BOARD OF PUBLIC WORKS

City of Kaukauna
Council Chambers
Municipal Services Building
144 W. Second Street, Kaukauna

Monday, October 16, 2023 at 6:00 PM

AGENDA

In-Person

1. Correspondence.

2. Discussion Topics.
   a. Grignon Park Shelter Update - KHS Civic Engagement.
   b. Kaukauna Youth Baseball (KYB) request to construct batting cages at Horseshoe Park and update on other projects.
   c. 2022 Annual Clearwater Sustainability Program Report.
   d. 2023 TMDL Implementation Plan Updates “Stormwater Management Plan of Action”.
   e. Update on Waste Ordinance Implementation Plans.
   f. Mini Golf Update.
   g. Public Works Update.

3. Adjourn.

NOTICES

Notice is hereby given that a majority of the City Council will be present at the meeting of the Board of Public Works meeting scheduled for Monday, October 16, 2023 at 6:00 P.M. to gather information about a subject over which they have decision making responsibility.

IF REQUESTED THREE (3) DAYS PRIOR TO THE MEETING, A SIGN LANGUAGE INTERPRETER WILL BE MADE AVAILABLE AT NO CHARGE.

MEMO

DEPARTMENT OF PUBLIC WORKS

To: Board of Public Works

From: Jake Van Gompel

Date: 10/16/23

Re: Batting cage addition to Horseshoe Park

Discussion:

Kaukauna Youth Baseball has approached the city of the desire to have a second batting cage added to Horseshoe Park this fall. The new cage would be adjacent to the existing and be of the same size. This will help with warming multiple teams up before tournaments and allow more time of batting practice when both fields are utilized for practices.

The excavation and concrete work will be completed by Jacobs Concrete, volunteers from Kaukauna Youth Baseball will be constructing the cage, and city staff would complete restoration. Kaukauna Youth Baseball will be contracting and funding all the project besides the material and labor needed for the restoration.

The city has discussed with KYB that there is a main storm interceptor that runs below the proposed batting cage and the city holds no responsibility for replacement of said batting cage if the city needs to remove the cage to excavate for repairs or replacement of the interceptor.

Recommended action:

Approve Kaukauna Youth Baseball to contract and construct a second batting cage adjacent to the existing at Horseshoe Park with the help of labor and material from city staff to complete restoration of the work site.

Jake Van Gompel
Street Superintendent

4-0425
G.I.
4-043202
411.34
135
4-043203
CSM 4980
213.08

City of Kaukauna
Board of Public Works **October 16, 2022**
JB/engr dept

Agenda Item # 2c
2022 Annual Clearwater Sustainability Program Report to HOVMSD

Background

Member communities of the HOVMSD (Kaukauna, Kimberly, Little Chute, Combined Locks, and the Darboy Sanitary District) are required to file an annual Clearwater Sustainability Program report to the HOVMSD.

The City of Kaukauna's annual report is attached.

The intent of the annual report is to update the HOVMSD on the community's efforts toward maintaining a sustainable level of inflow and infiltration.

The governing body of each HOVMSD member community must review each year's annual report. A resolution stating that the governing body has reviewed and accepted the annual report is on the Common Council agenda tomorrow night.

Recommended Action

Accept and place on file the City of Kaukauna 2022 Annual Clearwater Sustainability Program Report to HOVMSD.

Clearwater Sustainability Program

2022 Annual Report to HOVMSD

October 16, 2023

Submitted By:
Jeffrey Bodoh
City of Kaukauna Engineering

Clearwater Sustainability Program
2022 Annual Report

CONTENTS

1) CMAR

2) WDNR Response

3) Construction and Non-Construction I&I Reduction Projects

4) Local Ordinance Changes

5) CMOM Updates and Changes

Section 1: 2022 CMAR

The City of Kaukauna submits a Compliance Maintenance Annual Report to Wisconsin DNR. Per Wisconsin DNR: Chapter NR 208, Wis. Adm. Code is more commonly known as the Compliance Maintenance Annual Report (CMAR) rule for publicly and privately owned domestic wastewater treatment works. The CMAR is a self-evaluation tool that promotes the owner's awareness and responsibility for wastewater collection and treatment needs, measures the performance of a wastewater treatment works during a calendar year, and assesses its level of compliance with permit requirements.

This report provides the following information to help:

- Describes the management and physical condition of the wastewater treatment works during the previous calendar year.
- Assesses system performance and wastewater maintenance activities.
- Evaluates compliance with WPDES permit requirements
- Provides an objective analysis to determine whether a more detailed evaluation of the wastewater facility is needed.
- Identifies proposed actions necessary to maintain regulatory compliance.

City of Kaukauna has achieved an overall grade of “A” in 2022, which requires no formal corrective actions. A Resolution acknowledging that the report is complete and reviewed is required and was adopted by the Common Council. Recommended collection system response and an overall comment/action items from the Council acknowledging the need to continue improvements to City sanitary sewer collection system was approved. A copy of the 2022 CMAR is attached to this section.

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

Financial Management

1. Provider of Financial Information

Name: William Van Rossum

Telephone: (920) 766-6312 (XXX) XXX-XXXX

E-Mail Address (optional): wvanrossum@kaukauna-wi.org

2. Treatment Works Operating Revenues

2.1 Are User Charges or other revenues sufficient to cover O&M expenses for your wastewater treatment plant AND/OR collection system ?

- ● Yes (0 points) ☐☐
- o No (40 points)

If No, please explain:

2.2 When was the User Charge System or other revenue source(s) last reviewed and/or revised?

Year: 2022

- ● 0-2 years ago (0 points) ☐☐
- o 3 or more years ago (20 points)☐☐
- o N/A (private facility)

2.3 Did you have a special account (e.g., CWFP required segregated Replacement Fund, etc.) or financial resources available for repairing or replacing equipment for your wastewater treatment plant and/or collection system?

- ● Yes (0 points)
- o No (40 points)

0

REPLACEMENT FUNDS [PUBLIC MUNICIPAL FACILITIES SHALL COMPLETE QUESTION 3]

3. Equipment Replacement Funds

3.1 When was the Equipment Replacement Fund last reviewed and/or revised?

Year: 2022

- ● 1-2 years ago (0 points)☐☐
- o 3 or more years ago (20 points)☐☐
- o N/A

If N/A, please explain:

3.2 Equipment Replacement Fund Activity

3.2.1 Ending Balance Reported on Last Year's CMAR		$ 6,192,743.00
3.2.2 Adjustments - if necessary (e.g. earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.)	-	$ 2,170,202.00
3.2.3 Adjusted January 1st Beginning Balance		$ 4,022,541.00
3.2.4 Additions to Fund (e.g. portion of User Fee, earned interest, etc.)	+	$ 3,702,029.00

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

3.2.5 Subtractions from Fund (e.g., equipment replacement, major repairs - use description box 3.2.6.1 below*) - $ 3,693,697.00

3.2.6 Ending Balance as of December 31st for CMAR Reporting Year $ 4,030,873.00

All Sources: This ending balance should include all Equipment Replacement Funds whether held in a bank account(s), certificate(s) of deposit, etc.

3.2.6.1 Indicate adjustments, equipment purchases, and/or major repairs from 3.2.5 above.

2022 Sanitary Sewer Budget, shows 2022 expenses. Detailed ledger is available upon request.

3.3 What amount should be in your Replacement Fund? $ 1.00

0

Please note: If you had a CWFP loan, this amount was originally based on the Financial Assistance Agreement (FAA) and should be regularly updated as needed. Further calculation instructions and an example can be found by clicking the SectionInstructions link under Info header in the left-side menu.

3.3.1 Is the December 31 Ending Balance in your Replacement Fund above, (#3.2.6) equal to, or greater than the amount that should be in it (#3.3)?

- ● Yes
- o No

If No, please explain.

4. Future Planning

4.1 During the next ten years, will you be involved in formal planning for upgrading, rehabilitating, or new construction of your treatment facility or collection system?

- ● Yes - If Yes, please provide major project information, if not already listed below.☐☐
- o No

Project #	Project Description	Estimated Cost	Approximate Construction Year
1	Desnoyer Street Area Utility Relay	$1,250,000	2025
2	Kenneth Ave/3rd Street Area	$600,000	2024
3	Manhole Lining/Repair Project	$50,000	2023
4	Reaume Ave Area	$950,000	2023
5	Presidential Streets Phase 1 of 2	$700,000	2025
6	Presidential Streets Phase 2 of 2	$800,000	2026
7	Lift Station Force Main Upgrades	$200,000	2023
8	River Street Sanitary Sewer and Easement CIPP	$150,000	2024
9	Thilmany Interceptor	$90,000	2024
10	CE Lift Station Interceptor to KHS	$400,000	2023

5. Financial Management General Comments

None

ENERGY EFFICIENCY AND USE

6. Collection System

6.1 Energy Usage

6.1.1 Enter the monthly energy usage from the different energy sources:

COLLECTION SYSTEM PUMPAGE: Total Power Consumed

Number of Municipally Owned Pump/Lift Stations: 7

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

	Electricity Consumed (kWh)	Natural Gas Consumed (therms)
January	10,093	
February	10,178	
March	9,632	
April	12,020	
May	11,536	
June	11,548	
July	12,979	
August	12,372	
September	12,543	
October	12,369	
November	12,242	
December	12,376	
Total	**139,888**	**0**
Average	**11,657**	**0**

6.1.2 Comments:

The electric usage was higher than 2021 due to a change of electric meters.
2021 had 119,227 total and 11,657 average.

6.2 Energy Related Processes and Equipment

6.2.1 Indicate equipment and practices utilized at your pump/lift stations (Check all that apply):

- ☐ Comminution or Screening
- ☐ Extended Shaft Pumps
- ☒ Flow Metering and Recording
- ☐ Pneumatic Pumping
- ☐ SCADA System
- ☒ Self-Priming Pumps
- ☒ Submersible Pumps
- ☐ Variable Speed Drives
- ☐ Other:

6.2.2 Comments:

6.3 Has an Energy Study been performed for your pump/lift stations?

- ● No
- ○ Yes

Year:

By Whom:

Describe and Comment:

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

6.4 Future Energy Related Equipment

6.4.1 What energy efficient equipment or practices do you have planned for the future for your pump/lift stations?

During systematic upgrades to lift stations, energy efficiency will be a determining factor for equipment.

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	**A**

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

Sanitary Sewer Collection Systems

1. Capacity, Management, Operation, and Maintenance (CMOM) Program

1.1 Do you have a CMOM program that is being implemented?

- ● Yes
- o No

If No, explain:

1.2 Do you have a CMOM program that contains all the applicable components and items according to Wisc. Adm Code NR 210.23 (4)?

- ● Yes
- o No (30 points)
- o N/A

If No or N/A, explain:

1.3 Does your CMOM program contain the following components and items? (check the components and items that apply)

☒ Goals [NR 210.23 (4)(a)]

Describe the major goals you had for your collection system last year:

Specific 2022 Numerical Goals and Results are found in Appendix IV of the city CMOM. A summary is attached.
Overall System goals:
1)No sanitary sewer overflows
2)No basement backups due to lack of mainline maintenance
3)No infrastructure failure(street or sewer collapse) due to lack of maintenance
4)Maintain capacity for community and industrial growthwithin the City and HOVMSD interceptor
5)Review and update City Sewer Use /ordinance and maintain compliance with WIDNR and HOVMSD ordinances
6)Assist HOVMSD in implementation of a FOG control program.
7)Continue to identify and eliminate illegal sump discharges, cross connections, and other illicit connections
8)Design and implement an on going sewer condition evaluation program
9)Maintain an adequate budget to perform necessary maintenance of sewer system
10)Maintain and update records to ensure accurate and eficient data management

Did you accomplish them?

- o Yes
- ● No

If No, explain:

Experienced 1 basement backup in 2022 - related to system maintenance. We believe the change in maintenance schedule for this area will prevent future backups.

☒ Organization [NR 210.23 (4) (b)]☐☐

Does this chapter of your CMOM include:

- ☒ Organizational structure and positions (eg. organizational chart and position descriptions)
- ☒ Internal and external lines of communication responsibilities
- ☒ Person(s) responsible for reporting overflow events to the department and the public

☒ Legal Authority [NR 210.23 (4) (c)]

What is the legally binding document that regulates the use of your sewer system?

Municipal Ordinance-Sewer Use Ordinance

If you have a Sewer Use Ordinance or other similar document, when was it last reviewed and revised? (MM/DD/YYYY) 2022-12-06

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

Does your sewer use ordinance or other legally binding document address the following:
- ☒ Private property inflow and infiltration
- ☒ New sewer and building sewer design, construction, installation, testing and inspection
- ☒ Rehabilitated sewer and lift station installation, testing and inspection
- ☒ Sewage flows satellite system and large private users are monitored and controlled, as necessary
- ☒ Fat, oil and grease control
- ☒ Enforcement procedures for sewer use non-compliance

☒ Operation and Maintenance [NR 210.23 (4) (d)]

Does your operation and maintenance program and equipment include the following:
- ☒ Equipment and replacement part inventories
- ☒ Up-to-date sewer system map
- ☒ A management system (computer database and/or file system) for collection system information for O&M activities, investigation and rehabilitation
- ☒ A description of routine operation and maintenance activities (see question 2 below)
- ☐ Capacity assessment program
- ☒ Basement back assessment and correction
- ☒ Regular O&M training

☒ Design and Performance Provisions [NR 210.23 (4) (e)]☐☐

What standards and procedures are established for the design, construction, and inspection of the sewer collection system, including building sewers and interceptor sewers on private property?
- ☒ State Plumbing Code, DNR NR 110 Standards and/or local Municipal Code Requirements
- ☒ Construction, Inspection, and Testing
- ☐ Others:

0

☒ Overflow Emergency Response Plan [NR 210.23 (4) (f)]☐☐

Does your emergency response capability include:
- ☒ Responsible personnel communication procedures
- ☒ Response order, timing and clean-up
- ☒ Public notification protocols
- ☐ Training
- ☐ Emergency operation protocols and implementation procedures

☒ Annual Self-Auditing of your CMOM Program [NR 210.23 (5)]☐☐

☐ Special Studies Last Year (check only those that apply):
- ☐ Infiltration/Inflow (I/I) Analysis
- ☐ Sewer System Evaluation Survey (SSES)
- ☐ Sewer Evaluation and Capacity Managment Plan (SECAP)
- ☐ Lift Station Evaluation Report
- ☐ Others:

2. Operation and Maintenance

2.1 Did your sanitary sewer collection system maintenance program include the following maintenance activities? Complete all that apply and indicate the amount maintained.

Cleaning	13.58	% of system/year
Root removal	0	% of system/year
Flow monitoring	100	% of system/year
Smoke testing	0	% of system/year

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

Sewer line televising	4.91	% of system/year
Manhole inspections	14.96	% of system/year
Lift station O&M	2	# per L.S./year
Manhole rehabilitation	1.0	% of manholes rehabbed
Mainline rehabilitation	1.2	% of sewer lines rehabbed
Private sewer inspections	1.61	% of system/year
Private sewer I/I removal	2.43	% of private services
River or water crossings	100	% of pipe crossings evaluated or maintained

Please include additional comments about your sanitary sewer collection system below:

3. Performance Indicators

3.1 Provide the following collection system and flow information for the past year.

28.66	Total actual amount of precipitation last year in inches
31.08	Annual average precipitation (for your location)
86	Miles of sanitary sewer
7	Number of lift stations
0	Number of lift station failures
0	Number of sewer pipe failures
1	Number of basement backup occurrences
32	Number of complaints
2.78	Average daily flow in MGD (if available)
4.16	Peak monthly flow in MGD (if available)
11.66	Peak hourly flow in MGD (if available)

3.2 Performance ratios for the past year:

0.00	Lift station failures (failures/year)
0.00	Sewer pipe failures (pipe failures/sewer mile/yr)
0.00	Sanitary sewer overflows (number/sewer mile/yr)
0.01	Basement backups (number/sewer mile)
0.37	Complaints (number/sewer mile)
1.5	Peaking factor ratio (Peak Monthly:Annual Daily Avg)
4.2	Peaking factor ratio (Peak Hourly:Annual Daily Avg)

4. Overflows

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

LIST OF SANITARY SEWER (SSO) AND TREATMENT FACILITY (TFO) OVERFLOWS REPORTED **			
Date	Location	Cause	Estimated Volume
None reported			

** If there were any SSOs or TFOs that are not listed above, please contact the DNR and stop work on this section until corrected.

5. Infiltration / Inflow (I/I)

5.1 Was infiltration/inflow (I/I) significant in your community last year?

- ● Yes
- ○ No

If Yes, please describe:

I&I could be detected at metering stations, specifically after rain events and changes in river level.

5.2 Has infiltration/inflow and resultant high flows affected performance or created problems in your collection system, lift stations, or treatment plant at any time in the past year?

- ○ Yes
- ● No

If Yes, please describe:

5.3 Explain any infiltration/inflow (I/I) changes this year from previous years:

Approximately 5,900 feet of deteriorated clay, concrete, and truss main and approximately 158 service laterals were replaced or rehabilitated as part of the City's rehabilitation projects in 2022. In addition, some temporary manhole improvements were made in the river to reduce inflow.

5.4 What is being done to address infiltration/inflow in your collection system?

The City has systematically replacing the collection system, including main and laterals to the home. Televising and flow monitoring continue to identify priority areas for rehabilitation. Clearwater inspections are performed on a 10 year cycle in all homes and businesses; and also, at time reconstruction projects in each neighborhood. Mini-Storm and storm sewer lateral installations, along with mandatory sump pump connections have also helped decrease I&I cross connections. Additional work on river manholes is scheduled for 2023.

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	**A**

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/30/2023 Reporting For: **2022**

Grading Summary

WPDES No: 0047341

SECTIONS	LETTER GRADE	GRADE POINTS	WEIGHTING FACTORS	SECTION POINTS
Financial	A	4	1	4
Collection	A	4	3	12
TOTALS			**4**	**16**
GRADE POINT AVERAGE (GPA) = 4.00				

Notes:
A = Voluntary Range (Response Optional)
B = Voluntary Range (Response Optional)
C = Recommendation Range (Response Required)
D = Action Range (Response Required)
F = Action Range (Response Required)

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 5/31/2023

Reporting For: **2022**

Resolution or Owner's Statement

Name of Governing Body or Owner: City of Kaukauna

Date of Resolution or Action Taken: 2023-06-06

Resolution Number: 2023-5389

Date of Submittal:

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO SPECIFIC CMAR SECTIONS (Optional for grade A or B. Required for grade C, D, or F):

Financial Management: Grade = A

Collection Systems: Grade = A

(Regardless of grade, response required for Collection Systems if SSOs were reported)

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO THE OVERALL GRADE POINT AVERAGE AND ANY GENERAL COMMENTS

(Optional for G.P.A. greater than or equal to 3.00, required for G.P.A. less than 3.00)

G.P.A. = 4.00

Compliance Maintenance Annual Report

Kaukauna Sewage Collection System

Last Updated: 6/14/2023 Reporting For: **2022**

DNR Response to Resolution or Owner's Statement

Name of Governing Body or Owner: City of Kaukauna

Date of Resolution or Action Taken: 2023-06-06

Resolution Number: 2023-5389

Date of Submittal: 6/14/2023

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO SPECIFIC CMAR SECTIONS (Optional for grade A or B. Required for grade C, D, or F):

Financial Management: Grade = A

Permittee Response:

DNR Response:

Collection Systems: Grade = A

(Regardless of grade, response required for Collection Systems if SSOs were reported)

Permittee Response:

Continued systematic inspection, rehabilitation and replacement of sanitary sewer collection system to achieve zero sanitary sewer overflows and assure capacity of the system for future growth.

DNR Response:

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO THE OVERALL GRADE POINT AVERAGE AND ANY GENERAL COMMENTS

(Optional for G.P.A. greater than or equal to 3.00, required for G.P.A. less than 3.00)

G.P.A. = 4

Permittee Response:

DNR G.P.A. Response:

DNR CMAR Overall Response:

Thank you for submitting the 2022 CMAR on time. The Department is appreciative of all of your efforts to implement your CMOM.

DNR Reviewer: Oumarou, Barti **Phone:** (920) 424-4013

Address: 625 E County Road Y Ste 700, Oshkosh, WI 54901-9731 **Date:** 8/8/2023

RESOLUTION NO. 2023-5389

2022 COMPLIANCE MAINTENANCE ANNUAL REPORT (CMAR) RESOLUTION

WHEREAS, it is a requirement under a Wisconsin Pollutant Discharge Elimination System (WPDES) permit issued by the Department of Natural Resources for the governing body to file a Compliance Maintenance Annual Report (CMAR) for its wastewater collection system under Wisconsin Administrative Code NR 208:

WHEREAS, the governing body has reviewed the Compliance Maintenance Annual Report (CMAR);

WHEREAS, it is necessary to provide recommendations or an action response plan for the Collection Systems CMAR section grades of "C" or less and/or an overall grade point average <3.00, or if a Sanitary Sewer Overflow was reported;

NOW, THEREFORE, BE IT RESOLVED by the Common Council of the City of Kaukauna that the following recommendations or actions will be taken to address or correct problems/deficiencies of the wastewater treatment or collection system as identified in the Compliance Maintenance Annual Report (CMAR):

1) Continue systematic inspection, rehabilitation, and replacement of sanitary sewer collection system to achieve zero sanitary sewer overflows and assure capacity of the system for future growth.

Introduced and adopted this 6th day of June 2023.

APPROVED: _____
Anthony J. Penterman, Mayor

ATTEST: _____
Sally A. Kenney, Clerk

Section 3: Construction and Non-Construction I&I Reduction Projects

2022 Construction Projects

Project 1-22 Concrete Street Paving
This project incorporated the installation of 12 internal manhole chimney seals in newly paved areas, including White Wolf Lane, Gray Squirrel Lane, Red Fox Lane, White Birch Lane and Island Street.

There were also 67 storm sewer laterals installed as part of the paving project.

Project 2-22 Kenneth Avenue Area Utility Relay
This project included a sanitary sewer main and lateral relay on Sullivan Avenue, Hendricks Avenue, Main Avenue, Whitney Street, Sixth Street, Seventh Street, and Eighth Street as well as replacement of sewer in adjacent easements. Approximately 1,076 lineal feet of 12: sanitary sewer, 444 lineal feet of 10" sanitary sewer, 3,928 lineal feet of 8" sanitary sewer, 9,467 lineal feet of private lateral pipe (121 homes) and 194 vertical feet of sanitary manholes replaced the existing deteriorated clay pipe sanitary sewer system. A map of the project area is attached to this section.

Project 12-22 Grignon Stream Restoration Project
This project included replacing the sanitary sewer that runs through Grignon Park, along and crossing under a stream corridor. Approximately 1,310 feet of 12" sanitary sewer and 82 vertical feet of sanitary manholes replaced the existing deteriorated pipes and manholes.

2022 Non-Construction Projects

On-going Clearwater (Illicit Cross Connection) Inspections
In addition to inspection of private laterals by City staff in reconstruction project limits, the City contracts with Kaukauna Utilities (KU) to perform Clearwater inspections while they are in a property for Cross Connection Control and Backflow Prevention inspections.

In 2022, the City inspected 134 homes and businesses for illicit connections; we found and issued orders repairs for 3 violations. Violations included a variety of issues including, non-compliant private sewer lateral and sump to floor drain connections.

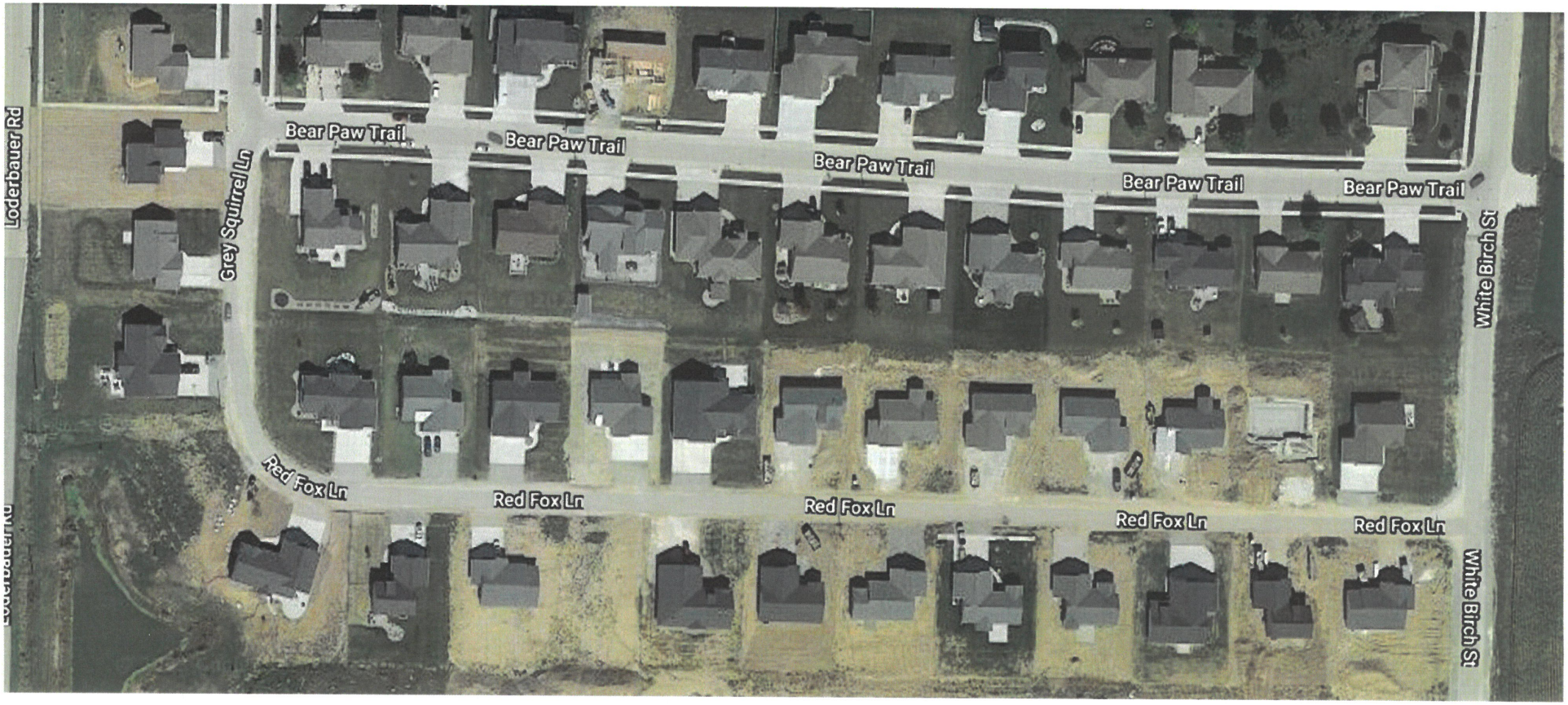
Sewer Cleaning and Inspections

The one of major areas of sewer main cleaning in 2022 was between Brothers Street on the south, Walnut Street on the north, Lawe Street on the east and George Street to the west. The other area was between Marie on the north, Joyce Street/Gertrude Street to the south, Alyssa Street to the east and Harrison Street to the west. The last area is between Loderbauer Road to the west, Haas Road to the east, CTH CE to the north and Bear Paw Trail to the south. CCTV inspections include annual televising contract in various areas (see CCTV map), post televising for the sewer rehab areas and some miscellaneous lines that were suspect of having issues. 23,174 lineal feet of sewer main and 139 laterals were televised in 2022. See maps at the end of this section.

