City of Kalamazoo

2015 Stormwater NPDES Permit Application

ATTACHMENTS

Attachment A	Enforcement Response Procedure (ERP) Chapter 29, City of Kalamazoo Code of Ordinances "Stormwater System"
Attachment B	Public Participation/Involvement Program (PPP)
Attachment C	Illicit Discharge Elimination Program (IDEP) Plan
Attachment D	Construction Stormwater Runoff Control
Attachment E	Chapter 30, City of Kalamazoo Code of Ordinances "Soil Erosion and Sedimentation Control"
Attachment F	City of Kalamazoo Code of Ordinances, Appendix A – Zoning Ordinance Section 8.3 "Specific Standards and Applications for Development Approval" (Note specifically Section 8.3H7l (Site Plan – "Stormwater Management" and reference to Performance Standards).
Attachment G	"Performance Standards for Groundwater Protection Within Wellhead Protection Capture Zones and Stormwater Quality Management"
Attachment H	Post-Construction Stormwater Runoff Program
Attachment I	"Site Plan Review Checklist for Public Services," and "Water Resources and Environmental Protection Questionnaire"
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ATTACHMENT A

Chapter 29

STORMWATER SYSTEM

GENERAL REFERENCES

Wastewater discharge regulations and enforcement procedures — See Ch. 28.

Soil erosion and sediment control — See Ch. 30.

Water — See Ch. 38.

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§ 29-1. Purpose; intent.

A. The objectives of this chapter are:

(1) To provide environmental protection to the waters of the state consistent with the State and Federal Clean Water Acts;

(2) To regulate discharges into the City of Kalamazoo's stormwater system;

(3) To remove existing and prevent the introduction of pollutants into the City's stormwater system, and the degradation that said constituents may cause to the environment;

(4) To require permits for connections to the system and to prohibit nonpermitted connections; and

(5) To establish legal authority to inspect and monitor use of the City's stormwater system to ensure compliance with this chapter, and to establish sanctions for those who violate this chapter.

§ 29-2. Definitions.

For the purposes of this chapter, the following shall mean:

ACT — Act 230, of the Public Acts of 1972, as amended, commonly known as the "Stille-DeRossett-Hale Single State Construction Code Act," and includes all international or national codes, including such codes' rules or appendices, as more fully set forth in Section 4 of the Act.**[Added 8-18-2008 by Ord. No. 1846]**

BEST MANAGEMENT PRACTICES (BMPs) — Devices or practices consistent with the guidelines set forth in the most current MDEQ Guidebook of BMPs for Michigan Watersheds, or equivalent practices and design criteria that accomplish the purposes of this chapter, as approved by the Department, that prevent pollutants from entering into stormwater flows, that direct the flow of stormwater, or that treat polluted water before it enters the stormwater system.

DISCHARGE PERMIT — A permit issued by the Department of Public Services ("Department"), Engineering Division or other division as designated by the Director to a user for a discharge into the City's stormwater drainage system.

FLOOD HAZARD BOUNDARY MAP (FHBM) — An official map of a community, issued by the FEMA, where the boundaries of the flood, mudslide (i.e., mudflow) related erosion areas having special hazards have been designated as Zone A, M and/or E.**[Added 8-18-2008 by Ord. No. 1846]**

FLOOD or FLOODING —

A. A general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters;

(2) The unusual and rapid accumulation or runoff of surface waters from any source;

(3) Mudflows; and

B. The collapse or subsidence of land along the shore of a lake or other body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels or suddenly caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event which results in flooding, as defined in Subsection A(1) of this definition. **[Added 8-18-2008 by Ord. No. 1846]**

FLOODPLAIN — Any land area susceptible to being inundated by water from any source (see definition of "flooding").**[Added 8-18-2008 by Ord. No. 1846]**

FLOODPLAIN MANAGEMENT — The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works, and floodplain management regulations.**[Added 8-18-2008 by Ord. No. 1846]**

FLOODPLAIN MANAGEMENT REGULATIONS — In addition to this chapter, zoning ordinances, land division regulations, building codes, health regulations, and other applications of police power that provide standards for the purpose of flood damage prevention and reduction.**[Added 8-18-2008 by Ord. No. 1846]**

ILLICIT CONNECTION — Any method or means for conveying an illicit discharge into the stormwater drainage system of the City.

ILLICIT DISCHARGE — Any direct or indirect non-stormwater discharge (or seepage) to the stormwater system that is not composed entirely of stormwater or uncontaminated groundwater, except as exempted in this chapter. These are considered illicit because municipal separate storm sewer systems (MS4s) are not designed to accept, process or discharge such discharges.

MDEQ — Michigan Department of Environmental Quality.

MS4 — Municipal separate storm sewer system, as defined by federal and state laws.

NPDES — National Pollutant Discharge Elimination System, as addressed in 33 U.S.C. § 1342(b) and the Federal Clean Water Act, as amended.

NPDES STORMWATER DISCHARGE PERMIT — A permit issued by the U.S. Environmental Protection Agency (EPA) [or a state under authority delegated pursuant to 33 U.S.C. § 1342(b)] that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis. For the purposes of this chapter, the subject NPDES permit is issued to the City by the MDEQ.

PERSON — Any individual, association, organization, partnership, firm, corporation or other entity recognized by law.

POLLUTANT — Any substance which, alone or in combination with other substances, if discharged to waters of the state in sufficient quantities, causes or contributes to, or has the potential to cause or contribute to, a violation of a federal, state, or local water quality standard, a nuisance, or to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, industrial, agricultural, recreational, or other legitimate beneficial uses or to any organism, aquatic life, plant or animal. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; nonhazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; sediment; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

STORMWATER — Run off from natural precipitation, including snowmelt, as well as other surface runoff and drainage that flow via natural or man-made drainage ways.

STORMWATER DRAINAGE SYSTEM (STORMWATER SYSTEM) — Any mode of conveyance that allows or permits the flow of stormwater to waters of the state, excluding combined sewer systems and sanitary sewer systems (separate stormwater systems are not intended to carry sanitary wastewater). The conveyance may be opened or enclosed, public or private, and may contain nonstormwater discharges. Specifically, the stormwater system includes all of the City's storm sewer infrastructures and natural drainage designs that are intended to collect, control, and provide a method of conveyance, discharge, and perhaps treatment of stormwater. This may include roads with drainage systems, municipal streets, catch basins, inlets, curbs, gutters, ditches, and man-made swales, channels, wetlands, storm drains, outfalls, and treatment structures.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) — A document, which describes the best management practices (BMPs) and activities be implemented by a person or business to identify known or potential sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater drainage ways, and/or receiving waters to the maximum extent practicable.

STRUCTURE — Anything built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.**[Added 8-18-2008 by Ord. No. 1846]**

WASTEWATER — Any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

WATERS OF THE STATE — Great Lakes and their connecting waters, all inland lakes, rivers, streams, impoundments, open drains, and other surface bodies of water within the confines of the state. It does not include drainage ways and ponds used solely for wastewater conveyance, treatment, or control.

§ 29-3. Responsibility for administration. [Amended 8-18-2008 by Ord. No. 1846]

The City's Department of Public Services ("Department") shall administer, implement and enforce the provisions of this chapter. For purposes of floodplain management regulations, the Department will work in conjunction with the City's building officials in performing such responsibilities. In addition, any other powers granted or duties imposed upon the Department may be delegated in writing by the Department Director to third parties as the Director deems appropriate.

§ 29-4. Discharge prohibitions.

A. Prohibition of illicit discharges.

(1) A person shall not discharge, directly or indirectly, any pollutant into the City's stormwater system, except in quantities expressly authorized by an approved NPDES permit or by a plan for compliance, or that are consistent with the utilization of best management practices.

(2) A person shall not improperly store, handle, or apply any pollutant in a manner that will cause its exposure to rainfall or runoff or otherwise cause it to discharge into the stormwater system, except in quantities explicitly authorized by an approved NPDES permit or by a plan for compliance, or that are consistent with the utilization of best management practices.

(3) The following shall not be deemed to be an illegal discharge (unless identified by the Department as a source of pollutants or deemed to be an interference to the proper operation and maintenance of the stormwater drainage system):

(a) Water supply line flushing, landscape irrigation runoff, diverted stream flows, rising groundwaters, uncontaminated groundwater infiltration [as defined by 40 CFR 35.2005 (20)], pumped groundwater (except for groundwater cleanups not specifically authorized by NPDES permits), discharges from potable water sources, foundation drains, air conditioning condensate, irrigation water, springs, water from crawl space pumps, footing drains and basement sump pumps, lawn watering runoff, waters from noncommercial car washing, flows from riparian habitats and wetlands, and residual street wash waters, discharges or flows from emergency fire fighting activities;

(b) Residential swimming pool discharges so long as the pool waters have been effectively de-chlorinated (less than 0.5 parts per million chlorine) and so long as the discharge does not occur during times of heavy rains (nonresidential/ commercial swimming pools are regulated under Chapter 34, Swimming Pools, of the Kalamazoo Code and Chapter 28, Wastewater Discharge Regulations and Enforcement Procedures);

(c) Discharges specified by the Department as being necessary to protect public health and safety;

(d) Dye testing using MDEQ or Department approved dyes, so long as preceded by a written notification to and approval from the Department; and

(e) Any nonstormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency or MDEQ, provided that the discharger is in full compliance with all requirements of the permit or order, and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the stormwater system.

(4) No person shall place any material in or around any stormwater system component, including catch basins, inlets, manholes, culverts, pipes, or natural watercourse, if such material acts to significantly obstruct or clog the stormwater system or

stormwater flow. This prohibition shall not apply to the temporary placement of material as acceptable and consistent with official City material collection programs and policies (such as leaf or brush pickups).

(5) A person may not discharge fluids into or towards the stormwater system if such discharge accumulates and freezes on a street or sidewalk, or is reasonably likely to do so.

B. Prohibition of illicit connections.

(1) No person shall construct, use, maintain, or allow to continue to exist a connection to the stormwater system unless first permitted to do so by the City's Department of Public Services, Engineering Division or other department designated division.

(2) This requirement includes, without limitation, connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

(3) A person is considered to be in violation of this chapter if the person connects a conduit conveying wastewater to the MS4, or allows such a connection to continue.

§ 29-5. Floodplain management. [Added 8-18-2008 by Ord. No. 1846[1]]

A. Pursuant to the provisions of Section 8b of the Act, the City is hereby designated as the enforcing agency to discharge its responsibility under the Act and assumes responsibility for the administration and enforcement of the Act, including Appendix G of the Michigan Building Code, as amended, throughout its corporate limits.

B. The Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) entitled "Kalamazoo County, Michigan (Community No. 260315)," referred to as "Flood Insurance Study No. 26077CV000A" and dated February 17, 2010, and the Flood Insurance Rate Maps (FIRMs) generated by that study, are identified as follows: **[Amended 2-1-2010 by Ord. No. 1866]**

Map No.		Date	Type
1.	26077C0169D	February 17, 2010	FIRM
2.	26077C0175D	February 17, 2010	FIRM
3.	26077C0179D	February 17, 2010	FIRM
4.	26077C0180D	February 17, 2010	FIRM
5.	26077C0185D	February 17, 2010	FIRM
6.	26077C0186D	February 17, 2010	FIRM
7.	26077C0187D	February 17, 2010	FIRM
8.	26077C0188D	February 17, 2010	FIRM
9.	26077C0189D	February 17, 2010	FIRM
10.	26077C0191D	February 17, 2010	FIRM
11.	26077C0195D	February 17, 2010	FIRM

1. **Editor's Note: This ordinance also renumbered former §§ 29-5 through 29-17 as §§ 29-6 through 29-18, respectively.**

Map No.		Date	Type
12.	26077C0285D	February 17, 2010	FIRM
13.	26077C0301D	February 17, 2010	FIRM
14.	26077C0302D	February 17, 2010	FIRM
15	26077C0310D	February 17, 2010	FIRM

and are adopted by reference (including any subsequent amendments or replacements) and declared to be a part of Section 1612.3 of the Michigan Building Code.

C. In performing the responsibilities under § 29-3, the Department and building officials shall administer, apply, and enforce the floodplain management regulations as contained in the State Construction Code (including Appendix G) and to be consistent with those regulations by:

(1) Obtaining, reviewing and reasonably utilizing flood elevation data available from federal, state, or other sources pending receipt of data from FEMA to identify the flood hazard area and areas with potential flooding.

(2) Ensuring that all permits necessary for development in floodplain areas have been issued, including a floodplain permit, approval, or letter of no authority from the Michigan Department of Environmental Quality under the floodplain regulatory provisions of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

(3) Reviewing all permit applications to determine whether the proposed building sites will be reasonably safe from flooding. Where it is determined that a proposed building will be located in a flood hazard area or special flood hazard area, the Construction Code Act enforcing agent shall implement the following applicable codes according to their terms:

(a) Floodplain management regulation provisions, and referenced codes and standards, of the Michigan Residential Code, as amended.

(b) Floodplain management regulation provisions, and referenced codes and standards, of the Michigan Building Code, as amended.

(c) Appendix G of the Michigan Building Code, as amended.

(4) Reviewing all proposed subdivisions or land divisions to determine whether such proposals are reasonably safe from flooding and to ensure compliance with all applicable floodplain management regulations.

(5) Assisting in the delineation of flood hazard areas; providing information concerning uses and occupancy of the floodplain or flood-related erosion areas, maintaining floodproofing and lowest floor construction records, cooperating with other officials, agencies, and persons for floodplain management.

(6) Advising FEMA of any changes in City boundaries, including appropriate maps.

(7) Maintaining records of new structures and substantially improved structures concerning any certificates of floodproofing, lowest floor elevation, basements, floodproofing, and elevations to which structures have been floodproofed.

D. In conjunction with this section, the City has adopted a "Resolution to Manage Floodplain Development for the National Flood Insurance Program (NFIP)," and may from time to time adopt other resolutions in order for the city to continue to participant in the NFIP.

§ 29-6. Compliance with other permits.

Any person subject to a NPDES stormwater discharge permit, City of Kalamazoo soil erosion and sedimentation control permit, or City of Kalamazoo site plan review shall comply with all provisions of such permit or approvals. Proof of compliance with said permits or approvals may be required in a form acceptable to the Department prior to the allowing of discharges to the MS4.

§ 29-7. Monitoring of discharges.

A. Access to facilities.

(1) As a condition to having a connection to the City's stormwater system, an industrial or commercial facility shall permit the Department to enter and inspect at reasonable times and in a reasonable manner to determine compliance with this chapter. Such entry and inspection may include but not be limited to sampling, analysis, dye testing, smoke testing, remote video inspection (Tving), and examination and/or copying of records that are required by this chapter to be maintained.

(2) The Department may require a commercial or industrial facility that discharges into the City's stormwater system to install devices as are reasonably necessary to monitor and/or sample the facility's stormwater discharge. In the alternative, and at the City's option, the City may install such devices. All such devices shall be calibrated to ensure accuracy.

(3) The City is hereby empowered to seek assistance from any court of competent jurisdiction in obtaining entry to a facility if the Department has been refused access to any part of the premises from which stormwater originates and/or is discharged, and if the Department is able to demonstrate probable cause to believe that there may be a violation of this chapter, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this chapter or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community. In addition, or in the alternative, the Department, if denied entry, may terminate the facility's connection to the stormwater system. Such termination must be preceded by written notice to the facility of such intent.

§ 29-8. Requirement to prevent, control, and reduce stormwater pollutants by the use of best management practices.

A. If the owner or operator of a facility does not provide reasonable protection from illicit discharge, the Department may require best management practices (BMPs) and/or stormwater pollution prevention plans (SWPPPs) for a facility that discharges, or is reasonably suspected of discharging, pollution into the stormwater system, at the facility's

expense. A BMP shall be consistent with the guidelines set forth in the most current MDEQ Guidebook of BMPs for Michigan Watersheds, or equivalent practices and design criteria that accomplish the purposes of this chapter, as approved by the Department. A BMP and/or a SWPPP, which may be imposed even if the facility is subject to a NPDES permit, shall be communicated in writing by the Department to the facility.

B. If the facility believes all or a portion of the BMP or SWPPP is unreasonable, it may appeal it to the Department Director. Such an appeal must be in writing and must be received by the Department Director within 14 days of when the BMP and/or SWPPP notification is received by the facility. In the absence of such an appeal, the facility shall implement the BMP and/or SWPPP before the deadline stipulated by the Department in the original written notification regarding the BMP requirement. If an appeal is denied, the facility shall implement the BMP and/or SWPPP within a deadline stipulated by the Department in the appeal denial notification letter. The required BMP implementation time period will be based on the severity of the specific situation and may range from one day to 45 days.

§ 29-9. Notification of spills.

A. Notwithstanding other requirements of law, as soon as any person responsible for a facility, or responsible for emergency response for a facility, has information of a release, or suspected release, of pollutants into the stormwater system, said person shall take all reasonable and necessary steps to discover, contain, and clean up such release, including, if necessary, contacting emergency response agencies. Said person shall also notify the Department of the discharge either in person, by telephone, or by facsimile as soon as possible, but in no event more than six hours after learning of the release.

B. All spill notifications provided to the Department in person or by telephone shall be documented by said person in writing and mailed to the Department within five business days of said incident. Such written notice shall specify the following: the composition of the discharge and the cause thereof; the exact date, time, and estimated volume of the discharge; all measures taken to clean up the discharge, and all measures proposed to be taken to reduce and prevent any recurrence; the name and telephone number of the person making the report, and the name of the person who may be contacted for additional information on the matter. The person shall also provide the Department with copies of all documents the person submits to state or federal agencies relating to the same release.

§ 29-10. Records, reports, sampling and analysis.

A facility shall prepare and maintain records and/or conduct such testing and analysis as deemed necessary by the Department to insure compliance with a BMP or a SWPPP. The facility shall make such records and test results available to the Department upon request. The owner or operator shall retain a copy of the written notice, all books, drawings, plans, prints, documents, memoranda, reports, correspondence, and records, including records on magnetic or electronic media, and any and all summaries of such records relating to monitoring, sampling, and chemical analysis of any discharge or stormwater runoff from any property for at least five years.

§ 29-11. Enforcement.

A. Whenever the Department finds that a person has violated a provision of this chapter, the Department may order compliance by issuing a written notice of violation to the responsible person. Such notice may require one or more of the following:

(1) The performance of monitoring, analyses, and reporting;

(2) The elimination of an illicit connection or discharge;

(3) That violating discharges, practices, or operations cease and desist;

(4) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;

(5) The abatement and correction of any degradation of riparian habitat and aquatic life caused by the failure to design, install, operate, or maintain sediment control, stormwater management, or agricultural BMPs in accordance with an approved sediment control plan, stormwater plan, sediment control permit, Soil Conservation and Quality Plan, or plan for compliance;

(6) The reimbursement to the City in an amount sufficient to reimburse the City for all reasonable administrative and remediation costs; and

(7) The implementation of source control or treatment BMPs.

B. If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work may be done by the Department, with the expense thereof charged to the violator.

§ 29-12. Appeal of notice of violation.

A. Any person receiving a notice of violation may appeal the determination to the Department Director. The notice of appeal must be received by the Director within 30 days from the date of the notice of violation and identify the matter being appealed and the basis for the appeal. The Director shall address the appeal within 30 days from the date of receipt of the notice of appeal. The Director will consider the appeal and make a decision whereby it affirms, rejects, or modifies the action being appealed. In considering any such appeal, the Director may consider the recommendations of its staff and the comments of other persons having knowledge of the matter.

B. In considering all such appeals, the Director may grant a variance from the terms of this chapter so as to provide relief, in whole or in part from the action being appealed, but only upon finding that the following requirements are satisfied:

(1) The application of the chapter provisions being appealed will present or cause unreasonable difficulties for a facility; and

(2) The granting of the relief requested will not substantially prevent the goals and purposes sought to be accomplished by this chapter from being accomplished, nor result in less effective management of stormwater runoff.

§ 29-13. Suspension of access to City stormwater system.

A. The Department may, after providing written notice, suspend MS4 discharge access to a person in violation of this chapter. Written notice shall describe the nature of the violation

and the action necessary to correct the violation. If the violation continues for 10 calendar days after the notice was sent, the Department may suspend MS4 discharge access.

B. The Department may suspend MS4 discharge access to a person in violation of this chapter, without prior notice, when such suspension is necessary to stop an actual or threatened discharge that presents an imminent and substantial danger to the City's stormwater system or to the environment.

§ 29-14. Abatement activities by Department.

A. The Department may perform reasonable and necessary abatement activities whenever the Department determines a violation of this chapter has occurred and it appears that the responsible party cannot or will not timely perform said activities, or when no known responsible party exists. The responsible party shall reimburse the City for all reasonable expenses thus incurred.

B. If the City desires the responsible party to reimburse it for reasonable abatement activity expenses, the City shall, within 90 days of the completion of said activities, mail to that person a notice of claim outlining the expenses incurred, including reasonable administrative costs, and the amounts thereof. The person billed shall pay said sum in full within 30 days of receipt of the claim. If the person billed desires to object to all or some of the amount sought by the Department, said person may file, within the same thirty-day period, a written objection so stating. The Department shall, within 30 days of its receipt of the objection, provide an opportunity for the objecting party to present facts or arguments supporting said objection. If the Department determines that some or all of the amount originally billed is appropriate, the person shall pay said sum within 30 days of receipt of that determination. If the amount due is not timely paid, the City may cause the charges to become a special assessment against the property and shall constitute a lien on the property.

