Written Pursuant to:
City of Kalamazoo NPDES Phase II
Municipal Stormwater Permit No. MIS040000
Certificate of Coverage No. MI0060009 V1.0

Written by:
City of Kalamazoo
Environmental Services
Water Resources Division
Department of Public Services

March 2022
(updated March 20, 2023)

Background and Introduction

Stormwater runoff is generated by precipitation events from rain and snow melt. In urban areas with impervious surfaces (parking lots, streets, paved surfaces, and roof tops), large volumes of stormwater runoff can flow over the ground and into a stormwater collection system. The City of Kalamazoo has a municipal separate storm sewer system (MS4) under Michigan's MS4 program, meaning that stormwater flows directly from the stormwater sewer (collection) system and discharges into local water bodies (lakes, rivers, and streams). Stormwater runoff and stormwater collection systems are subject to pollutants that can adversely affect water quality. Through good housekeeping, best management practices, the illicit discharge elimination program (IDEP), the catch basin cleaning plan, and public education, pollutants entering local water bodies can be mitigated.

In 1972 the EPA issued the Clean Water Act of 1972 as amended to help address water quality issues in the United States. Under the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permits program was designed to help regulate pollutant discharges to receiving water bodies. The City of Kalamazoo is subject to the Stormwater Phase II Final Rule, which requires operators of MS4s in urbanized areas to maintain a stormwater NPDES permit. The Stormwater Phase II Final Rule went into effect in December 1999.

Table of Contents

Attachments

Sections 1., 2. & 3. Applicant Information, MS4 Location Information & MS4 Contacts

General Stormwater Program Permit Information

Permit Authority: State of Michigan, Department of Environment, Great Lakes and Energy (EGLE)
Permit Type: National Pollutant Discharge Elimination System (NPDES) Phase II
Permit Number: MIS040000
Certificate of Coverage: MI0060009 V1.0
Permittee: Kalamazoo MS4
Street Address: 1415 N. Harrison Street, Kalamazoo, MI 49007
MS4 Program Contact Phone: 269-337-8583
Nested Permittee: Kalamazoo Valley Community College (KVCC), Downtown Campuses
City of Kalamazoo Website MS4 Information:
https://www.kalamazoocity.org/Community/Sustainability-Our-Environment,
https://protectyourwater.net/
Kalamazoo Stormwater Working Group (KSWG) Educational Website:
https://protectyourwater.net/kswg/

General MS4 Information - Department of Public Services, City of Kalamazoo
Capital Improvement: Anthony Ladd, P.E., Director of Public Works Division
Maintenance and Operation: Anthony Ladd, P.E., Director of Public Works Division
Stormwater Program Manager: Jean Talanda, Water Programs Manager, Water Resources Division
Stormwater Regulatory Compliance: Jean Talanda, Water Programs Manager, Water Resources Division

Primary Contact
Jean Talanda, Water Programs Manager, Water Resources Division, Dept. of Public Services
1415 N. Harrison St
Kalamazoo, MI 49007
mailto:talandaj@kalamazoocity.org
269-337-8583

Secondary Contact
Joe Bonhomme, Division Manager, Water Resources Division, Dept. of Public Services
1415 N. Harrison St
Kalamazoo, MI 49007
mailto:bonhommej@kalamazoocity.org
269-337-8716

Section 4: Regulated Area, Outfall/Points of Discharge, and Nested Jurisdictions

4.1 Regulated Area

The City of Kalamazoo is located in the southwest region of Michigan. The United States Census data estimates the City of Kalamazoo population is approximately 76,200 (2010 Census). Through the Phase II Stormwater NPDES permit, the City of Kalamazoo implements a comprehensive Stormwater Management Program (SWMP) outlined in Section 5.

Additionally, Kalamazoo Valley Community College's Downtown Campuses lie within the City's MS4-regulated area. Therefore, they have entered an agreement to nest under the City's MS4 permit.

Refer to ***Section 4: Attachment A*** for the Urbanized Area Reference Map of Kalamazoo, Michigan, from the 2010 Census. The subwatersheds of the Kalamazoo River lying within the City of Kalamazoo boundaries is also provided as ***Section 4: Attachment B***, *Kalamazoo River Mainstream 3 Corridor & Portage & Arcadia Watersheds* map**.**

4.2 Outfalls and Points of Discharge Information

There are a total of **575 outfalls within the City of Kalamazoo's jurisdiction** that are categorized below. Of the 575 outfalls, 563 are structural and 12 are not structural.

1) The 563 Structural Outfalls include the following assets.

   Private outfalls: 126

   Other government (non-City) MS4 outfalls: 35

   Michigan Department of Transportation (MDOT): 9
   Kalamazoo County Road Commission (KCRC): 14
   Kalamazoo County Office of Drain Commissioner: 1
   City of Portage MS4: 9
   Western Michigan University (WMU): 1
   Arcadia Creek tributary outfall to the Kalamazoo River, no action: 1

   Non-MS4 City of Kalamazoo: 8

   1415 N. Harrison Street (on a separate wastewater point source NPDES permit)

   MS4 City of Kalamazoo: 394

   - These outfalls are included in the City's MS4 IDEP dry weather evaluations.
   - In 2019, a jurisdictional transfer of outfalls occurred from MDOT to the City on certain street segments. These outfalls were added to the outfall evaluation schedule in 2022.

   Outfalls to Ground: 136
   Outfalls to Water: 258

2) The 12 Non-Structural Outfalls include 12 Jurisdictions Discharge "Outfall" Points from the City of Kalamazoo's MS4 to other non-City MS4s. These are not included in the total outfalls (575).

The list of 2022 Stormwater Jurisdictional Discharge Points is provided below in **Table 4-1**.

Table 4-1

2022 Stormwater Jurisdictional Discharge Points

Discharge Point ID	Location	Outfall ID	Jurisdiction Receiving Discharge
STMHKT18226JDP	Devonshire & Turwill	STOGKT18236	KCRC
STMHKC18165JDP	W. Main & Drake	STOWKT18259	MDOT
STMHKC18147JDP	W. Main & Northampton	STOWKT181019	MDOT
STMHKC30119JDP	Seneca Ln. & Stadium	STOGKC30136	MDOT
STMHKC29537JDP	Rambling & Stadium	STOWKC29360	MDOT
STCBPC051JDP	Oakland & Kilgore	STOWAPC052	City of Portage
STMHPC041022JDP	Kilgore & S. Westnedge	STOWAKC342500	City of Portage
STCBKC25125JDP	Cork & Sprinkle	STOGCT3013	KCRC
STMHKC36123JDP	Easy St. & Sprinkle	STOWKC364	KCRC
STMHKC36185JDP	Kilgore & Sprinkle	STOGKC366020	KCRC
STMHKC14305JDP	1100 Block of Gull Rd.	STOWKC15453	MDOT
STMHKC23723JDP	Branch & King Hwy.	STOWKC145	MDOT

Stormwater sewer system map

Refer to ***Section 4: Attachment C*** to view a map of the City of Kalamazoo Storm System Map or follow the directions provided below to view an interactive online map.

1) https://www.kalamazoocity.org/Residents/Taxes-Assessing/View-GIS-Maps.
2) To access the mapping tool, click on " View GIS Web Map" and then select the *layers tab*  . Then select the Public Stormwater layer in the dropdown menu.
3) Select the *legend icon* to view the legend. 
4) Zoom in to see map details.
5) Maps can be printed by selecting the *print icon*  . Printed maps will include a legend. To print select the icon, then select desired printing options.

4.3 Nested Jurisdictions

Kalamazoo Valley Community College

Kalamazoo Valley Community College (known as Kalamazoo Valley or KVCC) is nested under the City of Kalamazoo Phase II MS4 NPDES Permit as of August 2019. The 2022 revised Stormwater Management Plan for Kalamazoo Valley can be found in ***Section 4: Attachment D***.

Section 5: General SWMP, Enforcement Response Procedure, and Public Participation/Involvement Program

5.1 General SWMP Table

The City and Kalamazoo Valley use the General SWMP Table as a method of tracking the BMPs that make up the Stormwater Management Plan. The table lists each individual BMP, a description or method of implementation, which measures the BMP addresses, the frequency or schedule of the BMP, the method for evaluating effectiveness, and reports the progress of each BMP during each progress report. This table is included in ***Section 5: Attachment A***. In addition to the SWMP table, a Supplemental Implementation Plan – April 2022 has been developed and provided in ***Section 5: Attachment B***. This Plan defines a 1-year action list and a 2 to 3-year plan to address the new 2021 and 2022 NPDEW MS4 requirements. A phased-in approach to increase the City's Lovel of Services is outlined based on resource limitations.