2022 Project Area

NEW CONSTRUCTION:

RED FOX LANE, GREY SQUIRREL LANE, WHITE BIRCH STREET



2022 Project Area

NEW CONSTRUCTION:

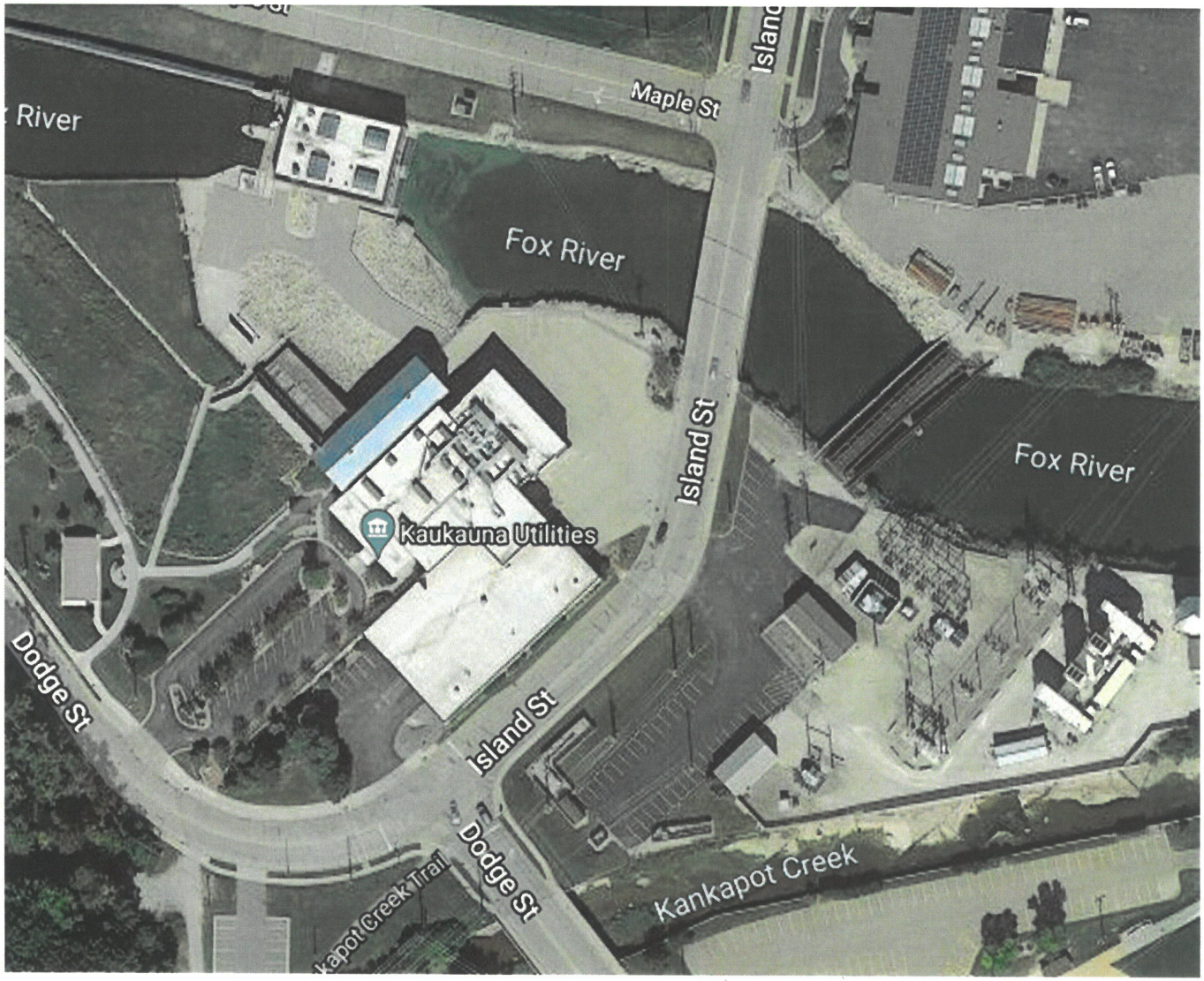
WHITE WOLF LANE



2022 Project Area

RE-CONSTRUCTION:

ISLAND STREET



2022 Project Area

NEW CONSTRUCTION:

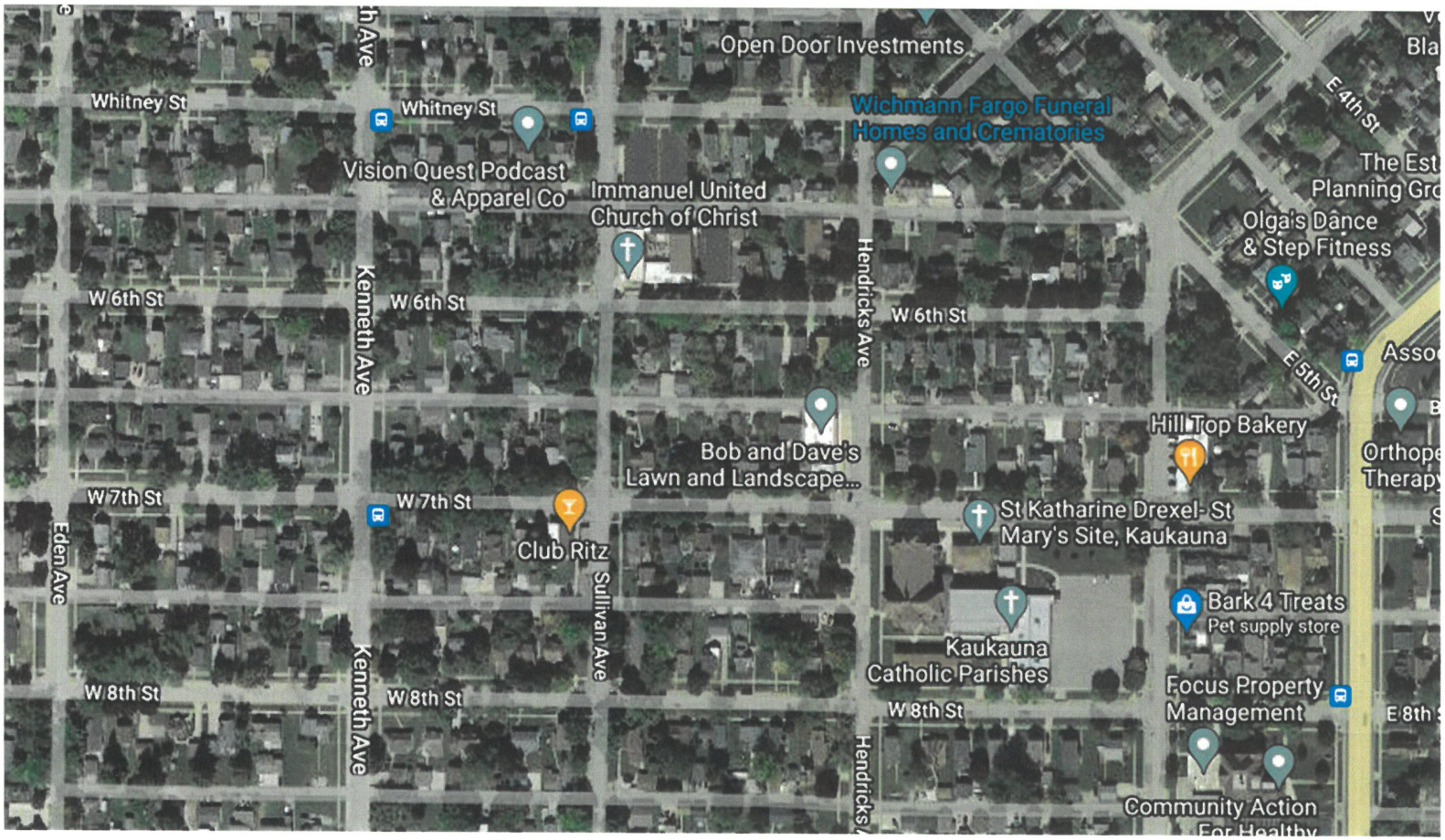
Wellhouse Drive

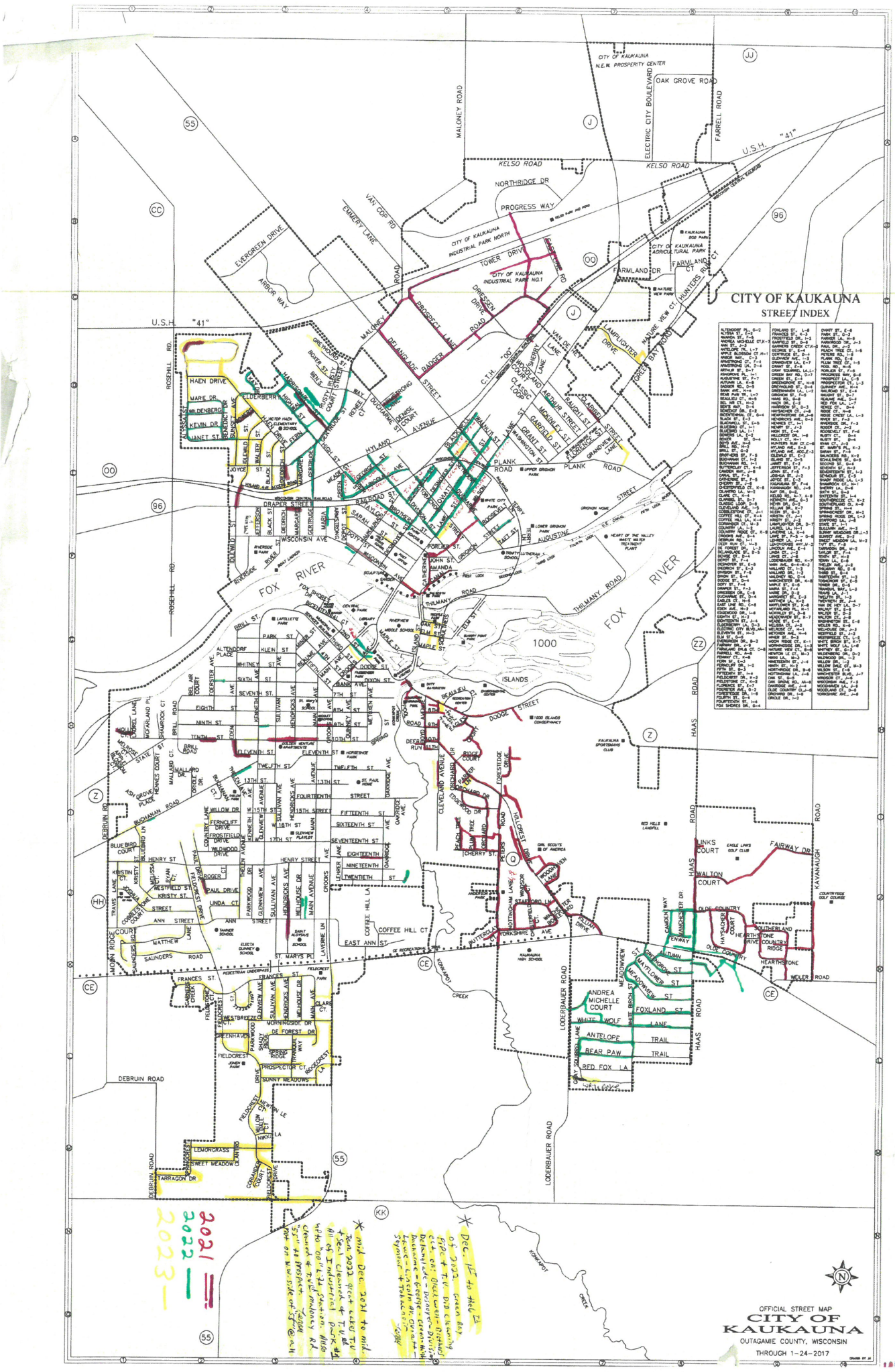


2022 Project Area

UTILITY RELAY:

EIGHTH STREET,SEVENTH STREET,SIXTH STREET,WHITNEY STREET AND MAIN AVENUE




CITY OF KAUKAUNA
STREET INDEX
OFFICIAL STREET MAP
CITY OF KAUKAUNA
OUTAGAMIE COUNTY, WISCONSIN
THROUGH 1-24-2017
FOX RIVER
1000 ISLANDS
U.S.H. "41"
KELSO ROAD
OAK GROVE ROAD
PLANK ROAD
WISCONSIN AVE
THILMANY ROAD
DEBRUIN ROAD
LODERBAUER ROAD
HAAS ROAD
DRAPER STREET
CLEVELAND AVENUE
2021 = 2022 = 2023 =


2022 SEWER
CCTV PROJECT
MAP -1
TOBACNOIR
DUCHARME
DIVISION
BROTHERS
LAKE
STREET

2022 SEWER CCTV PROJECT Map -2




2022 SEWER
CCTV PROJECT
MAP -3
TOBACNOIR
STREET
HIGH ST.
GEORGE
GREEN STREET
DIVISION
MEADE

Section 4: Local Ordinance Changes

Ordinance number 1873, amending Section 13.05(5)(A) and Section 13.05(5)(B) of the Kaukauna Municipal Code changed the user charge from $7.00 per 100 cubic feet to $8.00 per 100 cubic feet.

Section 5: CMOM Updates and Changes

The CMOM Plan is a working document that will require updates based upon annual reviews and performance of the system. The annual audit of the CMOM plan will be an important part of maintaining a high level of sewer service and sewer capacity. Reviews will occur in December of each calendar year.

There were no major updates/changes to the CMOM program in 2022. The City did update the appendix for annual maintenance goals and performance measures for 2022. An updated table is attached to the end of this section.

ANNUAL MAINTENANCE GOALS AND PERFORMANCE MEASURES						
2022						
Sewer Mainline O&M						
MAINTENANCE ITEM	**GOAL**	**% of System**	**2020**	**2021**	**2022**	**Comments**
Sewer Mainline Televised	~~1 mile per year~~ 5% of system per year	5.0%	22,650 ft (5%)	25,239 ft (5.6%)	17,250 ft(4.9%)	Project Areas, Subd.,CCTV
Main Line Rehabilitation and Replacement	1 mile per year	1.2%	7,200 ft (1.6%)	6,468 ft (1.4%)	5,910 ft (1.2%)	Utility Relays on8th, 7th, 6th, Whitney, Sullivan, Hendricks & Main
Clean Main Line Sewers	10 miles per year	12%	139,100ft (31%)	82,075 ft (18%)	61,682 ft (12.5%)	Approx. 25% of Branch lines per year
Root Cutting	TBD - Per Cleaning/Televising	TBD	5%	0%	0%	
Flow Monitoring	TBD – Project Areas	TBD	0%	0%	0%	100% metered at meter stations and lift stations -Discuss future metering options for project areas
Dye Test /Smoke Test	TBD - Visual Inspections will dictate	TBD	0 ft	0 ft	0 ft	
Manholes O&M						
MAINTENANCE ITEM	**GOAL**	**% of System**	**2020**	**2021**	**2022**	**Comments**
Visual Inspection of Critical and Easement MHs	Inspect 100% at least once annually	100%	100%	100%	100%	
Visual Inspection of standard MHs	Inspect every 4 years	25%	660 (35%)	465 (25%)	300 (15%)	Sewer Crew + CCTV + Project Areas
Manhole Rehabilitation/Replacement	Repair or replace 2% per year	2%	26 (1.3%)	41 (2.1%)	16 (1%)	Paving and Lining
Lift Station O&M						
MAINTENANCE ITEM	**GOAL**	**# Per Year**	**2020**	**2021**	**2022**	**Comments**
Lift Station Inspections	2 inspections per week of each station	104 per lift station	104	104	104	
Lift Station O&M Check	1 maintenance check per week	52 per lift station	52	52	52	
Clean and Degrease Lift Stations	2 times per year each	2 per lift station	3	2	2	
Easement O&M						
MAINTENANCE ITEM	**GOAL**	**% of System**	**2020**	**2021**	**2022**	**Comments**
Visual Inspection of Easements	Inspect twice per year	100%	100%	100%	100%	
Easement Maintenance	Maintain access to each mh and mark for visibility	As needed	NA	NA	NA	
Private Lateral O&M						
MAINTENANCE ITEM	**GOAL**	**#**	**2020**	**2021**	**2022**	**Comments**
Visual Inspection of Laterals	Inspect 100% of Laterals in Rehab Area	Varies	100%(14)	100% (109)	100%(139)	
Replace Private Laterals	Replace 95% of residential laterals - rehab project	Varies	100% (14 of 14)	85% (64 of 75)	88%(139 of 158)	
Inspect Private Properties for Illicit Connections	Inspect all properties within a 10 year cycle	10%	2%	2%	2.3%	Mostly performed by Building Insp. & ENG - KU also performed 29.

RESOLUTION NO. ____

**Resolution Accepting the City of Kaukauna
2022 Annual Clearwater Sustainability Program Report to the
Heart of the Valley Metropolitan Sewerage District (HOVMSD)**

WHEREAS, it is a requirement of the HOVMSD that member communities file an annual report as part of its Clearwater Sustainability Program; and

WHEREAS, the governing body of the City of Kaukauna has reviewed the annual report to the HOVMSD; and

WHEREAS, the annual report contains the following components as required by the HOVMSD:

1. CMAR as submitted to the WDNR
2. WDNR response to CMAR
3. Summary of construction and non-construction inflow/infiltration reduction projects
4. Local ordinance changes related to inflow/infiltration
5. CMOM updates or changes

NOW, THEREFORE, BE IT RESOLVED by the Common Council of the City of Kaukauna that the report prepared by the City of Kaukauna Engineering Department has been accepted and shall be forwarded to the HOVMSD as per HOVMSD requirements.

Introduced and adopted this 17th day of October, 2023.

APPROVED: _____
Anthony J. Penterman, Mayor

ATTEST: _____
Sally Kenney, Clerk

City of Kaukauna
Board of Public Works October 16, 2023
jn/engr dept

Agenda Item - 2d
2023 Total Maximum Daily Loading (TMDL) Implementation Plan Updates

Background

As a Permitted Municipality under Wisconsin NR 216, with a General Permit to Discharge Under the Wisconsin Pollutant Discharge Elimination System - WPDES Permit No. WI-S050075-3, municipalities within a watershed with Total Maximum Daily Loading(TMDL) must reduce pollutants of concern within their permit term. The City of Kaukauna Municipal Separate Storm Sewer System(MS4) boundary includes land within the Lower Fox TMDL, including the watersheds of Garners Creek, Konkapot Creek, Apple Creek, Plum Creek and the main stem Lower Fox Basin, all having TMDL requirements to reduce Total Suspended Solids(TSS) and Total Phosphorus (TP).

If, a full reduction pollutant load reduction cannot be achieved within the permit term, alternate provisions and reports must be made to the Wisconsin Department of Natural Resources (WDNR). The additional requirements coming due are attached. Many of the requirements were previously met with updates to the City Post-Construction Stormwater Management Ordinance (attached) and updates to our leaf collection and street sweeping programs. The City has worked with McMahon Associates to provide the updated maps and pollutant reduction analysis documents which are incorporated into the previously approved Stormwater Management Plan of Action.

Please review the updates and contact John Neumeier with any questions or concerns.

Recommended Action

1) Motion to receive and place on file the 2023 Total Maximum Daily Loading (TMDL) Implementation Plan Updates to the Stormwater Management Plan of Action and direct the Engineering Department to submit the updates to WDNR.

   and

2) Direct the Director of Public Works to apply for continued coverage under the WPDES General Permit.

GENERAL PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM - WPDES PERMIT NO. WI-S050075-3

A.5.3 If the permittee determines by October 31, 2021, that it is unable to achieve the reductions stipulated under sections A.5.2.a and A.5.2.b, the permittee shall meet the following requirements by October 31, 2023:

a. Pursuant to the permittee's authority under s. 281.33(6)(a)2., Wis. Stats., the permittee shall create or revise and promulgate a municipal storm water management ordinance applicable to redevelopment that requires compliance with post-construction storm water management performance standards that are stricter than the uniform statewide standards established by the Department. When reporting to the Department under section A.6.3, the permittee shall include a justification for the level of pollutant reduction in the ordinance with an assessment of the progress it achieves towards full compliance with the TMDL. The redevelopment reductions may be adjusted to account for other storm water control measures that may exist. The permittee may also establish TP reduction levels for redevelopment projects.

b. The permittee shall create or revise a municipal ordinance that requires the development and implementation of a maintenance plan for all privately-owned storm water treatment facilities for which the permittee takes a TSS and/or TP reduction credit. The permittee shall develop and implement procedures and measures to verify and track that the storm water treatment facilities are inspected on a regular schedule and maintained in the intended working condition in accordance with the plans. The permittee shall require that maintenance agreements be recorded with the appropriate property records that obligates the current and future owners to implement the maintenance plans.

c. The permittee shall revise or promulgate a municipal ordinance that requires the submittal of record drawings for storm water management facility that the permittee takes a TSS and/or TP reduction credit. The permittee shall require submittal of the record drawing prior to close-out of the local permit or upon final approval and shall maintain appropriate records and tracking of the plans.

d. If the pollutant of concern is TP, the permittee shall implement, expand, or optimize a municipal leaf collection program coupled with street cleaning to serve areas where municipal leaf collection is not currently provided within the MS4 but for which a phosphorus reduction has been assigned and additional reductions could be achieved.

e. Within the MS4 permitted area, the permittee shall inventory the condition of the conveyance systems and outfalls. Where erosion or scour is occurring, the permittee shall develop a schedule to stabilize the identified areas over a 5-year period.

f. The permittee shall install at least one new structural BMP or enhance one or more existing structural BMPs to reduce a pollutant of concern discharged via storm water runoff to an impaired waterbody for which a WLA has been assigned to the permittee. The permittee shall develop and implement a maintenance plan for each new structural BMP.

g. The permittee shall conduct an analysis of the current municipal street cleaning program, to determine if additional pollutant loading reductions can be achieved. The permittee shall evaluate optimizing sweeping frequency, targeting of critical areas and time periods, and instituting parking restrictions. Ifa pollutant reduction can be achieved through optimizing the existing street cleaning program, the permittee shall adopt the optimized program the next calendar year or provide a written explanation to the Department explaining why the optimize street cleaning program is not feasible and provide alternative options to achieve similar pollutant reductions.

Stormwater Management Plan of Action

CITY-WIDE STORMWATER QUALITY MANAGEMENT PLAN OF ACTION

Prepared For The

CITY OF KAUKAUNA

OUTAGAMIE COUNTY, WISCONSIN

October 4, 2023
AWS/JWN

McMAHON ENGINEERS ARCHITECTS

1445 MCMAHON DRIVE | P.O. BOX 1025 - NEENAH, WI 54957-1025
PH. 920.751.4200 | FX. 920.751.4284
WWW.MCMGRP.COM

Stormwater Management Plan of Action

CITY-WIDE STORMWATER QUALITY MANAGEMENT PLAN OF ACTION

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OUTAGAMIE COUNTY, WISCONSIN

Prepared By

McMAHON

NEENAH, WISCONSIN

Updated - October 4, 2023

McM. No. K0006-91700668

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Stormwater Management Plan of Action

CITY-WIDE STORMWATER QUALITY MANAGEMENT PLAN OF ACTION

Prepared For The

CITY OF KAUKAUNA

OUTAGAMIE COUNTY, WISCONSIN

Prepared By

McMAHON

NEENAH, WISCONSIN

October 4, 2023

McM. No. K0006-91700668

1.0 INTRODUCTION

At the request of the City of Kaukauna, McMAHON prepared the following City-Wide Stormwater Quality Management Plan of Action. The purpose of the plan is to provide the City with the long-term guidance necessary to comply with Wisconsin Administrative Code NR 216 stormwater regulations and improve water quality in receiving waters. Pursuant to NR 216, the City of Kaukauna obtained a WPDES Municipal Stormwater Discharge Permit from the DNR on December 15, 2006. The purpose of the permit is to regulate discharges from municipal separate storm sewer systems (MS4) and reduce urban non-point source pollution.

Relationship to Other Plans:

This City-Wide Stormwater Quality Management Plan of Action compliments and is part of efforts to implement recommendations contained in several existing resource management plans. These related resource management plans include the following:

- The Lower Green Bay Remedial Action Plan (RAP) recommends 50% total phosphorus reduction for the Green Bay Area of Concern. The RAP also recommends a reduction in other urban stormwater pollutants such as sediment, heavy metals, toxics, and bacteria. The RAP was finalized by WDNR in 1993. The RAP recommends that municipalities develop and implement programs for construction site erosion control, post-construction stormwater management, illicit discharges, and shoreland / wetland zoning. The RAP also recommends that municipalities develop and implement programs that preserve, restore and enhance environmental corridors, shoreline buffers, wetlands, habitat, and public access for shoreline fishing, boating and other water-based recreation. To meet these goals, the RAP recommends planning and implementation of best management practices to reduce nonpoint source pollutants. The RAP also recommends that municipalities seek innovative and alternative ways to achieve nonpoint source goals.

- The Total Maximum Daily Load (TMDL) developed for the Lower Fox River Basin identifies total suspended solids (TSS) and total phosphorus (TP) allocations for urban stormwater, wastewater, and agricultural sources located within the Lower Fox River Basin. The TMDL was approved by the U.S. Environmental Protection Agency (EPA) in 2012. More specifically, the TMDL identifies allocations for urban stormwater in the Apple Creek, Garners Creek, Fox River, Kankapot Creek, and Plum Creek basins.

- The Comprehensive Plan for the City of Kaukauna contains several recommendations related to natural resource management and stormwater management: (1) control stormwater volume so as to minimize property damage during heavy, moderate, or long term storm events; (2) filter storm water run-off to improve the quality of the watershed; (3) administer policies and zoning ordinances that protect all of the environmental and constructed features within the community; (4) maintain adequate open space in development applications where natural ecological features are preserved and green space is left to enhance the quality of life for residents; (5) work cooperatively with adjoining municipalities; (6) ensure short and long-term development plans are shared with other governmental entities.

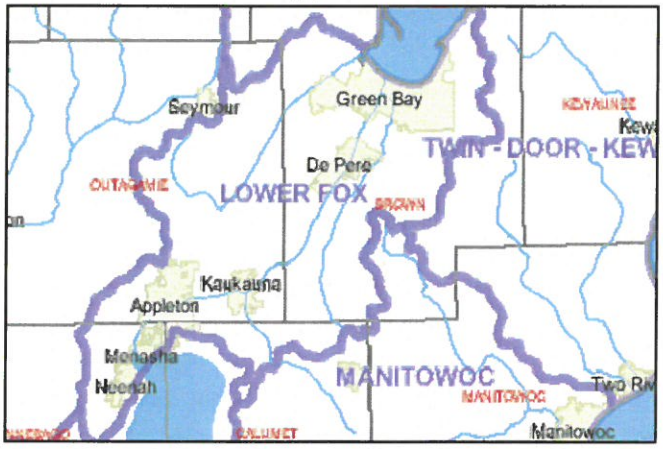
2.0 OVERVIEW OF STUDY AREA

The study area for this Stormwater Management Plan is depicted in Figure 1. The study area contains approximately 5,132 acres. The City of Kaukauna is located in Outagamie County, Wisconsin. As shown in Figure 2, several Municipal Separate Storm Sewer System (MS4) jurisdictions are located within and directly adjacent to the City. The 2023 population for the City is estimated at 17,372. The City of Kaukauna is part of the Appleton Urbanized Area as determined by the US Census Bureau.

Basins

The Wisconsin Department of Natural Resources (WDNR) divided the state into 24 basins or Water Management Units (WMU). The study area for the two Villages is located in the Lower Fox River Basin or WMU. The WMU boundary is similar to the federally designated 8-digit Hydrologic Unit Code (HUC) boundary for the Lower Fox River Basin.