§ 29-15. Injunctive relief.

If a person has violated or continues to violate the provisions of this chapter, the Department may petition the appropriate court for injunctive relief restraining the person from activities which would create further violations, or compelling the person to perform necessary abatement or remediation.

§ 29-16. Violations deemed a public nuisance.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken by the City.

§ 29-17. Criminal prosecution.

Any person who violates this chapter shall be guilty of a misdemeanor, punishable by a fine of not more than $500 or imprisonment of not more than 90 days. Each day a violation exists shall be deemed a separate violation.

§ 29-18. Remedies not exclusive.

The remedies listed in this chapter are not exclusive of any other remedies available under any applicable federal, state, or local law and it is within the discretion of the Department to seek cumulative remedies.

Response to MDEQ Comments in Letter dated May 20, 2016
Described in "Appendix 1: Comments on City of Kalamazoo MS4 Permit Application"
Regarding City of Kalamazoo 2015 Application for Reissuance of the NPDES MS4 Permit

Additional Information to Supplement Textual Response

Question 1

Addition to ATTACHMENT A:

Attachment A Description

and

"Stormwater IDEP Enforcement Tracking Table"

and

"Screen Shot of BS&A Software Used to Track Compliance for Soil Erosion & Sedimentation Program"

ATTACHMENT A

Section VII. Storm Water Management Program

1. Provide the ERP.

The primary Enforcement Response Procedure (ERP) used in the City of Kalamazoo's Stormwater Management Program is Chapter 29 of the City Code of Ordinances "Stormwater System." The attached "Stormwater IDEP Enforcement Tracking Table" will be used as a tracking tool for violations and follow-up for Chapter 29 of the Code of Ordinances "Stormwater Systems." The completed IDEP sheet will be provided with every Stormwater Program Progress Report.

The secondary ERP is the City's Chapter 30 "Soil Erosion and Sedimentation Control." A copy of a print screen from the BS&A Software used to track violations for individual property parcels (including those associated with soil erosion and sedimentation permits) is included to illustrate the software used. This system sets up inspection schedules. A letter or enforcement action can also be generated from the system.

A copy of the Stormwater System Ordinance contained in Chapter 29 of the Code of Ordinances is provided within this Attachment A. Chapter 30 "Soil Erosion and Sedimentation Control" is provided as Attachment E. Both subject Ordinances are referenced in the section titled "Supporting Text."

ATTACHMENT A: STORMWATER IDEP ENFORCEMENT TRACKING TABLE

Address	Property Owner Name	Business Name	Type of Violation	Occurrence/ Action Date	Description of Enforcement Response	Schedule for Action	Outfall	Receiving Stream

Application Views

- Property
  - Address
  - Miscellaneous
  - Attachments
  - Owner: KALAMAZOO COLLEGE
  - Taxpayer: KALAMAZOO COLLEGE
  - Responsible Party: KALAMAZOO COLLEGE
- Projects
- Permits
  - PB15-0744 ISSUED Commercial, New Structure
  - PD15-0043 FINALED Demo Commercial Structure
  - PE15-0731 ISSUED Electrical
  - PE15-0811 EXPIRED Electrical
  - PENV16-0001 ISSUED Environmental
    - Owner: KALAMAZOO COLLEGE
    - Contractor: JAMES E. FULTON & SONS INC
    - Licensee: JAMES FULTON & SONS
    - Applicant: JAMES E. FULTON & SONS INC
    - Transactions: $250.00 Due: $0.00
    - Prerequisites (0)
    - Building Info
    - Miscellaneous
    - Site Inspection, Partially Approved
      - Note - 2/11/2016
    - Site Inspection, Partially Approved
      - Note: - 2/19/2016
    - Site Inspection, Partially Approved
      - Note: - 3/28/2016
    - Site Inspection, Partially Approved
      - Note - 3/30/2016
    - Site Inspection, Disapproved
      - Note - 4/1/2016
    - Site Inspection, Approved
    - Site Inspection, Approved
    - Site Inspection, Partially Approved
    - Site Inspection, Partially Approved
    - Site Inspection, Partially Approved
  - PM15-0842 EXPIRED Mechanical

Property Summary

Name variations found...

Amount Due: $0.00

Property Information

Address: 131 CATHERINE ST

Parcel Number: 06-16-462-001

Owner: KALAMAZOO COLLEGE

Other owner properties...

Comment Information

Title: Note

Entered By: stubbsj

Date: 03/30/2016

Comment: Stopped by site and talked to Rick with OAK regarding street. Reminded need to keep curb and gutter clean and change silt sacks if they get full of sediment.

Quick Entry

Viewing Existing Property

Discard Changes

ATTACHMENT B

Response to MDEQ Comments in Letter dated May 20, 2016
Described in "Appendix 1: Comments on City of Kalamazoo MS4 Permit Application"
Regarding City of Kalamazoo 2015 Application for Reissuance of the NPDES MS4 Permit

Additional Information to Supplement Textual Response

Questions 2 and 3

Revised ATTACHMENT B

"Public Participation/Involvement Program"

ATTACHMENT B

PUBLIC PARTICIPATION/INVOLVEMENT PROGRAM

Procedure for Making the Stormwater Management Plan Available for Public Inspection and Comment

BMPs

The public will be notified regarding the The Stormwater Management Plan (SWMP) via the City's websites www.protectyourwater.net and the general City Website www.kalamazoocity.org/. These websites will serve as the primary BMP.

The SWMP will be available for review on the City's website www.protectyourwater.net in the Stormwater 101 Section. Opportunities for comment are provided on the websites by use of the Water Contact section.

The City will publish a notice for the opportunity to view the SWMP online and comment in the next "View from the Curb" publication, scheduled for March, 2017. This will help address members of the public who do not routinely visit the City's website.

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 run to street and re-route them to vegetated areas; reviewing and implementing appropriate BMPs found on the www.protectyourwater.net website; and directing comments regarding the SWMP using the website Contact form.

The City will also consider utilizing other communication opportunities to reach the public about the SWMP, including publications (e.g. newsletters), announcements at internal and external organizational meetings, etc. The City will primarily work independently to perform the PPP but would consider working collaboratively with regional partners – notably the Kalamazoo Area Stormwater Work Group for general issues, and the TMDL Non-Point Source as deemed appropriate.

Schedule

The SWMP will be available on www.protectyourwater.net by August, 2015, and throughout the Permit cycle. City staff will review submitted public comments on a monthly basis and if deemed appropriate and/or necessary, revise the SWMP on an annual basis, taking into consideration the public comments and other available information. Other communication strategies will be considered as publication schedules and internal discussions are made.

Method of Assessment

Timely posting of SWMP on website(s).

Number of website visits to the designated Stormwater 101 page.

Number and type of comments received from the public.

Number and type of other communication strategies implemented during the Permit cycle.

Other

For the purposes of this Stormwater Permit, the Water Resources Division Manager and/or the Environmental Programs Manager may serve as the Stormwater Program Manager and will be the City's points of contact for all related issues.

ATTACHMENT C

Response to MDEQ Comments in Letter dated May 20, 2016
Described in "Appendix 1: Comments on City of Kalamazoo MS4 Permit Application"
Regarding City of Kalamazoo 2015 Application for Reissuance of the NPDES MS4 Permit

Additional Information to Supplement Textual Response

Questions 8 - 19

"IDEP Progress/Effectiveness Review Checklist"

and

Revised IDEP w/o Attachments (8-16)

and

Table 7 Stormwater IDEP Enforcement Tracking

IDEP PROGRESS/EFFECTIVENESS REVIEW CHECKLIST

	Number	Yes/No	Changes/Comments
Number of			
Stormwater Outfall			
Evaluations			
Number of			
Inter-jurisdictional			
Discharge Inspections			
Review/Revisions of			
IDEP Forms			
Review/Revisions			
to Response Process			
for Chemical Releases			
Review/Revisions			
to Illicit			
Connections/Discharges			
Review/Revisions			
to Action Chart for			
Field Investigations			
Review/Revisions			
to Water Quality			
Monitoring Process			
Effectiveness of			
Asset Management/			
GIS Mapping			
Review/Revisions			
of Staff Training and			
Contractor Awareness			
Review/Revisions			
to Human and			
Financial Resources			

MUNICIPAL STORMWATER PHASE II MS4 PROGRAM

ILLICIT DISCHARGE ELIMINATION PLAN
(REVISED AUGUST 2016)

Associated With

NPDES GENERAL PERMIT MIG610000
MS4 WATERSHED GENERAL PERMIT

In Compliance with

CERTIFICATE OF COVERAGE MIG610336
("KALAMAZOO MS4 - KALAMAZOO")

March 2015

ILLICIT DISCHARGE ELIMINATION PLAN
(REVISED MARCH 2015)

INTRODUCTION

Background

Description and Purpose

This revised Illicit Discharge Elimination Plan (IDEP) primarily serves to fulfill the subject general requirements of the City of Kalamazoo (City) Municipal Storm Water Permit (MIS040000) Compliance Obligations for the Certificate of Coverage (COC) MIG610336. As with the previously submitted IDEPs, the revised IDEP is intended to provide a reasonable, logical and methodical strategy to effectively research, field investigate, prioritize, and eliminate illicit discharges and connections to prevent or minimize degradation of surface waters by untreated discharges that contain pollutants such as heavy metals, toxics, oil and grease, solvents, nutrients, phosphorus, viruses, and bacteria. In addition, the plan includes a discussion of on-going strategies to minimize infiltration of seepage from sanitary sewers and septic systems into the City's separate stormwater drainage system.

Previous and Current Document Submittals and Correspondence

The original City IDEP was submitted to the Michigan Department of Environmental Quality (MDEQ) as part of the first NPDES Storm Water Permit Application in March 2003. Subsequently, it was revised and submitted to MDEQ in June 2004, and again in December 2004 subsequent to the issuance of a new MDEQ IDEP guidance document, in May 2005, and in May 2010.

This version of the IDEP reflects updates by the City as initiated by the issuance of the new NPDES Storm Water Permit Application (associated Application due April 1, 2015), change from the Watershed-Based Permit to the Jurisdictional Permit MIS040000, acquired experience with its IDEP, newly available IDEP guidance documents, and a significant change in City staff involved in the implementation of the IDEP.

Definitions

For the purposes of this IDEP, the following definitions are provided.

“Department”: The City of Kalamazoo Public Services Department.

“Discharge Point”: An outfall from a drainage system to waters of the state, or a point where a stormwater drainage system discharges into a system operated by another municipal separate storm sewer system (MS4).

“Dry Weather Flow”: Flow from storm drain outfalls following and during substantial dry periods (a minimum of 48 hours after a precipitation or snow/ice melting event).

“Illicit Connection”: Any method or means (e.g. physical connection) for conveying an illicit discharge into the stormwater drainage system not authorized or permitted by the City of Kalamazoo.

“Illicit Discharge”: Any direct or indirect non-stormwater discharge (or seepage) to the stormwater system that is not composed entirely of stormwater or uncontaminated groundwater, except as exempted by the City’s Stormwater Ordinance (Ordinance No. 1776, Chapter 29 of the City of Kalamazoo Code of Ordinances), or for discharges specified in the permit and discussed herein.

“Significant Illicit Discharge”: A discharge that shows evidence indicating the likely potential to impair water quality in the receiving water.

“Stormwater”: That portion of precipitation that drains from city surfaces exposed to precipitation and flows via natural or manmade MS4 drainage systems into receiving waters.

“Stormwater System”: All of the City’s storm sewer infrastructures and natural drainage designs that are intended to collect, control, and provide a proper method of conveyance, discharge, and perhaps treatment of stormwater.

Legal Authority

General Authority

It is the City’s understanding that the IDEP can be generally implemented under the auspices of the Federal Clean Water Act, PL 92-500, as amended; the State of Michigan Natural Resources and Environmental Protection Act 451, Public Act of 1994, as amended, Part 31; the BOCA National Plumbing Code/1993; and the Michigan Department of Environmental Quality NPDES Stormwater General Permit (MIS040000).

City of Kalamazoo Ordinances

On September 20, 2004, a new Chapter 29 of the Kalamazoo Code (Ordinance 1776) was formally adopted by the City Commission and became effective 10 days later. Officially, it is titled “An Ordinance to Create Chapter 29 Regarding the City’s Stormwater System, to Repeal Certain Sections of Chapter 28, and to Amend Section 7 of Chapter 34.” Chapter 29 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. The Appendix contains a copy of the amended

Chapter 29 (5-15-09). The new ordinance is referred to as the "Stormwater Ordinance" in this IDEP.

In addition, the Wellhead Protection Zoning Overlay (Ordinance 1825) and the Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones and Stormwater Quality Management (Ordinance 1826) were formally adopted in May of 2007. These two ordinances work together to minimize known and potential impacts to groundwater and address stormwater discharge quality, and serve as a primary tool for Site Plan Review to address groundwater and surface water quality issues. Copies of these Ordinances are also provided in the Appendix.

Furthermore, several sections within other current Kalamazoo Code generally address illicit stormwater discharges. Most noteworthy of the references are included in Chapter 28, "Wastewater Discharge Regulations and Enforcement Procedures," Article II "Discharge Regulations"; Chapter 28, "Wastewater Discharge Regulations and Enforcement Procedures," Article I; Chapter 33 "Streets and Other Public Grounds"; Chapter 34 "Swimming Pools"; Ordinance No. 1693 addressing Site Plan Review; Chapter 30 "Soil Erosion and Sedimentation Control"; and Chapter 9 "Buildings and Building Regulations."

Acceptable/ Authorized Non-Stormwater Discharges

The following non-stormwater discharges are not authorized by the City's National Pollutant Discharge Elimination System (NPDES) Certificate of Coverage (COC) but do not need to be prohibited by the permittee, unless they are identified as significant contributors of pollutants to the regulated separate stormwater drainage system:

- water line flushing and discharges from potable water sources;
- landscape irrigation runoff, lawn watering runoff, and irrigation waters;
- diverted stream flows, and flows from riparian habitats and wetlands;
- rising groundwaters and springs;
- uncontaminated groundwater infiltration (as defined by 40 CFR 35.2005 (20));
- pumped groundwater (except for groundwater cleanups not specifically authorized by NPDES permits), foundation drains, water from crawl space pumps, footing drains and basement sump pumps;
- air conditioning condensates;
- waters from non-commercial car washing;
- residual street wash waters;
- discharges or flows from emergency fire fighting activities;
- dechlorinated swimming pool waters from single, two, or three family residences – a swimming pool operated by the permittee shall not be discharged to a separate storm sewer or to the surface waters of the State without specific NPDES permit authorization from the Michigan Department of Natural Resources and Environment (MMDEQ).

Discharges from residential swimming pools shall not be allowed to the stormwater system unless it meets the conditions set in the City's Stormwater Ordinance. These conditions address the issues of chlorine levels and storm sewer capacity.

Other proposals to temporarily discharge non-stormwater (e.g., dewatering) into the MS4 will be considered on a case-by-case basis but must have associated work plans approved by the Department, meet the "Performance Standards for Groundwater Quality within Wellhead Protection Capture Zones and Stormwater Quality" and if appropriate, demonstrate via water quality analyses that the discharge will meet water quality standards and will not be in violation of existing ordinances.

Stormwater System Description/Stormwater Asset Inventory

A Stormwater Asset Inventory was performed during the period 2001 through 2003. Specific stormwater system structures (assets), including catch basins, inlets, culverts, leaching basins, outfalls, and manholes were physically located and provided an identification number, locational description, condition assessment, and assigned a global positioning coordinate (GPS'd), and noted for material type and size. Additional attributes included offset from centerline and segment length for storm main, and location, directional orientation, and size of pipe connections entering/existing manholes, catch basins, and inlets. Apparent private connections that could not initially be identified as an intended part of the city's storm sewer system were labeled as "Private Connections" in the database. All of this information is maintained in the City's internal Geographic Information System (GIS) database. The locations of stormwater assets are available and can be viewed as an informational layer on the City's on-line GIS.

In summary, the following are 2015 statistics detailing the stormwater collection system (MS4). There are approximately 470 outfalls shown on Figure 1, with the following breakdown:

- 373 City of Kalamazoo Outfalls with ~169 to ground that are included in the inspections since most are near a surface water feature.
- 74 are attributed to other MS4s (52 MDOT, 13 KCRC, 8 Portage, 1 KCDC).
- 4 are private outfalls.
- 19 have been removed/deleted.

There are approximately 11,616 catch basins/inlets.

There are approximately 4,670 manholes.

There are approximately 228 miles of storm sewer pipe.

These stormwater assets can be viewed on the City's on'ine GIS by selecting:

> http://www.kalamazoocity.org/about-kzoo/government "Online Services" "Find GIS/Property Mapping" and selecting "Stormwater Utilities" as one of the available layers.

There are seven retention/detention basins.

There are 74 discharge points from the City's MS4 to other MS4s. Figure 1 shows all stormwater discharge points (outfalls and City MS4 to Non-City MS4 exit locations), indicating the receiving waters and MS4 interconnecting jurisdiction. Table 1 lists the outfall and action status and Table 2 lists the City MS4 to non-City MS4 connections.

Ofthe 74 City MS4 to non-City MS4 discharge points, two (2) go into the City of Portage's MS4, four (4) into the Kalamazoo County Road Commission's MS4, and 68 into the Michigan Department of Transportation's (MDOT's) MS4.

Roles and Responsibilities

The City utilizes its own employees, equipment, and materials as much as possible and practical to investigate illicit connections and discharges.

Management

The Department of Public Services (Department), Environmental Services Division (ESD) management staff has developed, administers and manages the IDEP. John P. Paquin, Environmental Programs Manager (or designee), serves as the City's primary MS4 IDEP contact for MDEQ, including general administration, all written correspondence and verbal communication with MDEQ, IDEP implementation and reporting, scheduling and facilitating internal meetings, and providing general prioritization and guidance of IDEP related work. If John Paquin is unavailable, Michael Wetzel, Environmental Services Superintendent, is designated as the MS4 IDEP contacts Management is also responsible for the implementation of the City's Stormwater Ordinance, including issuances of "Notice of Violations."

Environmental Services Supervisor

The Environmental Services Supervisor has the primary role of supervising the "Technician IIIs" staff involved with the specific day-to-day IDEP field activities, and providing oversight of the general scheduling of IDEP related work and communicating to the ESD Management any known pertinent IDEP issues, typically communicated from the ESD Technician IIIs. The Environmental Services Supervisor also on occasion, participates in investigations of illicit discharges as deemed necessary and/or appropriate by ESD Management.

ESD Technician IIIs

The ESD Technician IIIs schedule and perform the day-to-day IDEP field activities, including outfall evaluations, discharge sampling, field sample analysis, field source investigations, facility inspections/evaluations, document all associated work using provided IDEP forms, and maintain currency of the general electronic outfall database/spreadsheet as appropriate. This position also responds to reports of illicit discharges as assigned by ESD Management or by the ESD Supervisor. They are also responsible to communicate any relevant IDEP issues or events, including apparent violations of the Stormwater Ordinance and/or opportunities for the implementation of appropriate facility best management practices, to the ESD Supervisor and/or Manager(s).

Analytical Laboratory Services

The City's State Certified Laboratories and/or its subcontractors (e.g., KAR Laboratories) perform all of the necessary laboratory analysis.

Other

Staff from other Public Services Divisions periodically participate in implementing the IDEP, such as: Field Services staff provide stormwater asset maintenance and televising, and its Dispatcher receives and communicates some of the initial illicit discharge reports (especially during normal business hours); Wastewater System Treatment Control Analysts (TCAs) and Operators receive and communicate occasional initial illicit discharge reports received during normal business hours and will receive all off-hour calls forwarded by the Community Answering Service (CAS); and Engineering provides records support and provides occasional expertise regarding stormwater system design and trouble reports. All City staff is responsible to appropriately communicate reports of illicit discharges.

Staff Training

Professional Experience

ESD Management staff has numerous years experience with regulatory and non-regulatory environmental program administration and project management related to drinking water, water resource management, wastewater management, stormwater management, solid waste management, analytical laboratory management, contaminant source investigations, and other field and professional experience that qualify them in their roles and responsibilities.

For several years prior to the submittal of the first Stormwater Phase II NPDES Permit Application, staff's direct roles and responsibilities with the Industrial Pre-Treatment Program (IPP) have provided them with significant and relevant experience involving unscheduled and demand facility monitoring and evaluations, spill response, contaminant source investigation, sampling techniques and associated protocol, and written documentation. Staff is knowledgeable with the application of the IPP Enforcement Response Plan that is similar in regulatory significance as the IDEP. They are also familiar with our Stormwater Ordinance. In addition, Staff can also draw upon experience from on-going training and experience with the City's Cross Connection Program, especially as it relates to procedures/methods for eliminating the illicit discharges/connections.