5.2 Enforcement Response Procedure (ERP)

City ordinances are designed by the City Attorney to provide the City with legal mechanisms to address the MS4 violations but also purposely designed to provide staff with a reasonable level of flexibility in timelines and methodology since each situation exhibits unique characteristics, amount of evidence, and level of known and potential severity.

5.2.1 City of Kalamazoo Stormwater Ordinance

Adopted by the City Commissioners of the City of Kalamazoo in 2004 by Ordinance No. 1776, Chapter 29, the Kalamazoo Code of Ordinance was designed specifically to regulate the contribution of pollutants; prohibit illicit discharges; establish/confirm legal authority to investigate, inspect, and eliminate illicit connections and discharges; and to require and enforce elimination of illicit connections and discharges. It is the primary Enforcement Response Procedure (ERP). ***Section 5: Attachment C*** contains a copy of the City of Kalamazoo Stormwater Ordinance. It can also be found online by visiting https://ecode360.com/9697112.

5.2.2 City of Kalamazoo Soil Erosion and Sediment Control Ordinance

The secondary ERP is the Chapter 30 of Ordinance No. 1776, Soil Erosion and Sedimentation Control, *and it* allows the City to control soil erosion and sedimentation with respect to earth change activities within the City, by requiring proper provision for water disposal and protection of soil surfaces during and after construction, in order to promote the safety, public health and general welfare of the City, as well as to limit the exposed area of any disturbed land for the shortest possible period of time. ***Section 5: Attachment D*** contains a copy of the City of Kalamazoo Soil Erosion and Sediment Control Ordinance, or it can be found online by visiting https://ecode360.com/9697242.

Illicit discharges will be tracked through an illicit discharge tracking method using the Lucity Asset Management Software (Lucity). The development of this process is contained in the SWMP Supplemental Implementation Plan, found in ***Section 5: Attachment B***. Public Services staff utilize the IDEP tracking method in Lucity for evaluations and inspections for suspected illicit discharges. Enforcement action may be taken pursuant Chapter 29 and Chapter 30 of the City of Kalamazoo Code of

Ordinances if initiated by Public Services Department. A detailed City of Kalamazoo Illicit Discharge Elimination Plan is found in Section 7. Enforcement action will be tracked in the Enforcement Response Tracking Table and will be provided for the biannual report. A copy of the Stormwater IDEP Enforcement Tracking Table can be found in ***Section 5: Attachment E***. The City will utilize this table as the tracking tool for violations and follow-up for Chapter 29 of the Code of Ordinances. The completed IDEP sheet will be provided with every Stormwater Program Progress Report.

5.3 Public Participation/Involvement Program

5.3.1 Policy

This policy is to establish procedures for the City of Kalamazoo Public Participation/Involvement Program (PPP).

5.3.2 Background

The EGLE NPDES MS4 Stormwater Discharge Permit Application requires a procedure for public participation/involvement program. This procedure includes a description of the opportunities for the public to provide comment on the Stormwater Management Plan (SWMP) and inviting public involvement and participation in the implementation and periodical review of the SWMP.

5.3.3 Procedure

a) Stormwater Management Plan Available for Public Inspection and Comment
The City SWMP will be made available to the public through the City of Kalamazoo websites, https://protectyourwater.net/kalamazoo-stormwater-management/ and https://www.kalamazoocity.org/Community/Sustainability-Our-Environment and under the associated search terms: stormwater, rain, stormwater runoff, runoff, stormwater management plan, NPDES, SWMP, and IDEP. The SWMP will be available for public comment through both websites that direct the public to https://protectyourwater.net/contact/. This information includes the contact information of the Water Programs Manager to compile and track comments from the public including: commenter's name, date, and comments. Comments will be reviewed regularly when received and taken into consideration during annual review of the SWMP. If deemed appropriate and/or necessary edits will be considered to the SWMP.

b) Public Involvement and Participation
Public involvement and participation consist of action items that people can do at their own homes and within their community. Publication and promotion of events and action items will typically be virtual activities (promotion of events and activities via a community's website, Stormwater group's website, social medial, various website links, etc.) for in-person events and activities to be performed by residents independently.

c) Public Involvement and Participation in the Implementation and Periodic Review of the SWMP
The mechanisms for the public to be involved in the implementation, participation, and review of the SWMP include: Keeping catch basins and inlets located in the streets in front of their homes clear of debris; reporting any observed illegal dumping of chemicals/debris down catch basins/inlets; washing cars on lawn areas; disconnecting downspouts that un to street and re-route them to vegetated areas; reviewing and implement appropriate BMPs found on the websites; and, directing comments regarding the SWMP using the website Contact form.

The following BMPs in **Table 5-1** will be utilized to allow for PPP in the implementation and periodic review of the SWMP.

Table 5-1

BMP	Description	Schedule	Method of Assessment
Public Notice	The City will publicize the document is available for review and comment on the City's website. The City, if producing and distributing a community newsletter, will also publicize that the SWMP document is available on the website. If no community newsletter exists during the duration of the permit, the notice of the community's SWMP document being available for review and comment will be flagged/publicized on the community's homepage with a link to the SWMP.	1st Year of new permit issuance Promote document twice per permit cycle	Copy of the website showing the document was available and the number of comments. Copy of the community newsletter (if applicable) showing the document was available on the website. If no newsletter was used, a screenshot of the homepage showing the documented was linked from the community's homepage.
Website	The City's web site will be utilized to explain the SWMP program and opportunities for public involvement and participation.	Ongoing	Number of comments.
Community Website Updates / Promote TMDL activities	The City will promote events put together by the Kalamazoo River Watershed Council, such as "Rain Barrel Sale", Kanoe the Kazoo", etc., or other appropriate agency's events that are appropriate for this community.	Ongoing	Number of programs promoted on website. A link to the KSWG website or other agency's website that is promoting various event activities is on the Community's homepage and/or the event information is promoted directly on the community website's homepage.

Educational materials on how community members can get involved is also included on protectyourwater.net. Some examples include keeping stormwater catch basins and inlets clear of debris, reporting of any illegal dumping down catch basins and inlets, washing cars on lawn areas, routing downspouts to vegetative areas, and implementing appropriate Best Management Practices (BMP).

Any questions on this policy and procedure should be directed to the Water Programs Manager.

5.3.4 Process for Updating/Revising this Procedure

The City is proposing a modification to the PPP to be uniform with other agencies within Kalamazoo County. This procedure shall be reviewed on an annual basis by the Water Programs Manager for any updates to improve effectiveness.

Section 6: Public Education Program (PEP)

6.1 Overview

This updated PEP is integrated into the Stormwater Management Plan 1-4-2023. The PEP with associated tables is included within the Section. The primary mechanism is to provide free public education material to residents via the City's website, utilize a social media campaign to cover each PEP topic, and to promote ongoing stormwater education activities by other groups and agencies.

6.2 Introduction

6.2.1 Background

The unique purpose of the public education portion of the NPDES MS4 permit is to increase the awareness of residents about how their everyday activities contribute pollutants to their community's water resources. Most citizens recognize the recreational and aesthetic benefits they receive from water, and most even recognize that water quality degradation is a serious concern in the Great Lakes Region. However, most people have not made the connection that the majority of this pollution can be generated from their normal everyday actions and not simply from large commercial and industrial sources.

This PEP is jurisdictional based; however, portions may be performed in conjunction, cooperation, and coordination with the other water quality educational efforts within the watershed, such as MS4 permit holders, partners within the Kalamazoo Stormwater Working Group (KSWG), Wellhead Protection Programs, and the TMDL Implementation Committee. It is recognized that some existing educational components were designed to address groundwater, certain watersheds, stretches of streams, particular audiences, to convey a specific message, or to implement a particular type of educational strategy or technique. However, many of the on-going educational efforts share certain general water quality messages and strategies that are relevant to the stormwater program.

The City of Kalamazoo is a participating partner of the KSWG. Together the KSWG partners provide collaborative stormwater education to better meet the collective groups goals. In 2020, a grant was obtained for the purpose of establishing and marketing an online educational presence using strategic marketing. Through strategic marketing, the group can reach numerous households and produce measurable data based on the number of impressions made. This educational outreach strategy was extremely successful during the COVID 19 restriction timeframe from 2020 through 2022. Again in 2022, the KSWG partners obtained a 1-year grant to continue these outreach efforts.

