Engineering Report

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WESTERN RACINE COUNTY SEWERAGE DISTRICT

Adaptive Management Plan

Applied Technologies
Engineers - Architects

PN6387

ADAPTIVE MANAGEMENT PLAN

WESTERN RACINE COUNTY SEWERAGE DISTRICT

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SECTION 1
EXECUTIVE SUMMARY

The Western Racine County Sewerage District (District) owns and operates a wastewater treatment facility (WWTF) with an interim total phosphorus (TP) effluent limit of 1.0 mg/L. The Water Quality Based Effluent Limits (WQBELs) for TP are currently scheduled to decrease to 0.1 mg/L within the next permit, which begins in 2021. The Fox (IL) Total Maximum Daily Load (TMDL) is in the early stages of development and will likely change effluent limits in future permit cycles.

The compliance schedule required the District to submit a Final Compliance Alternatives Plan to the Wisconsin Department of Natural Resources (WDNR) by September 30, 2020. The Final CAP provided a summary of the alternatives considered to ensure permit compliance and recommended Adaptive Management. This report presents the Adaptive Management Plan for the Western Racine County Sewerage District (WRCSD) Action Area.

Partnerships were established in the watershed, including key partnerships with the Southeastern Wisconsin Fox River Commission (SEWFRC), the Watershed Protection Committee of Racine County (WPCR), and County Land and Water Conservation Departments. The WRCSD Action Area was described, characterized, and defined by seven subwatersheds within the Fox River Watershed. Agriculture is a major land use within the WRCSD Action Area, and several phosphorus loss reduction practices were identified to be compatible with corn production.

To prioritize areas for new practices and installations, critical source areas (CSAs) were identified. These include crop fields throughout the WRCSD Action Area, as well as streambanks along the Fox River. The ultimate total annual target phosphorus reduction was determined to be approximately 400 pounds per year, with approximately 200 pounds per year in reductions required by the end of the first five-year permit term. Improved effluent quality at the WRCSD wastewater treatment facility is expected to provide a significant portion of the target phosphorus reductions, especially in the second five-year permit term. Nonpoint source reductions are anticipated to be critical to achieving the target, especially cover crop adoption.

Project success will be defined by improved water quality, documented implementation of Best Management Practices (BMPs), and financial viability for the District. These metrics will be evaluated annually, with Adaptive Management being assessed before each new permit term. Adaptive Management is the lowest cost compliance option for the WRCSD. With this Adaptive Management Plan, the District is eager to do its part to improve the water quality of the Fox River.

SECTION 2
INTRODUCTION

The Western Racine County Sewerage District (District) owns and operates a wastewater treatment facility (WWTF) in Racine County. The District's wastewater treatment facility (WWTF) provides services to residential and commercial customers in the Village of Rochester, the Village of Waterford, and Waterford Sanitary District No. 1 customers within the Town of Waterford. The design average flow of the WWTF is 2.53 mgd, and the current average flow is approximately 1.2 mgd. The District discharges to the Fox River, which has a Water Quality Criterion of 0.1 mg/L total phosphorus.

The current average effluent phosphorus concentration is approximately 0.62 mg/L. The current average effluent phosphorus limit is 1.0 mg/L, but this limit is expected to decrease to 0.1 mg/L in the next permit unless a different compliance alternative is selected. The Fox (IL) Total Maximum Daily Load (TMDL) is in the early stages of development and will likely change effluent limits in future permit cycles. All phosphorus compliance planning was completed using the WQBEL effluent limits.

In anticipation of the more restrictive WQBEL limits, the District's current Wisconsin Pollutant Discharge Elimination System (WPDES) permit includes a phosphorus compliance schedule. The compliance schedule requires the District to complete several actions to evaluate alternatives and achieve compliance.

The District was required submit a Final Compliance Alternatives Plan (CAP) by September 30, 2020. The Compliance Alternatives Plan was performed to evaluate a wide variety of compliance alternatives capable of ensuring permit compliance. The Final CAP provided a summary of the alternatives considered and recommended Adaptive Management. This report presents the Adaptive Management Plan.

ADAPTIVE MANAGEMENT

Adaptive Management (AM) presents a unique opportunity for the District to demonstrate compliance with its permit. The District plans to work with partners to reduce phosphorus loadings in the WRCSD Action Area. The WRCSD Action Area is comprised of the following 12-digit hydrological unit code (HUC-12) subwatersheds, as defined by the United States Geological Survey (USGS): 071200060301; 071200060302; 071200060303; 071200060304; 071200060704; 071200060705; and approximately 2.7 square miles of 071200060707. Through both point and non-point load reductions, the District's goal is for the Fox River to achieve the total phosphorus (TP) water quality criterion (WQC) of 0.1 mg/L at the proposed point of compliance, located downstream of where the District's effluent is discharged.

IDENTIFY PARTNERS

A successful Adaptive Management Plan relies on strong partnerships. Fortunately, the WRCSD Action Area already has many active parties working to improve water quality. The District, in collaboration with other members of the Illinois Fox River Group, has conducted river sampling throughout the watershed since 2013, as detailed in Section 3. Other organizations, such as the Southeastern Wisconsin Fox River Commission (SEWFRC) have identified Critical Source Areas (CSAs) throughout the watershed. The Watershed Protection Committee of Racine County (WPCR) is a farmer-led group that provides information to farmers and rural landowners. With support from WPCR, approximately 20 acres of waterway buffers and 600 acres of cover crops have been implemented in Racine County. Finally, the Land and Water Conservation Departments (LWCD) in Racine County and Waukesha County have facilitated best management practices throughout the WRCSD Action Area and beyond.

By accessing local knowledge, coordinating with other governmental organizations, and reaching out to non-governmental groups, these strong partnerships can foster strong relationships with stakeholders and lead to improved outcomes. Table 2-1 summarizes the proposed roles and responsibilities of all partners. Letters of support are included in the Appendix from key partners.

Table 2-1 Adaptive Management Partners	
Partner	Role / Responsibilities
Western Racine County Sewerage District* (District)	Lead partner for Adaptive Management project.
	Coordinate project efforts, define scope.
	Establish schedule for proposed projects.
	Source of financial assistance for improvements and new practices.
	Coordinate search for external funding.
Applied Technologies, Inc.* (ATI)	Provide technical assistance for the District's wastewater treatment facility.
	Provide technical assistance to the District for implementing and quantifying phosphorus reductions in the watershed.
	Support efforts to complete grant proposals and cost-share applications.
Racine County Land and Water Conservation Department* (LWCD)	Provide technical assistance, regulatory oversight, and review of implemented practices in Racine County.
	Evaluate current and future landowner compliance with Wisconsin's agricultural standards and limits from NR 151.
Southeastern Wisconsin Fox River Commission* (SEWFRC)	Identify opportunities for phosphorus reductions in the watershed.
United States Department of Agriculture (USDA): Farm Services Agency (FSA) and Natural Resources Conservation Service (NRCS)	Provide technical assistance and financial assistance for the Adaptive Management Project.
	Support enrollment in USDA programs with cost-share/funding such as the Environmental Quality Incentive Program (EQIP) and the Regional Conservation Partnership Program (RCPP) to implement BMPs as part of the Adaptive Management Project.
Watershed Protection Committee of Racine County* (WPCR)	Identify opportunities for phosphorus reductions in the watershed.
Waukesha County Land and Water Conservation Department (LWCD)	Provide technical assistance, regulatory oversight, and review of implemented practices in Waukesha County.
	Evaluate current and future landowner compliance with Wisconsin's agricultural standards and limits from NR 151.
Wisconsin Department of Natural Resources (WDNR)	Provide regulatory oversight for the Adaptive Management Project.
	Coordinate directly with the District regarding compliance with effluent limits at the wastewater treatment facility and progress with implementing the Adaptive Management Plan

Note: Asterisks indicate key partners.

SECTION 3
WATERSHED INFORMATION

The Western Racine County Sewerage District (District) owns and operates a wastewater treatment facility (WWTF) that discharges to the Fox River in the Long Lake-Fox River Subwatershed (HUC-12: 071200060707).

ADAPTIVE MANAGEMENT ELIGIBILITY

To evaluate Adaptive Management (AM) for the Western Racine County Sewerage District (District), the average flow of the Fox River at the District's effluent discharge was estimated. The Pollutant Reduction Estimate Tool (PRESTO) from the Wisconsin Department of Natural Resources (WDNR) was used to estimate the watershed area and Fox River flow. Watershed areas and Fox River flow percentiles were determined for several communities along the Fox River, as included in the Appendix. These data were then compared to the average Fox River flows reported in recently completed Adaptive Management Plan (AMPs) for Burlington and Mukwonago. In cases where an average flow was unavailable, the 33rd-percentile flow was used as an approximation of the average flow. To confirm the relationship between watershed area and average flow of the Fox River, the average Fox River Flow was then plotted as a function of the watershed area. The relationships between average flow and 33rd-percentile flow, as well as average flow and watershed area, were valid for all communities evaluated, as demonstrated in Figures A-2 and A-3 in the Appendix.

Upstream Fox River NR 217 Median Growing Season Phosphorus Concentration

The median growing season phosphorus concentration was then determined for the Fox River immediately upstream of the outfall at WRCSD. This upstream Fox River phosphorus concentration was determined to be 0.098 mg/L, based on 28-day rolling averages from August 2015 – July 2020. The full dataset is included in the Appendix.

Eligibility, Point of Compliance Phosphorus Level, and Ultimate Reductions Required

Although the upstream median concentration of 0.098 mg/L meets the Water Quality Criterion (WQC) of 0.100 mg/L, a mass balance determined that the receiving water (point of compliance) does not meet the WQC.

Per the Adaptive Management Technical Handbook, the first requirement for AM eligibility is whether "the receiving water is exceeding the applicable phosphorus criterion". The receiving water is determined at the confluence of the WRCSD effluent outfall and the Fox River. Based on Table 3-1, a mass balance shows that the receiving water, also known as the point of compliance, receives approximately 75,991 lb/yr of phosphorus loading. For the Fox River to meet the WQC of 0.100 mg/L, the loading cannot exceed 75,595 lb/yr. Therefore, the phosphorus loading exceeds the WQC limit, and ultimate reductions of 396 lb/yr would be required to meet the WQC. Therefore, WRCSD meets the first requirement of AM eligibility.

Table 3-1
WRCSD Adaptive Management Plan
Reductions Required Based on Fox River Sampling (Aug 2015-Jul 2020)

	Flow (mgd)	Phosphorus Loading (lb/year)	Phosphorus Concentration (mg/L)	% of Total Loading
Sum Upstream	247	73,725	0.098	97%
WRCSD Effluent (2015-2020)	1.2	2,266	0.62	3%
Point of Compliance – Current	248	75,991	0.101	
Point of Compliance – Limit	248	75,595	0.100	
Ultimate Reductions Required	-	396	-	

The second requirement for AM eligibility is based on whether filtration would be required to meet the new limit. Based on an upstream median concentration of 0.098 mg/L, the Water Quality Based Effluent Limit (WQBEL) at WRCSD would remain below 0.2 mg/L. As detailed in the Final Compliance Alternatives Plan, WRCSD's effluent could not comply with a WQBEL below 0.2 mg/L without tertiary filtration or nonpoint source compliance alternatives. At WRCSD's design flow of 2.53 mgd and an estimated 7Q2 of 72 cfs, the WQBEL would be 0.137 mg/L. Therefore, WRCSD meets the second requirement of AM eligibility.

The third requirement for AM eligibility is based on whether nonpoint sources contribute at least 50% of the total phosphorus entering the receiving water. Based on the PRESTO report for WRCSD in the Appendix (Reach ID 200211805), it is most likely that nonpoint sources contribute approximately 65% of the loading at the point of compliance, with a possibility of up to 80% of the load estimated for Adaptive Management eligibility determinations. Therefore, more than 50% of the loading is derived from nonpoint sources, and WRCSD meets the third requirement for AM eligibility.

The final requirements for AM eligibility are based on WRCSD's 1) willingness to partner with other phosphorus contributors in its action area and 2) capability to meet an interim phosphorus limit of 0.60 mg/L. Based on its proposed AMP partners and its current effluent concentration of 0.62 mg/L, WRCSD is willing and able to meet these requirements. Therefore, WRCSD meets all requirements for AM eligibility.

Required Reductions

Based on Table 3-1, ultimate reductions of 396 lb/yr will be necessary to meet the WQC at the point of compliance. These ultimate reductions will be required by the end of the second permit term (Year 10 of the AMP). The WDNR specifies two calculations for determine the minimum reductions to occur by the end of the first permit term (Year 5 of the AMP). However, only the on-track (50%) minimum reduction applies to the WRCSD AMP.

On-Track (50%) Minimum Reduction – Permit Term 1

The actual target first-term reductions will be at least 198 lb/yr, based on the on-track minimum reductions shown in Table 3-2. WDNR guidance from the AM Technical Handbook states that:

"Adaptive management applicants should consider offsetting more than the required amount when the overall water quality load reduction goal is far greater than the minimum reduction requirement or when the receiving water is likely to respond slowly to changes in land use in the watershed. In these scenarios, it is recommended to target 50% of the load reduction needed to meet water quality criteria, rather than the minimum offset required."

The ultimate reductions required are far greater than the proportional loading minimum reduction requirement. Therefore, at least half (198 lb/yr) of the ultimate reductions (396 lb/yr) will be targeted within the first permit term.

Table 3-2
WRCSD Adaptive Management Plan
Phosphorus Reductions Required

	% of Ultimate Reductions Required	Phosphorus Loading (lb/year)	Schedule	Source
Ultimate Reductions Required	100%	396	Achieved by Year 10 of WRCSD AMP	Table 3-1: 396 lb/yr required for Fox River to meet WQC at Point of Compliance.
On-Track (50%) Minimum Reduction	50%	198	Achieved by Year 5 of WRCSD AMP	AM Technical Handbook: 50% of ultimate reductions required as minimum reduction within first permit term.

WATERSHED DESCRIPTION AND INVENTORY

The WRCSD Action Area is defined by six full and one partial USGS HUC-12 subwatersheds within the Fox River Watershed, as listed in Table 3-3. Notably, approximately 2.7 square miles of the Long Lake – Fox River Subwatershed (HUC-12: 071200060707) will be removed from the existing Action Area for Burlington and added to WRCSD Action Area. This area is immediately adjacent to the District's WWTF, which will allow for the point of compliance (POC) to be downstream of the District's effluent outfall, yet upstream of where Eagle Creek meets the Fox

River. As shown in Figure 3-1, the WRCSD Action Area spans approximately 93,000 acres and four counties, as detailed in Table 3-4.

The WRCSD Action Area features several key waterbodies, including: Tichigan Lake, Wind Lake Muskego Lake, Little Muskego Lake, Wind Lake Drainage Canal, Goose Lake Branch Drainage Canal, and the Fox River. As compared to the current average WWTF flow of 1.2 mgd, the average flow of 247 mgd in the Fox River will continue to provide significant dilution.

Table 3-3
WRCSD Action Area
USGS Subwatersheds

USGS Subwatersheds	HUC-12	Area (Acres)	% of Action Area
Little Muskego Lake	071200060301	8,700	9%
Muskego Lake	071200060302	12,900	14%
Goose Lake Branch Drainage Canal	071200060303	17,000	18%
Wind Lake Drainage Canal	071200060304	18,300	20%
Village of Big Bend-Fox River	071200060704	17,700	19%
Tichigan Lake-Fox River	071200060705	16,800	18%
Long Lake-Fox River*	071200060707	1,500	2%
WRCSD Action Area	**-**	**93,000**	**100%**

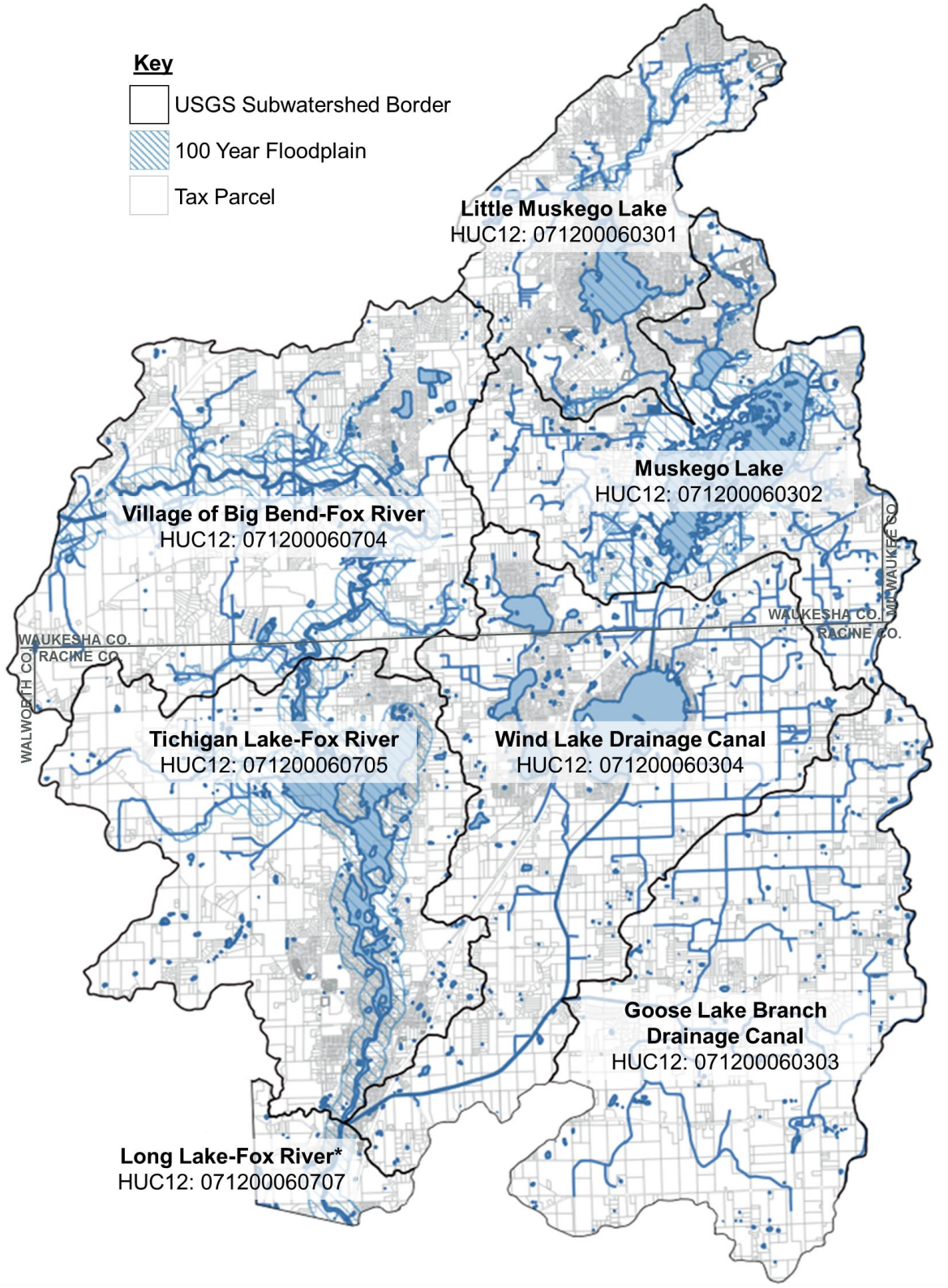
Source: SEWFRC. Note that only 22% of 071200060707 is included in the WRCSD Action Area.

Table 3-4
WRCSD Action Area
Acreage by County

County	Acres	% of Watershed
Racine County	53,800	58%
Waukesha County	38,800	42%
Milwaukee County	300	0%
Walworth County	100	0%
Total	**93,000**	**100%**

Source: USDA Web Soil Survey.

Figure 3-1
WRCSD Action Area



Land Use

Land use and land management practices are key to understanding the water quality within the WRCSD Action Area. As shown in Table 3-5, the WRCSD Action Area is primarily agricultural, with 38% of the total acreage in cropland.

Table 3-5
WRCSD Action Area
Land Use, 2015-2019

Land Use	Acres	% of Action Area	% of Cropland
Forest	17,700	19%	-
Developed	16,100	17%	-
Corn	13,700	15%	42%
Soybeans	11,600	12%	36%
Wetlands	9,700	10%	-
Grass/Pasture	8,100	9%	-
Open Water	5,400	6%	-
Hay	4,000	4%	12%
Other Crops	3,000	3%	9%
Fallow/Idle Cropland	2,700	3%	-
Miscellaneous	1,000	1%	-
Total	**93,000**	**100%**	**-**
Cropland	**35,100**	**38%**	**100%**

Source: USDA CropScape. Cropland includes acreage in corn, soybeans, hay, and other crops, as well as fallow/idle cropland.

Corn

As shown in Figure 3-2, corn comprises 15% of the total acres in the WRCSD Action Area, and more than 40% of the cropland acres. It is grown primarily for grain production, with less than 6% produced for silage. Corn is grown frequently on the same parcels. Figure 3-3 shows areas of frequent corn plantings, especially in: 1) the western portion of the Tichigan Lake-Fox River and Big Bend-Fox River Subwatersheds; and 2) the southern portion of the Wind Lake Drainage Canal and Goose Lake Branch Drainage Canal Subwatersheds. As presented in Table 3-6, 24% of the corn acres within the WRCSD Action Area are managed as high frequency corn, rather than in a balanced crop rotation. Under almost continuous corn plantings, measures are required to control for erosion and other sources of phosphorus loss to surface waters.