Specific IDEP Training

Management has provided appropriate ESD personnel with written copies of the IDEP, supplemental guideline documentation (including the recognition of naturally occurring phenomena and their sources), field instrumentation, various maps of the stormwater system, and hold occasional meetings to discuss the IDEP, and distribute new materials. In addition, the ESD Environmental Programs Manager and Environmental Services Supervisor have attended at least one IDEP training workshop provided by Wayne County that includes addressing what illicit discharges/connections are, and techniques for sampling, analyzing, and recording. Staff will periodically attend formal refresher IDEP training as deemed appropriate by management.

During this effective Permit Period (April 1, 2015 through March 31, 2020), all employees who are involved in illicit discharge-related activities, or have field jobs with the potential for witnessing illicit discharges (e.g., street sweepers) and connections (inspectors) will

receive training regarding the IDEP within the current five-year cycle for existing staff, and within one-year of the hiring of new staff. The DVD “Storm Watch: Municipal Storm Water Pollution Prevention Everyday Best Management Practices Employee Training” produced by Excal Visual was used during the permit cycle and it - or something comparable - will be used as the general training tool. The Technician 3 staff has already and will again view the Excal Visual DVD “Illicit Discharge Detection & Elimination A Grate Concern” which addresses IDEP more specifically. Other relevant information regarding the IDEP will be distributed/communicated to staff of the ESD, and the Divisions of Engineering, Field Services, Inspection Services, Operations and Maintenance, as necessary. In addition, a DVD “Stormwater Employee Training” was provided by MDEQ and may be used for selected staff.

Training topics will include: definitions of illicit discharges and connections; techniques for finding and locating illicit discharges such as field screening and source identification; methods to eliminate illicit discharges/connections and appropriate enforcement response. In addition, Industrial Certified Stormwater Operator training necessary to meet the new permit obligations for “facilities” will be maintained and addressed in the Stormwater Pollution Prevention Plans (SWPPPs) for the Public Services Stockbridge Facility.

General Safety Training

Safety training for general occupational safety is provided on a regular basis as part of the Department’s Health and Safety Program. Specific safety training for issues such as confined space and traffic control have been provided in the past and will continue to be updated as deemed necessary by Management. Currently, the City has retained FTC&H as the general Health & Safety contractor, managed by the Environmental Services Superintendent.

WORK PLAN

For reference in the following sections, revised IDEP documentation forms are contained in the Appendix.

Determination and Investigation of Illicit Discharges and Connections

Outfall Evaluations

Figure 1 shows the locations of all of the known outfalls and the City MS4 to Non-City MS4 Exit Locations. The primary method to confirm the presence of illicit discharges is to perform a physical inspection of the outfalls, including both scheduled and those related to reports of dry weather discharges. Figure 2 illustrates an “Action Chart for Outfall Field Evaluation” that progresses the process up to facility evaluations/inspections.

During the first Stormwater Permit cycle, all of the City’s outfalls were evaluated. Table 1 also the current status of all of the stormwater outfall evaluations, indicating whether there are dry weather flows and if so, which have flow sources identified, which ones have on-going source investigations, and those that have associated corrective and/or enforcement actions. Subsequently, the priority for outfall dry-weather screening will

consider known poor water quality, discharge complaints and reports, and high risk land use areas.

It will be the goal to perform an evaluation of each outfall every four (4) years. However, if results of the initial evaluations dictate a need for return visits and/or significant field and source investigations, fewer evaluations per year would result. Conversely, if less subsequent investigations are needed, outfall evaluations may occur with greater frequency. Currently, ESD Technician IIIs are assigned to perform the outfall evaluations and are instructed to follow procedures indicated in Figure 2, perform the necessary facility evaluations/inspections, and prepare and submit documentation so that any necessary legal enforcement action can be initiated by Management.

Dry weather outfall screening will be completed after a minimum of 48 hours after any precipitation or significant melting event. However, it is our experience that due to the highly variable precipitation events and characteristics of the stormwater collection system (travel time in specific outfall contribution areas, etc.), it is more effective to schedule specific outfall evaluations for specific circumstances, based on staff discretion and field observations. Outfalls to surface water have the highest priority for the purposes of the IDEP but outfalls to ground will be considered primarily for groundwater protection purposes and the potential of any discharges to reach and impact surface water.

For every outfall evaluation, staff will complete *an "Outfall Evaluation Field Observation Form"* to record information such as weather conditions, discharge characteristics (presence and rate of dry weather flow), olfactory and visual observations of discharge characteristics (odor, color, turbidity, and floatable matter). Physical characteristics along the land/water interface will also be noted, including deposits/stains, vegetative type and stress adjacent to the outfall, and structure condition.

If a dry weather flow does exist and the source is obvious, no sampling or analysis will be performed and the illicit discharge will be eliminated. If a dry weather flow exists and the source is not obvious, an *"Outfall Evaluation Water Quality Analysis Form"* will be completed to record field analysis results for parameters such as temperature, pH, specific conductivity or total dissolved solids, total chlorine, and fluoride using appropriate field instruments and sampling/indicator kits. In addition, each dry weather flow will also be sampled for laboratory analysis of fluoride to confirm field screening, phosphorus for the TMDL, and surfactants for indicating potential sources. If the origin of the discharge is suspected to be of human sewage, a sample will be collected for E-Coli and appropriately reported as discussed in the subsequent section "*Discharges of Untreated or Partially Treated Sewage of Human Origin*." As Figure 2 indicates, the presence or absence of a dry weather flow will dictate subsequent actions, as follows.

No Dry Weather Flow

If a dry weather flow does not exist and there is no evidence of an intermittent flow, that outfall will be re-visited a minimum of every four years thereafter.

Wet Weather Flow: Evidence of Significant Pollutants

On occasion, field observations or public reports indicate that certain wet-weather stormwater discharges contain pollutant loadings that could be considered and

categorized as Significant Illicit Discharges. These reports will be considered and prioritized on a case-by-case basis, depending on the specific evidence. If warranted, field and source investigations will be conducted similarly as with other illicit discharges as discussed below.

No Dry Weather Flow: Intermittent Flow Evidence

If dry weather flows were not observed at the outfall but evidence of an intermittent flow is apparent (i.e. deposits, stains, unusual vegetative type and stress, and odor) adjacent to the outfall exist, an intermittent flow investigation will be initiated. Up to three subsequent visits will be made within one year at least one week apart during a dry period to document and sample a discharge. If there is a subsequent observed flow, the investigative sequence of events and methodology will be the same as the other dry weather flows.

Dry Weather Flow: Non-Significant Discharges

If a dry weather flow exists and initial field visual indications, olfactory observations, and field analysis indicate the lack of evidence of a Significant Illicit Discharge, the fluoride level will dictate whether the source focus will be on natural groundwater sources or a public water supply source (since groundwater serves 100 percent of the source of the City of Kalamazoo Public Water Supply System and fluoride is an additive). The common range of Fluoride in the City's Public Water Supply System is 0.5 to 1.0 mg/L (ppm).

If the Fluoride level is greater than 0.5 mg/L, the investigation will focus on businesses that receive municipal water, and other likely sources from the city's public water supply system, including routine flushing of the water mains, landscape irrigation runoff, de-chlorinated swimming pool discharges, emergency fire fighting, or a broken water main, etc. If the Fluoride level is less than or equal to 0.5 mg/L, the investigation of the discharge source will focus on likely natural untreated groundwater sources, such as in-flow/infiltration of the stormwater infrastructure, pumped groundwater/dewatering activities, etc. Field Investigation and Source Inspection Forms will be completed in either case and a reasonable attempt will be made to identify the source.

Dry Weather Flow: Significant Illicit Discharges

If a dry weather flow exists and it exhibits evidence of a Significant Illicit Discharge, such as unnatural and/or characteristics of certain odor, color, sheen, staining, floatables and other deposits, vegetative stress or excessive growth, as indicated by the field analysis of the discharge, or the discharge was determined not be from natural untreated groundwater or the public water supply system, the source focus will be on industrial and commercial sources. However, residential sources will also be considered as potential sources. *A Field Observation Form* will be used to record specifics of upstream manhole reconnaissance, beginning at the nearest upstream manhole and continue upstream to determine the section of storm main (pipe) that the illicit discharge originates. In addition, the names and addresses of facilities/residences along the storm main segment between the "wet" and "dry" manholes will be recorded on the *Source Investigation Form*. Other details of observations may also be recorded, such as on a "General Comment Form." If the discharge is suspected to contain human sewage, it will be

investigated and reported as described in the noted subsequent section. Otherwise, the discharge will be addressed and reported as discussed in other sections of this IDEP.

Based on the results of the investigation, staff may prepare a "Recommended Facility Inspection Spreadsheet," noting the following considerations/relevance: Industrial Pre-Treatment Program category, Cross-Connection Program, ownership, NPDES Permit, MDEQ Stormwater Permit, current observations, historical issues, business type, and selection rationale. The Environmental Programs Manager may re-prioritize the recommended rankings based on review of other available sources of information regarding the property. Additional information may include previous inspection reports associated with Occupancy Permits, Building Permits, Industrial Pre-treatment Program inspections, and Fire Marshal records. Records from the Stormwater Asset Inventory Project database may also be reviewed for suspected private connection listings in the upstream vicinity of the apparent segment or point of origin. Property ownership will be determined by the City's Geographic Information System (GIS)/city assessor parcel database. A map will be prepared indicating the subject facilities and stormwater collection system features. In addition, higher priorities will be given to facilities that can be inspected for multiple programs, thus optimizing the potential of information collection during site visits and minimizing disruptions of facility operations.

A "*Facility Survey for Stormwater IDEP Form*" (See Appendix) will be used to record facility inspection results. Facility evaluations will include a verbal interview with selected facility personnel, a visual facility evaluation, confirmation of discharge sources, and dye testing where warranted. An evaluation will target any evidence of illicit connections, illegal dumping, or poor housekeeping practices that could be a source of illicit discharges. If illicit connections are found and/or if other facility operational practices or known or suspected maintenance problems indicate a likelihood that an illicit discharge could occur, a post evaluation meeting will be held with the designated facility contact to discuss any necessary corrective actions. If appropriate, a Notice of Violation Letter from the Environmental Programs Manager will be sent to summarize the facility evaluation results and outline the need and schedule for corrective actions. Generally if necessary, multiple Notice of Violation letters will be sent, with the second from the Environmental Services Superintendent, and the third from the City Attorney's Office. The elimination of an illicit connection or required best management practice will be confirmed by a follow-up facility/field evaluation, documented on the relevant IDEP form(s), and be documented in the next Stormwater Program Progress Report.

It is the goal of the Department to proactively work with the property and facility owners and managers to avoid the need for legal enforcement action. However if necessary, formal enforcement procedures detailed in the Stormwater Ordinance will be followed, such as: monitoring of discharges and the requirement to allow City staff to enter and inspect facilities as necessary; requiring the prevention, control, and reduction of stormwater pollutants by the use of best management practices; and appropriate record keeping.

Discharges of Untreated or Partially Treated Sewage of Human Origin

Sanitary Sewer Overflows

Currently, the city maintains a policy to complete the "Report of Discharges of Untreated or Partially Treated Sewage" form for any Sanitary Sewer Overflows (SSOs) and follows

the associated procedures, including if appropriate, notification requirements, a Media Release, and E-Coli sampling. This procedure is initiated in association with the City of Kalamazoo's WWTP NPDES Permit MI0023299 and is summarized in a separate associated annual report. SSOs that impact surface water will also be summarized in the applicable Stormwater Progress Report.

Non-Sanitary Sewer Overflow Sewage Connections/Discharges

Non-SSO related illicit sanitary connections/discharges found during IDEP investigations would be addressed as follows. First, if an illicit connection is suspected as being from a sanitary or septic source but no evidence of a discharge exists, the associated source investigation and corrective response will be provided the highest priority for known illicit connections. Second, if evidence of a non-SSO significant discharge of untreated or partially treated sewage exists, it will be reported within 24 hours after the known discharge begins or is discovered and a Report of Discharges of Untreated or Partially Treated Sewage will be submitted, with the associated E-Coli sampling. The City will also notify the MMDEQ, the Kalamazoo County Human Services Department, and the Kalamazoo Gazette, as required with Section 324.3112a of Part 31 of Public Act 451 of 1994. Any subject discharges will continue to be reported as appropriate until the illicit connection is eliminated. The report will indicate whether the frequency of discharge is periodic or continuous and will provide an estimate of the annual volume of discharge if possible.

Multiple MS4 Cooperative Investigations

If an upstream field source investigation reaches the boundary of another MS4 and indicates a possible cross-jurisdictional source and/or shared drainage infrastructures, the City will contact the appropriate representative of the subject MS4(s) in an effort to continue the source investigation in a collaborative and cooperative manner. The discharge will be prioritized like any other suspected illicit discharge (discussed herein). As previously noted, Table 2 lists the City to non-City MS4 connection locations. The City will continue to share information that it considers valuable to other MS4s regarding stormwater collection system infrastructure and flows.

Non-MS4 Private Drainage Systems

The City understands that it is not responsible under the Phase II Stormwater Regulations for stormwater drainage systems that are not owned and operated by the City or connected to the City's MS4. Non-MS4 stormwater issues that involve stormwater derived on private properties and directly flow to the waters of the state should fall under direct MDEQ responsibility and appropriate regulations. However, as a courtesy to the MDEQ, the City has in the past and will continue to provide information regarding private outfalls into the waters of the state when known. In addition, the City's Public Participation Process Plans and Public Education Plan address the education of the private property owners and operators with the intent/hope that they will use their private stormwater collection systems appropriately, and incorporate any necessary best management practices.

Current Strategies/Actions for Minimizing Infiltration of Seepage from Sanitary Sewers and Septic Systems into the MS4

Reportedly, there are only 14 street segments within the City that do not have sanitary sewer and only two of those have storm sewers (see Table 3). Consequently, the likelihood for private septic systems to adversely impact the City's MS4 is negligible. However, the following describes the City's general work practices protocol that minimizes the possibility of infiltration of seepage from the sanitary sewer collection system into the storm water collection system.

Strategies/Actions

1. Sanitary sewers are typically installed an average of three to five feet lower than storm sewers, thus providing a protective vertical separation if a seepage event occurs.
2. Sanitary sewers are routinely installed with at least 10 feet horizontal separation from the storm sewer (usually closer to the center of the roadway while the storm main is installed along or further beyond the road edge), thus providing protective horizontal separation.
3. New sanitary sewer is contract-specified to be air or water pressure tested, mandrel tested and televised subsequent to acceptance for operations and maintenance.
4. If a sanitary main breakage or joint leakage occurs and reaches the street via a manhole, all attempts are made to plug the storm sewer entry points, isolate and contain the sanitary material by earth dams from excavated soil or other means, and if appropriate, remove the waste using the City's vactor trucks. In addition, public notification procedures are properly followed.
5. For new or replacement sanitary main, it is required that SDR 35 PVC, ductile iron, or reinforced concrete be used. Note that due to the age of the sanitary sewer system within the City, the vast majority of sanitary main is clay with gasket/joint construction.
6. Televising of sanitary main is routinely performed ahead of planned street construction, and in response to known or suspected trouble areas.
7. Staff responds to internal reports regarding observations of changes in the physical integrity or flow characteristics within the sanitary system, or reports from the public regarding apparent problems. Typical mitigation includes replacement of "broken" sewer pipes, spot repairs to minor "breaks" within the sewer pipe, and lining an existing sewer(s) to enhance its physical condition.
8. Sanitary sewer serves almost the entire City, with the small exception mentioned above. However, the City will work with the Kalamazoo County Human Services Department and other appropriate entities to: confirm those areas not currently being served by the City's sanitary sewer system; encourage septic system inspections; encourage septic system abandonment for failing septic systems or those within an area where it is reasonable to request connection to the sanitary sewer; and direct waste discharges to approved septic systems if sanitary sewer is not available.

Field and Facility Testing Procedures

Field investigative strategies were discussed previously and are generally self-explanatory on the IDEP forms (i.e. sample collection, screening, and analysis, upstream manhole reconnaissance, documentation of facilities in suspected source area, etc.). However, the following discusses additional testing procedures used in conjunction with

facility evaluations or when traditional field visual evaluations are not adequate for source identification.

Dye Testing

Primarily, colored dye is used as the primary investigative test to investigate suspected illicit connections, and secondarily to indicate if flow exists in storm main. Use of colored dyes shall be performed in accordance with MMDEQ guidance, directives, and previously obtained approvals (See Appendix) contains information regarding dyes used by the City of Kalamazoo). The City will notify the MDEQ Kalamazoo District Office prior to dye use (considering reasonable significant quantities and conditions) so that if calls are made to the MDEQ District Office or the Public Emergency Assistance System (PEAS) regarding visual observance of colored discharges, a possible explanation can be provided. In addition, any calls made to the City will be communicated via the City's IDEP "Public Information Reporting and Response Tracking System" discussed in a later section. All dye testing investigations will be performed in conjunction with procedures developed, used, and proven effective by the City for numerous years.

In summary, arrangements will be made for property and facility access as necessary. Typically, a crew of two or more will perform the dye inspections after a review is performed of the City's stormwater system adjacent to the subject site and a reasonable understanding of the facility-plumbing configuration is achieved. At the facility property, colored dye will be placed in selected plumbing fixtures at the suspected source location and downstream sanitary and stormwater manholes will be monitored for the presence of dye. If dye is observed in the sanitary manhole(s) but not in the stormwater system under adequate viewing conditions, it will initially be assumed that the source(s) of the illicit discharge is elsewhere and the investigation will continue. If dye is observed in the stormwater system, a source of the illicit discharge will be considered confirmed and appropriate notification and corrective procedures will be followed as previously discussed. If dry weather flows are no longer visible after confirmation of the illicit connection elimination, it will be assumed that the illicit connection has been corrected unless evidence to the contrary exists. If dry weather flows continues, other potential sources will be investigated.

Additional Investigative Strategies

If initial facility evaluations and associated dye techniques are not conclusive, additional dye testing may be implemented or other investigative methods will be initiated, such as additional discharge sampling and analysis, televising of storm pipe, or smoke testing.

Discharge sampling for additional parameters for laboratory analysis may be implemented to help indicate the type and origin of the flow. Laboratory analysis parameters will be selected on the basis of area land use and the presence/non-presence of sanitary or septic systems, including, phenols, ammonia/ammonium, E-coli, and toxicity screening tests.

Televising of the suspected segment of the storm main may be used to better determine the source of and illicit discharge. Televising the storm main will be used to visually observe and note illicit connections, pipe condition, and create a permanent record of conditions at a specific time. Conditions such as heavily stained pipe, grease build-up on

pipe walls, food scraps, toilet and other paper products, soapsuds, chemicals, paint, and other waste products will be looked for and recorded.

Smoke testing will probably be used as a last strategy to determine an illicit discharge source. If implemented, the City will utilize smoke testing practices consistent with industry standards. The City will also contact MMDEQ prior to smoke testing and a reasonable effort will be made to contact all property and facility owners that may witness the effects of the testing.

Prioritization of Illicit Discharges and Connections

Staff response to outfall evaluations and reports of spills and other releases into the MS4 will be prioritized on the basis of all available information and current staff availability. A determination will be made whether a Significant Illicit Discharge meets 24-hour notification obligations by judging if it has "the potential to seriously affect surface water quality, designated uses, and public health." Generally, the categorical prioritization strategy is as follows.

1. Dry Weather Significant Illicit Discharges – Untreated or Partially Treated Human Sewage
2. Dry Weather Significant Illicit Discharges – Non-Sewage Related But Determined to Meet 24-hour Notification Criteria
3. Dry Weather Significant Illicit Discharges – Determined Not to Meet 24-hour Notification Criteria
4. Dry Weather Intermittent Flows
5. Dry Weather Non-Significant Illicit Discharges
6. Wet Weather Illicit Discharges
7. Private Outfall and Non-MS4 Discharges*

Routine scheduled outfall evaluations and subsequent (every four years) outfall visits will have less priority than responding to known or suspected illicit outfall discharges. Suspected illicit connections not related to known illicit flows will also be prioritized. Priorities will be based on factors such as: known water quality problem areas; perceived higher risk land use; environmentally sensitive areas; non-sewered areas; water bodies within City jurisdiction; current and potential project areas; funding opportunities; relevant information obtained from field investigations; reports from City and non-City organizations; and other acquired information.

*If City staff observes apparent illicit discharges directly into the waters of the state or via private oufalls, MMDEQ will be notified as soon as possible. The MDEQ Spill or Release Report will be referenced and submitted as necessary (see Appendix).

PUBLIC INFORMATION REPORTING AND RESPONSE TRACKING SYSTEM

Public Calls and Other Contacts

A public reporting system for illicit discharges and/or connections has been prepared to record, investigate, source identify, and perform corrective action in an attempt to resolve reports to the maximum extent practicable. It is important to note that City staff are not certified or trained as "First Responders" to chemical spills. Consequently,

decisions regarding any required remediation actions will be directed to the Kalamazoo County HazMat Team who will make the determination whether they contact an appropriate remedial firm to perform the necessary remedial action and invoice the responsible party or if the responsible party will directly retain the necessary firm. The City is also in the process of pre-qualifying one to three firms to be available to perform emergency remedial work if a responsible party is not immediately identified. Subsequently, the City would attempt to identify a responsible party to collect reimbursement for accrued expenses.