6.2.2 KSWG Mission Statement

The KSWG is a collaborative effort of outreach and education for our interconnected MS4s in the Kalamazoo County area. Rain falls and snow melts across hard and impervious surfaces that do not allow water to soak into the ground. The water flows to storm sewers or catch basins which direct it to a natural surface water body such as a wetland, river, pond or lake. Stormwater runoff carries salts, grass clippings, sediment, fertilizer, oils, pet waste, and other material left on driveways and sidewalks into the catch basins, and unfortunately, they eventually drain to our natural water bodies. KSWG partners work together to protect against harmful discharges to the Kalamazoo River and its tributaries.

6.2.3 PEP Educational Components

The following educational components are PEP requirements of the MS4 program**:**

1. Educate the general public about personal watershed stewardship.
2. Educate residents concerning the ultimate stormwater discharge locations and the potential impacts of pollution from discharges could have on the surface waters of the state.
3. Educate and encourage the public reporting of the presence of illicit discharges or improper disposal of materials into the community's separate stormwater drainage systems.
4. Promote preferred cleaning materials and procedures for car, pavement and power washing.
5. Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers.
6. Promote proper disposal of grass clippings, leaf litter, and animal waste.
7. Identify and promote the availability, location, and requirements of facilities for disposal or drop-off of household hazardous waste, travel trailer sanitary wastes, chemicals, yard waste sand motor vehicle fluids.
8. Inform and educate the public on proper septic care and maintenance, and how to recognize system failure.
9. Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.
10. Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.

See *Section 6: Attachment A* for the detailed Public Education Plan (PEP) Educational Components**.**

6.3 City of Kalamazoo PEP Task Elements

The City of Kalamazoo's planned educational activities are specified in ***Section 6: Attachment A***. More specifically, these are the educational tasks to be undertaken by the City of Kalamazoo as a component of its Certificate of Coverage.

The PEP is intended to illustrate the relationship between the components listed above and the desired messages, delivery mechanisms, evaluation methods, measurable goals, and an associated timetable for implementation. It is recognized that results of the PEP are difficult to measure and are somewhat subjective. It is debatable what is more significant in measuring the success of a PEP - aspects of quantity, quality, or a combination of the two; it is likely that it is dependent on the specific action item.

Tons and type of trash collected and/or the number and type of people that participated in the process could measure the success of stream cleanup efforts. Furthermore, it is easy to measure the number of new signs or catch basin markings installed but it does not address the quality aspect of the marking design process, location selection process, or even perhaps a creative financing strategy to fund the cost of implementation. The measurable goals in Section 6: Attachment A were selected to balance both the quantity and quality aspects of success of the subject action items.

Typically, PEPs also identify commercial, industrial, and institutional entities likely to contribute to pollutant to stormwater run-off.

6.4 Summary

The City of Kalamazoo will increase public education by the following:

1. Participate in the Kalamazoo Area Stormwater Working Group, the TMDL, or another active group (i.e., attend meetings, promote educational activities on website, etc.).
2. Provide information on the Community's website and/or links to centralized web page and utilize social media platforms to direct people to the educational materials.
3. Continue to support and provide Employee Training.
4. Educate commercial, industrial, and institutional entities as the need arises.
5. Conduct public survey twice per permit cycle.
6. Evaluate the effectiveness of the PEP at time of annual report.

6.5 City of Kalamazoo – PEP Measure of Assessment

The City will conduct a public survey twice per permit cycle to measure change in education level. The first survey will be within the first 2 years of the permit cycle (year 1 or 2) and the second survey will occur in the last 2 years of the permit cycle (year 4 or 5). This survey will be a brief and is intended to measure delivery mechanism effectiveness along with change in knowledge and behavior among residents.

The City of Kalamazoo will assess at a staff level, the effectiveness of the overall PEP at the time of the annual report and make changes to improve the PEP for the remaining years within the permit cycle as it relates to the measurable goals for each Best Management Practice (BMP). The procedure for evaluating and determining the effectiveness of the overall PEP will be at the discretion of the Water Programs Manager at the time of evaluation based on survey responses and other data available (website data, comments provided, etc.).

Any questions on this policy and procedure should be directed to the Water Programs Manager.

6.6 Process for Updating/Revising this Procedure

This procedure was reviewed as part of this annual reporting by the Water Programs Manager for any updates to improve effectiveness. The City is submitting a new PEP to be consistent with other agencies within Kalamazoo County for a more uniform message and better tracking of metrics.

Section 7: Illicit Discharge Elimination Program (IDEP)

7.1 Illicit Discharge Elimination Program Summary

An illicit discharge is considered any discharge to the MS4 that is not precipitation. Illicit discharges that reach local water bodies can have negative impacts on water quality. Identification and elimination of illicit discharges and illicit connections is necessary to protect local water resources. A detailed IDEP for the City of Kalamazoo is provided in ***Section 7: Attachment A***.

As part of the preparation of each Stormwater Biannual Progress Report, the City of Kalamazoo will evaluate the effectiveness of the IDEP by reviewing the overall status and progress with the IDEP. Considerations will include the effectiveness of program elements such as the; Risk reduction prioritization process; adequacy/appropriateness of outfall evaluation schedule; detection methods; water quality monitoring methods; field documentation forms; illicit connection elimination process/ ordinance effectiveness; response to acute reports of illicit discharges; asset management and mapping; staff training and contractor accountability; current cost effectiveness related to current, projected, and proposed human and other budgetary resources. Changes will be made if deemed necessary and/or appropriate by Public Services Department prior to the scheduled Biannual Progress Report.

The City works cooperatively and regularly with other local MS4 groups in the identification and elimination of illicit discharges. The City of Kalamazoo meets with other local MS4 groups at a minimum of once quarterly and has agreed to work cooperatively with field investigations and sharing of documentation in the event of an interjurisdictional IDEP investigation. The City has identified 12 locations where the City of Kalamazoo MS4 discharges to other downstream MS4 jurisdictions. Refer to **Table 4-1** for the list of interjurisdictional outfalls.

Definitions:

- Illicit Discharge: Any Discharge to, or seepage into, an MS4 that is not composed entirely of stormwater or uncontaminated groundwater except discharges pursuant to an NPDES permit.
- Illicit Connection: A physical connection to an MS4 that primarily conveys non-storm water discharges other than uncontaminated groundwater into the MS4; or a physical connection not authorized or permitted by the City.

Stormwater sewer system map

1) https://www.kalamazoocity.org/Residents/Taxes-Assessing/View-GIS-Maps.
2) To access the mapping tool, click on " View GIS Web Map" and then select the *layers tab*  . Then select the Public Stormwater layer in the dropdown menu.
3) Select the *legend icon* to view the legend. 
4) Zoom in to see map details.
5) Maps can be printed by selecting the *print icon*  . Printed maps will include a legend. To print select the icon, then select desired printing options.

7.1.1 Illicit Discharge Identification and Investigation

The City of Kalamazoo will evaluate all 394 outfalls on a four-year cycle during dry weather conditions (48 hours without precipitation). For a comprehensive explanation of the City of Kalamazoo IDEP program, see the detailed Illicit Discharge Elimination Plan in ***Section 7: Attachment A***. In 2021, the City of Kalamazoo started utilizing the Asset Management software, Lucity, for tracking, documenting, and reporting purposes for the City of Kalamazoo's IDEP.