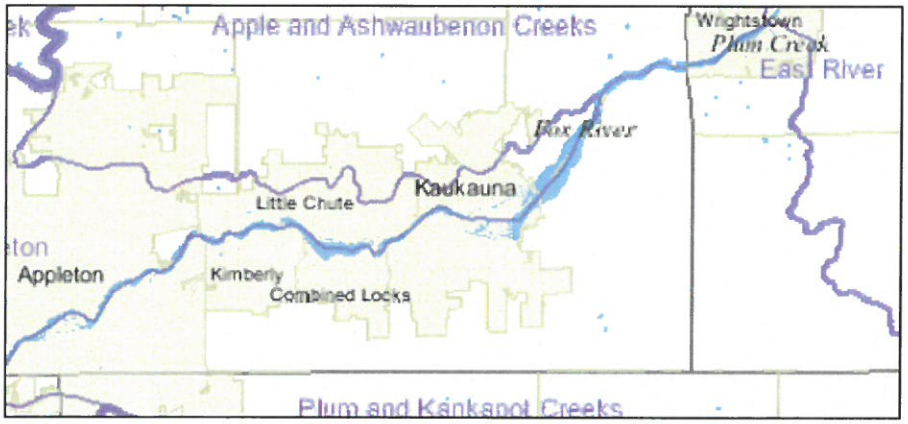
Exhibit 2-1: Lower & Upper Fox River Basins



Watersheds

The WDNR divided the Lower Fox River Basin into 6 watersheds. The City's study area is located in three of these watersheds: Apple & Ashwaubenon Creeks Watershed (LF02-113), Plum and Kankapot Creeks Watershed (LF03-113) and Fox River - Appleton Watershed (LF04-113).

Exhibit 2-2: Plum & Kankapot Creeks Watershed



Sub-Watersheds

For purposes of this stormwater management plan, the WDNR watershed was divided into five sub-watersheds. The sub-watersheds are depicted in Figure 3 and summarized in Table 2-1. The sub-watersheds were delineated after considering the locally designated stormwater planning boundaries, federally designated 12-digit Hydrologic Unit Code (HUC) boundaries, and state designated Total Maximum Daily Load (TMDL) sub-basin boundaries.

Table 2-1: Sub-Watersheds

Sub-Watershed	HUC-12	TMDL Sub-Basin Name
Apple Creek	040302040202 Apple Creek	Apple Creek
Fox River	040302040205 Garners Creek-Fox River	Lower Fox River Main Stem
Garners Creek	040302040205 Garners Creek-Fox River	Garners Creek
Kankapot Creek	040302040203 Kankapot Creek	Kankapot Creek
Plum Creek	040302040204 Plum Creek	Plum Creek

Natural Resources

Natural resource features include surface waters (lakes, rivers, streams), wetlands, and endangered or threatened resources. Natural resource features located in the study area are depicted in Figure 4. Some of these natural resource features are protected with a special regulatory designation such as outstanding resource water, exceptional resource water, 303(d) impaired water, endangered species, and threatened species. Natural resource features located in the study area with one of these special regulatory designations are identified below.

Outstanding and exceptional resource waters are pristine surface waters which are not significantly impacted by human activities and provide valuable fisheries, unique hydrological or geological features, outstanding recreational opportunities, or unique environmental settings. For example, cold water trout streams and natural waterfalls are typically classified as an outstanding or exceptional resource waters. The City of Kaukauna does not discharge stormwater runoff into any outstanding resource waters or exceptional resource waters.

Impaired water bodies are degraded surface waters which are not meeting water quality standards or their potential uses, such as fishing and swimming, due to pollutants and poor water quality. The US EPA requires each state to update its 303(d) impaired waters list

every two years, including Wisconsin. The City of Kaukauna discharges stormwater runoff into five 303(d) impaired waters:

- Apple Creek: Apple Creek is a 303(d) impaired water body due to a blend of non-point and point source pollution. Pollutants of concern include total phosphorus and sediment/total suspended solids. Impairments include degraded habitat. The attainable use for Apple Creek is fish and aquatic life. Currently, Apple Creek is not supporting its attainable use.

- Fox River: The Fox River is a 303(d) impaired water body due to contaminated sediment and a blend of non-point and point source pollution. Pollutants of concern include total phosphorus and polychlorobiphenyls. Impairments include low dissolved oxygen and contaminated fish tissue. The attainable use for the Fox River is warm water sport fishery. Currently, the Fox River is not supporting its attainable use.

- Garners Creek: Garners Creek is a 303(d) impaired water body due to non-point source pollution. Pollutants of concern include total phosphorus and sediment/total suspended solids. Impairments include degraded habitat. The attainable use for Garners Creek is warm water sport fishery. Currently, Garners Creek is not supporting its attainable use.

- Kankapot Creek: Kankapot Creek is a 303(d) impaired water body due to a blend of non-point and point source pollution. Pollutants of concern include total phosphorus and sediment/total suspended solids. Impairments include degraded habitat. The attainable use for Kankapot Creek is fish and aquatic life. Currently, Kankapot Creek is not supporting its attainable use.

- Plum Creek: Plum Creek is a 303(d) impaired water body due to a blend of non-point and point source pollution. Pollutants of concern include total phosphorus and sediment/total suspended solids. Impairments include degraded habitat. The attainable use for Kankapot Creek is fish and aquatic life. Currently, Kankapot Creek is not supporting its attainable use.

Endangered and threatened resources are wild animal and plant species which are either in danger of extinction throughout all or a significant portion of its range or likely to become endangered in the foreseeable future. Typically, the location of an endangered or threatened species is tracked in Wisconsin's Natural Heritage Inventory and is only identified by township. Sensitive species that are particularly vulnerable to collection or disturbance are only identified by county. The Natural Heritage Inventory maps and species lists are routinely updated by WDNR. To prevent collection or disturbance of sensitive species, endangered and threatened resources are not depicted in Figure 4.

Cultural Resources

Cultural resources are places of cultural significance. Some cultural resources are protected with a special regulatory designation such as archeological sites and historical sites. Cultural resource features located in the study area with one of these special regulatory designations are identified below.

Archeological sites may be located within the study area, but cannot be disclosed by law. The State of Wisconsin maintains maps and a computer database on the location and nature of archaeological sites. Special permission is required to view these maps and databases. The location of archaeological sites is exempt from public disclosure to prevent collection or disturbance of valuable artifacts.

Historical sites located within the City and listed in the Wisconsin Historical Society's register are depicted in Figure 4 and summarized in Table 2-2.

Table 2-2: Historical Sites

I.D.	Historic Name	Location	Reference No.
1	Black, Merritt, House	104 River Road	84003752
2	Brokaw, Norman, House	714 Grignon Street	84003754
3	Fargo's Furniture Store	172-176 W. Wisconsin Ave.	84003755
4	Free Public Library of Kaukauna	111 Main Avenue	84003756
5	Grignon, Charles A., House	Augustine Street	72000064
6	Holy Cross Church	309 Desnoyer Street	84003758
7	Kaukauna Locks Historic District	Fox River - East past Canal St.	93001327
8	Klein Dairy Farmhouse	1018 Sullivan Avenue	84003760
9	Kuehn Blacksmith Shop-Store	148-152 E. 2nd Street	84003761
10	Lindauer and Rupert Block	137-141 E. 2nd Street	84003763
11	Martens, Julius J Company Building	124-128 E. 3rd Street	84003764
12	Meade, Capt. Matthew J., House	309 Division Street	84003765
13	Nicolet Public School	109 E. 8th Street	84003767
14	Osprey Site	Address Restricted	97001644
15	St. Andrews, Frank, House	320 Dixon Street	84003768
16	St. Mary's Catholic Church	119 W. 7th Street	84003769
17	Stribley, Charles W., House	705 W. Wisconsin Avenue	84003770
18	US Post Office, Former	112 Main Avenue	91001990

Remediation & Waste Disposal Sites

Remediation sites are places where cleanup of environmental soil or groundwater contamination is ongoing or completed. Remediation sites may involve hazardous wastes, underground storage tanks, or other contaminant sources. Waste disposal sites are places where solid wastes are stored. Understanding the location of remediation and waste

disposal sites is an important consideration when evaluating potential stormwater retrofit locations. The approximate location of WDNR identified remediation sites (open and closed sites) and waste disposal sites (not archived) are depicted in Figure 4.

Soils

Soil information is from the *Outagamie County Soil Survey,* Natural Resource Conservation Service, U.S. Department of Agriculture. The U.S. Department of Agriculture has classified soil types into four hydrologic soil groups (HSG). The four hydrologic soil groups (i.e. A, B, C and D) are classified according to the minimum infiltration rate of the soil column. Group A soils have the highest permeability rate or lowest runoff potential, whereas Group D soils have the lowest permeability rate or highest runoff potential. Hydrologic soil groups are depicted in Figure 5.

MS4 System

The municipal separate storm sewer system (MS4) consists of publicly owned or operated conveyance systems including streets, curbs, gutters, catch basins, storm sewers, swales, channels, culverts, and occasionally bridges. The MS4 system is depicted in Figure 6.

The MS4 system contains several structural best management practices (BMPs). The structural BMPs are depicted in Figure 7 and summarized in Table 2-3. Structural BMPs include wet detention ponds, dry detention ponds, biofilters, proprietary devices, and other devices. Some of these structural BMPs are publicly owned and others are privately owned.

The MS4 system is based on available records. The MS4 system contains three different types of surface drainage: curb & gutter, grass swales, and no controls. The types of surface drainage are depicted in Figure 8. Figure 8 also depicts riparian areas that discharge directly into the Fox River without passing through the City's MS4.

Table 2-3: Structural BMPs

BMP ID	BMP Name	Type of Structural BMP	BMP Owner	Maintenance Agreement
A2b	Van Epern Pond	Wet Pond	City	Yes
A5b	*G and G Machine*	Biofilters	Private	Yes
A5c	Kelso Park Pond	Wet Pond	City	Yes
A6d1	Badger Drive Pond	Dry Pond	City	Yes
A8a	Renee Court Stormceptor	Proprietary	City	Yes
A11	Northridge Drive Pond	Dry Pond	City	Yes
A13a1	Commerce Crossing 1 Pond	Wet Pond	City	Yes
A13a2	Commerce Crossing 2 Pond	Wet Pond	City	Yes
A14b	Commerce Crossing 3 Pond	Wet Pond	City	Yes
A16a	Wildenberg Estates North Pond	Wet Pond	Private	Yes
A17a	Kay Street Pond	Dry Pond	Private	Yes
A18a	Wildenberg North 1 Pond	Wet Pond	Private	Yes
A19a	Hurkman Heights 4 Pond	Wet Pond	Private	Yes
A19b	Wildenberg North 2 Pond	Wet Pond	Private	Yes
F1b4	Lamplighter Apartments Pond	Wet Pond	Private	Yes
F1d	Agricultural Park Pond	Wetland System	City	Yes
F5d1	Lamplighter Apartments Pond	Wet Pond	Private	Yes
F5d13	Rose Tree Villas	Biofilters	Private	Yes
F9-1	Catherine Street Pond	Wet Pond	City	Yes
F13b1	Hurkman Heights South Pond	Wet Pond	Private	Yes
F13b4	Wildenberg Estates South Pond	Wet Pond	Private	Yes
F23d1	Bluestem 3 Pond	Wet Pond	Private	Yes
F23d3	Autumn Court Pond	Dry Pond	Private	Yes
F23e	Camden Way Pond	Wet Pond	Private	Yes
F23f1	Fenway Court Pond	Wet Pond	Private	Yes
F24e6	Andrea Michelle Court Pond	Wet Pond	Private	Yes
F24g	Meadowview South Pond	Wet Pond	Private	Yes
F24k	Whitewolf Lane Pond	Wet Pond	Private	Yes
F26b	Company Woods Pond	Wet Pond*	City	Yes
F27c4	Softball Diamond #2	Biofilters	City	Yes
F36c1	MSB Biofilter North	Biofilters	City	Yes
F36c2	MSB Biofilter South	Biofilters	City	Yes
F36c3	DPW Underground Pond	UG Wet Pond	City	Yes
G2a	Moon Ridge Court Pond	Wet Pond	Private	Yes
G2b	Park Trail Apartment Pond 5	Dry Pond	Private	No
G3d	Jonen Park Bio Retention Device	Biofilters	City	Yes
G3f	Parkwood Drive Pond	Dry Pond	Private	Yes
G3g	Sunny Meadows Pond	Dry Pond	Private	Yes
G3h	Newton Lane Court Pond	Wet Pond	Private	Yes
G3k	Jonen Park Pond	Wet Pond	City	Yes

BMP ID	BMP Name	Type of Structural BMP	BMP Owner	Maintenance Agreement
G4a	Coriander Court Pond	Wet Pond	Private	Yes
G4b	Lemongrass Way Pond	Wet Pond	Private	Yes
K1a2	Softball Diamond #1	Biofilters	City	Yes
K4	Horseshoe Park Pond	Wet Pond	City	Yes
K4m2	Debruin Street Pond	Dry Pond	Private	Yes
K4m3	Joshua Street Pond	Dry Pond	Private	Yes
K4m7-1	Park Trail Apartment Pond 1	Dry Pond	Private	No
K4m7-2	Park Trail Apartment Pond 2	Dry Pond	Private	No
K4m7-3	Park Trail Apartment Pond 3	Dry Pond	Private	No
K4m7-4	Park Trail Apartment Pond 4	Dry Pond	Private	No
K4m7-5	Ann Street Pond	Dry Pond	Private	Yes
K7c2	Piggly Park Pond	Wet Pond	City	Yes
K7d	Coffee Hill Pond	Wet Pond	Private	Yes
K8f	Loderbauer Pond	Wet Pond	Private	Yes
K9a	Inside the Park Pond	Wet Pond	City	Yes
P2a1	Kavanaugh Road Pond	Dry Pond	Private	Yes
P2a2	Kavanaugh Pond	Wet Pond	City	Yes
P3a	Countryside Estates Pond	Wet Pond	Private	Yes
P3b	Bluestem 2 Pond	Wet Pond	Private	Yes
P3c	Bluestem 3 Pond	Wet Pond	Private	Yes

WPDES Industrial Permits

As shown in Figure 9 and summarized in Table 2-4, there are 13 industrial operations with coverage under a WPDES Industrial Permit that are currently located within the City of Kaukauna. WPDES Industrial Permits are regulated by the WDNR. Some WPDES Industrial Permits may allow discharges into the MS4 system during dry weather. Understanding the location of the WPDES Industrial Permitted sites is important to effective implementation of the City's stormwater program.

Table 2-4: WPDES Industrial Permits

I.D.	Site Name	Site Address	WPDES Permit No.
1	Expera Specialty Solutions	600 Thilmany Rd	S067849
2	MCC Kaukauna Quarry	421 Plank Road	0046515
3	Roloff Manufacturing	400 Gertrude Street	S067849
4	Bassett Mechanical	1215 Hyland Avenue	S067857
5	Team Industries	1200 Maloney Road	S067857
6	Schuh Transport/OSI Environmental Inc.	2000 Badger Road	S067857
7	Safety Kleen Systems Inc.	2201 Badger Road	S067857
8	Goldin Iron & Recycling Corporation	300 Farmland Drive	S058831

I.D.	Site Name	Site Address	WPDES Permit No.
9	Rolling Frito-Lay Sales	2350 Northridge Drive	S067857
10	Profile Finishing Systems	1700 Progress Way	S067857
11	Classic Gears & Machining	2551 Northridge Drive	S067857
12	Fahrner Asphalt Sealers, LLC - Kaukauna	860 East Line	S067857
13	UPS Ground Freight	1700 Tower Drive	S067857

Drinking Water System

The City of Kaukauna is responsible for protecting the drinking water system. The City obtains drinking water from groundwater aquifers using five municipal wells. The municipal wells are depicted in Figure 11. Well 4 (BG574), Well 5 (BG575), Well 8 (HJ196), Well 9 (BG578) and Well 10 (BG576) currently do not have a wellhead ordinance. The City does have a well protection plan with the DNR restricting activities within a 1,200 foot radius around each well. According to the DNR, the Kaukauna Utilities system is susceptible to contamination by volatile organic compounds (VOCs), nitrate, beryllium, and microbes. The system has moderate susceptibility to contamination by synthetic organic compounds (SOCs). The system has low susceptibility to contamination by ethylene dibromide (EDB).

Land Uses

The location of publicly owned parks, recreational areas, open lands, and municipal facilities are depicted in Figure 9. Understanding the location of publicly owned land is important to effective implementation of the municipal stormwater program.

Table 2-5: Land Uses

Land Use	2004 Land Use		2012 Land Use		Future Land Use	
	(acres)	(%)	(acres)	(%)	(acres)	(%)
Residential						
High Density	176	4.4%	178	3.7%	178	3.7%
Low Density	258	6.4%	288	6.0%	323	6.7%
Med Density	1,373	34.3%	1,424	29.7%	1,589	33.1%
Multi-Family	72	1.8%	79	1.6%	98	2.0%
Suburban	41	1.0%	49	1.0%	91	1.9%
Commercial						
Commercial Strip	140	3.5%	109	2.3%	184	3.8%
Commercial Downtown	20	0.5%	20	0.4%	20	0.4%
Office Park	22	0.5%	24	0.5%	54	1.1%
Shopping Center	29	0.7%	33	0.7%	33	0.7%
Institutional						

Land Use	2004 Land Use (acres)	2004 Land Use (%)	2012 Land Use (acres)	2012 Land Use (%)	Future Land Use (acres)	Future Land Use (%)
Hospital	11	0.3%	11	0.2%	11	0.2%
Misc. Institutional	66	1.7%	70	1.4%	72	1.5%
School	86	2.1%	86	1.8%	86	1.8%
Industrial		0.0%		0.0%		0.0%
Light Industrial	388	9.7%	471	9.8%	612	12.8%
Medium Industrial	95	2.4%	128	2.7%	130	2.7%
Open Space						
Cemetery	30	0.8%	30	0.6%	41	0.9%
[1]Park	251	6.3%	362	7.5%	505	10.5%
Railroad	33	0.8%	42	0.9%	42	0.9%
[2]Undeveloped	662	16.5%	1,118	23.3%	454	9.5%
Highway/Freeway	253	6.3%	280	5.8%	277	5.8%
Total:	4,008	100.0%	4,801	100.0%	4,801	100.0%

[1]Includes grass and water associated with stormwater ponds/facilities.
[2]Undeveloped land includes agriculture, grass, woods, wetlands open water, and quarries.

Land uses on or before October 1, 2004 are depicted in Figure 10 and summarized in Table 2-5. Table 2-5 summarizes the 2004 land uses located within the urban planning boundary. For purposes of the NR 151 pollutant analysis, undeveloped in-fill sites less than 5 acres are shown to be developed based on adjoining land uses. Undeveloped in-fill sites greater than 5 acres are shown as agriculture, woods, grass, or another undeveloped open space, as appropriate.

2012 land uses are depicted in Figure 11 and summarized in Table 2-5 for the study area. For purposes of the Total Maximum Daily Load (TMDL) pollutant analysis, the undeveloped in-fill sites are shown as agriculture, grass, woods, wetland or another undeveloped open space, as appropriate.

Future land uses are depicted in Figure 12 and summarized in Table 2-5 for the study area. For purposes of the Total Maximum Daily Load (TMDL) pollutant analysis, the future land uses generally match the 2012 land uses, except the appropriate undeveloped sites are converted to a future land use based on adjoining land uses and information from the City.

3.0 TMDL POLLUTANT ANALYSIS

A Total Maximum Daily Load (TMDL) is the maximum amount of a pollutant that a water body can receive and still meet water quality standards. A TMDL for excess total phosphorus and total suspended solid (e.g. sediment) pollutants was developed by the WDNR for the Lower Fox River Basin. The TMDL for the Lower Fox River Basin was approved by the US Environmental Protection Agency (EPA) on May 18, 2012.



The Lower Fox River Basin has 14 streams and rivers that are impaired by phosphorus and/or sediment pollutants. Excessive amounts of these pollutants cause poor water clarity, increase algae, impact swimming, and degrade aesthetics. The top photograph depicts Fox River algae during 2008 (WDNR photo) and the bottom photograph depicts sediment discharging into Green Bay during 2011 (Steve Seilo photo).



The Lower Fox River Basin TMDL was calibrated and developed using stream, river and lake monitoring data collected by the United States Geological Survey, WDNR, University of Wisconsin-Green Bay, UW-Milwaukee, and NEW Water (Green Bay MSD).

As shown in Figure 6, the City's storm sewer system discharges to five impaired Lower Fox River Basin waterways: Apple Creek, Garners Creek, Fox River, Kankapot Creek and Plum Creek. Apple Creek, Garners Creek, Fox River, Kankapot Creek, and Plum Creek are all specifically included in the Lower Fox River Basin TMDL.

Performance Standard

The TMDL Report developed for the Lower Fox River Basin states that a Municipal (MS4) Stormwater Discharge Permit cannot be reissued without a waste load allocation that is consistent with an EPA approved TMDL. The WDNR anticipates reissuing the City of Kaukauna's MS4 Permit during 2024.

The TMDL Report developed for the Lower Fox River Basin identifies waste load allocations for permitted Urban MS4 areas. The total phosphorus (TP) and total suspended solid (TSS) waste load allocations identified in the TMDL Report for the City's municipal boundary are summarized in Tables 3.-1 and 3-2, respectively.

Table 3-1: Phosphorus Allocations from TMDL Report

TMDL Sub-Basin	City Urban Area (acres)	Total Phosphorus (TP)			
		Baseline (lbs/yr)	Allocated (lbs/yr)	Reduction (lbs/yr)	Reduction (%)
Apple Creek	794.7	563	394	169	30.0%
Garners Creek	1,827.2	739	517	222	30.0%
Fox River	193.1	126	46	80	63.2%
Kankapot Creek	1,207.4	1,312	918	394	30.0%
Plum Creek	33.2	46	32	14	30.4%
Total:	4,055.5	2,786	1,908	878	31.5%

Table 3-2: Sediment Allocations from TMDL Report

TMDL Sub-Basin	City Urban Area (acres)	Total Suspended Solids (TSS)			
		Baseline (lbs/yr)	Allocated (lbs/yr)	Reduction (lbs/yr)	Reduction (%)
Apple Creek	794.7	237,775	142,665	95,110	40.0%
Garners Creek	1,827.2	410,816	142,959	267,857	65.2%
Fox River	193.1	54,218	27,167	27,051	49.9%
Kankapot Creek	1,207.4	666,000	399,600	266,400	40.0%
Plum Creek	33.2	15,120	9,072	6,048	40.0%
Total:	4,055.5	1,383,929	721,463	662,466	47.9%

As shown in Tables 3-1 and 3-2, the TMDL Report expresses the MS4 allocation as both a load reduction (pounds per year) and a percent reduction. Based on WDNR guidance, the TMDL's percent reduction should be used for MS4 permit compliance, rather than the TMDL's load reduction (pounds per year). However, the TMDL's percent reduction requires adjustment to a "no controls" condition before using for MS4 permit compliance. WDNR guidance describes the TMDL adjustment methodology in greater detail. Table 3-3 summarizes the adjusted TP and TSS percent reductions for the City. The adjusted TMDL percent reductions in Table 3-3 are based on the "no-controls" condition and are used for evaluating alternatives for MS4 permit compliance.

Table 3-3: Adjusted TMDL Percent Reductions

TMDL Sub-Watershed	Adjusted TSS Reduction from No-Controls	Adjusted TP Reduction from No-Controls
Apple Creek	52.0%	40.5%
Garners Creek	60.0%	68.7%
Fox River	72.2%	40.5%
Kankapot Creek	52.0%	40.5%
Plum Creek	52.0%	40.5%

Methodology

The TMDL pollutant analysis uses the Source Loading and Management Model for Windows (WinSLAMM version 10). WinSLAMM is a stormwater quality model that predicts runoff volumes and non-point source pollution loads for urban land uses. WinSLAMM also calculates the amount of pollutant removal provided by Best Management Practices (BMPs) such as street sweeping, catch basin cleaning, grass swales, grass filter strips, biofiltration, infiltration basins, wet ponds, wetland systems, proprietary devices, and other BMPs.

The TMDL pollutant analysis uses the series of small rainfall events that occurred between March 29, 1968 and November 25, 1972 in Green Bay, Wisconsin. For purposes of MS4 Permit compliance, this 5-year rainfall series was determined by the WDNR to represent an average annual rainfall condition for municipalities located in Northeast Wisconsin.

The TMDL pollutant analysis uses data files developed by the United States Geological Survey (USGS) and WDNR for the WinSLAMM model. The data files identify typical runoff volumes, pollutant concentrations, pollutant distributions, pollutant deliveries, and pollutant particle size distributions for typical urban stormwater runoff. The WinSLAMM data files obtained from the USGS and used in the TMDL pollutant analysis are as follows:

- WisReg - Green Bay Five Year Rainfall.ran
- WI_GEO02.ppdx
- v10 WI_SL06 Dec06.rsv
- WI_avg01.pscx
- WI_Res and Other Urban Dec06.std
- WI_Com Inst Indust Dec06.std
- Freeway Dec06.std
- Nurp.cpz

The TMDL pollutant analysis is based on the standard land use files developed by the WDNR for WinSLAMM. The standard land use files identify the amount of roof, parking lot, driveway, sidewalk, street, and lawn source areas which are typical for each standard land use. The standard land use files also identify the amount of connected imperviousness for each source area.

The TMDL pollutant analysis uses the study area depicted in Figure 1, the Sub-Watersheds depicted in Figure 3, and the 2012 land uses depicted in Figure 11. For purposes this TMDL pollutant analysis, the study area contains 4,801 acres. Of the 4,801 acre study area, the 327 acres of undeveloped land use (i.e. agriculture, quarries, wetlands, and open water) are excluded from the analysis. As such, the TMDL allocations apply to 4,474 acres of developed urban area in the Apple Creek, Garners Creek, Fox River, Kankapot Creek, and Plum Creek Sub-Watersheds. The WDNR is currently developing TMDL and WinSLAMM modeling guidance to assist with MS4 Permit compliance. This TMDL pollutant analysis will likely require updating after the WDNR guidance documents are completed.