Regular Business Hours

During regular business hours, reports from the public regarding illicit discharges and connections are typically made to the main Department of Public Services Harrison Street Facility information number 269-337-8701, the Treatment Control Analyst (TCA) "24/7" number 269-337-8681, the Environmental Programs Manager's number 269-337-8737, the Environmental Services Supervisor at 269-337-8705, or to the Department of Public Services Stockbridge Avenue Facility Dispatcher at 269-337-8729 or the "24/7" emergency number 269-337-8148.

All recipients of these calls are directed to initially document the call on the form "Chemical Release Documentation Initial Report Log" (see Appendix C) and forward it to the Public Services Department Environmental Services Division. Environmental Services staff will consider each report and prioritize it based on all available information. Staff will then determine the appropriate response, based on the information provided and the availability of staff. Response options include, but are limited to, sending the Technician III staff, the Environmental Services Supervisor, or the Environmental Programs Manager to the site to perform an initial field assessment regarding the need for field/source investigations, or whether the Public Safety Central Dispatch (269-337-8994) should be contacted to request that the Hazmat Team be dispatched to the site, or staff may immediately contact Central Dispatch prior to performing an initial field assessment.

Non-Regular Business Hours (After Hours)

During non-regular business hours, calls will be made to or forwarded to either the TCAs' "24/7" number 269-337-8681, or to the after hours water emergency number 269-337-8148 where they are handled by the Community Answering Service (CAS). Subsequently, CAS are directed to immediately forward the calls to the TCAs, and will also send a fax to the Harrison Street Facility documenting the call. Subsequently, the TCAs are instructed to immediately contact the Public Safety Central Dispatch to request that the Hazmat Team respond to the report. If appropriate or necessary, staff will also contact the Kalamazoo County Environmental Health Bureau and the MMDEQ.

Internal Record Documentation

Environmental Services Division staff also tracks and records all outfall visits, locational information, historical and current inspection status codes, completion of IDEP forms, site condition, and any other relevant notes in a general outfall master electronic spreadsheet, generally maintained on a monthly basis by the Technician IIIs. The additional forms discussed within this IDEP will track progress of the report response and field investigation until the issue is resolved. All relevant information will be

incorporated into individual stormwater outfall files for internal purposes. The Appendix contains all subject IDEP forms.

Public Outreach

The public will continue to be notified of the existence, value, and proper use of the public reporting system via various means, including the website www.protectyourwater.net, the City's annual Water Quality Report (Consumer's Confidence Report), communication through the Public Education Plan efforts, and at City Commission and other various meetings and presentations, newsletters and other mailings initiated via its Public Participation Process Plans. The Stormwater Ordinance will be publicized in similar ways, as deemed appropriate. For example, in 2009, business sector specific mailings were made to the Pressure Washer businesses and the Waste Haulers located within a 20 mile radius from Kalamazoo.

Information Sharing/Other Cooperative Efforts

The City has and plans to continue to work with and assist the other MS4s and stakeholders. To date, the City has participated in the informational exchange of IDEPs, is represented at various inter-organizational stormwater related meetings, has provided other MS4s and other interested parties all of its IDEP documentation forms and copies of the Stormwater Ordinance, provided a presentation to the MS4s regarding the Wellhead Protection Zoning Overlay and Performance Standards, periodically informs MS4s of relevant guidance documents, and occasionally provides suggestions based on its experience with the program to date. City staff also participates on the MMDEQ' MS4 Implementation Group.

Continuation of Existing Activities to Minimize Polluted Stormwater Discharges

An on-going effort to educate the citizens about water quality issues – perhaps most significantly that there are two separate sewer systems - is critical to the success of decreasing illegal dumping into the stormwater catch basins/inlets. This issue is discussed in the Public Education Plan and past Stormwater Progress Reports. The City's Stormwater Ordinance requires the notification of spills and all the requirements involved therein. Illegal dumping directly or indirectly into storm catch basins and inlets, and spills collected by drain catch basins and inlets, are typically discovered by either visual and/or olfactory observations, and are subsequently reported by citizens or City field crews (e.g., street sweepers).

The City plans to continue its many efforts to minimize the occurrence of adverse stormwater discharges. For example, the City promotes and/or enforces its weed and tall grass ordinance, fall leaf collection, monthly brush collection, holiday tree collection, curbside recycling program, monthly household junk and debris pickup, and participates in the Kalamazoo County Household Hazardous Waste Program. The City also sponsors and promotes other related efforts, including: special household junk, debris and trash drop off opportunities at transfer stations; special recycling events (televisions and computers); free composting guides; free natural landscaping guides; free firewood, compost, and woodchips; and offers information to citizens on how and where to recycle a number of other types of materials. The City utilizes its Site Plan Review to require stormwater control and treatment to new and re-development, if appropriate. These and other efforts such as street sweeping and proper road salt storage and use

management, are discussed in detail in other sections of the Stormwater Pollution Prevention Initiative (SWPPI).

In addition, efforts will continue to improve communications within the City departments, including those involved with the Building Code, Soil Erosion and Sedimentation Control, the Fire Marshal Office, Engineering, and other field inspection and service groups that provide information regarding apparent illicit connections they may observe from routine field work/inspections.

IDEP EFFECTIVENESS

The experience gained from the first Permit cycle has increased the overall effectiveness and efficiency of the IDEP. Consequently, the primary method for assessing the effectiveness of the IDEP will be to determine the progress of its components, such as the number of outfall inspections, field investigations, source investigations, facility evaluations, the number of illicit connections discovered, and the number of illicit connections that have been eliminated. In addition, an assessment will be made as to how effective the IDEP is in regards to its responses to and tracking of reports of illicit discharges. Finally, staff training, documentation, and internal and external communication and correspondence will be evaluated for effectiveness.

Documentation will be provided to identify the locations of illicit connections and discharges, and what the responses were and how effective the results were. Inter-MS4 flows will also be documented.

IMPLEMENTATION SCHEDULE

The accuracy of the Implementation Schedule will be dependent upon the time needed to perform the actual outfall source investigations – a highly variable factor that is related to the specific complexity and comprehensive nature of the individual situations. Consequently, actual numbers and estimated dates of accomplishments may vary according to the constant re-prioritization of IDEP related work. Thus, the primary measurement of the success of the IDEP will be effectively meeting the overall IDEP elements. Secondarily, success will be measured by accomplishing the below activities within the associated time schedule below.

Table 1: “2015 Stormwater Outfall Status and Action Plan (March 2015)” provides the schedule for all outfalls from 2015-2019. Table 2 shows the jurisdictional discharge points, the discharge point structure, the destination outfall, and the jurisdiction receiving the discharge. Since any existence of dry weather flows from our MS4 passing through these locations should be detected by the respective MS4s via their IDEP screening, flow inspections of these structures will not be deemed as a priority. However, if the schedule allows, we will make a reasonable effort to check for flows in these structures before the April 1, 2013 permit expiration date.

The implementation schedule within Table 1 for the outfalls is prioritized and organized by information shown in the columns labeled “Next Proposed Actions,” “Outfall Status,” and “Outfall ID” and are based on all work performed to date.

SUMMARY

The City's experience to date indicates that the IDEP will be an ongoing and dynamic process and will need to be periodically refined based on acquired knowledge and experience and review of new information as it becomes available. Since the City is the primary IDEP authority for issues within its jurisdiction, it reserves the right to perform and finance its IDEP in a manner it thinks is the most appropriate for its stormwater system and natural water resources.

However, the City recognizes the need and value of its participation in inter-organizational cooperative arrangements to supplement all of the individual MS4 IDEP programs as necessary to protect the waters of the state. Subsequently, the City will continue its participation in a cooperative IDEP effort (IDEP Peer Group) if the cooperative approach is cost effective, timely, and conducted in a professional manner.

In summary, this IDEP incorporates what the City thinks are reasonable and relevant updates associated with specific stormwater collection system and thinks it is well within the allowed flexibility of an individual MS4 IDEP. The IDEP meets both the compliance requirements and provides a reasonable, logical and methodical strategy to effectively research, field investigate, prioritize, and eliminate illicit discharges and connections.

CITY OF KALAMAZOO

IDEP PLAN

FIGURES and TABLES

Figure 1. City of Kalamazoo Stormwater Outfalls

Figure 2. Action Chart for Outfall Field Evaluation

Table 4. 2019 Revision - 2015 Stormwater Outfall Status and Action Plan (refer to the TABLE Section)

~~Table 1. 2015 Stormwater Outfall Status and Action Plan~~

Table 2. Stormwater Jurisdictional Discharge Points

Table 3. Street Segments with No Sanitary Sewers

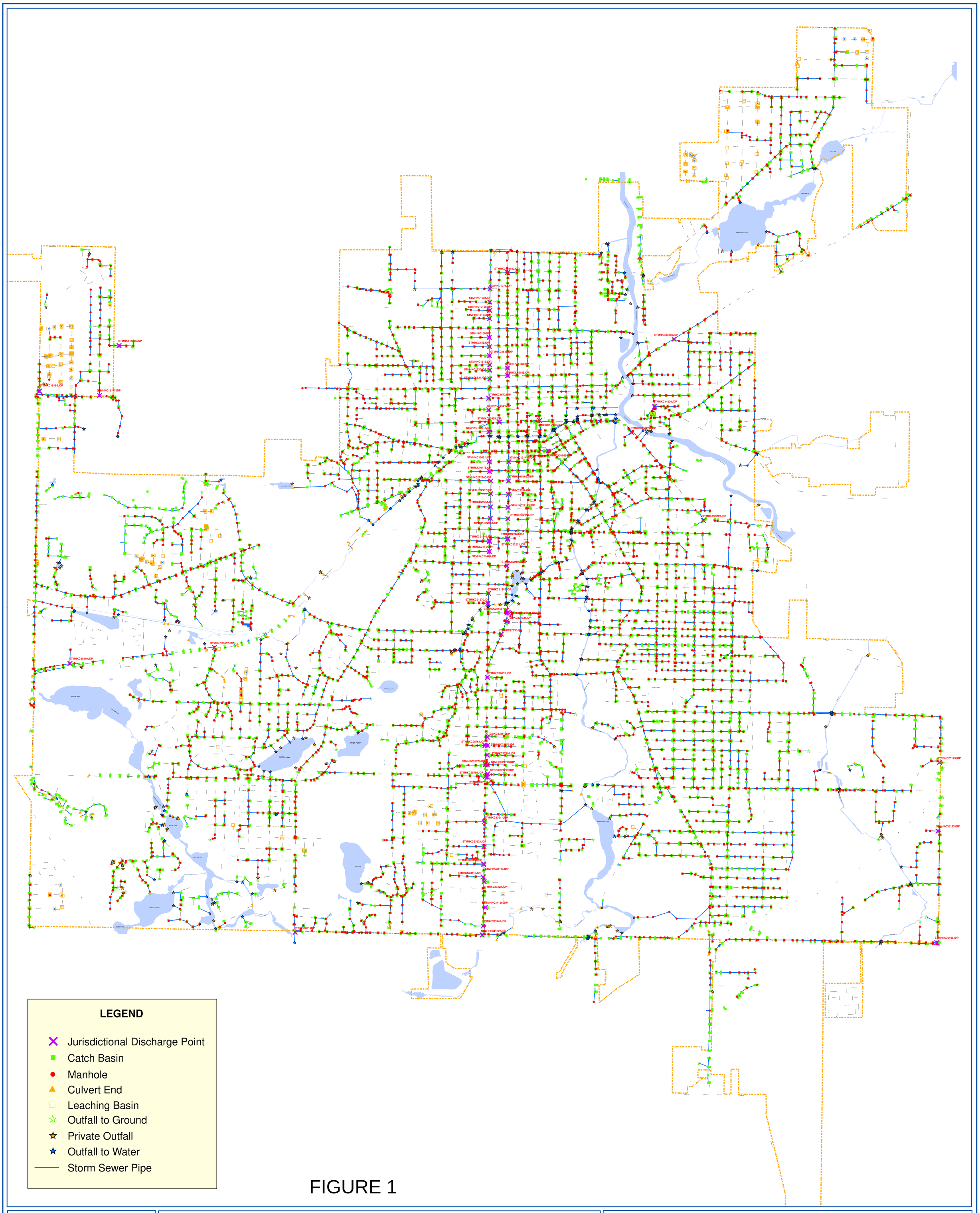


FIGURE 1

THE CITY OF Kalamazoo
Department of Public Services
Environmental Services Division

City of Kalamazoo Stormwater Discharge Points: Outfalls and City MS4 to Non-City MS4 Interconnections

FIGURE 1

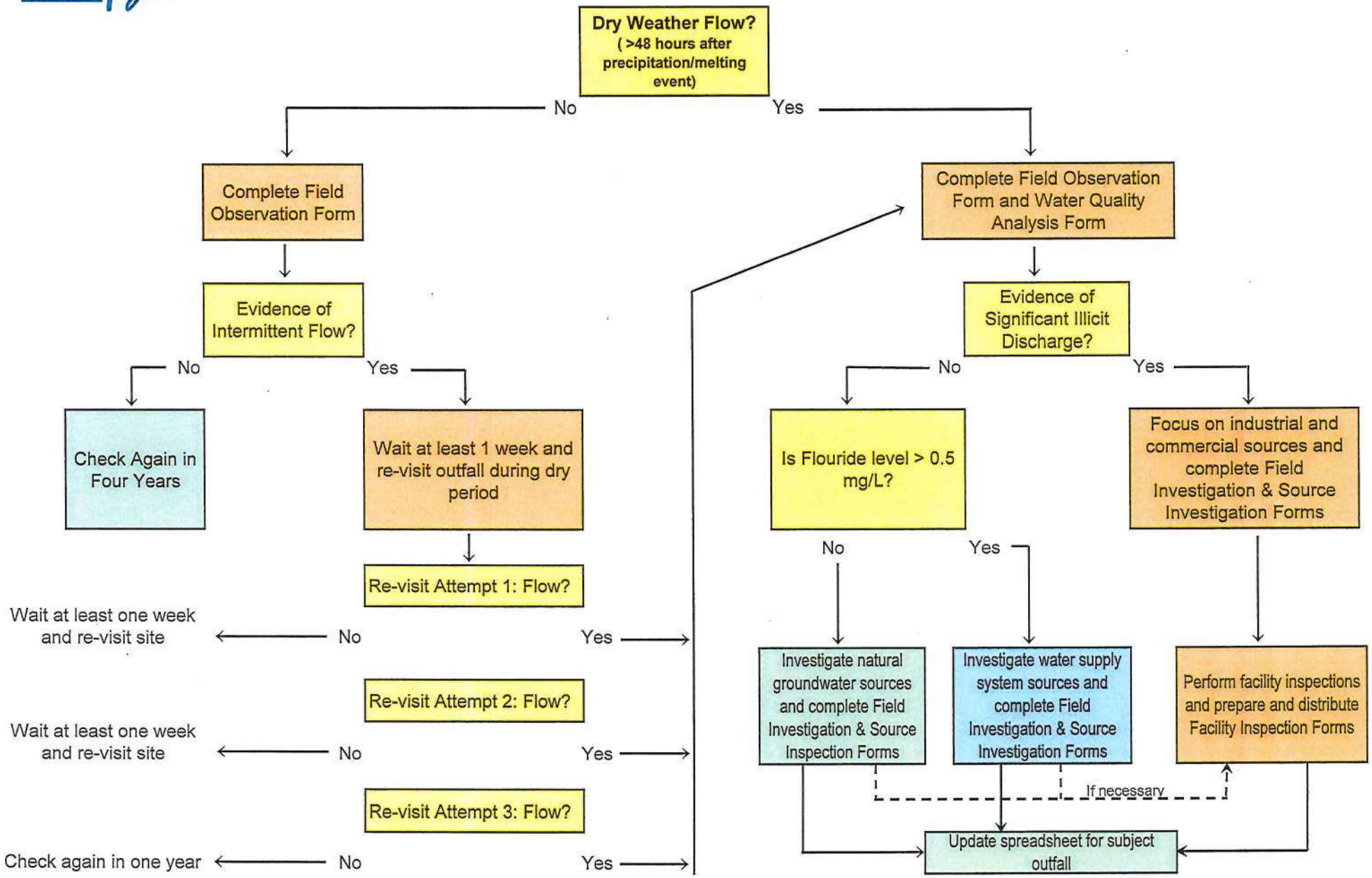
0 1,000 2,000 4,000 Feet

NORTH

The maps from the City of Kalamazoo's GIS are not at survey accuracy.
The City of Kalamazoo assumes no legal responsibility for
the information contained on this map.

FIGURE 2

ACTION CHART FOR OUTFALL FIELD EVALUATION



Prepared by The City of Kalamazoo Department of Public Services Environmental Services Division 3/30/2015

TABLE 2

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
STMHKC1078JDP	Prouty & N. Westnedge	STOWAKC102308	MDOT
STMHKC101182JDP	Hopkins & Park	STOWAKT102030	MDOT
STMHKC1084JDP	Lulu & N. Westnedge	STOWAKC102308	MDOT
STMHKC10120JDP	Bosker & N. Westnedge	STOWAKC102308	MDOT
STMHKC10124JDP	Harding Pl & N. Westnedge	STOWAKC102308	MDOT
STMHKC156JDP	Williams & N. Westnedge	STOGKC102100	MDOT
STMHKC158JDP	Elizabeth & N. Westnedge	STOGKC102100	MDOT
STMHKC1512JDP	Mabel & N. Westnedge	STOGKC102100	MDOT
STMHKC1516JDP	Florence & N. Westnedge	STOWKC15459	MDOT
STMHKC1520JDP	Lawrence & N. Westnedge	STOWKC15459	MDOT
STMHKC1524JDP	Ada & N. Westnedge	STOWKC15459	MDOT
STMHKC1672JDP	Ransom & N. Westnedge	STOWKC15459	MDOT
STMHKC15684JDP	Willard & N. Westnedge	STOWKC15459	MDOT
STMHKC162016JDP	Eleanor & N. Westnedge	STOWAKC162227	MDOT
STMHKC15170JDP	Drexel Pl. & N. Park	STOWKC15459	MDOT
STMHKC15158JDP	Frank & N. Park	STOWKC15459	MDOT
STMHKC151065JDP	N. Burdick & Kalamazoo	STOWAKC152205	MDOT
STMHKC15905JDP	Cooley & Kalamazoo	STOWKC15707	MDOT
STMHKC16461JDP	Academy & S. Westnedge	STOWAKC162228	MDOT
STMHKC16475JDP	South St. & S. Westnedge	STOWAKC162228	MDOT
STMHKC22957JDP	Cedar & S. Westnedge	STOWAKC223501	MDOT
STMHKC222243JDP	Lovell & S. Westnedge	STOWAKC223501	MDOT
STMHKC22961JDP	Walnut & S. Westnedge	STOWAKC223501	MDOT
STMHKC22963JDP	Dutton & S. Westnedge	STOWAKC223501	MDOT
STMHKC21444JDP	Village & S. Westnedge	STOWAKC222500	MDOT
STMHKC21446JDP	Village & S. Westnedge	STOWKC221141	MDOT
STMHKC21448JDP	Minor & S. Westnedge	STOWKC221141	MDOT
STMHKC21643JDP	McCourtie & S. Westnedge	STOWAKC212202	MDOT
STMHKC151413JDP	Academy & S. Westnedge	STOWAKC151272	MDOT
STMHKC151623JDP	Lovell & S. Park	STOWAKC151272	MDOT

