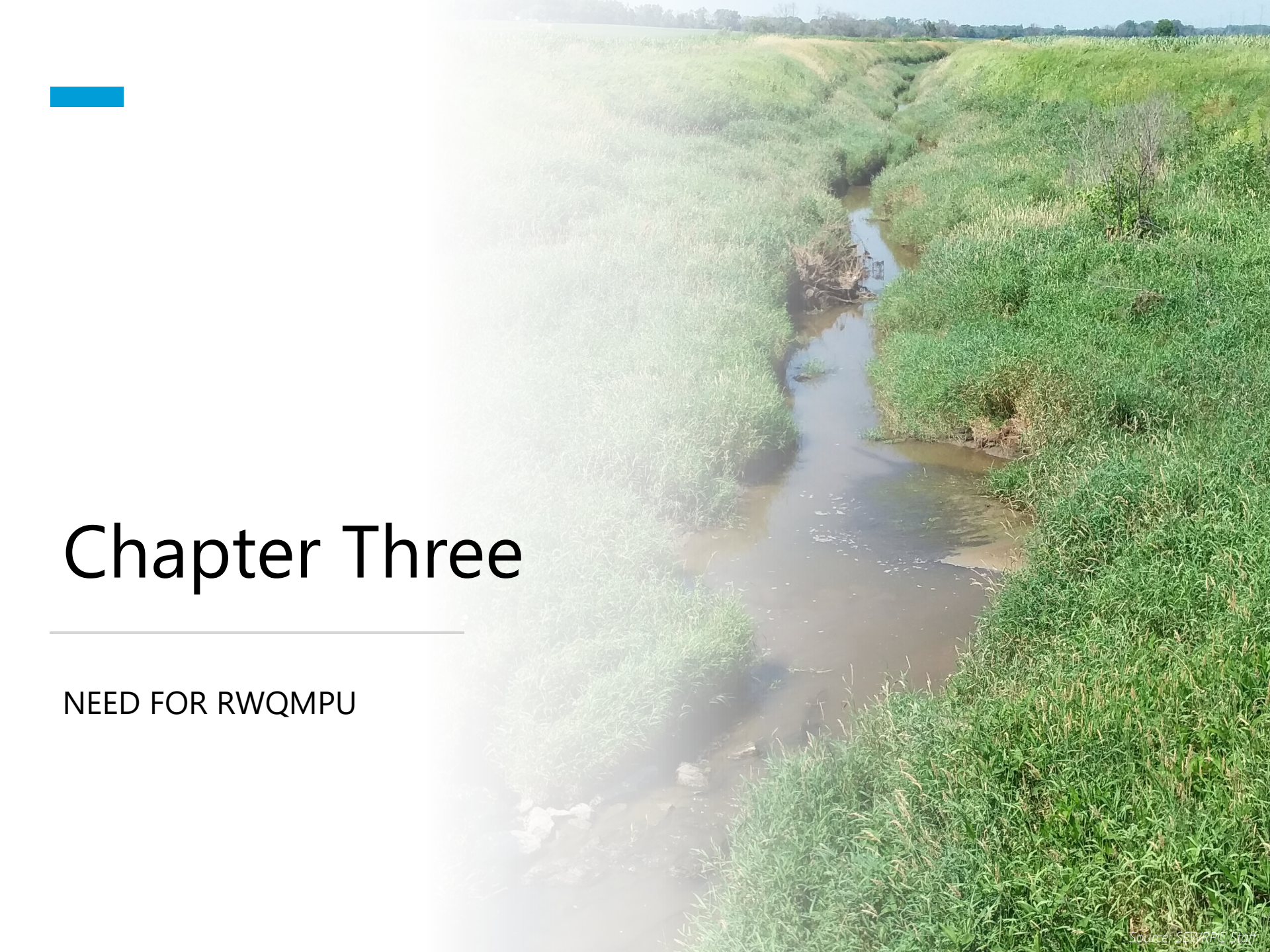
Chapter 2 – Purpose of Prospectus

➢The Prospectus will

1. Establish the need for and purpose of RWQMPU
2. Define scope and content
3. Describe the work and analyses needed to:
   - Evaluate historical and current regional **water quality conditions**, and document research findings
   - Assess the state of **wastewater treatment** in the Region, document findings, and make informed recommendations
   - Identify **sources of pollution** and estimate their relative contributions to the Region's surface water and groundwater
4. Outline the most feasible means for organizing and accomplishing the required work
5. Recommend time sequence and schedule for the work
6. Propose a budget for the required work program, including identification of potential sources of funding

Chapter Three

NEED FOR RWQMPU



Chapter 3 – Need for RWQMPU

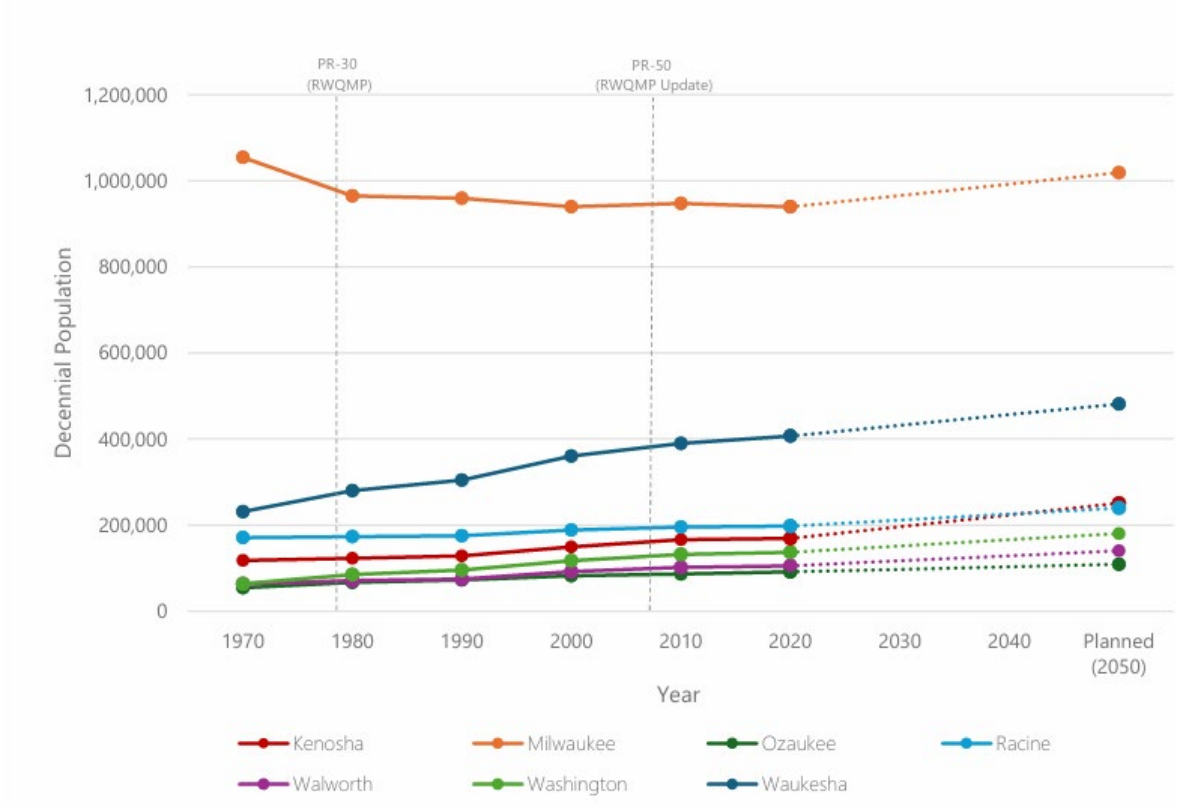
History

- **1979** - RWQMP (PR-30)
- **1995** - Status Report (MR-93)
- **2007** - RWQMPU for the Greater Milwaukee Watersheds (PR-50)
- **No comprehensive Region-wide update since 1979**

Population Change

- 1,756,100 (1970)
- 2,046,800 (2020)
- 2,421,600 (projected 2050)

Figure 3.1
Trends in Population by County: 1970-2050



Source: SEWRPC

Table 3.2
Historical and Current Land Uses in the Region: 1970-2020

Land Use	Historical (1970)		Existing (2020)	
	Square Miles	Percent of Total	Square Miles	Percent of Total
Urban				
Residential[a]	221	8.2	416	15.5
Commercial	10	0.4	19	0.7
Industrial	13	0.5	28	1.0
Transportation, Communication and Utilities	159	5.9	254	9.4
Government and Institutional	21	0.8	28	1.0
Unused Urban	45	1.7	58	2.2
Recreational	33	1.2	54	2.0
Urban Subtotal	502	18.7	857	31.8
Nonurban				
Agricultural	1,565	58.2	1,012	37.6
Landfills and Extractive Sites	13	0.5	19	0.7
Unused Rural	78	2.9	164	6.1
Natural Lands				
Woodlands	186	6.9	213	7.9
Wetlands	272	10.1	340	12.7
Surface Water	74	2.7	85	3.2
Nonurban Subtotal	2,188	81.3	1,833	68.2
Total	2,690	100.0	2,690	100.0

Note: Changes in watershed boundaries, fluctuating water levels, and the construction of stormwater detention and infiltration basins resulted in an increase in surface waters in the Region from 1970 to 2020. Conversion of prior-converted agricultural lands back to wetland, the creation or restoration of wetlands, and the delineation of previously unidentified wetlands resulted in an increase in the area represented by wetlands in the Region during the same time period. Additional discrepancies in land use inventories may result from changing technologies and methods over time.