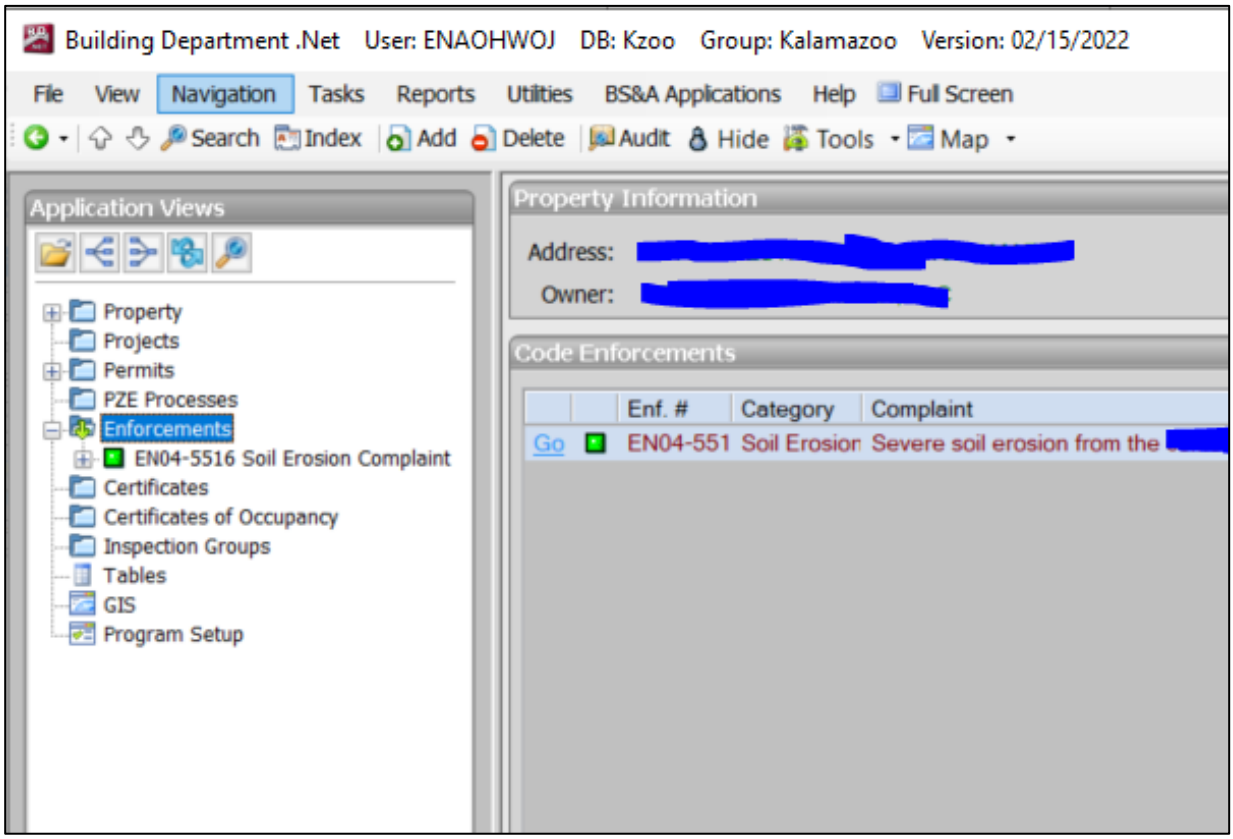
The Implementation Schedule may rely on other MS4s to notify the City if dry weather flows are entering another MS4 system from the City's points of discharge. Please note the City must either conduct dry weather screening at these points of discharge, or submit an interjurisdictional agreement with the owe or operator of the downstream MS4 identifying responsibilities for ensuring an illicit discharge is eliminated If originating from the applicant's point of discharge.

Section 8: Construction Stormwater Runoff Control Program

8.1 Municipal Enforcing Agency for Soil Erosion and Sedimentation Control

Our Municipal Enforcing Agency (MEA) for Part 91 of Act 451 (Soil Erosion and Sedimentation Control) for the City is the Department of Community Development and Economic Planning (CPED), Code Administration Division. They are responsible for administrating Part 91 via Chapter 30 of the City Code of Ordinances (***Section 5: Attachment D***). The Building Official has the required Soil Erosion and Sedimentation Control (SESC) training/certification, reviews all the Site Plans, attends the Site Plan Review meetings, and sets conditions for Site Plan approval regarding Part 91. The City of Kalamazoo currently employees 6 SESC certified professionals. The Department of Public Services, Engineering Division, also serves as a MEA for utility work within Right-of-Ways (ROWs) and has certified stormwater staff.

City of Kalamazoo CPED uses BS&A software to track SESC permits and program violations for property parcels. This system is used as a procedure to ensure construction activities with the potential to discharge to the City's MS4 are covered under the appropriate Soil Erosion and Sedimentation Control Permits and/or Procedures. This system sets up inspection schedules and can generate a letter of enforcement if a violation occurs. An example of the BS&A SESC permit tracking program is shown below.



8.2 Site Plan Review

During Site Plan Review, it is the Building Division's responsibility to inform the developer/contractor whether a SESC Permit is required or not. If it is, then the developer/contractor is required to note it on the site plan schematics. Subsequently, the building inspectors complete a building plan review, using a checklist on the third page of the building permit application (refer to *Section 8: Attachment A*). During this process, the inspectors are responsible to check whether the SESC Permit is issued or not, all measures are in place on the plan, and finally to inspect the soil control measures in the field. Once the SESC Permits are issued and all soil erosion control measures are in place, then the inspectors will enter and track the inspections in the City's BS&A software system until the project is completed and the permits are closed out.

For 50 percent of the construction sites, the Site Plan Application and Review process initiates the discussion of appropriate and necessary BMPs (e.g., inlet protection) based on the applicant's submittal of the Site Plan Review forms provided in ***Section 8: Attachment B***. At this time, Part 91 of Act 451 and the stormwater requirements are discussed with the applicant and their contractors. General construction site BMPs are set as conditions for Site Plan approval as deemed appropriate. The detailed requirements for Site Plan Review are provided in Appendix A of the City Code of Ordinances, Section 8.3 "Specific Standards and Applications for Development Approval."

Subsequently, the remaining 50 percent of the construction sites that submit SESC Permit Applications do so independently of the Site Plan Review process. Approximately 30 percent of those are associated with demolition projects and 20 percent involve residential and state public institutions construction sites (e.g., Public School Systems).

8.2.1 Notifications

The staff administering Part 91 will directly contact EGLE as required for any significant releases from construction sites. As in the past, City staff will keep the EGLE Kalamazoo District Phase II contact person informed of any significant issues regarding impacts to the MS4. In addition, and if appropriate, the EGLE Spill or Release Report will be completed and submitted as necessary. The EGLE PEAS Hotline (800) 292-4706 will also be used to report releases of polluting materials as necessary. Citizen complaints regarding sediment on the streets from a construction site are forwarded to and handled by our MEA.

The Department of Public Services, Water Resources Division, can also address the issue via its Stormwater IDEP Ordinance (Chapter 29 of the Code) since sediment in stormwater is listed as a pollutant that the Code regulates. Staff will follow the established IDEP Plan which details communication procedures. These incidents are treated as an acute response to a potential stormwater illicit discharge. Staff will continue to contact EGLE if the MS4 is significantly impacted resulting in the impairment of the waters of the state. The City of Kalamazoo's IDEP can be found in ***Section 7: Attachment A*** of this document and it includes the "Chemical Release Documentation Initial Report Log" and other forms used to track the complaint response.

In addition, the Department of Public Services, Fleet Services Division, also has Industrial Stormwater Certified staff that administers the Stormwater Pollution Prevention Plan (SWPPP) for the fleet facility located at 415 E. Stockbridge Avenue (described further in Section 9 of this document).

8.3 Post Construction Stormwater Runoff Program

8.3.1 Ordinances

"Specific Standards and Applications for Development Approval" are provided in Appendix A of the Code of Ordinances – Zoning Ordinance, Section 8.3.H and available at https://ecode360.com/33037802 . The specific section for stormwater management is 8.3.H.7I, which references Ordinance No. 1826 "Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones and Stormwater Quality Management (Performance Standards). These comprehensive Performance Standards, provide in ***Section 8: Attachment C***, detail the current requirements addressing specific stormwater management issues. The Performance Standards reference stormwater management in relation to the wellhead protection captures zones shown on the Wellhead Protection Zoning Overlay Map (Ordinance 1825) provided in ***Section 8: Attachment D*** and available at https://ecode360.com/33036726.

8.3.2 Water Quality Treatment Performance Standards

The existing Performance Standards (Ordinance No. 1826) require the treatment of the first one-half inch of runoff on a site until they were revised in 2015 to better align with the permit requirement of treating the first one inch of runoff on a site. The post-construction stormwater runoff, from new and redevelopment projects for sites one acre or larger, include: Revised Water Quality Performance Standards; Revised Channel Protection Performance Standards; Continued Site-Specific Requirements for Contaminated sites; continued use of the Site Plan Review; and revised Long-Term Operation and Maintenance of BMPs. These are detailed below, based on the Site Plan Review Worksheets provided in ***Section 8: Attachment E***.

<u>Volume</u>

The intent of the Water Quality Performance Standard is to reduce or prevent water quality impact of stormwater runoff by capturing and treating the initial "first flush" volume expected to contain the majority of pollutants by ensuring that the selected BMP is appropriately designed and sized. The calculation used is:

Volume (cubic feet) = *Area contributing stormwater runoff* (square feet) x *1/12 foot* (0.083 feet).

<u>Total Suspended Solids</u>

The method to treat the one inch of runoff volume shall be designed on a site-specific basis to achieve a minimum of 80% removal of the Total Suspended Solids (TSS), as compared with uncontrolled runoff, or a discharge concentration of TSS that does not exceed 80 Milligrams per Liter (mg/L). Where site conditions do not generate TSS concentrations greater than 80 mg/L, water quality treatment of the runoff is not required. However, without site-specific documentation that the TSS concentration will not exceed 80 mg/L, treatment BMPs must be applied to achieve the 80% TSS removal. Depending on the project site, this standard can be achieved by using a single BMP, or multiple BMPs each achieving less than the required removal of TSS, but when properly applied as a system achieve the required removal for the site. All BMPs must be designed, installed, and maintained properly to continuously achieve the required removal for the project site.