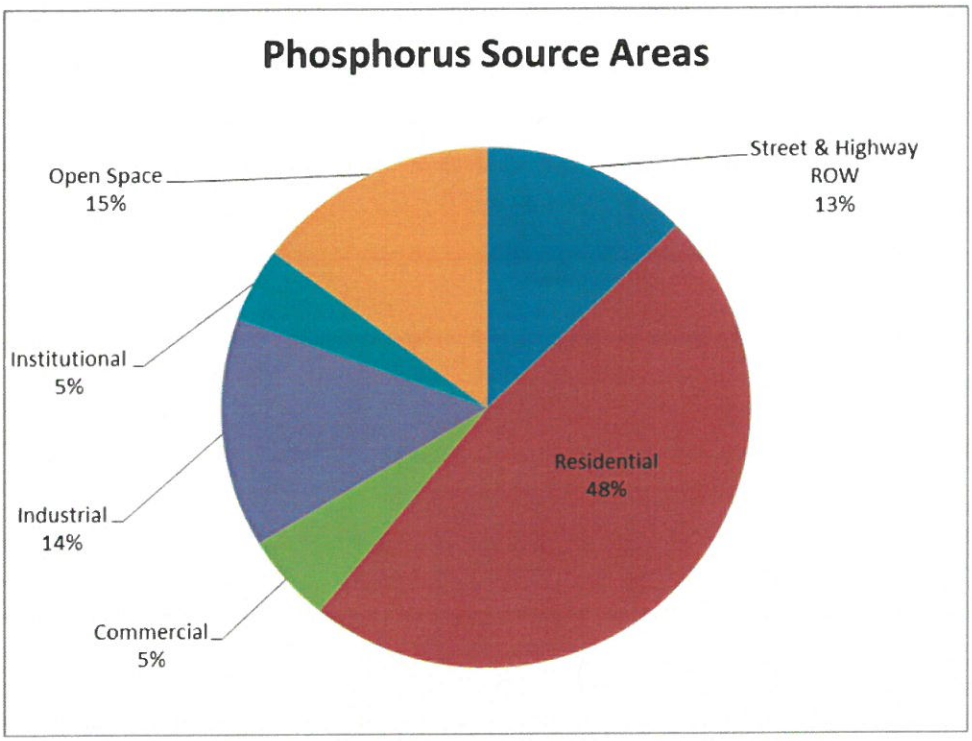
Baseline Load

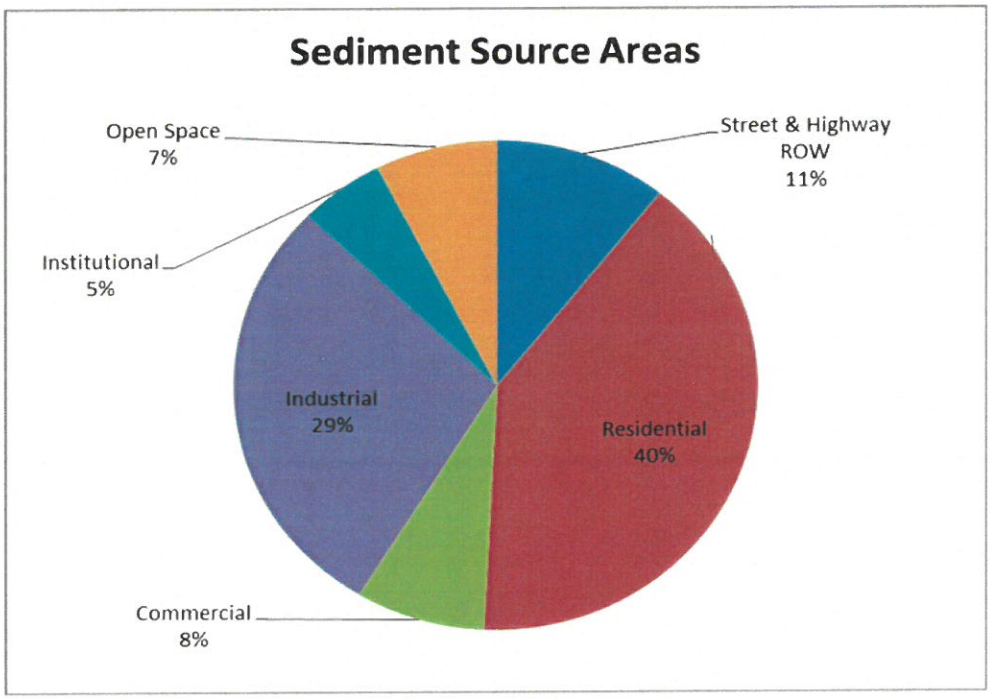
The TMDL baseline loads using WinSLAMM are summarized by land use in Table 3-4 and Exhibit 3-1. These baseline or "no control" loads exclude the pollutant reduction benefits of existing BMPs. As shown in Table 3-4 and Exhibit 3-1, residential land uses comprise the majority of land area, but street and highway land uses generate the largest pollutant loads.

Table 3-4: TMDL Baseline Loads by Land Use (WinSLAMM)

Land Use	Area (acres)	Area (%)	TP (lbs/yr)	TP (%)	TSS (lbs/yr)	TSS (%)
Residential	2,018	45%	1,515	48%	390,785	40%
Commercial	186	4%	174	6%	77,385	8%
Industrial	599	13%	451	14%	277,892	29%
Institutional	166	4%	146	5%	50,892	5%
Open Space	1,225	27%	464	15%	72,765	7%
Street & Highway ROW	280	6%	402	13%	104,074	11%
Total	4,474	100%	3,151	100%	973,793	100%

Exhibit 3-1: TMDL Baseline Loads by Land Use (WinSLAMM)





The City-wide Stormwater Management Plan (SWMP) dated December 26, 2013 contains a list of baseline pollutant yields (pounds per acre per year) and loads (pounds per year) from WinSLAMM for total phosphorus and total suspended solid pollutants. The baseline pollutant yields and loads are ranked by drainage area from highest to lowest within the Sub-Watersheds. Figures provided in the 2013 SWMP depict the WinSLAMM baseline pollutant yields and loads.

The TMDL pollutant analysis is based on the sub-watershed areas and WinSLAMM baseline pollutant loads contained in Tables 3-5, 3-6 and 3-7, respectively. These sub-watershed areas and baseline pollutant loads are categorized by MS4 jurisdiction and riparian property.

Table 3-5: Watershed Areas

	Watershed Areas (WinSLAMM)								
	City MS4		County Hwy		State Hwy		Riparian		Total
Sub-Watershed	(acres)	(%)	(acres)	(%)	(acres)	(%)	(acres)	(%)	(acres)
Apple Creek	794.7	18%	19.4	0%	90.2	2%	0.0	0%	904.2
Garners Creek	1,900.7	42%	55.1	1%	7.2	0%	112.8	3%	2,075.8
Fox River	193.1	4%	7.1	0%	0.0	0%	0.0	0%	200.2
Kankapot Creek	1,207.4	27%	48.3	1%	4.2	0%	0.0	0%	1,259.9
Plum Creek	33.2	1%	0.3	0%	0.0	0%	0.0	0%	33.4
Total	4,129.0	92%	130.2	3%	101.6	2%	112.8	3%	4,473.5

Table 3-6: Total Phosphorus Baseline Loads

	Total Phosphorus Baseline Loads (WinSLAMM)								
	City MS4		County Hwy		State Hwy		Riparian		Total
Sub-Watershed	(lbs/yr)	(%)	(lbs/yr)	(%)	(lbs/yr)	(%)	(lbs/yr)	(%)	(lbs/yr)
Apple Creek	519.0	16%	27.0	1%	108.5	3%	0.0	0%	654.5
Garners Creek	1,221.5	39%	88.7	3%	10.6	0%	56.3	2%	1,377.1
Fox River	142.6	5%	9.9	0%	0.0	0%	0.0	0%	152.5
Kankapot Creek	872.3	28%	66.8	2%	7.6	0%	0.0	0%	946.7
Plum Creek	22.5	1%	0.4	0%	0.0	0%	0.0	0%	23.0
Total	2,777.9	88%	192.8	6%	126.7	4%	56.3	2%	3,153.7

Table 3-7: Total Suspended Solid Baseline Loads

	Total Suspended Solid Baseline Loads (WinSLAMM)								
	City MS4		County Hwy		State Hwy		Riparian		Total
Sub-Watershed	(lbs/yr)	(%)	(lbs/yr)	(%)	(lbs/yr)	(%)	(lbs/yr)	(%)	(lbs/yr)
Apple Creek	221,672	23%	5,006	1%	34,634	4%	0	0%	261,311
Garners Creek	365,793	38%	22,738	2%	2,864	0%	20,960	2%	412,356
Fox River	37,440	4%	1,716	0%	0	0%	0	0%	39,156
Kankapot Creek	239,905	25%	14,688	2%	1,880	0%	0	0%	256,474
Plum Creek	5,454	1%	74	0%	0	0%	0	0%	5,528
Total	870,264	89%	44,222	5%	39,378	4%	20,960	2%	974,824

Allocation Analysis

Each MS4 permitted entity located within the City's municipal boundary is anticipated to receive a portion of the phosphorus and sediment waste load allocations contained in the TMDL Report. These MS4 permitted entities include the City of Kaukauna, Outagamie County Highway Department, and Wisconsin Department of Transportation (DOT). In addition to the MS4 permitted entities, riparian areas located along the Fox River or areas that do not drain through the permitted portion of the City's MS4 system are also anticipated to receive a portion of the allocations.

For purposes this analysis, the portions of developed urban area which were excluded from the TMDL pollutant analysis include the following:

- State & County Highways: The TMDL pollutant analysis excludes the pollutant load for state and county highway right-of-ways. The City has limited authority to regulate stormwater runoff, issue permits, and charge stormwater utility fees to state and county highway right-of-ways. Also, the state and county highway right-of-ways are separately regulated and permitted by WDNR. Of the 4,473.5 acres of developed urban area located within the Apple Creek, Garners Creek, Fox River, Kankapot Creek, and Plum Creek Sub-Watersheds, 4,129.0 acres are City MS4 jurisdiction, 130.2 acres are County MS4 jurisdiction, and 101.6 acres are State MS4 jurisdiction. Connecting highways are included in the City's MS4 jurisdiction.

- Riparian: The TMDL pollutant analysis excludes the pollutant load from riparian areas discharging directly into the Fox River without passing through the City's MS4 system. Of the 4,473.5 acres of developed urban area located in the Apple Creek, Garners Creek, Fox River, Kankapot Creek, and Plum Creek Sub-Watersheds, 112.8 acres are classified as riparian.

- Publicly Owned Parcels: The TMDL pollutant analysis includes the pollutant load for publicly owned parcels located within the urban planning boundary. Unlike state and county highway right-of-ways, the City has legal authority to regulate stormwater runoff, issue permits, and charge a stormwater utility fee to publicly owned parcels. For these reasons, the TMDL pollutant analysis includes the pollutant load for publicly owned parcels.

- WPDES Industrial Permits: The TMDL pollutant analysis includes the pollutant load for industrial areas with coverage under a WDPES Industrial Permit for 12 of the 13 industrial permitted facilities. The pollutant analysis excludes Expera Specialty Solutions for the alternatives provided. The City of Kaukauna had an initial conversation with Thilmany (now Expera Specialty Solutions), about potentially isolating their storm sewer system and discharging their runoff into their Wastewater Treatment Facility. Expera is looking at isolating their storm sewer system to reduce stormwater utility charges. Of the 4,129.0 acres within the City's MS4 jurisdiction, 73.5 acres that are privately owned are Expera Specialty Solutions. The excluded area is shown on Figure 15.

  The remaining industrial facilities are included in the analysis for the following reasons: the City has legal authority to regulate stormwater runoff; the City has legal authority to charge a stormwater utility fee; it is difficult to determine which portions of an industrial site are covered by a WPDES Industrial Permit; and the pollutant load is the City's responsibility if the WPDES Industrial Permit is terminated or certified "No Exposure" in the future. For these reasons, the TMDL pollutant analysis includes the pollutant load for industrial permitted areas, except quarries which are excluded from the City's MS4 jurisdiction.

2017 & 2023 Best Management Practices

Several BMPs qualified for TMDL pollutant reduction credit in 2017: street sweeping, grass swales, Van Epern Pond, G and G Machine Biofilters, Kelso Park Pond, Commerce Crossing 2 Pond, Commerce Crossing 3 Pond, Wildenberg Estates North Pond, Lamplighter Apartments Pond, Rose Tree Villas Biofilter, Hurkman Heights South Pond, Wildenberg Estates South Pond, Autumn Court Pond, Camden Way Pond, Fenway Court Pond, Andrea Michelle Court Pond, Meadowview South Pond, Whitewolf Lane Pond, Softball Diamond #2 Biofilter, Moon Ridge Court Pond, Jonen Park Biofilter, Newton Lane Court Pond, Jonen Park Pond, Coriander Court Pond, Lemongrass Way Pond, Softball Diamond #1 Biofilter, Horseshoe Park Pond, Piggly Park Pond, Loderbauer Pond and Kavanaugh Pond and the Coffee Hill Pond. Grass swales owned or operated by County and State MS4 jurisdictions are not included in the existing condition TMDL pollutant analysis. The 2012 BMPs are depicted in Figure 13.

The BMPs qualified for the TMDL pollutant credit in 2023 includes those listed above for 2017 with the addition of Company Woods Pond, Catherine Street Pond, DPW Underground Detention Pond. Other BMPs were constructed since 2017 privately or were new development and are considered to have minimal benefits. Therefore, they were not included in this analysis and would be included in future City-wide SWMP updates. The 2023 BMPs are depicted in Figure 14.

- Apple Creek: Table 3-8 indicates the 2023 BMPs provided a 38.9% TP reduction within the Apple Creek Sub-Watershed, which does not satisfy the 40.5% TP reduction required in Table 3-1. Also, Table 3-8 indicates the 2023 BMPs provided a 58.0% TSS reduction within the Apple Creek Sub-Watershed, which satisfies the 52.0% TSS reduction required in Table 3-2.

- Garners Creek: Table 3-8 indicates the 2023 BMPs provided a 27.0% TP reduction within the Garners Creek Sub-Watershed, which does not satisfy the 68.7% TP reduction required in Table 3-1. Also, Table 3-8 indicates the 2023 BMPs provided a 40.1% TSS reduction within the Garners Creek Sub-Watershed, which does not satisfy the 60.0% TSS reduction required in Table 3-2. As such, additional BMPs are needed within the Garners Creek Sub-Watershed to target both sediment and phosphorus pollutants.

- Fox River: Table 3-8 indicates the 2023 BMPs provided a 14.2% TP reduction within the Fox River Sub-Watershed, which does not satisfy the 40.5% TP reduction required in Table 3-1. Also, Table 3-8 indicates the 2023 BMPs provided a 22.0% TSS reduction within the Fox River Sub-Watershed, which does not satisfy the 72.2% TSS reduction required in Table 3-2. As such, additional BMPs are needed within the Fox River Sub-Watershed to target both sediment and phosphorus pollutants.

- Kankapot Creek: Table 3-8 indicates the 2023 BMPs provided a 26.7% TP reduction within the Kankapot Creek Sub-Watershed, which does not satisfy the 40.5% TP reduction required in Table 3-1. Also, Table 3-8 indicates the 2023 BMPs provided a 39.2% TSS reduction within the Kankapot Creek Sub-Watershed, which does not satisfy the 52.0% TSS reduction required in Table 3-2. As such, additional BMPs are needed within the Kankapot Creek Sub-Watershed to target both sediment and phosphorus pollutants.

- Plum Creek: Table 3-8 indicates the 2023 BMPs provided a 42.9% TP reduction within the Plum Creek Sub-Watershed, which satifies the 40.5% TP reduction required in Table 3-1. Also, Table 3-8 indicates the 2023 BMPs provided a 64.1% TSS reduction within the Plum Creek Sub-Watershed, which satisfies the 52.0% TSS reduction required in Table 3-2.

2017 Condition:

Pollutant Analysis Summary - Urban Study Area									
		TSS							
Sub-Watershed	Area (acres)	Before Drain System (lbs/yr)	After Outfall Control (lbs/yr)	Total Load Reduct (lbs)	Total Load Reduct (%)	TMDL Load Redct Req'd (lbs)	TMDL Load Redct Req'd (lbs)	Addt'l Load Redct Req'd (lbs)	TMDL TSS Redct Satisfied (Y/N)
Apple Creek	794.7	221,672	93,148	128,524	58.0%	115,269	52.0%	-13,254	Y
Fox River	1,827.2	336,567	267,720	68,847	20.5%	243,001	72.2%	174,154	N
Garners Creek	193.1	37,328	22,346	14,982	40.1%	22,397	60.0%	7,415	N
Kankapot Creek	1,207.4	239,905	145,829	94,076	39.2%	124,751	52.0%	30,675	N
Plum Creek	33.2	5,454	1,957	3,497	64.1%	2,836	52.0%	-661	Y
Totals:	4,055.5	840,926	531,000	309,926	36.9%	508,254	60.4%	198,328	N

Pollutant Analysis Summary - Urban Study Area									
		TP							
Sub-Watershed	Area (acres)	Before Drain System (lbs/yr)	After Outfall Control (lbs/yr)	Total Load Reduct (lbs)	Total Load Reduct (%)	TMDL Load Redct Req'd (lbs)	TMDL Load Redct Req'd (lbs)	Addt'l Load Redct Req'd (lbs)	TMDL TP Redct Satisfied (Y/N)
Apple Creek	794.7	519.0	317.2	201.8	38.9%	210.2	40.5%	8.4	N
Fox River	1,827.2	1,179.7	1,028.4	151.3	12.8%	477.8	40.5%	326.5	N
Garners Creek	193.1	142.6	104.1	38.5	27.0%	98.0	68.7%	59.5	N
Kankapot Creek	1,207.4	872.3	639.8	232.5	26.7%	353.3	40.5%	120.7	N
Plum Creek	33.2	22.5	12.9	9.7	42.9%	9.1	40.5%	-0.5	Y
Totals:	4,055.5	2,736.2	2,102.3	633.8	23.2%	1,148.4	42.0%	514.5	N

2023 Condition:

Note: BMPs Added: Catherine Pond, Ann Street Underground Pond & Company Woods Pond

Pollutant Analysis Summary - Urban Study Area									
		TSS							
Sub-Watershed	Area (acres)	Before Drain System (lbs/yr)	After Outfall Control (lbs/yr)	Total Load Reduct (lbs)	Total Load Reduct (%)	TMDL Load Redct Req'd (lbs)	TMDL Load Redct Req'd (lbs)	Addt'l Load Redct Req'd (lbs)	TMDL TSS Redct Satisfied (Y/N)
Apple Creek	794.7	221,672	93,148	128,524	58.0%	115,269	52.0%	-13,254	Y
Fox River	1,827.2	336,567	262,533	74,034	22.0%	243,001	72.2%	168,967	N
Garners Creek	193.1	37,328	22,346	14,982	40.1%	22,397	60.0%	7,415	N
Kankapot Creek	1,207.4	239,905	145,829	94,076	39.2%	124,751	52.0%	30,675	N
Plum Creek	33.2	5,454	1,957	3,497	64.1%	2,836	52.0%	-661	Y
Totals:	4,055.5	840,926	525,813	315,114	37.5%	508,254	60.4%	193,141	N

Pollutant Analysis Summary - Urban Study Area									
		TP							
Sub-Watershed	Area (acres)	Before Drain System (lbs/yr)	After Outfall Control (lbs/yr)	Total Load Reduct (lbs)	Total Load Reduct (%)	TMDL Load Redct Req'd (lbs)	TMDL Load Redct Req'd (lbs)	Addt'l Load Redct Req'd (lbs)	TMDL TP Redct Satisfied (Y/N)
Apple Creek	794.7	519.0	317.2	201.8	38.9%	210.2	40.5%	8.4	N
Fox River	1,827.2	1,179.7	1,012.6	167.1	14.2%	477.8	40.5%	310.7	N
Garners Creek	193.1	142.6	104.1	38.5	27.0%	98.0	68.7%	59.5	N
Kankapot Creek	1,207.4	872.3	639.8	232.5	26.7%	353.3	40.5%	120.7	N
Plum Creek	33.2	22.5	12.9	9.7	42.9%	9.1	40.5%	-0.5	Y
Totals:	4,055.5	2,736.2	2,086.6	649.6	23.7%	1,148.4	42.0%	498.8	N

4.0 POLLUTANT REDUCTION ANALYSIS

WinSLAMM (version 10) was used in conjunction with national literature to analyze the stormwater quality benefits and cost-effectiveness of proposed urban stormwater BMPs such as street sweeping, catch basin cleaning, grass swales, grass filter strips, biofiltration, infiltration basins, wet detention ponds / wetland systems, proprietary devices, and mechanical / biological treatment facilities. The results of the pollutant reduction analysis are summarized herein. More detailed water quality results are provided in Appendix B.

The capital costs contained in Tables 4-1 through 4-7 are the estimated present value capital costs for the BMP. The capital costs include an allowance for construction, land acquisition, engineering, legal, and contingency costs. The 20-year costs provided in the tables are the estimated present value costs per pound of TSS removed during a 20-year period. The 20-year costs include an allowance for capital costs and long-term operation and maintenance costs. The 20-year period was determined to be a reasonable life cycle or planning period for evaluating BMP cost-effectiveness. A longer planning period would improve the cost-effectiveness of structural BMPs (e.g. wet detention pond) as compared to non-structural BMPs (e.g. street sweeping).

Street Sweeping

Street sweeping is effective at collecting large sediment particles (sand sized particles), trash, debris and leaves. Limited pollutant removal occurs for fine-grained particles such as silt, clay, metals and nutrients. Research indicates that street pollutants tend to accumulate within 3 feet of the street's curb and gutter. Wind turbulence from traffic tends to blow pollutants toward the curb. The curb acts as a barrier and traps pollutants. For streets without curb, wind turbulence generated by a passing vehicle tends to blow pollutants onto the adjacent grass area. As such, for street sweeping to be effective, the street must have curb.

The effectiveness of a municipal street sweeping program depends on the type of street sweeper, number of curb-miles, sweeping frequency, traffic volume, time of year, rainfall, and operator knowledge. In addition, the benefits of sweeping are significantly reduced when vehicles are parked along the curb. Whenever a street sweeper needs to maneuver around a parked car, the pollutants under the car are not removed. As such, the more cars parked along a street, the less pollutant removal.

There are two types of street sweeper: mechanical and high efficiency. Mechanical street sweepers use a broom to remove pollutants from the street surface and high efficiency street sweepers use a vacuum system to remove pollutants. Typically, the high efficiency sweeper is more effective at removing pollutants as compared to the mechanical sweeper. Table 4-1 summarizes typical street sweeping costs.

- High Efficiency (H.E.) Street Sweeper – The City currently uses a high efficiency street sweeper. The City also adopted a parking control ordinance to restrict parking along the street during sweeping operations.

Table 4-1: Street Sweeping & Catch Basin Cleaning

BMP	Pollutant Load Reduction		Avg. Annual TSS Cost ($/lb)
	TSS (%)	TP (%)	
M. Sweeper (Every 2 weeks, no parking ordinance)	3%	2%	$5.4
M. Sweeper (Every 2 weeks, with parking ordinance)	6%	4%	$2.5
H.E. Sweeper (Every 4 weeks, no parking ordinance)	2%	1%	$3.5
H.E. Sweeper (Every 4 weeks, with parking ordinance)	6%	4%	$1.2
H.E. Sweeper (Every 2 weeks, no parking ordinance)	5%	3%	$2.9
H.E. Sweeper (Every 2 weeks, with parking ordinance)	13%	8%	$1.2
H.E. Sweeper (Every week, no parking ordinance)	10%	6%	$2.9
H.E. Sweeper (Every week, with parking ordinance)	22%	14%	$1.4
Catch Basin Cleaning	12%	9%	$1.7

Catch Basin Cleaning

Catch basin cleaning is effective at collecting large sediment particles (sand sized particles), trash, debris and leaves. Limited pollutant removal occurs for fine-grained particles such as silt, clay, metals and nutrients. Catch basin sumps are effective for parking lots and streets that serve a small drainage area (less than 1 acre). Ideally, a catch basin sump has a minimum 3 foot depth to prevent scouring of previously settled pollutants during a rainfall.

Approximately 10% of the Cities MS4 system contains catch basin sumps. Catch basin sumps are dispersed throughout the City and are not mapped. The City is slowly eliminating the catch basin sumps due to their high cost and lower benefit. Typically, the City cleans catch basin sumps once a year if staff is available. The City of Kaukauna owns a JetVac for catch basin cleaning.

Based on WDNR Guidance, the City cannot obtain water quality credit for both catch basin cleaning and street sweeping. In the City, street sweeping is a priority since sweeping helps maintain aesthetics, reduces public complaints, and reduces catch basin grate clogging. For these reasons, the City prefers street sweeping as compared to catch basin cleaning.

Routine maintenance costs are high since catch basin sumps need to be cleaned in order to permanently dispose of trapped pollutants in the sump. As shown in Table 4-1, street sweeping every 2 weeks with a high efficiency street sweeper and adoption of a parking

control ordinance provides about the same pollutant reduction as catch basin cleaning, but is more cost effective.

Grass Swales

Grass swales remove pollutants from concentrated stormwater by filtration through the grass and infiltration into the soil. The filtering capacity depends on the flow depth in the swale as compared to the grass height. Typically, when the flow depth is above the grass, filtering is minimal and scouring of previously settled pollutants is a concern. The water quality benefits of a grass swale are largely determined by the infiltrating capacity of underlying soils and the depth to groundwater. A grass swale located in sandy soil has a much higher pollutant removal as compared to a grass swale located in clay soil. WDNR Technical Standard 1005 – Vegetated Infiltration Swale discusses design criteria for grass swales.

Grass swales are typically located along streets. As shown in Figure 8, most streets in the City are drained via curb and gutter, rather than grass swales. As shown in Figure 5, soils in the City are predominately clay (hydrologic soil group C and D). As such, the infiltrating capacity of the underlying soils is minimal. Due to the urban streets and clay soils in the City, the cost to retrofit a grass swale along an existing street is very high and the pollutant removal is relatively low. Table 4-2 summarizes the cost and water quality benefits of a grass swale retrofit. The costs contained in Table 4-2 can be compared to the other BMP costs contained in 4-1, 4-3, 4-4, 4-5 and 4-6.

Grass Filter Strips

Grass filter strips remove pollutants from stormwater by filtration through the grass and infiltration into the soil. The filtering capacity of a grass filter strip depends on its longitudinal slope, length and grass density. The water quality benefits of a grass filter strip are largely determined by the infiltrating capacity of underlying soils. A grass filter strip located in sandy soil has a higher pollutant removal as compared to a grass filter strip located in clay soil.

Grass filter strips are effective for parking lots that serve small drainage areas (less than 1 acre). Typically, grass filter strips need to be a minimum of 20 feet long, but at least as long as the contributing impervious surface length. A 64 foot wide parking lot would typically require a 64 foot long grass filter strip. As such, grass filter strips require a significant amount of land area as compared to other BMPs.

In order for a grass filter strip to be effective, the stormwater flowing into the filter strip cannot be concentrated within a swale, ditch, channel, gutter, or other similar conveyance system. Rather, the stormwater must be flowing across the surface of a parking lot, lawn or other ground surface in a very thin sheet of dispersed water.

As shown in Figure 8, the City does not currently have any grass filter strips. As shown in Figure 5, soils in the City are predominately clay (hydrologic soil group C and D). As such, the infiltrating capacity of the underlying soils is minimal. Due to the land requirements and predominately clay soils in the City, the construction and land costs to retrofit a grass filter strip are high as compared to the water quality benefit provided. Table 4-2 summarizes the cost and water quality benefits of a grass filter strip retrofit. The costs contained in Table 4-2 can be compared to the other BMP costs contained in 4-1, 4-3, 4-4, 4-5 and 4-6.

Table 4-2: Grass Swales & Grass Filter Strips

BMP	Pollutant Load Reduction		Avg. Annual TSS Cost ($/lb)
	TSS (%)	TP (%)	
Grass Swales – Retrofit C&G Streets	15%	10%	$178.0
Grass Filter Strips – Retrofit Parking Lot	98%	98%	$11.2

Biofiltration

Biofiltration devices remove pollutants from stormwater by filtration through an engineered soil mixture. Typically, the engineered soil is three feet deep and consists of a sand, compost, peat, and/or topsoil mixture. A diverse mix of prairie flowers, grasses, shrubs and/or trees are typically planted in a mulch layer located above the engineered soil. During a rainfall, stormwater is temporarily stored above the mulch layer until it can be filtered through the engineered soil. A perforated underdrain pipe located beneath the engineered soil collects the filtered water and discharges it into an adjacent storm sewer or other conveyance system. Biofiltration devices are effective for small drainage areas (less than 2 acres).