[a] *Includes single and multi-family residential.*

Source: SEWRPC

Chapter 3 – Need for RWQMPU

Map 3.1
Increases in Urban Land Use Within Subwatersheds of the Region: 1963–2020

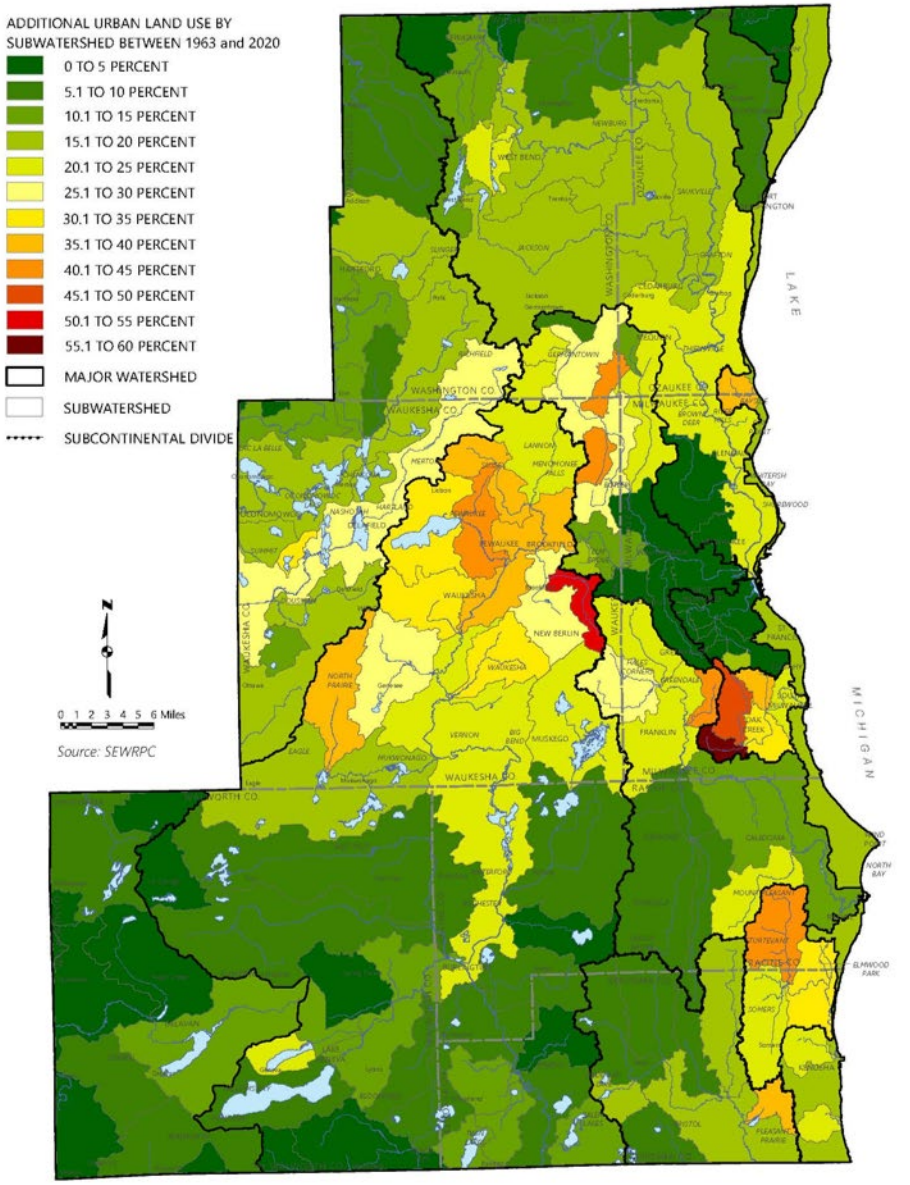
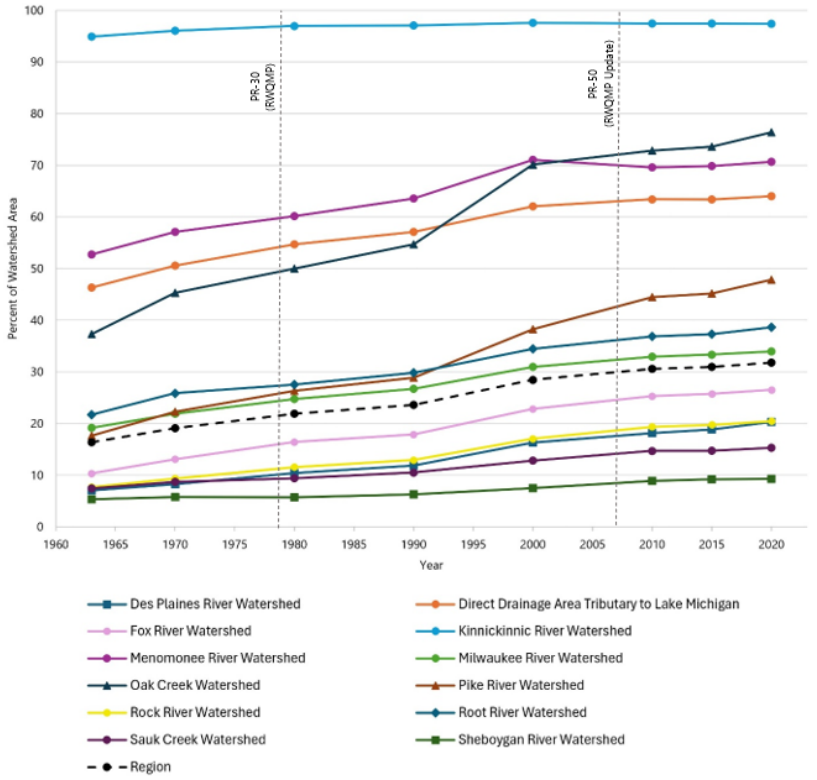


Figure 3.2
Trends in Urban Land Uses Within the Watersheds of the Region: 1963 to 2020



Note: SEWRPC land use inventories are only available for the seven-county Southeastern Wisconsin Region including Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties. Portions of the RWQMPU project area outside of these counties are not included in this figure.

Source: SEWRPC

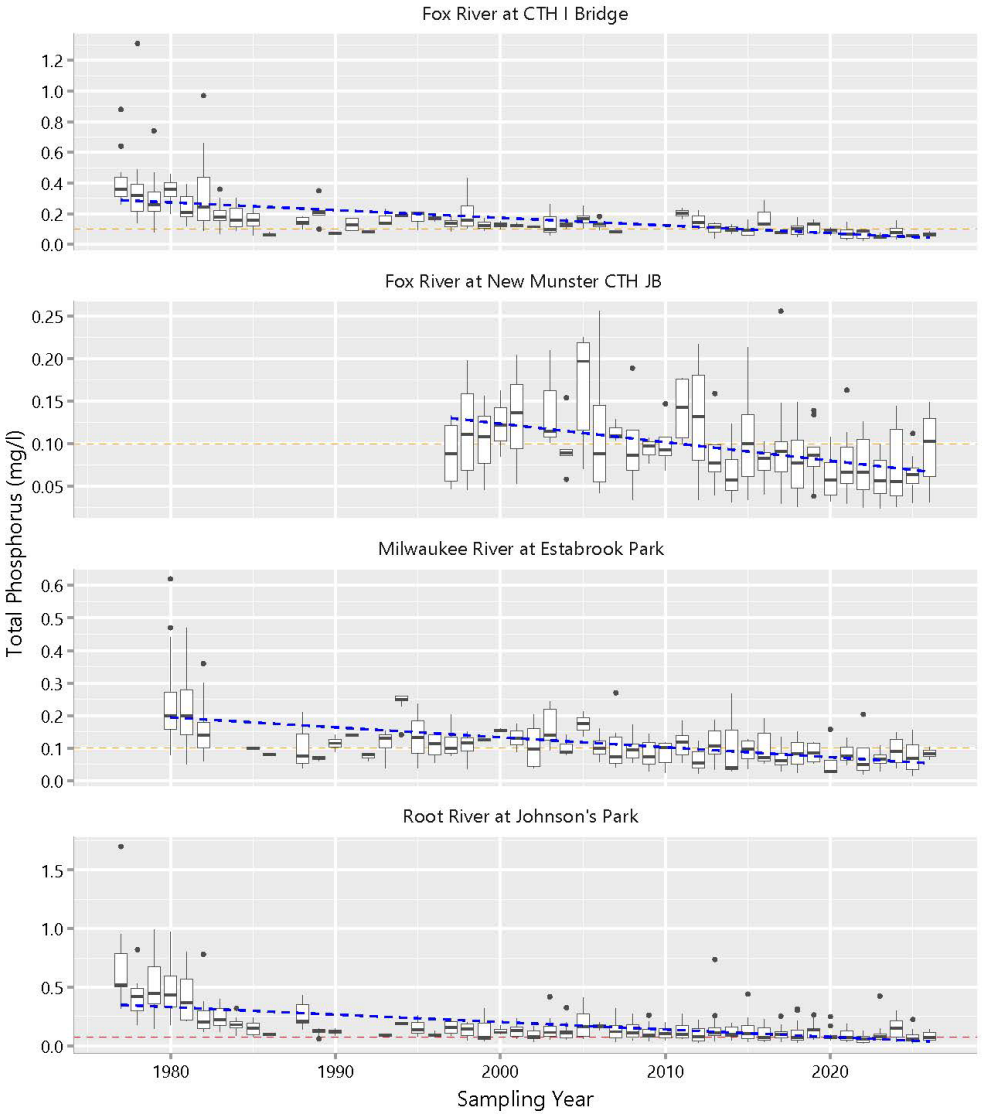
Table 3.3
Number of Section 303(d) Impaired Waterbodies in Southeastern Wisconsin as of 2024

Pollutant (Cause)	Number of Impaired Waterbodies			
	River and Stream Reaches	Lakes	Reservoirs	Beaches
Total Phosphorus	51	14	5	--
Total Suspended Solids	17	--	1	--
Chloride	41	--	--	--
Fecal Coliform	2	--	--	--
Polychlorinated Biphenyls (PCBS)	15	3	1	--
Polycyclic Aromatic Hydrocarbons (PAHS)	2	--	--	--
Escherichia coli (*E.* coli)	--	--	--	15
Other Cause[a]	8	1	1	--
Unknown Cause	19	3	--	--

[a] *Includes impairments from metals, mercury, and creosote.*

Source: WDNR and SEWRPC

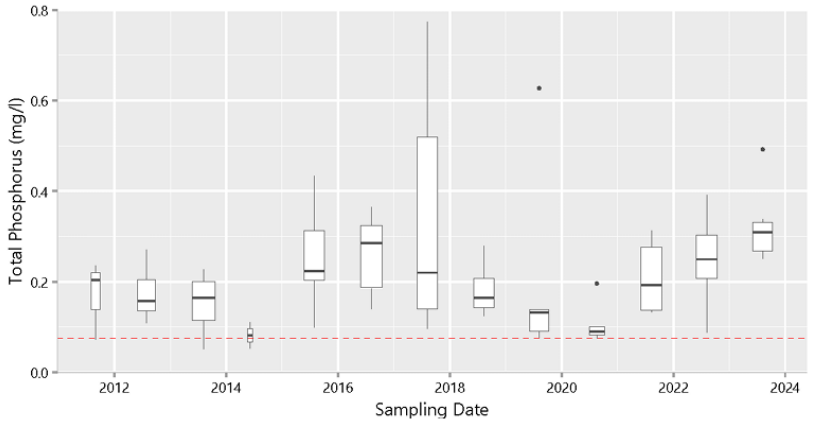
Figure 3.3
Long-term Total Phosphorus Trends at Selected River Sites



Note: Blue dashed lines indicate that a trend is statistically significant. The red dashed line marks the State criterion of 0.075 mg/l for smaller rivers and streams, and orange dashed lines mark the State criterion of 0.1 mg/l for larger rivers.