If MTDs are selected as BMPs, they shall be NJCAT verified and NJDEP certified (or better) to satisfy the Water Quality Treatment Volume Standard, unless otherwise approved by the City. The model/size of the certified unit shall be selected on the basis to effectively pre-treat stormwater at the calculated

water quality flow rate. The NJDEP 50% Certified TSS Removal Rate approximates 80% net TSS reduction for the Kalamazoo region.

8.3.3 Channel Protection Performance Standard

A Channel Protection Performance Standard is required to maintain the post-development project site runoff volume and peak flow rate at or below pre-development levels for all storms up to the 2-year, 24-hour storm or 2.59 inches (whichever is greater), using current data from the nearest NOAA weather station (Kalamazoo State Hosp – Site ID: 20-4244). This standard is required for all sites ≥ 0.5 acre (medium and large sites). If the post-development runoff volume is equal to or less than the pre-development runoff volume, the channel protection performance standard is met. The intent of the Channel Protection Performance Standard is to prevent excess sediment and channel instability caused by the increased rate and volume of stormwater runoff that can result from development.

Runoff Volume and Peak Runoff Rate

The *Rational Method Equation* formula will be used to calculate whether a BMP is suitable to meet the Channel Protection Performance Standard. For the purpose of selecting the appropriate size of a stormwater Manufactured Treatment Device (MTD) or other acceptable BMP, the Water Quality Treatment Flow Rate (Q) shall be calculated using the Stormwater Calculations Worksheet which uses the Rational Method Equation: Q = CIA, where

Q = *Discharge rate* (cubic feet per seconds)
C = *Runoff coefficient* depending on the characteristics of the drainage area
I = *Rainfall intensity* (inches/hour)
A = *Drainage area* (acres)

The runoff coefficient (C) shall be the weighted average that is based on the percentage of different surface types shown on the Stormwater Calculations Worksheet. The simplified Table of Rational Methods Runoff Coefficients is provided as **Table 8-1** on the following page.

The rainfall intensity (I) shall be equal to a 1-year 30-minute storm (1.65 inches/hour) or the 90% annual non-exceedance storm, whichever is greater, using current data from the nearest National Oceanic and Atmospheric Administration (NOAA) weather station (Kalamazoo State Hosp – Site ID: 20-4244).

The drainage area (A) means the entire upstream land area which drains to and from that location.

In addition:

- The BMP shall be designed to treat 100% of the flow without bypass at the calculated water quality treatment flow rate; and,
- The treatment device will have the capacity to handle the designed 10-year storm pipe flows without losing floatables or sediment.

Small sites do not require a water quality treatment volume unless water quality discharge is a concern due to land use characteristics that pose a high risk to water quality. City-approved catch basin inserts may only be used on small sites as a water quality treatment BMP and when hydrodynamic separators and other BMPs are not physically practical due to site characteristics, such as depth to groundwater, hydraulics, etc.

Table 8-1

Simplified Table of Rational Method Runoff Coefficients

Ground Cover	Runoff Coefficient, c
Lawns	0.05 - 0.35
Forest	0.05 - 0.25
Cultivated land	0.08-0.41
Meadow	0.1 - 0.5
Parks, cemeteries	0.1 - 0.25
Unimproved areas	0.1 - 0.3
Pasture	0.12 - 0.62
Residential areas	0.3 - 0.75
Business areas	0.5 - 0.95
Industrial areas	0.5 - 0.9
Asphalt streets	0.7 - 0.95
Brick streets	0.7 - 0.85
Roofs	0.75 - 0.95
Concrete streets	0.7 - 0.95

Historically, the City has not supported stormwater infiltration through contaminated soils and has either prohibited it or required pre-treatment standards for properties within a Wellhead Protection Area (WHPA), dictated by the type of capture zone. For contaminated properties not within a WHPA, the City routinely requests that the applicant provide data showing contaminated areas so that infiltration would not be the selected stormwater strategy for that impacted area. The City is committed to working with the applicant's consultants to verify site conditions and determine the best reasonable strategy for stormwater control. Applicants will be provided with or given reference to the EPA guidance "Implementing Stormwater Infiltration Practices at Vacant Parcels and Brownfield Sites." The Remediation and Redevelopment Division (RRD) of EGLE will be contacted for consultation in projects where stormwater infiltration is being proposed in areas with known existing soil and/or groundwater contamination, as provided in the Site Plan Review Wellhead Protection and Stormwater Compliance Checklist (refer to ***Section 8: Attachment F***).

Upon City approval of the Site Plan where BMPs requiring maintenance are a conditional of approval, the City requires the applicant to enter into a deed-recorded, Stormwater Maintenance Agreement. The agreement requires annual inspection of the BMPs, performance of maintenance and annual notification to the City of compliance. ***Section 8: Attachment G*** contains the template of the Stormwater Agreement and Instruction Page.

The Landowner shall annually submit a report to the City regarding the inspection, operation, and maintenance for each of the stormwater MTDs and other BMPs. The Landowner shall submit one or more of the Stormwater Treatment Inspection Report forms provided in ***Section 8: Attachment H***, or a comparable form for a site-specific MTD or BMP, and the Inspection Forms, respectively.

Section 9. Post-Construction Stormwater Runoff Program

9.1 City of Kalamazoo Stormwater Assets

The City maintains records of stormwater assets utilizing a 2022 Lucity database program. Refer to ***Section 9: Attachment A*** for the City's Work Practice that describes "Updates to Stormwater Asset Inventory, Mapping and Record Retention."

The City's stormwater assets can be viewed via our online GIS mapping tool by selecting:

1) https://www.kalamazoocity.org/Residents/Taxes-Assessing/View-GIS-Maps.
2) To access the mapping tool, click on " View GIS Web Map" and then select the *layers tab*  . Then select the Public Stormwater layer in the dropdown menu.
3) Select the *legend icon* to view the legend. 
4) Zoom in to see map details.
5) Maps can be printed by selecting the *print icon*  . Printed maps will include a legend. To print select the icon, then select desired printing options.

Specific maps that include all stormwater assets and their locations are available at the Department of Public Services, Water Resources Division located at 1415 N. Harrison Street, Kalamazoo, MI 49007. Hard copies are available upon request using the following link: http://protectyourwater.net/contact/.

The City's stormwater asset inventory was updated in 2021-2022 and uploaded into our Lucity Program. The following updated inventory is provided below detailing specific storm structures based on data mined from Lucity. In summary, the following are 2022 statistics detailing the MS4 stormwater system.

There is a total of **406 MS4 outfalls within the City of Kalamazoo's jurisdiction** that are categorized below. Of the 406 outfalls, 394 are structural and 12 are not structural.

MS4 City of Kalamazoo: 394

- These outfalls are included in the City's MS4 IDEP dry weather evaluations.
- In 2019, a jurisdictional transfer of outfalls occurred from MDOT to the City on certain street segments. These outfalls were added to the outfall evaluation schedule in 2022.

Outfalls to Ground: 136
Outfalls to Water: 258

The **12 Non-Structural Outfalls** include 12 Jurisdictions Discharge "Outfall" Points from the City of Kalamazoo's MS4 to other non-City MS4s.These are not included in the total outfalls (575). The list of 2022 Stormwater Jurisdictional Discharge Points is provided below in **Table 4-1**.

The City's structural stormwater assets include:

- Approximately 11,553 catch basins/inlets
- Approximately 4,902 manholes
- Approximately 258 leaching basins

- Approximately 239 culverts
- Approximately 244 miles of stormwater sewer pipe plus 46 miles of connection pipe
- Approximately 9 City-owned pre-treatment sites (MTDs)
- 8 detention/retention basins
- Native vegetive buffers around south Crosstown Pond and select areas at Milham Park

Additionally, privately owned stormwater structures within the City boundaries include 126 outfalls and approximately 256 pretreatment sites (MTDs). Upon City approval of the Site Plan where BMPs requiring maintenance are a conditional of approval, the City requires the applicant to enter into a deed-recorded, Stormwater Maintenance Agreement requiring annual inspection of the BMPs.