Figure 3-2
WRCSD Action Area
Land Use

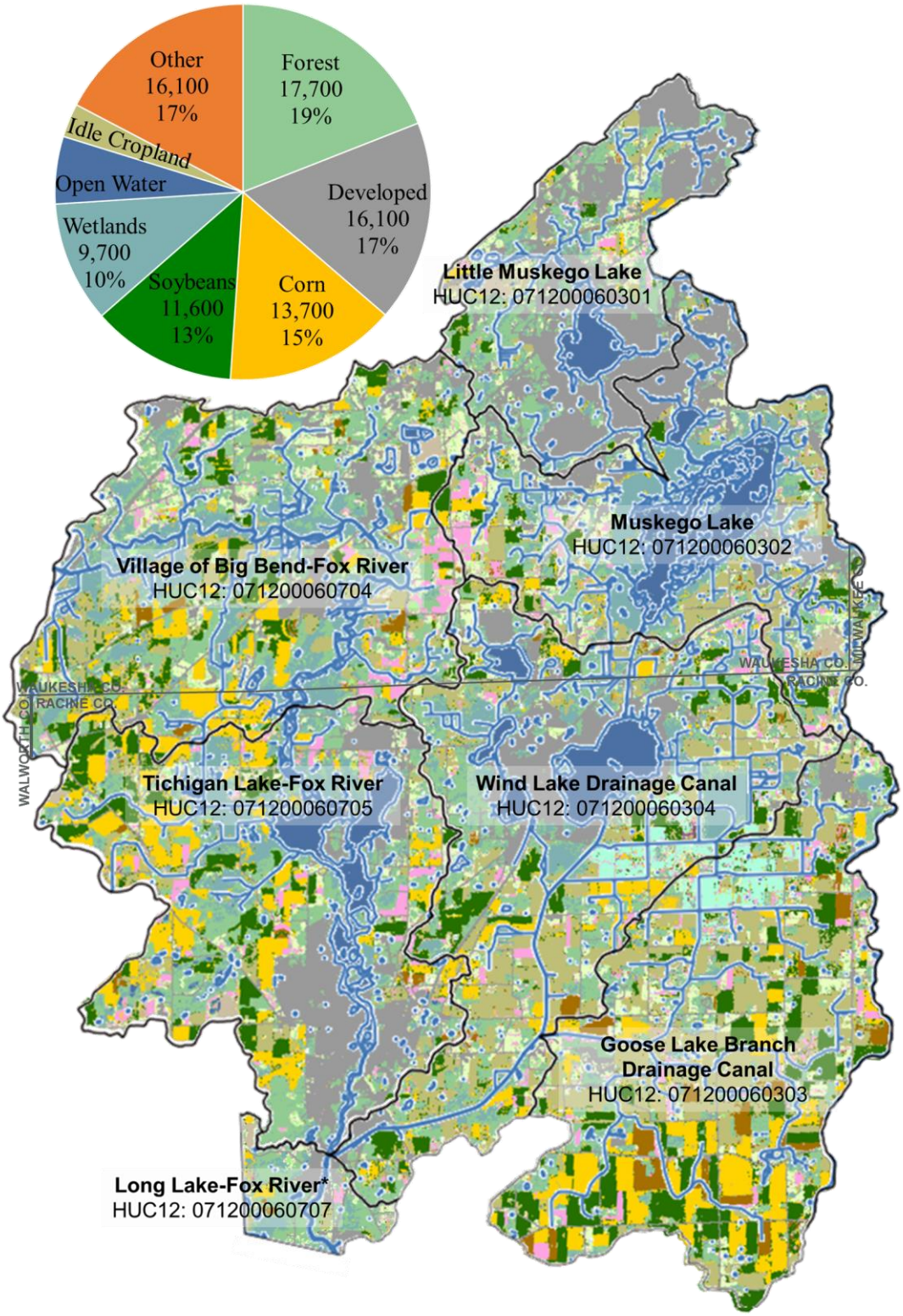


Figure 3-3
WRCSD Action Area
Frequency of Corn

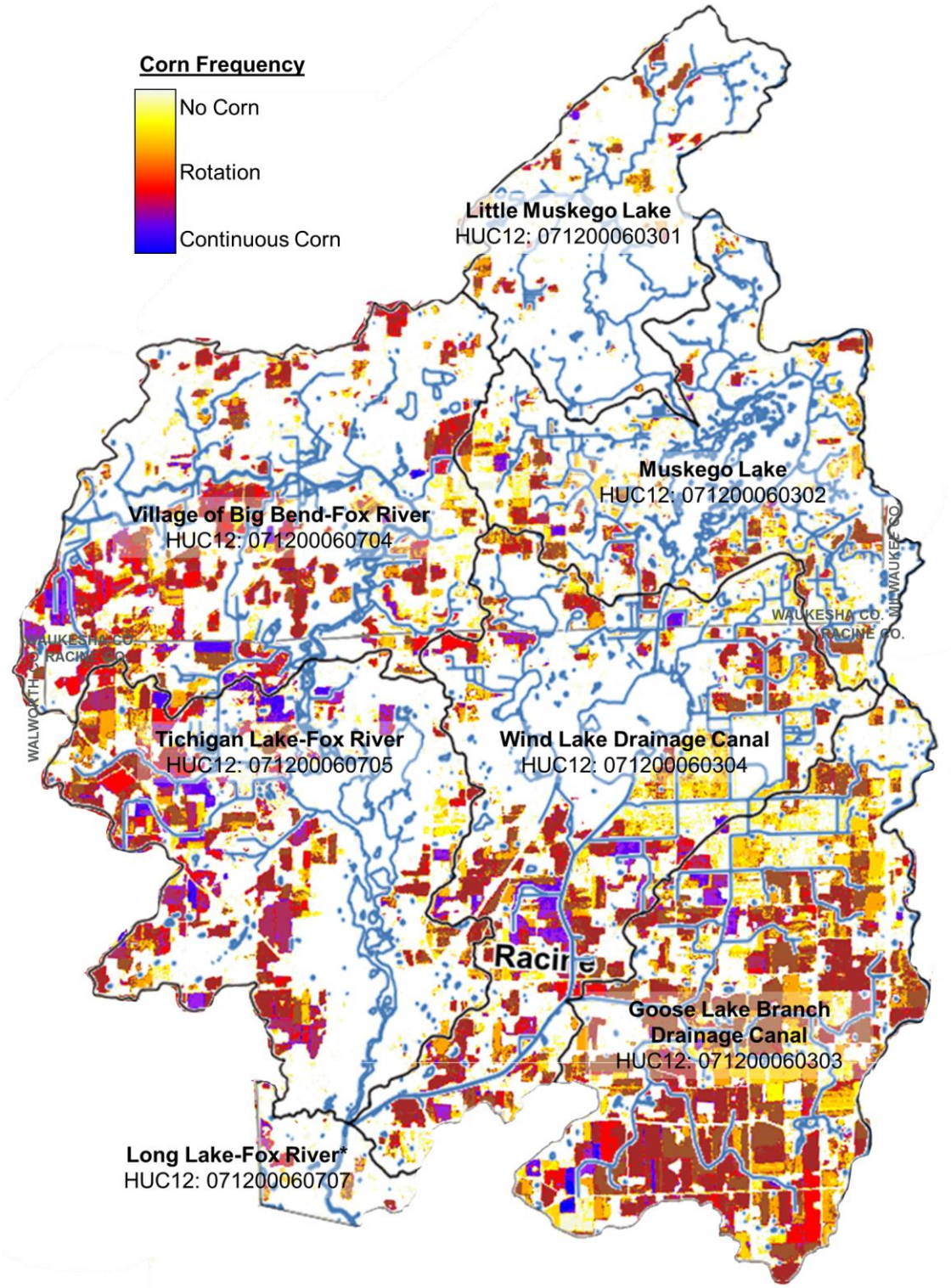


Table 3-6 WRCSD Action Area Corn Practices						
Practice	**Acres**	**% of Corn Acres**	**Acres**	**% of Corn Acres**	**Acres**	**% of Corn Acres**
	Racine County		**Waukesha County**		**WRCSD Action Area**	
Corn for Grain	34,900	94%	23,600	95%	12,900	94%
Corn Silage	2,200	6%	1,300	5%	800	6%
High Frequency Corn	-	-	-	-	3,300	24%
Corn in Balanced Rotation	-	-	-	-	10,400	76%

Source: USDA AgCensus for corn practices in Racine and Waukesha Counties. Total corn acres and corn frequency based on USDA CropScape. Estimated percentage of corn practices based on weighted averages for total acres in Racine and Waukesha Counties. High frequency corn is defined as frequency >66%.

Cropland Management Practices

To prevent phosphorus loss to surface waters, corn growers in the WRCSD Action Area employ several practices. As demonstrated in Table 3-7, practices such as cover crops, conservation easements, and no-till/reduced tillage are already in use in both Racine and Waukesha Counties.

Estimates for the WRCSD Action Area suggest that cover crops are planted into only 1,800 acres each year, comprising only 5% of the total cropland and 13% of the total corn acres. Cover crops are especially compatible with corn production, either in continuous corn or with a rotation that does not yet include a winter cover. Cover crops support soil health, improved infiltration, reduced erosion, and can contribute to higher corn yields. Consequently, interest in cover crops by corn growers is increasing, and adoption of cover crops has great potential to reduce phosphorus loadings to surface waters.

Conservation easements are less popular, as these programs require growers to suspend their crop production in exchange for a payment. Therefore, unless there are major disruptions to agricultural markets, increased adoption of conservation easements would require substantial increases in compensation to landowners.

Most crop acres in the WRCSD Action Area are currently managed with either reduced tillage (34%) or no-till practices (44%). It is expected that some of the growers currently using intensive tillage (22%) may be willing to try new practices to reduce phosphorus losses, although this subset of growers typically lags behind others in the adoption of conservation management practices. In addition, growers that employ no-till may not see significant reductions in phosphorus losses if they add cover crops. Based on these factors, it is anticipated that improved tillage practices may offer a secondary option for reduced phosphorus loadings to surface waters.

Table 3-7
Racine County, Waukesha County, and WRCSD Action Area Cropland Management Practices

Practice	Racine County		Waukesha County		WRCSD Action Area (Est.)	
	Acres	% of Cropland	Acres	% of Cropland	Acres	% of Cropland
Cover Crop	1,146	1%	7,787	11%	1,800	5%
Conservation Easement	429	0%	892	1%	300	1%
No-Till	32,828	33%	31,688	58%	15,300	44%
Reduced Till	36,571	37%	16,135	30%	11,900	34%
Intensive Till	29,194	30%	6,764	12%	7,900	22%
Total Cropland	109,772	100%	71,502	100%	35,100	100%

Source: USDA AgCensus for cropland management practices in Racine and Waukesha Counties. Total cropland for counties and WRCSD Action Area based on USDA CropScape. Estimated percentage of cropland practices based on weighted averages for total acres in Racine and Waukesha Counties.

CRITICAL SOURCE AREAS

Critical Source Areas (CSAs) should be identified to efficiently meet the goals of AM. These CSAs are marked by areas of high phosphorus losses as well as high potential for phosphorus transport to the surface water. As shown in Figure 3-4, the Southeastern Wisconsin Fox River Commission (SEWFRC) has already demarcated priority parcels for implementation of agricultural Best Management Practices (BMPs) within the WRCSD Action Area. These priority parcels include approximately 23,200 acres of high priority parcels, as detailed in Table 3-8. Based on the work of SEWFRC, a suitable watershed inventory for the WRCSD Action Area has already been established.

In Figure 3-5, 22 high priority parcels were identified that have been planted nearly continuously in corn, rather than in a balanced crop rotation. This high frequency of corn plantings requires measures to control for erosion and other sources of phosphorus loss to surface waters. As part of the CSA identification phase, owners of these parcels may be contacted to determine what tillage practices are currently employed, as well as any interest in implementing agricultural BMPs. In total, these 22 high priority, high frequency corn parcels comprise approximately 1,800 acres.

Table 3-8
WRCSD Action Area
Priority Parcels for Agricultural BMPs

USGS Subwatersheds	Priority Acres			% of Total Priority Acres	Total Acres
	High	Medium	Total		
Muskego Lake / Little Muskego Lake	4,400	400	4,800	17%	21,600
Wind Lake Drainage Canal / Goose Lake Branch Drainage Canal	8,900	3,800	12,700	46%	35,300
Tichigan Lake-Fox River / Village of Big Bend-Fox River	9,500	200	9,700	35%	34,500
Long Lake-Fox River*	400	0	400	1%	1,500
WRCSD Action Area	**23,200**	**4,400**	**27,600**	**100%**	**93,000**

Figure 3-4
WRCSD Action Area
Priority Parcels for Agricultural Best Management Practices

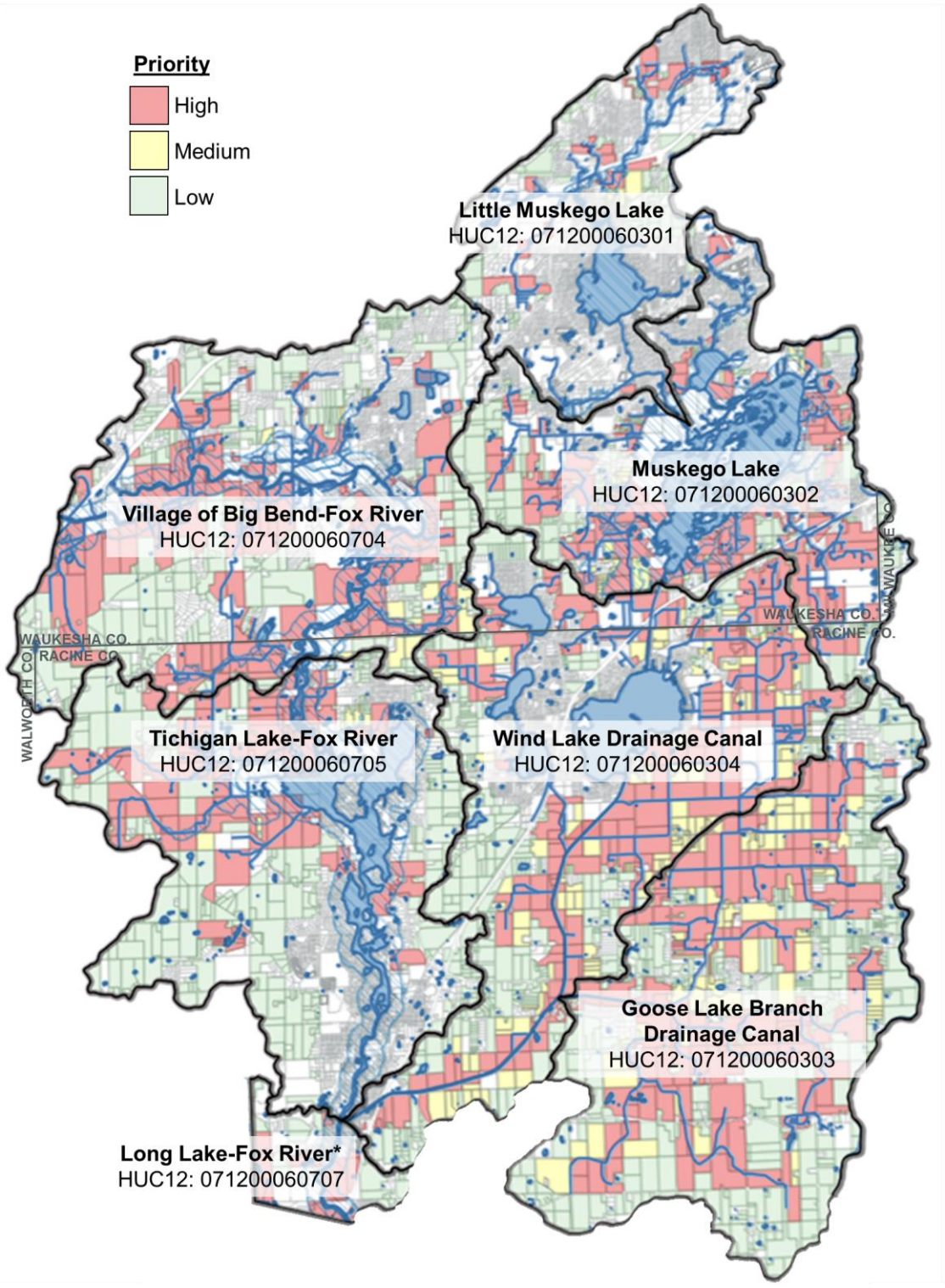
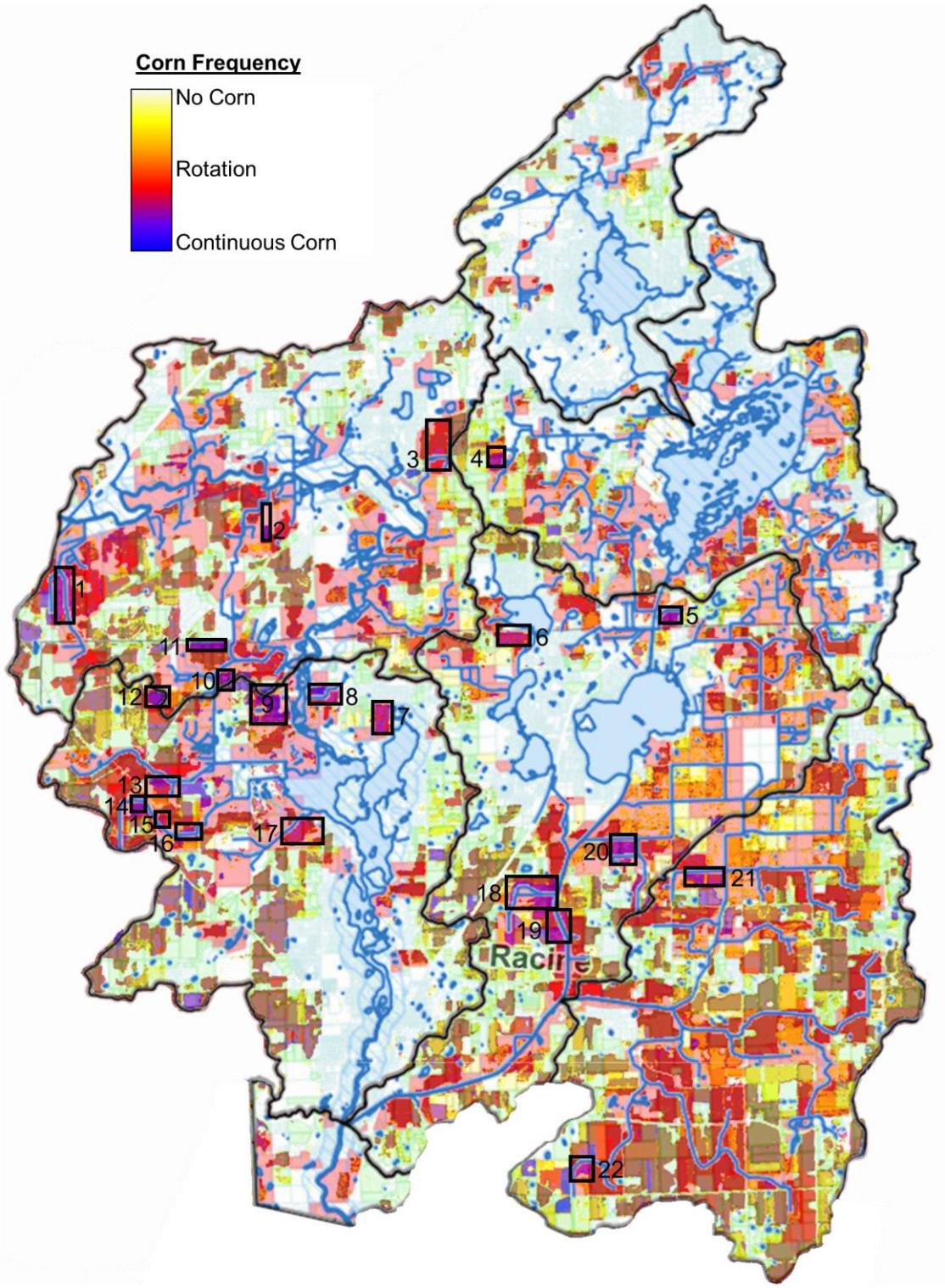


Figure 3-5
WRCSD Action Area
Critical Source Areas: High Priority Parcels with High Frequency Corn

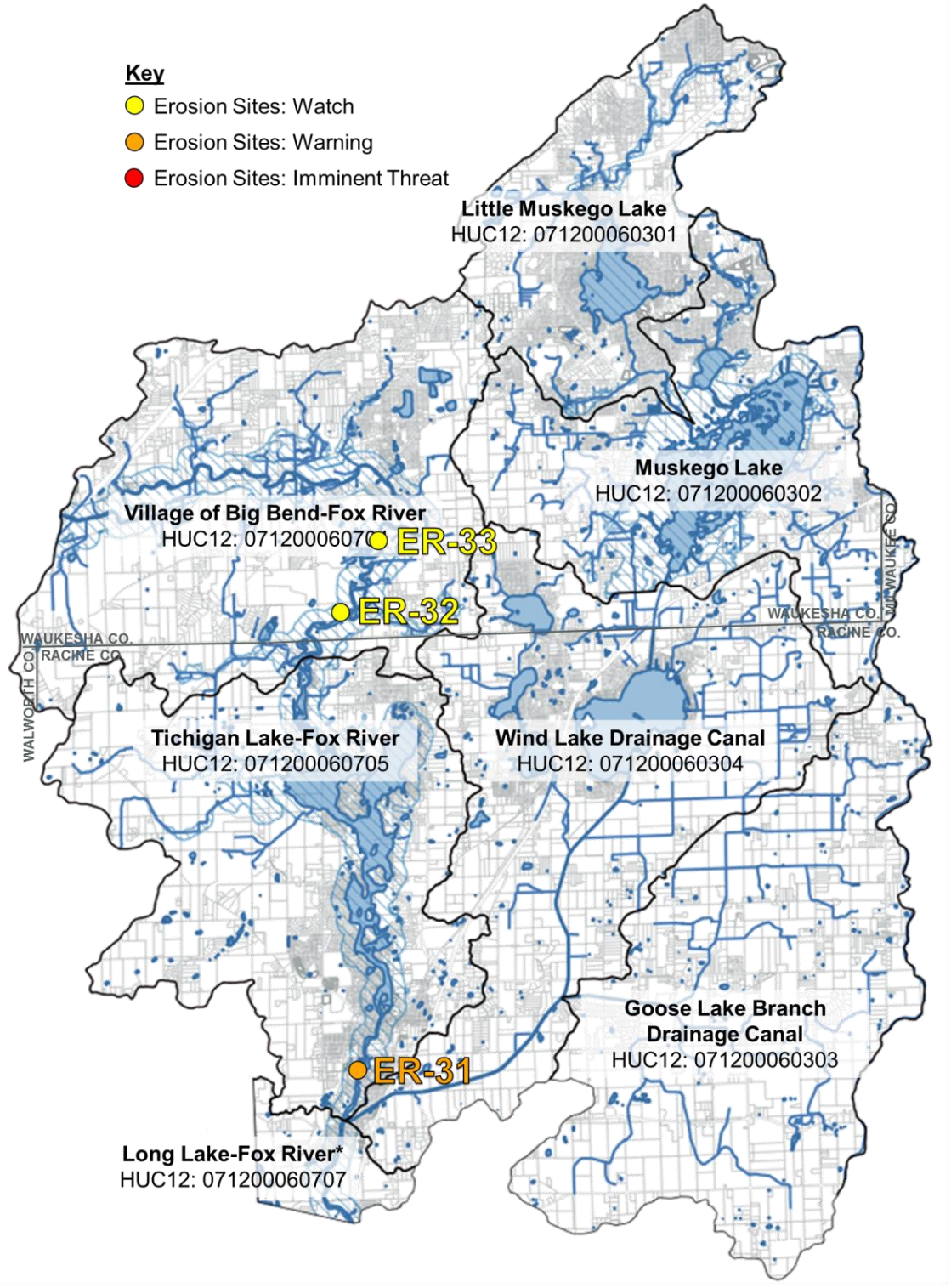


Streambank erosion is another source of phosphorus loadings that SEWFRC has investigated. SEWFRC has developed prioritization throughout the Fox River Watershed, including three locations within the WRCSD Action Area. As shown in Figure 3-6, the WRCSD Action Area contains two of the 24 "watch" sites (ER-32 and ER-33) and one of the 10 "warning" sites (ER-31). "Watch" sites are defined as streambanks where erosion is observed, but its severity does not appear to be excessive. "Warning" sites do not appear to pose a threat to known infrastructure within the next five years, but erosion severity is moderate to high. Although seven "imminent threat" sites were reported along the Fox River, none were reported within the WRCSD Action Area.

Notably, SEWFRC has estimated that streambank erosion along the Fox River contributes approximately 0.5% of the total phosphorus loading to the Fox River Watershed. Therefore, streambank restoration projects will be evaluated for their ability to economically reduce phosphorus loadings as part of the WRCSD Adaptive Management Plan (AMP).

CSA identification will continue as part of the early phases of the AM process, including further engagement with the Land and Water Conservation Departments (LWCD) of Racine and Waukesha Counties, and the Watershed Protection Committee of Racine County (WPCR). As the focus of the AM plan shifts and is refined, CSA identification and the watershed inventory will continue to be updated as needed.