Source: USGS, WDNR, and SEWRPC

Figure 3.4
Total Phosphorus Concentrations in Grantosa Creek Near Mouth: 2011-2024

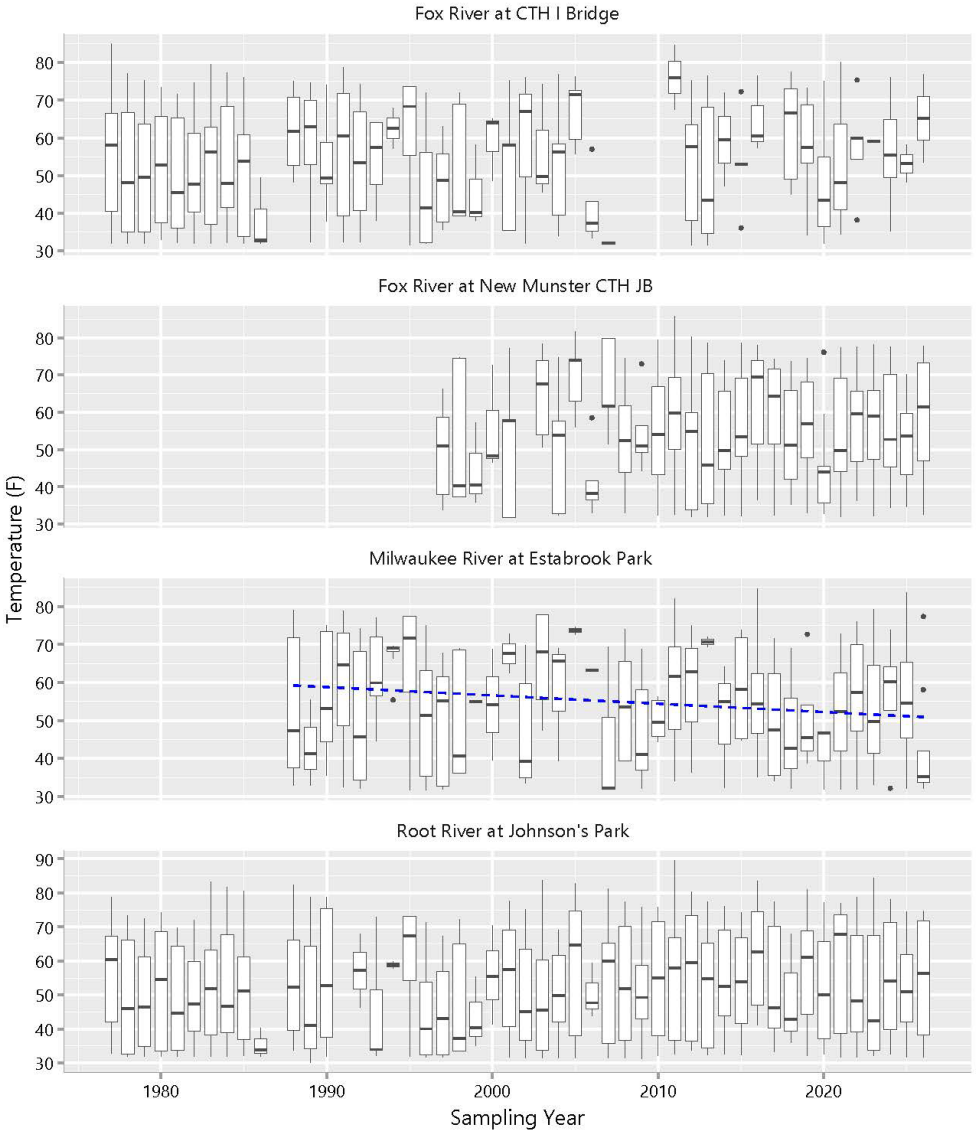


Note: The red dashed line marks the State TP criterion of 0.075 mg/l for smaller rivers and streams.

Source: WDNR and SEWRPC

Chapter 3 – Need for RWQMPU

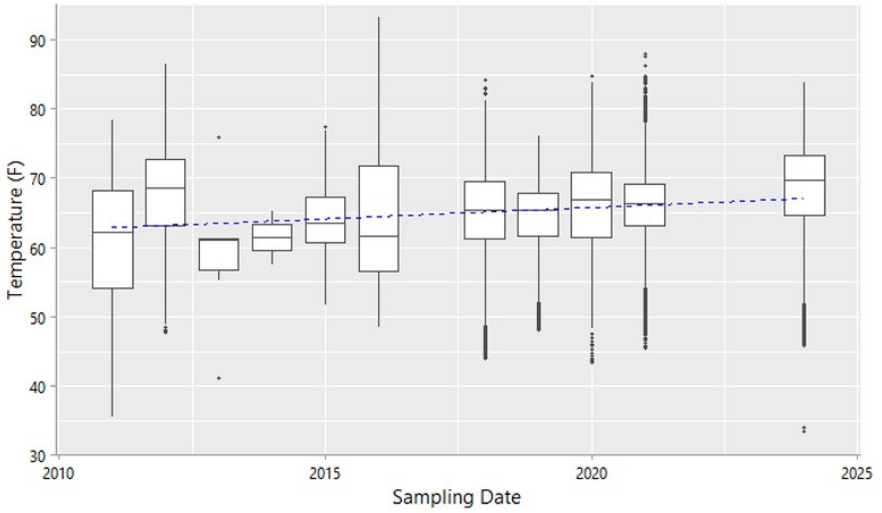
Figure 3.6
Long-term Temperature Trends at Selected River Sites: 1977-2026



Note: Blue dashed line indicates statistically significant trend.

Source: USGS, WDNR, and SEWRPC

Figure 3.7
Temperature at Grantosa Creek Near Mouth: 2011-2024

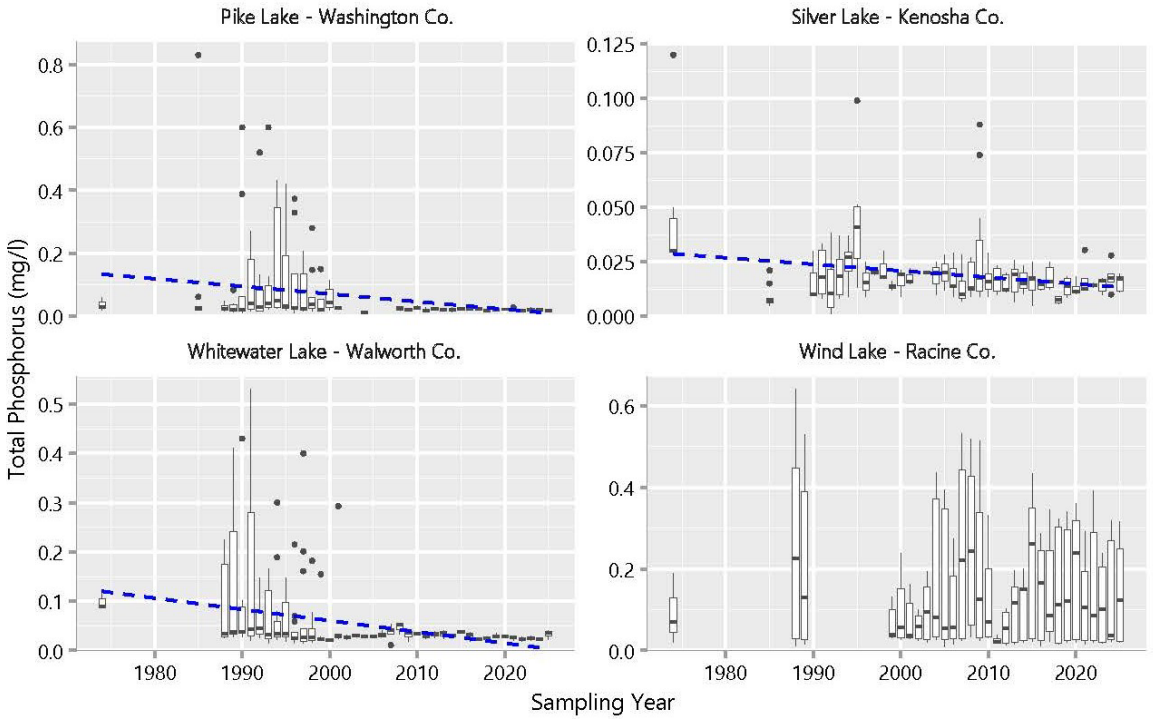


Note: Blue dashed line indicates that the trend is statistically significant.

Source: WDNR and SEWRPC

Chapter 3 – Need for RWQMPU

Figure 3.8
Long-term Summer Total Phosphorus Trends in Selected Lakes: 1977-2025



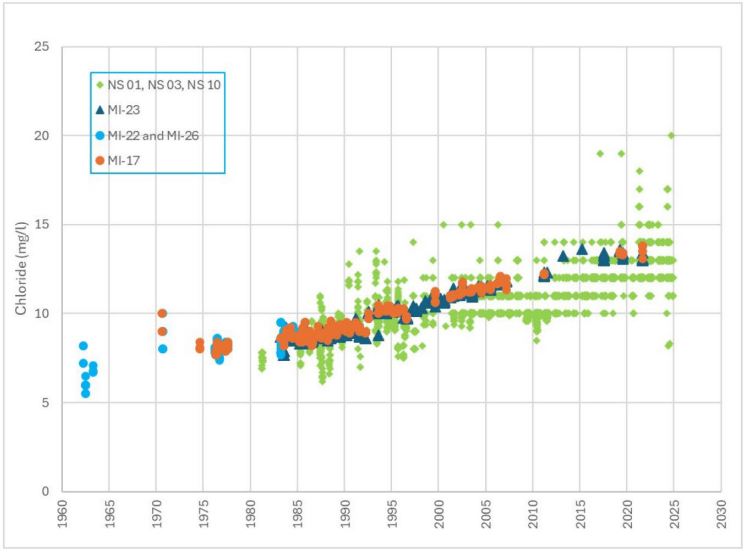
Note: Summer is defined as June 1 through September 15. Blue dashed lines indicate that a trend is statistically significant.
Y-axis scales vary by lake to maintain data readability across different ranges.