Discharge Point ID	Location	Outfall_ID	Jurisdiction Receiving Discharge
STMHKC2239JDP	Cedar & S. Park	STOWAKC223501	MDOT
STMHKC22173JDP	Walnut & S. Park	STOWAKC223501	MDOT
STMHKC22159JDP	Dutton & S. Park	STOWAKC223501	MDOT
STMHKC22261JDP	Ranney & S. Park	STOWAKC222500	MDOT
STMHKC22251JDP	Ranney & S. Park	STOWKC221141	MDOT
STMHKC221093JDP	Park Pl. & S. Park	STOWKC221141	MDOT
STMHKC151099JDP	Farmer's Alley & E. Michigan	STOWAKC152204	MDOT
STMHKC21670JDP	Pioneer & S. Westnedge	STOWAKC212201	MDOT
STMHKC28552JDP	Grandview & S. Westnedge	STOWKC213012	MDOT
STCBKC27811JDP	Montrose & S. Westnedge	STOWKC341010	MDOT
STMHKC28764JDP	Fairview & S. Westnedge	STOWKC341010	MDOT
STMHKC27676JDP	Fairview & S. Westnedge	STOWKC341010	MDOT
STMHKC27808JDP	Garland & S. Westnedge	STOWKC341010	MDOT
STMHKC28775JDP	Whitcomb & S. Westndege	STOWKC341010	MDOT
STMHKC27799JDP	Whitcomb & S. Westnedge	STOWKC341010	MDOT
STCBKC27757JDP	Fairfax & S. Westnedge	STOWKC341010	MDOT
STMHKC28789JDP	Whites & S. Westnedge	STOWKC341010	MDOT
STMHKC27851JDP	Whites & S. Westnedge	STOWKC341010	MDOT
STMHKC27330JDP	Howard & S. Park	STOWKC221397	MDOT
STCBKC221721JDP	Emerson (extened) & S. Park	STOWKC221397	MDOT
STMHKC221687JDP	Balch & S. Park	STOWKC221397	MDOT
STMHKC221681JDP	Balch & S. Park	STOWKC221399	MDOT
STMHKC33811JDP	Lynn (extended) & S. Westnedge	STOWKC341010	MDOT
STMHKC33821JDP	Parker & S. Westnedge	STOWKC341010	MDOT
STMHKC33114JDP	Denway & S. Westnedge	STOWKC341010	MDOT
STMHKC33113JDP	Denway & S. Westnedge	STOWKC341010	MDOT
STMHKC33119JDP	Liberty & S. Westnedge	STOWAKC342500	MDOT
STMHKC33122JDP	Oakhurst & S. Westnedge	STOWAKC342500	MDOT
STMHKC34158JDP	Pratt & S. Westnedge	STOWAKC342500	MDOT
STMHKC33140JDP	4400 Block of S. Westnedge	STOWAKC342500	MDOT
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
STMHKC14239JDP	Engleman & Riverview	STOWKC156000	MDOT
STMHKC151200JDP	800 Block of King Hwy.	STOWKC146513	MDOT
STMHKC23723JDP	Branch & King Hwy.	STOWKC145	MDOT

TABLE 3

Street Segments with No Sanitary Sewers

Street	Limits	Comments
Regent St.	Mt. Olivet to north end	No existing storm sewers
Dennis Ct.	Douglas Ave. to west end	No existing storm sewers
Monarch St.	Portage St. to Burke St.	No existing storm sewers
Burke St.	Pomeroy to Cork & Sheridan to the north.	Storm sewer at intersection of Sheridan
Pomeroy St.	Portage St. to Burke St.	Storm sewer on street
Allendale St.	Sprinkle Rd to Saidla St.	No existing storm sewers
Barber Ave.	Lovers Ln. to west end	No existing storm sewers
Albany St.	Rose. St. to west end	No existing storm sewers
Carolee St.	Duke St. to west end	No existing storm sewers
Kent Ave.	Edgewood to south end	No existing storm sewers
Laird Ave.	Edgewood to south end	No existing storm sewers
Blanche St.	Address #41 to Address #115	No existing storm sewers
Pierce Ave.	Rose St. to Ash St.	No existing storm sewers
Deloofs Alley	Burdick St. to west end	No existing storm sewers

IDEP Plan

APPENDIX

Stormwater Ordinance (Ordinance 1776)
[NOTE: Provided as Attachment A in Permit Application]

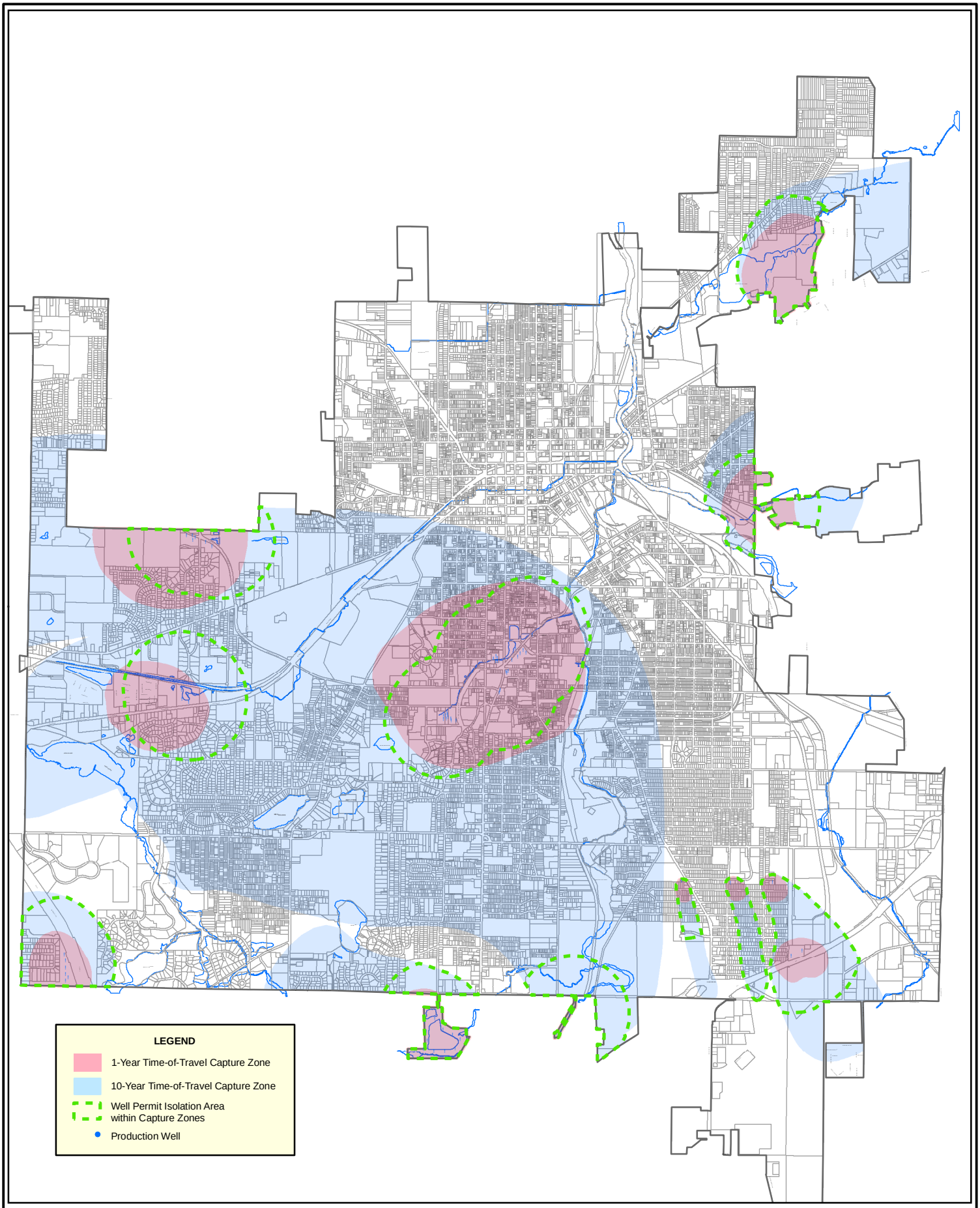
Wellhead Protection Zoning Overlay (Ordinance 1825)

Performance Standards (Ordinance 1826)
[NOTE: Provided as Attachment G in Permit Application]

IDEP Documentation Forms

Dye Information

MDEQ Spill or Release Report



THE CITY OF Kalamazoo

FIGURE 1

Wellhead Protection Zoning Overlay

0 1,500 3,000 6,000 Feet

Prepared by the
Environmental Services Division
March 2007

OUTFALL EVALUATION
FIELD OBSERVATION FORM

Outfall ID: _____ **Discharge Water Body:** _____

Date: _____ **Time:** _____ **Inspector(s):** _____

WEATHER

Temperature(°F) : _____ ☐ Clear ☐ Partly Cloudy

☐ Overcast ☐ Rain ☐ Snow

DISCHARGE CHARACTERISTICS

Flow Rate

☐ Dry, no water present ☐ Trace, insufficient to quantify ☐ Intermittent

☐ Measurable, Gallons per minute = _____ Method Used _____

Odor

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ None ☐ Gasoline ☐ Oil ☐ Solvent ☐ Sewage ☐ Sulfur/Rotten Egg

☐ Rancid/Sour ☐ Other _____

Color

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ Clear ☐ Yellow ☐ Green ☐ Red ☐ Gray ☐ Black

☐ Light Brown ☐ Medium Brown ☐ Dark Brown ☐ Other _____

Turbidity/Clarity

☐ In flow ☐ At Structure ☐ Manhole ☐ Catch Basin

☐ Clear ☐ Slightly Cloudy ☐ Moderately Cloudy ☐ Highly Cloudy ☐ Opaque

Floatables

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ None ☐ Trash ☐ Sewage ☐ Oily Sheen ☐ Suds/Scum ☐ Bacterial Sheens/Algae/Slimes

PHYSICAL CHARACTERISTICS

Deposits/Stains

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ None ☐ Sediment ☐ Oily ☐ Grease ☐ Crystalline Powder

☐ Fragments ☐ Bacterial Sheen or Slime ☐ Other _____

Vegetation

☐ In flow ☐ At structure

☐ None ☐ Normal ☐ Excessive ☐ Algae ☐ Other _____

Structural

☐ In flow ☐ At structure

☐ Normal ☐ Cracking ☐ Settlement ☐ Corrosion ☐ Other _____

COMMENTS

_____

_____

Rev. 3/1/10

(SEE BACK FOR WATER QUALITY ANALYSIS FORM)

OUTFALL EVALUATION
WATER QUALITY ANALYSIS FORM

Outfall ID: _____ Manhole ID: _____ Receiving Water Body: _____

Date: _____ Time: _____ Inspector(s): _____

DISCHARGE CHARACTERISTICS

Field Analysis (required for every sample)

Temperature (°F): _____ pH: _____

Specific Conductivity (micromhos): _____ OR Total Dissolved Solids (ppm): _____

Total Chlorine (ppm): _____ Flouride (mg/L): _____

Laboratory Analysis

Only required for Flouride, Phosphorus, Surfactants, and E-Coli* unless approved by supervisor.
Record result and place Laboratory Analytical Reports in appropriate outfall file.

Chain of Custody Number: _____

Flouride (mg/L): _____ Total Phosphorus (ug/L): _____

Surfactants: _____ E-Coli*: _____

*** mandatory for all suspected discharges of human sewage origin**

Ammonia/Ammonium: _____ Phenols: _____

Toxicity Screening: _____ Metals: _____

Other: _____

Note: If outfall is underwater or not safe to access, obtain sample from first available upstream manhole using an in-line sampling device ("sampling stick").

FACILITY INSPECTION FOR STORMWATER IDEP

Outfall ID: _____ Receiving Waters: _____

Date: _____ Time: _____ City Rep(s): _____

Facility Information

Facility Name: _____ Address: _____

Facility Contact: _____ Phone Number: _____

Dicharge Sources

Discharge Source	Sanitary (SS)	Storm (SW)	Comments
☐ Catch Basin/Inlet	☐ SS	☐ SW	
☐ Floor Drain	☐ SS	☐ SW	
☐ Trench Drain	☐ SS	☐ SW	
☐ Sump Pump Drain	☐ SS	☐ SW	
☐ Foundation Drain	☐ SS	☐ SW	
☐ Swimming Pool Sump Drain	☐ SS	☐ SW	
☐ Roof Drains	☐ SS	☐ SW	
☐ Laundry Tub	☐ SS	☐ SW	
☐ Utility Sink	☐ SS	☐ SW	
☐ Chemistry Lab Sink	☐ SS	☐ SW	
☐ Restrooms	☐ SS	☐ SW	
☐ Fire System Testing	☐ SS	☐ SW	
☐ Containment Area	☐ SS	☐ SW	
☐ Septic System	☐ SS	☐ SW	
☐ Direct Discharge	☐ SS	☐ SW	
☐ Oil Separator	☐ SS	☐ SW	
☐ Other:			

Operational Practices

☐ Wash-up operations at the end of a work shift or job activity	☐ SS	☐ SW
☐ Wash-down operation following irregular accidents and spills	☐ SS	☐ SW
☐ Vehicle maintenance and washing	☐ SS	☐ SW
☐ Outdoor washing practices	☐ SS	☐ SW
☐ Other	☐ SS	☐ SW

Known or Suspected Maintenance Problems

☐ Leaking tanks, pipes or fittings, etc.

☐ Sanitary sewer or septic system capacity limitation

☐ Other _____

General Comments

_____

_____

DISCHARGE TO STORM SEWER
FIELD INVESTIGATION FORM

Storm Sewer Structure Entry Point ID: _____

Downstream Outfall ID: _____

Inspector(s): _____ **Date:** _____ **Time:** _____

Notification Details

Notification origin: _____ **Date:** _____ **Time:** _____

If Citizen: Name: _____

Address: _____ Phone: _____

Details of Complaint: _____

_____

Observations

Observed Conditions: _____

_____

_____

_____

Results

Action Taken: _____

_____

_____

Followup Needed: _____

_____

_____

Comments

_____

_____

_____

_____

CHEMICAL RELEASE DOCUMENTATION
INITIAL REPORT LOG

Date: _____ **Time:** _____

City Representative: _____

Reported by: ☐ Phone ☐ In Person ☐ E-mail

Person Reporting Incident

Name: _____ Title: _____

Address: _____ Organization: _____

Phone Number(s): _____ _____

Location Information:

Chemical Release Location: _____

Chemical(s) (if known): _____

Description of Spill/Release: _____

_____

Observation of Spill/Release: _____ _____
(Date) (Time)

Other notes: _____

Message Referral

☐ Message referred to Kalamazoo Public Safety Central Dispatch (337-8994) to contact Haz-Mat Response Team:

by: _____ on: _____ at: _____
(City Representative) (Date) (Time)

Provide copy of log to Environmental Services, Harrison St. Facility

Phone Log Provided to Environmental Services by: _____
(signature)

Provided to: _____ on: _____ at: _____
(Date) (Time)

Provided by: ☐ Phone ☐ In Person ☐ E-mail

(To be filed in outfall file)

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ILLICIT DISCHARGE ELIMINATION PLAN
CONTACT & CORRESPONDENCE FORM

Outfall ID with Dry Weather Flow: _____

Inspector(s): _____ **Date:** _____

Contact/Correspondence (check type):

☐ Phone Log (describe or attach separate log)

Contact: _____

Discussion: _____

☐ Letters (attach)

- ☐ Notification of Inspection/Testing Schedule
- ☐ Notification of Inspection Follow-up Results/Necessary Corrective Actions
- ☐ Notification of Illicit Connection Elimination Confirmation Inspection Schedule
- ☐ Notification of Compliance/Appreciation
- ☐ Notification of Non-Compliance/Legal Procedures
- ☐ Other (Describe):

Owner/Operator: _____

Address: _____

City: _____ Zip Code: _____

Regarding Business: _____

Address: _____

City: _____ Zip Code: _____

ILLICIT DISCHARGE ELIMINATION PLAN
FIELD INVESTIGATION FORM

Outfall ID with Dry Weather Flow: _____

Date: _____ **Time:** _____ **Inspector(s):** _____

Upstream Manhole Reconnaissance

Start with immediate upstream manhole on primary storm main and work consecutively upstream. Indicate manholes inspected on field map(s).

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

If **yes**, continue to next up-gradient manhole.
If **no**, check field maps for connections within subject storm main segment between outfall and first upstream "dry"manhole. Proceed up-gradient manhole reconaissance in each secondary storm main segment, repeating same procedure until the main segment contributing the flow is identified. List two manhole I.D.'s defining segment and indicate on field map.

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

over

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

Manhole I.D.: _____ Dry Weather Flow? ☐ Yes ☐ No

ILLICIT DISCHARGE ELIMINATION PLAN
GENERAL COMMENT FORM

Outfall I.D. with Dry Weather Flow: _____

Inspector(s): _____ **Date:** _____

Comments:

_____

_____

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ILLICIT DISCHARGE ELIMINATION PLAN
GENERAL COMMENT FORM

Outfall I.D. with Dry Weather Flow: _____

Inspector(s): _____ **Date:** _____

Comments:

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DISCHARGE TO STORM SEWER
FIELD INVESTIGATION FORM

Storm Sewer Structure Entry Point ID: _____

Downstream Outfall ID: _____

Inspector(s): _____ **Date:** _____ **Time:** _____

Notification Details

Notification origin: _____ **Date:** _____ **Time:** _____

If Citizen: Name: _____

Address: _____ Phone: _____

Details of Complaint: _____

_____

Observations

Observed Conditions: _____

_____

_____

_____

Results

Action Taken: _____

_____

_____

Followup Needed: _____

_____

_____

Comments

_____

_____

_____

_____

ILLICIT DISCHARGE ELIMINATION PLAN
FACILITY STATUS FORM

Outfall ID with Dry Weather Flow: _____

Date: _____ **Time:** _____ **Inspector(s):** _____

FACILITY INFORMATION

Name of Facility: _____ Address: _____

Facility Contact: _____ Phone Number: _____

ILLICIT DISCHARGE TESTING

Type of Test: ☐ Dye ☐ Smoke ☐ Other _____

Test Results

☐ Proper Connection - The fixtures tested in this establishment have been found to be properly connected to the sanitary sewer system. No problems were noticed at time of inspection.

☐ Incomplete/unfinished (state reason): _____

☐ Unsuccessful attempt (state reason): _____

☐ Violation/Illicit Connection/Improper discharge:

- ☐ Illicit Connection
- ☐ Improper Discharge
- ☐ Poor Housekeeping

List All Fixtures Tested: _____

_____

_____

_____

Comments: _____

_____

_____

FACILITY INSPECTION FOR STORMWATER IDEP

Outfall ID: _____ Receiving Waters: _____

Date: _____ Time: _____ City Rep(s): _____

Facility Information

Facility Name: _____ Address: _____

Facility Contact: _____ Phone Number: _____

Dicharge Sources

Discharge Source	Sanitary (SS)	Storm (SW)	Comments
☐ Catch Basin/Inlet	☐ SS	☐ SW	
☐ Floor Drain	☐ SS	☐ SW	
☐ Trench Drain	☐ SS	☐ SW	
☐ Sump Pump Drain	☐ SS	☐ SW	
☐ Foundation Drain	☐ SS	☐ SW	
☐ Swimming Pool Sump Drain	☐ SS	☐ SW	
☐ Roof Drains	☐ SS	☐ SW	
☐ Laundry Tub	☐ SS	☐ SW	
☐ Utility Sink	☐ SS	☐ SW	
☐ Chemistry Lab Sink	☐ SS	☐ SW	
☐ Restrooms	☐ SS	☐ SW	
☐ Fire System Testing	☐ SS	☐ SW	
☐ Containment Area	☐ SS	☐ SW	
☐ Septic System	☐ SS	☐ SW	
☐ Direct Discharge	☐ SS	☐ SW	
☐ Oil Separator	☐ SS	☐ SW	
☐ Other:			

Operational Practices

☐ Wash-up operations at the end of a work shift or job activity	☐ SS	☐ SW
☐ Wash-down operation following irregular accidents and spills	☐ SS	☐ SW
☐ Vehicle maintenance and washing	☐ SS	☐ SW
☐ Outdoor washing practices	☐ SS	☐ SW
☐ Other	☐ SS	☐ SW

Known or Suspected Maintenance Problems

☐ Leaking tanks, pipes or fittings, etc.

☐ Sanitary sewer or septic system capacity limitation

☐ Other _____

General Comments

_____

_____

ILLICIT DISCHARGE ELIMINATION PLAN
SOURCE INVESTIGATION FORM

Outfall ID with Dry Weather Flow: _____

Investigator(s): _____

List facilities/residences and associated addresses along storm main segment between "wet" and "dry"manholes, starting with most downstream and proceeding upstream:

1. Name _____ Address: _____
2. Name _____ Address: _____
3. Name _____ Address: _____
4. Name _____ Address: _____
5. Name _____ Address: _____
6. Name _____ Address: _____
7. Name _____ Address: _____
8. Name _____ Address: _____
9. Name _____ Address: _____
10. Name _____ Address: _____
11. Name _____ Address: _____
12. Name _____ Address: _____
13. Name _____ Address: _____
14. Name _____ Address: _____
15. Name _____ Address: _____
16. Name _____ Address: _____
17. Name _____ Address: _____

OUTFALL EVALUATION
FIELD OBSERVATION FORM

Outfall ID: _____ **Discharge Water Body:** _____

Date: _____ **Time:** _____ **Inspector(s):** _____

WEATHER

Temperature(°F) : _____ ☐ Clear ☐ Partly Cloudy

☐ Overcast ☐ Rain ☐ Snow

DISCHARGE CHARACTERISTICS

Flow Rate

☐ Dry, no water present ☐ Trace, insufficient to quantify ☐ Intermittent

☐ Measurable, Gallons per minute = _____ Method Used _____

Odor

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ None ☐ Gasoline ☐ Oil ☐ Solvent ☐ Sewage ☐ Sulfur/Rotten Egg

☐ Rancid/Sour ☐ Other _____

Color

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ Clear ☐ Yellow ☐ Green ☐ Red ☐ Gray ☐ Black

☐ Light Brown ☐ Medium Brown ☐ Dark Brown ☐ Other _____

Turbidity/Clarity

☐ In flow ☐ At Structure ☐ Manhole ☐ Catch Basin

☐ Clear ☐ Slightly Cloudy ☐ Moderately Cloudy ☐ Highly Cloudy ☐ Opaque

Floatables

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ None ☐ Trash ☐ Sewage ☐ Oily Sheen ☐ Suds/Scum ☐ Bacterial Sheens/Algae/Slimes

PHYSICAL CHARACTERISTICS

Deposits/Stains

☐ In flow ☐ At structure ☐ Manhole ☐ Catch Basin

☐ None ☐ Sediment ☐ Oily ☐ Grease ☐ Crystalline Powder

☐ Fragments ☐ Bacterial Sheen or Slime ☐ Other _____

Vegetation

☐ In flow ☐ At structure

☐ None ☐ Normal ☐ Excessive ☐ Algae ☐ Other _____

Structural

☐ In flow ☐ At structure

☐ Normal ☐ Cracking ☐ Settlement ☐ Corrosion ☐ Other _____

COMMENTS

_____

_____

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(SEE BACK FOR WATER QUALITY ANALYSIS FORM)

OUTFALL EVALUATION
WATER QUALITY ANALYSIS FORM

Outfall ID: _____ Manhole ID: _____ Receiving Water Body: _____

Date: _____ Time: _____ Inspector(s): _____

DISCHARGE CHARACTERISTICS

Field Analysis (required for every sample)

Temperature (°F): _____ pH: _____

Specific Conductivity (micromhos): _____ OR Total Dissolved Solids (ppm): _____

Total Chlorine (ppm): _____ Flouride (mg/L): _____

Laboratory Analysis

Only required for Flouride, Phosphorus, Surfactants, and E-Coli* unless approved by supervisor.
Record result and place Laboratory Analytical Reports in appropriate outfall file.