Biofiltration devices are called a "bioretention" device when the native soils located beneath the engineered soil layer are permeable and the majority of stormwater infiltrates into the native soils. In sandy soils, it may be feasible to eliminate the perforated underdrain pipe to further increase infiltration. Bioretention devices are used to recharge groundwater and improve stormwater quality, whereas biofiltration devices are primarily used to improve stormwater quality. WDNR Technical Standard 1004 – Bioretention for Infiltration discusses design criteria for bioretention and biofiltration.

Bioretention devices are sometimes called a "rain garden" if the device does not contain an engineered soil layer. Rain gardens are typically installed for groundwater recharge purposes rather than stormwater pollutant removal. Often, runoff from a residential roof, patio, sidewalk or driveway is directed to a rain garden. These residential source areas have a low pollutant load but generate a significant amount of runoff volume. Whenever a source area has a high pollutant load (i.e. street or parking lot), an engineered soil layer is recommended to provide a higher capacity filter media. A high capacity filter media reduces

the device's surface area, ponding duration, and clogging potential. If stormwater is allowed to pond on the surface of a rain garden, bioretention device, or biofiltration device for more than 24 hours, the plants may become diseased or die due to wet conditions or poor system hydrology.

Biofiltration devices are sometimes called a "bio-swale" if the device contains a longitudinal slope to facilitate flow conveyance. Typically, a bio-swale has a linear configuration. Bio-swales are typically installed within parking lots or along streets. Bio-swales can be used to recharge groundwater and/or improve stormwater quality. As such, a bio-swale may or may not include a perforated underdrain pipe.

As shown in Figure 5, soils in the City are predominately clay (hydrologic soil group C and D). Due to the predominately clay soils, biofiltration is more practicable for high load source areas as compared to a rain garden or bioretention device that relies on infiltration.

The costs to incorporate biofiltration into a street retrofit project or a street reconstruction project are summarized in Table 4-3. Typically, it is more cost-effective to incorporate biofilters into a street reconstruction project, as compared to a street retrofit project. The costs contained in Table 4-3 can be compared to the other BMP costs contained in 4-1, 4-2, 4-4, 4-5 and 4-6.

Table 4-3: Street Biofiltration

Street Corridor Land Use	Pollutant Load Reduction		Avg. Annual TSS Cost ($/lb)			
			Retrofit		Reconstruct	
	TSS (%)	TP (%)	Sand	Clay	Sand	Clay
Commercial Corridors	80%	71%	$5.5	$17.6	$4.4	$14.2
Industrial Corridors	80%	49%	$3.4	$11.6	$2.8	$9.3
Institutional Corridors	80%	72%	$3.8	$12.0	$3.1	$9.7
Residential Corridors	80%	66%	$6.7	$20.7	$5.4	$16.7
Open Space Corridors	80%	66%	$6.1	$20.1	$4.9	$16.2

The costs to incorporate biofiltration into a parcel retrofit project or a parcel reconstruction project are summarized in Table 4-4. Typically, it is more cost-effective to incorporate biofilters into a parcel or site reconstruction project, as compared to a parcel or site retrofit project. The costs contained in Table 4-4 can be compared to the other BMP costs contained in Tables 4-1, 4-2, 4-3, 4-5 and 4-6.

Table 4-4: Parcel Biofiltration

Parcel Land Use	Pollutant Load Reduction		Avg. Annual TSS Cost ($/lb)			
			Retrofit		Reconstruct	
	TSS (%)	TP (%)	Sand	Clay	Sand	Clay
Commercial Downtown	80%	69%	$65.0	$81.8	$52.5	$66.1
Hospital	80%	68%	$53.0	$76.2	$42.9	$61.6
Institutional	80%	66%	$38.0	$57.1	$30.7	$46.2
Light Industrial	80%	55%	$14.6	$17.7	$11.8	$14.3
Medium Industrial	80%	69%	$23.9	$35.7	$19.4	$28.9
Multi-Family Residential	80%	60%	$38.9	$71.6	$31.4	$57.9
Office Park	80%	67%	$35.4	$51.5	$28.6	$41.7
Schools	80%	63%	$33.6	$52.5	$27.2	$42.5
Shopping Center	80%	69%	$39.3	$51.8	$31.8	$41.9
Strip Commercial	80%	69%	$44.0	$57.6	$35.6	$46.6

Recent research has shown that biofilter media may not decrease total phosphorus. Research is being developed for sand filters and their respective pollutant reduction. A sand filter is similar to a biofiltration device except the engineered soil consists of 100% sand meeting one of the gradation options specified in Technical Standard 1004. Per WNDR guidance, a sand filter may obtain 80% TSS and 35% TP reduction for the filtering component of the devices. The WDNR is currently researching development of an engineered soil mixture that would achieve a greater TP removal credit than a sand filter. The costs to incorporate a sand filters into a street or parking lot retrofit or reconstruction project will be primarily the same as the biofiltration costs listed in Tables 4-3 and 4--4. The only difference between sand filters and biofiltration is that sand filters provide some level of TP removal for the filtered component.

Infiltration Basins

An infiltration basin is a water impoundment constructed over a highly permeable soil. The purpose of an infiltration basin is to temporarily store stormwater and allow it to infiltrate through the bottom and sides of the infiltration basin. Pollutants are removed by the filtering action of the underlying soil. The primary functions of an infiltration basin are to provide groundwater recharge, reduce runoff volumes, and reduce peak discharge rates. The secondary function of an infiltration basin is water quality. WDNR Technical Standard 1003 – Infiltration Basin discusses design criteria for infiltration basins.

Infiltration basins require pretreatment to prevent clogging and failure. WDNR Technical Standard 1003 - Infiltration Basin requires a pretreatment system to reduce the TSS load entering an infiltration basin by 60% for a residential land use and 80% for a commercial, industrial, or institutional land use. Typically, a wet detention pond or biofiltration device is used as the pretreatment system. The pretreatment system prevents the infiltration basin from failing and helps reduce the risk of groundwater contamination due to pollutants

contained in stormwater. Not all stormwater runoff should be infiltrated due to concern for groundwater contamination.

In order for an infiltration basin to be feasible, the depth to groundwater typically needs to be 5 feet or more and the soil needs to be a loam, silt or sand. As shown in Figure 5, soils in the City are predominately clay (hydrologic soil group C and D). Silty soils (hydrologic soil group B) in the City are generally located along the Kankapot Creek corridor and within the central portion of the City's north side. As such, the feasibility of an infiltration basin is very limited within the City.

Finally, a significant amount of the water quality benefit is provided by the infiltration basin's pretreatment system. Typically, the pretreatment system is a wet detention pond or biofiltration device. From a water quality perspective, an infiltration basin is not cost effective after considering the pretreatment costs. As such, infiltration basin costs are not included in the analysis; rather pretreatment system costs are included in the analysis (i.e. wet detention ponds and biofiltration devices).

Wet Detention Ponds / Wetland Systems

Wet detention ponds and wetland systems are effective at removing sediment, nutrients, heavy metals, oxygen demanding compounds (BOD), hydrocarbons, and bacteria. Pollutant removal within a wet pond and wetland system is primarily due to gravity settling of particulate pollutants and sediment. Filtration, adsorption and microbial decomposition also remove pollutants, particularly within a wetland system. WDNR Technical Standard 1001 – Wet Detention Pond discusses design criteria for wet detention ponds.

Typically, a wet detention pond or wetland system must contain a minimum water depth of 5 feet within a portion of the permanent pool to minimize re-suspension of pollutants during a rainfall event. The WDNR requires that wet detention ponds and wetland systems be sized using the National Urban Runoff Project (NURP) particle size distribution. To achieve an 80% reduction in TSS, a wet detention pond or wetland system typically needs to remove the 3 to 5 micron sediment particle.

Existing dry detention ponds located in the City were evaluated to determine the feasibility of converting into wet detention ponds. Currently, WDNR does not allow water quality credit for dry detention ponds. Existing dry detention ponds located within the City are depicted in Figure 7 and summarized in Table 2-3. Generally, wet detention ponds are not recommended for small watersheds (less than 15 to 20 acres in clay soil). A wet detention pond located in a small watershed may develop stagnation problems and become a public nuisance. Public acceptance of stormwater BMPs is important to the success of the City's stormwater program.

As shown in Figure 5, soils in the City are predominately clay (hydrologic soil group C and D). Since clay soils are not conducive to infiltration, wet detention ponds and wetland systems tend to be cost-effective BMP options. A cost analysis was completed to determine the most cost-effective retrofits within the City. As part of the analysis, aerial photographs were used to identify potential undeveloped properties that could be used for a retrofit. The location of storm sewer pipes and the watershed size in relation to the undeveloped property was also considered. Table 4-5 summarizes the cost and water quality benefits of those wet detention ponds / wetland systems analyzed for the City (partial list of analyzed ponds). Wet detention ponds analyzed for the City is provided in Appendix C. The costs contained in Table 4-5 can be compared to the other BMP costs contained in 4-1, 4-2, 4-3, 4-4 and 4-6.

Table 4-5: Potential Wet Detention Ponds / Wetland Systems

Wet Detention Pond / Wetland System	Drainage Area (acres)	Pollutant Reduction		Capital Costs*	Capital & O&M Costs Over 20 Years*	Avg. Annual TSS Cost ($/lb)*
		TSS (%)	TP (%)			
Grignon Park Disk Golf Pond	106	72%	50%	$282,470	$344,268	$1.95
Agricultural Park Pond Mod.	96	88%	52%	$480,800	$974,482	$2.10
Northridge Dr Dry Pond Conver	39	86%	60%	$348,580	$483,196	$2.19
MCC Quarry Regional Pond	346	81%	55%	$1,923,199	$1,920,938	$2.29
Seventh Street Pond	29	83%	63%	$186,310	$238,112	$2.57
Company Woods Expansion	44	78%	51%	$180,000	$215,010	$3.42
Fourteenth Street Pond	43	76%	53%	$186,310	$236,660	$3.05
Draper Street North Pond	121	55%	39%	$552,919	$580,068	$4.03
Winchester East Pond	23	78%	55%	$210,350	$243,313	$4.37
Sunny Meadows Pond	20	80%	55%	$155,058	$171,596	$5.08
Kelso Park Pond Expansion	441	70%	55%	$1,412,349	$1,526,520	$5.70
Badger Pond Conversion	48	82%	58%	$388,246	$445,614	$5.90
CTH HH Pond	27	82%	57%	$360,600	$404,036	$6.62
Fieldcrest Ponds	11	80%	55%	$352,000	$403,800	$6.79
Riverview Underground Pond	112	57%	42%	$2,155,175	$2,255,925	$8.28
MCC Quarry Pond	31	85%	43%	$276,460	$321,308	$8.86

** 2023 present value costs.*

In the 2002 version of the NR 151 rule, best management practices (BMPs) associated with post-construction sites containing new development may not be located in navigable waters to receive credit for meeting any performance standard in Chapter NR 151. This restriction has been retained in the revised rule. Also in the 2002 version of the rule, best management practices for existing development, re-development or in-fill development could receive water quality credit for wet detention ponds / wetland systems constructed within both perennial and intermittent streams if all applicable permits are received. As of January 1, 2011, NR 151.003 only allows water quality credit for newly constructed wet detention ponds / wetland systems constructed within intermittent streams for which all applicable permits are received.

In the future, the City may want to investigate the feasibility of adding polymers or flocculants to wet detention ponds to enhance pollutant removal efficiencies. Polymer or flocculent additions will likely require installation of mechanical injection systems. Due to WDNR environmental concerns, polymer and flocculent costs were not evaluated for this study. The WDNR is currently discussing if Wisconsin will allow the use of polymers and flocculants in wet detention ponds. This TMDL pollutant analysis will likely require updating after WDNR guidance documents regarding the use of polymer and flocculants in ponds is completed.

Concept drawings for a few of the Table 4-5 facilities are provided in Appendix C.

Proprietary Devices

Several private companies have developed proprietary stormwater quality treatment devices. These underground treatment devices are advantageous within ultra-urban watersheds where there is not land available for wet detention ponds, wetland systems, or biofiltration devices. Some of the devices are based on simple hydraulics and residence times, and others devices are based on complex hydrodynamics or the use of different filter materials. Maintenance activities vary from vacuum truck suctioning of pollutants to replacing filter media in cartridges. The WDNR Technical Standard 1006 - Proprietary Sedimentation Devices discusses design criteria for proprietary sedimentation devices.

Several proprietary devices were analyzed using WinSLAMM. For purposes of this analysis, various proprietary devices and drainage areas were evaluated to determine the device's cost effectiveness. McMahon contacted a local proprietary device supplier and asked the supplier to size the proprietary devices using their design methodology. McMahon then used the WinSLAMM model and unit size selected by the supplier to evaluate water quality benefits. Table 4-6 summarizes the costs and water quality benefits of those proprietary devices. The costs contained in Table 4-6 can be compared to the other BMP costs contained in 4-1, 4-2, 4-3, 4-4 and 4-5.

Table 4-6: Proprietary Devices

Structural BMP	Drainage Area (acres)	Pollutant Load Reduction		Capital Costs	Capital & O&M Costs Over 20 Years	Avg. Annual TSS Cost ($/lb)
		TSS (%)	TP (%)			
Vortechnic VX-11000 Unit	16.59	17%	14%	$60,000	$96,694	$4.61
Vortechnic VX-7000 Unit	10.42	22%	16%	$44,125	$72,665	$5.69
Vortechnic VX-9000 Unit	6.36	24%	18%	$44,250	$76,867	$9.89
Vortechnic VX-4000 Unit	6.36	20%	14%	$37,750	$62,213	$9.90

Mechanical / Biological Treatment Facilities

Mechanical / biological treatment facilities are not currently used in Wisconsin, with the exception of combined sewer systems that treat wastewater and stormwater. A mechanical / biological treatment facility would be difficult to implement for stormwater given the number of storm sewer outfalls located within the City. Significant storm sewer pumping would likely be needed to convey stormwater from each outfall to a regional stormwater treatment facility, similar to a wastewater treatment facility. As a result, stormwater treatment facilities are not typically cost effective BMPs. A mechanical / biological treatment facility and associated pumping systems are estimated to have an average annual cost that is well above $20 per pound of TSS removed. In addition, diverting low flows from all storm sewer outfalls to a regional treatment facility may dry up existing wetlands and streams located near the City's current storm sewer outfalls.

5.0 PLAN OF ACTION

The City is responsible for reducing phosphorus and sediment discharges to comply with the waste load allocations for the developed urban area. A Plan of Action was developed to satisfy the TMDL allocations. The Plan of Action identifies a combination of existing and proposed BMPs that satisfies TMDL allocations for the City MS4.

The Plan of Action is a living document, which may change in the future as implementation progresses. The Plan of Action provides an anticipated implementation schedule, including projected costs. The Plan of Action is depicted in Figure 15 and includes the following:

- Street sweeping with a high efficiency street sweeper and parking controls to improve pollutant reduction benefits. Street sweeping occurs 4 times per week for downtown areas and 2 times per week for main arterial roads. Weather permitting, street sweeping begins March 29 and ends November 25 of each calendar year.

- Proposed pond construction project required to meet the TMDL goals include: Badger Pond, Company Woods Expansion, Draper Street North Pond, MCC Quarry Regional Pond, Riverview Pond, Winchester East Pond, CTH HH Pond with Enhanced Settling, Fieldcrest Ponds with Enhanced Settling, Sunny Meadows Pond with Enhanced Settling and many street and rear-yard biofilters. Additionally, modifications to existing ponds include: Coriander Court Pond with Enhanced Settling, Horseshoe Park Pond with Enhanced Settling, Jonen Park Wet Pond with Enhanced Settling, Lemongrass Way Pond with Enhanced Settling, Moon Ridge Court Pond with Enhanced Settling, Newton Lane Court Pond with Enhanced Settling, and Kelso Park Pond Expansion.

- Future development was also considered as part of the TMDL Plan of Action. The future development areas are shown on Figure 15. These areas will have 80% TSS reduction in the developed condition.

Costs associated with the proposed structural BMPs are provided in Table 5-1. The capital costs include an allowance for construction, land, engineering, and contingency costs. The City's 25-year Capital Improvement Plan (CIP), developed for the Plan of Action is included in Appendix A. The 25-year CIP shows the TMDL allocations are planned to be met in the year 2040 (25 year timeline). The City currently has debt service which expires in 2025, which limits the ability to construct ponds in the near future. See Appendix A for more information.

Table 5-1: Plan of Action

Structural BMP	Opinion of Probable Cost	Construction Year	Apply for UNPS&SW Grant
Company Woods Expansion	$180,000	2023	2022
Riverview Pond	$2,140,925	2025	2024
Badger Pond	$402,364	2025	-
Horseshoe Park Pond with Enhanced Settling	$238,664	2027	-
Moon Ridge Court Pond with Enhanced Settling	$33,067	2027	2026
Sunny Meadows Pond with Enhanced Settling	$156,451	2029	2028
MCC Quarry Regional Pond	$1,993,134	2030	-
Jonen Park Wet Pond with Enhanced Settling	$122,647	2030	-
Draper Street North Pond	$623,291	2030	2030
Winchester East Pond	$244,771	2032	2032
Kelso Park Pond Expansion	$1,720,499	2035	2034
Fieldcrest Ponds with Enhanced Settling	$433,849	2036	2036
Coriander Court Pond with Enhanced Settling	$55,611	2036	-
Lemongrass Way Pond with Enhanced Settling	$151,906	2036	-
Newton Lane Court Pond with Enhanced Settling	$122,947	2036	-
Starwood Acres Pond	$573,026	2037	2036
CTH HH Pond with Enhanced Settling	$599,653	2040	2040
Bio Retention / Rain Gardens	$882,747	2040	-
Total	$10,643,070	-	-

6.0 IMPLEMENTATION & RECOMMENDATIONS

Below are various recommendations for the City to consider when implementing the Plan of Action and working toward MS4 Municipal Stormwater Permit compliance. The goal of the Plan of Action is to achieve long-term urban stormwater quality requirements established in the Lower Fox River Basin Total Maximum Daily Load (TMDL).

Operation & Maintenance

It is recommended that the City continue to operate and maintain its current stormwater management system, which provides a City-wide average Total Suspended Solids (TSS) and Total Phosphorus (TP) reduction of 37.5% and 23.7%, respectively. Operation and maintenance is needed in order for the stormwater system to perform as designed. It is recommended that the City monitor sediment depths within City-owned wet detention ponds. Sediment accumulation rates can be used to predict future dredging activities.

10-Year & 25-Year Capital Improvement Plan

It is recommended that the City manage and update a 10-year capital improvement plan. The 10-year capital improvement plan should include ample time for public input, grant applications, BMP design, regulatory permits, financing, and construction. The 10-year capital improvement plan should also take into consideration the timing of other local capital improvement projects, such as street reconstruction projects, utility projects, and private development projects. The City developed an initial capital improvement plan to assist with planning and implementation. The City established a 25-year CIP for the TMDL Plan of Action and is shown in Appendix A.

Public Education & Involvement

Public education and public involvement are recommended during development and implementation of the Plan of Action. Potential stakeholders include the general public, elected officials, City Staff, developers, regulatory entities, individual property owners and other regulated entities. Although this stormwater quality management plan includes a cost versus benefit analysis, the plan does not take into consideration intangibles such as public sentiment, public opinion, land availability, etc.

Municipal Leaf Collection Program

It is recommended that the City consider contributing stormwater utility funds to future leaf collection scientific research. The League of Municipalities, WDNR, and United States Geological Survey (USGS) plan to initiate a second leaf collection study during 2018 or 2019 to further quantify phosphorus reductions for urban source areas and drainage systems. The second study is anticipated occur over a 2 to 3 year period. The WDNR will use the study

results to develop additional leaf collection and phosphorus reduction guidance for municipalities. The municipal leaf collection / phosphorus reduction studies may reduce future wet detention pond costs for the City.

As new scientific research and guidance is released, it is recommended that the City review and update pollutant reduction credits for its municipal leaf collection program.

Financing Plan

It is recommended that the City develop a financing plan. The financing plan will allow the City to implement its Plan of Action and 10-year Capital Improvement Plan. Below is a discussion of various funding sources which may be available to the City. Depending on the project, funding options may be used individually or in combination.

- Stormwater Utility: Stormwater utilities are similar to sanitary and water utilities. Stormwater utilities generate revenue for stormwater related projects by charging property owners an annual service fee. Annual service fees are based upon the amount of runoff generated by a specific property. Properties with more impervious area (i.e. roofs, parking lots, driveways, etc.) are charged a higher fee as compared to properties with less impervious area. All properties, including tax exempt properties, pay the service fee. Rate adjustments are recommended as needed to fund the City's stormwater program.

- Grant Funding: Urban Non-Point Source and Stormwater (UNPS&SW) Construction Grants are recommended for urban retrofits that improve stormwater quality for existing development. The competitive WDNR grant program has a 50% state cost share rate and $150,000 maximum state cost share for eligible design and construction costs. The City has been awarded an UNPS&SW Construction Grant for some of its existing wet detention ponds. Grant applications are submitted to the WDNR in even numbered years, such as 2024 and 2026. If awarded a grant, funds are available for construction projects in the 2 year period following the application. The year in which the City is planning to submit an UNPS&SW Construction Grant application is summarized in Table 5-1 for each capital improvement project.

  Urban Non-Point Source and Stormwater (UNPS&SW) Planning Grants are recommended for urban planning projects that improve stormwater quality. The competitive WDNR grant program has a 50% state cost share rate and $85,000 maximum state cost share for eligible planning costs. In the past 15 years, the City has been awarded several planning grants to assist with Municipal Stormwater Permit compliance. UNPS&SW Planning Grant applications are submitted in odd numbered years, such as 2023 and 2025. Grant funds are available for planning projects in the following 2 year period.

Below are a few grant / loan programs which the City of Kaukauna may or may not be familiar with. Grant applications are recommended.

- Coastal Management Grant
- Community Development Block Grant
- Clean Water Fund
- Great Lakes Basin Program

- Debt / Bonds: General obligation and revenue bonds may be used to secure funding for stormwater projects. Property taxes and revenue fees are used for long-term debt payments.

- Impact Fees: Impact fees may be charged to developers for stormwater projects that benefit the development. Impact fees are usually paid during initial stages of development. Typically, projects include regional stormwater facilities or improvements to deficient downstream infrastructure. Often, other funding sources are needed to pay for project costs until developers and property owners are required to pay the impact fee. Impact fees are recommended as needed to fund the City's stormwater program.

- Tax Incremental Financing (TIF) District: TIF Districts may be used by Cities and Villages to fund stormwater projects that benefit property located within the District. Property value increases within the TIF District generate additional tax revenue that is used for long-term debt payments.

Inter-Governmental Agreements

It is recommended that the City execute an agreement with Outagamie County Highway Department and/or Wisconsin DOT within the next 5 years in order to take credit for pollutant reduction benefits of wet ponds, grass swales and street sweeping along County & State Highways. After executing an agreement, both the City and County and/or the City and State can benefit from pollutant reductions associated with street sweeping, grass swales and wet detention ponds. The City's Plan of Action assumes that the City enters into an intergovernmental agreement with the County Highway Department and Wisconsin DOT.

It is recommended that the City evaluate other inter-governmental agreements when implementing its Plan of Action. It may be more cost effective to work together with adjoining municipal jurisdictions to construct a mutually beneficial stormwater BMP, share equipment, restore a wetland, or improve water quality within all watersheds, especially the Garners Creek watershed, since phosphorus allocations are more stringent.

Redevelopment Sites

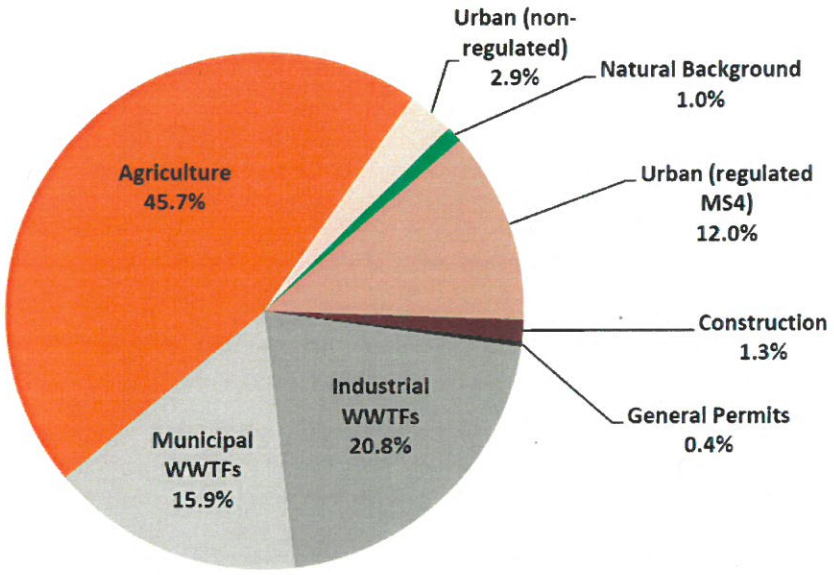
It is recommended that the City evaluate public / private partnerships with landowners when implementing its Plan of Action. As required by the City's Post-Construction Stormwater Management Ordinance, redevelopment sites with 1 acre or more of land disturbance are required to achieve a minimum 40% TSS & 30% TP reduction for Apple Creek, Kankapot Creek, and Plum Creek; a minimum 49.9% TSS & 63.1% TP reduction for Garners Creek and a minimum of 65.2% TSS & 30 TP reduction for the Fox River. Compliance with the TSS reduction is only required when a construction project occurs on the site. When redevelopment occurs on commercial, industrial, institutional and multi-family residential parcels, stormwater quality improvements will be required. Public / private partnerships provide an opportunity to work together such that both the landowner and City benefit.

For example, redevelopment of a 20 acre shopping center may provide an opportunity to increase the site's TSS reduction goal from 65.2% to 80% through a cost sharing agreement between the landowner and City. In some instances, cost sharing can be used as a financial incentive. Typically, it is more cost effective to incorporate stormwater quality improvements into an already planned construction project as compared to retrofitting a BMP without considering other construction activities in the watershed.

Watershed Adaptive Management

It is recommended that the City evaluate the feasibility and cost effectiveness of Watershed Adaptive Management when developing and implementing its Plan of Action. Adaptive management is a watershed approach that focuses on meeting water quality standards within a river, stream or lake in a more cost-effective manner. Watershed Adaptive Management needs to be initiated by a wastewater treatment facility owner, but would likely involve cooperation among other phosphorus dischargers including agricultural, urban stormwater, and wastewater dischargers. Exhibit 6-1 depicts the portion of phosphorus that is being generated by agriculture, urban stormwater and wastewater treatment facilities within the Lower Fox River Basin. Exhibit 6-1 was obtained from the Lower Fox River Basin TMDL Report.

Exhibit 6-1: Phosphorus Sources in Lower Fox River Basin



Water Quality Trading

It is recommended that the City consider water quality trading when implementing its Plan of Action. The cost for achieving compliance with TMDL allocations is not uniform among dischargers and source areas. As such, compliance with TMDL allocations may be more cost-effectively achieved by trading with other dischargers. Water quality trading is allowed between wastewater treatment facilities, agricultural landowners, and other urban stormwater dischargers. In order to be eligible for water quality trading, specific criteria needs to be satisfied. Water quality trading can be used in conjunction with Adaptive Management.