Source: WDNR and SEWRPC

- Phosphorus decreasing or unchanged in LTT lakes and larger lakes
- Smaller lakes lack long-term data or trends have not been assessed
- PR-30 and PR-50 focused on larger lakes (>50 acres)

Chapter 3 – Need for RWQMPU

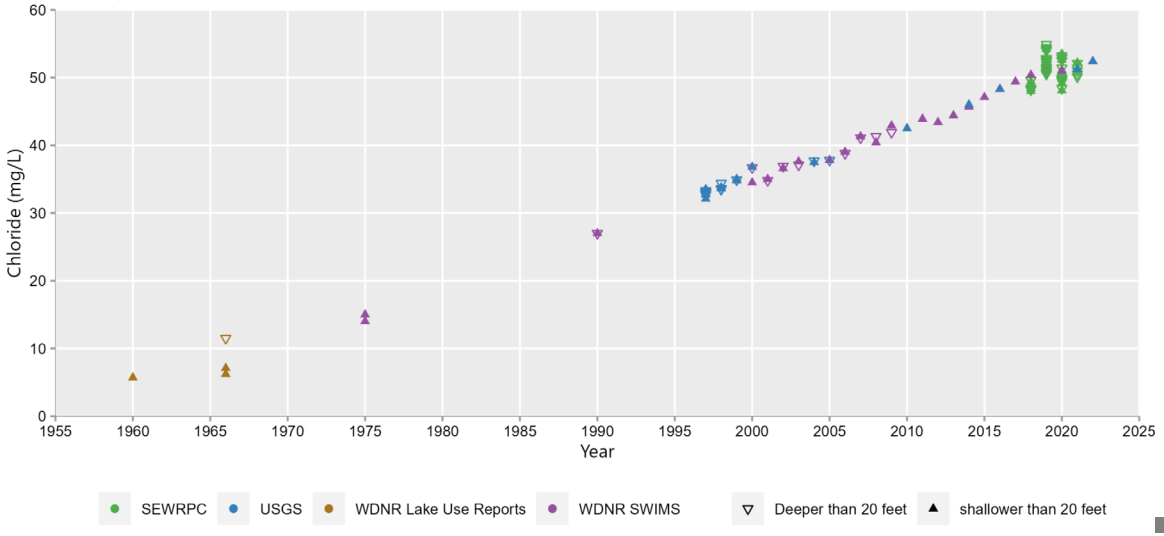
Figure 5.25
Lake Michigan Chloride Levels: 1962-2024



Source: MMSD, USEPA, SEWRPC

- Not all constituents are improving in lakes (for example chloride – graphs not in draft text)

Figure 5. Geneva Lake (Walworth County), Annual Chloride_TS
Scatterplots of Chloride Concentrations Over Time for Geneva Lake: 1960 to 2022

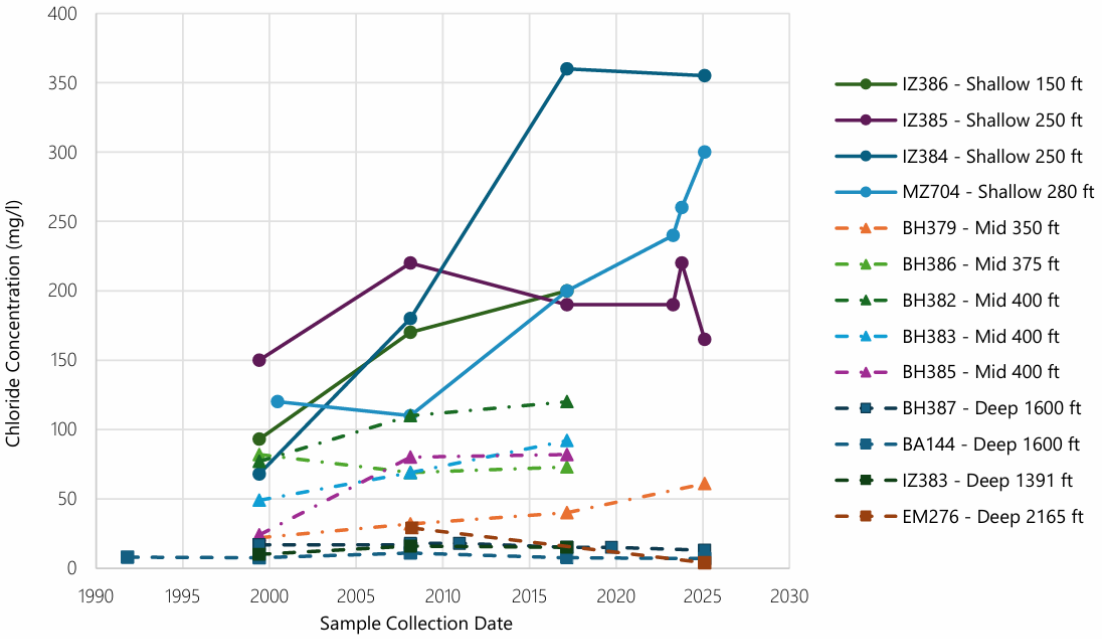


Source: SEWRPC, WDNR SWIMS, USGS, WDNR Lake Use Reports

Groundwater

- Discharges into and interacts with rivers, lakes, and wetlands
- Surface water can recharge aquifers, allowing pollutants to migrate into groundwater
- Certain contaminants are increasing in groundwater
  - Chlorides, PFAS, Herbicides/Pesticides, Nitrate
  - Radium growing concern in deep wells in SE WI

Figure 3.9
Municipal Well Chloride Trend – City of Brookfield: 1991-2025



Source: WDNR, City of Brookfield, and SEWRPC

Chapter 3 – Need for RWQMPU

➢ Emerging Contaminants

- **6PPD/6PPD-Q**
  - Anti-ozonate applied to car tires
  - Toxic to salmon and trout species
  - Linked to fish kills in the Pacific Northwest but have many sensitive species in Wisconsin
  - Currently no data for lakes and streams in WI

- **Per- and Polyfluoroalkyl substances (PFAS)**
  - Extensive group of human-made chemicals used in various industry and consumer products that do not occur naturally in the environment
  - Not examined in PR-30 or PR-50
  - Higher concentrations recorded in Region than other parts of the state
    - PFOS and PFOA concentrations higher than 2024 USEPA Draft Recommended Human Health Water Quality Criteria for PFAS for surface waters used for fish consumption
    - 2026 303(d) Water Conditions List includes two stream segments in Region for PFAS

Chapter 3 – Need for RWQMPU

➢ Emerging Contaminants cont.

- **Microplastics**
  - No widespread monitoring for microplastics in SE WI
  - Some local studies (MKE Riverkeeper & Loyola University)
  - Microplastic particles found in fish and mussels
    - 85% of fish from the Milwaukee River were found to contain plastic in their digestive tract (Kelly et al., 2018)
    - Zebra and quagga mussels in the Milwaukee Estuary

- **Neonicotinoids**
  - Widely used in agriculture and home landscaping
    - Over 500 products containing neonicotinoid active ingredients registered for use in Wisconsin
  - Threat to aquatic invertebrates in streams receiving pesticide-laden runoff
  - Detected in both surface water and groundwater in SE WI
  - Recent WDNR study data indicates uniformly chronic toxicity levels for aquatic invertebrates

Chapter 3 – Need for RWQMPU

Figure 3.10
Historical Change in Annual Average Temperature and Average Summer Temperature: 1950-2024

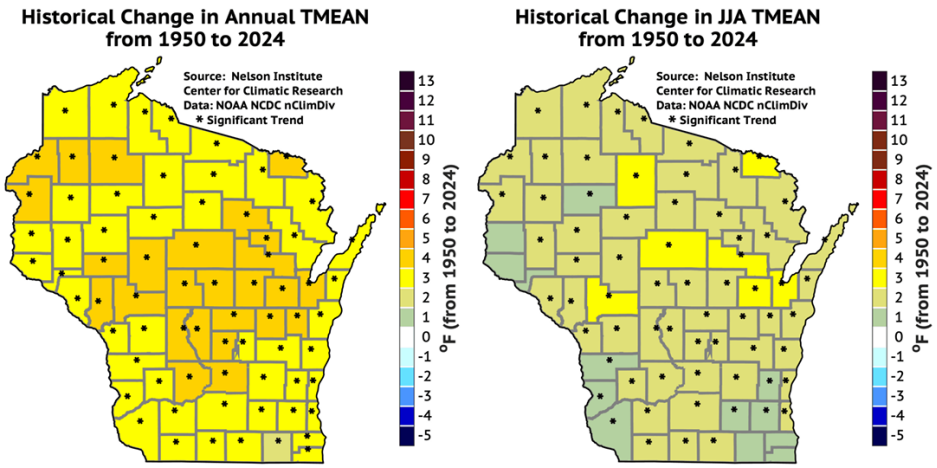
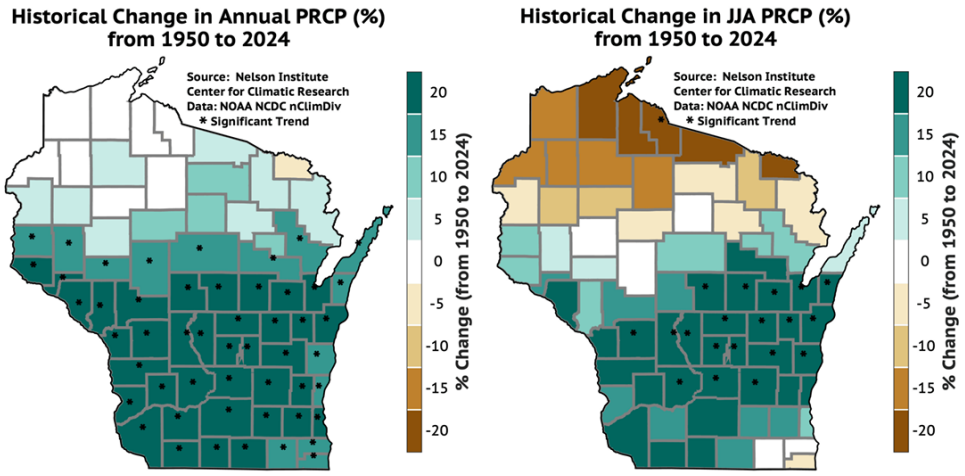


Figure 3.11
Historical Change in Annual Average Precipitation and Average Summer Precipitation: 1950-2024