Chain of Custody Number: _____

Flouride (mg/L): _____ Total Phosphorus (ug/L): _____

Surfactants: _____ E-Coli*: _____

*** mandatory for all suspected discharges of human sewage origin**

Ammonia/Ammonium: _____ Phenols: _____

Toxicity Screening: _____ Metals: _____

Other: _____

Note: If outfall is underwater or not safe to access, obtain sample from first available upstream manhole using an in-line sampling device ("sampling stick").

GENERAL RULE 97 CERTIFICATION OF APPROVAL

R97-20/001

In compliance with the provisions of Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), and Rule R323.1097 of the Part 4, Water Quality Standards, promulgated thereunder, tracer dyes containing certain active ingredients are authorized to be applied to surface waters of the state, directly or indirectly, for the purpose of identification and elimination of illicit discharges and cross connections, identification of pipeline and tank failures during hydrostatic pressure testing, discharge point location studies, mixing zone mapping, or time-of-passage studies by an entity submitting a complete Notification of Intent under this certification. This certification does not authorize the discharge of tracer dyes for any purposes other than those noted above.

The Notice of Intent and instructions for its submittal are available from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Web site at https://www.michigan.gov/egle/0,9429,7-135-3313_46123_54919---,00.html or by contacting 517-284-6660 or AshcraftS@Michigan.gov.

The application or discharge of tracer dyes to surface waters of the state is authorized by this certification only under, and contingent upon, full compliance with the following conditions:

1. A complete Notice of Intent is submitted.

2. The extent of the dye plume(s) in waters of the state shall be minimized to the maximum extent practicable.

3. The application of tracer dye(s) shall be conducted in accordance with all pertinent label instructions and additional restrictions identified in this certification.

4. Only the tracer dye(s) containing the active ingredients identified in the Acceptable Michigan Tracer Dye List (https://www.michigan.gov/documents/deq/wrd-rule97-acceptable-dye_559825_7.pdf) are authorized under this certification. Upon authorization, the dyes shall only be applied at concentrations resulting in active ingredient concentrations at or below the concentration limit. The active ingredient Chemical Abstract Service (CAS) number and concentration to be used shall also be identified in the applicant's Notification of Intent in order to be authorized.

5. The following agencies shall be notified 48 hours prior to application:

    - Local Municipality (city, township, village, etc.)
    - Local County Health Department
    - Downstream Health Departments if they could be potentially affected.
    - Local Area Emergency Coordinator

6. EGLE, Water Resources Division (WRD) staff shall also be notified 48 hours prior to applications of tracer dyes directly to surface waters of the state. WRD staff must also be notified if visible discharges of tracer dyes are observed in the surface waters of the state as a result of indirect application (illicit discharge and connections studies or discharge point location). Notification to WRD staff shall be as follows:

    - During normal working hours, please contact the appropriate WRD, District Office (https://www.michigan.gov/documents/deq/wrd-district-offices_345311_7.pdf).

    - After hours, weekends, or holidays, please contact the Pollution Emergency Alert System (PEAS) at 1-800-292-4706.

7. The entity applying the tracer dye(s) to the surface waters of the state, or to another area that has the potential to enter waters of the state, shall retain records identifying treatment locations; dates of treatment; name of applicator(s); and the name, CAS number, and concentration of the active ingredient applied at each location for a minimum of three years from the date of dye application.

8. In the event that any of the conditions of this certification are not, or may not be met, the entity applying the tracer dye(s) shall immediately notify the appropriate WRD, District Office staff (https://www.michigan.gov/documents/deq/wrd-district-offices_345311_7.pdf) of the area in which the application occurred.

9. The issuance of this certification does not authorize the violation of any federal, state, or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other EGLE permits, or approvals from other units of government as may be required by law.

Issued this 13th day of December 2019, by EGLE, this Certificate of Approval shall become effective on January 1, 2020, and shall expire at midnight on December 31, 2021.

Jon E Russell

Jon Russell, Manager
Field Operations Section - Lakes Erie and Huron
Water Resources Division

1 Company and Substance / Formulation Identification

· **Product identifier**

· **Product name: LIQUID POWDER TRACING DYE YELLOWGREEN**

· **Product Code** LPY-C

· **Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.

· **Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

· **Application of the substance / preparation** Dyestuff/Colouring agent

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**
Norlab Inc.
7465 Industrial Parkway
Lorain, Ohio 44053 USA
(800) 247-9422

· **Department:** Regulatory

· **Emergency Telephone:**
1-800-247-9422

2 Hazards identification

· **Classification of the substance or mixture**
The product is not classified according to the Globally Harmonized System (GHS).

· **Label elements**

· **GHS label elements** Void

· **Hazard pictograms** Void

· **Signal word** Void

· **Hazard statements** Void

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**

Health = 1
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 1
Fire = 0
Reactivity = 0

· **Other hazards** Personal Protection Index: B

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Hazardous components:** Void

(Contd. on page 2)

4 First-aid measures

(Contd. from page 1)

· **Description of first aid measures**

· **General information:** No special measures required.

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.

· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

· **After swallowing:**
Rinse out mouth and then drink plenty of water.
Seek immediate medical advice.

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed**
No further relevant information available.

· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**

· **Suitable extinguishing agents:**
Use fire fighting measures that suit the environment.
CO_2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.

· **Advice for firefighters**

· **Protective equipment:** Wear fully protective suit.

· **Additional information**
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Collect contaminated fire fighting water separately.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Product forms slippery surface when combined with water.
Wear protective clothing.

· **Environmental precautions:**
Material is approved for controlled release for certain water tracing applications.
Refer to any and all applicable state or municipal regulations to determine tracer study requirements.

· **Methods and material for containment and cleaning up:**
Clean the affected area carefully; suitable cleaners are:
Warm water
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

· **Reference to other sections**
No dangerous substances are released.
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.

(Contd. from page 2)

See Section 13 for disposal information.

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Store in cool, dry place in tightly closed receptacles.
No special measures required.
· **Protection against explosions and fires:** No special measures required.
· **Special Sensitivity:** KEEP FROM FREEZING.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements for storerooms and containers:** Store only in the original receptacle.
· **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Technical systems:**
Facilities using this material should be equipped with an eye wash station and a safety shower.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Product is a concentrated colorant and can stain skin and/or various articles. The hazards of this product should be low under normal industrial and commercial use. Handle with care to minimize exposure.

· **Breathing equipment:** Use suitable respiratory protective device in case of insufficient ventilation.
· **Protection of hands:**
Use of gloves suggested; concentrated dye/pigment products may stain skin if directly contacted.
· **Glove Material** No specified glove material; most liquid-impervious protective gloves will suffice.
· **Eye protection:** General eye protection suggested when handling any chemical product.
· **Body protection:** Protective work clothing

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

· **Form:**	Liquid
· **Color:**	Dark yellow
· **Odor:**	Odorless
· **Odour threshold:**	Not determined.
· **pH-value at 20°C (68 °F):**	8.6 - 11.0

(Contd. on page 4)

(Contd. from page 3)

· **Change in condition**	
· **Melting point/Melting range:**	Undetermined.
· **Boiling point/Boiling range:**	Undetermined.
· **Flash point:**	Not applicable.
· **Ignition temperature:**	
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Vapor pressure:**	Not determined.
· **Density at 20°C (68 °F):**	1.27 g/cm³ (10.598 lbs/gal)
· **Relative density**	Not determined.
· **Solubility in / Miscibility with**	
· **Water:**	Soluble.
· **Viscosity:**	
· **Dynamic:**	Not determined.
· **Kinematic:**	Not determined.
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity**
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:**
In the case of a fire, oxides of carbon, fumes, and smoke may be produced.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **LD/LC50 values that are relevant for classification:**
Based on the known information of the ingredients, product is expected to have a low level of acute oral toxicity. (Oral LD50 >2,000 mg/kg)
· **Primary irritant effect:**
· **on the skin:** Contact may cause irritation.
· **on the eye:** Contact may cause irritation.
· **Sensitization:** No sensitizing effects known.

(Contd. on page 5)

(Contd. from page 4)

· **Additional toxicological information:**

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Not known to be hazardous to water.
· **Other adverse effects:** No further relevant information available

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:** Must be specially treated adhering to official regulations.

· **Uncleaned packagings:**
· **Recommendation:** Packaging can be reused or recycled after cleaning.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	Void
· **UN proper shipping name**	
· **DOT, ADR, IMDG, IATA**	Void
· **Transport hazard class(es)**	
· **DOT, ADR, IMDG, IATA**	
· **Class**	Void
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	Void
· **Special precautions for user**	Not applicable.
· **UN "Model Regulation":**	-

(Contd. on page 6)

(Contd. from page 5)

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **SARA**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

None of the ingredients is listed.

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **OSHA (Occupational Safety & Health Administration)**

None of the ingredients is listed.

· **GHS label elements** Void

· **Hazard pictograms** Void

· **Signal word** Void

· **Hazard statements** Void

16 Other information

The data in this Material Safety Data Sheet relates only to the specific material designated herein. It does not relate to use in combination with any other material or in any process. This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of the manufacturer/supplier. The data on this sheet are related only to the specific material designated herein, and the information available for all ingredients at the time of creation. Manufacturer/supplier assumes no responsibility for use or reliance upon these data. Any information that is withheld herein (such as exact chemical identity or exact concentration) has been reserved as a trade secret as per applicable regulations.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

SPILL OR RELEASE REPORT

NOTE: Some regulations require a specific form to use and procedures to follow when reporting a release. Those forms and procedures **MUST** be used and followed if reporting under those regulations. This report form is to aid persons reporting releases under regulations that do not require a specific form. This report form is not required to be used. **To report a release, some regulations require a facility to call the PEAS Hotline at 800-292-4706, or DEQ District Office that oversees the county where it occurred, and other regulating agencies and provide the following information. A follow-up written report may be required. Keep a copy of this report as documentation that the release was reported. If you prefer to submit this report electronically by FAX or e-mail, contact the regulating agency for the correct telephone number or e-mail address.** See the DEQ website on Spill/Release Reporting for more reporting information.

Please print or type all information.

NAME AND TITLE OF PERSON SUBMITTING WRITTEN REPORT	TELEPHONE NUMBER (provide area code)

NAME OF BUSINESS			RELEASE LOCATION (provide address if different than business, if known, and give directions to the spill location. Include nearest highway, town, road intersection, etc.)
STREET ADDRESS			
CITY	STATE	ZIP CODE	
BUSINESS TELEPHONE NUMBER (provide area code)			

SITE IDENTIFICATION NUMBER AND OTHER IDENTIFYING NUMBERS (if applicable)	COUNTY	TOWNSHIP	TIER/RANGE/SECTION (if known)

RELEASE DATA. Complete all applicable categories. Check all the boxes that apply to the release. Provide the best available information regarding the release and its impacts. Attach additional pages if necessary.

DATE & TIME OF RELEASE (if known)	DATE & TIME OF DISCOVERY	DURATION OF RELEASE (if known)	TYPE OF INCIDENT
____/____/____	____/____/____	_____ days	☐ Explosion ☐ Pipe/valve leak or rupture
		_____ hours	☐ Fire ☐ Vehicle accident
_____am/pm	_____am/pm	_____ minutes	☐ Leaking container ☐ Other _____
			☐ Loading/unloading release _____

MATERIAL RELEASED (Chemical or trade name) ☐ CHECK HERE IF ADDITIONAL MATERIALS LISTED ON ATTACHED PAGE.	CAS NUMBER or HAZARDOUS WASTE CODE	ESTIMATED QUANTITY RELEASED (indicate unit e.g. lbs, gals, cu ft or yds)	PHYSICAL STATE RELEASED (indicate if solid, liquid, or gas)

FACTORS CONTRIBUTING TO RELEASE

- ☐ Equipment failure
- ☐ Operator error
- ☐ Faulty process design
- ☐ Training deficiencies
- ☐ Unusual weather conditions
- ☐ Other _____

SOURCE OF LOSS

- ☐ Container
- ☐ Railroad car
- ☐ Pipeline
- ☐ Ship
- ☐ Tank
- ☐ Tanker
- ☐ Truck
- ☐ Other _____ _____

TYPE OF MATERIAL RELEASED

- ☐ Agricultural: manure, pesticide, fertilizer
- ☐ Chemicals
- ☐ Flammable or combustible liquid
- ☐ Hazardous waste
- ☐ Liquid industrial waste
- ☐ Oil/petroleum products or waste
- ☐ Salt
- ☐ Sewage
- ☐ Other_____
- ☐ Unknown

MATERIAL LISTED ON or DEFINED BY

- ☐ CAA Section 112(r) list (40 CFR Part 68)
- ☐ CERCLA Table 302.4 (40 CFR Part 302)
- ☐ EPCRA Extremely Hazardous Substance (40 CFR Part 355)
- ☐ Michigan Critical Materials Register or permit
- ☐ NREPA Part 31, Part 5 Rules polluting material
- ☐ NREPA Part 111 or RCRA hazardous waste
- ☐ NREPA Part 121 liquid industrial waste
- ☐ Other list _____
- ☐ Unknown

IMMEDIATE ACTIONS TAKEN

- ☐ Containment
- ☐ Dilution
- ☐ Evacuation
- ☐ Hazard removal
- ☐ Neutralization
- ☐ System shut down
- ☐ Diversion of release to treatment
- ☐ Decontamination of persons or equipment
- ☐ Monitoring
- ☐ Other _____

RELEASE REACHED

Distance from spill location to surface water, in feet_____

- ☐ Surface waters (include name of river, lake, drain involved) _____
- ☐ Drain connected to sanitary sewer (include name of wastewater treatment plant and/or street drain, if known) _____
- ☐ Drain connected to storm sewer (include name of drain or water body it discharges into, if known) _____
- ☐ Groundwater (indicate if it is a known or suspected drinking water source and include name of aquifer, if known) _____

_____

- ☐ Soils (include type e.g. clay, sand, loam, etc.) _____
- ☐ Ambient Air
- ☐ Spill contained on impervious surface

THIS IS A MASTER COPY. PLEASE MAKE COPIES AS NEEDED.

EXTENT OF INJURIES, IF ANY	WAS ANYONE HOSPITALIZED?	TOTAL NUMBER OF INJURIES TREATED ON-SITE:
	☐ Yes NUMBER HOSPITALIZED:____ ☐ No	_____

DESCRIBE THE INCIDENT, THE TYPE OF EQUIPMENT INVOLVED IN THE RELEASE, HOW THE VOLUME OF LOSS WAS DETERMINED, ALONG WITH ANY RESULTING ENVIRONMENTAL DAMAGE CAUSED BY THE RELEASE. IDENTIFY WHO IMMEDIATELY RESPONDED TO THE INCIDENT (own employees or contractor — include cleanup company name, contact person, and telephone number). ALSO IDENTIFY WHO DID FURTHER CLEANUP ACTIVITIES, IF PERFORMED OR KNOWN WHEN REPORT SUBMITTED

☐ **CHECK HERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE**

ESTIMATED QUANTITY OF ANY RECOVERED MATERIALS AND A DESCRIPTION OF HOW THOSE MATERIALS WERE MANAGED (include disposal method if applicable)

☐ **CHECK HERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE**

ASSESSMENT OF ACTUAL OR POTENTIAL HAZARDS TO HUMAN HEALTH (include known acute or immediate and chronic or delayed effects, and where appropriate, advice regarding medical attention necessary for exposed individuals.)

☐ **CHECK HERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE**

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY NOTIFIED:

INITIAL CONTACT BY: ☐ **Telephone** ☐ **Fax** ☐ **Email** ☐ **Other**

DATE/TIME INITIAL CONTACT:_____

☐ PEAS: 800-292-4706 Log Number Assigned _____

☐ DEQ District or Field Office

		Divisions or Offices Contacted:
☐ Baraga	☐ Gwinn	☐ Air Quality
☐ Bay City	☐ Jackson	☐ Land & Water Management
☐ Cadillac	☐ Kalamazoo	☐ Office Geological Survey
☐ Crystal Falls	☐ Lansing	☐ Remediation and Redevelopment
☐ Detroit	☐ Newberry	
☐ Gaylord	☐ Warren	☐ Waste and Hazardous Materials
☐ Grand Rapids	☐ Wyoming	
DEQ Office locations are subject to change		☐ Water Bureau

NAME AND TITLE OF PERSON MAKING INITIAL REPORT:

_____

DEQ STAFF CONTACTED & PHONE NUMBER:

_____

_____

OTHER ENTITIES NOTIFIED:

	Date:	Time:
☐ National Response Center (NRC): 800-424-8802	_____	_____
☐ US Coast Guard Office: ☐ Detroit ☐ Grand Haven ☐ Sault Ste. Marie	_____	_____
☐ US Department of Transportation	_____	_____
☐ US Environmental Protection Agency	_____	_____
☐ 911 (or primary public safety answering point)	_____	_____
☐ Local Fire Department	_____	_____
☐ Local Police and/or State Police	_____	_____
☐ Local Emergency Planning Committee	_____	_____
☐ State Emergency Response Commission via MI SARA Title III Program	_____	_____
☐ Wastewater Treatment Plant Authority	_____	_____
☐ Hazmat Team	_____	_____
☐ Local Health Department	_____	_____
☐ Department of Labor & Economic Growth MIOSHA	_____	_____
☐ Department of Labor & Economic Growth Fire Safety	_____	_____
☐ Michigan Department of Agriculture: 800-405-0101		
☐ Other _____		

PERSON CONTACTED & PHONE NUMBER:

_____

_____

DATE WRITTEN REPORT SUBMITTED	SIGNATURE OF PERSON SUBMITTING WRITTEN REPORT

THIS IS A MASTER COPY. PLEASE MAKE COPIES AS NEEDED.

ATTACHMENT D

CONSTRUCTION STORMWATER RUNOFF CONTROL

Permit Application Questions 28 – 31 (Revised January, 2017)

Municipal Enforcing Agency for Soil Erosion and Sedimentation

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 Planning Department, Code Administration Division. They are responsible for administrating Part 91 via Chapter 30 of the City Code (Attachment A). The Building Official has the required Soil Erosion and Sedimentation Control (SESC) training/certification and reviews all of the Site Plans, attends the Site Plan Review meetings, and sets conditions for Site Plan approval regarding Part 91. The goal of the Building Official is to have three additional staff SESC- certified in 2015. The Department of Public Services, Engineering Division, also serve as a MEA for utility work within Right-of-Ways (ROWs) and have staff stormwater certified.

Site Plan Review

During Site Plan Review, it is the Building Department's responsibility to inform the developer/contractor that a Soil Erosion and Sedimentation Control (SESC) Permit is required or not. If it is, then they are required to show it on the site plan. Subsequently, the building inspectors complete a building plan review, using a checklist on the third page of the building permit (see attached). During this process, the inspectors are responsible to check if the SESC Permit is issued or not, if 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. Any further questions can be directed to Mr. Robert (Bob) McNutt, Building Official, Code Admin Manager, 269-337-8566.

Typically, the Site Plan Application and Review process initiates the discussion of appropriate and necessary BMPs (e.g. inlet protection) for 50 percent of the construction sites. At this time, Part 91 of Act 451 and 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. Appendix A of the City Code of Ordinances, Section 8.3 "Specific Standards and Applications for Development Approval" details the requirements for Site Plan Review.

Subsequently, the remaining 50 percent of the construction sites that submit Soil Erosion Permit Applications do so independently of the Site Plan Review process, with approximately 30 percent associated with demolition projects and 20 percent involve residential and state public institutions (e.g. W.M.U.) construction sites.