Figure 3-6
WRCSD Action Area
Streambank Erosion Sites and Prioritization



SECTION 4
LOAD REDUCTION PLAN

To meet the Water Quality Criterion of 0.1 mg/L, phosphorus loadings to the WRCSD Action Area will need to be reduced by approximately 396 pounds per year. The District plans to meet this goal using both point source and nonpoint source reductions.

MANAGEMENT PRACTICES

The phosphorus load reduction practices will be categorized as 1) Wastewater Treatment Facility Optimization and 2) Nonpoint Source Best Management Practices.

Wastewater Treatment Facility Optimization

Under current practices, the District adds ferrous chloride at its wastewater treatment facility (WWTF) for chemical phosphorus removal. The current average effluent phosphorus level is approximately 0.62 mg/L, and the current average effluent phosphorus loading is approximately 2,266 pounds per year. To comply with the terms of Adaptive Management, the District's WWTF effluent will be required to meet a six-month average effluent phosphorus level of 0.6 mg/L throughout the first five-year permit term, and 0.5 mg/L throughout the second permit term. It is anticipated that the District will meet the future average effluent limits of 0.6 and 0.5 mg/L with additional annual chemical costs of $1,000 and $11,000, respectively. Therefore, compared to the current baseline of 2,266 pounds per year, the WWTF is expected to reduce annual point source phosphorus loadings by 73 pounds in the first permit term, with an additional annual cost of approximately $1,000 ($14 per pound). In the second permit term, the WWTF is expected to reduce annual point source phosphorus loadings by 439 pounds compared to the current baseline, with an annual chemical cost of approximately $11,000 ($25 per pound) greater than the current chemical budget.

Nonpoint Source Best Management Practices

In addition to point source optimization, several types of best management practices (BMPs) will be pursued to reduce non-point source loadings and soil erosion. Potential management practices include:

- Annual BMPs
    - Cover crops
    - Grassed waterways
    - Improved tillage
    - Conservation easements
    - Nutrient management plans

- Capital BMPs
    - Streambank stabilization
    - Retention ponds
    - Barnyard improvements
    - Wetland restoration

The adoption of cover crops within corn production systems is expected to be the primary focus for nonpoint source BMPs. Secondary areas of focus are grassed waterways and reduced tillage. These BMPs align with the core efforts of the Watershed Protection Committee of Racine County (WPCR). It is anticipated that these practices would be focused on the High Priority and Medium Priority parcels identified by SEWFRC in Figures 3-4 and 3-5. An annual reduction of 125 pounds is anticipated by the conclusion of the first permit term of the Adaptive Management Plan. This level is achievable if cover crops are planted on only 11% of the acreage identified in the 22 CSAs (1,800 acres) in Figure 3-5.

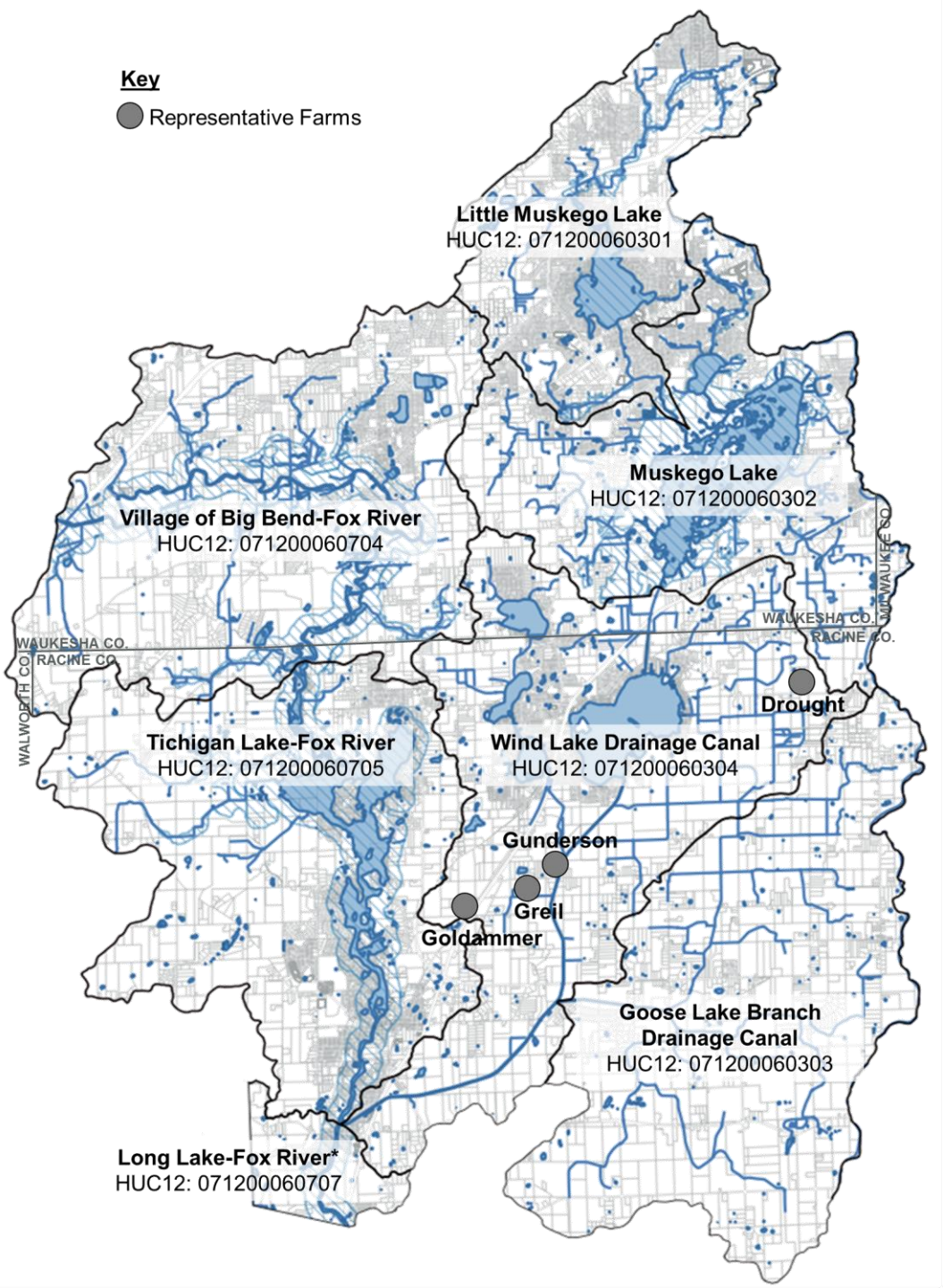
Outreach to farmers is expected primarily via contacts through the County LWCDs. The Racine County LCPWD has a track record of facilitating nonpoint source credit generation. An established procedure is to share the Action Area boundaries with the LWCD, provide an estimate of available resources or credit requirements, and let the LWCD share this information with farmers already considering BMPs. When farmers then decide which BMPs they would like to implement, the District and LWCD can call or meet with the farmer to determine if financial support of the BMPs

would be acceptable in exchange for registering and claiming the generated credits. Notably, this does not put the District in the position of recommending BMPs – instead, the District is poised to support BMPs that farmers already are interested in implementing. Groups such as the Watershed Protection Committee of Racine County (WPCR) and the County LWCDs are anticipated to be critical to these outreach efforts.

As shown in Figure 4-1, SnapPlus modeling was conducted on four representative farms within the WRCSD Action Area. Modeling was conducted to determine the anticipated loading reductions for cover crops. The adoption of cover crops was estimated to reduce annual phosphorus losses by approximately 0.62 pounds per acre for cropland in the WRCSD Action Area. To meet the annual phosphorus reduction target of 125 pounds, approximately 200 acres of cover crops would need to be planted. With an estimated 11,900 acres of corn production without cover crops, there are abundant opportunities to achieve 200 acres of cover crops within the WRCSD Action Area. Based on an estimated $45/acre[1], these practices would result in annual costs of approximately $9,000 by the end of the first permit term.

[1] Based on Oconomowoc Watershed Protection Program, Tom Steinbach, personal communication.

Figure 4-1
WRCSD Action Area
Representative Farms for SnapPlus Modeling



LOAD REDUCTION SCHEDULE

The load reduction schedule is presented in Table 4-1. In addition to the actions detailed here, efforts will be made starting in the first permit term to monitor water quality, conduct additional windshield surveys, and register new practices for potential use in Water Quality Trading (WQT).

Table 4-1
Load Reduction Schedule

Load Reductions	WWTF Optimization		Nonpoint Source BMPs	Total	Required
	(mg/L)	(lb/yr)	(lb/yr) (lb/yr)	(lb/yr)	(lb/yr)
End of Permit Term 1					
Incremental	0.6	73	125	**198**	
Cumulative		73	125	**198**	**198**
Additional Annual Cost		$1,000	$9,000	**$10,000**	
End of Permit Term 2					
Incremental	0.5	366	0	**366**	
Cumulative		439	125	**564**	**396**
Additional Annual Cost		$11,000	$9,000	**$20,000**	
Note: Additional annual costs are in comparison to 2020 chemical budget ($10,000) and 2020 nonpoint source BMP budget ($0)					

SECTION 5
PROJECT METRICS

To ensure success, two key metrics will be evaluated annually: water quality and financial viability. Decisions will be made prior to the start of each new permit term. It is anticipated that other partners may provide additional metrics.

MEASURING SUCCESS

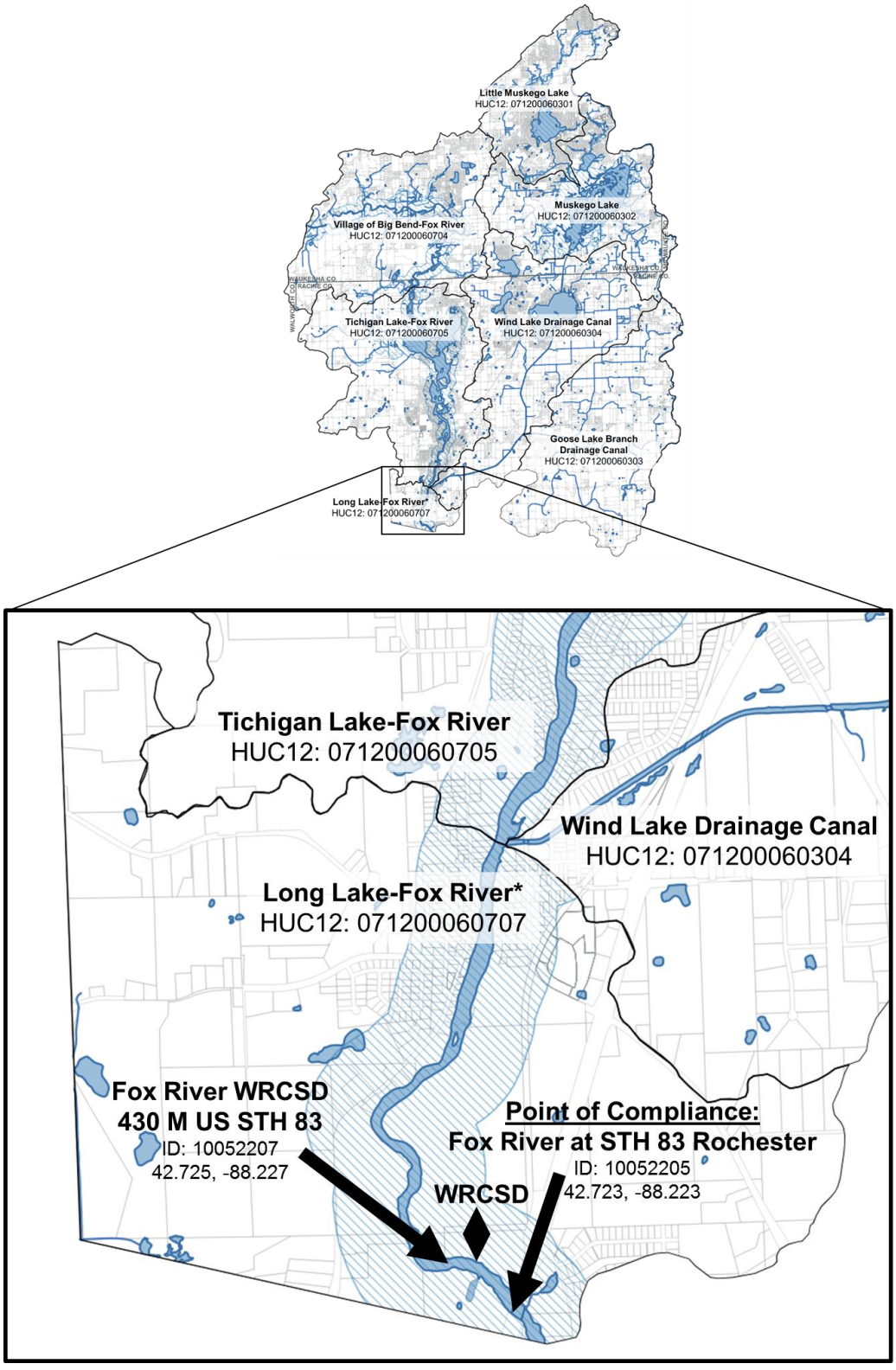
Adaptive management is a flexible and creative approach for communities and watersheds to achieve specific Water Quality Criteria. Therefore, monitoring of water quality is critical. As detailed in Section 3, monitoring will focus on the Point of Compliance on the Southwest bank of the Fox River just east of Hwy 36, as shown in Figure 5-1. All sampling locations will be in the open river beyond interference from bridges or downstream waterways. Sampling will be conducted in the growing season only (May through October), with at least one sample per month. The District will continue sampling based on the protocols that have been employed since 2013, and the Ascorbic Acid Autoclave method is used for determining phosphorus concentrations.

With the adoption of new practices, several steps will be taken. First, proposed new practices will be modeled via SnapPlus or other applicable programs, both under baseline and new conditions. Second, new practices that will be funded by the District will be registered for potential use in Water Quality Trading (WQT). Next, the District will work with county LWCD staff to conduct monitoring of installed practices.

Best Management Practice monitoring will be conducted via site visits, windshield surveys, and geographic information system (GIS) data. Monitoring will include a 1) determination of practice status, 2) notification of landowner of corrective action (if necessary), 3) implementation of corrective action (if necessary), 4) documentation of corrective action, and 5) updating of database and modeling (if necessary). Monitoring will occur at least once per permit term, and the District will ensure that a comprehensive database is maintained.

Annual reporting to the WDNR will keep the Adaptive Management Plan on course. Annual reporting will include several metrics, including the following: stream and river monitoring, numbers of stakeholders contacted, practices and payments planned and completed, implemented practice monitoring, and pollutant load reductions achieved.

Figure 5-1
WRCSD Adaptive Management Plan
Water Quality Sampling Locations



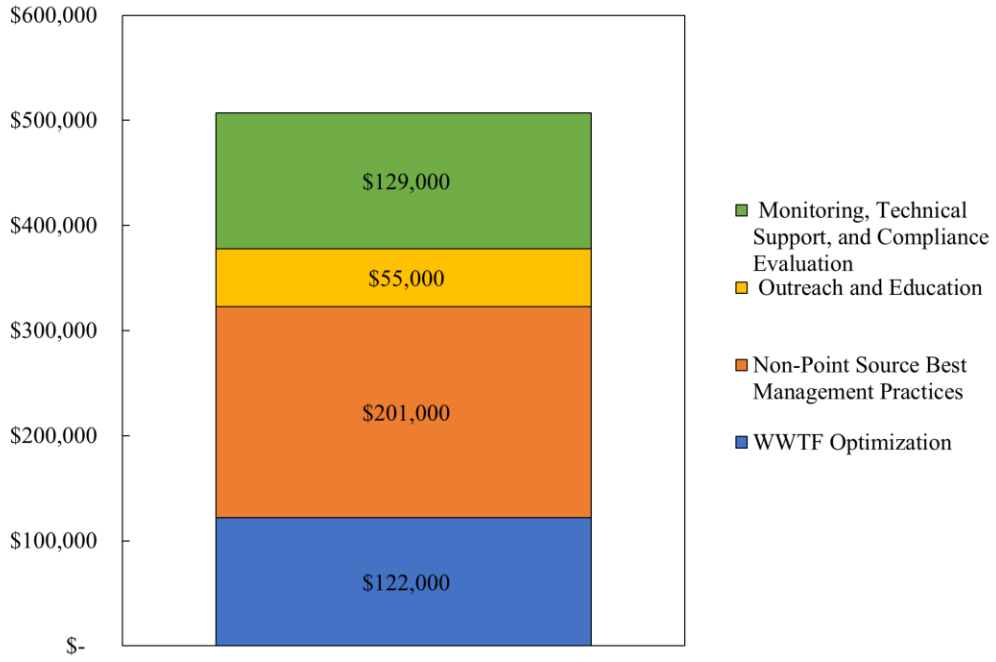
FINANCIAL VIABILITY

Sustained environmental success requires financial viability. Based on the values presented in Figure 5-2, the total present worth of Adaptive Management was determined to be the most cost effective of all alternatives evaluated. Additional details are included in the Appendix.

As the District begins working with partners to reduce loadings, the anticipated compliance costs of Adaptive Management will be continually updated and evaluated. In addition, annual evaluations required by the compliance schedule will keep the District cognizant of its resource allocation. If Adaptive Management no longer remains the most cost-effective compliance option, the District may exercise its option to select another compliance alternative. This change would likely occur upon permit reissuance, currently expected every five years.

Adaptive Management is anticipated to be the lowest cost compliance option. With great partnerships, smart evaluations, and an open approach, the Western Racine County Sewerage District is eager to do its part in meeting the goals established in this Adaptive Management Plan. Working together, the WRCSD Adaptive Management Plan is poised for great progress and improvements for years to come.

Figure 5-2
WRCSD Adaptive Management Plan
20-Year Total Present Worth



APPENDIX

APPENDIX A:
ADAPTIVE MANAGEMENT

Visit us at **WWW.SEWFRC.ORG**

Mr. Matthew Claucherty
Department of Natural Resources
PO Box 7921
Madison, WI 53707

Dear Mr. Claucherty:

My name is James J Pindel, and I serve as the Secretary/Treasurer for the Southeastern Wisconsin Fox River Commission. A key mission of the Southeastern Wisconsin Fox River Commission is to work with farmers and landowners to improve water quality in Racine and Waukesha County.

We have recently learned about the Adaptive Management Plan proposed by the Western Racine County Sewerage District. This proposal will decrease phosphorus loadings in the Fox River Watershed and improve water quality. The goals and approaches proposed are aligned with our own mission, and we are therefore very excited to support the proposed efforts.

If you have any questions, please feel free to contact me. Otherwise, thank you for evaluating this important proposal to improve our county's water quality.

Sincerely,

James J Pindel

James J Pindel
Secretary/Treasurer SEWFRC
Southeastern Wisconsin Fox River Commission (SEWFRC)
6212 N River Bay Road, Waterford, WI
262 895-3703
jpindel@wi.rr.com

Racine County
WISCONSIN

Land Conservation
Public Works & Development Services
14200 Washington Avenue
Sturtevant, WI 53177
262-886-8440
fax: 262-886-8480
landconservation@racinecounty.com

Mr. Matthew Claucherty
Department of Natural Resources
PO Box 7921
Madison, WI 53707

Dear Mr. Claucherty:

My name is Chad Sampson, and I serve as the County Conservationist for Racine County Land Conservation. A key mission of Racine County Land Conservation is to work with farmers and landowners to improve water quality in Racine County.

We have recently learned about the Adaptive Management Plan proposed by the Western Racine County Sewerage District. This proposal will decrease phosphorus loadings in the Fox River Watershed and improve water quality. The goals and approaches proposed are aligned with our own mission, and we are therefore very excited to support the proposed efforts.

If you have any questions, please feel free to contact me. Otherwise, thank you for evaluating this important proposal to improve our county's water quality.

Sincerely,

Chad Sampson
County Conservationist

Watershed Protection Committee
Of Racine County
"Healthy Soil is Sustainable Agriculture"

TOM GREIL
4901 BIG BEND ROAD
WATERFORD WI 53185

Mr. Matthew Claucherty
Department of Natural Resources
PO Box 7921
Madison, WI 53707

Dear Mr. Claucherty:

My name is Tom Greil, and I serve as Chairperson for the Watershed Protection Committee of Racine County (WPCR). A key mission of the the Watershed Protection Committee of Racine County (WPCR) is to work with farmers and landowners to improve water quality in Racine County.

We have recently learned about the Adaptive Management Plan proposed by the Western Racine County Sewerage District. This proposal will decrease phosphorus loadings in the Fox River Watershed and improve water quality. The goals and approaches proposed are aligned with our own mission, and we are therefore very excited to support the proposed efforts.

If you have any questions, please feel free to contact me. Otherwise, thank you for evaluating this important proposal to improve our county's water quality.