➢ Climate

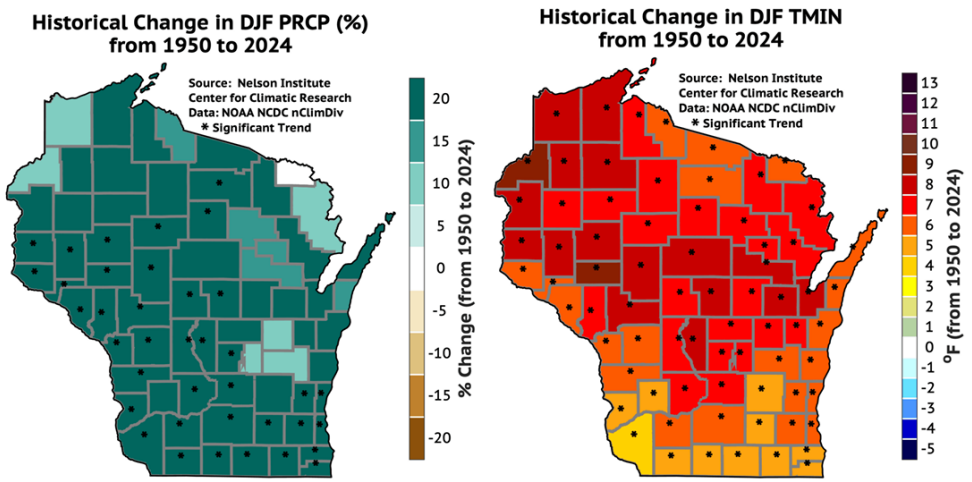
- Average daily temperature in SE WI increased ~3° F since 1950s
- Average daily summer temperatures increased ~1-2° F
- Six of the top ten wettest years on record in Wisconsin have occurred between 2000 and 2024
- 15-20% increase in annual precipitation since 1950
- More variable precipitation trends in Region during the summer months

Source: WICCI

➢ Climate cont.

- Winter precipitation in Region has increased ~20% since 1950
- Winter temperatures have increased ~5-6° F
- Winters are getting wetter and warmer with fewer extended stretches of extreme cold temperatures
- Negative affect on lake ice conditions
  - Lake Geneva in Walworth Co. thawed 4 days earlier on average in 2015 compared to 1905 (USEPA)

Figure 3.12
Historical Change in Total Winter Precipitation and Minimum Winter Temperature: 1950-2024



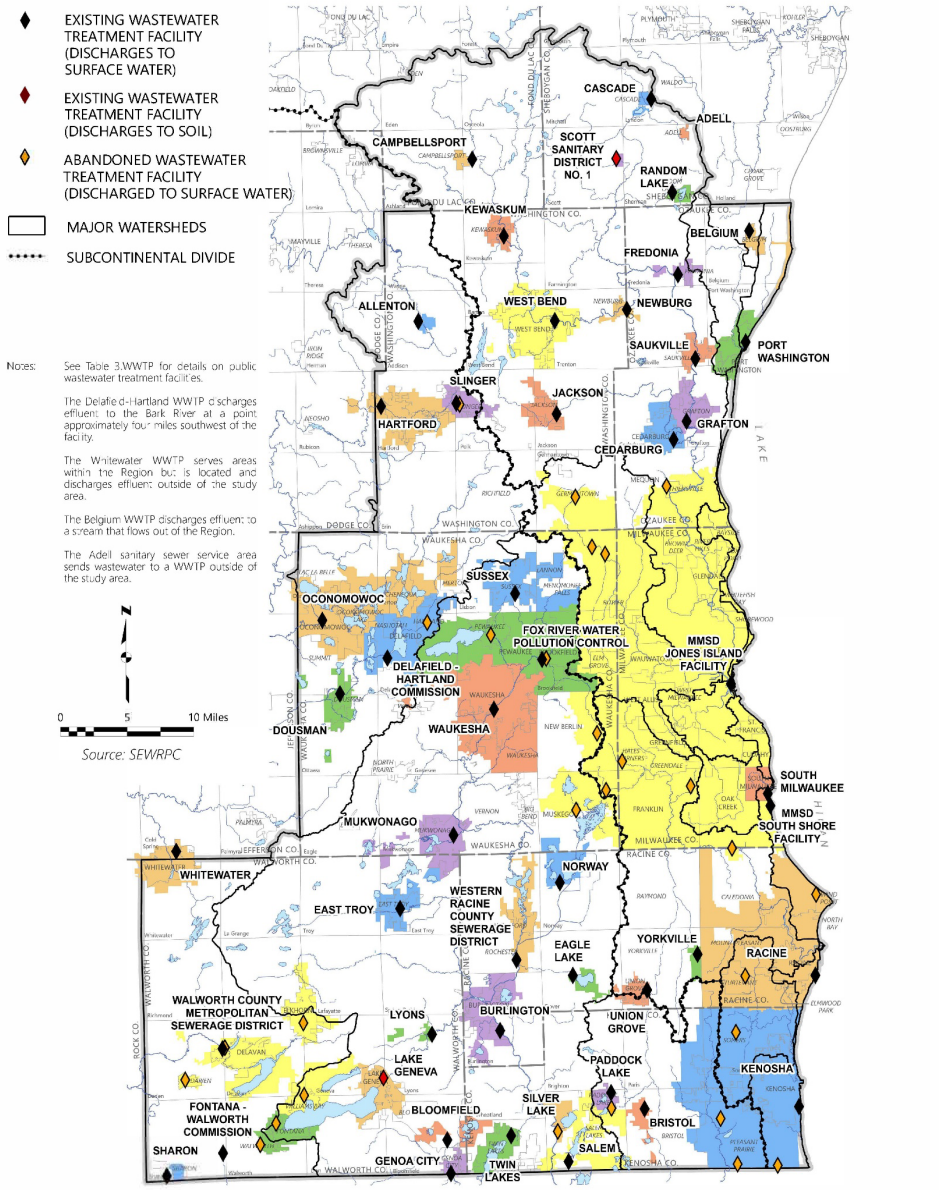
Source: WICCI

Chapter 3 – Need for RWQMPU

➢ WWTPs

- Of the 21 plants recommended for abandonment in PR-30, one remains (Yorkville)
- Of the 8 new plants recommended for construction in PR-30, one has yet to be built (Big Bend)
- 45 active, public WWTPs as of 2026
- Seven private WWTPs
- Plants vary in size, age, practices, and technologies
- Listing in Table 3.4 of draft

Map 3.2
Existing and Abandoned Wastewater Treatment Facilities and Planned Sanitary Sewer Service Areas



Chapter 3 – Need for RWQMPU

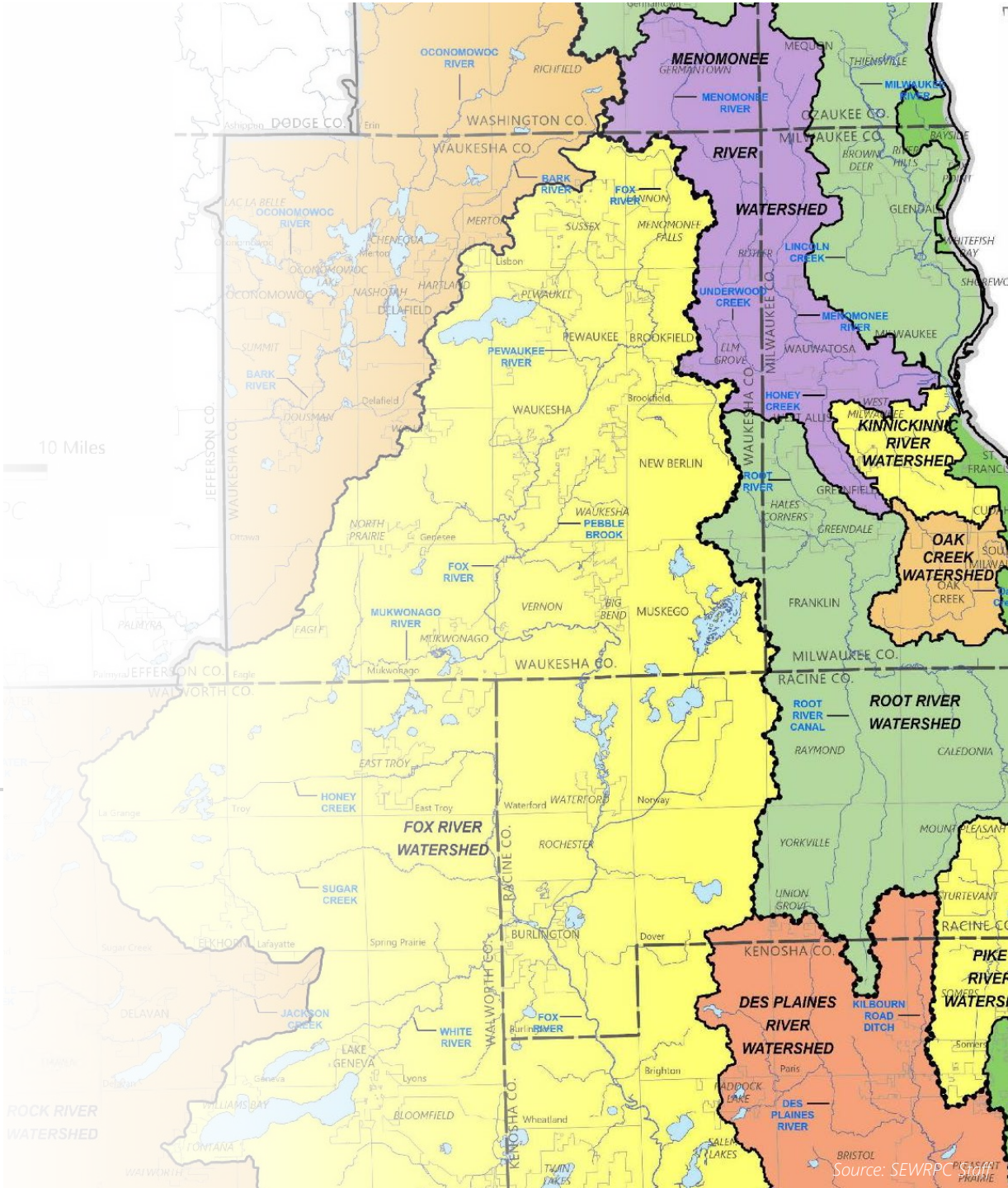
Wastewater Treatment

- Updated WWTP inventories are necessary to:
  - Evaluate current treatment capabilities and facility needs
  - Assess the environmental impacts of effluent discharges
  - Identify opportunities for further plant consolidation or new WWTP development
- Many facilities in the Region land apply biosolids
  - Contaminants, including PFAS, can persist in biosolids and leach into soil, groundwater, or nearby surface waters
  - Need to identify where sludge is land applied and conduct a comprehensive review of current sludge management practices
- Water quality trading, adaptive management, and multi-discharger variance programs
  - How are communities utilizing these programs to offset phosphorus discharges?
  - Need for assessment of overall effectiveness