Notifications

The staff administering Part 91 will directly contact MDEQ as required for any significant releases from construction sites. As in the past, City staff will keep the MDEQ Kalamazoo District Phase II contact informed of any significant issues regarding impacts to the MS4. In addition, and if appropriate, the MDEQ Spill or Release Report will be completed and submitted as necessary. The PEAS Hotline (800) 292-4706 will also be used to report releases of polluting materials as necessary. 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 Ordinace (Chapter 29 of the Code) since sediment is listed as a pollutant that it regulates in stormwater. Staff will follow the IDEP Plan which details communication procedures. The form "Chemical Release Documentation Initial Report Log" and other forms found in the IDEP Appendix are used to track the complaint response and treated as an acute response to a potential stormwater illicit discharge. Staff will continue to contact MDEQ if the MS4 is significantly impacted resulting in the impairment of the waters of the state.

In addition, The Department of Public Services, Fleet Services Division, also has two Industrial Stormwater Certified staff that administers the Stormwater Pollution Prevention Plan (SWPPP) for the fleet facility located at 415 Stockbridge. The SWPPP provides two decision tree flow chart graphics that were prepared for the staff administering this SWPPP for the reporting of oil spills and other polluting material releases.

ATTACHMENT E

Chapter 30

SOIL EROSION AND SEDIMENTATION CONTROL

GENERAL REFERENCES

Buildings and building regulations — See Ch. 9.

Construction Board of Appeals — See § 9-31 et seq.

Land division — See Ch. 20A.

Wastewater discharge regulations and enforcement procedures — See Ch. 28.

Stormwater system — See Ch. 29.

Zoning — See App. A.

Land subdivision standards — See App. B.

STATUTORY REFERENCES

Soil Erosion and Sedimentation Control — See MCLA § 324.9101 et seq.

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§ 30-1. Purpose.

The purpose of this chapter is 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.

§ 30-2. Definitions.

A. The following definitions shall apply in the interpretation and enforcement of this chapter:

ACT 451 — Part 91, Soil Erosion and Sedimentation Control (SESC), of the Natural Resources and Environmental Protection Act, being Act No. 451 of the Public Acts of 1994, as amended,[1] as well as the promulgated rules of the Michigan Department of Environmental Quality (MDEQ).

CERTIFICATION OF COMPLETION — A signed written statement by the Building Official or the Building Official's designee that specific construction has been inspected and found to comply with all requirements specified in this chapter and any permit issued in accordance with this chapter.

CITY BUILDING OFFICIAL — The City Building Official of the City of Kalamazoo or his/her duly authorized representative, who has completed the required MDEQ SESC training.

EARTH CHANGE — A human-made change in the natural cover or topography of land, including cut and fill activities, which may result in or contribute to soil erosion or sedimentation of the waters of the state. "Earth change" does not include the practice of plowing and tilling soil for the purpose of crop production.

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1. **Editor's Note: See MCLA § 324.9101 et seq.**

EROSION — The process by which land is worn away by action of wind, water, gravity or a combination thereof.

EXCAVATION or CUT — Any act by which soil or rock is cut into, dug, quarried, uncovered, removed, displaced or relocated and shall include the conditions that result from such activities.

FLOODPLAIN — That area which would be inundated by storm runoff or floodwater equivalent to that which would occur with a storm event of one-hundred-year recurrence frequency after total development of the watershed.

GRADING — Any stripping, excavating, filling, stockpiling or any combination of such activities, and shall include the land in its excavated or filled condition.

MUNICIPAL ENFORCING AGENCY (MEA) — The Department of Community Planning and Development, or such subsequent department or division as the City Manager designates in writing as having enforcement responsibilities under this chapter.

PERMIT — A permit issued to authorize work to be performed under this chapter in accordance with Act 451, including rules promulgated under Act 451.

STRIPPING — Any activity that removes or significantly disturbs the vegetative surface cover including clearing and grubbing operations.

B. Words, terms and phrases used in this chapter, unless defined in this section, shall have the meaning ascribed to them in Act 451, including rules promulgated under Part 91.

§ 30-3. Compliance.

Except with respect to an earth change for which no permit is required, a certificate of occupancy for any building shall not be issued unless the applicant first obtains a certificate of completion from the MEA.

§ 30-4. Permits and plans.

A. A land owner or designated agent who contracts for, allows, or engages in an earth change in the City shall obtain a permit from the MEA prior to commencement of an earth change which disturbs one or more acres of land, is on a parcel or parcels adjacent to a public street, or is within 500 feet of waters of the state as defined by Act 451. A permit is not required for those activities that are exempt from permits as specified in Section 9115 of Act 451[2] and Michigan Administrative Rule 323.1705, as amended. Failure to obtain a permit before initiating an earth change shall be deemed a violation of this chapter.

B. A soil erosion and sedimentation control plan shall be prepared for any earth change identified in § 30-4A. The plan shall be designed to effectively reduce accelerated soil erosion and sedimentation and shall identify factors that may contribute to soil erosion or sedimentation, or both. The plan shall include, but not be limited to, the following:

(1) A soils survey or a written description of the exposed land area contemplated for the earth change, including predominant land features and soil types.

(2) Details for proposed earth changes, including:

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2. **Editor's Note: See MCLA § 324.9115.**

(a) A description and the location of the physical limits of each proposed earth change.

(b) A description and the location of all existing and proposed on-site drainage and dewatering facilities.

(c) The timing and sequence of each proposed earth change.

(d) A description and the location of all proposed permanent or temporary soil erosion and sediment control measures.

(e) A program proposal for the continued maintenance of all permanent soil erosion and sediment control facilities that remain after project completion, including the designation of the person responsible for the maintenance. Maintenance responsibilities shall become a part of any sales or exchange agreement for the land on which the permanent soil erosion control measures are located.

(f) A statement of quantity of excavation and fill involved.

(3) A boundary line survey or legal description of the land on which the work is to be performed.

(4) A plan of the site at a scale of not more than 100 feet to the inch showing:

(a) Name, address, and telephone number of the landowner or designated agent.

(b) Existing topography at a maximum of five-foot contour intervals.

(c) Proposed topography at a maximum of five-foot contour intervals.

(d) Location of any structure or natural feature on site.

(e) Location of any structure or natural feature on the land adjacent to the site within 50 feet of the site boundary line.

(f) Location of any proposed additional structures or development on the site.

(g) The proximity of any proposed earth change to lakes, drains, wetlands or streams.

(5) Other information as requested, including but not limited to the location of stockpiles, access to site, tracking protection, location of storm inlets, and traffic routes.

§ 30-5. Application review and permit procedures.

All application review and permit procedures shall be in accordance with Act 451 and this chapter.

§ 30-6. Fees.

At the time of filing an application for a permit, a nonrefundable fee shall be charged for plan review. Upon approval of the plans a permit will be issued and a fee shall be made for the permit, including inspections. Fees will be in accordance with a fee schedule adopted by resolution of the City Commission from time to time.

§ 30-7. Bond requirement.

A. A permit shall not be issued for an earth change unless the permittee first posts with the City a bond executed by the owner or the owner's contractor issued by a surety authorized to do business within the state; provided, however, that a bond shall not be required for single-family residential units less than one acre in size.

B. The bond shall be in a form approved by the City Attorney, payable to the City and in an amount sufficient to assure the installation and completion of such protective and corrective measures as may be required by the MEA. The bond may include penalty provisions for failure to complete the work on schedule as specified in the permit.

C. Every bond shall include language requiring the permittee to comply with all the provisions of this chapter and all terms and conditions of the permit and to complete all work contemplated under the permit within the time limit specified in the permit. If no time limit is specified the project shall be completed within 365 days after the date of the issuance of the permit.

§ 30-8. Extension of time.

Not less than 10 days prior to the expiration date of a permit, a permittee may present in writing to the MEA a request for an extension where the permittee asserts that it is unable to complete the work within the specified time. For good cause shown, the MEA may grant additional time for completion, but no extension shall be treated or interpreted as a release of the surety bond.

§ 30-9. Failure to complete work.

A. In the event of failure to complete work required as part of an approved permit, the MEA may order such work as necessary to provide for effective soil erosion and sedimentation control. The permittee and the surety executing the bond shall continue to be firmly bound under a continuing obligation for the payment of all necessary costs and expenses that may be incurred by the City in causing any and all work to be done to comply.

B. Notwithstanding other provisions of this chapter, the MEA may avail itself all the rights provided under Act 451 in the event a permittee fails to comply with an approved soil erosion and sediment control plan or other permit conditions.

§ 30-10. Denial of permit.

Permits shall not be issued where:

A. The proposed work would cause uncontrolled soil erosion and sedimentation; or

B. The proposed work would cause hazards to the public safety and welfare; or

C. The proposed work will damage any public or private property, interfere with an existing drainage course so as to cause damage to adjacent property, result in the deposit of debris or sediment on any public way, waters of the state or create an unreasonable hazard to persons or property; or

D. The land area in which work is to occur is subject to geological hazard such that no reasonable amount of corrective work can eliminate or sufficiently reduce settlement, slope instability or any other such hazard to persons or property; or

E. The land area in which the work is to occur is within the floodplain of any stream or watercourse, unless a permit from the MDEQ approving the work accompanies the application and a hydrologic report prepared by a professional engineer is submitted certifying that the proposed work will have no detrimental influence on the public welfare or upon the total development of the watershed; or

F. The proposed work unreasonably exposes the land to repeated disturbances.

§ 30-11. Modification of approved plans.

Any modification of an approved plan must be submitted to and approved by the MEA. All necessary supplemental reports shall be submitted with the proposal to modify the approved plan. No work in connection with any proposed modification shall be permitted without the prior approval of the MEA.

§ 30-12. Responsibility of permittee.

During operations associated with the approved soil erosion and sedimentation control plan, the permittee shall be responsible for:

A. The prevention of damage to or sedimentation of waters of the state, adjacent properties or public areas. No person shall grade on land so close to a property line as to endanger any public street, sidewalk, alley or any public or private property without supporting and protecting such property from settling, cracking or other damage that might result. Similarly, no person shall permit sediment or runoff to occur on public streets, sidewalks, alleys or other public area.

B. Carrying out the proposed work in accordance with the approved plans and in compliance with all the requirements of the permit, this chapter and Act 451.

C. The prompt removal of any sediment that may inadvertently be deposited in any lake, drain, stream or wetland.

D. The complete restoration of the site within five business days following final grading of the site.

§ 30-13. Maintenance requirements.

Persons carrying out soil erosion and sedimentation control measures under this chapter, and all subsequent owners of the property concerning which such measures have been taken, shall be liable to maintain all permanent anti-erosion and sediment control devices, retaining walls, structures, plantings, and other protective devices.

§ 30-14. Minimum design standards for erosion and sediment control.

All grading plans and specifications, including amendments to previously approved plans, shall include provisions for erosion and sediment control in accordance with, but not limited to, the standards contained in the current versions of Michigan Department of Transportation's Soil Erosion and Sedimentation Control Manual or the Michigan Department of Management and Budget's Soil Erosion and Sedimentation Control Guidebook. Current copies of these publications shall be available for public inspection in the office of the Building Official.

§ 30-15. Variances and exceptions.

Where it is alleged that there is an error or misinterpretation in any order, requirement, determination or interpretation made by the MEA on non-Part 91 issues, the applicant may file an appeal with the Construction Board of Appeals. Such an appeal must be filed within 21 days of the issuance of the decision at issue. The Construction Board of Appeals may, by a majority vote of its members serving, affirm, reverse, or affirm with conditions the appeal consistent with the general purposes and the intent of this chapter.

§ 30-16. Inspection and enforcement.

A. Representatives of the MEA may enter at all reasonable times in or upon private or public property for the purpose of inspecting and investigating conditions or practices associated with the issuance of a permit. If the MEA finds that the permittee has not complied with Act 451 or this chapter and that the work does not conform to the permit issued, a cease and desist order shall be issued and the permit shall be revoked. The permittee shall be notified by mail of the MEA's determination. The permittee shall, within in five calendar days following the issuance of the notice, implement and maintain soil erosion and sediment control measures consistent with the approved plans, Act 451, and this chapter. The permittee shall continue to be firmly bound under a continuing obligation for the payment of all necessary cost and expenses that may be incurred by the MEA in causing any and all work to be done to comply with the regulations.

B. Upon satisfactory execution of all proposed earth change plans and other requirements, the permittee shall file a written notice of completion so that the MEA may make a final inspection and issue a certificate of completion and release of the bond. If the project is to be completed in different phases, the MEA may issue separate permits and certificates of completion and bond release for each phase of the earth change project.

C. Notwithstanding any other provision of this chapter, the MEA shall have the right to avail itself to all enforcement mechanisms provided for by Act 451. All state rules and regulations promulgated under Part 91 of the Act are hereby incorporated by reference into this chapter.

§ 30-17. Penalties.

A. Any person, firm or corporation who violates any provision of this chapter is responsible for a municipal civil infraction and shall be fined not more than $2,500 for each violation. A civil infraction citation for a violation of this chapter may be issued by the Building Official, or by such person as the City Commission or City Manager may designate.

B. Each day a violation exists or continues shall be deemed as a separate offense.

C. Any person, firm or corporation found responsible for a violation of this chapter within two years of a prior conviction for a violation of this chapter shall be fined an amount double the amount assessed for the immediately preceding violation or the maximum fine permitted by state law, whichever is less.

D. In addition to the remedies provided in this chapter, the MEA may, following proper notification, enter the property for the purpose of correcting or abating the violation in accordance with Act 451 and Michigan law.

E. In addition to fines assessed pursuant to this chapter, a person, firm, or corporation found to be responsible for a violation shall pay the MEA's actual costs, direct or indirect, for correcting and abating the violation, and the actual costs, direct and indirect, to which the MEA has incurred in correcting or abating the violation to the extent permitted by law. In the event that the MEA is not reimbursed for its costs within 30 days of the date it provides written notice to the property owner(s), the fines and costs may be added to and made part of the next City tax bill against the subject premises and may be collected in the same manner as provided by Michigan law for the collection of City taxes on real estate.

§ 30-18. Civil remedies.

In addition to any other remedies provided in this chapter, the City or the MEA may also proceed against any person, firm or corporation for a violation of this chapter by seeking injunctive relief and/or damages.

§ 8.3. Specific Standards and Applications for Development Approval.

A. General. The table below summarizes the development review procedures for all types of applications for development approvals and other permits outlined in this section.

Table 8.3-1 Development Review Procedures
[Amended 3-19-2007 by Ord. No. 1822]

Procedure	Review and Decision-Making Authority					Notices (Written, Newspaper)
	Staff	PC	ZBA	HO	CC	
Text Amendments (§ 8.3A)	R	<R>	—		<DM>	N
Zone District Map Amendments (§ 8.3B)	R	<R>	—		<DM>	W, N
Planned Unit Development District (§ 8.3C)	R	<R>	—		<DM>	W, N
Special Use Permit (§ 8.3D)	R	<DM>	—			W, N
Variance (§ 8.3E)	R	—	<DM>			W
Appeals of Administrative Decisions (§ 8.3F)	—	—	<DM>		—	W
Administrative Adjustments (§ 8.3G)	DM		<A>			—
Site Plan Review						
CBTR District (§ 8.3H)	R	DM				
All other districts (§ 8.3H)	DM (if delegated)	DM (if not delegated)				
Sign Permit (§ 8.3I)	DM	—	<A>			—
Temporary Use Permit (§ 8.3J)	DM	—	<A>			—
Certificate of Zoning Compliance (§ 8.3K)	DM					
Interpretations (§ 8.3L)	DM		<A>			
Beneficial Use Determinations (§ 8.3M)				R	<DM>	

NOTES:

PC = Planning Commission

ZBA = Zoning Board of Appeals

HO = Hearing Officer

CC	=	City Commission
R	=	Review Body (Responsible for Review and Recommendation)
DM	=	Decision-Making Body (Responsible for Final Decision to Approve or Deny)
A	=	(Appellate) Authority to hear and decide appeals of Decision-Making Body's or Staff's action
<>	=	Public Hearing Required
N	=	Published Notice pursuant to § 8.1I2, Published Notice
W	=	Written notice pursuant to § 8.1I3, Written (Mailed) Notice.

B. Amendments to Text of Ordinance or Zone District Map (Rezoning)

1. Purpose. The purpose of this section is to provide a means for amending the text of this Ordinance or making an amendment to the Zone District Map (Rezone).

2. Authority. The City Commission may adopt an ordinance amending the text of this Ordinance or amending the Zone District Map (Rezone) upon compliance with the provisions of this section.

3. Initiation.

   a) Amendment to the Text of This Ordinance. A petition to amend the text of this Ordinance may be initiated by the City Commission, the Planning Commission, City staff, an owner of property in the City, or a citizen of the City.

   b) Amendment to Zone District Map. A petition to amend the Zone District Map (Rezoning) may be initiated by the City Commission, the Planning Commission, City staff, or pursuant to § 8.1A: Authority to File Applications.

Zone District Map Amendments
(Includes PUD)

4. Procedures. The procedures and requirements for a rezoning shall comply with the requirements of § 8.1, General Provisions.

5. Standards. The advisability of amending the text of this Ordinance or making an amendment to the Zone District Map (Rezoning) is a matter committed to the legislative discretion of the City Commission and is not controlled by any one factor. In considering a Zone District Map (Rezoning) amendment, the City Commission may adopt a change for only part of the area requested or for a less intense zone district than requested by the applicant. In determining whether to adopt or disapprove the proposed amendment, the City Commission shall consider the following factors:

   a) Consistent With Comprehensive Plan. Whether and the extent to which the proposed amendment is consistent with the comprehensive plan.

   b) Changed Conditions. Whether and the extent to which there are changed conditions that require an amendment.

   c) Community Need. Whether and the extent to which the proposed amendment addresses a demonstrated community need.

d) Compatible With Surrounding Uses. Whether and the extent to which the proposed amendment is compatible with existing and proposed uses surrounding the subject land, and is the appropriate zone district for the land, or the proposed amendment to the text of this Ordinance will maintain or improve compatibility among uses and will ensure efficient development within the City.

e) Development Patterns. Whether and the extent to which the proposed amendment would result in a logical and orderly development pattern.

C. Planned Unit Development Overlay (PUD-O).

1. General. Proposed Planned Unit Development Overlay (PUD-O) zone district shall comply with all applicable requirement of § 3.4: Planned Unit Development Overlay (PUD-O) Zone District, and with this standards and criteria set forth in this § 8.3C.

2. General Applicability. Before any development shall be designated as a Planned Unit Development Overlay (PUD-O) zone district on the Zone District Map, it shall receive approval pursuant to the terms of this section.

3. Procedure.

a) Overview. A Planned Unit Development Overlay (PUD-O) District shall constitute an amendment to the Zone District Map. It shall be controlled by a PUD Plan and PUD Agreement that is approved as part of the Planned Unit Development Overlay (PUD-O) zone district classification. The procedure requires review and recommendation of approval, approval with conditions or disapproval by the Planning Commission and review and approval, approval with conditions or disapproval by the City Commission. Subsequent to development of a Planned Unit Development Overlay (PUD-O) district, a site plan shall be approved pursuant to § 8.3.H: Site Plan.

b) General. The procedures and requirements for a Planned Unit Development Overlay (PUD-O) district classification shall comply with the requirements of § 8.1: General Provisions.

4. Standards In approving a Planned Unit Development Overlay (PUD-O) zone district classification, the City Commission shall find the zone district designation and PUD Plan complies with the following standards:

a) Development Parameters.

1) The proposed uses for the development may be varied from the permitted uses and special uses for the underlying base zone district identified in § 4.1: Use Table.

2) The dimensional standards may vary from the requirements in § 5.1: Density/Intensity/Dimensional Standards Table.

3) The development is comprehensively planned and integrated, compact, and, where possible, linked by pedestrian ways to surrounding properties.

4) The development is compatible with the character of surrounding land uses and maintains and enhances the value of surrounding properties.

b) Signs. Signage complies with Chapter 7: Signs, except that signage standards may vary from Chapter 7: Signs, if a comprehensive sign plan for the proposed development is submitted that is determined to be suitable for the PUD Plan, and it is consistent with the intent and purpose of the sign regulations.

c) Public Facilities.

1) The PUD Plan demonstrates a safe and adequate on-site transportation circulation system that is integrated with the off-site transportation circulation system of the City.

2) The PUD Plan demonstrates a safe and adequate on-site system of potable water and wastewater lines that can accommodate the proposed development, that are efficiently integrated into off-site potable water and wastewater public improvement plans.

3) Adequate off-site facilities for potable water supply, sewage disposal, solid waste disposal, electrical supply, fire protection and roads is planned and programmed for the development proposed in the PUD Plan, and the development is conveniently located in relation to schools and police protection services.

4) The improvements standards applicable to the public facilities that will serve the site comply with the relevant City regulations. Provided, however, the development may deviate from the City's road standards so the development achieves greater efficiency of infrastructure design and installation through clustered or compact forms of development, when the following minimum design principles are followed:

(a) The circulation system is designed to provide safe, convenient access to all areas of the proposed development using the minimum practical roadway length. Access is provided by a public right-of-way, private vehicular or pedestrian way or a commonly owned easement Internal pathways are provided to form a logical, safe and convenient system for pedestrian access to dwelling units and common areas, with appropriate linkages off-site.