Sincerely,

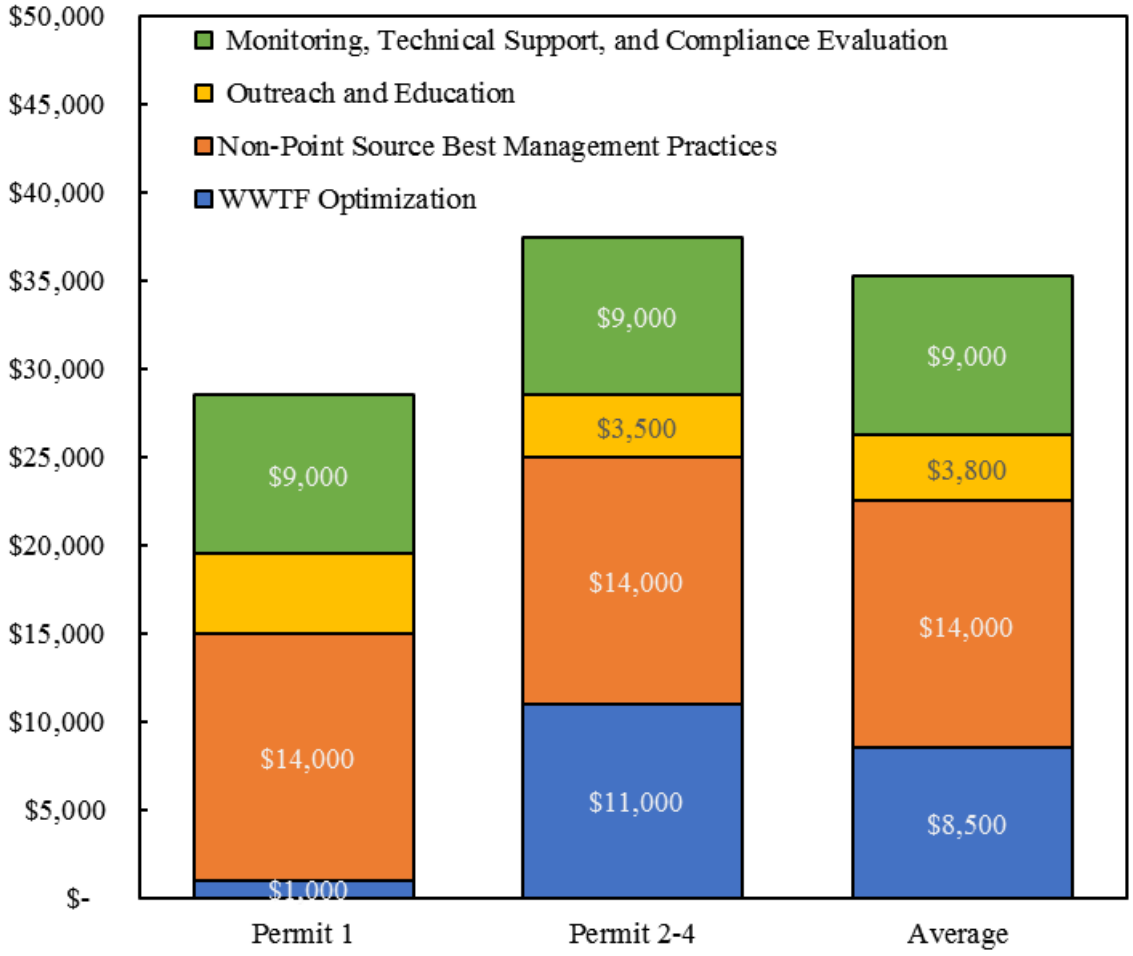
Tom Greil

Tom Greil
Chairperson

Table A-1
Adaptive Management Overall Costs

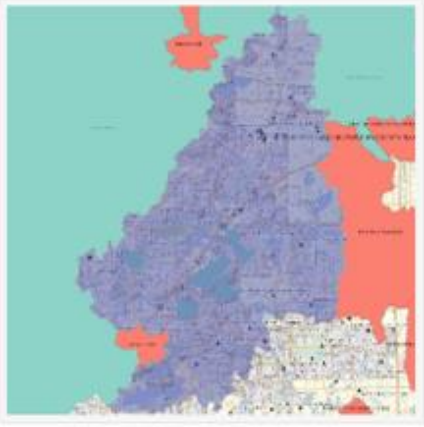
Item	Annual Cost					TPW Factor	Total Present Worth	Notes			
	Permit 1	Permit 2	Permit 3	Permit 4	Average	14.38	$	Value	Unit	Rate	Unit
WWTF Optimization											
Additional Chemical	$ 1,000	$ 11,000	$ 11,000	$ 11,000	$ 8,500	14.38	$ 122,000				
Subtotal	**$ 1,000**	**$ 11,000**	**$ 11,000**	**$ 11,000**	**$ 8,500**	**14.38**	**$ 122,000**				
Non-Point Source Best Management Practices											
Implement Practices	$ 9,000	$ 9,000	$ 9,000	$ 9,000	$ 9,000	14.38	$ 129,000	$73	$ / lb TP	Cover Crop, 0.62 lb/ac, $45/ac	
Labor - Staff	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	14.38	$ 29,000	20	h / year	$ 100	$/hr
Labor - Partners	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	14.38	$ 43,000	20	h / year	$ 150	$/hr
Subtotal	**$ 14,000**	**$ 14,000**	**$ 14,000**	**$ 14,000**	**$ 14,000**		**$ 201,000**				
Outreach and Education											
Labor - Staff	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	14.38	$ 14,000	10	h / year	$ 100	$/hr
Labor - Partners	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	14.38	$ 22,000	10	h / year	$ 150	$/hr
Materials	$ 2,000	$ 1,000	$ 1,000	$ 1,000	$ 1,300	14.38	$ 19,000	$ 1,000	$ / year	$ 2,000	Initial Cost
Subtotal	**$ 4,500**	**$ 3,500**	**$ 3,500**	**$ 3,500**	**$ 3,800**		**$ 55,000**				
Monitoring, Technical Support, and Compliance Evaluation											
Labor - Staff	$ 1,000	$ 1,000	$ 1,000	$ 1,000	$ 1,000	14.38	$ 14,000	10	h / year	$ 100	$/hr
Labor - Partners	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	14.38	$ 86,000	40	h / year	$ 150	$/hr
Materials	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	14.38	$ 29,000	$ 2,000	$ / year		
Subtotal	**$ 9,000**	**$ 9,000**	**$ 9,000**	**$ 9,000**	**$ 9,000**		**$ 129,000**				
Overall Costs											
Total	**$ 28,500**	**$ 37,500**	**$ 37,500**	**$ 37,500**	**$ 35,300**		**$ 507,000**				

Figure A-1
Adaptive Management Annual Costs

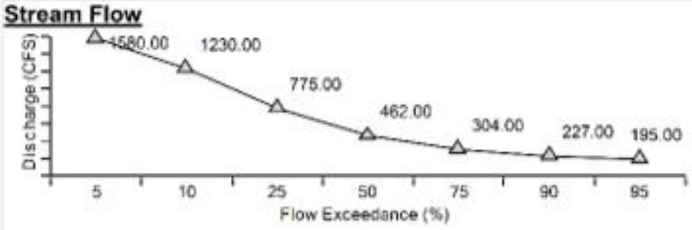


City of Burlington
PRESTO-Lite Watershed Delineation Report

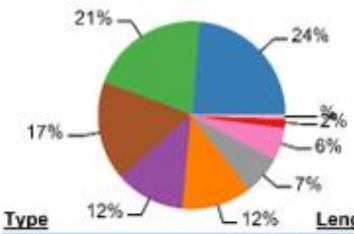
Reach ID: 200006075	
Watershed Name: Spring Brook-Fox River	
Waterbody Name: Fox River	
HUC08: Upper Fox	
Watershed Area: 766.14 mi²	
Average Annual Precipitation: 33.98in	



Stream Flow

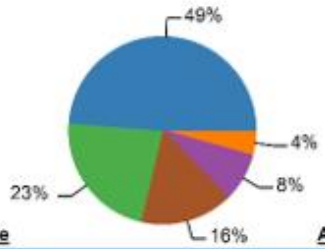


Tributary Stream Type



Type	Length
Cool-Cold Headwater	327376 ft
Cold Headwater	282860 ft
Macroinvertebrates	235962 ft
Coldwater	165538 ft
Warm Mainstem	164598 ft
Warm Headwater	93159 ft
Cold Mainstem	77695 ft
Cool-Cold Mainstem	22264 ft
Large River	6058 ft

Landcover



Type	Area
Agriculture	367.36 mi²
Urban	170.01 mi²
Forest	121.51 mi²
Wetland	63.05 mi²
Open Water	32.64 mi²
Barren	5.9 mi²
Grassland	5.59 mi²

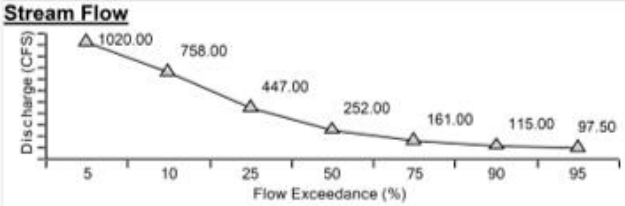
PRESTO Phosphorus Load Estimate

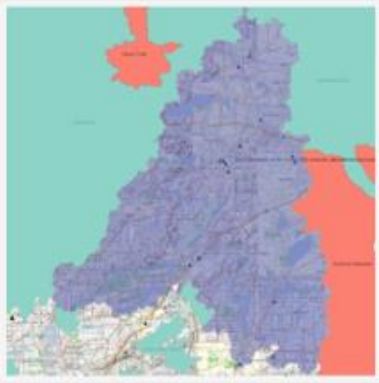
Avg. Annual Nonpoint Phosphorous Load (80% Confidence Interval)	114,492 (51,001 - 257,020) lbs
Number of Facilities (Individual Facility Information below)	15
Avg. Annual Point-source Phosphorous Load (2010 - 2012 total of all facilities)	43,376lbs
Most Likely Point : Nonpoint Phosphorous Ratio	27% : 73%
Low Estimate Point : Nonpoint Phosphorous Ratio (Adaptive Management)	14% : 86%

Western Racine County Sewerage District
PRESTO-Lite Watershed Delineation Report

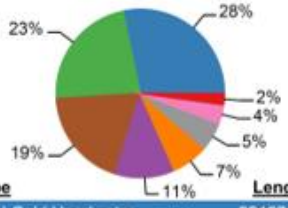
Reach ID: 200211805	
Watershed Name: Long Lake-Fox River	
Waterbody Name: Fox River	
HUC08: Upper Fox	
Watershed Area: 443.19 mi²	
Average Annual Precipitation: 33.66in	

Stream Flow



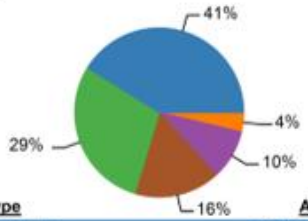


Tributary Stream Type



Type	Length
Cool-Cold Headwater	224571 ft
Cold Headwater	179891 ft
Macroinvertebrates	151994 ft
Warm Mainstem	91160 ft
Coldwater	56477 ft
Warm Headwater	43220 ft
Cold Mainstem	28990 ft
Cool-Cold Mainstem	17165 ft

Landcover



Type	Area
Agriculture	179.71 mi²
Urban	127.73 mi²
Forest	71.57 mi²
Wetland	42.06 mi²
Open Water	16.31 mi²
Barren	3.32 mi²
Grassland	2.57 mi²

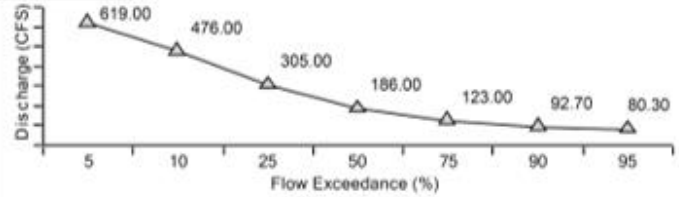
PRESTO Phosphorus Load Estimate

Avg. Annual Nonpoint Phosphorous Load (80% Confidence Interval)	62,032 (27,707 - 138,881) lbs
Number of Facilities (Individual Facility Information below)	8
Avg. Annual Point-source Phosphorous Load (2010 - 2012 total of all facilities)	33,742lbs
Most Likely Point : Nonpoint Phosphorous Ratio	35% : 65%
Low Estimate Point : Nonpoint Phosphorous Ratio (Adaptive Management)	20% : 80%

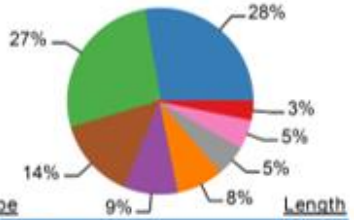
City of Mukwonago
PRESTO-Lite Watershed Delineation Report

Reach ID: 200212023	
Watershed Name: Village of Big Bend-Fox River	
Waterbody Name: Fox River	
HUC08: Upper Fox	
Watershed Area: 298.49 mi²	
Average Annual Precipitation: 33.62in	

Stream Flow

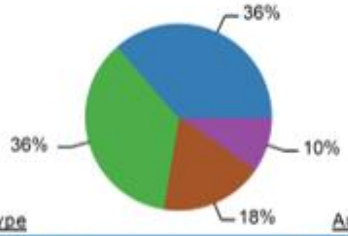


Tributary Stream Type



Type	Length
Cool-Cold Headwater	149343 ft
Cold Headwater	144798 ft
Macroinvertebrates	76249 ft
Warm Mainstem	50645 ft
Coldwater	43864 ft
Cold Mainstem	28990 ft
Warm Headwater	27286 ft
Cool-Cold Mainstem	17165 ft
Large River	0 ft

Landcover



Type	Area
Agriculture	104.23 mi²
Urban	103.34 mi²
Forest	51.52 mi²
Wetland	27.91 mi²
Barren	1.58 mi²
Grassland	1.28 mi²

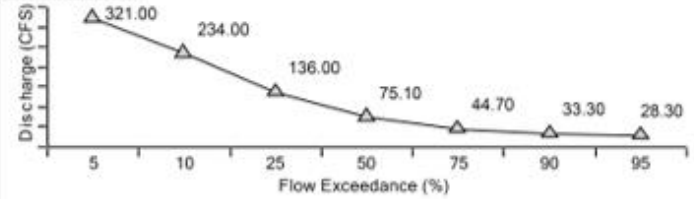
PRESTO Phosphorus Load Estimate

Avg. Annual Nonpoint Phosphorous Load (80% Confidence Interval)	37,021 (16,668 - 82,223) lbs
Number of Facilities (Individual Facility Information below)	5
Avg. Annual Point-source Phosphorous Load (2010 - 2012 total of all facilities)	30,519lbs
Most Likely Point : Nonpoint Phosphorous Ratio	45% : 55%
Low Estimate Point : Nonpoint Phosphorous Ratio (Adaptive Management)	27% : 73%

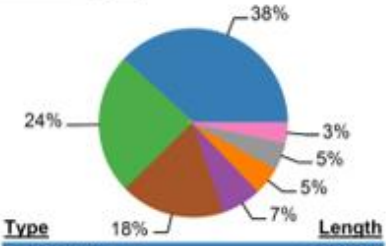
City of Waukesha
PRESTO-Lite Watershed Delineation Report

Reach ID: 200212130	
Watershed Name: City of Waukesha-Fox River	
Waterbody Name: Fox River	
HUC08: Upper Fox	
Watershed Area: 129.17 mi²	
Average Annual Precipitation: 33.43in	

Stream Flow

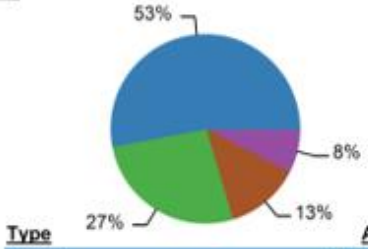


Tributary Stream Type



Type	Length
Cold Headwater	103382 ft
Cool-Cold Headwater	65420 ft
Macroinvertebrates	48709 ft
Warm Mainstem	18408 ft
Cold Mainstem	13002 ft
Warm Headwater	12686 ft
Coldwater	9084 ft
Cool-Cold Mainstem	0 ft
Large River	0 ft

Landcover



Type	Area
Urban	65.31 mi²
Agriculture	32.86 mi²
Forest	15.68 mi²
Wetland	9.48 mi²
Barren	1.01 mi²
Grassland	0.58 mi²

PRESTO Phosphorus Load Estimate

Avg. Annual Nonpoint Phosphorous Load (80% Confidence Interval)	25,298 (10,788 - 59,324) lbs
Number of Facilities (Individual Facility Information below)	4
Avg. Annual Point-source Phosphorous Load (2010 - 2012 total of all facilities)	28,885lbs
Most Likely Point : Nonpoint Phosphorous Ratio	53% : 47%
Low Estimate Point : Nonpoint Phosphorous Ratio (Adaptive Management)	33% : 67%

Figure A-2
WRCSD Adaptive Management Plan
Fox River Flow vs. Fox River Flow Percentile

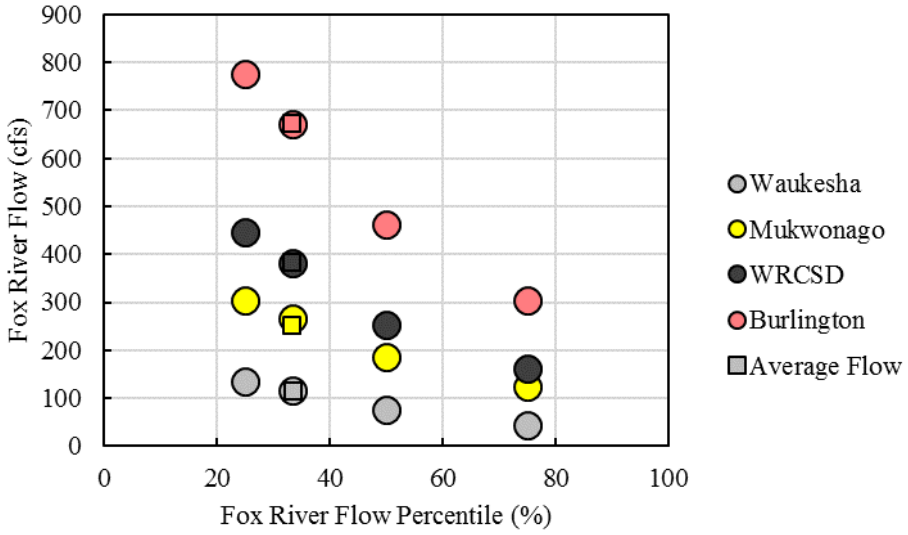


Figure A-3
WRCSD Adaptive Management Plan
Fox River Flow vs. Watershed Area

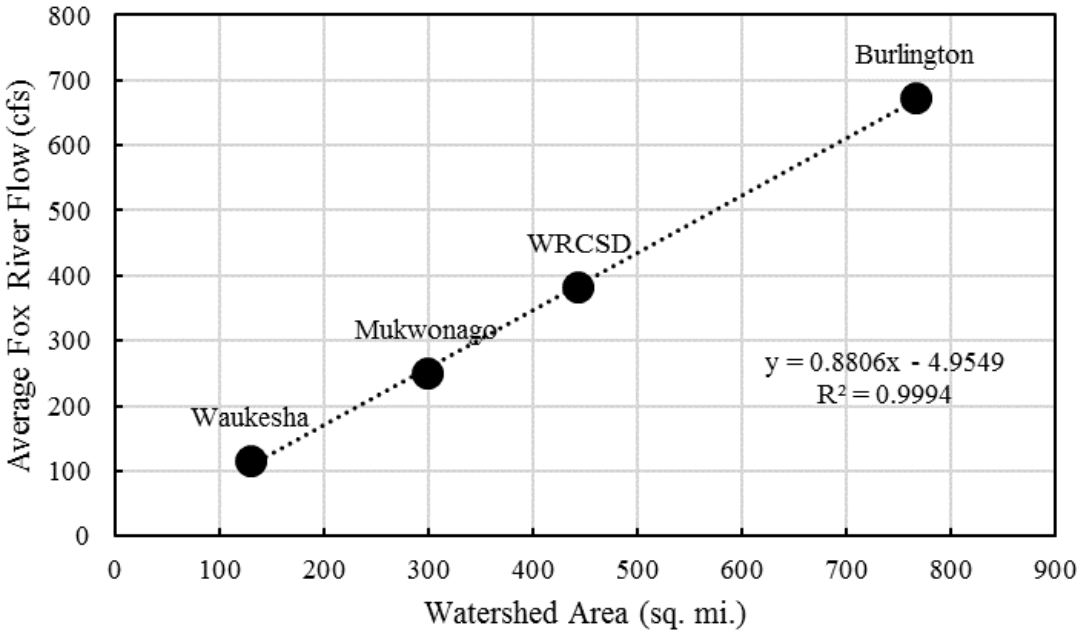


Figure A-4
WRCSD Adaptive Management Plan
Neighboring Adaptive Management Plan Action Areas

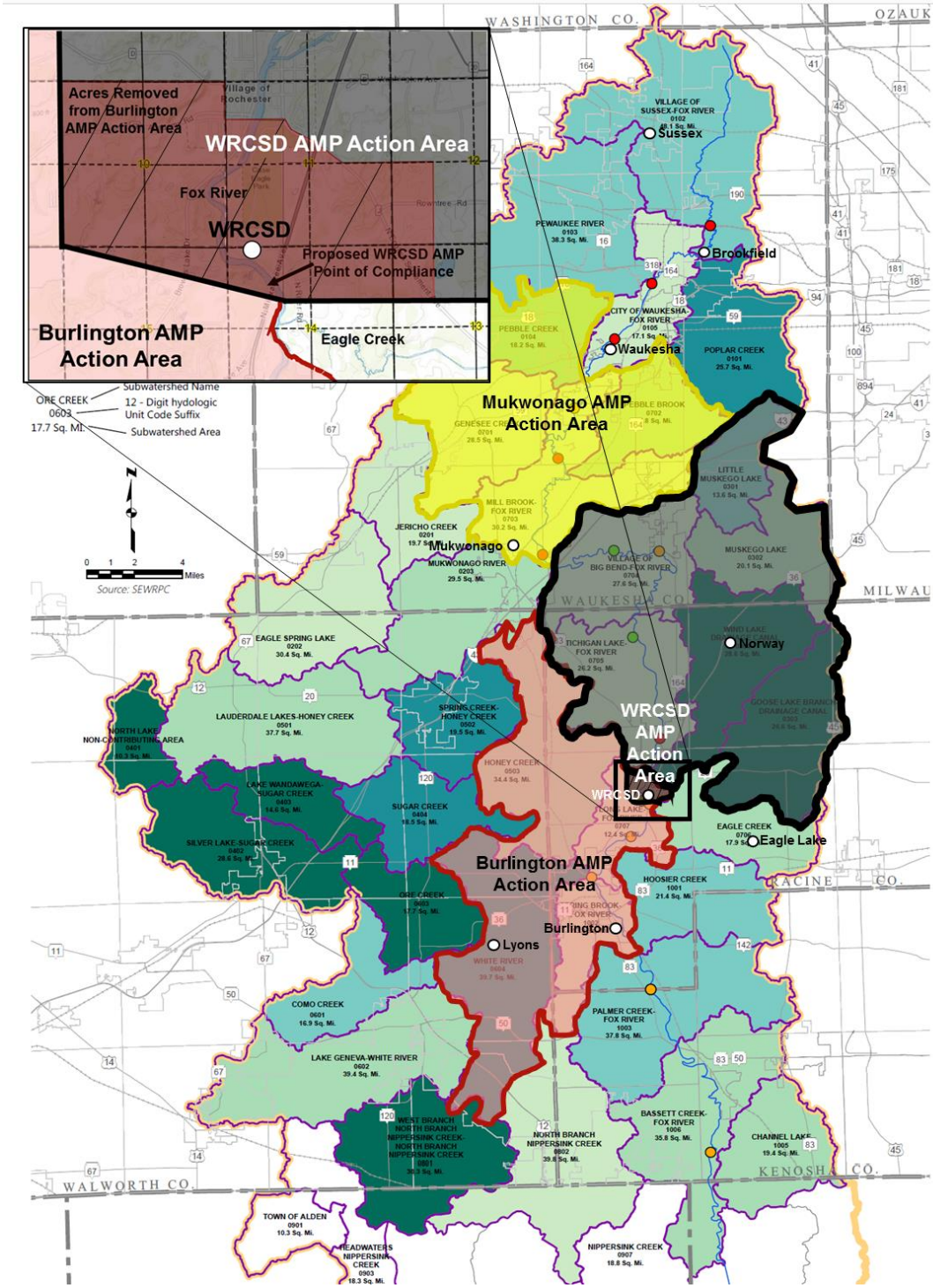


Table A-2 WRCSD Action Area Critical Source Areas: High Priority and High Frequency Corn		
Site	Acres	USGS Subwatershed
1	94	Village of Big Bend-Fox River
2	40	Village of Big Bend-Fox River
3	211	Village of Big Bend-Fox River
4	39	Muskego Lake
5	27	Wind Lake Drainage Canal
6	61	Wind Lake Drainage Canal
7	71	Tichigan Lake-Fox River
8	68	Tichigan Lake-Fox River
9	156	Tichigan Lake-Fox River
10	78	Village of Big Bend-Fox River
11	70	Village of Big Bend-Fox River
12	137	Tichigan Lake-Fox River
13	71	Tichigan Lake-Fox River
14	47	Tichigan Lake-Fox River
15	20	Tichigan Lake-Fox River
16	40	Tichigan Lake-Fox River
17	137	Tichigan Lake-Fox River
18	171	Wind Lake Drainage Canal
19	49	Wind Lake Drainage Canal
20	64	Wind Lake Drainage Canal
21	119	Goose Lake Branch Drainage Canal
22	40	Goose Lake Branch Drainage Canal
Totals		
Count	Acres	USGS Subwatershed
0	-	Little Muskego Lake
1	39	Muskego Lake
2	159	Goose Lake Branch Drainage Canal
5	371	Wind Lake Drainage Canal
5	492	Village of Big Bend-Fox River
8	746	Tichigan Lake-Fox River
0	-	Long Lake-Fox River
21	1,807	WRCSD Action Area

TOTAL PHOSPHORUS TEST
Ascorbic acid method

Sampling:
Samples will be collected from the Fox River using a 10-ft pole, which is an increase from the 6-ft pole currently used. Samples will be collected at the locations shown on Figure 5-1.