Chapter Four

WORK PROGRAM

(INVENTORIES)



Chapter 4 – Work Program

➢ Chapter 4

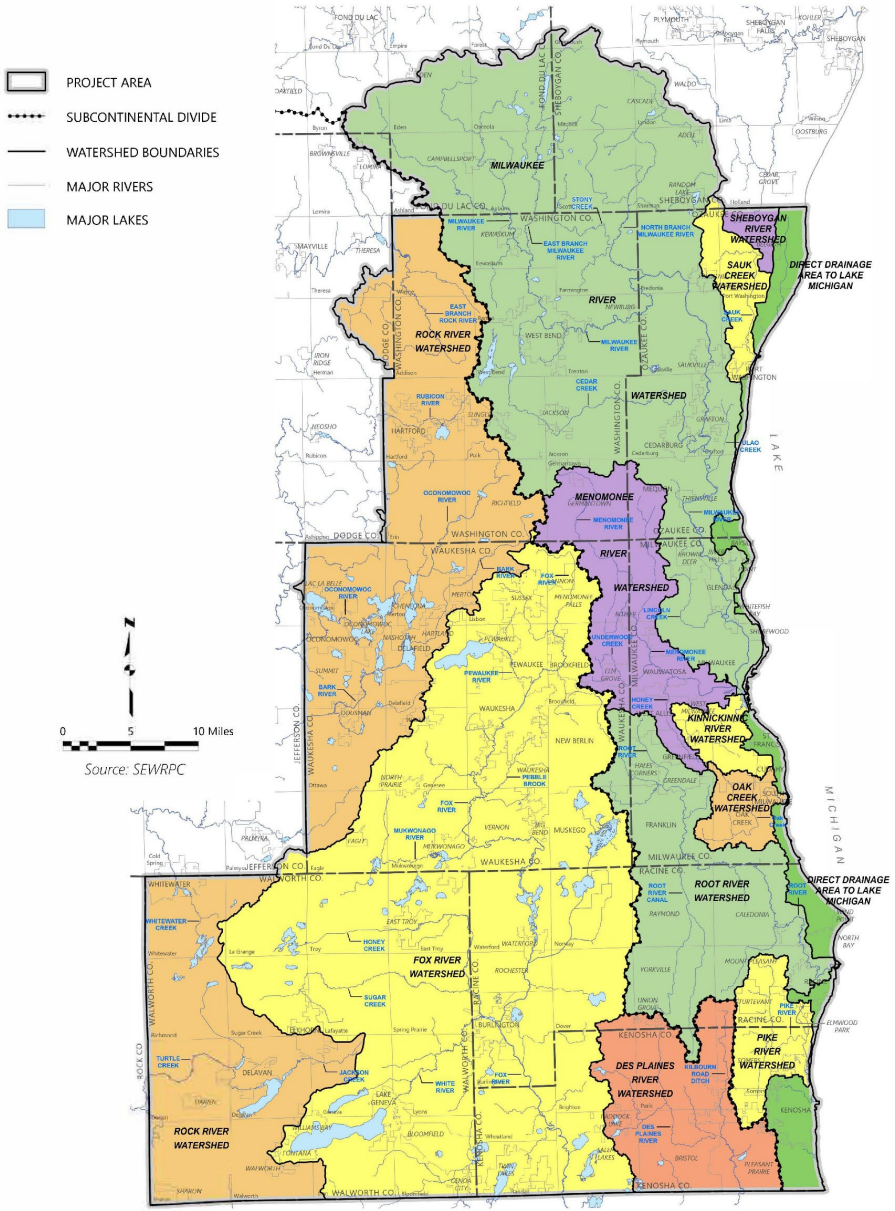
- Components of proposed RWQMPU
- Scope of work to be completed

➢ Sections

- **4.2 - Inventories and Assessments**
- 4.3 - Sources of Pollution
- 4.4 - Plan Outcomes and Management Recommendations

Chapter 4 – Work Program

Map 4.1
Major Watersheds in Southeastern Wisconsin



- **RWQMPU Project Area**
  - 2,982 square miles
  - 12 Watersheds
    - Des Plaines River
    - Fox River
    - Kinnickinnic River
    - Menomonee River
    - Milwaukee River
    - Oak Creek
    - Pike River
    - Rock River
    - Root River
    - Sauk Creek
    - Sheboygan River
    - Direct Drainage Area to Lake Michigan

Chapter 4 – Work Program (Inventories)

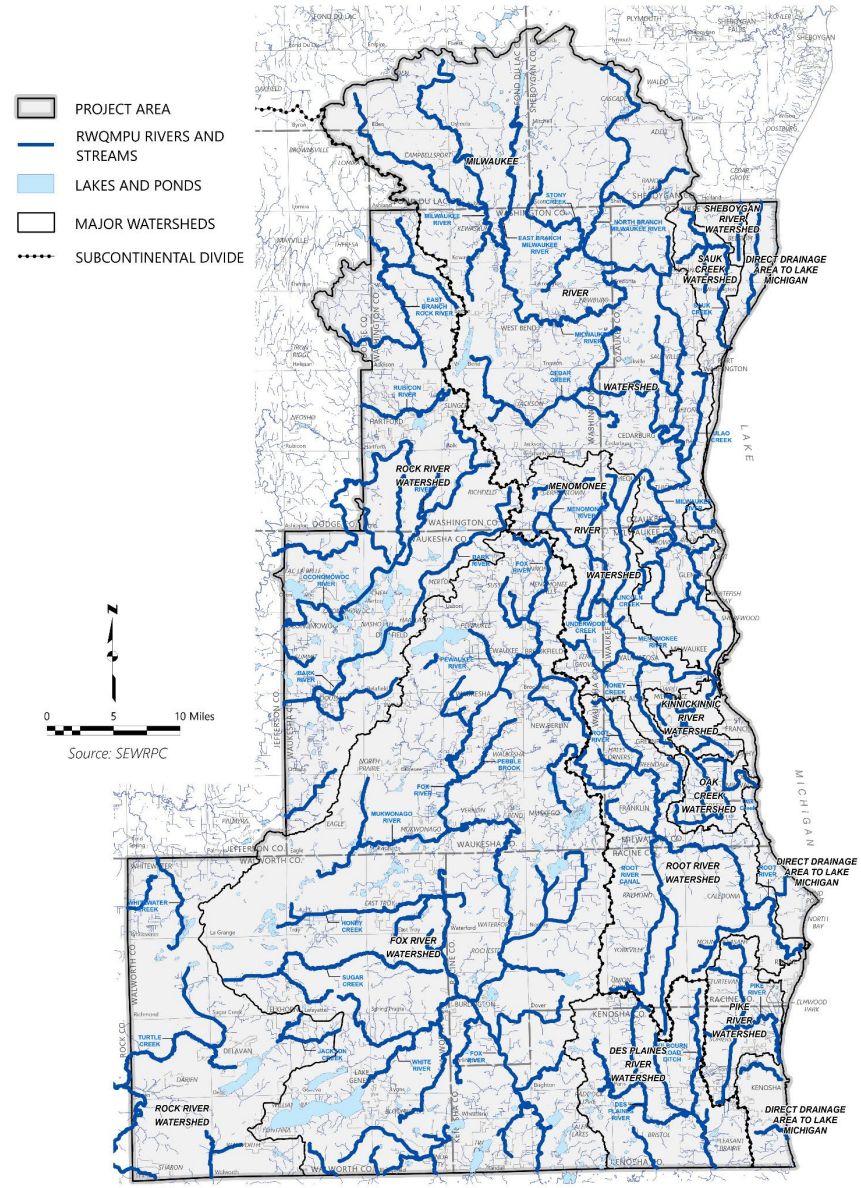
➢ Surface Water Quality Inventories and Assessments

- Prioritize commonly monitored chemical and physical parameters
- Compare observed conditions to WQ criteria and designated uses
- Assess recent and historical trends
- Identify waters in need of improvement
- Recognize successful restoration efforts
- Identify long-term patterns affecting the Region
- Include more comprehensive review of biological indicators
  - Macroinvertebrates, fish, aquatic plants, invasive species

➢ Data Sources

- WQ Data Portal, SWIMS, USGS-NWIS Water Databases
- WDNR, local organizations, USGS, SEWRPC, EPA

Map 4.2
Rivers and Streams Selected for the Regional Water Quality Management Plan Update



➢Streams and Rivers

- Large, perennial streams
- Streams that flow through major municipalities
- Streams that currently or previously received WWTP effluent discharge
- Impaired streams included in a TMDL
- Includes streams recommended by the TAC

Table 4.1
Stream and Lake Water Quality Parameters Proposed to be Included in RWQMPU Inventories

Water Quality Parameters	Rivers and Streams	Inland Lakes	Lake Michigan
Chemical			
Dissolved Oxygen[a]	X	X	X
Hydrogen Ion Exchange (pH)	X	X	
Total Phosphorus[a]	X	X	X
Nitrate-Nitrogen	X	X	
Chloride	X	X	X
Biological Oxygen Demand (BOD)		X	
Alkalinity		X	
Physical			
Temperature[a]	X	X	X
Total Suspended Sediment/Solids	X	X	
Clarity[a]		X	
Bacteriological and Biological			
Chlorophyll-a[a]		X	
E. coli Bacteria		X	
Fishery Index of Biotic Integrity Values	X		
Macroinvertebrate HBI Values	X		
Macroinvertebrate ETP Values	X		
Aquatic Plant Community		X	
Aquatic Invasive Species	X	X	
Ice On/Ice Off Conditions		X	
Toxic and Hazardous Materials			
Heavy Metals	X	X	
Pesticides and Herbicides	X	X	
Polychlorinated Biphenyls (PCBs)	X		
PFAS Substances	X	X	
Pharmaceuticals	X		
Microplastics	X	X	

[a] Parameters used to determine inland lake trophic status.