Stream & Shoreline Erosion

It is recommended that the City undertake stream, shoreline and channel stabilization projects to reduce the discharge of sediment and phosphorus pollutants associated with bed, bank or steep slope erosion. Stream and shoreline erosion can result in a significant amount of sediment and phosphorus pollutants being discharged into the City's sub-watersheds. The estimated sediment and phosphorus loads associated with existing stream or shoreline erosion problems were not estimated, since numeric TMDL credit is not currently provided by WDNR. Grant funding is available to assist with stream, shoreline and channel stabilization projects. In addition to the water quality benefits, these projects provide an opportunity to improve habitat, remove invasive species, and potentially restore wetlands.

Resource Management Plans

Several resource management plans were discussed in Section 1.0. It is recommended that the priorities and recommendations contained in these resource management plans be incorporated into this Plan of Action by reference.

APPENDIX A

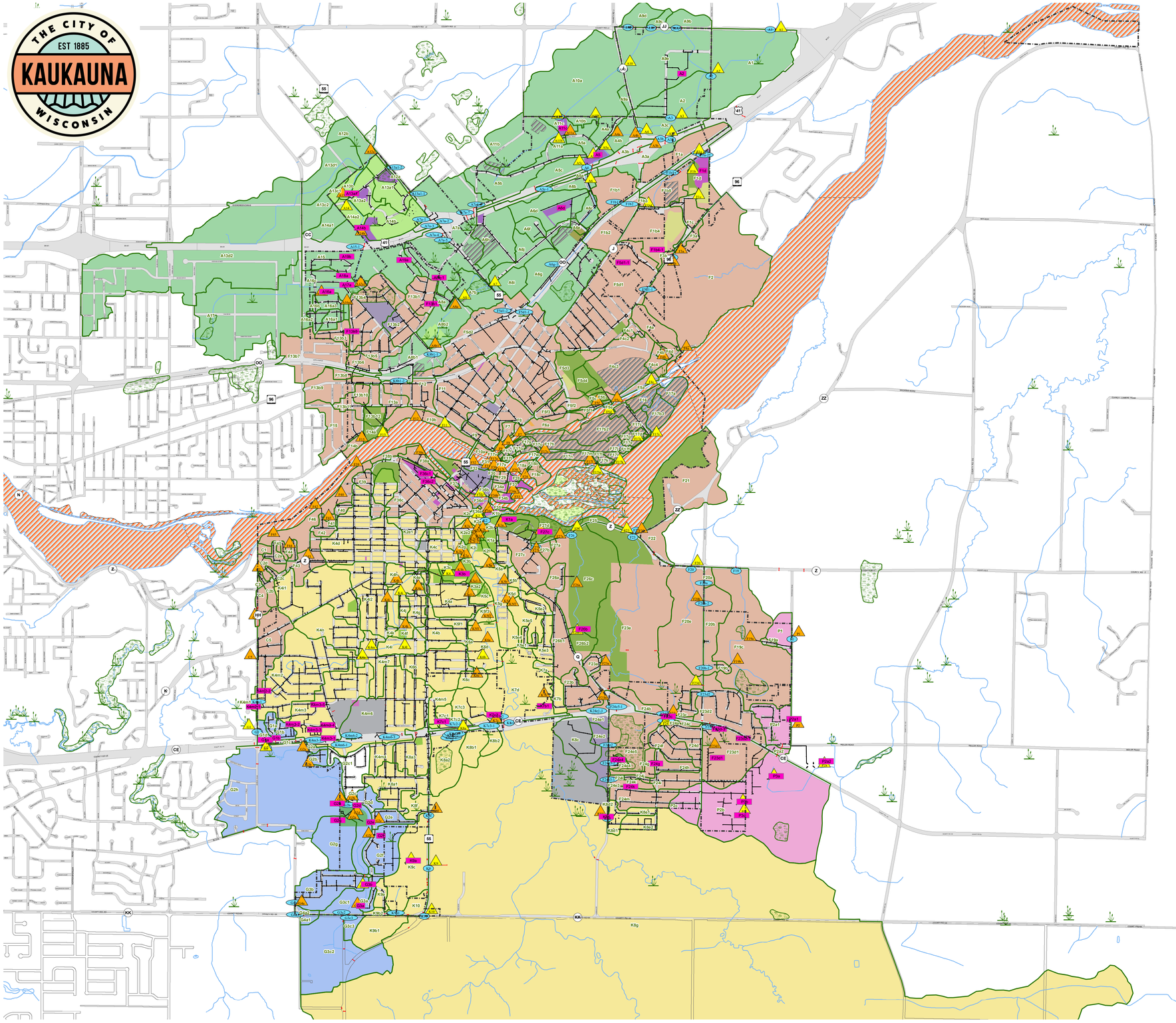
25-year Stormwater Plan of Action CIP

APPENDIX B

Water Quality Results

APPENDIX C

Pond Concepts



MS4 Drainage System

- Bridges and Culverts
- Flow Arrows
- Storm Sewer System
- F22 Bridge and Culvert ID
- A1 Major Outfall I.D.
- A4a Minor Outfall I.D.
- A5 Structural BMP ID
- A1 Surface Water

Publically Owned Land

- Kaukauna Open Lands
- Kaukauna Recreational Areas
- Kaukauna Municipal Facilities
- Kaukauna School District
- Outagamie County Municipal Facility
- United States Government Property

Natural Resources

- WDNR Wetland Inventory (Less Than 2 Acres)
- WDNR Wetland Inventory (2 Acres or Greater)
- 303(d) Impaired Waters
- Surface Water
- Streams

WPDES Industrial Permits

- WPDES Industrial Permit I.D.
- Properties with WPDES Industrial Permits

Other Mapped Features

- Parcel Lines
- Right of Way
- Municipal Boundary
- County Boundary

TMDL Watershed Basins

- APPLE CREEK
- LOWER FOX RIVER
- GARNERS CREEK
- KANKAPOT CREEK
- PLUM CREEK

NORTH

0 1,500 3,000 4,500 6,000 7,500 Feet

Sources: City of Kaukauna, 2007-08; Wisconsin Department of Natural Resources, 2007; Outagamie and Calumet Counties, 2005.

Disclaimer: The property lines, right-of-way lines, and other property information on this drawing ere developed or obtained as part of the County Geographic Information System or through the County property tax mapping function. McMahon Associates does not guarantee this information to be correct, current, or complete. The property and right-of-way information are only intended for use as a general reference and are not intended or suitable for site-specific uses. Any use to the contrary of the above stated uses is the responsibility of the user and such use is at the user's own risk.

FIGURE 6
MS4 SYSTEM
UPDATED 6/5/2020
STORM WATER MANAGEMENT PLAN
CITY OF KAUKAUNA
OUTAGAMIE COUNTY, WISCONSIN

V:\ArcView Data\Kaukauna\arc\ArcMap-MXD\MS4_MAP 3-17-2010 jwn

III. Total Maximum Daily Load (TMDL) Water Quality Analysis: **2023 Condition:** **2012 Land Use; High Effeciency Street Sweeper - Frequency of 4 times per week, WPC - Downtown Areas, 2 times per week, WPC - main arterial roadways, 1 time per week, WPC - STH 55 and Industrial / Business Parks, and twice per month, WPC - remaining areas.** **A parking control ordinance will be required for "remaining areas". A maintenance agreement with Outagamie County and the State of Wisconsin for water quality benefits of their grass swale conveyance system will be obtained.**

			City of Kaukauna																																						Totals/Sums for Comparison								
			UPB (Excludes Undeveloped Areas over 5 ac, Other MS4 Jurisdictions, Agricultural Areas & Waters of the State)										Expera Specialty Solutions								Riparian								County HWY								State HWY														
			Total Suspended Solids (TSS)							Total Phosphorus (TP)								TSS Provided				TP Provided				TSS Provided				TP Provided				TSS Provided				TP Provided										
Drainage System	Sub-Watershed	BMP Name	Area (acres)	Before Drain System (lbs/yr)	After Drain System (lbs/yr)	BMP Reduct (%)	After Outfall Control (lbs/yr)	Total Load Reduct (%)	Net Gain (lbs/yr)	Before Drain System (lbs/yr)	After Drain System (lbs/yr)	BMP Reduct (%)	After Outfall Control (lbs/yr)	Total Load Reduct (%)	Area (acres)	Before Drain System (lbs/yr)	After Outfall Control (lbs/yr)	Load Reduct (%)	Before Drain System (lbs/yr)	After Outfall Control (lbs/yr)

III. Total Maximum Daily Load (TMDL) Water Quality Analysis: **2023 Condition:** **2012 Land Use; High Effeciency Street Sweeper - Frequency of 4 times per week, WPC - Downtown Areas, 2 times per week, WPC - main arterial roadways, 1 time per week, WPC - STH 55 and Industrial / Business Parks, and twice per month, WPC - remaining areas.** **A parking control ordinance will be required for "remaining areas". A maintenance agreement with Outagamie County and the State of Wisconsin for water quality benefits of their grass swale conveyance system will be obtained.**

| | | | City of Kaukauna | | |

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| | | | City of Kaukauna | | |

IV. TMDL Water Quality Analysis (meeting Goals): Action Plan: **2012 Land Use; High Effeciency Street Sweeper - Frequency of 4 times per week, WPC - Downtown Areas, 2 times per week, WPC - main arterial roadways, 1 time per week, WPC - STH 55 and Industrial / Business Parks, and twice per month, WPC - remaining areas.** A parking control ordinance will be required for "remaining areas". A maintenance agreement with Outagamie County and the State of Wisconsin for water quality benefits of their grass swale conveyance system will be obtained.

| | | | City of Kaukauna | | |

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| | | | UPB (Excludes Undeveloped Areas over 5 ac, Other MS4 Jurisdictions, Agricultural Areas & Waters of the State) | | | | | | | | | | | | City of Kaukauna | | | | | | | | | | | |

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| | | | City of Kaukauna | | |

City of Kaukauna TMDL Stormwater Plan of Action
Capital Improvement Plan (CIP)
McM No. K0006-9-17-00668
Updated - October 4, 2023

	Rate	7.5			8	9.8		10			10.5			11		12			14					16			
City of Kaukauna TMDL Stormwater Plan of Action	Beginning Balance:	$518,213																									
Revenues	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**Totals**
1 Licenses & Permits	$11,000	$11,220	$11,444	$11,673	$11,907	$12,145	$12,388	$12,636	$12,888	$13,146	$13,409	$13,677	$13,951	$14,230	$14,514	$14,805	$15,101	$15,403	$15,711	$16,025	$16,345	$16,672	$17,006	$17,346	$17,693	$18,047	$359,380
2 Storm Water Utility Fees	$1,110,000	$1,190,000	$1,190,000	$1,190,000	$1,270,000	$1,398,000	$1,398,000	$1,430,000	$1,430,000	$1,430,000	$1,590,000	$1,590,000	$1,590,000	$1,670,000	$1,670,000	$1,670,000	$1,910,000	$1,910,000	$1,910,000	$2,230,000	$2,230,000	$2,230,000	$2,230,000	$2,390,000	$2,390,000	$2,390,000	$43,526,000
3 DNR Construction Grant[1]	$0	$0	$0	$0	$0	$80,000		$120,000	$0	$120,000	$0	$120,000	$120,000		$120,000	$0	$0	$120,000	$0	$120,000	$0	$0	$120,000	$0	$0	$0	$1,040,000
Total Revenues	**$1,121,000**	**$1,201,220**	**$1,201,444**	**$1,201,673**	**$1,281,907**	**$1,490,145**	**$1,410,388**	**$1,562,636**	**$1,442,888**	**$1,563,146**	**$1,603,409**	**$1,723,677**	**$1,723,951**	**$1,684,230**	**$1,804,514**	**$1,684,805**	**$1,925,101**	**$2,045,403**	**$1,925,711**	**$2,366,025**	**$2,246,345**	**$2,246,672**	**$2,367,006**	**$2,407,346**	**$2,407,693**	**$2,408,047**	**$44,925,380**
Expenditures	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**Totals**
Capital Projects - Pond Construction / Enhancement																											
1 Company Woods Expansion	$0	$0	$0	$0	$0	$180,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$180,000
2 *Ann Street Underground Detention	$0	$0	$0	$0	$0	$1,010,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,010,000
3 Riverview Pond	$0	$0	$0	$0	$0	$0	$0	$2,140,925	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,140,925
4 Badger Pond	$0	$0	$0	$0	$0	$0	$0	$402,364	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$402,364
5 Horseshoe Park Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$238,664	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$238,664
6 Moon Ridge Court Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$33,067	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$33,067
7 Sunny Meadows Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$156,451	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$156,451
8 MCC Quarry Regional Pond	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,993,134	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,993,134
9 Jonen Park Wet Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$122,647	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$122,647
10 Draper Street North Pond	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$623,291	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$623,291
11 Winchester East Pond	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$244,771	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$244,771
12 Kelso Park Pond Expansion	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,720,499	$0	$0	$0	$0	$0	$0	$0	$0	$1,720,499
13 Fieldcrest Ponds with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$433,849	$0	$0	$0	$0	$0	$0	$0	$433,849
14 Coriander Court Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$55,611	$0	$0	$0	$0	$0	$0	$0	$55,611
15 Lemongrass Way Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$151,906	$0	$0	$0	$0	$0	$0	$0	$151,906
16 Newton Lane Court Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$122,947	$0	$0	$0	$0	$0	$0	$0	$122,947
17 Starwood Acres Pond	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$250,000	$0	$0	$0	$0	$0	$0	$250,000
18 CTH HH Pond with Enhanced Settling	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$599,653	$0	$0	$0	$599,653
19 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$75,529	$0	$0	$0	$75,529
20 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$45,632	$0	$0	$0	$45,632
21 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$29,897	$0	$0	$0	$29,897
22 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$72,382	$0	$0	$0	$72,382
23 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$29,897	$0	$0	$0	$29,897
24 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$125,882	$0	$0	$0	$125,882
25 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$287,955	$0	$0	$0	$287,955
26 Bio Retention / Rain Gardens	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$215,573	$0	$0	$0	$215,573
Storm Sewer Annual Replacement	$520,000	$275,000	$440,000	$940,000	$50,000	$650,000	$885,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$10,840,000
Pond Construction / Enhancement Totals	**$520,000**	**$275,000**	**$440,000**	**$940,000**	**$50,000**	**$1,840,000**	**$885,000**	**$2,943,289**	**$400,000**	**$671,731**	**$400,000**	**$556,451**	**$3,139,072**	**$400,000**	**$644,771**	**$400,000**	**$400,000**	**$2,120,499**	**$1,164,313**	**$650,000**	**$400,000**	**$400,000**	**$1,882,400**	**$400,000**	**$400,000**	**$400,000**	**$11,362,526**
Capital Projects - Soil Loss Prevention																											
1 Konkapot Creek Streambank Restoration Projects	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
2 Kelso Park Pond Bank Stabilization	$75,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
3 Peters Road/Lauer Outfall	$40,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4 Bel Air Court Outfall	$0	$25,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$25,000
5 Gringon Park Stream	$0	$0	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$150,000
6 Hoersch Outfall - (Not in MS4)	$0	$0	$0	$0	$0	$0	$0	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$150,000
7 Other Streambank Resoration/Steam Bank Stabilization	$0	$0	$35,000	$35,000	$35,000	$35,000	$35,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$460,000
Soil Loss Prevention Totals	**$145,000**	**$25,000**	**$35,000**	**$35,000**	**$185,000**	**$35,000**	**$35,000**	**$165,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$15,000**	**$785,000**
Total Capital Expenditures	**$665,000**	**$300,000**	**$475,000**	**$975,000**	**$235,000**	**$1,875,000**	**$920,000**	**$3,108,289**	**$415,000**	**$686,731**	**$415,000**	**$571,451**	**$3,154,072**	**$415,000**	**$659,771**	**$415,000**	**$415,000**	**$2,135,499**	**$1,179,313**	**$665,000**	**$415,000**	**$415,000**	**$1,897,400**	**$415,000**	**$415,000**	**$415,000**	**$11,625,000**
1 Anticipated Note	$665,000	$300,000	$475,000	$975,000	$235,000	$1,875,000	$920,000	$3,108,289	$415,000	$686,731	$415,000	$571,451	$3,154,072	$415,000	$659,771	$415,000	$415,000	$2,135,499	$1,179,313	$665,000	$415,000	$415,000	$1,897,400	$415,000	$415,000	$415,000	$22,987,526
2 Bonding						$2,500,000					$5,000,000				$4,500,000					$4,800,000						$5,000,000	
Professional Services																											
1 Street Cleaning	$169,856	$173,253	$176,718	$180,253	$183,858	$187,535	$191,285	$195,111	$199,013	$202,994	$207,054	$211,195	$215,418	$219,727	$224,121	$228,604	$233,176	$237,839	$242,596	$247,448	$252,397	$257,445	$262,594	$267,846	$273,203	$278,667	$5,549,349
2 Storm Sewer Maintenance	$128,561	$131,132	$133,755	$136,430	$139,159	$141,942	$144,781	$147,676	$150,630	$153,642	$156,715	$159,849	$163,046	$166,307	$169,634	$173,026	$176,487	$180,016	$183,617	$187,289	$191,035	$194,856	$198,753	$202,728	$206,782	$210,918	$4,200,204
3 KU Meter Reading / Billing Charges	$12,820	$13,076	$13,338	$13,605	$13,877	$14,154	$14,437	$14,726	$15,021	$15,321	$15,628	$15,940	$16,259	$16,584	$16,916	$17,254	$17,599	$17,951	$18,310	$18,676	$19,050	$19,431	$19,819	$20,216	$20,620	$21,033	$418,841
4 Administrative Costs	$92,009	$93,849	$95,726	$97,641	$99,594	$101,585	$103,617	$105,689	$107,803	$109,959	$112,158	$114,402	$116,690	$119,023	$121,404	$123,832	$126,309	$128,835	$131,412	$134,040	$136,721	$139,455	$142,244	$145,089	$147,991	$150,951	$3,006,017
5 Depreciation	$173,147	$176,610	$180,142	$183,745	$187,420	$191,168	$194,992	$198,891	$202,869	$206,927	$211,065	$215,287	$219,592	$223,984	$228,464	$233,033	$237,694	$242,448	$247,297	$252,242	$257,287	$262,433	$267,682	$273,035	$278,496	$284,066	$5,656,869
6 Non-operating Expenses		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
7 Debt Payments	$654,964	$582,595	$613,931	$593,524	$447,397	$446,922	$635,057	$669,417	$1,029,803	$464,186	$460,000	$715,000	$575,000	$630,000	$640,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$840,000	$17,742,830
8 Long Term Pond Maintenance	$103,456	$105,525	$107,636	$114,323	$116,610	$118,942	$128,763	$131,338	$142,293	$145,139	$150,790	$153,806	$156,882	$313,785	$320,061	$401,428	$409,457	$443,048	$572,622	$584,074	$595,756	$607,671	$619,824	$632,221	$644,865	$657,762	$8,374,619
9 Engineering - General - DNR Grant Applications	$0	$0	$4,000	$0	$4,000	$0	$4,000	$0	$4,000	$0	$4,000	$0	$4,000	$0	$4,000	$0	$0	$4,000	$0	$4,000	$0	$0	$4,000	$0	$4,000	$0	$44,000
10 Engineering - General - SWMP Update	$0	$0	$0	$0	$0	$5,000	$0	$0	$30,000	$0	$0	$0	$0	$0	$0	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$30,000	$95,000
Professional Services Totals	**$1,334,813**	**$1,276,041**	**$1,325,246**	**$1,319,520**	**$1,191,913**	**$1,207,248**	**$1,416,932**	**$1,462,849**	**$1,881,432**	**$1,298,167**	**$1,317,410**	**$1,585,479**	**$1,466,888**	**$1,689,411**	**$1,724,599**	**$2,047,177**	**$2,040,721**	**$2,094,137**	**$2,235,853**	**$2,267,770**	**$2,292,245**	**$2,321,290**	**$2,354,916**	**$2,381,134**	**$2,415,957**	**$2,473,396**	**$45,087,731**
Total Expenditures	**$1,334,813**	**$1,276,041**	**$1,325,246**	**$1,319,520**	**$1,191,913**	**$1,207,248**	**$1,416,932**	**$1,462,849**	**$1,881,432**	**$1,298,167**	**$1,317,410**	**$1,585,479**	**$1,466,888**	**$1,689,411**	**$1,724,599**	**$2,047,177**	**$2,040,721**	**$2,094,137**	**$2,235,853**	**$2,267,770**	**$2,292,245**	**$2,321,290**	**$2,354,916**	**$2,381,134**	**$2,415,957**	**$2,473,396**	**$57,235,257**
Total Fund Balance Applied or Surplus	**($213,813)**	**($74,821)**	**($123,802)**	**($117,846)**	**$89,994**	**$282,897**	**($6,544)**	**$99,786**	**($438,543)**	**$264,979**	**$285,999**	**$138,199**	**$257,063**	**($5,181)**	**$79,915**	**($362,373)**	**($115,620)**	**($48,734)**	**($310,142)**	**$98,255**	**($45,900)**	**($74,618)**	**$12,090**	**$26,212**	**($8,264)**	**($65,349)**	
Stormwater Utility Projected Total Funds	**$304,400**	**$229,579**	**$105,777**	**($12,069)**	**$77,925**	**$360,821**	**$354,277**	**$454,064**	**$15,520**	**$280,499**	**$566,498**	**$704,696**	**$961,759**	**$956,577**	**$1,036,493**	**$674,120**	**$558,500**	**$509,766**	**$199,624**	**$297,879**	**$251,979**	**$177,361**	**$189,451**	**$215,663**	**$207,399**	**$142,049**	

NOTE: ALL FUTURE COSTS ASSUME INFLATION RATE OF **2.00%**

NOTE: INCREASE UTILITY RATES TO MEET PROJECTED NEEDS

[1]Grant applications due April 15 of even numbered years (grant max's out at $150,000 - assumes giving 20% cost share back to score higher)

POST-CONSTRUCTION STORM WATER MANAGEMENT ZONING ORDINANCE

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SUBCHAPTER II
POST-CONSTRUCTION STORM WATER MANAGEMENT

22.02(1) AUTHORITY.

(a) This ordinance is adopted by the Common Council under the authority granted by s. 62.234, for cities, Wis. Stats. This ordinance supersedes all provisions of an ordinance previously enacted under s. 62.23, Wis. Stats., that relate to storm water management regulations. Except as otherwise specified in s. 62.234, Wis. Stats., s. 62.23, Wis. Stats., applies to this ordinance and to any amendments to this ordinance.

(b) The provisions of this ordinance are deemed not to limit any other lawful regulatory powers of the same governing body.

(c) The Common Council hereby designates the Director of Public Works or designee to administer and enforce the provisions of this ordinance.

(d) The requirements of this ordinance do not pre-empt more stringent storm water management requirements that may be imposed by any of the following:

1. Wisconsin Department of Natural Resources administrative rules, permits or approvals including those authorized under ss. 281.16 and 283.33, Wis. Stats.
2. Targeted non-agricultural performance standards promulgated in rules by the Wisconsin Department of Natural Resources under s. NR 151.004, Wis. Adm. Code.

22.02(2) FINDINGS OF FACT.

The Common Council finds that uncontrolled, post-construction runoff has a significant impact upon water resources and the health, safety and general welfare of the community and diminishes the public enjoyment and use of natural resources. Specifically, uncontrolled post-construction runoff can:

(a) Degrade physical stream habitat by increasing stream bank erosion, increasing streambed scour, diminishing groundwater recharge, diminishing stream base flows and increasing stream temperature.

(b) Diminish the capacity of lakes and streams to support fish, aquatic life, recreational and water supply uses by increasing pollutant loading of sediment, suspended solids, nutrients, heavy metals, bacteria, pathogens and other urban pollutants.

(c) Alter wetland communities by changing wetland hydrology and by increasing pollutant loads.

(d) Reduce the quality of groundwater by increasing pollutant loading.

(e) Threaten public health, safety, property and general welfare by overtaxing storm sewers, drainage ways, and other minor drainage facilities.

(f) Threaten public health, safety, property and general welfare by increasing major flood peaks and volumes.

(g) Undermine floodplain management efforts by increasing the incidence and levels of flooding.

22.02(3) PURPOSE AND INTENT.

(a) PURPOSE. The general purpose of this ordinance is to establish long-term, post-construction runoff management requirements that will diminish the threats to public health, safety, welfare and the aquatic environment. Specific purposes are to:

1. Further the maintenance of safe and healthful conditions.
2. Prevent and control the adverse effects of storm water; prevent and control soil erosion; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; preserve ground cover and scenic beauty; and promote sound economic growth.
3. Control exceedance of the safe capacity of existing drainage facilities and receiving water bodies; prevent undue channel erosion; control increases in the scouring and transportation of particulate matter; and prevent conditions that endanger downstream property.

(b) INTENT. It is the intent of the Common Council that this ordinance regulates post-construction storm water discharges to waters of the state. This ordinance may be applied on a site-by-site basis. The Common Council recognizes, however, that the preferred method of achieving the storm water performance standards set forth in this ordinance is through the preparation and implementation of comprehensive, systems-level storm water management plans that cover hydrologic units, such as watersheds, on a municipal and regional scale. Such plans may prescribe regional storm water devices, practices or systems, any of which may be designed to treat runoff from more than one site prior to discharge to waters of the state. Where such plans are in conformance with the performance standards developed under s. 281.16, Wis. Stats., for regional storm water management measures and have been approved by the Common Council, it is the intent of this ordinance that the approved plan be used to identify post-construction management measures acceptable for the community.

22.02(4) APPLICABILITY AND JURISDICTION.

(a) APPLICABILITY.

1. Where not otherwise limited by law, this ordinance applies to all post-construction sites, unless the site is otherwise exempt under paragraph 2..

2. A post-construction site that meets any of the criteria in this paragraph is exempt from the requirements of this ordinance.
   a. 1- and 2-family residential dwellings that are not part of a larger common plan of development or sale and that result in less than 1 acre of disturbance.
   b. Non-point discharges from agricultural activity areas.
   c. Non-point discharges from silviculture activities.
   d. Mill and crush operations.

3. Notwithstanding the applicability requirements in paragraph 1., this ordinance applies to post-construction sites of any size that, in the opinion of the Director of Public Works or designee, is likely to result in runoff that exceeds the safe capacity of the existing drainage facilities or receiving body of water, that causes undue channel erosion, that increases water pollution by scouring or the transportation of particulate matter or that endangers property or public safety.

(b) JURISDICTION.

This ordinance applies to post construction sites within the boundaries and jurisdiction of the City of Kaukauna.

(c) EXCLUSIONS.

This ordinance is not applicable to activities conducted by a state agency, as defined under s. 227.01 (1), Wis. Stats., but also including the office of district attorney, which is subject to the state plan promulgated or a memorandum of understanding entered into under s. 281.33 (2), Wis. Stats.

22.02(5) DEFINITIONS.

(a) "Adequate sod, or self-sustaining vegetative cover" means maintenance of sufficient vegetation types and densities such that the physical integrity of the streambank or lakeshore is preserved. Self-sustaining vegetative cover includes grasses, forbs, sedges and duff layers of fallen leaves and woody debris.

(b) "Administering authority" means a governmental employee, or a regional planning commission empowered under s. 62.234, Wis. Stats., that is designated by the Common Council to administer this ordinance.

(c) "Agricultural activity area" means the part of the farm where there is planting, growing, cultivating and harvesting of crops for human or livestock consumption and pasturing or outside yarding of livestock, including sod farms and silviculture. Practices in this area may include waterways, drainage ditches, diversions, terraces, farm lanes, excavation, filling and similar practices. The agricultural activity area does not include the agricultural production area.