Method: Standard Methods, Method 4500 P E - 1999

Equipment:

Genesys 10 spectrophotometer
NAPCO 8000DSE Autoclave – slow exhaust model
50ml volumetric flasks
50ml Erlenmeyer flasks
Pipettes and cylinders

Reagents and Standards:

1. 5ppm Phosphorus standard
2. 50ppm Phosphorus Standard
3. 11N H_2SO_4
4. Phenolphthalein indicator
5. Potassium persulfate
6. 5N H_2SO_4
7. 5N NaOH
8. Potassium antimonyl tartrate
9. Ammonium Molybdate
10. Ascorbic Acid

Method sensitivity:

Ammonia LOD is determined annually.

Sample preservation, storage and hold time:
Samples are preserved with 5N H_2SO_4 and stored in a refrigerator at $\leq$6 degrees C until analysis. Samples are stored no more than 28 days. Storage containers are cleaned with a phosphate free detergent and rinsed with dilute 10% hydrochloric acid solution. Containers are then rinsed three times with distilled water.

QC sample and Frequency:

Samples are generally analyzed every other Saturday. A duplicate is run each time the test is performed for control purposes. The duplicate is alternated between the influent and the effluent.

Calibration and standardization:

The WRCSD lab generates a full calibration curve using .1, .2, .4, .6, .8, 1.0mls 50ppm phosphorus standard at least once per year. The 50ppm phosphorus standard is purchased as a stock standard. A second source phosphorus standard is used as the ICV, ICAL and ICV standards are digested. A CCV is analyzed to verify calibration. WRCSD rotates between 2, 3, 4 and 5mls of the 5ppm phosphorus standard for the CCV. The 5ppm standard is made as follows: 50mls of the stock 50ppm phosphorus standard to 450mls of distilled water. The CCV is digested and must be within $\pm$10% of the true value. The Genesys 10 allows the operator to measure the curve standards, save the values and plot the curve. This curve will then be used to generate values of the unknown sample.

1. Turn on the Genesys 10 spec. The switch is on the lower left in the back. Allow 10 or 15 minutes for warm up.
2. Make sure the wave length setting is 880nm on the screen, it should already be there. If not, hit the change mode button, press SET nm, enter 880 press SET nm again, press the change mode button to the mode. Ready to go.
3. Press the test button, the test screen appears. Highlight standard curve and press enter. The standard curve screen appears.
4. Press run standards to set up and run the standards
5. Enter the concentration value into each field, press enter. The standards screen will come up. Place the blank sample in the spec. Be sure to close the spec's cover for each sample. Press measure blank to measure the blank. When the measurement is complete the standards screen will come back up with the value for the blank in the table.

6. Place the .1ml standard in the spec and press measure standard. When measurement is complete, the standards screen will return.
7. Continue this for the .2, .4, .6, .8, and 1mls samples. When all the standards are done the standards screen will come up and showing the absorbance of each standard, along with the slope, intercept and correlation coefficient of the curve.
8. To save the curve press save test.

Sample preparation (Digestion)

1. Shake sample thoroughly inverting the sample at least three times. Pipette a suitable portion of the sample into a 50ml Erlenmeyer flask. For samples <5ml, add 50mls distilled water. For sample ≥5mls, add distilled water to a total volume of 50 mls.
2. Add 1 drop of Phenolphthalein indicator into each Erlenmeyer flask. If a pink color appears, decolorize with 5N H_2SO_4.
3. Add 1ml of the 11N H_2SO_4 to each flask.
4. Add one scoop of Potassium Persulphate to each flask.
5. Cover flasks with small pieces of aluminum foil.
6. Place the flasks into the autoclave and bring auto clave up to temperature and pressure and cook for 30 minutes.
7. Turn off the autoclave, allow it to depressurize, open the door and allow the sample to cool.

Procedure

1. Pour sample into a 50ml volumetric flask.
2. Add 1 drop of Phenolphthalein indicator into each volumetric flask.
3. Titrate with 5N NaOH just until a magenta pink color develops.
4. Decolorize with just enough H_2SO_4 to clear away the color.
5. Add 8mls of the mixed coloring reagent, making sure to mix after addition of the reagent.
6. Bring up to volume with distilled water.
7. Leave the sample stand for at least 10 minutes but be done with the test within 30 minutes.
8. Make sure the wave length setting is 880nm on the screen, it should already be there. If not, hit the change mode button, press SET nm, enter 880 press SET nm again. Ready to go.
9. With the Standards screen showing, press Run test. The Sample screen will appear.
10. Place the blank in the tube holder, press measure blank. Always make sure to close the cover on the spec while measuring. The absorbance and curve value will be shown when ready. Record the numbers on the appropriate bench sheet.
11. Place the method blank into the tube holder, press method blank. The absorbance and curve value will be shown when ready. Record the numbers on the appropriate bench sheet.
12. Press measure samples. Put the sample to be measured into the tube holder. After each sample is done record the absorbance and the curve value on the appropriate bench sheet.

Data assessment and acceptance criteria for QC measures

Quality Assurance

1. A CCV alternating between 2, 3, 4 and 5ppm phosphorus standard is set up each day that the test is run. The CCV must be within ±10% of the true value.
2. ICAL is run using a second source standard for the ICV once per year
3. A calibration blank and method blank are run with each test. Distilled water is used for the calibration blank. The method blank is run identically to the other samples.
4. Samples whose absorbance reading falls outside the curve values are rerun.
5. Samples whose absorbance falls below the end of the curve using 50mls sample are reported as TLTD.

Corrective actions and contingencies for handling out of control or unacceptable data

In the event of an out of control result, corrective action will be taken. The corrective action shall identify the source of the problem, correct the problem, and the lab shall monitor the effectiveness of the implemented corrective action changes and take additional corrective action when initial and/or subsequent corrective action fails to resolve the nonconformance. WRCSD lab maintains a corrective action log to record and monitor sample results that exceed QC limits

Combined Reagent

50 mls of 5 N sulfuric acid

5 mls of antimonyl tartrate solution

15 mls of 4% ammonium molybdate solution

Add them in the order shown, mix after addition of each reagent. Must be a straw color when complete.

Reagent is stable for 4 hours.

Phosphorus 50 ppm stock solution = .2195 grams potassium phosphate monobasic / 1000 mls distilled water, if not purchased direct from vendor.

Sodium Hydroxide Solution = 20 grams / 500 mls distilled water if not purchased prepared from vendor

Ascorbic Acid = 1.76 grams / 100 mls distilled water

5 ppm working solution = 100 mls of the 1000 ppm stock solution / 1000 mls distilled water

5 N Sulfuric Acid = 140 mls of concentrated Sulfuric Acid / 1000 mls of distilled water

Mean	**0.109**
Median	**0.095**
NR 217 Median	**0.098**
# of "single samples"	**120**

date	year	month	Day	wd	TP	28-day Mean TP
8/1/2015	2015	Aug	1	Sat		
8/2/2015	2015	Aug	2	Sun		
8/3/2015	2015	Aug	3	Mon		
8/4/2015	2015	Aug	4	Tue		
8/5/2015	2015	Aug	5	Wed		
8/6/2015	2015	Aug	6	Thu		
8/7/2015	2015	Aug	7	Fri		
8/8/2015	2015	Aug	8	Sat		
8/9/2015	2015	Aug	9	Sun		
8/10/2015	2015	Aug	10	Mon		
8/11/2015	2015	Aug	11	Tue	0.168	0.139
8/12/2015	2015	Aug	12	Wed		
8/13/2015	2015	Aug	13	Thu		
8/14/2015	2015	Aug	14	Fri		
8/15/2015	2015	Aug	15	Sat		
8/16/2015	2015	Aug	16	Sun		
8/17/2015	2015	Aug	17	Mon		
8/18/2015	2015	Aug	18	Tue		
8/19/2015	2015	Aug	19	Wed		
8/20/2015	2015	Aug	20	Thu	0.147	0.125
8/21/2015	2015	Aug	21	Fri		
8/22/2015	2015	Aug	22	Sat		
8/23/2015	2015	Aug	23	Sun		
8/24/2015	2015	Aug	24	Mon		
8/25/2015	2015	Aug	25	Tue		
8/26/2015	2015	Aug	26	Wed		
8/27/2015	2015	Aug	27	Thu		
8/28/2015	2015	Aug	28	Fri		
8/29/2015	2015	Aug	29	Sat		
8/30/2015	2015	Aug	30	Sun		
8/31/2015	2015	Aug	31	Mon		
9/1/2015	2015	Sep	1	Tue		
9/2/2015	2015	Sep	2	Wed		
9/3/2015	2015	Sep	3	Thu	0.103	0.088
9/4/2015	2015	Sep	4	Fri		
9/5/2015	2015	Sep	5	Sat		
9/6/2015	2015	Sep	6	Sun		
9/7/2015	2015	Sep	7	Mon		
9/8/2015	2015	Sep	8	Tue		
9/9/2015	2015	Sep	9	Wed		
9/10/2015	2015	Sep	10	Thu		
9/11/2015	2015	Sep	11	Fri		
9/12/2015	2015	Sep	12	Sat		
9/13/2015	2015	Sep	13	Sun		

9/14/2015	2015	Sep	14	Mon		
9/15/2015	2015	Sep	15	Tue		
9/16/2015	2015	Sep	16	Wed		
9/17/2015	2015	Sep	17	Thu	0.072	0.072
9/18/2015	2015	Sep	18	Fri		
9/19/2015	2015	Sep	19	Sat		
9/20/2015	2015	Sep	20	Sun		
9/21/2015	2015	Sep	21	Mon		
9/22/2015	2015	Sep	22	Tue		
9/23/2015	2015	Sep	23	Wed		
9/24/2015	2015	Sep	24	Thu		
9/25/2015	2015	Sep	25	Fri		
9/26/2015	2015	Sep	26	Sat		
9/27/2015	2015	Sep	27	Sun		
9/28/2015	2015	Sep	28	Mon		
9/29/2015	2015	Sep	29	Tue		
9/30/2015	2015	Sep	30	Wed		
10/1/2015	2015	Oct	1	Thu		
10/2/2015	2015	Oct	2	Fri		
10/3/2015	2015	Oct	3	Sat		
10/4/2015	2015	Oct	4	Sun		
10/5/2015	2015	Oct	5	Mon		
10/6/2015	2015	Oct	6	Tue		
10/7/2015	2015	Oct	7	Wed		
10/8/2015	2015	Oct	8	Thu		
10/9/2015	2015	Oct	9	Fri		
10/10/2015	2015	Oct	10	Sat		
10/11/2015	2015	Oct	11	Sun		
10/12/2015	2015	Oct	12	Mon		
10/13/2015	2015	Oct	13	Tue		
10/14/2015	2015	Oct	14	Wed		
10/15/2015	2015	Oct	15	Thu	0.066	0.058
10/16/2015	2015	Oct	16	Fri		
10/17/2015	2015	Oct	17	Sat		
10/18/2015	2015	Oct	18	Sun		
10/19/2015	2015	Oct	19	Mon		
10/20/2015	2015	Oct	20	Tue		
10/21/2015	2015	Oct	21	Wed		
10/22/2015	2015	Oct	22	Thu		
10/23/2015	2015	Oct	23	Fri		
10/24/2015	2015	Oct	24	Sat		
10/25/2015	2015	Oct	25	Sun		
10/26/2015	2015	Oct	26	Mon		
10/27/2015	2015	Oct	27	Tue		
10/28/2015	2015	Oct	28	Wed		
10/29/2015	2015	Oct	29	Thu	0.049	0.049
10/30/2015	2015	Oct	30	Fri		
10/31/2015	2015	Oct	31	Sat		
5/3/2016	2016	May	3	Tue	0.065	0.062
5/4/2016	2016	May	4	Wed		

5/5/2016	2016	May	5	Thu		
5/6/2016	2016	May	6	Fri		
5/7/2016	2016	May	7	Sat		
5/8/2016	2016	May	8	Sun		
5/9/2016	2016	May	9	Mon		
5/10/2016	2016	May	10	Tue	0.061	0.066
5/11/2016	2016	May	11	Wed		
5/12/2016	2016	May	12	Thu		
5/13/2016	2016	May	13	Fri		
5/14/2016	2016	May	14	Sat		
5/15/2016	2016	May	15	Sun		
5/16/2016	2016	May	16	Mon		
5/17/2016	2016	May	17	Tue	0.061	0.068
5/18/2016	2016	May	18	Wed		
5/19/2016	2016	May	19	Thu		
5/20/2016	2016	May	20	Fri		
5/21/2016	2016	May	21	Sat		
5/22/2016	2016	May	22	Sun		
5/23/2016	2016	May	23	Mon		
5/24/2016	2016	May	24	Tue	0.059	0.068
5/25/2016	2016	May	25	Wed		
5/26/2016	2016	May	26	Thu		
5/27/2016	2016	May	27	Fri		
5/28/2016	2016	May	28	Sat		
5/29/2016	2016	May	29	Sun		
5/30/2016	2016	May	30	Mon		
5/31/2016	2016	May	31	Tue	0.082	0.071
6/1/2016	2016	Jun	1	Wed		
6/2/2016	2016	Jun	2	Thu		
6/3/2016	2016	Jun	3	Fri		
6/4/2016	2016	Jun	4	Sat		
6/5/2016	2016	Jun	5	Sun		
6/6/2016	2016	Jun	6	Mon		
6/7/2016	2016	Jun	7	Tue	0.068	0.069
6/8/2016	2016	Jun	8	Wed		
6/9/2016	2016	Jun	9	Thu		
6/10/2016	2016	Jun	10	Fri		
6/11/2016	2016	Jun	11	Sat		
6/12/2016	2016	Jun	12	Sun		
6/13/2016	2016	Jun	13	Mon		
6/14/2016	2016	Jun	14	Tue	0.062	0.066
6/15/2016	2016	Jun	15	Wed		
6/16/2016	2016	Jun	16	Thu		
6/17/2016	2016	Jun	17	Fri		
6/18/2016	2016	Jun	18	Sat		
6/19/2016	2016	Jun	19	Sun		
6/20/2016	2016	Jun	20	Mon		
6/21/2016	2016	Jun	21	Tue	0.070	0.071
6/22/2016	2016	Jun	22	Wed		
6/23/2016	2016	Jun	23	Thu		

6/24/2016	2016	Jun	24	Fri		
6/25/2016	2016	Jun	25	Sat		
6/26/2016	2016	Jun	26	Sun		
6/27/2016	2016	Jun	27	Mon		
6/28/2016	2016	Jun	28	Tue	0.074	0.072
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7/1/2016	2016	Jul	1	Fri		
7/2/2016	2016	Jul	2	Sat		
7/3/2016	2016	Jul	3	Sun		
7/4/2016	2016	Jul	4	Mon		
7/5/2016	2016	Jul	5	Tue	0.059	0.091
7/6/2016	2016	Jul	6	Wed		
7/7/2016	2016	Jul	7	Thu		
7/8/2016	2016	Jul	8	Fri		
7/9/2016	2016	Jul	9	Sat		
7/10/2016	2016	Jul	10	Sun		
7/11/2016	2016	Jul	11	Mon		
7/12/2016	2016	Jul	12	Tue	0.079	0.104
7/13/2016	2016	Jul	13	Wed		
7/14/2016	2016	Jul	14	Thu		
7/15/2016	2016	Jul	15	Fri		
7/16/2016	2016	Jul	16	Sat		
7/17/2016	2016	Jul	17	Sun		
7/18/2016	2016	Jul	18	Mon		
7/19/2016	2016	Jul	19	Tue	0.076	0.107
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7/26/2016	2016	Jul	26	Tue	0.149	0.127
7/27/2016	2016	Jul	27	Wed		
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8/7/2016	2016	Aug	7	Sun		
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8/9/2016	2016	Aug	9	Tue	0.091	0.100
8/10/2016	2016	Aug	10	Wed		
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8/12/2016	2016	Aug	12	Fri		

8/13/2016	2016	Aug	13	Sat		
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8/15/2016	2016	Aug	15	Mon		
8/16/2016	2016	Aug	16	Tue	0.158	0.092
8/17/2016	2016	Aug	17	Wed		
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8/20/2016	2016	Aug	20	Sat		
8/21/2016	2016	Aug	21	Sun		
8/22/2016	2016	Aug	22	Mon		
8/23/2016	2016	Aug	23	Tue	0.080	0.086
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8/31/2016	2016	Aug	31	Wed		
9/1/2016	2016	Sep	1	Thu		
9/2/2016	2016	Sep	2	Fri		
9/3/2016	2016	Sep	3	Sat		
9/4/2016	2016	Sep	4	Sun		
9/5/2016	2016	Sep	5	Mon		
9/6/2016	2016	Sep	6	Tue	0.058	0.073
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9/8/2016	2016	Sep	8	Thu		
9/9/2016	2016	Sep	9	Fri		
9/10/2016	2016	Sep	10	Sat		
9/11/2016	2016	Sep	11	Sun		
9/12/2016	2016	Sep	12	Mon		
9/13/2016	2016	Sep	13	Tue	0.134	0.076
9/14/2016	2016	Sep	14	Wed		
9/15/2016	2016	Sep	15	Thu		
9/16/2016	2016	Sep	16	Fri		
9/17/2016	2016	Sep	17	Sat		
9/18/2016	2016	Sep	18	Sun		
9/19/2016	2016	Sep	19	Mon		
9/20/2016	2016	Sep	20	Tue	0.053	0.055
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9/22/2016	2016	Sep	22	Thu		
9/23/2016	2016	Sep	23	Fri		
9/24/2016	2016	Sep	24	Sat		
9/25/2016	2016	Sep	25	Sun		
9/26/2016	2016	Sep	26	Mon		
9/27/2016	2016	Sep	27	Tue	0.047	0.057
9/28/2016	2016	Sep	28	Wed		
9/29/2016	2016	Sep	29	Thu		
9/30/2016	2016	Sep	30	Fri		
10/1/2016	2016	Oct	1	Sat		

10/2/2016	2016	Oct	2	Sun		
10/3/2016	2016	Oct	3	Mon		
10/4/2016	2016	Oct	4	Tue	0.070	0.066
10/5/2016	2016	Oct	5	Wed		
10/6/2016	2016	Oct	6	Thu		
10/7/2016	2016	Oct	7	Fri		
10/8/2016	2016	Oct	8	Sat		
10/9/2016	2016	Oct	9	Sun		
10/10/2016	2016	Oct	10	Mon		
10/11/2016	2016	Oct	11	Tue	0.049	0.065
10/12/2016	2016	Oct	12	Wed		
10/13/2016	2016	Oct	13	Thu		
10/14/2016	2016	Oct	14	Fri		
10/15/2016	2016	Oct	15	Sat		
10/16/2016	2016	Oct	16	Sun		
10/17/2016	2016	Oct	17	Mon		
10/18/2016	2016	Oct	18	Tue	0.062	0.073
10/19/2016	2016	Oct	19	Wed		
10/20/2016	2016	Oct	20	Thu		
10/21/2016	2016	Oct	21	Fri		
10/22/2016	2016	Oct	22	Sat		
10/23/2016	2016	Oct	23	Sun		
10/24/2016	2016	Oct	24	Mon		
10/25/2016	2016	Oct	25	Tue	0.083	0.083
10/26/2016	2016	Oct	26	Wed		
10/27/2016	2016	Oct	27	Thu		
10/28/2016	2016	Oct	28	Fri		
10/29/2016	2016	Oct	29	Sat		
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10/31/2016	2016	Oct	31	Mon		
5/2/2017	2017	May	2	Tue	0.154	0.088
5/3/2017	2017	May	3	Wed		
5/4/2017	2017	May	4	Thu		
5/5/2017	2017	May	5	Fri		
5/6/2017	2017	May	6	Sat		
5/7/2017	2017	May	7	Sun		
5/8/2017	2017	May	8	Mon		
5/9/2017	2017	May	9	Tue	0.064	0.076
5/10/2017	2017	May	10	Wed		
5/11/2017	2017	May	11	Thu		
5/12/2017	2017	May	12	Fri		
5/13/2017	2017	May	13	Sat		
5/14/2017	2017	May	14	Sun		
5/15/2017	2017	May	15	Mon		
5/16/2017	2017	May	16	Tue	0.068	0.081
5/17/2017	2017	May	17	Wed		
5/18/2017	2017	May	18	Thu		
5/19/2017	2017	May	19	Fri		
5/20/2017	2017	May	20	Sat		
5/21/2017	2017	May	21	Sun		

5/22/2017	2017	May	22	Mon		
5/23/2017	2017	May	23	Tue	0.065	0.093
5/24/2017	2017	May	24	Wed		
5/25/2017	2017	May	25	Thu		
5/26/2017	2017	May	26	Fri		
5/27/2017	2017	May	27	Sat		
5/28/2017	2017	May	28	Sun		
5/29/2017	2017	May	29	Mon		
5/30/2017	2017	May	30	Tue	0.108	0.109
5/31/2017	2017	May	31	Wed		
6/1/2017	2017	Jun	1	Thu		
6/2/2017	2017	Jun	2	Fri		
6/3/2017	2017	Jun	3	Sat		
6/4/2017	2017	Jun	4	Sun		
6/5/2017	2017	Jun	5	Mon		
6/6/2017	2017	Jun	6	Tue	0.082	0.105
6/7/2017	2017	Jun	7	Wed		
6/8/2017	2017	Jun	8	Thu		
6/9/2017	2017	Jun	9	Fri		
6/10/2017	2017	Jun	10	Sat		
6/11/2017	2017	Jun	11	Sun		
6/12/2017	2017	Jun	12	Mon		
6/13/2017	2017	Jun	13	Tue	0.118	0.113
6/14/2017	2017	Jun	14	Wed		
6/15/2017	2017	Jun	15	Thu		
6/16/2017	2017	Jun	16	Fri		
6/17/2017	2017	Jun	17	Sat		
6/18/2017	2017	Jun	18	Sun		
6/19/2017	2017	Jun	19	Mon		
6/20/2017	2017	Jun	20	Tue	0.127	0.128
6/21/2017	2017	Jun	21	Wed		
6/22/2017	2017	Jun	22	Thu		
6/23/2017	2017	Jun	23	Fri		
6/24/2017	2017	Jun	24	Sat		
6/25/2017	2017	Jun	25	Sun		
6/26/2017	2017	Jun	26	Mon		
6/27/2017	2017	Jun	27	Tue	0.094	0.102
6/28/2017	2017	Jun	28	Wed		
6/29/2017	2017	Jun	29	Thu		
6/30/2017	2017	Jun	30	Fri		
7/1/2017	2017	Jul	1	Sat		
7/2/2017	2017	Jul	2	Sun		
7/3/2017	2017	Jul	3	Mon		
7/4/2017	2017	Jul	4	Tue	0.112	0.141
7/5/2017	2017	Jul	5	Wed		
7/6/2017	2017	Jul	6	Thu		
7/7/2017	2017	Jul	7	Fri		
7/8/2017	2017	Jul	8	Sat		
7/9/2017	2017	Jul	9	Sun		
7/10/2017	2017	Jul	10	Mon		