Source: SEWRPC

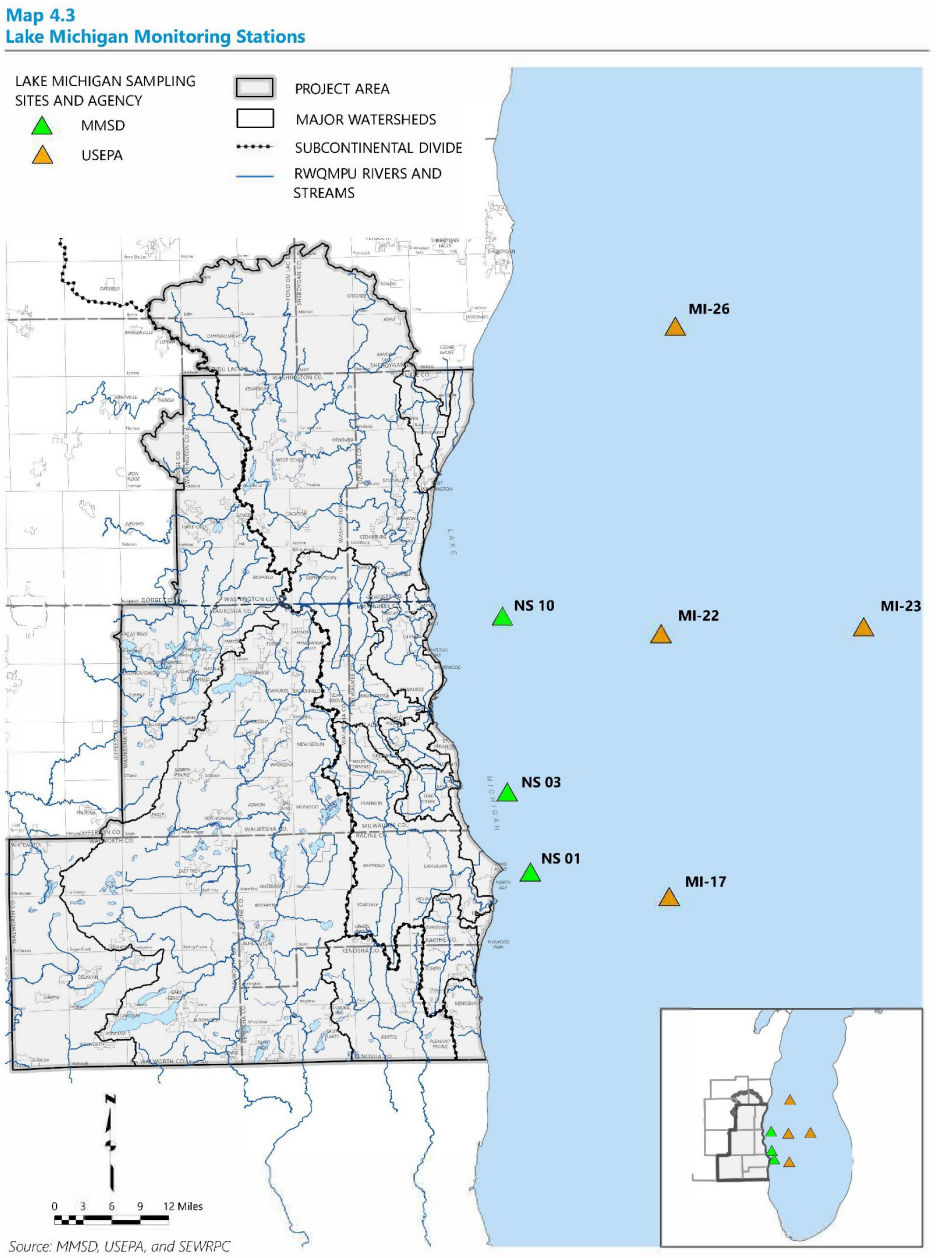
Inland Lakes

- Include all lakes in the Region with available water quality data
  - Allow the RWQMPU to identify smaller, yet regionally significant lakes that may lack consistent monitoring data
  - Guide future monitoring recommendations
- Include various chemical, physical, and biological parameters as well as lake natural community types
  - Deep headwater lakes, deep seepage lakes, shallow seepage lakes, and deep lowland lakes
- Lake water quality data collected by the WDNR, USGS, SEWRPC, and volunteer groups affiliated with local lake associations

Chapter 4 – Work Program (Inventories)

➢Lake Michigan

- Monitoring locations adjacent to the Region
  - Four USEPA monitoring sites
  - Three MMSD monitoring sites
- General picture of the state of water quality in the Lake



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Stream and Lake Water Quality Parameters Proposed to be Included in RWQMPU Inventories

Water Quality Parameters	Rivers and Streams	Inland Lakes	Lake Michigan
Chemical			
Dissolved Oxygen[a]	X	X	X
Hydrogen Ion Exchange (pH)	X	X	
Total Phosphorus[a]	X	X	X
Nitrate-Nitrogen	X	X	
Chloride	X	X	X
Biological Oxygen Demand (BOD)		X	
Alkalinity		X	
Physical			
Temperature[a]	X	X	X
Total Suspended Sediment/Solids	X	X	
Clarity[a]		X	
Bacteriological and Biological			
Chlorophyll-a[a]		X	
E. coli Bacteria		X	
Fishery Index of Biotic Integrity Values	X		
Macroinvertebrate HBI Values	X		
Macroinvertebrate ETP Values	X		
Aquatic Plant Community		X	
Aquatic Invasive Species	X	X	
Ice On/Ice Off Conditions		X	
Toxic and Hazardous Materials			
Heavy Metals	X	X	
Pesticides and Herbicides	X	X	
Polychlorinated Biphenyls (PCBs)	X		
PFAS Substances	X	X	
Pharmaceuticals	X		
Microplastics	X	X	

[a] Parameters used to determine inland lake trophic status.

Source: SEWRPC

Groundwater Quality Assessment

- Compare recent conditions to historical trends and current standards
- Utilize data from shallow and deep municipal wells
- WQ parameters will include:
  - Nitrate
  - Chloride
  - Sodium
  - PFAS (when available)
  - Metals (iron, manganese, and arsenic)
- Radium will be assessed for deep wells

Wastewater Treatment

- Review of current wastewater treatment plant (WWTP) locations, practices, and technologies
  - Use WDNR WWTP databases
  - Conduct interviews with WWTP operators in the Region
- Review discharge permits and variances for each WWTP
- Examine discharge pollutants
  - Five-day biological oxygen demand, total suspended solids, chlorides, phosphorus, pH, and *E. coli*
- Summarize methods used to meet nutrient limited and water quality standards

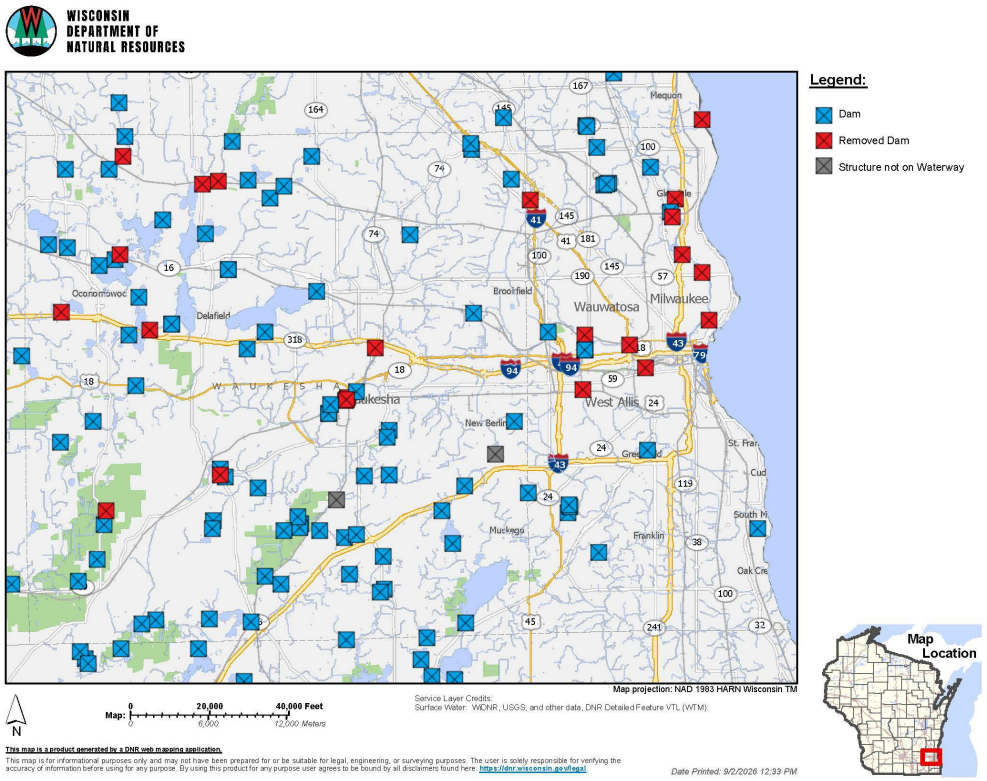
General Land Use

- Use SEWRPC historical land use inventories and recent 2020 land use data to examine changes (1965-2020)
- Calculate proportions of each land use category for each watershed
- Relate land use to water quality changes and conditions
- Use land use to identify possible sources of pollution (discussed in future Chapter 4 section)

Chapter 4 – Work Program (Inventories)

➢ Stream Connectivity and Fish Passage

- Leverage readily available inventories to identify existing bridges, culverts, dams, or other potential barriers on the project area streams
- Produce a series of watershed maps summarizing existing structures and possible barriers to fish passage
- Include recommendations for removing or modifying obstructive infrastructure



Chapter 4 – Work Program (Inventories)

➢Environmental Corridors and Natural Areas

- Utilize the most recent 2020 environmental corridor and floodway inventories
- Generate maps for each watershed to identify currently protected areas to be excluded from development during SSA planning

➢Steep Slopes

- Review and update current maps identifying steep slopes (gradient ≥ 12%)
- Develop recommendations for areas to be excluded from SSA development and for water quality protection