(d) "Agricultural production area" means the part of the farm where there is concentrated production activity or impervious surfaces. Agricultural production areas include buildings, driveways, parking areas, feed storage structures, manure storage structures, and other impervious surfaces. The agricultural production area does not include the agricultural activity area.

(e) “Average annual rainfall” means a calendar year of precipitation, excluding snow, which is considered typical. For purposes of this ordinance, average annual rainfall means measured precipitation in Green Bay, Wisconsin between March 29 and November 25, 1969.

(f) “Best management practice” or “BMP” means structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.

(g) “Business day” means a day the office of the Director of Public Works or designee, is routinely and customarily open for business.

(h) “Cease and desist order” means a court-issued order to halt land disturbing construction activity that is being conducted without the required permit.

(i) “Combined sewer system” means a system for conveying both sanitary sewage and storm water runoff.

(j) “Common plan of development or sale” means a development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan. A common plan of development or sale includes, but is not limited to, subdivision plats, certified survey maps, and other developments.

(k) “Connected imperviousness" means an impervious surface connected to the waters of the state via a separate storm sewer, an impervious flow path, or a minimally pervious flow path.

(l) “Construction site” means an area upon which one or more land disturbing construction activities occur, including areas that are part of a larger common plan of development or sale.

(m) “Design storm” means a hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency, and total depth of rainfall. Atlas 14 MSE4 24-hour design storms for City of Kaukauna are: 1-year, 2.11 inches; 2-year, 2.42 inches; 5-year, 2.97 inches; 10-year, 3.48 inches; 25-year, 4.26 inches; and 100-year, 5.62 inches.

(n) “Development” means residential, commercial, industrial, institutional, or other land uses and associated roads.

(o) “Direct conduits to groundwater” means wells, sinkholes, swallets, fractured bedrock at the surface, sand or gravel surficial deposits, mine shafts, nonmetallic mines, tile inlets discharging to groundwater, quarries or depressional groundwater recharge areas over shallow fractured bedrock.

(p) “Division of land” means the creation from one or more parcels or building sites of additional parcels or building sites where such creation occurs at one time or through the successive partition within a 5 year period.

(q) “Effective infiltration area” means the area of the infiltration system that is used to infiltrate runoff and does not include the area used for site access, berms or pretreatment.

(r) “Erosion” means the process by which the land’s surface is worn away by the action of wind, water, ice or gravity.

(s) "Exceptional resource waters" means waters listed in s. NR 102.11, Wis. Adm. Code.

(t) “Existing development” means development in existence on October 1, 2004 or development for which a storm water permit in accordance with subch. III of Ch. NR 216, Wis. Adm. Code, was received on or before October 1, 2004.

(u) “Extraterritorial” means the unincorporated area within 3 miles of the corporate limits of a first, second, or third class city, or within 1.5 miles of a fourth class city or village.

(v) “Filtering layer” means soil that has at least a 3-foot deep layer with at least 20 percent fines; or at least a 5-foot deep layer with at least 10 percent fines; or an engineered soil with an equivalent level of protection as determined by the Director of Public Works or designee, for the site.

(w) "Final stabilization" means that all land disturbing construction activities at the construction site have been completed and that a uniform, perennial, vegetative cover has been established, with a density of at least 70% of the cover, for the unpaved areas and areas not covered by permanent structures, or that employ equivalent permanent stabilization measures.

(x) “Financial guarantee” means a performance bond, maintenance bond, surety bond, irrevocable letter of credit, or similar guarantees submitted to the Director of Public Works or designee, by the responsible party to assure that requirements of the ordinance are carried out in compliance with the storm water management plan.

(y) “Governing body” means town board of supervisors, county board of supervisors, city council, village board of trustees or village council.

(z) “Groundwater” means any of the waters of the state, as defined in s.281.01 (18), stats. occurring in a saturated subsurface geological formation of rock or soil.

(aa) “High Groundwater Level” or “Subsurface Saturation” means the higher of either the elevation to which the soil is saturated as observed as a free water surface in an unlined hole, or the elevation to which the soil has been seasonally or periodically saturated as indicated by soil color patterns throughout the soil profile. As defined in Technical Standard 1002, Site Evaluation for Stormwater Infiltration.

(bb) “Highway” has the meaning given in s. 340.01 (22), Wis. Stats.

(cc) “Highway reconditioning” has the meaning given in s. 84.013 (1)(b), Wis. Stats.

(dd) “Highway reconstruction” has the meaning given in s. 84.013(1)(c), Wis. Stats.

(ee) “Highway resurfacing” has the meaning given in s. 84.013(1)(d), Wis. Stats.

(ff) “Impervious surface” means an area that releases as runoff all or a large portion of the precipitation that falls on it, except for frozen soil. Rooftops, sidewalks, driveways, parking lots and streets are examples of surfaces that typically are impervious. Gravel surfaces are considered impervious, unless specifically designed to encourage infiltration.

(gg) “Impervious surface disturbance” means any land disturbing construction activity in which any new impervious surfaces are created or existing impervious surfaces are redeveloped.

(hh) “In-fill” means an undeveloped area of land or new development area located within an existing urban sewer service area, surrounded by development or development and natural or man-made features where development cannot occur. “In-fill” does not include any undeveloped area that was part of a larger new development for which a storm water permit in accordance with subch. III of ch. NR 216, Wis. Adm. Code, was required to be submitted after October 1, 2004 to the Wisconsin Department of Natural Resources or Wisconsin Department of Safety and Professional Services (formerly Department of Commerce).

(ii) “Infiltration” means the entry and movement of precipitation or runoff into or through soil.

(jj) “Infiltration system” means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.

(kk) “Land disturbing construction activity” or “disturbance” means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover, that may result in runoff and lead to an increase in soil erosion and movement of pollutants into the municipal separate storm sewer or waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities, and soil stockpiling.

(ll) “Maintenance agreement” means a legal document that provides for long-term maintenance of storm water management and best management practices.

(mm) “MEP” or “maximum extent practicable” means the highest level of performance that is achievable but is not equivalent to a performance standard identified within this ordinance. Maximum extent practicable applies when the permit applicant demonstrates to the Director of Public Works or designee’s, satisfaction that a performance standard is not achievable and that a lower level of performance is appropriate. In making the assertion that a performance standard is not achievable and that a level of performance different from the performance standard is the maximum extent practicable, the permit applicant shall take into account the best available technology, cost effectiveness, geographic features, and other competing interests such as protection of public safety and welfare, protection of endangered and threatened resources, and preservation of historic properties.

(nn) “Minor reconstruction of a highway” means reconstruction of a highway that is limited to 1.5 miles in continuous or aggregate total length of realignment and that does not exceed 100 feet in width of roadbed widening, and that does not include replacement of a vegetated drainage system with a non-vegetated drainage system except where necessary to convey runoff under a highway or private road or driveway.

(oo) “Navigable waters” and “navigable waterway” has the meaning given in s. 30.01(4m), Wis. Stats.

(pp) “New development” means that portion of a post-construction site where impervious surfaces are being created or expanded. Any disturbance where the amount of impervious area for the post-development condition is greater than the pre-development condition is classified as new development. For purposes of this ordinance, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

(qq) “Off-site” means located outside the property boundary described in the permit application.

(rr) “On-site” means located within the property boundary described in the permit application.

(ss) "Ordinary high-water mark" has the meaning given in s. NR 115.03(6), Wis. Adm. Code.

(tt) “Outstanding resource waters” means waters listed in s. NR 102.10, Wis. Adm. Code.

(uu) “Percent fines” means the percentage of a given sample of soil, which passes through a # 200 sieve.

(vv) “Performance standard” means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

(ww) “Permit” means a written authorization made by the Director of Public Works or designee, to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.

(xx) “Permit administration fee” means a sum of money paid to the Director of Public Works or designee, by the permit applicant for the purpose of recouping the expenses incurred by the authority in administering the permit.

(yy) “Pervious surface” means an area that releases as runoff a small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or other similar vegetated areas are examples of surfaces that typically are pervious.

(zz) “Pollutant” has the meaning given in s. 283.01(13), Wis. Stats.

(aaa) “Pollution” has the meaning given in s. 281.01(10), Wis. Stats.

(bbb) “Post-construction site" means a construction site following the completion of land disturbing construction activity and final site stabilization.

(ccc) “Post-development” means the extent and distribution of land cover types present after the completion of land disturbing construction activity and final site stabilization.

(ddd) “Pre-development” means the extent and distribution of land cover types present before the initiation of land disturbing construction activity, assuming that all land uses prior to development activity are managed in an environmentally sound manner.

(eee) “Preventive action limit” has the meaning given in s. NR 140.05(17), Wis. Adm. Code.

(fff) "Redevelopment ” means that portion of a post-construction site where impervious surfaces are being reconstructed, replaced, or reconfigured. Any disturbance where the amount of impervious area for the post-development condition is equal to or less than the pre-development condition is classified as redevelopment. For purposes of this ordinance, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

(ggg) “Responsible party” means any entity holding fee title to the property or other person contracted or obligated by other agreement to implement and maintain post-construction storm water BMPs.

(hhh) “Routine maintenance” means that portion of a post-construction site where pre-development impervious surfaces are being maintained to preserve the original line and grade, hydraulic capacity, drainage pattern, configuration, or purpose of the facility. Remodeling of buildings and resurfacing of parking lots, streets, driveways, and sidewalks are examples of routine maintenance, provided the lower ½ of the impervious surface’s granular base is not disturbed. The disturbance shall be classified as redevelopment if the lower ½ of the granular base associated with the pre-development impervious surface is disturbed or if the soil located beneath the impervious surface is exposed. For purposes of this ordinance, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

(iii) “Runoff” means storm water or precipitation including rain, snow or ice melt or similar water that moves on the land surface via sheet or channelized flow.

(jjj) “Sediment” means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

(kkk) “Separate storm sewer” means a conveyance or system of conveyances including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

(lll) Is designed or used for collecting water or conveying runoff.

(mmm) Is not part of a combined sewer system.

(nnn) Is not part of a publicly owned wastewater treatment works that provides secondary or more stringent treatment.

(ooo) Discharges directly or indirectly to waters of the state.

(ppp) “Silviculture activities” means activities including tree nursery operations, tree harvesting operations, reforestation, tree thinning, prescribed burning, and pest and fire control. Clearing and grubbing of an area of a construction site is not a silviculture activity.

(qqq) “Site” means the entire area included in the legal description of the land on which the land disturbing construction activity occurred.

(rrr) “Stop work order” means an order issued by the Director of Public Works or designee, which requires that all construction activity on the site be stopped.

(sss) “Storm water management plan” means a comprehensive plan designed to reduce the discharge of pollutants from storm water after the site has under gone final stabilization following completion of the construction activity.

(ttt) “Storm water management system plan” is a comprehensive plan designed to reduce the discharge of runoff and pollutants from hydrologic units on a regional or municipal scale.

(uuu) “Targeted performance standard” means a performance standard that will apply in a specific area, where additional practices beyond those contained in this ordinance, are necessary to meet water quality standards. A total maximum daily load is an example of a targeted performance standard.

(vvv) "Technical standard" means a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.

(www) “Top of the channel” means an edge, or point on the landscape, landward from the ordinary high-water mark of a surface water of the state, where the slope of the land begins to be less than 12% continually for at least 50 feet. If the slope of the land is 12% or less continually for the initial 50 feet, landward from the ordinary high-water mark, the top of the channel is the ordinary high-water mark.

(xxx) “Total maximum daily load” or “TMDL” means the amount of pollutants specified as a function of one or more water quality parameters, that can be discharged per day into a water quality limited segment and still ensure attainment of the applicable water quality standard.

(yyy) “TR-55” means the United States Department of Agriculture, Natural Resources Conservation Service (previously Soil Conservation Service), Urban Hydrology for Small Watersheds, Second Edition, Technical Release 55, June 1986, which is incorporated by reference for this ordinance.

(zzz) “Transportation facility” means a public street, a public road, a public highway, a railroad, a public mass transit facility, a public-use airport, a public trail, or any other public work for transportation purposes such as harbor improvements under s. 85.095(1)(b), Wis. Stats. “Transportation facility” does not include building sites for the construction of public buildings and buildings that are places of employment that are regulated by the Wisconsin Department of Natural Resources pursuant to s. 281.33, Wis. Stats.

(aaaa) “Type II distribution” means a rainfall type curve as established in the “United States Department of Agriculture, Soil Conservation Service, Technical Paper 149, published 1973”, which is incorporated by reference for this ordinance. The Type II curve is applicable to all of Wisconsin and represents the most intense storm pattern.

(bbbb) “Waters of the state” has the meaning given in s. 283.01 (20), Wis. Stats.

22.02(6) TECHNICAL STANDARDS.

The following methods shall be used in designing and maintaining the water quality, peak discharge, infiltration, protective area, and fueling / vehicle maintenance components of storm water practices needed to meet the water quality standards of this ordinance:

(a) Technical standards identified, developed or disseminated by the Wisconsin Department of Natural Resources under subchapter V of chapter NR 151, Wis. Adm. Code.

(b) Technical standards and guidance identified within the City of Kaukauna Storm Water Reference Guide.

(c) Where technical standards have not been identified or developed by the Wisconsin Department of Natural Resources, other technical standards may be used provided that the methods have been approved by the Director of Public Works or designee.

(d) In this ordinance, the following year and location has been selected as average annual rainfall: Green Bay, 1969 (Mar. 29-Nov. 25).

22.02(7) PERFORMANCE STANDARDS.

(a) RESPONSIBLE PARTY. The responsible party shall implement a post-construction storm water management plan that incorporates the requirements of this section.

(b) PLAN. A written storm water management plan in accordance with Section 22.02(9) shall be developed and implemented for each post-construction site.

(c) REQUIREMENTS. The storm water management plan shall meet the following minimum requirements to the maximum extent practicable:

1. WATER QUALITY. BMPs shall be designed, installed and maintained to control pollutants carried in runoff from the post-construction site. The design shall be based on the average annual rainfall, as compared to no runoff management controls.

a. For post-construction sites with 1 acre or more of land disturbance in a TMDL, the following is required:

i. Except as provided in 22.02(7)(c)(1)a.*ii.*, a pollutant reduction is required as follows:

Watershed	Total Suspended Solids (TSS) & Total Phosphorus (TP) Reduction					
	New Development		Redevelopment		Routine Maintenance	
	TSS	TP	TSS	TP	TSS	TP
Apple Creek	80%	60%	40%	30%	40%	30%
Garners Creek	80%	63.1%	49.9%	63.1%	49.9%	63.1%
Kankapot Creek	80%	60%	40%	30%	40%	30%
Lower Fox River	80%	60%	65.2%	30%	65.2%	30%
Plum Creek	80%	60%	40%	30%	40%	30%

ii. A pollutant reduction is not required for routine maintenance areas that are part of a post-construction site with less than 5 acres of disturbance.

b. For post-construction sites with less than 1 acre of disturbance, not in a TMDL watershed, reduce the pollutant load using BMPs from the City of Kaukauna Storm Water Reference Guide or other practices approved by of Public Works or designee.

c. Sites, including common plan of development sites, with a disturbance and/or cumulative addition of 20,000 square feet or greater of impervious surfaces are required to satisfy the performance standards within 22.02(7)(c)1.a.i. and ii.

d. The amount of pollutant control previously required for the site shall not be reduced as a result of the proposed development or disturbance.

e. When designing BMPs, runoff draining to the BMP from offsite areas shall be taken into account in determining the treatment efficiency of the practice. Any impact on the BMP efficiency shall be compensated for by increasing the size of the BMP accordingly. The pollutant load reduction provided by the BMP for an offsite area shall not be used to satisfy the required onsite pollutant load reduction, unless otherwise approved by the of Public Works or designee, in accordance with 22.02(7)(e).

f. If the design cannot meet the water quality performance standards of 22.02(7)(c)1.a through e., the storm water management plan shall include a written, site specific explanation of why the water quality performance standard cannot be met and why the pollutant load will be reduced only to the maximum extent practicable. Except as provided in 22.02(7)(f), the Public Works or designee may not require any person to exceed the applicable water quality performance standard to meet the requirements of maximum extent practicable.

g. *Exemptions.* The water quality performance standards do not apply to the following:

i. For municipalities that are regulated under subch. I of NR 216, Wis. Adm. Code, the water quality performance standard for a highway reconstruction project first applies January 1, 2017.

2. PEAK DISCHARGE. BMPs shall be designed, installed and maintained to control peak discharges from the post-construction site as follows:

a. For post-construction sites with 20,000 square feet or more of impervious surface disturbance and/or creation and post-construction sites with 1 acre or more of land disturbance, the following is required:

i. The peak post-development discharge rate shall not exceed the peak pre-development discharge rate for the 1-year, 2-year, 10-year, and 100-year, 24-hour design storms. These peak discharge requirements apply to new development and redevelopment areas. No peak discharge control is required for routine maintenance areas, unless runoff from the routine maintenance area discharges into a proposed peak flow control facility.

ii. TR-55 methodology shall be used for peak discharge calculations, unless the administering authority approves an equivalent methodology. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR-55. Unless the site is currently woodland, peak pre-development discharge rates shall be determined using the following runoff curve numbers for a "meadow" vegetative cover:

Maximum Pre-Development Runoff Curve Numbers				
Vegetative Cover	Hydrologic Soil Group			
	A	B	C	D
Meadow	30	58	71	78
Woodland	30	55	70	77

b. For post-construction sites with less than 20,000 square feet of impervious surface disturbance, reduce peak post-development discharge rates using BMPs from the City of Kaukauna Storm Water Reference Guide. These sites are not required to satisfy a numeric performance standard.

c. Sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces after the adoption date of this ordinance are required to satisfy the performance standards within Section 22.02(7)(c)2.a.*i*. and *ii*.

d. The amount of peak discharge control previously required for the site shall not be reduced as a result of the proposed development or disturbance.

e. When designing BMPs, runoff draining to the BMP from offsite areas shall be taken into account in determining the performance of the practice. Any impact on the BMP performance shall be compensated for by increasing the size of the BMP accordingly. The peak discharge reduction provided by the BMP for an offsite area shall not be used to satisfy the required onsite peak discharge reduction, unless otherwise approved by the Public Works or designee in accordance with 22.02(7)(e).

f. An adequate outfall shall be provided for each point of concentrated discharge from the post-construction site. An adequate outfall consists of non-erosive discharge velocities and reasonable downstream conveyance. Where possible, outfalls shall discharge to the municipal separate storm sewer system, waters of the state, or appropriate drainage easement.

g. Exemptions. The following transportation facilities are not required to meet the peak discharge requirements of this paragraph 2. provided the transportation facility is not part of a larger common plan of development or sale:

i. A transportation facility where the discharge is directly into a lake over 5,000 acres or a stream or river segment draining more than 500 square miles.

ii. Except as provided under 22.02(7)(c)2.d. to f., a highway reconstruction site.

iii. Except as provided under 22.02(7)(c)2.d. to f., a transportation facility that is part of a redevelopment project.

3. INFILTRATION. BMPs shall be designed, installed, and maintained to infiltrate runoff in accordance with the following, except as provided in subds. h. through k.

a. For post-construction sites with 20,000 square feet or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance, the following shall be met:

i. *Low Imperviousness.* For development up to 40 percent connected imperviousness, such as parks, cemeteries, and low density residential development, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 90 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than one percent of the post-construction site is required as an effective infiltration area.

ii. *Moderate imperviousness.* For development with more than 40 percent and up to 80 percent connected imperviousness, such as medium and high density residential, multi-family development, industrial and institutional development, and office parks, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.

iii. *High imperviousness.* For development with more than 80 percent connected imperviousness, such as commercial strip malls, shopping centers, and commercial downtowns, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.

b. Pre-development condition shall assume “good hydrologic conditions” for appropriate land covers as identified in TR-55 or an equivalent methodology approved by the administering authority. The meaning of “hydrologic soil group” and “runoff curve number” are as determined in TR-55. However, when pre-development land cover is cropland, rather than using TR-55 values for cropland, the following runoff curve numbers shall be used:

Maximum Pre-Development Runoff Curve Numbers				
Vegetative Cover	Hydrologic Soil Group			
	A	B	C	D
Woodland	30	55	70	77
Grassland	39	61	71	78
Cropland	55	69	78	83

c. For post-construction sites with less than 20,000 square feet of new impervious surfaces, infiltrate runoff volume using BMPs from the City of Kaukauna Storm Water Reference Guide. These sites are not required to satisfy a numeric performance standard.

d. Sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces after the adoption date of this ordinance are required to satisfy the performance standards within Section 22.02(7)(c)3.a and b.

e. The amount of infiltration previously required for the site shall not be reduced as a result of the proposed development or disturbance.

f. Agricultural production areas shall infiltrate runoff volume using BMPs from the City of Kaukauna Storm Water Reference guide

g. When designing BMPs, runoff draining to the BMP from offsite areas shall be taken into account in determining the performance of the practice. Any impact on the BMP performance shall be compensated for by increasing the size of the BMP accordingly. The runoff volume reduction provided by the BMP for an offsite area shall not be used to satisfy the required onsite runoff volume reduction, unless otherwise approved by the Public Works or designee in accordance with 22.02(7)(e).

h. *Pretreatment.* Before infiltrating runoff, pretreatment shall be required for parking lot runoff and for runoff from road construction in commercial, industrial and institutional areas that will enter an infiltration system. The pretreatment shall be designed to protect the infiltration system from clogging prior to scheduled maintenance and to protect groundwater quality in accordance with 22.02(7)(c)3.o. Pretreatment options may include, but are not limited to, oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips.

i. *Source area prohibitions.* Runoff from the following areas may not be infiltrated and may not qualify as contributing to meeting the requirements of 22.02(7)(c)3 unless demonstrated to meet the conditions of 22.02(7)(c)3.o.

i. Areas associated with a tier 1 industrial facility identified in s. NR 216.21(2)(a), Wis. Adm. Code, including storage, loading, and parking. Rooftops may be infiltrated with the concurrence of the Public Works or designee.

ii. Storage and loading areas of a tier 2 industrial facility identified in s. NR 216.21(2)(b), Wis. Adm. Code.

iii. Fueling and vehicle maintenance areas. Rooftops of fueling and vehicle maintenance areas may be infiltrated with the concurrence of the Public Works or designee.

iv. Agricultural production areas that contain livestock, animal waste, or feed storage.

j. *Source area exemptions.* Runoff from the following areas may be credited toward meeting the requirement when infiltrated, but the decision to infiltrate runoff from these sources is optional:

i. Parking areas and access roads less than 5,000 square feet for commercial development.

ii. Parking areas and access roads less than 5,000 square feet for industrial development not subject to the prohibitions under 22.02(7)(c)3.i.

iii. Except as provided under 22.02(7)(c)3.e., redevelopment and routine maintenance areas.

iv. In-fill development areas less than 5 acres.

v. Roads in commercial, industrial and institutional land uses, and arterial residential roads.

vi. Except as provided under 22.02(7)(c)3.e., transportation facility highway reconstruction and new highways.

k. *Prohibitions.* Infiltration practices may not be located in the following areas:

i. Areas within 1,000 feet upgradient or within 100 feet downgradient of direct conduits to groundwater.

ii. Areas within 400 feet of a community water system well as specified in s. NR 811.16(4), Wis. Adm. Code, or within the separation distances listed in s. NR 812.08, Wis. Adm. Code, for any private well or non-community well for runoff infiltrated from commercial, including multi-family residential, industrial, and institutional land uses or regional devices for one- and two-family residential development.

iii. Areas where contaminants of concern, as defined in s. NR 720.03(2), Wis. Adm. Code, are present in the soil through which infiltration will occur.

l. *Separation distances.* Infiltration practices shall be located so that the characteristics of the soil and the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock are in accordance with the following:

Separation Distances and Soil Characteristics		
Source Area	Separation Distance	Soil Characteristics
Industrial, Commercial, Institutional Parking Lots and Roads	5 feet or more	Filtering Layer
Residential Arterial Roads	5 feet or more	Filtering Layer
Roofs Draining to Subsurface Infiltration Practices	1 foot or more	Native or Engineered Soil with Particles Finer than Coarse Sand
Roofs Draining to Surface Infiltration Practices	Not Applicable	
All Other Impervious Source Areas	3 feet or more	Filtering Layer

Note: Notwithstanding 22.02(7)(c)3.l., applicable requirements for injection wells classified under ch. NR 815, Wis. Adm. Code, shall be followed.

m. *Infiltration rate exemptions.* Infiltration practices located in the following areas may be credited toward meeting the requirement under the following conditions, but the decision to infiltrate under these conditions is optional:

i. Where the infiltration rate of the soil measured at the proposed bottom of the infiltration system is less than 0.6 inches per hour using a scientifically credible field test method.

ii. Where the least permeable soil horizon to 5 feet below the proposed bottom of the infiltration system using the U.S. Department of Agriculture method of soils analysis is one of the following: sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.

n. *Alternate uses.* Where alternate uses of runoff are employed, such as for toilet flushing, laundry, irrigation or storage on green roofs where an equivalent portion of the runoff is captured permanently by rooftop vegetation, such alternate use shall be given equal credit toward the infiltration volume required by 22.02(7)(c)3.

o. *Groundwater standards.*

i. Infiltration systems designed in accordance with this 22.02(7)(c)3 shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and shall maintain compliance with the preventive action limit at a point of standards application in accordance with ch. NR 140, Wis. Adm. Code. However, if site specific information indicates that compliance with a preventive action limit is not achievable, the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.

ii. Notwithstanding 22.02(7)(c)3.o.*i.*, the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

p. Where the conditions of 22.02(7)(c)3.i. through m. limit or restrict the use of infiltration practices, the performance standard of 22.02(7)(c)3.shall be met to the maximum extent practicable.

4. PROTECTIVE AREAS.

a. “Protective area” means an area of land that commences at the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands, and that is the greatest of the following widths, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface. However, in this paragraph, “protective area” does not include any area of land adjacent to any stream enclosed within a pipe or culvert, such that runoff cannot enter the enclosure at this location.

i. For outstanding resource waters and exceptional resource waters, and for wetlands in areas of special natural resource interest as specified in s. NR 103.04, 75 feet.

ii. For perennial and intermittent streams identified on a United States geological survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, 50 feet.

iii. For lakes, 50 feet.

iv. For highly susceptible wetlands, 50 feet. Highly susceptible wetlands include the following types: fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins.

v. For moderately susceptible wetlands, 50 feet. Moderately susceptible wetlands include, but are not limited to: shrub wetlands, floodplain forests, fresh wet meadows, deep/shallow marshes, and forested wetlands. Perennial and intermittent streams also fit in this protective area designation.

vi. For less susceptible wetlands, 10 percent of the average wetland width, but no less than 10 feet nor more than 30 feet. Less susceptible wetlands include degraded wetlands dominated by invasive species such as reed canary grass.

vii. In subd. a.*iv, v,and vi*, determinations of the extent of the protective area adjacent to wetlands shall be made on the basis of the sensitivity and runoff susceptibility of the wetland in accordance with the standards and criteria in s. NR 103.03.

viii. Wetlands shall be delineated. Wetland boundary delineations shall be made in accordance with s. NR 103.08(1m). 22.02(7)(c)4.a. does not apply to wetlands that have been completely filled in accordance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in accordance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed. Where there is a legally authorized wetland fill, the protective area standard need not be met in that location.

xi. For concentrated flow channels with drainage areas greater than 130 acres, 10 feet.

b. 22.02(7)(c)4 applies to all post-construction sites located within a protective area, except those areas exempted pursuant to subd. e. below.

c. The following requirements shall be met:

i. Impervious surfaces shall be kept out of the protective area to the maximum extent practicable. The storm water management plan shall contain a written site-specific explanation for any parts of the protective area that are disturbed during construction.

ii. Where land disturbing construction activity occurs within a protective area, and where no impervious surface is present, adequate sod or self-sustaining vegetative cover of 70% or greater shall be established and maintained. The adequate sod or self-sustaining vegetative cover shall be sufficient to provide for bank stability, maintenance of fish habitat and filtering of pollutants from upslope overland flow areas under sheet flow conditions. Non-vegetative materials, such as rock riprap, may be employed on the bank as necessary to prevent erosion, such as on steep slopes or where high velocity flows occur.

iii. Best management practices, such as filter strips, swales, or wet detention basins, which are designed to control pollutants from non-point sources, may be located in the protective area.

d. A protective area established or created after the adoption date of this ordinance shall not be eliminated or reduced, except as allowed in e. *ii*, *iii*, or *iv* below.

e. Exemptions. The following areas are not required to meet the protective area requirements of 22.02(7)(c)4.:

i. Redevelopment and routine maintenance areas provided the minimum requirements within in subd. d. above are satisfied.

ii. Structures that cross or access surface waters such as boat landings, bridges and culverts.

iii. Structures constructed in accordance with s. 59.692(1v), Wis. Stats.

iv. Post-construction sites from which runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the requirements of 22.02(7)(c)1 and 2, except to the extent that vegetative ground cover is necessary to maintain bank stability.