7/11/2017	2017	Jul	11	Tue	0.178	0.151
7/12/2017	2017	Jul	12	Wed		
7/13/2017	2017	Jul	13	Thu		
7/14/2017	2017	Jul	14	Fri		
7/15/2017	2017	Jul	15	Sat		
7/16/2017	2017	Jul	16	Sun		
7/17/2017	2017	Jul	17	Mon		
7/18/2017	2017	Jul	18	Tue	0.025	0.133
7/19/2017	2017	Jul	19	Wed		
7/20/2017	2017	Jul	20	Thu		
7/21/2017	2017	Jul	21	Fri		
7/22/2017	2017	Jul	22	Sat		
7/23/2017	2017	Jul	23	Sun		
7/24/2017	2017	Jul	24	Mon		
7/25/2017	2017	Jul	25	Tue	0.248	0.154
7/26/2017	2017	Jul	26	Wed		
7/27/2017	2017	Jul	27	Thu		
7/28/2017	2017	Jul	28	Fri		
7/29/2017	2017	Jul	29	Sat		
7/30/2017	2017	Jul	30	Sun		
7/31/2017	2017	Jul	31	Mon		
8/1/2017	2017	Aug	1	Tue	0.151	0.122
8/2/2017	2017	Aug	2	Wed		
8/3/2017	2017	Aug	3	Thu		
8/4/2017	2017	Aug	4	Fri		
8/5/2017	2017	Aug	5	Sat		
8/6/2017	2017	Aug	6	Sun		
8/7/2017	2017	Aug	7	Mon		
8/8/2017	2017	Aug	8	Tue	0.109	0.110
8/9/2017	2017	Aug	9	Wed		
8/10/2017	2017	Aug	10	Thu		
8/11/2017	2017	Aug	11	Fri		
8/12/2017	2017	Aug	12	Sat		
8/13/2017	2017	Aug	13	Sun		
8/14/2017	2017	Aug	14	Mon		
8/15/2017	2017	Aug	15	Tue	0.109	0.110
8/16/2017	2017	Aug	16	Wed		
8/17/2017	2017	Aug	17	Thu		
8/18/2017	2017	Aug	18	Fri		
8/19/2017	2017	Aug	19	Sat		
8/20/2017	2017	Aug	20	Sun		
8/21/2017	2017	Aug	21	Mon		
8/22/2017	2017	Aug	22	Tue	0.119	0.097
8/23/2017	2017	Aug	23	Wed		
8/24/2017	2017	Aug	24	Thu		
8/25/2017	2017	Aug	25	Fri		
8/26/2017	2017	Aug	26	Sat		
8/27/2017	2017	Aug	27	Sun		
8/28/2017	2017	Aug	28	Mon		
8/29/2017	2017	Aug	29	Tue	0.104	0.082

8/30/2017	2017	Aug	30	Wed		
8/31/2017	2017	Aug	31	Thu		
9/1/2017	2017	Sep	1	Fri		
9/2/2017	2017	Sep	2	Sat		
9/3/2017	2017	Sep	3	Sun		
9/4/2017	2017	Sep	4	Mon		
9/5/2017	2017	Sep	5	Tue	0.109	0.091
9/6/2017	2017	Sep	6	Wed		
9/7/2017	2017	Sep	7	Thu		
9/8/2017	2017	Sep	8	Fri		
9/9/2017	2017	Sep	9	Sat		
9/10/2017	2017	Sep	10	Sun		
9/11/2017	2017	Sep	11	Mon		
9/12/2017	2017	Sep	12	Tue	0.055	0.083
9/13/2017	2017	Sep	13	Wed		
9/14/2017	2017	Sep	14	Thu		
9/15/2017	2017	Sep	15	Fri		
9/16/2017	2017	Sep	16	Sat		
9/17/2017	2017	Sep	17	Sun		
9/18/2017	2017	Sep	18	Mon		
9/19/2017	2017	Sep	19	Tue	0.060	0.091
9/20/2017	2017	Sep	20	Wed		
9/21/2017	2017	Sep	21	Thu		
9/22/2017	2017	Sep	22	Fri		
9/23/2017	2017	Sep	23	Sat		
9/24/2017	2017	Sep	24	Sun		
9/25/2017	2017	Sep	25	Mon		
9/26/2017	2017	Sep	26	Tue	0.141	0.098
9/27/2017	2017	Sep	27	Wed		
9/28/2017	2017	Sep	28	Thu		
9/29/2017	2017	Sep	29	Fri		
9/30/2017	2017	Sep	30	Sat		
10/1/2017	2017	Oct	1	Sun		
10/2/2017	2017	Oct	2	Mon		
10/3/2017	2017	Oct	3	Tue	0.077	0.087
10/4/2017	2017	Oct	4	Wed		
10/5/2017	2017	Oct	5	Thu		
10/6/2017	2017	Oct	6	Fri		
10/7/2017	2017	Oct	7	Sat		
10/8/2017	2017	Oct	8	Sun		
10/9/2017	2017	Oct	9	Mon		
10/10/2017	2017	Oct	10	Tue	0.087	0.090
10/11/2017	2017	Oct	11	Wed		
10/12/2017	2017	Oct	12	Thu		
10/13/2017	2017	Oct	13	Fri		
10/14/2017	2017	Oct	14	Sat		
10/15/2017	2017	Oct	15	Sun		
10/16/2017	2017	Oct	16	Mon		
10/17/2017	2017	Oct	17	Tue	0.088	0.092
10/18/2017	2017	Oct	18	Wed		

10/19/2017	2017	Oct	19	Thu		
10/20/2017	2017	Oct	20	Fri		
10/21/2017	2017	Oct	21	Sat		
10/22/2017	2017	Oct	22	Sun		
10/23/2017	2017	Oct	23	Mon		
10/24/2017	2017	Oct	24	Tue	0.095	0.095
10/25/2017	2017	Oct	25	Wed		
10/26/2017	2017	Oct	26	Thu		
10/27/2017	2017	Oct	27	Fri		
10/28/2017	2017	Oct	28	Sat		
10/29/2017	2017	Oct	29	Sun		
10/30/2017	2017	Oct	30	Mon		
10/31/2017	2017	Oct	31	Tue		
5/1/2018	2018	May	1	Tue		
5/2/2018	2018	May	2	Wed		
5/3/2018	2018	May	3	Thu		
5/4/2018	2018	May	4	Fri		
5/5/2018	2018	May	5	Sat		
5/6/2018	2018	May	6	Sun		
5/7/2018	2018	May	7	Mon		
5/8/2018	2018	May	8	Tue	0.156	0.133
5/9/2018	2018	May	9	Wed		
5/10/2018	2018	May	10	Thu		
5/11/2018	2018	May	11	Fri		
5/12/2018	2018	May	12	Sat		
5/13/2018	2018	May	13	Sun		
5/14/2018	2018	May	14	Mon		
5/15/2018	2018	May	15	Tue		
5/16/2018	2018	May	16	Wed		
5/17/2018	2018	May	17	Thu		
5/18/2018	2018	May	18	Fri		
5/19/2018	2018	May	19	Sat		
5/20/2018	2018	May	20	Sun		
5/21/2018	2018	May	21	Mon		
5/22/2018	2018	May	22	Tue	0.121	0.114
5/23/2018	2018	May	23	Wed		
5/24/2018	2018	May	24	Thu		
5/25/2018	2018	May	25	Fri		
5/26/2018	2018	May	26	Sat		
5/27/2018	2018	May	27	Sun		
5/28/2018	2018	May	28	Mon		
5/29/2018	2018	May	29	Tue	0.123	0.139
5/30/2018	2018	May	30	Wed		
5/31/2018	2018	May	31	Thu		
6/1/2018	2018	Jun	1	Fri		
6/2/2018	2018	Jun	2	Sat		
6/3/2018	2018	Jun	3	Sun		
6/4/2018	2018	Jun	4	Mon		
6/5/2018	2018	Jun	5	Tue	0.102	0.147
6/6/2018	2018	Jun	6	Wed		

6/7/2018	2018	Jun	7	Thu		
6/8/2018	2018	Jun	8	Fri		
6/9/2018	2018	Jun	9	Sat		
6/10/2018	2018	Jun	10	Sun		
6/11/2018	2018	Jun	11	Mon		
6/12/2018	2018	Jun	12	Tue	0.110	0.158
6/13/2018	2018	Jun	13	Wed		
6/14/2018	2018	Jun	14	Thu		
6/15/2018	2018	Jun	15	Fri		
6/16/2018	2018	Jun	16	Sat		
6/17/2018	2018	Jun	17	Sun		
6/18/2018	2018	Jun	18	Mon		
6/19/2018	2018	Jun	19	Tue	0.219	0.155
6/20/2018	2018	Jun	20	Wed		
6/21/2018	2018	Jun	21	Thu		
6/22/2018	2018	Jun	22	Fri		
6/23/2018	2018	Jun	23	Sat		
6/24/2018	2018	Jun	24	Sun		
6/25/2018	2018	Jun	25	Mon		
6/26/2018	2018	Jun	26	Tue	0.156	0.128
6/27/2018	2018	Jun	27	Wed		
6/28/2018	2018	Jun	28	Thu		
6/29/2018	2018	Jun	29	Fri		
6/30/2018	2018	Jun	30	Sat		
7/1/2018	2018	Jul	1	Sun		
7/2/2018	2018	Jul	2	Mon		
7/3/2018	2018	Jul	3	Tue	0.145	0.131
7/4/2018	2018	Jul	4	Wed		
7/5/2018	2018	Jul	5	Thu		
7/6/2018	2018	Jul	6	Fri		
7/7/2018	2018	Jul	7	Sat		
7/8/2018	2018	Jul	8	Sun		
7/9/2018	2018	Jul	9	Mon		
7/10/2018	2018	Jul	10	Tue	0.100	0.123
7/11/2018	2018	Jul	11	Wed		
7/12/2018	2018	Jul	12	Thu		
7/13/2018	2018	Jul	13	Fri		
7/14/2018	2018	Jul	14	Sat		
7/15/2018	2018	Jul	15	Sun		
7/16/2018	2018	Jul	16	Mon		
7/17/2018	2018	Jul	17	Tue	0.110	0.200
7/18/2018	2018	Jul	18	Wed		
7/19/2018	2018	Jul	19	Thu		
7/20/2018	2018	Jul	20	Fri		
7/21/2018	2018	Jul	21	Sat		
7/22/2018	2018	Jul	22	Sun		
7/23/2018	2018	Jul	23	Mon		
7/24/2018	2018	Jul	24	Tue	0.170	0.268
7/25/2018	2018	Jul	25	Wed		
7/26/2018	2018	Jul	26	Thu		

7/27/2018	2018	Jul	27	Fri		
7/28/2018	2018	Jul	28	Sat		
7/29/2018	2018	Jul	29	Sun		
7/30/2018	2018	Jul	30	Mon		
7/31/2018	2018	Jul	31	Tue	0.110	0.248
8/1/2018	2018	Aug	1	Wed		
8/2/2018	2018	Aug	2	Thu		
8/3/2018	2018	Aug	3	Fri		
8/4/2018	2018	Aug	4	Sat		
8/5/2018	2018	Aug	5	Sun		
8/6/2018	2018	Aug	6	Mon		
8/7/2018	2018	Aug	7	Tue	0.410	0.255
8/8/2018	2018	Aug	8	Wed		
8/9/2018	2018	Aug	9	Thu		
8/10/2018	2018	Aug	10	Fri		
8/11/2018	2018	Aug	11	Sat		
8/12/2018	2018	Aug	12	Sun		
8/13/2018	2018	Aug	13	Mon		
8/14/2018	2018	Aug	14	Tue	0.380	0.238
8/15/2018	2018	Aug	15	Wed		
8/16/2018	2018	Aug	16	Thu		
8/17/2018	2018	Aug	17	Fri		
8/18/2018	2018	Aug	18	Sat		
8/19/2018	2018	Aug	19	Sun		
8/20/2018	2018	Aug	20	Mon		
8/21/2018	2018	Aug	21	Tue	0.090	0.173
8/22/2018	2018	Aug	22	Wed		
8/23/2018	2018	Aug	23	Thu		
8/24/2018	2018	Aug	24	Fri		
8/25/2018	2018	Aug	25	Sat		
8/26/2018	2018	Aug	26	Sun		
8/27/2018	2018	Aug	27	Mon		
8/28/2018	2018	Aug	28	Tue	0.140	0.178
8/29/2018	2018	Aug	29	Wed		
8/30/2018	2018	Aug	30	Thu		
8/31/2018	2018	Aug	31	Fri		
9/1/2018	2018	Sep	1	Sat		
9/2/2018	2018	Sep	2	Sun		
9/3/2018	2018	Sep	3	Mon		
9/4/2018	2018	Sep	4	Tue	0.340	0.160
9/5/2018	2018	Sep	5	Wed		
9/6/2018	2018	Sep	6	Thu		
9/7/2018	2018	Sep	7	Fri		
9/8/2018	2018	Sep	8	Sat		
9/9/2018	2018	Sep	9	Sun		
9/10/2018	2018	Sep	10	Mon		
9/11/2018	2018	Sep	11	Tue	0.120	0.150
9/12/2018	2018	Sep	12	Wed		
9/13/2018	2018	Sep	13	Thu		
9/14/2018	2018	Sep	14	Fri		

9/15/2018	2018	Sep	15	Sat		
9/16/2018	2018	Sep	16	Sun		
9/17/2018	2018	Sep	17	Mon		
9/18/2018	2018	Sep	18	Tue	0.110	0.145
9/19/2018	2018	Sep	19	Wed		
9/20/2018	2018	Sep	20	Thu		
9/21/2018	2018	Sep	21	Fri		
9/22/2018	2018	Sep	22	Sat		
9/23/2018	2018	Sep	23	Sun		
9/24/2018	2018	Sep	24	Mon		
9/25/2018	2018	Sep	25	Tue	0.070	0.133
9/26/2018	2018	Sep	26	Wed		
9/27/2018	2018	Sep	27	Thu		
9/28/2018	2018	Sep	28	Fri		
9/29/2018	2018	Sep	29	Sat		
9/30/2018	2018	Sep	30	Sun		
10/1/2018	2018	Oct	1	Mon		
10/2/2018	2018	Oct	2	Tue	0.300	0.223
10/3/2018	2018	Oct	3	Wed		
10/4/2018	2018	Oct	4	Thu		
10/5/2018	2018	Oct	5	Fri		
10/6/2018	2018	Oct	6	Sat		
10/7/2018	2018	Oct	7	Sun		
10/8/2018	2018	Oct	8	Mon		
10/9/2018	2018	Oct	9	Tue	0.100	0.156
10/10/2018	2018	Oct	10	Wed		
10/11/2018	2018	Oct	11	Thu		
10/12/2018	2018	Oct	12	Fri		
10/13/2018	2018	Oct	13	Sat		
10/14/2018	2018	Oct	14	Sun		
10/15/2018	2018	Oct	15	Mon		
10/16/2018	2018	Oct	16	Tue	0.063	0.174
10/17/2018	2018	Oct	17	Wed		
10/18/2018	2018	Oct	18	Thu		
10/19/2018	2018	Oct	19	Fri		
10/20/2018	2018	Oct	20	Sat		
10/21/2018	2018	Oct	21	Sun		
10/22/2018	2018	Oct	22	Mon		
10/23/2018	2018	Oct	23	Tue	0.430	0.230
10/24/2018	2018	Oct	24	Wed		
10/25/2018	2018	Oct	25	Thu		
10/26/2018	2018	Oct	26	Fri		
10/27/2018	2018	Oct	27	Sat		
10/28/2018	2018	Oct	28	Sun		
10/29/2018	2018	Oct	29	Mon		
10/30/2018	2018	Oct	30	Tue	0.030	0.030
10/31/2018	2018	Oct	31	Wed		
5/1/2019	2019	May	1	Wed		
5/2/2019	2019	May	2	Thu		
5/3/2019	2019	May	3	Fri		

5/4/2019	2019	May	4	Sat		
5/5/2019	2019	May	5	Sun		
5/6/2019	2019	May	6	Mon		
5/7/2019	2019	May	7	Tue	0.099	0.102
5/8/2019	2019	May	8	Wed		
5/9/2019	2019	May	9	Thu		
5/10/2019	2019	May	10	Fri		
5/11/2019	2019	May	11	Sat		
5/12/2019	2019	May	12	Sun		
5/13/2019	2019	May	13	Mon		
5/14/2019	2019	May	14	Tue	0.073	0.105
5/15/2019	2019	May	15	Wed		
5/16/2019	2019	May	16	Thu		
5/17/2019	2019	May	17	Fri		
5/18/2019	2019	May	18	Sat		
5/19/2019	2019	May	19	Sun		
5/20/2019	2019	May	20	Mon		
5/21/2019	2019	May	21	Tue	0.066	0.108
5/22/2019	2019	May	22	Wed		
5/23/2019	2019	May	23	Thu		
5/24/2019	2019	May	24	Fri		
5/25/2019	2019	May	25	Sat		
5/26/2019	2019	May	26	Sun		
5/27/2019	2019	May	27	Mon		
5/28/2019	2019	May	28	Tue	0.170	0.114
5/29/2019	2019	May	29	Wed		
5/30/2019	2019	May	30	Thu		
5/31/2019	2019	May	31	Fri		
6/1/2019	2019	Jun	1	Sat		
6/2/2019	2019	Jun	2	Sun		
6/3/2019	2019	Jun	3	Mon		
6/4/2019	2019	Jun	4	Tue	0.110	0.094
6/5/2019	2019	Jun	5	Wed		
6/6/2019	2019	Jun	6	Thu		
6/7/2019	2019	Jun	7	Fri		
6/8/2019	2019	Jun	8	Sat		
6/9/2019	2019	Jun	9	Sun		
6/10/2019	2019	Jun	10	Mon		
6/11/2019	2019	Jun	11	Tue	0.087	0.102
6/12/2019	2019	Jun	12	Wed		
6/13/2019	2019	Jun	13	Thu		
6/14/2019	2019	Jun	14	Fri		
6/15/2019	2019	Jun	15	Sat		
6/16/2019	2019	Jun	16	Sun		
6/17/2019	2019	Jun	17	Mon		
6/18/2019	2019	Jun	18	Tue	0.090	0.113
6/19/2019	2019	Jun	19	Wed		
6/20/2019	2019	Jun	20	Thu		
6/21/2019	2019	Jun	21	Fri		
6/22/2019	2019	Jun	22	Sat		

6/23/2019	2019	Jun	23	Sun		
6/24/2019	2019	Jun	24	Mon		
6/25/2019	2019	Jun	25	Tue	0.090	0.118
6/26/2019	2019	Jun	26	Wed		
6/27/2019	2019	Jun	27	Thu		
6/28/2019	2019	Jun	28	Fri		
6/29/2019	2019	Jun	29	Sat		
6/30/2019	2019	Jun	30	Sun		
7/1/2019	2019	Jul	1	Mon		
7/2/2019	2019	Jul	2	Tue	0.140	0.123
7/3/2019	2019	Jul	3	Wed		
7/4/2019	2019	Jul	4	Thu		
7/5/2019	2019	Jul	5	Fri		
7/6/2019	2019	Jul	6	Sat		
7/7/2019	2019	Jul	7	Sun		
7/8/2019	2019	Jul	8	Mon		
7/9/2019	2019	Jul	9	Tue	0.130	0.110
7/10/2019	2019	Jul	10	Wed		
7/11/2019	2019	Jul	11	Thu		
7/12/2019	2019	Jul	12	Fri		
7/13/2019	2019	Jul	13	Sat		
7/14/2019	2019	Jul	14	Sun		
7/15/2019	2019	Jul	15	Mon		
7/16/2019	2019	Jul	16	Tue	0.110	0.095
7/17/2019	2019	Jul	17	Wed		
7/18/2019	2019	Jul	18	Thu		
7/19/2019	2019	Jul	19	Fri		
7/20/2019	2019	Jul	20	Sat		
7/21/2019	2019	Jul	21	Sun		
7/22/2019	2019	Jul	22	Mon		
7/23/2019	2019	Jul	23	Tue	0.110	0.083
7/24/2019	2019	Jul	24	Wed		
7/25/2019	2019	Jul	25	Thu		
7/26/2019	2019	Jul	26	Fri		
7/27/2019	2019	Jul	27	Sat		
7/28/2019	2019	Jul	28	Sun		
7/29/2019	2019	Jul	29	Mon		
7/30/2019	2019	Jul	30	Tue	0.090	0.070
7/31/2019	2019	Jul	31	Wed		
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8/3/2019	2019	Aug	3	Sat		
8/4/2019	2019	Aug	4	Sun		
8/5/2019	2019	Aug	5	Mon		
8/6/2019	2019	Aug	6	Tue	0.070	0.065
8/7/2019	2019	Aug	7	Wed		
8/8/2019	2019	Aug	8	Thu		
8/9/2019	2019	Aug	9	Fri		
8/10/2019	2019	Aug	10	Sat		
8/11/2019	2019	Aug	11	Sun		

8/12/2019	2019	Aug	12	Mon		
8/13/2019	2019	Aug	13	Tue	0.060	0.065
8/14/2019	2019	Aug	14	Wed		
8/15/2019	2019	Aug	15	Thu		
8/16/2019	2019	Aug	16	Fri		
8/17/2019	2019	Aug	17	Sat		
8/18/2019	2019	Aug	18	Sun		
8/19/2019	2019	Aug	19	Mon		
8/20/2019	2019	Aug	20	Tue	0.060	0.075
8/21/2019	2019	Aug	21	Wed		
8/22/2019	2019	Aug	22	Thu		
8/23/2019	2019	Aug	23	Fri		
8/24/2019	2019	Aug	24	Sat		
8/25/2019	2019	Aug	25	Sun		
8/26/2019	2019	Aug	26	Mon		
8/27/2019	2019	Aug	27	Tue	0.070	0.095
8/28/2019	2019	Aug	28	Wed		
8/29/2019	2019	Aug	29	Thu		
8/30/2019	2019	Aug	30	Fri		
8/31/2019	2019	Aug	31	Sat		
9/1/2019	2019	Sep	1	Sun		
9/2/2019	2019	Sep	2	Mon		
9/3/2019	2019	Sep	3	Tue	0.070	0.110
9/4/2019	2019	Sep	4	Wed		
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9/6/2019	2019	Sep	6	Fri		
9/7/2019	2019	Sep	7	Sat		
9/8/2019	2019	Sep	8	Sun		
9/9/2019	2019	Sep	9	Mon		
9/10/2019	2019	Sep	10	Tue	0.100	0.120
9/11/2019	2019	Sep	11	Wed		
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9/13/2019	2019	Sep	13	Fri		
9/14/2019	2019	Sep	14	Sat		
9/15/2019	2019	Sep	15	Sun		
9/16/2019	2019	Sep	16	Mon		
9/17/2019	2019	Sep	17	Tue	0.140	0.113
9/18/2019	2019	Sep	18	Wed		
9/19/2019	2019	Sep	19	Thu		
9/20/2019	2019	Sep	20	Fri		
9/21/2019	2019	Sep	21	Sat		
9/22/2019	2019	Sep	22	Sun		
9/23/2019	2019	Sep	23	Mon		
9/24/2019	2019	Sep	24	Tue	0.130	0.098
9/25/2019	2019	Sep	25	Wed		
9/26/2019	2019	Sep	26	Thu		
9/27/2019	2019	Sep	27	Fri		
9/28/2019	2019	Sep	28	Sat		
9/29/2019	2019	Sep	29	Sun		
9/30/2019	2019	Sep	30	Mon		