9.2 Pollution Prevention and Good Housekeeping Program (P2GH)

Significant changes in the City's policies and material use have not changed since 2017. A chemical evaluation was completed by the City's Department of Public Services Safety Coordinator as a procedure selected to identify the need for BMPs at City facilities with a "Medium and Lower Potential for Discharge of Pollutants." The result of this evaluation is provided in ***Section 9: Attachment B*** and is titled "*Report Name: Materials Report Run Date: 1/24/17*." All of the chemicals inventoried were at relatively low quantities, pre-packaged within an enclosed/contained building, and/or reported to meet chemical storage requirements. The "Procedure for Updating and Revising the Existence, Location, Structural Controls, and Potential to Discharge Pollutants to the Surface Waters of the State," is detailed in the following subsection.

The City has evaluated P2GH requirements for the following entities:

1) The City has identified their Fleet Services, at 415 E. Stockbridge Avenue as requiring a Stormwater Pollution Prevention Plan (SWPPP) due to the facility's potential to have high risk for pollutant runoff. ***Section 9: Attachment C*** contains the Fleet Services SWPPP.

2) The Kalamazoo Water Reclamation Plant (wastewater treatment plant) located at 1415 N. Harrison Street also has a SWPPP but is permitted separately under a NPDES point source permit.

3) The Mayors' Riverfront Park, operated by the City's Parks and Recreation Department and located at 251 Mills Street has a SWPPP due to the facility's potential to have risk for pollutant runoff. However, the evaluation of this facility did not meet the definition of a facility that required a SWPPP.

4) The Metro Transit Facilities at one time was owned and operated by the City of Kalamazoo. Since 2016, the Metro Transit Facilities are permitted separately from the City.

9.2.1 Procedure for Updating and Revising the Existence, Location, Structural Stormwater Controls and Potential to Discharge Pollutants to the Surface Waters of the State

Within 60 days of a newly constructed facility, and when structural stormwater controls at existing facilities are added, removed, or no longer owned and operated, the City will consider the following factors when assessing its potential to discharge pollutants to the surface waters of the State, and the

associated need to prepare and implement a new or revise an existing SWPPP and Standard Operation Procedures (SOP).

1. Amount of urban pollutants stored at the site (e.g., sediment, nutrients, metals, hydrocarbons, pesticides, fertilizers, herbicides, chlorides, trash, bacteria, or other site-specific pollutants);
2. Identification of improperly stored materials;
3. The potential for polluting activities to be conducted outside (e.g., vehicle washing);
4. Proximity to waterbodies;
5. Poor housekeeping practices; and
6. Discharge to pollutants of concern to impaired water.

The Department of Public Services Safety Coordinator will keep current a chemical storage inventory of all Public Services facilities and prepare annual updates to the "Material Report."

If the City determines that a new SWPPP/SOP is required or an existing one revised, one will be prepared/revised, submitted to EGLE, and implemented according to the EGLE guidelines. In addition, if a SWPPP is not warranted but stormwater BMPs are necessary, the City will implement them as appropriate. A summary of the P2GH efforts and tracking progress is provided in the SWMP (***Section 5: Attachment A***).

9.2.2 Catch Basin Cleaning Plan

The City of Kalamazoo's catch basin cleaning plan can be found in ***Section 9: Attachment D***. The City defers to EGLE and EPA guidance provided in ***Section 9: Attachment E*** and ***Section 9: Attachment F***, respectively, for implementing this plan. Catch Basins will be evaluated by percentage full. These structures will be cleaned out when they are between 1/3 and 1/2 full or greater. The City of Kalamazoo started utilizing the Asset Management software, Lucity, in 2022 for tracking, documenting, and reporting purposes.

The disposal of the material taken from the catch basins is collected by the street sweepers and transported to 1415 N. Harrison Street (Wastewater Treatment Plant), placed on a dewatering pad, missed with other material, including that collected from street sweeping, sampled for landfill acceptability and transported to a Type II landfill by a contractor.

9.2.3 Street Sweeping Policy

The following is a summary of the City's Street Sweeping Policy:

1) Street sweeping is only to be performed during dry weather if possible.
2) Sweepers are to be operated at manufactured requested optimal speed level to increase effectiveness.
3) Sweepers are to be adequately maintained per manufactured recommendations and determined needs.
4) Staff training for equipment use will be provided for all sweeper vehicle drivers.
5) Materials from the street sweepers will be stored at dedicated dumpsters and transported to the City's 1415 N. Harrison Street Facility where it will be dewatered in a contained area, sampled and analyzed for landfill acceptance, and transported to a Type II Landfill.

6) Maintenance of accurate logs on worked performed including:
    - Date work performed
    - Streets swept
    - Sweeper crew identification
    - Sweeper vehicle use identification
    - Emergency contacts
    - City covered area associated with boundary sections (from City-prepared street sweeping and Snow Plowing Section Map)
    - Number of material dumps
    - Location of dumpsters
    - Material storage
    - Material disposal records
7) As the sweeper operators move through street segments, they will actively conduct visual assessments of the condition of the storm sewer catch basins and inlets. This assessment will be performed from inside the vehicle. Operators will record and report any damaged or plugged assets to the Public Works Supervisor. Catch basin cleaning work orders will be written for these assets and they will be prioritized in the cleaning schedule.

Schedule

The current schedule of street sweeping is monthly for the "downtown" area, approximately defined as Section 1 on the attached map titled "*City of Kalamazoo Maintenance Zones for Street Sweeping and Snow Plowing*" (refer to ***Section 9: Attachment G*** for a copy of the map). The remaining portions of the City (Sections 2 through 10) are swept approximately every 2-3 weeks.

Street sweeping is also performed as necessary when construction or utility work activities result in excessive sediment on the streets (e.g., water main breaks).

9.2.4 Inspect, perform maintenance, and evaluate all Stormwater Controls

The City operates and maintains 12 stormwater treatment sites (MTDs), and 8 retention/detention basins that are shown on maps provided in ***Section 9: Attachment H*** and ***Section 9: Attachment I****, respectively*. The stormwater MTDs and retention/detention basins are inspected on an annual basis and maintained as needed and as resources allow. Other preventative actions the City undertakes routinely are indicated on the Stormwater Management Plan provided as ***Section 5: Attachment A*** Rows 13, 14, and 16 through 23.

9.3 Total Maximum Daily Load (TMDL) Implementation Plan

9.3.1 GENERAL OVERVIEW

The total maximum daily load (TMDL) plan was developed to address the three monitoring objectives described below. Ultimately, the goal of this monitoring manual is to provide an approach for municipal separate storm sewer system (MS4) permittees in the watershed to demonstrate progress towards meeting TMDL targets. The implementation of this plan over a 5-year period involves evaluation of structural and operational best management practices (BMP), sampling of targeted outfalls in dry and

wet weather, monitoring of impaired streams, and reporting of other restoration and water quality surveys conducted in the impaired waterways.

9.3.2 OBJECTIVES

Objective 1. Determining progress toward meeting TMDL targets.

The State of Michigan is required by the Clean Water Act to assess all water resources. If, during this assessment, a water body is found not to support its designated use or attain its water quality standards (WQS), a TMDL is developed to define the steps necessary to achieve attainment. Since 2002, the Kalamazoo River has had a TMDL for Phosphorus. As of December 2020, EGLE determined that three subwatersheds within the Kalamazoo River Watershed (KRW) were designated with a TMDL E. Coli impairment status: Arcadia Creek, Davis Creek, and Axtell Creek.

Note that the EGLE periodically reassesses and updates the list of impaired streams in the KRW. TMDLs addressing recreational and aquatic life use impairments have been developed for several waterways in the KRW using limited data gathered in 2010 by the local health department. Because bacteria are used to assess recreation use impairment, target concentrations for E. Coli have been developed for the TMDLs addressing bacteria impairments.

Several communities within the KRW own or operate a MS4 and are regulated by a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are now issued to individual MS4 communities; however, MS4s in the KRW are working on a watershed scale. By working on a watershed scale, communities can implement regional plans for permit compliance, saving money and reducing duplicate initiatives by neighboring communities.

In October 2022, EGLE will renew NPDES MS4 permits in the KRW, and each permittee will incorporate this TMDL plan for E. Coli. These permits require MS4s to make progress in achieving the pollutant load reduction requirements in the TMDL. In addition, the MS4s are required to implement the monitoring plan to assess the effectiveness of the BMPs implemented in making progress towards achieving the TMDL. Communities that do not have a MS4 permit and areas outside the MS4 are not required to implement BMPs; however, BMPs implemented in these areas are consistent with the watershed-scale approach to meeting the TMDL in-stream targets.

Given the need to address the requirements in the TMDLs, the Kalamazoo Stormwater Working Group (KSWG) determined that it would be to the benefit of the KRW if TMDL-related activities and other water quality monitoring were done in a collaborative, uniform manner throughout the watershed.