5. FUELING AND VEHICLE MAINTENANCE AREAS. Fueling and vehicle maintenance areas shall, to the maximum extent practicable, have BMPs designed, installed and maintained to reduce petroleum within runoff, such that the runoff that enters waters of the state contains no visible petroleum sheen.

6. SWALE TREATMENT FOR TRANSPORTATION FACILITIES. This Section 22.02 (7)(c)6. is not applicable to transportation facilities that are part of a larger common plan of development or sale.

a. Requirements. Except as provided in subd. b., transportation facilities that use swales for runoff conveyance and pollutant removal are exempt from the requirements of 22.02(7)(c)1., 2., and 3., if the swales are designed to do all of the following to the maximum extent practicable:

i. Swales shall be vegetated. However, where appropriate, non-vegetative measures may be employed to prevent erosion or provide for runoff treatment, such as rock riprap stabilization or check dams.

ii. Swales shall comply with the Wisconsin Department of Natural Resources Technical Standard 1005, “Vegetated Infiltration Swale”, except as otherwise authorized in writing by the Wisconsin Department of Natural Resources.

b. Alternate Requirements. The Director of Public Works or designee may, consistent with water quality standards, require other provisions of this section be met on a transportation facility with an average daily travel of vehicles greater than 2500 and where the initial surface water of the state that the runoff directly enters is any of the following:

i. An outstanding resource water.

ii. An exceptional resource water.

iii. Waters listed in s. 303(d) of the Federal Clean Water act that are identified as impaired in whole or in part, due to nonpoint source impacts.

iv. Waters where targeted performance standards are developed under s. NR 151.004, Wis. Adm. Code, to meet water quality standards.

7. EXEMPTIONS. The following areas are not required to meet the performance standards within Section 22.02(7)(c):

a. Underground utility construction such as water, sewer, gas, electric, telephone, cable television, and fiber optic lines. This exemption does not apply to the construction of any above ground structures associated with utility construction.

b. The following transportation facilities are exempt, provided the transportation facility is not part of a larger common plan of development or sale.

i. A transportation facility with less than 10% connected imperviousness based on complete development of the transportation facility, provided the cumulative area of all parking lots and rooftops is less than one acre.

this exemption, the protective area requirements of 22.02(7)(c)4 still apply.

ii. Reconditioning or resurfacing of a highway.

iii. Minor reconstruction of a highway. Notwithstanding this exemption, the protective area requirements within 22.02(7)(c)4 apply to minor reconstruction of a highway.

iv. Routine maintenance for transportation facilities that have less than 5 acres of land disturbance if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.

v. Routine maintenance if performed for storm water conveyance system cleaning.

(d) GENERAL CONSIDERATIONS FOR ON-SITE AND OFF-SITE STORM WATER MANAGEMENT MEASURES. The following considerations shall be observed in managing runoff:

1. Natural topography and land cover features such as natural swales, natural depressions, native soil infiltrating capacity, and natural groundwater recharge areas shall be preserved and used, to the extent possible, to meet the requirements of this section.
2. Emergency overland flow for all storm water facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.

(e) LOCATION AND REGIONAL TREATMENT OPTIONS.

1. To comply with the performance standards required unde3r 22.02(7) of this ordinance, BMPs may be located on-site or off-site as part of a regional storm water device, practice or system, but shall be installed in accordance with s. NR 151.003 Wis. Adm. Code and ch. 30, Wis, Stats.
2. The Director of Public Works or designee may approve off-site management measures provided that all of the following conditions are met:
   a. The Director of Public Works or designee determines that the post-construction runoff is covered by a storm water management system plan that is approved by the City of Kaukauna and that contains management requirements consistent with the purpose and intent of this ordinance.
   b. The off-site facility meets all of the following conditions:
      i. The facility is in place.
      ii. The facility is designed and adequately sized to provide a level of storm water control equal to or greater than that which would be afforded by on-site practices meeting the performance standards of this ordinance.

iii. The facility has a legally obligated entity responsible for its long-term operation and maintenance.

3. Where a regional treatment option exists such that the Director of Public Works or designee exempts the applicant from all or part of the minimum on-site storm water management requirements, the applicant shall be required to pay a fee in an amount determined in negotiation with the Director of Public Works or designee. In determining the fee for post-construction runoff, the Director of Public Works or designee shall consider an equitable distribution of the cost for land, engineering design, construction, and maintenance of the regional treatment option.

4. To comply with 22.02(7)(c)1. performance standards, the Director of Public Works or designee, may authorize credit for water quality trading provided all of the following conditions are satisfied:

    1. The treatment practices associated with a water quality trade shall be in place, effective and operational before credit can be authorized.

    2. The water quality trade shall comply with applicable trading ratios established by the Wisconsin Department of Natural Resources or the City of Kaukauna.

    3. The water quality trade shall comply with applicable regulations, standards, and guidance developed by the Wisconsin Department of Natural Resources or the City of Kaukauna.

    4. The responsible party shall furnish a copy of executed water quality trading agreements or other related information deemed necessary by the Director of Public Works or designee in order to authorize credit.

(f) TARGETED PERFORMANCE STANDARDS. The Director of Public Works or designee may establish numeric water quality requirements that are more stringent than those set forth in 22.02(7)(c) in order to meet targeted performance standards, total maximum daily loads, and/or water quality standards for a specific water body or area. The numeric water quality requirements may be applicable to any permitted site, regardless of the size of land disturbing construction activity.

(g) ALTERNATE REQUIREMENTS. The Director of Public Works or designee may establish storm water management requirements more stringent than those set forth in this section if the Director of Public Works or designee determines that an added level of protection is needed to protect sensitive resources. Also, the Director of Public Works or designee may establish storm water management requirements less stringent than those set forth in this section if the Director of Public Works or designee determines that less protection is needed to protect sensitive resources and provide reasonable flood protection. However, the alternative requirements shall not be less

stringent than those requirements promulgated in rules by Wisconsin Department of Natural Resources under NR 151 Wisconsin Administrative Code.

22.02(8) PERMITTING REQUIREMENTS, PROCEDURES AND FEES.

(a) PERMIT REQUIRED. No responsible party may undertake a land disturbing construction activity without receiving a post-construction runoff permit from the Director of Public Works or designee prior to commencing the proposed activity.

(b) PERMIT APPLICATION AND FEES. Unless specifically excluded by this ordinance, any responsible party desiring a permit shall submit to the Director of Public Works or designee a permit application made on a form provided by the Director of Public Works or designee for that purpose.

1. Unless otherwise excepted by this ordinance, a permit application must be accompanied by a storm water management plan, a maintenance agreement and a non-refundable permit administration fee.
2. The storm water management plan shall be prepared to meet the requirements of Sections 22.02 (7) and (9), the maintenance agreement shall be prepared to meet the requirements of Section 22.02(10), the financial guarantee shall meet the requirements of Section 22.02(11), and fees shall be those established by the Common Council as set forth in Section 22.02(12).

(c) REVIEW AND APPROVAL OF PERMIT APPLICATION. The Director of Public Works or designee shall review any permit application that is submitted with a storm water management plan, maintenance agreement, and the required fee. The following approval procedure shall be used:

1. Within 20 business days of the receipt of a complete permit application, including all items as required by sub. (b), the Director of Public Works or designee shall inform the applicant whether the application, plan and maintenance agreement are approved or disapproved based on the requirements of this ordinance.
2. If the storm water permit application, plan and maintenance agreement are approved, or if an agreed upon payment of fees in lieu of storm water management practices is made, the Director of Public Works or designee shall issue the permit.
3. If the storm water permit application, plan or maintenance agreement is disapproved, the Director of Public Works or designee shall detail in writing the reasons for disapproval.
4. The Director of Public Works or designee may request additional information from the applicant. If additional information is submitted, the Director of Public Works or designee

shall have 20 business days from the date the additional information is received to inform the applicant that the plan and maintenance agreement are either approved or disapproved.

5. Failure by the Director of Public Works or designee to inform the permit applicant of a decision within 20 business days of a required submittal shall be deemed to mean approval of the submittal and the applicant may proceed as if a permit had been issued.

(d) PERMIT REQUIREMENTS. All permits issued under this ordinance shall be subject to the following conditions, and holders of permits issued under this ordinance shall be deemed to have accepted these conditions. The Director of Public Works or designee may suspend or revoke a permit for violation of a permit condition, following written notification of the responsible party. An action by the Director of Public Works or designee to suspend or revoke this permit may be appealed in accordance with Section 22.02(14).

1. Compliance with this permit does not relieve the responsible party of the responsibility to comply with other applicable federal, state, and local laws and regulations.
2. The responsible party shall design and install all structural and non-structural storm water management measures in accordance with the approved storm water management plan and this permit.
3. The responsible party shall notify the Director of Public Works or designee at least 10 business days before commencing any work in conjunction with the storm water management plan, and within 10 business days upon completion of the storm water management practices. If required as a special condition under sub. (e), the responsible party shall make additional notification according to a schedule set forth by the Director of Public Works or designee so that practice installations can be inspected during construction.
4. Practice installations required as part of this ordinance shall be certified "as built" by a licensed professional engineer. Completed storm water management practices must pass a final inspection by the Director of Public Works or designee or its designee to determine if they are in accordance with the approved storm water management plan and ordinance. The Director of Public Works or designee or its designee shall notify the responsible party in writing of any changes required in such practices to bring them into compliance with the conditions of this permit.
5. The responsible party shall notify the Director of Public Works or designee of any significant modifications it intends to make to an approved storm water management plan. The Director of Public Works or designee may require that the proposed modifications be submitted to it for approval prior to incorporation into the storm water management plan and execution by the responsible party.

6. The responsible party shall maintain all storm water management practices in accordance with the storm water management plan until the practices either become the responsibility of the Common Council, or are transferred to subsequent private owners as specified in the approved maintenance agreement.

7. The responsible party shall inspect BMPs annually and after runoff events in accordance with stormwater management plan reference in section 22.02(9). The responsible party shall have a licensed professional submit a stamped written inspection report to Director of Public Works or designee for review and approval every five years. All reports shall accompany the stamped report.

8. The responsible party authorizes the Director of Public Works or designee to perform any work or operations necessary to bring storm water management measures into conformance with the approved storm water management plan, and consents to a special assessment or charge against the property as authorized under subch. VII of ch. 66, Wis. Stats., or to charging such costs against the financial guarantee posted under Section 22.02(11).

9. If so directed by the Director of Public Works or designee, the responsible party shall repair at the responsible party's own expense all damage to adjoining municipal facilities and drainage ways caused by runoff, where such damage is caused by activities that are not in compliance with the approved storm water management plan.

10. The responsible party shall permit property access to the Director of Public Works or designee or its designee for the purpose of inspecting the property for compliance with the approved storm water management plan and this permit.

11. Where site development or redevelopment involves changes in direction, increases in peak rate and/or total volume of runoff from a site, the Director of Public Works or designee may require the responsible party to make appropriate legal arrangements with affected property owners concerning the prevention of endangerment to property or public safety.

12. The responsible party is subject to the enforcement actions and penalties detailed in Section 22.02(13), if the responsible party fails to comply with the terms of this permit.

13. The permit applicant shall post the “Certificate of Permit Coverage” in a conspicuous location at the construction site.

(e) PERMIT CONDITIONS. Permits issued under this subsection may include conditions established by Director of Public Works or designee in addition to the requirements needed to meet the performance standards in Section 22.02(7) or a financial guarantee as provided for in Section 22.02(11).

(f) PERMIT DURATION. Permits issued under this section shall be valid from the date of issuance through the date the Director of Public Works or designee notifies the responsible party that all storm water management practices have passed the final inspection required under sub. (d)4.

(g) ALTERNATE REQUIREMENTS. The Director of Public Works or designee may prescribe alternative requirements for applicants seeking an exemption to on-site storm water management performance standards under Section 22.02(7)(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

22.02(9) STORM WATER MANAGEMENT PLAN.

(a) PLAN REQUIREMENTS. The storm water management plan required under Section 22.02(8)(b) shall comply with the City of Kaukauna Storm Water Reference Guide and contain at a minimum the following information:

1. Name, address, and telephone number of the landowner and responsible parties.
2. A legal description of the property proposed to be developed.
3. Pre-development site map with property lines, disturbed limits, and drainage patterns.
4. Post-development site map with property lines, disturbed limits, and drainage patterns.
    a. Total area of disturbed impervious surfaces within the site.
    b. Total area of new impervious surfaces within the site.
    c. Performance standards applicable to site.
    d. Proposed best management practices.
    e. Groundwater, bedrock, and soil limitations.
    f. Separation distances. Storm water management practices shall be adequately separated from wells to prevent contamination of drinking water.
5. Inspection and maintenance schedules of stormwater BMPs.

(b) ALTERNATE REQUIREMENTS. The Director of Public Works or designee may prescribe alternative submittal requirements for applicants seeking an exemption to on-site storm water management performance standards under Section 22.02(7)(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

22.02(10) MAINTENANCE AGREEMENT.

(a) MAINTENANCE AGREEMENT REQUIRED. The maintenance agreement required under Section 22.02(8)(b) for storm water management practices shall be an agreement between the Director of Public Works or designee and the responsible party to provide for maintenance of

storm water practices beyond the duration period of this permit. The maintenance agreement shall be filed with the County Register of Deeds as a property deed restriction so that it is binding upon all subsequent owners of the land served by the storm water management practices.

(b) AGREEMENT PROVISIONS. The maintenance agreement shall contain the following information and provisions and be consistent with the maintenance plan required by Section 22.02(9)(a)6.:

1. Identification of the storm water facilities and designation of the drainage area served by the facilities.
2. A schedule for regular maintenance of each aspect of the storm water management system consistent with the storm water management plan required under Section 22.02(8)(b).
3. Identification of the responsible party(s), organization or city, county, town or village responsible for long term maintenance of the storm water management practices identified in the storm water management plan required under Section22.02(8)(b).
4. Requirement that the responsible party(s), organization, or city, county, town or village shall maintain storm water management practices in accordance with the schedule included in par. 2.
5. Authorization for the Director of Public Works or designee to access the property to conduct inspections of storm water management practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.
6. A requirement on the Director of Public Works or designee to maintain public records of the results of the site inspections, to inform the responsible party responsible for maintenance of the inspection results, and to specifically indicate any corrective actions required to bring the storm water management practice into proper working condition.
7. Agreement that the party designated under par. 3., as responsible for long term maintenance of the storm water management practices, shall be notified by the Director of Public Works or designee of maintenance problems which require correction. The specified corrective actions shall be undertaken within a reasonable time frame as set by the Director of Public Works or designee.
8. Authorization of the Director of Public Works or designee to perform the corrected actions identified in the inspection report if the responsible party designated under par. 3. does not make the required corrections in the specified time period. The Director of Public Works or designee shall enter the amount due on the tax rolls and collect the money as a special charge against the property pursuant to subch. VII of ch. 66, Wis. Stats.

(c) ALTERNATE REQUIREMENTS. The Director of Public Works or designee may prescribe alternative requirements for applicants seeking an exemption to on-site storm water management

performance standards under Section 22.02(7)(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

22.02(11) FINANCIAL GUARANTEE.

(a) ESTABLISHMENT OF THE GUARANTEE. The Director of Public Works or designee may require the submittal of a financial guarantee, the form and type of which shall be acceptable to the Director of Public Works or designee. The financial guarantee shall be in an amount determined by the Director of Public Works or designee to be the estimated cost of construction and the estimated cost of maintenance of the storm water management practices during the period which the designated party in the maintenance agreement has maintenance responsibility. The financial guarantee shall give the Director of Public Works or designee the authorization to use the funds to complete the storm water management practices if the responsible party defaults or does not properly implement the approved storm water management plan, upon written notice to the responsible party by the Director of Public Works or designee that the requirements of this ordinance have not been met.

(b) CONDITIONS FOR RELEASE. Conditions for the release of the financial guarantee are as follows:

1. The Director of Public Works or designee shall release the portion of the financial guarantee established under this section, less any costs incurred by the Director of Public Works or designee to complete installation of practices, upon submission of "as built plans" by a licensed professional engineer. The Director of Public Works or designee may make provisions for a partial pro-rata release of the financial guarantee based on the completion of various development stages.
2. The Director of Public Works or designee shall release the portion of the financial guarantee established under this section to assure maintenance of storm water practices, less any costs incurred by the Director of Public Works or designee, at such time that the responsibility for practice maintenance is passed on to another entity via an approved maintenance agreement.

(c) ALTERNATE REQUIREMENTS. The Director of Public Works or designee may prescribe alternative requirements for applicants seeking an exemption to on-site storm water management performance standards under Section 22.02(7)(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

22.02(12) FEE SCHEDULE.

The fees referred to in other sections of this ordinance shall be established by the Common Council and may from time to time be modified by resolution. A schedule of the fees established by the Common Council shall be available for review in City Hall.

22.02(13) ENFORCEMENT.

(a) Any land disturbing construction activity or post-construction runoff initiated after the effective date of this ordinance by any person, firm, association, or corporation subject to the ordinance provisions shall be deemed a violation unless conducted in accordance with the requirements of this ordinance.

(b) The Director of Public Works or designee shall notify the responsible party by certified mail of any non-complying land disturbing construction activity or post-construction runoff. The notice shall describe the nature of the violation, remedial actions needed, a schedule for remedial action, and additional enforcement action which may be taken.

(c) Upon receipt of written notification from the Director of Public Works or designee under sub. (b), the responsible party shall correct work that does not comply with the storm water management plan or other provisions of this permit. The responsible party shall make corrections as necessary to meet the specifications and schedule set forth by the Director of Public Works or designee in the notice.

(d) If the violations to a permit issued pursuant to this ordinance are likely to result in damage to properties, public facilities, or waters of the state, the Director of Public Works or designee may enter the land and take emergency actions necessary to prevent such damage. The costs incurred by the Director of Public Works or designee plus interest and legal costs shall be billed to the responsible party.

(e) The Director of Public Works or designee is authorized to post a stop work order on all land disturbing construction activity that is in violation of this ordinance, or to request the municipal attorney to obtain a cease and desist order in any court with jurisdiction.

(f) The Director of Public Works or designee may revoke a permit issued under this ordinance for non-compliance with ordinance provisions.

(g) Any permit revocation, stop work order, or cease and desist order shall remain in effect unless retracted by the Director of Public Works or designee or by a court with jurisdiction.

(h) The Director of Public Works or designee is authorized to refer any violation of this ordinance, or of a stop work order or cease and desist order issued pursuant to this ordinance, to the municipal attorney for the commencement of further legal proceedings in any court with jurisdiction.

(i) Any person, firm, association, or corporation who does not comply with the provisions of this ordinance shall be subject to a forfeiture of not less than $25 dollars or more than $500 dollars

per offense, together with the costs of prosecution. Each day that the violation exists shall constitute a separate offense.

(j) Compliance with the provisions of this ordinance may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctional proceedings.

(k) When the Director of Public Works or designee determines that the holder of a permit issued pursuant to this ordinance has failed to follow practices set forth in the storm water management plan, or has failed to comply with schedules set forth in said storm water management plan, the Director of Public Works or designee or a party designated by the Director of Public Works or designee may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformance with requirements of the approved plan. The Director of Public Works or designee shall keep a detailed accounting of the costs and expenses of performing this work. These costs and expenses shall be deducted from any financial security posted pursuant to Section 22.02(11) of this ordinance. Where such a security has not been established, or where such a security is insufficient to cover these costs, the costs and expenses shall be entered on the tax roll as a special charge against the property and collected with any other taxes levied thereon.

22.02(14) APPEALS.

(a) BOARD OF APPEALS. The board of appeals, created pursuant to s. 62.23(7)(e), Wis. Stats, shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the Director of Public Works or designee in administering this ordinance. The board shall also use the rules, procedures, duties, and powers authorized by statute in hearing and deciding appeals. Upon appeal, the board may authorize variances from the provisions of this ordinance that are not contrary to the public interest, and where owing to special conditions a literal enforcement of the ordinance will result in unnecessary hardship.

(b) WHO MAY APPEAL. Appeals to the board of appeals may be taken by any aggrieved person or by an officer, department, board, or bureau of the City of Kaukauna affected by any decision of the Director of Public Works or designee.

22.02(15) SEVERABILITY.

(a) If any section, clause, provision or portion of this ordinance is judged unconstitutional or invalid by a court of competent jurisdiction, the remainder of the ordinance shall remain in force and not be affected by such judgment.

ORDINANCE NO. 1771

ORDINANCE AMENDING SECTION 7.12 (1) OF THE KAUKAUNA MUNICIPAL CODE TO PROHIBIT PARKING ON PUBLIC STREETS DURING STREET SWEEPING AND FALL LEAF PICKUP

WHEREAS, motor vehicle parking on public streets impedes the City of Kaukauna's High Efficiency Street Sweeping program and reduces the efficiency and effectiveness of the program in removing solids and pollutants that migrate into the municipal separate storm sewer system; and

WHEREAS, according to Storm Water Pollution Prevention modeling, street sweeping effectiveness will significantly increase upon enactment of a city wide parking prohibition during street sweeping and fall leaf pick up; and

WHEREAS, the increase in street sweeping effectiveness will reduce the number, size, and overall expense of storm water best management practices needed, including ponds, to meet the Wisconsin Department of Natural Resources Total Maximum Daily Load requirements and mandated load allocation limits for Total Suspended Solids and Total Phosphorus for the Lower Fox River, Apple Creek, Konkapot Creek, Plum Creek, and Garners Creek; and

WHEREAS, the Common Council of the City of Kaukauna has determined that the public interest, welfare, and safety would be served by adoption of an ordinance to restrict parking during street sweeping and fall leaf pick up;

NOW THEREFORE, it is ordained by the Common Council of the City of Kaukauna that Section 7.12(1) of the Kaukauna Municipal Code is amended to include the following:

7.12 (1) (au) Parking Prohibited During Street Sweeping and Fall Leaf Pickup

(1) Duration. Beginning April 1st of each year and continuing through September 30th of each year, parking restrictions shall be in effect for the City of Kaukauna for the purpose of street sweeping. Beginning October 1st through the Friday prior to Thanksgiving of each year parking restrictions shall be in effect for the City of Kaukauna for the purpose of fall leaf pickup.

(2) Street Sweeping and Fall Leaf Pickup Maps. Street Sweeping and Fall Leaf Pickup maps shall be prepared and maintained by the Director of Public Works and kept on file as public records in the office of the City Engineer, copies of which shall be distributed to the members of the Council and filed with the Council.

(3) Districts for Street Sweeping and Fall Leaf Pickup. The Street Sweeping and Fall Leaf Pickup maps shall divide the City into areas or districts in which Street Sweeping and Fall Leaf Pickup shall be conducted on the days of the week herein specified. No vehicles shall be parked on the street between the hours of 7:00 a.m. and 3:00 p.m. during Street Sweeping and Fall Leaf Pickup for the streets set forth herein, and as more specifically described below:

District 1. No parking on Mondays during Street Sweeping and Fall Leaf Pickup on any residential street North of the Fox River and including Island Street, Maple Street, Elm Street, Oak Street, and Schultheis Street:

District 2. No parking on Tuesdays during Street Sweeping and Fall Leaf Pickup on any residential street in the area bounded by the following:

South of the Fox River; North of and including Henry Street; West of Crooks Avenue to the City Limits.

And South of the Fox River; North of and including 20th Street; East of Crooks Avenue to Konkapot Creek.

District 3. No parking on Wednesdays during Street Sweeping and Fall Leaf Pickup on any residential street in the area bounded by the following:

South of the Fox River; North of CTH CE; East of Konkapot Creek to Haas Road; but excluding Haas Road, Olde Country Circle, Manchester Drive, Fenway Court and Camden Way.

And South of Henry Street; North of CTH KK; West of Konkapot Creek to the City Limits.

District 4. No parking on Thursdays during Street Sweeping and Fall Leaf Pickup on any residential street in the area bounded by the following:

South of CTH CE; North of CTH KK; East of Konkapot Creek to City Limits

And South of the Fox River; North of CTH CE; East of Haas Road to City Limits; and including Haas Road, Olde Country Circle, Manchester Drive, Fenway Court and Camden Way.

(4) Notice. The Director of Public Works shall post signs identifying the street sweeping regulations applicable to each particular area or district.

(5) Citations. Citations may be issued if a vehicle is parked in violation of this ordinance.

This ordinance shall be in full force and effect from and after its adoption and publication.

APPROVED: _____
Eugene J. Rosin, Mayor

ATTEST: _____
Susan J. Duda, Clerk/Treasurer

Adopted: 2-21-18
Published: 3-7-18

MEMO

COMMUNITY ENRICHMENT & RECREATION

To: Board of Public Works Item

From: Terri Vosters, Community Enrichment & Recreation Director
John Neumeier, Director of Public Works

Date: 10/16/2023

Re: Mini Golf Update

Discussion:

Tubgg!n fu!xjui!Wboef!Ifz!Dpnqboz-!Jod/!upefufsnjof!qspkfdu!tdpqf!qspkfdufe!dptu!pg!b!nojhpmg!dpvstf!bu!uif!Brvbujd!Dfoufs!tjuf/!Wboef!Ifz!Dpnqboz!!looked at muliple options but found that the space adjacent to the Aquatic Center would be advantageous for families but also creates structural challenges. Tif!proposed!mpdbujpo!offet!sfubjojoh!xbmt!boe!uif!fybdu!bnpvu!efqfoet!po!BEB!dpnqmjbodf/sloping/grade/Uif!dptu!pg!uif!sfubjojoh!xbmt!xpvme!cvehfu!jo!uif!bsfb!pg!%361-111/ Up!qspevdf!b!dpvstf!jo!uibu!mpdbujpo!xpvme!cvehfu!%861-111!xijdi!xpvme!jodmvef!cbtjd!mboetdbqjoh-!mbzpvut-!boe!cbdlespqt/!B!cvehfu!pg!%961-111!up!%2!njmjpo!xpvme!jodmvef!xbufs!gfbuvsft!boe!fydjujoh!cbdlespqt/!This information is concurrent to what Commerical Recreation Specialists & Parkitecture & Planning provided to the City in July of 2023.

The recommended option from Vande Hey Company is begin another capital campaign up generate $20,000 per hole (18) for sponsorship. The goal would be to generate an additional $360,000 !in sponsorship to offset the overall cost.