10/1/2019	2019	Oct	1	Tue	0.110	0.080
10/2/2019	2019	Oct	2	Wed		
10/3/2019	2019	Oct	3	Thu		
10/4/2019	2019	Oct	4	Fri		
10/5/2019	2019	Oct	5	Sat		
10/6/2019	2019	Oct	6	Sun		
10/7/2019	2019	Oct	7	Mon		
10/8/2019	2019	Oct	8	Tue	0.070	0.070
10/9/2019	2019	Oct	9	Wed		
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10/11/2019	2019	Oct	11	Fri		
10/12/2019	2019	Oct	12	Sat		
10/13/2019	2019	Oct	13	Sun		
10/14/2019	2019	Oct	14	Mon		
10/15/2019	2019	Oct	15	Tue	0.080	0.070
10/16/2019	2019	Oct	16	Wed		
10/17/2019	2019	Oct	17	Thu		
10/18/2019	2019	Oct	18	Fri		
10/19/2019	2019	Oct	19	Sat		
10/20/2019	2019	Oct	20	Sun		
10/21/2019	2019	Oct	21	Mon		
10/22/2019	2019	Oct	22	Tue	0.060	0.060
10/23/2019	2019	Oct	23	Wed		
10/24/2019	2019	Oct	24	Thu		
10/25/2019	2019	Oct	25	Fri		
10/26/2019	2019	Oct	26	Sat		
10/27/2019	2019	Oct	27	Sun		
10/28/2019	2019	Oct	28	Mon		
10/29/2019	2019	Oct	29	Tue		
10/30/2019	2019	Oct	30	Wed		
10/31/2019	2019	Oct	31	Thu		
5/1/2020	2020	May	1	Fri		
5/2/2020	2020	May	2	Sat		
5/3/2020	2020	May	3	Sun		
5/4/2020	2020	May	4	Mon		
5/5/2020	2020	May	5	Tue	0.097	0.093
5/6/2020	2020	May	6	Wed		
5/7/2020	2020	May	7	Thu		
5/8/2020	2020	May	8	Fri		
5/9/2020	2020	May	9	Sat		
5/10/2020	2020	May	10	Sun		
5/11/2020	2020	May	11	Mon		
5/12/2020	2020	May	12	Tue	0.071	0.093
5/13/2020	2020	May	13	Wed		
5/14/2020	2020	May	14	Thu		
5/15/2020	2020	May	15	Fri		
5/16/2020	2020	May	16	Sat		
5/17/2020	2020	May	17	Sun		
5/18/2020	2020	May	18	Mon		
5/19/2020	2020	May	19	Tue	0.110	0.097

5/20/2020	2020	May	20	Wed		
5/21/2020	2020	May	21	Thu		
5/22/2020	2020	May	22	Fri		
5/23/2020	2020	May	23	Sat		
5/24/2020	2020	May	24	Sun		
5/25/2020	2020	May	25	Mon		
5/26/2020	2020	May	26	Tue	0.094	0.093
5/27/2020	2020	May	27	Wed		
5/28/2020	2020	May	28	Thu		
5/29/2020	2020	May	29	Fri		
5/30/2020	2020	May	30	Sat		
5/31/2020	2020	May	31	Sun		
6/1/2020	2020	Jun	1	Mon		
6/2/2020	2020	Jun	2	Tue	0.097	0.093
6/3/2020	2020	Jun	3	Wed		
6/4/2020	2020	Jun	4	Thu		
6/5/2020	2020	Jun	5	Fri		
6/6/2020	2020	Jun	6	Sat		
6/7/2020	2020	Jun	7	Sun		
6/8/2020	2020	Jun	8	Mon		
6/9/2020	2020	Jun	9	Tue	0.086	0.101
6/10/2020	2020	Jun	10	Wed		
6/11/2020	2020	Jun	11	Thu		
6/12/2020	2020	Jun	12	Fri		
6/13/2020	2020	Jun	13	Sat		
6/14/2020	2020	Jun	14	Sun		
6/15/2020	2020	Jun	15	Mon		
6/16/2020	2020	Jun	16	Tue	0.094	0.104
6/17/2020	2020	Jun	17	Wed		
6/18/2020	2020	Jun	18	Thu		
6/19/2020	2020	Jun	19	Fri		
6/20/2020	2020	Jun	20	Sat		
6/21/2020	2020	Jun	21	Sun		
6/22/2020	2020	Jun	22	Mon		
6/23/2020	2020	Jun	23	Tue	0.093	0.106
6/24/2020	2020	Jun	24	Wed		
6/25/2020	2020	Jun	25	Thu		
6/26/2020	2020	Jun	26	Fri		
6/27/2020	2020	Jun	27	Sat		
6/28/2020	2020	Jun	28	Sun		
6/29/2020	2020	Jun	29	Mon		
6/30/2020	2020	Jun	30	Tue	0.130	0.106
7/1/2020	2020	Jul	1	Wed		
7/2/2020	2020	Jul	2	Thu		
7/3/2020	2020	Jul	3	Fri		
7/4/2020	2020	Jul	4	Sat		
7/5/2020	2020	Jul	5	Sun		
7/6/2020	2020	Jul	6	Mon		
7/7/2020	2020	Jul	7	Tue	0.099	0.098
7/8/2020	2020	Jul	8	Wed		

7/9/2020	2020	Jul	9	Thu		
7/10/2020	2020	Jul	10	Fri		
7/11/2020	2020	Jul	11	Sat		
7/12/2020	2020	Jul	12	Sun		
7/13/2020	2020	Jul	13	Mon		
7/14/2020	2020	Jul	14	Tue	0.103	0.097
7/15/2020	2020	Jul	15	Wed		
7/16/2020	2020	Jul	16	Thu		
7/17/2020	2020	Jul	17	Fri		
7/18/2020	2020	Jul	18	Sat		
7/19/2020	2020	Jul	19	Sun		
7/20/2020	2020	Jul	20	Mon		
7/21/2020	2020	Jul	21	Tue	0.091	0.091
7/22/2020	2020	Jul	22	Wed		
7/23/2020	2020	Jul	23	Thu		
7/24/2020	2020	Jul	24	Fri		
7/25/2020	2020	Jul	25	Sat		
7/26/2020	2020	Jul	26	Sun		
7/27/2020	2020	Jul	27	Mon		
7/28/2020	2020	Jul	28	Tue		
7/29/2020	2020	Jul	29	Wed		
7/30/2020	2020	Jul	30	Thu		
7/31/2020	2020	Jul	31	Fri		

APPENDIX B:
WPDES PERMIT

WISCONSIN
DEPT. OF NATURAL RESOURCES

WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

Western Racine County Sewerage District

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility located at
1020 NORTH RIVER ROAD, Rochester, WI
to
Fox (IL) River (Fox (IL) River watershed, Fox (IL) River basin)
in Racine County

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By _____
Bryan Hartsook
Wastewater Field Supervisor

5/31/19
Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE – January 01, 2016 **EXPIRATION DATE - December 31, 2020**
PERMIT MODIFICATION: EFFECTIVE DATE – June 01, 2019

TABLE OF CONTENTS

1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
701	Influent: 24-hr flow proportional composite sampler, intake located after the bar screen and prior to grit removal.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT TO PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD_5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Nitrogen, Ammonia (NH_3-N) Total		mg/L	Weekly	24-Hr Flow Prop Comp	
Mercury, Total Recoverable		ng/L	Quarterly	24-Hr Flow Prop Comp	See Mercury subsection below.

1.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

2 In-Plant Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
103	Collect the mercury field blank using standard sample handling procedures.

2.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point 103 - Mercury Effluent Blanks

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Mercury, Total Recoverable		ng/L	Quarterly	Blank	See Mercury subsection below.

2.2.1.1 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3 Surface Water Requirements

3.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
001	Effluent: 24-hr flow proportional composite sample and grab sample taken at the effluent chamber prior to UV disinfection. Grab samples for fecal coliforms are taken after UV disinfection.

3.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 001 - EFFLUENT

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD_5, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	Year round limit
BOD_5, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Year round limit
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	Year round limit
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	Year round limit
Nitrogen, Ammonia (NH_3-N) Total	Daily Max	20 mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring required year round. Limit effective November - April annually.
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	15 mg/L	Monthly	24-Hr Flow Prop Comp	Effective January annually
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	16 mg/L	Monthly	24-Hr Flow Prop Comp	Effective February, July, August, and December annually.
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	19 mg/L	Monthly	24-Hr Flow Prop Comp	Effective April annually
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	12 mg/L	Monthly	24-Hr Flow Prop Comp	Effective October annually
Nitrogen, Ammonia (NH_3-N) Total	Monthly Avg	18 mg/L	Monthly	24-Hr Flow Prop Comp	Effective November annually
Fecal Coliform	Geometric Mean	400 #/100 ml	Weekly	Grab	Effective May - September annually
pH Field	Daily Min	6.0 su	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	This is an interim limit. The final water quality based effluent limits are 0.1 mg/L as a six-month average and 0.3 mg/L monthly average and take effect at the end of the compliance schedule. See Phosphorus subsections below.
Phosphorus, Total		lbs/day	3/Week	Calculated	Monitoring only. The final water quality based mass limit of 2.11 lbs/day as a six month average takes effect at the end of the compliance schedule. See Phosphorus subsections below.
Chloride		mg/L	4/Month	24-Hr Flow Prop Comp	Monitor in calendar year 2019 (January 1 - December 31). Sampling shall be done on four consecutive days each month. See Chloride subsection below.
Mercury, Total Recoverable	Daily Max	2.6 ng/L	Quarterly	Grab	This is an alternative mercury effluent limit. See Mercury Monitoring subsection below and section 5.2 for the mercury PMP compliance schedule.
Nitrogen, Total Kjeldahl		mg/L	Quarterly	24-Hr Flow Prop Comp	Sample once each calendar quarter.
Nitrogen, Nitrite + Nitrate Total		mg/L	Quarterly	24-Hr Flow Prop Comp	Sample once each calendar quarter.
Nitrogen, Total		mg/L	Quarterly	Calculated	Add the test results for (Total Kjeldahl Nitrogen) and (Nitrite + Nitrate Total Nitrogen) each quarter and report the calculated Total Nitrogen.
Acute WET		TU_a	See Listed Qtr(s)	24-Hr Flow Prop Comp	See "Whole Effluent Toxicity (WET) Testing" section below for monitoring dates and WET requirements.

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Chronic WET		rTU_c	See Listed Qtr(s)	24-Hr Flow Prop Comp	See "Whole Effluent Toxicity (WET) Testing" section below for monitoring dates and WET requirements.

3.2.1.1 Average Annual Design Flow

The average annual design flow of the permittee's wastewater treatment facility is 2.53 MGD.

3.2.1.2 Phosphorus Water Quality Based Effluent Limitation(s)

The final water quality based effluent limit for phosphorus is 0.1 mg/L as a six month average (averaged during the months of May-October and November-April), 0.3 mg/L as a monthly average, and 2.11 lbs/day as a six month average, and will take effect per the Phosphorus schedule in the Schedules section of the permit unless:

(A) As part of the application for the next reissuance, or prior to filing the application, the permittee submits either: 1.) a watershed adaptive management plan and a completed Watershed Adaptive Management Request Form 3200-139; or 2.) an application for water quality trading; or 3.) an application for a variance; or 4.) new information or additional data that supports a recalculation of the numeric limitation; and

(B) The Department modifies, revokes and reissues, or reissues the permit to incorporate a revised limitation before the expiration of the compliance schedule*.

(C) Final limits may be revised based on possible future Fox (IL) River TMDL evaluations.

Note: The permittee may also submit an application for a variance within 60 days of this permit reissuance, as noted in the permit cover letter, in accordance with s. 283.15, Stats.

If Adaptive Management or Water Quality Trading is approved as part of the permit application for the next reissuance or as part of an application for a modification or revocation and reissuance, the plan and specifications submittal, construction, and final effective dates for compliance with the total phosphorus WQBEL may change in the reissued or modified permit. In addition, the numeric value of the water quality based effluent limit may change based on new information (e.g. a TMDL) or additional data. If a variance is approved for the next reissuance, interim limits and conditions will be imposed in the reissued permit in accordance with s. 283.15, Stats., and applicable regulations. A permittee may apply for a variance to the phosphorus WQBEL at the next reissuance even if the permittee did not apply for a phosphorus variance as part of this permit reissuance.

Additional Requirements: If a water quality based effluent limit has taken effect in a permit, any increase in the limit is subject to s. NR 102.05(1) and ch. NR 207, Wis. Adm. Code. When a six-month average effluent limit is specified for Total Phosphorus the applicable averaging periods are May through October and November through April.

*Note: The Department will prioritize reissuances and revocations, modifications, and reissuances of permits to allow permittees the opportunity to implement adaptive management or nutrient trading in a timely and effective manner.

3.2.1.3 Alternative Approaches to Phosphorus WQBEL Compliance

Rather than upgrading its wastewater treatment facility to comply with WQBELs for total phosphorus, the permittee may use Water Quality Trading or the Watershed Adaptive Management Option, to achieve compliance under ch. NR 217, Wis. Adm. Code, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. The permittee may also implement an upgrade to its wastewater treatment facility in combination with Water Quality Trading or the Watershed Adaptive Management Option to achieve compliance,

provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. If the Final Compliance Alternatives Plan concludes that a variance will be pursued, the Plan shall provide information regarding the basis for the variance.

3.2.1.4 Submittal of Permit Application for Next Reissuance and Adaptive Management or Pollutant Trading Plan or Variance Application

The permittee shall submit the permit application for the next reissuance at least 6 months prior to expiration of this permit. If the permittee intends to pursue adaptive management to achieve compliance with the phosphorus water quality based effluent limitation, the permittee shall submit with the application for the next reissuance: a completed Watershed Adaptive Management Request Form 3200-139, the completed Adaptive Management Plan and final plans for any system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the permittee intends to pursue pollutant trading to achieve compliance, the permittee shall submit an application for water quality trading with the application for the next reissuance. If system upgrades will be used in combination with pollutant trading to achieve compliance with the final water quality-based limit, the reissued permit will specify a schedule for the necessary upgrades. If the permittee intends to seek a variance, the permittee shall submit an application for a variance with the application for the next reissuance.

3.2.1.5 Chloride Sampling

A sample frequency of 4/month requires that samples be collected on four consecutive days each month. Any four consecutive days of sampling shall be exclusive to one week of a month; where Week 1 is days 1-7, Week 2 is days 8-14, Week 3 is days 15-21, and Week 4 is days 22-28. The weekly average discharge shall be calculated and reported for any week that samples are collected.

3.2.1.6 Mercury Monitoring

The permittee shall collect and analyze all mercury samples according to the data quality requirements of ss. NR 106.145(9) and (10), Wisconsin Administrative Code. The limit of quantitation (LOQ) used for the effluent and field blank shall be less than 1.3 ng/L, unless the samples are quantified at levels above 1.3 ng/L. The permittee shall collect at least one mercury field blank for each set of mercury samples (a set of samples may include combinations of intake, influent, effluent or other samples all collected on the same day). The permittee shall report results of samples and field blanks to the Department on Discharge Monitoring Reports.

3.2.1.7 Whole Effluent Toxicity (WET) Testing

Primary Control Water: Fox (IL) River upstream, out of the influence of the mixing zone of outfall 001 and any other know discharges.

Instream Waste Concentration (IWC): 28%

Dilution series: At least five effluent concentrations and dual controls must be included in each test.

- **Acute:** 100, 50, 25, 12.5, 6.25% and any additional selected by the permittee.
- **Chronic:** 100, 30, 10, 3, 1% and any additional selected by the permittee.

WET Testing Frequency:

Acute tests shall be conducted once each year, in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Acute:** January – March 2016; July – September 2017; October – December 2018; April – June 2019; January – March 2020

Acute WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the fourth calendar year of this permit. For example, the next test would be required in April - June 2021.

Chronic tests shall be conducted once each year, in rotating quarters in order to collect seasonal information about the discharge. Tests are required during the following quarters.

- **Chronic:** January – March 2016; July – September 2017; October – December 2018; April – June 2019; January – March 2020

Chronic WET testing shall continue after the permit expiration date (until the permit is reissued) in accordance with the WET requirements specified for the fourth calendar year of this permit. For example, the next test would be required in April - June 2021.

Testing: WET testing shall be performed during normal operating conditions. Permittees are not allowed to turn off or otherwise modify treatment systems, production processes, or change other operating or treatment conditions during WET tests.

Reporting: The permittee shall report test results on the Discharge Monitoring Report form, and also complete the "Whole Effluent Toxicity Test Report Form" (Section 6, "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition*"), for each test. The original, complete, signed version of the Whole Effluent Toxicity Test Report Form shall be sent to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of test completion. The Discharge Monitoring Report (DMR) form shall be submitted electronically by the required deadline.

Determination of Positive Results: An acute toxicity test shall be considered positive if the Toxic Unit - Acute (TU_a) is greater than 1.0 for either species. The TU_a shall be calculated as follows: If $LC_{50} \geq 100$, then $TU_a = 1.0$. If LC_{50} is < 100, then $TU_a = 100 \div LC_{50}$. A chronic toxicity test shall be considered positive if the Relative Toxic Unit - Chronic (rTU_c) is greater than 1.0 for either species. The rTU_c shall be calculated as follows: If $IC_{25} \geq$ IWC, then $rTU_c = 1.0$. If $IC_{25} <$ IWC, then $rTU_c =$ IWC $\div IC_{25}$.

Additional Testing Requirements: Within 90 days of a test which showed positive results, the permittee shall submit the results of at least 2 retests to the Biomonitoring Coordinator on "Whole Effluent Toxicity Test Report Forms". The 90 day reporting period shall begin the day after the test which showed a positive result. The retests shall be completed using the same species and test methods specified for the original test (see the Standard Requirements section herein).

4 Land Application Requirements

4.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
002	Aerobically digested, Class B liquid sludge, thickened using a Dissolved Air Flotation (DAF) system. Representative sludge samples should be taken from the storage tank after mixing.

4.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

4.2.1 Sampling Point (Outfall) 002 - Sludge

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Quarterly	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	
Potassium, Total Recoverable		Percent	Quarterly	Composite	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonium (NH_4-N) Total		Percent	Quarterly	Composite	
Radium 226 Dry Wt		pCi/g	Once	Composite	Once in 2017
PCB Total Dry Wt	Ceiling	50 mg/kg	Once	Composite	Once in 2017. See PCB subsection below.
PCB Total Dry Wt	High Quality	10 mg/kg	Once	Composite	Once in 2017. See PCB subsection below.

Other Sludge Requirements	
Sludge Requirements	**Sample Frequency**
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	**Quarterly**
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	**Quarterly**

4.2.1.1 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

4.2.1.2 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

4.2.1.3 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

4.2.1.4 Sludge Which Exceeds the High Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high quality limit for any parameter. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. The formula to be used for calculating cumulative loading is as follows:

[(Pollutant concentration (mg/kg) x dry tons applied/ac) ÷ 500] + previous loading (lbs/acre) = cumulative lbs pollutant per acre

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

4.2.1.5 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2017**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

4.2.1.6 Lists 1, 2, 3, and 4

List 1 **TOTAL SOLIDS AND METALS** See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters. The following requirements shall be met prior to land application of sludge.
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)
Radium-226, pCi/g (dry weight)

List 2 **NUTRIENTS** See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH4-N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3
PATHOGEN CONTROL FOR CLASS B SLUDGE

The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.

The following requirements shall be met prior to land application of sludge.

Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent Process	

***** The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.

List 4
VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O_2/hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

4.2.1.7 Daily Land Application Log

Daily Land Application Log		
Discharge Monitoring Requirements and Limitations The permittee shall maintain a daily land application log for biosolids land applied each day when land application occurs. The following minimum records must be kept, in addition to all analytical results for the biosolids land applied. The log book records shall form the basis for the annual land application report requirements**.**		
Parameters	**Units**	**Sample Frequency**
DNR Site Number(s)	Number	Daily as used
Outfall number applied	Number	Daily as used
Acres applied	Acres	Daily as used
Amount applied	As appropriate * /day	Daily as used
Application rate per acre	unit */acre	Daily as used
Nitrogen applied per acre	lb/acre	Daily as used
Method of Application	Injection, Incorporation, or surface applied	Daily as used

*gallons, cubic yards, dry US Tons or dry Metric Tons

5 Schedules

5.1 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The permittee shall comply with the WQBELs for Phosphorus as specified. No later than 30 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification requirement.

Required Action	Due Date
Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by June 30, 2020. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than June 30, 2020 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report. If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by June 30, 2020 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet WQBELs', 'Complete Construction', 'Achieve Compliance'). STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than December 31, 2024.	12/31/2019
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final phosphorus WQBELs, the submittal shall include a preliminary engineering design report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan. If water quality trading will be undertaken, the plan must state that trading will be pursued.	06/30/2020
Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final	09/30/2020

phosphorus WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code. If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2020
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.) Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2021
Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	03/31/2022
Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	03/31/2023
Construction Upgrade Progress Report #2: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	03/31/2024
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	11/30/2024
Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	12/31/2024

5.2 Mercury Pollutant Minimization Program

The permittee shall implement the approved pollutant minimization program as defind in s. NR 106.145(7), Wis. Adm. Code.

Required Action	Due Date
Annual Mercury Progress Report: The permittee shall submit to the Department an annual mercury progress report to summarize and evaluate mercury monitoring data and other relevant information collected to document background and effluent levels of mercury, including an analysis of trends in monthly and annual total effleunt mercury concentrations.The report shall also indicate which mercury pollutant minimization activities or activities outlined in the approved PMP have been implemented. The first annual report shall be due on the date specified and shall cover PMP activities conducted between January 1, 2016 and December 31, 2016.	02/28/2017
Annual Mercury Progress Report #2: Submit the second annual mercury status report on the progress of the PMP covering PMP activities conducted between January 1, 2017 - December 31, 2017.	02/28/2018
Annual Mercury Progress Report #3: Submit the third annual mercury status report on the progress of the PMP covering PMP activities conducted between January 1, 2018 - December 31, 2018.	02/28/2019
Annual Mercury Progress Report #4: Submit the fourth annual mercury status report on the progress of the PMP covering PMP activities conducted between January 1, 2019 - December 31, 2019.	02/28/2020
Final Mercury Report: Submit a final report documenting the success in reducing mercury concentrations in the effluent, as well as the anticipated future reduction in mercury sources and mercury effluent concentrations. The report shall summarize mercury pollutant minimization activities that have been implemented during the current permit term and state which, if any, pollutant minimization activities from the approved pollutant minimization plan were not pursued and why. The report shall include analysis of trends in monthly and annual total effluent mercury concentrations based on mercury sampling during the current permit term. Note: If the permittee wishes to apply for an alternative mercury effluent limitation in the next permit, that application is due with the application for permit reissuance 6 months prior to permit expiration. The permittee should submit an updated PMP plan as part of that application.	04/30/2020
Annual Mercury Reports after Permit Expiration: In the event that this permit is not reissued on time, the permittee shall continue to submit annual mercury reports by February 28th each year, covering pollutant minimization activites implemented and mercury concentration trends.	

5.3 CMOM (Capacity, Management, Operation and Maintenance) Program Development

Required Action	Due Date
Complete Program Development: Complete development of CMOM Program by August 1, 2016. See CMOM requirements in the Standard Requirements section.	08/01/2016

6 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

6.1 Reporting and Monitoring Requirements

6.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a principal executive officer, a ranking elected official or other duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

6.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

6.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

6.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.

- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.

- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD_5 and Total Suspended Solids shall be considered to be limits of quantitation

- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a 0 (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

6.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

A separate CMAR certification document, that is not part of the electronic report form, shall be mailed to the Department at the time of electronic submittal of the CMAR. The CMAR certification shall be signed and submitted by an authorized representative of the permittee. The certification shall be submitted by mail. The certification shall verify the electronic report is complete, accurate and contains information from the owner's treatment works.

6.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

6.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

6.2 System Operating Requirements

6.2.1 Noncompliance Reporting

Sanitary sewer overflows and sewage treatment facility overflows shall be reported according to the 'Sanitary Sewer Overflows and Sewage Treatment Facility Overflows' section of this permit.

The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:

- any noncompliance which may endanger health or the environment;
- any violation of an effluent limitation resulting from a bypass;
- any violation of an effluent limitation resulting from an upset; and
- any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

A scheduled bypass approved by the Department under the 'Scheduled Bypass' section of this permit shall not be subject to the reporting required under this section.

NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit. **The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill**. **To report a hazardous substance spill, call DNR's 24-hour HOTLINE at 1-800-943-0003.**

6.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

6.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-536, Wis. Adm. Code.

6.2.4 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

6.2.5 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;

- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

6.2.6 Bypass

This condition applies only to bypassing at a sewage treatment facility that is not a scheduled bypass, approved blending as a specific condition of this permit, a sewage treatment facility overflow or a controlled diversion as provided in the sections titled 'Scheduled Bypass', 'Blending' (if approved), 'SSO's and Sewage Treatment Facility Overflows' and 'Controlled Diversions' of this permit. Any other bypass at the sewage treatment facility is prohibited and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats. The Department may approve a bypass if the permittee demonstrates all the following conditions apply:

- The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance. When evaluating feasibility of alternatives, the department may consider factors such as technical achievability, costs and affordability of implementation and risks to public health, the environment and, where the permittee is a municipality, the welfare of the community served; and
- The bypass was reported in accordance with the Noncompliance Reporting section of this permit.

6.2.7 Scheduled Bypass

Whenever the permittee anticipates the need to bypass for purposes of efficient operations and maintenance and the permittee may not meet the conditions for controlled diversions in the 'Controlled Diversions' section of this permit, the permittee shall obtain prior written approval from the Department for the scheduled bypass. A permittee's written request for Department approval of a scheduled bypass shall demonstrate that the conditions for bypassing specified in the above section titled 'Bypass' are met and include the proposed date and reason for the bypass, estimated volume and duration of the bypass, alternatives to bypassing and measures to mitigate environmental harm caused by the bypass. The department may require the permittee to provide public notification for a scheduled bypass if it is determined there is significant public interest in the proposed action and may recommend mitigation measures to minimize the impact of such bypass.

6.2.8 Controlled Diversions

Controlled diversions are allowed only when necessary for essential maintenance to assure efficient operation. Sewage treatment facilities that have multiple treatment units to treat variable or seasonal loading conditions may shut down redundant treatment units when necessary for efficient operation. The following requirements shall be met during controlled diversions:

- Effluent from the sewage treatment facility shall meet the effluent limitations established in the permit. Wastewater that is diverted around a treatment unit or treatment process during a controlled diversion shall be recombined with wastewater that is not diverted prior to the effluent sampling location and prior to effluent discharge;
- A controlled diversion does not include blending as defined in s. NR 210.03(2e), Wis. Adm. Code, and as may only be approved under s. NR 210.12. A controlled diversion may not occur during periods of excessive flow or other abnormal wastewater characteristics;
- A controlled diversion may not result in a wastewater treatment facility overflow; and

- All instances of controlled diversions shall be documented in sewage treatment facility records and such records shall be available to the department on request.

6.2.9 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. The wastewater treatment facility shall be under the direct supervision of a state certified operator as required in s. NR 108.06(2), Wis. Adm. Code. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

6.3 Sewage Collection Systems

6.3.1 Sanitary Sewage Overflows and Sewage Treatment Facility Overflows

6.3.1.1 Overflows Prohibited

Any overflow or discharge of wastewater from the sewage collection system or at the sewage treatment facility, other than from permitted outfalls, is prohibited. The permittee shall provide information on whether any of the following conditions existed when an overflow occurred:

- The sanitary sewer overflow or sewage treatment facility overflow was unavoidable to prevent loss of life, personal injury or severe property damage;
- There were no feasible alternatives to the sanitary sewer overflow or sewage treatment facility overflow such as the use of auxiliary treatment facilities or adequate back-up equipment, retention of untreated wastes, reduction of inflow and infiltration, or preventative maintenance activities;
- The sanitary sewer overflow or the sewage treatment facility overflow was caused by unusual or severe weather related conditions such as large or successive precipitation events, snowmelt, saturated soil conditions, or severe weather occurring in the area served by the sewage collection system or sewage treatment facility; and
- The sanitary sewer overflow or the sewage treatment facility overflow was unintentional, temporary, and caused by an accident or other factors beyond the reasonable control of the permittee.

6.3.1.2 Permittee Response to Overflows

Whenever a sanitary sewer overflow or sewage treatment facility overflow occurs, the permittee shall take all feasible steps to control or limit the volume of untreated or partially treated wastewater discharged, and terminate the discharge as soon as practicable. Remedial actions, including those in NR 210.21 (3), Wis. Adm. Code, shall be implemented consistent with an emergency response plan developed under the CMOM program.

6.3.1.3 Permittee Reporting

Permittees shall report all sanitary sewer overflows and sewage treatment overflows as follows:

- The permittee shall notify the department by telephone, fax or email as soon as practicable, but no later than 24 hours from the time the permittee becomes aware of the overflow;
- The permittee shall, no later than five days from the time the permittee becomes aware of the overflow, provide to the department the information identified in this paragraph using department form number 3400-184. If an overflow lasts for more than five days, an initial report shall be submitted within 5 days as required in this paragraph and an updated report submitted following cessation of the overflow. At a minimum, the following information shall be included in the report:

◦The date and location of the overflow;
◦The surface water to which the discharge occurred, if any;
◦The duration of the overflow and an estimate of the volume of the overflow;
◦A description of the sewer system or treatment facility component from which the discharge occurred such as manhole, lift station, constructed overflow pipe, or crack or other opening in a pipe;
◦The estimated date and time when the overflow began and stopped or will be stopped;
◦The cause or suspected cause of the overflow including, if appropriate, precipitation, runoff conditions, areas of flooding, soil moisture and other relevant information;
◦Steps taken or planned to reduce, eliminate and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
◦A description of the actual or potential for human exposure and contact with the wastewater from the overflow;
◦Steps taken or planned to mitigate the impacts of the overflow and a schedule of major milestones for those steps;
◦To the extent known at the time of reporting, the number and location of building backups caused by excessive flow or other hydraulic constraints in the sewage collection system that occurred concurrently with the sanitary sewer overflow and that were within the same area of the sewage collection system as the sanitary sewer overflow; and
◦The reason the overflow occurred or explanation of other contributing circumstances that resulted in the overflow event. This includes any information available including whether the overflow was unavoidable to prevent loss of life, personal injury, or severe property damage and whether there were feasible alternatives to the overflow.

NOTE: A copy of form 3400-184 for reporting sanitary sewer overflows and sewage treatment facility overflows may be obtained from the department or accessed on the department's web site at http://dnr.wi.gov/topic/wastewater/SSOreport.html. As indicated on the form, additional information may be submitted to supplement the information required by the form.

- The permittee shall identify each specific location and each day on which a sanitary sewer overflow or sewage treatment facility overflow occurs as a discrete sanitary sewer overflow or sewage treatment facility overflow occurrence. An occurrence may be more than one day if the circumstances causing the sanitary sewer overflow or sewage treatment facility overflow results in a discharge duration of greater than 24 hours. If there is a stop and restart of the overflow at the same location within 24 hours and the overflow is caused by the same circumstance, it may be reported as one occurrence. Sanitary sewer overflow occurrences at a specific location that are separated by more than 24 hours shall be reported as separate occurrences; and
- A permittee that is required to submit wastewater discharge monitoring reports under NR 205.07 (1) (r) shall also report all sanitary sewer overflows and sewage treatment facility overflows on that report.

6.3.1.4 Public Notification

The permittee shall notify the public of any sanitary sewer and sewage treatment facility overflows consistent with its emergency response plan required under the CMOM (Capacity, Management, Operation and Maintenance) section of this permit and s. NR 210.23 (4) (f), Wis. Adm. Code. Such public notification shall occur promptly following any overflow event using the most effective and efficient communications available in the community. At minimum, a daily newspaper of general circulation in the county(s) and municipality whose waters may be affected by the overflow shall be notified by written or electronic communication.

6.3.2 Capacity, Management, Operation and Maintenance (CMOM) Program

- The permittee shall by August 1, 2016 submit to the Department verification that a CMOM program for the sewage collection system has been developed which is consistent with the requirements of NR 210.23, Wis. Adm. Code.
- The permittee shall develop and maintain written documentation of the CMOM program components, and shall verify each year with the submittal of the Compliance Maintenance Annual Report required under the 'Compliance Maintenance Annual Reports' section of this permit that the CMOM program documentation is current and meets the requirements in NR 210.23, Wis. Adm. Code.
- The permittee shall implement a CMOM program consistent with the permittee's program documentation and with the requirements of NR 210.23, Wis. Adm. Code.
- The permittee shall annually conduct a self-audit of activities to ensure the CMOM program is being implemented as necessary to meet the requirements contained in the CMOM program documentation.
- The permittee shall make available CMOM program documentation, a record of implementation activities and the results of the self-audit to the Department on request.

6.3.3 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility.
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility.
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste.

6.4 Surface Water Requirements

6.4.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

6.4.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

6.4.3 Effluent Temperature Requirements

Weekly Average Temperature – The permittee shall use the following formula for calculating effluent results to determine compliance with the weekly average temperature limit (as applicable): Weekly Average Temperature = the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock. 'Cold Shock' means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state.

6.4.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

6.4.5 Surface Water Uses and Criteria

In accordance with NR 102.04, Wis. Adm. Code, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.

b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.

c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.

d) Substances in concentrations or in combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

6.4.6 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD_5 and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

6.4.7 Fecal Coliforms

The limit for fecal coliforms shall be expressed as a monthly geometric mean.

6.4.8 Whole Effluent Toxicity (WET) Monitoring Requirements

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, 2nd Edition" (PUB-WT-797*, November 2004) as required by NR 219.04, Table A, Wis. Adm. Code). All of the WET tests required in this permit, including any required retests, shall be conducted on the *Ceriodaphnia dubia* and fathead minnow species. Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

6.4.9 Whole Effluent Toxicity (WET) Identification and Reduction

This standard requirement applies only to acute or chronic WET monitoring that is not accompanied by a WET limit. Within 60 days of a retest which showed positive results, the permittee shall submit a written report to the Biomonitoring Coordinator, Bureau of Water Quality, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921, which details the following:

- A description of actions the permittee has taken or will take to remove toxicity and to prevent the recurrence of toxicity;

- A description of toxicity reduction evaluation (TRE) investigations that have been or will be done to identify potential sources of toxicity, including some or all of the following actions:

  (a) Evaluate the performance of the treatment system to identify deficiencies contributing to effluent toxicity (e.g., operational problems, chemical additives, incomplete treatment)
  (b) Identify the compound(s) causing toxicity
  (c) Trace the compound(s) causing toxicity to their sources (e.g., industrial, commercial, domestic)
  (d) Evaluate, select, and implement methods or technologies to control effluent toxicity (e.g., in-plant or pretreatment controls, source reduction or removal)

- Where corrective actions including a TRE have not been completed, an expeditious schedule under which corrective actions will be implemented;

- If no actions have been taken, the reason for not taking action.

The permittee may also request approval from the Department to postpone additional retests in order to investigate the source(s) of toxicity. Postponed retests must be completed after toxicity is believed to have been removed.

6.5 Land Application Requirements

6.5.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

6.5.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

6.5.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

6.5.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

6.5.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:
Water Extractable Phosphorus (% of Total P) =
[Water Extractable Phosphorus (mg/kg, dry wt) ÷ Total Phosphorus (mg/kg, dry wt)] x 100

6.5.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined as follows.

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code.

- EPA Method 1668 may be used to test for all PCB congeners. If this method is employed, all PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported. **Note**: It is recognized that a number of the congeners will co-elute with others, so there will not be 209 results to sum.
- EPA Method 8082A shall be used for PCB-Aroclor analysis and may be used for congener specific analysis as well. If congener specific analysis is performed using Method 8082A, the list of congeners tested shall include at least congener numbers 5, 18, 31, 44, 52, 66, 87, 101, 110, 138, 141, 151, 153, 170, 180, 183, 187, and 206 plus any other additional congeners which might be reasonably expected to occur in the particular sample. For either type of analysis, the sample shall be extracted using the Soxhlet extraction (EPA Method 3540C) (or the Soxhlet Dean-Stark modification) or the pressurized fluid extraction (EPA Method 3545A). If Aroclor analysis is performed using Method 8082A, clean up steps

of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.11 mg/kg as possible. Reporting protocol, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If congener specific analysis is done using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.003 mg/kg as possible for each congener. If the aforementioned limits of detection cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified indicating the presence of an interference. The lab conducting the analysis shall perform as many of the following methods as necessary to remove interference:

3620C – Florisil	3611B - Alumina
3640A - Gel Permeation	3660B - Sulfur Clean Up (using copper shot instead of powder)
3630C - Silica Gel	3665A - Sulfuric Acid Clean Up

6.5.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

6.5.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

6.5.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

6.5.11 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

6.5.12 Class B Sludge: Fecal Coliform Limitation

Compliance with the fecal coliform limitation for Class B sludge shall be demonstrated by calculating the geometric mean of at least 7 separate samples. (Note that a Total Solids analysis must be done on each sample). The geometric mean shall be less than 2,000,000 MPN or CFU/g TS. Calculation of the geometric mean can be done using one of the following 2 methods.

Method 1:

Geometric Mean = $(X_1 \times X_2 \times X_3 \ldots \times X_n)^{1/n}$

Where X = Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Method 2:

Geometric Mean = $\text{antilog}[(X_1 + X_2 + X_3 \ldots + X_n) \div n]$

Where X = $\log_{10}$ of Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Example for Method 2

Sample Number	Coliform Density of Sludge Sample	$\log_{10}$
1	6.0×10^5	5.78
2	4.2×10^6	6.62
3	1.6×10^6	6.20
4	9.0×10^5	5.95
5	4.0×10^5	5.60
6	1.0×10^6	6.00
7	5.1×10^5	5.71

The geometric mean for the seven samples is determined by averaging the $\log_{10}$ values of the coliform density and taking the antilog of that value.

$(5.78 + 6.62 + 6.20 + 5.95 + 5.60 + 6.00 + 5.71) \div 7 = 5.98$

The antilog of $5.98 = 9.5 \times 10^5$

6.5.13 Class B Sludge - Vector Control: Injection

No significant amount of the sewage sludge shall be present on the land surface within one hour after the sludge is injected.

6.5.14 Land Application of Sludge Which Contains Elevated Levels of Radium-226

When contributory water supplies exceed 2 pci per liter of Radium 226, monitoring for Radium 226 in sludge is required. Sludge containing Radium 226 shall be land applied in accordance with the requirements in s. NR 204.07(3)(n), Wis. Adm. Code.

7 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Operational Evaluation Report	December 31, 2019	13
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Preliminary Compliance Alternatives Plan	June 30, 2020	13
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Compliance Alternatives Plan	September 30, 2020	13
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Progress Report on Plans & Specifications	December 31, 2020	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Final Plans and Specifications	December 31, 2021	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Treatment Plant Upgrade to Meet WQBELs	March 31, 2022	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Construction Upgrade Progress Report #1	March 31, 2023	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Construction Upgrade Progress Report #2	March 31, 2024	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Complete Construction	November 30, 2024	14
Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus - Achieve Compliance	December 31, 2024	14
Mercury Pollutant Minimization Program -Annual Mercury Progress Report	February 28, 2017	15
Mercury Pollutant Minimization Program -Annual Mercury Progress Report #2	February 28, 2018	15
Mercury Pollutant Minimization Program -Annual Mercury Progress Report #3	February 28, 2019	15
Mercury Pollutant Minimization Program -Annual Mercury Progress Report #4	February 28, 2020	15
Mercury Pollutant Minimization Program -Final Mercury Report	April 30, 2020	15
Mercury Pollutant Minimization Program -Annual Mercury Reports after Permit Expiration	See Permit	15
CMOM (Capacity, Management, Operation and Maintenance) Program Development -Complete Program Development	August 1, 2016	15
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	17
General Sludge Management Form 3400-48	prior to any significant sludge management changes	25

Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	25
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	26
Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	26
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	16

Report forms shall be submitted electronically in accordance with the reporting requirements herein. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to:
Southeast Region, 2300 N Dr ML King Drive, Milwaukee, WI 53212

State of Wisconsin
Department of Natural Resources
Bureau of Watershed Management
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Watershed Adaptive Management Request

Form 3200-139 (R 01/12)

Notice: Pursuant to s. NR 217.18, Wis. Adm. Code, this form must be completed and submitted to the Department at the time of the reissuance of an existing WPDES (Wisconsin pollutant discharge elimination system) permit to request adaptive management for phosphorus water quality based effluent limits (WQBEL).Failure to provide all requested information may result in denial of your request. Personal information collected will be used for administrative purposes and may be provided to requestors to the extent required by Wisconsin Open Records law [ss. 19.31-19.39, Wis. Stats.].

Type of Request:

- (●) **This is the formal adaptive management request as required in s. NR 217.18(2)**
- ( ) **This is a preliminary adaptive management request** (to be submitted as part of facility planning.)

Facility and Permit Information

Facility Name	WPDES Permit No.
Western Racine County Sewerage District	WI- 0 0 2 8 7 5 4

Facility Address	City	State	ZIP Code
1020 North River Road	Rochester	WI	53167

Receiving Water: Fox River

Owner Contact Information

Last Name	First	MI	Phone No. (incl. area code)
Bratz	Jeff		(262) 534-6237

Street Address	FAX Number
1020 North River Road	

City	State	ZIP Code	E-mail address
Rochester	WI	53167	wrcsd@tds.net

Facility Information

Required for AM Request	Wis. Administrative code Reference	Conclusion	Evidence/Source of information (attach as needed)
1. NPS contribute at least 50% of total P contribution	s. NR 217.18(2)(b)	(●) NPS contributes at least 50% ( ) NPS DOES **NOT** contribute at least 50%	PRESTO
2. WQBEL Requires Filtration	s. NR 217.18(2)(c)	(●) Filtration required ( ) Filtration **NOT** required	Preliminary Compliance Alternatives Plan (PCAP)
3. AM Plan	s. NR 217.18(2)(d)	(●) Plan is Included - Page 3 ( ) Plan is NOT Included *For a preliminary adaptive management request, AM plan not required*	WRCSD Adaptive Management Plan (AMP)

Facility Operation and Performance

1. **Current P removal capability** – If the facility is currently required by a WPDES permit to monitor effluent phosphorus (P) provide a summary of the influent and effluent annual average P concentrations for each of the past three (3) years. If permit required P data is not available, the applicant should provide any other P data that may be applicable and available. If no data is available, the Department may estimate the P effluent concentration by based on data from other similar facilities

   See PCAP for Average Phosphorus Concentrations 2017-2019:
   Influent: 6.4 mg/L
   Effluent: 0.6 mg/L

2. **Facility Operation** - Provide a summary description of overall facility operation. If not a continuously discharging facility, describe storage procedures and the time periods when effluent discharge occurs

Raw wastewater flows from the District interceptor to the influent screw pumps. The facility also accepts hauled waste at a septage receiving station located on-site. Waste delivered to the septage receiving station flows into a nearby manhole where it combines with raw wastewater prior to being pumped to preliminary treatment. Preliminary treatment includes mechanical bar screening and grit removal. The wastewater flow then proceeds through a Parshall flume prior to flowing into the influent splitter structure.

In addition to the raw wastewater, the influent splitter structure also receives return activated sludge (RAS) and process return flows (PRF). This combined mixed liquor (ML) wastewater flows via gravity to the oxidation ditches for aeration and biological treatment. Chemical addition for phosphorus removal is added upstream of the oxidation ditches. The activated sludge ML is settled in final clarifiers, where the underflow is returned to the influent splitter structure via RAS pumping stations. A portion of this underflow is wasted to a dissolved air flotation thickener (DAFT). The waste activated sludge (WAS) is concentrated in the DAFT prior to being pumped to the sludge storage tank.

Final clarifier effluent flows through an effluent Parshall flume and undergoes ultraviolet (UV) disinfection. Following disinfection and automatic sampling, effluent is discharged through a 36-inch pipe to the Fox River.

3. **Previous Studies** - Reference or attach any facility planning or evaluation study that evaluated facility performance capabilities Note - Only include studies that are recent, within 5 years, or otherwise applicable for the evaluation of the existing facility and current conditions).

Preliminary Compliance Alternatives Plan only study within past five years. A new Facilities Plan is currently under development, with last Facilities Plan completed in 2002.

Adaptive Management Plan (s. NR 217.18(d))9.25

This section should summarize the Adaptive Management Plan for internal and external review. A complete Adaptive Management Plan should be attached. Note: If this is a preliminary adaptive management request, this section is not required.

Watershed	Percent Contribution of Applicant Discharge
Fox River	3%

Action Area (include map)

HUC-12s including: 071200060301; 071200060302; 071200060303; 071200060304; 071200060704; 071200060705; and 2.3 sq. miles of 071200060707

Watershed Characteristics and Timeline Justification

NR 217 median growing season concentration of Fox River upstream of WRCSD is 0.098 mg/L (August 2015-July 2020). 145 sq. miles of Action Area. Target is to complete within two terms.

Key Proposed Actions

Nonpoint source reductions: cover crops, reduced tillage; grassed waterways.

Point source reductions: additional chemical phosphorus removal, enhanced biological phosphorus removal.

Key Goals and Measures for Determining Effectiveness

Two key goals and measures:

1) Complete reduction target of 396 lbs/year by end of second permit term through registered best management practices and point-source reductions. Complete reduction target of at least 200 lbs/year by end of first permit term. Adhere to six-

month average effluent phosphorus concentrations of 0.6 mg/L throughout first permit term and 0.5 mg/L throughout second permit term.
2) Measure phosphorus concentrations in Fox River, hope to meet 0.100 mg/L WQC, and re-evalate number of practices in year 5 of first permit term if Fox River phosphorus concentrations do not show downward trend toward or below WQC.

Partner(s)
Village of Rochester, Village of Waterford, Waterford Sanitary District, Land and Water Conservation Departments (Racine and Waukesha Counties), Watershed Protection Committee of Racine County, Southeastern Wisconsin Fox River Commission, ATI, USDA, DNR

Funding Sources
WRCSD, possibly SEWFRC

Adaptive Management Request and Certification

Based on the information provided, I am requesting the Watershed Adaptive Management option to achieve compliance with phosphorus water quality standards in accordance with s. NR 217.19, Wis. Adm. Code.
I certify that the information provided with this request is true, accurate and complete to the best of my knowledge.

Print or type name of person submitting request*	Title
Vince Klemko	Vice President
Signature of Official	Date Signed
Vincent G. Klemko	9-29-2020