Objective 2. Evaluate the effectiveness of municipal stormwater runoff controls and practices (BMPs)

For permitted MS4 communities, the NPDES permit application requires the development and evaluation of BMPs. BMPs are implemented within each community, and each BMP is designed to reduce pollutants from entering a waterbody. Each MS4 is responsible for BMPs as a part of their permit that identifies numerous structural and operational BMPs and their operation and maintenance.

Monitoring at MS4 outfalls in targeted areas that have the highest risk of polluting waterways will be one method to measure the effectiveness of operational BMPs on in-stream water quality. The monitoring locations and sampling identified in this monitoring manual provide information about water

quality benefits resulting from BMP implementation by individual MS4 permittees. The sampling and analytical procedures identified can be further used in various illicit discharge detection and verification processes if needed.

Objective 3. Coordinate with partners' reasonable assurance activities toward meeting TMDL targets

Non-point source pollution includes both agricultural and urban pollution sources that are commonly difficult to define and locate. Land cover in the KRW is 1,302,804 acres and is comprised of approximately 47% agriculture (dominated by corn and soybeans), 30% unmanaged terrestrial uplands (mostly secondary deciduous forest and successional old fields), 15% lakes and wetlands, and 8% urban. In addition, several villages and unincorporated developed areas do not have MS4 permits. The impact of runoff from these non-point sources contribute to the overall health of a watershed.

9.3.3 Monitoring Approach

The MS4 permits include requirements to implement monitoring to assess the effectiveness of implemented BMPs in making progress toward achieving the TMDL pollutant load reductions. Methods selected to meet these requirements include water quality monitoring, and implementation of the Illicit Discharge Elimination Plan (IDEP) and the watershed Public Education Plan (PEP). MS4 permittees in the KRW have chosen to work collaboratively on the TMDL Implementation Plan to address impairments to water quality. This collaborative effort provides an opportunity to work with watershed partners in a cost-effective manner. In-stream monitoring and/or outfall sampling conducted by watershed partners will be recorded and assessed to complement the efforts taken under this Plan to evaluate water quality improvements. The monitoring approach follows the permit cycle to ensure that an adequate amount of time is considered in showing pollutant reductions.

9.3.4 Background And Effort - Phosphorus

The City discharges stormwater to the KRW which has a TMDL for Phosphorus. The TMDL anticipated implementation of the communities MS4 program is part of the stormwater loading reductions to help achieve this limit. As such, stormwater is part of the non-point source load allocation in the TMDL. The City's goal is to have a 50% Total Phosphorus removal as a compliance target.

The City's short-term goal and priority is to continue with street sweeping / parking lot sweeping, catch basin cleaning and public education to reduce the Phosphorus loading to the maximum extent practical. The City will also review funding sources to implement long term solutions to Phosphorus removal at individual outfalls.

The City has NPDES Permits for both wastewater and stormwater discharges into the Kalamazoo River. The Kalamazoo River has a designated TMDL for Phosphorus, identified in the application notice. The wastewater (point) dischargers are represented by signatories of the Kalamazoo River/Lake Allegan Watershed Cooperative Agreement for the Reduction of Phosphorus Loading ("Cooperative Agreement"). The original TMDL Implementation Plan was submitted to the U.S. EPA and the EGLE in August 2002. The City collected samples from the Kalamazoo River at four locations (35th Street Comstock, River Street Comstock, Paterson Street, and Mosel Avenue) approximately every two weeks for Total Phosphorus and Soluble Phosphorus during the designated growing season. The TMDL Phosphorus reduction efforts of the Point Source Group and Non-Point Source Group are documented and reported to the EGLE, Water Resources Division at the Kalamazoo District Office.

9.3.5 MS4 Discharge Permit TMDL Implementation Plan

The City will continue to be involved with the collaborative efforts of the Non-Point Source Group in its efforts to coordinate and document Phosphorus reductions, including consideration of those issues listed in the Non-Point Source Issues section of table "Lake Allegan/Kalamazoo River Watershed TMDL Implementation Strategic Plan for 2012 and Beyond" presented as ***Section 9: Attachment J***. Some notable progress in these cooperative efforts includes routine meetings, public education, water quality monitoring, agricultural Phosphorus loading focus, and work with the non-MS4 TMDL communities.

Specifically, the City of Kalamazoo will continue its sediment and Phosphorus reduction efforts by continuing, and in some cases enhancing the following BMPs: municipal operations, such as street sweeping, leaf and brush pick-up programs, etc. (refer to the SWMP in ***Section 5: Attachment A***); the PEP (refer to ***Section 6: Attachment A***); the Construction SESC Program; and the required Post-Construction Stormwater Controls via the Site Plan Review process.

Monitoring Plan

<u>Phosphorous</u>

Unexpectedly, a 5-year Lake Allegan Carp Management Study was initiated in 2019 by Georgia-Pacific. This study has the potential to significantly affect the long-term water quality in Lake Allegan (including total Phosphorus reductions) with a much greater magnitude than previous efforts by the MS4 and TMDL actions.

Sampling may also be impacted by EPA's announcement in 2021 that portions of the Kalamazoo River within the City of Kalamazoo and Kalamazoo Township boundaries will be dredged in 2022 and continue through at least 2025. The River is a listed Superfund site and the work to conducted is part of the remediation plan for PCBs in the river bottom sediments. It is highly probable the dredging will affect sampling for TMDL on the Kalamazoo River.

The COK is utilizing a group approach for Phosphorus monitoring. In March 2023, EGLE Permits Section and Surface Water Assessment Section staff discussed the request to add a monitoring point on the Kalamazoo River downstream of the urbanized area in order to better assess inputs of Phosphorus in the watershed as an assessment of water quality, not a direct permit requirement. EGLE staff has submitted a Targeted Monitoring Request for an additional sampling point. The TMDL sampling will be conducted by an EGLE aquatic biologist during the growing season every other year. The plan is to utilize the data, collected by EGLE for reporting purposes under the COK's TMDL plan. The goal would be to measure Phosphorus trends over time, to determine if the Kalamazoo Area MS4s are successfully reducing Phosphorus inputs.

<u>E. Coli</u>

Also, as of December 2020, three subwatersheds within the KRW have had a TMDL for E. Coli impairment designation: Arcadia Creek, Davis Creek, and Axtell Creek. The City discharges stormwater into these creeks via the City of Kalamazoo's storm system.

The daily maximum for Recreational usage in Michigan's Water Quality Standards is 300 E. Coli counts per 100 mL from May to October (Total Body Contact) and a standard of 130 E. Coli counts per 100 mL as a 30-day geometric mean. When conducting instream sampling, further investigation into sources is needed if the value is above 300 E. Coli counts per mL. When conducting outfall sampling, Kalamazoo County MS4 communities are using 1,000 E. Coli counts per 100 mL (Partial Body Contact) as the criteria below which no further investigation is necessary in the current permit cycle. In other words, an E. Coli concentration of less than 1,000 E. Coli counts per 100 mL indicates no impairment of the stream.

The second monitoring is anticipated in 2024. The City will collaborate with other MS4 partners to collect the samples. A review and evaluation of the water quality data of the first and second monitoring events will be performed and summarized in a future Annual Stormwater Program Progress Report that will include an assessment of the effectiveness of the BMPs implemented.

In the future, sampling locations may be removed from the targeted list if sample results at a location are below threshold levels. Sampling locations have the possibility to be added to the targeted list as the IDEP and TMDL investigation deems necessary to identify and reduce pollution coming from MS4 areas. Outfalls may also be added to the list if IDEP screening results in flow present with no other field indicators present.

Note: Arcadia Creek, Davis Creek, and Axtell Creek are not currently used for recreation other than boating and fishing. Therefore, they have only minimal direct dermal contact by humans.

9.3.6 Background And Effort – E. Coli

As stated above in Objective 1, three subwatersheds within the KRW were determined by EGLE to have a TMDL E. Coli impairment status since December 2020: Arcadia Creek, Davis Creek, and Axtell Creek.

Public Education Plan Coordination

Much of the pollution contributing to the degradation of the KRW is suspected to be coming from rural areas (i.e., agricultural land) that is outside of MS4 jurisdiction. The collaborative KRW PEP performed through the KSWG addresses education in the watershed that focuses on things like proper septic system maintenance, properly disposing of pet waste, the impacts of feeding waterfowl, and reporting illicit discharges. Many of the actions found in the PEP directly impact the TMDL requirements. The success of this TMDL plan depends on implementation of the PEP, in addition to other operational BMPs performed by communities.