Riparian Buffer Analysis

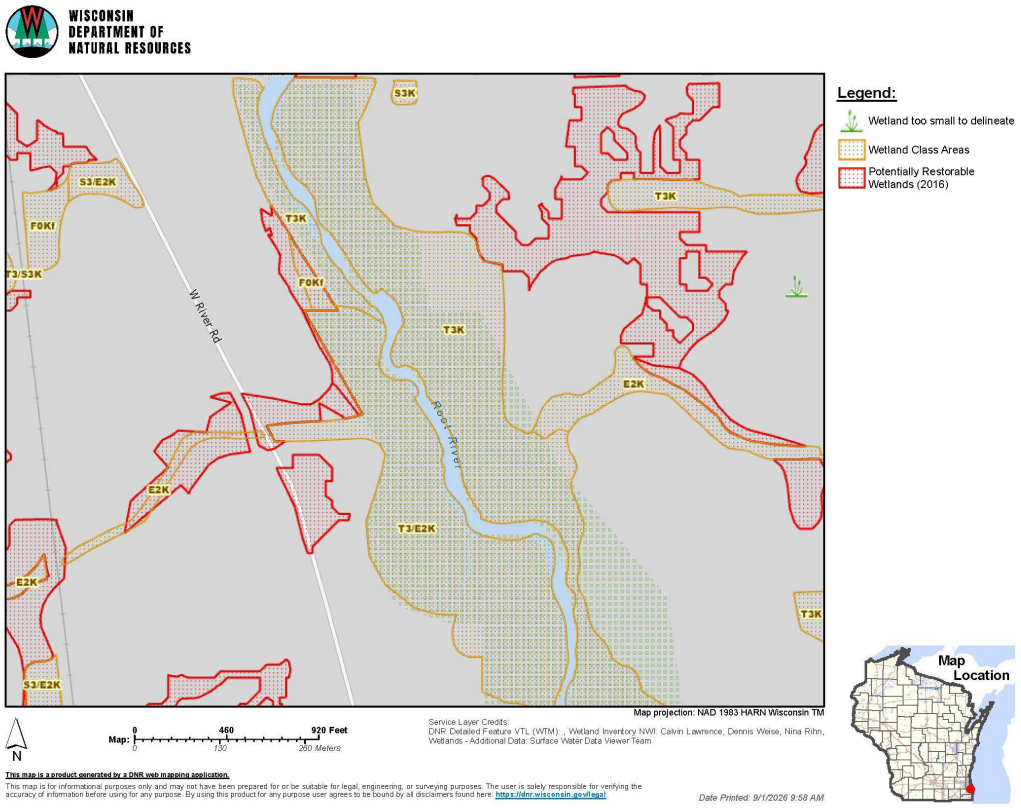
- Use ArcGIS Pro, 2020 land use and environmental corridor inventories, and the most current FEMA floodway spatial layer to delineated buffers along RWQMPU streams and select lakes
  - 75, 400, and 1000 feet from stream centerline/lake edge
- Estimate percentage of waterbodies protected by riparian buffers
- Determine relative amounts of riparian buffer areas not currently protected by environmental corridor or floodway designation

Source: Illinois River Watershed Partnership

Chapter 4 – Work Program (Inventories)

Wetland Inventory and Potentially Restorable Wetlands

- Utilize WDNR Wisconsin wetland inventory data and geospatial files
- Determine the number, types, and sizes of wetlands within each watershed
- Use 2016 WDNR potentially restorable wetland dataset
- Include possible wetland management and restoration recommendations in RWQMPU



Hydric Soils

- Use most recent NRCS soil data and ArcGIS spatial layers
- Generate hydric soils maps for watersheds in the Region

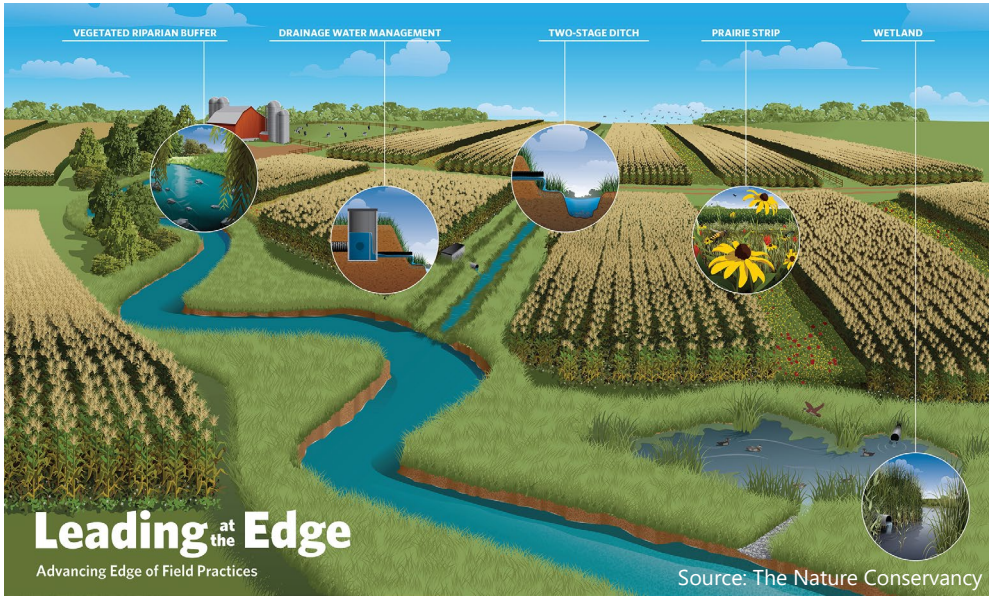
Groundwater Recharge Areas and Depth to Groundwater

- Map groundwater recharge areas and depth to groundwater
- Inventory was completed as part of the Regional Water Supply Plan (PR-52) in 2010

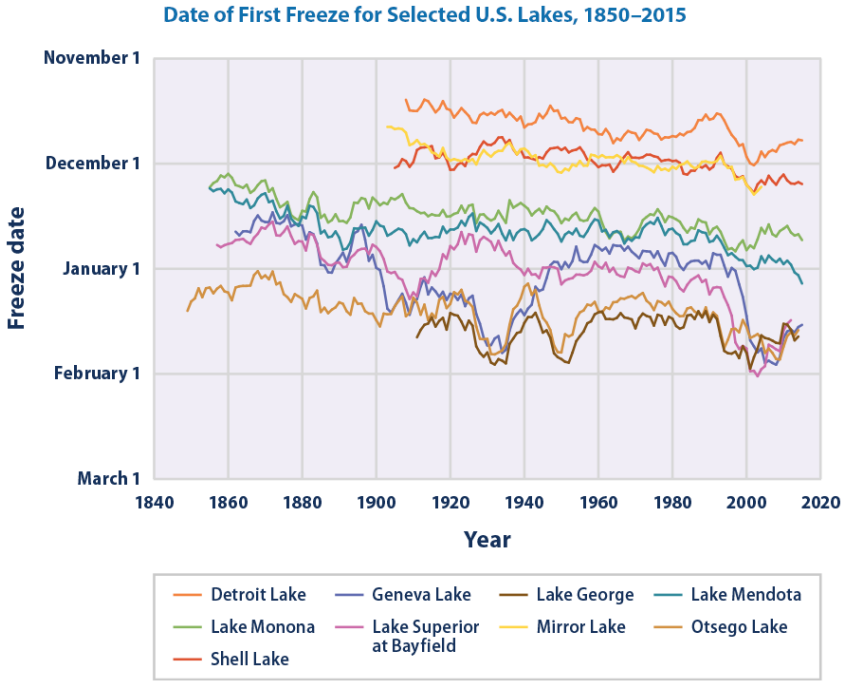
Chapter 4 – Work Program (Inventories)

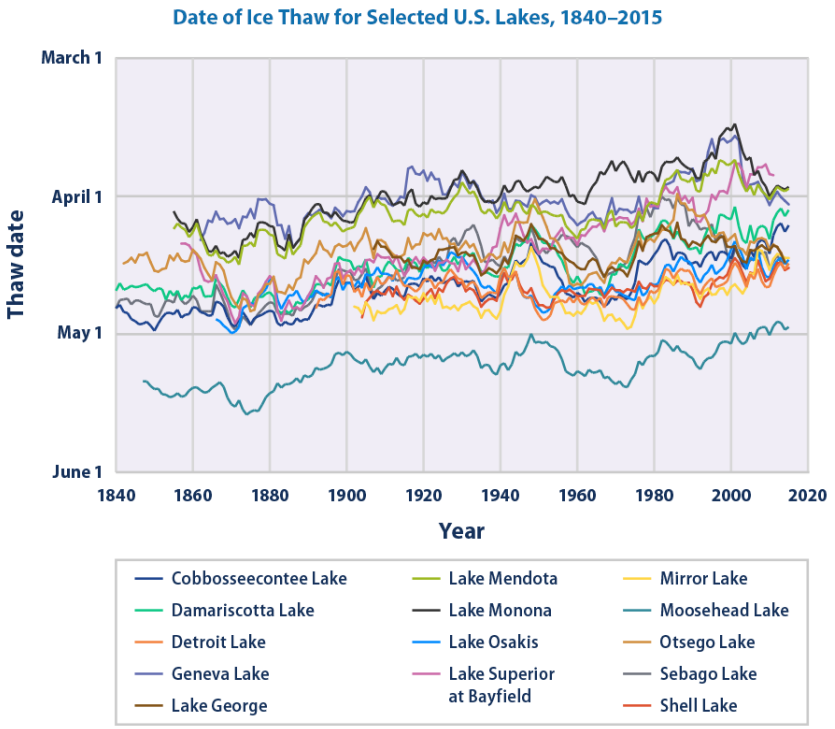
Agricultural Practices

- Partner with county conservationists to conduct a generalized regional agricultural practices inventory
  - Percentage of land in nutrient management planning
  - Distributions of crop types
  - Presence and location of CAFOs
  - Extent of BMPs
- Evaluate potential impacts of farming practices on water quality



Chapter 4 – Work Program (Inventories)





Data source: Compilation of data from 11 organizations. See www.epa.gov/climate-indicators for specific information.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climate-indicators.

➢ Climatological Data

- Air temperature, annual and seasonal precipitation pattern/frequency, and storm intensity data (WICCI)
- Ice on/off (where available)
- Assess impact of long-term weather trends on water quality

Sanitary Sewer Service Area Inventories

- Inventory of the currently served sanitary sewer service areas
- Collect up-to-date service area data from communities for the year 2026
- Produce maps that delineate the areas currently served by sanitary sewer systems across each major watershed in the Region
- Provide a foundational dataset to:
  - Forecast future potential plant limitations
  - Identify unserved areas where extending public wastewater systems could mitigate pollution risks associated with POWTS

Next Steps

➢ Next meeting (November)

- Review remaining Chapter 4 sections (sources of pollution, outcomes)
- Review Chapter 5 (budget and timeline)

➢ Prospectus finished December 2026

Meeting agendas, presentations, and summary notes along with draft prospectus text will be posted on our website

www.sewrpc.org/Regional-Planning/Water-Quality

Thank You

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