Targeted Outfalls for E. Coli Sampling in Wet and Dry Weather

MS4 communities will sample targeted outfalls and/or streams, depending on the most suitable location, during wet weather events. A consultant would first evaluate the exact locations whether it be a manhole or other structure at or near an outfall, and "upstream of the confluence" of the Kalamazoo River. In a creek such as Axtell or Arcadia which are entirely within the City's jurisdiction, instream sampling will be assessed if it is determined by the consultant as a preferred option.

As part of the City's Outfall Inspection Program, sampling collected at outfalls during dry-weather monitoring may be considered to determine the contribution of pollutants to TMDL reaches. For this situation, Outfalls will be prioritized based on the following criteria:

- Outfalls identified will be in the MS4 urbanized area.
- Outfalls will have a direct discharge to a State identified impaired reach for a TMDL stream.
- Drainage areas to each outfall: Targeted outfalls will be those where baseline E. Coli impairment can be assessed within the drainage areas.

IDEP Dry Weather Sampling Conditions

The IDEP requirements of the permits have the potential to identify areas and take actions to reduce pollutants entering impaired water bodies. The first monitoring component of this TMDL plan is to evaluate past IDEP results. The IDEP requires permittees to develop a program to find and eliminate illicit connections and discharges to their MS4. The IDEP approved by EGLE in 2019 includes a plan to conduct dry-weather screening of each prioritized MS4 outfall and point of discharge once every five years. This approved plan will be implemented again in 2022. If outfalls in TMDL reaches are determined to have illicit discharges or connections during dry weather screening, extra sampling may be completed for the specific stream reach impairment. E. Coli is not a parameter that is evaluated routinely in the IDEP. However, to gain insight on pollutant sources, samples from dry weather screening can aid data collected during wet weather in order to determine effectiveness of reducing E. Coli in impaired reaches.

If dry weather flow is detected at a targeted outfall during IDEP screening, the IDEP procedure will be followed. If IDEP contaminants (ammonia, pH, temperature, surfactants in a certain range) are not detected during the field analysis, then an E. Coli sample may be collected and transported to the lab for analysis, ***if that waterbody has a TMDL impairment for E. Coli***. If the lab analysis is above threshold levels, then the IDEP will be followed in order to discover and eliminate the illicit discharge source.

Wet Weather Sampling Conditions

The sampling conditions in this monitoring component should target sample collection during wet weather conditions at the targeted outfalls and/or in-stream monitoring. Samples will be collected during a qualifying rain event. A qualifying rain event is a storm event of sufficient size to produce enough runoff to influence local receiving water quality after the local streams have achieved predominantly base flow. A qualifying rain event has these characteristics:

- Precipitation event generally greater than 0.25 inch;
- Preceded by dry weather or less than 0.1 inches of rain in the previous 48 hours; and,
- Occurs during Michigan's recreation season, which is May through October.

However, sampling should never occur during unsafe weather conditions. Samples should capture the first flush, which occurs within the first 30 minutes of the rain event, if possible, but not longer than the first 60 minutes.

Sampling Frequency

Sampling will occur a minimum of two times, and a maximum of four times, based on sample results during wet weather at the targeted sample locations within the permit period. Please refer to the maps below indicating approximate sample locations and suggested outfalls.

9.3.7 Timeline for Implementation

The implementation of this plan involves evaluation of structural and operational BMPs, sampling of targeted outfalls in dry and wet weather, monitoring of impaired streams, and reporting of other restoration and water quality surveys conducted in the impaired waterways.

The following is the implementation plan:

Year 1:

- Collect and analyze data regarding E. Coli from partners who have performed in-stream or outfall water quality sampling in TMDL watersheds.
- Prioritize BMPs to reduce pollutants entering MS4.
- Implement activities listed in the PEP including education on proper septic system maintenance, properly disposing of pet waste, etc.
- Consultant to create a list of targeted TMDL sample locations based on potential contribution of E. Coli to a water body as a guide to wet weather and IDEP sampling efforts.

Year 2:

- Phase 1 Baseline sampling: Conduct sampling of E. Coli at 3 targeted discharge outfalls or manholes for Arcadia Creek, Davis Creek, and Axtell Creek during wet weather, at a point immediately upgradient of the confluence to the KRW (or Portage Creek in the case of Axtell Creek) to determine the E. Coli concentrations near the end point of conveyance.
- Continue to implement prioritized BMPs to reduce pollutants entering MS4.
- Implement activities listed in the PEP including education on proper septic system maintenance, properly disposing of pet waste, etc.

Year 3:

- If Phase I sampling results in one or more E. Coli exceedance, conduct Phase 2 sampling upstream of the exceedance.
- Phase 2 sampling: Conduct outfall or manhole sampling of E. Coli at up to 3 targeted points where Arcadia Creek, Davis Creek, and/or Axtell Creek enter an MS4 jurisdictional boundaries to determine whether the E. Coli exceedance is entering the MS4 jurisdiction.
- If Phase 2 sampling results do not have an E. Coli exceedance, conduct Phase 3 sampling.
- Phase 3 sampling: Conduct outfall or manhole sampling of E. Coli at up to 3 targeted mid-points between the Phase I and Phase 2 sample location points of Arcadia Creek, Davis Creek, and/or Axtell Creek in order to determine whether the E. Coli exceedance is within the MS4 jurisdiction.
- Prepare progress reports on BMP implementation and document effectiveness as defined in Stormwater Management Plans.
- Continue to implement prioritized BMPs to reduce pollutants entering MS4.
- Implement activities listed in the PEP including education on proper septic system maintenance, properly disposing of pet waste, etc.

Year 4:

- Adjust BMP implementation based on monitoring results.
- Review TMDL Implementation Plan to identify next steps.
- Continue to implement prioritized BMPs to reduce pollutants entering MS4.

- Implement activities listed in the PEP including education on proper septic system maintenance, properly disposing of pet waste, etc.
- Conduct sampling according to IDEP, with addition of Total Suspended Solids (TSS) and E. Coli at targeted outfalls in wet weather.

Year 5:

- Repeat Phase 1 sampling: Conduct sampling of E. Coli at 3 targeted discharge outfalls or manholes for Arcadia Creek, Davis Creek, and Axtell Creek in wet weather at points immediately upgradient of the confluence to the KRW (or Portage Creek in the case of Axtell Creek) to compare with baseline E. Coli concentrations at the end point of conveyance.
- Prepare progress reports on BMP implementation and document effectiveness as defined in Stormwater Management Plans.
- Continue to implement prioritized BMPs to reduce pollutants entering MS4.
- Implement activities listed in the PEP including education on proper septic system maintenance, properly disposing of pet waste, etc.
- Prepare progress reports on BMP implementation and document effectiveness as defined in Stormwater Management Plans.

9.3.8 Evaluation

The effectiveness of this plan will be evaluated by the following:

- Determining if progress has been made to meet the TMDL by evaluating the actions outlined in the community's Stormwater Management Plan (i.e., number of catch basins cleaned, miles of streets swept, number of projects constructed under new stormwater standards).
- Meeting goals and metrics outlined in the community's PEP and IDEP.
- Data collected from sampling events result in reasonable progress towards meeting the TMDLs.

9.3.9 Summary

NPDES regulations require the development and evaluation of BMPs. BMPs are implemented within each community, and each BMP is designed to reduce pollutants from entering a waterbody. The individual MS4 communities identifies structural and operational BMPs within their community and their operation and maintenance.

Non-point source pollution includes both agricultural and urban pollution sources that are commonly difficult to define and locate. Land cover in the Kalamazoo River watershed is 1,302,804 acres and is comprised of approximately 47% agriculture (dominated by corn and soybeans), 30% unmanaged terrestrial uplands (mostly secondary deciduous forest and successional old fields), 15% lakes and wetlands, and 8% urban. In addition, several villages and unincorporated developed areas do not have MS4 permits. The impact of runoff from these non-point sources contribute to the overall health of a watershed and will be taken into consideration when analyzing data that is collected and determining BMP implementation and feasibility.

The monitoring locations and outfall sampling and analytical procedures identified in this monitoring program provide a solid foundation for water quality benefits resulting from BMP implementation by individual MS4 permittees. MS4 permittees in the KRW will follow the objectives: (1) Determining

progress toward meeting TMDL targets, (2) Evaluate the effectiveness of municipal stormwater runoff controls and practices (BMPs), and (3) Coordinate with partners' reasonable assurance activities toward meeting TMDL targets in order to make progress towards meeting TMDL requirements.

Any questions on this policy and procedure should be directed to the Water Programs Manager at the City, Department of Public Services, Water Resources Division.

9.3.10 Process for Updating/Revising this Procedure

This procedure shall be reviewed on an annual basis by the Water Programs Manager for any updates to improve effectiveness.