(b) Roadways are designed to permit access by emergency vehicles to all lots and/or units. An access easement is granted for emergency vehicles and utility vehicles, as applicable, to use roadways in the development for the purpose of providing emergency services and for installation, maintenance and repair of utilities.

(c) Principal vehicular access points are designed to provide for smooth traffic flow, minimizing hazards to vehicular, pedestrian, or bicycle traffic. Where a PUD-O district abuts a major collector, arterial road, or highway, direct access to the road or highway from individual lots, units, or buildings is not permitted, unless specifically approved as part of the PUD-O district.

d) Open Space. The development proposed in the PUD Plan complies with the following open space standards:

1) A minimum of 35% of the gross land in the PUD Plan is reserved for common recreation and usable open space. Parking areas, street right-of-way and minimum yard setbacks shall not be counted when determining usable open space. Water bodies and floodplains that are preserved as open space shall count towards this minimum standard, even when they are not usable by or accessible to the residents of the development.

2) All privately owned common open space shall continue to conform to its intended use, as specified in the PUD Plan. To ensure that all the common open space identified in the PUD Plan will be used as common open space, restrictions and/or covenants shall be placed in each deed to ensure their maintenance and to prohibit the partition of any common open space.

e) Natural Resource and Environmental Protection. The PUD Plan complies with the current regulatory standards of this Ordinance and other relevant City, state and federal regulations related to natural resource and environmental protection.

f) Phasing. The PUD Plan includes a phasing plan for the development, if appropriate, with specific build-out dates and the necessary components to insure protection of natural resources and the health, safety, and welfare of the users of the planned unit development and the residents of the surrounding area. If development of the planned unit development is proposed to occur in phases, then guarantees shall be provided that project improvements and amenities that are necessary and desirable for residents of the project, or that are of benefit to the City, are constructed with the first phase of the project, or, if this is not possible, then as early in the project as is technically feasible.

g) Consistent With Comprehensive Plan. The PUD Plan is consistent with the City's Comprehensive Plan.

h) Complies With This Ordinance. The PUD Plan complies with all other relevant requirements of this Ordinance.

5. Conditions. The Planning Commission shall have the authority to recommend and the City Commission shall have the authority to impose such conditions on a Planned Development (PUD) Overlay zone district classification and PUD Plan that are necessary to accomplish the purposes of this Ordinance.

6. Planned Unit Development (PUD) Agreement. Concurrent with the approval of the adopting ordinance for the PUD Overlay zone district classification and the PUD Plan, a PUD Agreement shall be established binding the Planned Development to any conditions placed in the adopting ordinance and PUD Plan. To the degree necessary and appropriate, the PUD Agreement shall include, but is not limited to conditions related to: design requirements; a phasing plan; open space; a comprehensive sign plan; landscaping; parking; and public facility improvements and phasing.

7. Placement of Planned Unit Development (PUD) Overlay District Designation on Official Zone District Map. After final approval of the adopting ordinance for the Planned Unit Development Overlay (PUD-O) zone district classification, the PUD Plan and PUD Agreement, the City Planner shall amend the Zone District Map to show a Planned Unit Development Overlay (PUD-O) zone district classification.

8. Recordation. The applicant shall record the adopting ordinance for the Planned Unit Development Overlay (PUD-O) zone district classification, the PUD Plan and the PUD Agreement with the County Registrar of Deeds. They shall be binding upon the landowners, their successors and assigns, and shall constitute the development regulations for the land. Development of the land shall be limited to the uses, density, configuration, design guidelines and all other elements and conditions set forth on the PUD Plan and PUD Agreement. The applicant shall submit proof to the City Planner that the adopting ordinance, PUD Plan, and PUD Agreement have been recorded with the County Registrar of Deeds within 180 calendar days of its approval or the adopting ordinance, PUD Plan, and PUD Agreement shall be rendered invalid and the property shall return to its prior zone district classification.

9. Effect. Approval of an adopting ordinance for a Planned Unit Development Overlay (PUD-O) zone district classification, the PUD Plan and PUD Agreement shall constitute a Zone District Map classification and recognition by the City that the landowner may proceed, consistent with the PUD Plan and PUD Agreement to develop the land, with appropriate site plan review and permit approvals.

10. Expiration.

    a) General. The approval of a PUD Plan, and PUD Agreement if applicable shall be null and void unless construction of required improvements is commenced and diligently pursued to completion, and a site plan is submitted for at least the initial phase of the PUD Plan within three years after the date of approval of the Planned Unit Development Overlay (PUD-O) Overlay zone district classification. Such time period will not be extended with transfer of ownership.

    b) One Extension. Upon written request, one extension of time may be granted by the City Commission for a period not to exceed one year for good cause shown. No request for an extension shall be considered unless a written request is submitted to the City Planner no later than 30 days prior to the date the PUD Plan is to expire. The approval shall be deemed extended until the City Commission has acted upon the request for extension. Failure to submit an application for an extension within

the time limits established by this section shall render invalid the PUD Plan, and PUD Agreement if applicable.

c) Effect of Invalidation. If an adopted PUD Plan, and PUD Agreement if applicable, becomes invalid through the operation of Subsection (a) or (b) above, no further development within the approved PUD-O zone district may take place until a new PUD Plan, and PUD Agreement if applicable, has been approved in the same manner required for the approval of the original PUD Plan. At any time after the invalidation of a PUD Plan, and PUD Agreement if applicable, the City Commission may, upon its own initiative, rezone the property in the approved PUD-O districts back to the zone district that existed prior to the approval of the PUD-O district, or to any other zone district consistent with the Comprehensive Plan.

11. Minor Deviations. A minor deviation to a PUD Plan and/or a PUD Agreement may be approved by the City Planner. In making a decision on a minor deviation the City Planner shall identify the facts and standards of this section that permit the approval or disapproval of the minor deviation. A minor deviation shall be limited to technical or engineering considerations first discovered during actual development that could not reasonably be anticipated during the approval process or any other change that has no material effect on the character of the approved planned unit development or any of its approved terms or conditions, as long as it complies with the standards of this Ordinance. Minor deviations shall be limited to the following:

a) Height. An increase of building height by not more than 10%, as long as the height increase is consistent with the contextual height of the surrounding buildings and structures and the PUD Plan.

b) Alteration of the Building Envelope. Alteration of the building envelope of up to 10%, provided such alteration does not materially change the design of the development approved in the PUD Plan, and does not change the number of stories, density or intensity.

c) Reduction of Open Space. Reduction of the total amount of open space by not more than 1%, as long as 20% of the project is maintained in open space.

d) Parking Spaces. A decrease of parking spaces by not more than 5%, if it is demonstrated that the minor deviation complies with requirements of § 6.1: Off-Street Parking and Loading.

e) Relocation of Buildings. Relocation of buildings or uses, as long as they maintain the same general building relationships, topography, landscaping, and utility design and are consistent with the PUD Plan, as long as any required setbacks are maintained.

12. Amendments. An amendment to a PUD Plan and/or PUD Agreement may be made only pursuant to the procedures and standards for its original approval.

D. Special Use Permit.

1. Purpose. Special uses are those uses that may have a greater propensity to adversely affect surrounding uses in a zone district and, therefore, require special and individual review of their location, design, configuration, intensity, and density of use or structures to ensure land use compatibility, public facility adequacy, natural resource protection and the public health, safety and welfare of the residents of the City. Conditions of approval may be imposed on a special use that is pertinent to the particular use at a particular location.

2. Authorization.

   a) General. The Planning Commission, in accordance with the procedures and standards of this section, shall review, consider and approve, approve with conditions or disapprove special use permits.

   b) Uses Authorized. Only those uses authorized as special uses in § 4.1: Use Table, may be approved as special uses. The designation of a use as a special use in § 4.1: Use Table, does not constitute an authorization that such use shall be approved as a special use pursuant to this section. Rather, each proposed special use shall be evaluated by the Planning Commission for compliance with the standards set forth in this section and the applicable supplementary standards for the use in § 4.2: Use Standards.

3. Procedure. The procedures and requirements for a special use permit shall comply with the requirements of § 8.1: General Provisions.

Special Use Permit

4. Standards. The Planning Commission shall approve a special use permit if it finds there is evidence in the record that demonstrates all of the following are met:

   a) Compatibility. The proposed special use is appropriate for its proposed location and compatible with the character of surrounding land uses and the uses permitted in the zone district(s) of surrounding lands.

   b) Zone District Use Standards. The proposed special use complies with § 4.2: Use Standards.

   c) Location and Design Minimizes Adverse Impact. The location and design of the proposed special use minimizes adverse effects, including visual impact of the proposed use on adjacent lands by:

      1) Avoiding significant adverse impact on surrounding lands regarding service delivery, parking and loading, odors, noise, glare, and vibration, and does not create a nuisance.

      2) Retaining, to the greatest extent possible, the natural features of the landscape where they provide a barrier or buffer between the proposed special use and adjoining lands.

      3) Locating buildings, structures, and entryways to minimize impact.

      4) Providing appropriate screening, fencing, landscaping, and setbacks.

   d) Design Minimizes Environmental Impact. The proposed special use minimizes environmental impacts, and conforms to all relevant environmental protection standards of this Ordinance, or any other state or federal laws.

   e) Off-Site Roads. There is adequate road capacity available to serve the proposed special use.

   f) Road Ingress and Egress. The proposed special use is designed to ensure safe ingress and egress onto the site and safe road conditions around the site.

   g) Impact on Other Public Facilities. There are adequate potable water, wastewater, solid waste, park, police, and fire/EMS facilities to serve the proposed special use.

   h) Access for Fire, Police, and EMS. The proposed special use is located and designed so that adequate access onto the site is provided for fire, police, and EMS services.

   i) Site Development Standards. The proposed special use complies with the appropriate standards in Chapter 6: General Development Standards.

j) Other Relevant Standards of This Ordinance. The proposed special use complies with all standards imposed on it by all other applicable provisions of this Ordinance for use, layout, and general development characteristics.

5. Conditions of Approval. The Planning Commission may impose, in approving the special use, such conditions on approval of the proposed use, and the premises to be developed or used pursuant to such approval, as it determines are required by the standards of this section and all other relevant standards of this Ordinance to prevent or minimize adverse effects from the proposed use and development on surrounding lands. All conditions imposed on any special use shall be expressly set forth in the special use permit approval.

6. Recording. The Planning Commission may require the applicant to record the special use permit with the County Register of Deeds. The special use permit shall be binding upon the landowners, their successors and assigns.

7. Effect of Special Use Permit. Issuance of a special use permit shall authorize only the particular use, subject to the conditions approved in the special use permit. A special use permit, including any conditions, shall run with the land and shall not be affected by a change in ownership.

8. Expiration. Unless otherwise specified in the special use permit, an application for a construction permit shall be applied for and approved within two years of the date of the approval of the special use permit or the special use permit shall be considered invalid. Permitted time frames do not change with successive owners.

9. Extension. Upon written request, one extension of one year may be granted by the Planning Commission for good cause shown.

10. Amendments. A special use permit may be amended, extended, or modified only in accordance with the procedures and standards established for its original approval.

E. Variances.

1. Purpose.

a) General. There are two types of variances allowed under the terms of this Ordinance: dimensional variances and use variances.

b) Dimensional Variances. Dimensional variances are deviations from the height, setback, yard, lot coverage, parking, landscaping and signage standards of this Ordinance, when owing to special circumstances or conditions (such as exceptional topographical conditions, narrowness, shallowness, or the shape of a specific parcel of land), the literal enforcement of the provisions of this Ordinance would result in peculiar and practical difficulties to the owners of the land, and the deviation would not be contrary to the public interest.

c) Use Variances. Use variances are variations from the schedule of permitted uses in a zone district established pursuant to § 4.1: Use Table, when owing to unnecessary hardship uniquely associated with the property, this Ordinance unreasonably restricts the property owner's use of permitted uses.

d) No Increase in Residential Density. A request to modify lot requirements to increase the permitted density of new residential development shall not be considered a variance and is prohibited (e.g., a lot modification that increases the number of permitted dwelling units on a lot shall not be allowed).

2. Authority. The Zoning Board of Appeals, in accordance with the procedures, standards and limitations of this section, is authorized to review and approve, approve with conditions or disapprove an application for a variance (dimensional variances or use variances).

3. Procedure. The procedures and requirements for variances shall comply with the requirements of § 8.1: General Provisions.

Variance

4. Standards.

a) Dimensional Variance. The Zoning Board of Appeals shall approve a dimensional variance on a finding there is competent, material, and substantial evidence in the record that all of the following standards are met:

1) There are special circumstances or conditions (like exceptional topographic conditions, narrowness, shallowness, or the shape of property) that are peculiar to the land or structure for which the variance is sought, that is not applicable to other land or structures in the same zone district.

2) The special circumstances are not the result of the actions of the applicant or titleholder of the land.

3) The literal interpretation and enforcement of the terms and provisions of this Ordinance would deprive the applicant of rights commonly enjoyed by other land in the same zone district, and would cause practical difficulty.

4) The granting of the variance is the minimum action that will make possible the use of the land or structure that is not contrary to the public interest, and that would carry out the spirit of this Ordinance.

5) The granting of the variance will not adversely affect adjacent land in a material way.

6) The granting of the variance will be generally consistent with the purposes and intent of this Ordinance.

7) Where the requested dimensional variance involves required landscaping, the Zoning Board of Appeals may grant a variance upon the following additional criteria:

   (a) Existing landscaping, screening or wetlands intended to be preserved meets the intent of this section.

   (b) The landscape design proposed by the applicant meets the intent of this section.

   (c) There is a steep change in topography that would limit the benefits of required landscaping.

   (d) The proposed building and parking lot placement is setback well beyond the minimum required.

   (e) The abutting or adjacent land is developed or will be developed in the near future with a use other than residential.

   (f) Similar conditions to the above exist such that no good purpose would be served by providing the landscaping or screening required.

b) Use Variance. The Zoning Board of Appeals shall approve a use variance on a finding there is competent, material, and substantial evidence in the record that all of the following standards are met:

1) The literal interpretation and enforcement of the terms and provisions of this Ordinance would deprive the applicant for all practical purposes from using the property for a permitted use identified in § 4.1: Use Table, which is a right commonly enjoyed by other land in the same zone district.

2) There is unnecessary hardship based on special circumstances or conditions that are peculiar to the land or structure for which the use variance is sought that is not applicable to other land or structures in the same zone district.

3) The special circumstances are not the result of the actions of the applicant.

4) The granting of the variance is the minimum action that will make possible the use of the land or structure that is not contrary to the public interest, and that would carry out the spirit of this Ordinance.

5) The granting of the variance will not adversely affect adjacent land in a material way.

6) The granting of the variance will be generally consistent with the purposes and intent of this Ordinance.

5. Conditions of Approval. The Zoning Board of Appeals, in approving the variance, may impose conditions on such approval, the proposed use, and the premises to be developed or used pursuant to such approval as it determines are required to ensure compliance with the standards in this section. The conditions shall be identified in the variance approval.

6. Recording. The Zoning Board of Appeals may require the applicant to record the variance with the County Register of Deeds. The variance shall be binding upon the landowners, their successors and assigns.

7. Effect of Variance. Issuance of a variance shall authorize only the particular variation that is approved in the variance. A variance, including any conditions, shall run with the land and not be affected by a change in ownership.

8. Subsequent Development. Development authorized by the variance shall not be carried out until the applicant has secured all other approvals required by this Ordinance or any other applicable provisions of the City. A variance does not ensure that the development approved as a variance shall receive subsequent approval for other applications for development approval unless the relevant and applicable portions of this Ordinance or any other applicable provisions are met.

9. Expiration. Unless otherwise specified in the variance, an application for a construction permit shall be applied for and approved within one year of the date of the approval of the variance, otherwise the variance shall become invalid. Permitted time frames do not change with successive owners.

10. Extension. Upon written request, one extension of six months may be granted by the Zoning Board of Appeals for good cause shown.

11. Amendment. A variance may be amended, extended or modified only in accordance with the procedures and standards established for its original approval. A request for a change in a condition of approval of a variance shall be considered an amendment.

F. Appeals of Administrative Decisions.

1. Authorization. Any person aggrieved or effected by any order, decision, determination, or interpretation made by the City Planner or other administrative official of the City charged with administration or enforcement of this Ordinance, may appeal such decision to the Zoning Board of Appeals pursuant to the procedures and standards of this section.

2. Procedure.

a) Initiation of Appeal. An appeal pursuant to this section shall be initiated by filing a written appeal of the administrative decision/determination within 30 days of the date of the order, decision, determination or interpretation.

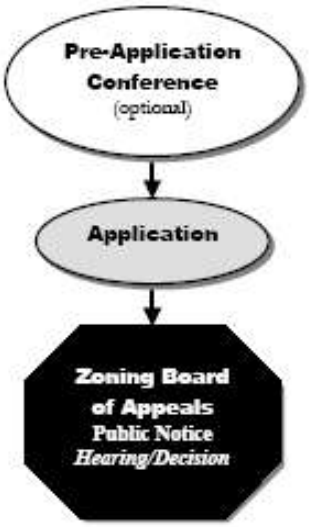
b) Contents of Appeal. The written appeal of the administrative decision/determination from the allegedly aggrieved person shall include a statement of the error or improper order, decision, determination or interpretation, the date of that decision, and all support materials related to the decision. A nonrefundable filing fee as set by resolution of the City Commission shall also be submitted.

c) Forwarding Record to the Appellate Body. Upon receiving the written appeal of the administrative decision/determination, the City Planner or other administrative official whose decision/determination is being appealed, shall transmit the written appeal of the administrative decision/determination and all papers, documents and other materials relating to the order, decision, determination or interpretation that is appealed to the Zoning Board of Appeals. This material shall constitute the record of the appeal.

d) Scheduling of Notice and Hearing. The City Planner shall schedule a hearing on the matter at the next regularly scheduled Zoning Board of Appeals meeting by which time notice can be provided consistent with the requirements of § 8.1I.3: Written (Mailed) Notice.

e) Action by Zoning Board of Appeals. At the hearing on the appeal, the appellant or the appellant's agent shall state the grounds for the appeal and identify any materials or evidence from the record to support the appeal. The City Planner or other administrative official whose action is the subject of the appeal shall be given an opportunity to respond, as well as any other person(s) the Zoning Board of Appeals deems necessary. After the conclusion of the hearing, the Zoning Board of Appeals shall affirm, partly affirm, modify, or reverse the order, decision,

determination, or interpretation, based on the standards in § 8.3F.3: Standards. The concurring vote of a majority of the members of the Zoning Board of Appeals shall be necessary to reverse any order, decision, determination, or interpretation on appeal.



Appeals of Administrative Decisions

3. Standards. An order, decision, determination or interpretation shall not be reversed or modified unless there is competent, material and substantial evidence in the record that the order, decision, determination or interpretation fails to comply with either the procedural or substantive requirements of this Ordinance, state law or the federal or state constitutions.

4. Conditions. The Zoning Board of Appeals may impose conditions upon an affirmative decision to ensure the requirements and purposes of this Ordinance are followed in the order, decision, determination, or interpretation.

5. Stay. A properly submitted appeal shall stay all administrative proceedings by the City in furtherance of the action appealed, unless the City Planner or other administrative official from whom the appeal is taken certifies to the Zoning Board of Appeals that a stay would cause imminent peril to life or property, in which case the administrative proceedings shall not be stayed unless a restraining order is granted by the Zoning Board of Appeals for good cause shown.

G. Administrative Adjustments.

1. General. This section sets out the procedures and standards for administrative adjustments, which are modifications of 10% or less of any numeric dimensional standard set out in § 5.1: Density/Intensity/Dimensional Standards Table, except those related to residential density or nonresidential intensity.

2. Procedure.

   a) General. The procedures and requirements for initiation of an application, the application contents, fees, application submission, and review of the application by City staff shall comply with those relevant provisions in § 8.1: General Provisions.

   b) Action by City Planner. Within 30 days after the application is determined sufficient, the City Planner shall review the application and approve, approve with conditions or disapprove the administrative adjustment based on the standards in § 8.3G.3: Standards.

Administrative Adjustments

3. Standards. The City Planner may approve an administrative adjustment upon a finding that all of the following standards are met:

   a) General. The requested adjustment eliminates an unnecessary inconvenience to the applicant, is not inconsistent with the character of development in the surrounding area and will not result in incompatible land uses;

   b) Mitigates Adverse Impacts. Any adverse impacts resulting from the administrative adjustment will be mitigated to the maximum extent feasible; and

   c) Technical Nature/Compensates for Unusual Aspect of Site. The administrative adjustment is of a technical nature and is required to compensate for some unusual aspect of the site or the proposed development that is not shared by landowners in general. For example: If a lot slopes so sharply at the property boundary that the primary structure would not be visible even without the minimum setback, and the shape of the lot makes it difficult to meet the setback, an administrative adjustment to a smaller setback may be appropriate.

4. Conditions of Approval. The City Planner may, in approving the administrative adjustment, impose such restrictions and conditions on such approval and the premises to be developed or used pursuant to such approval as are determined are required to ensure compliance with the general goals, objectives, and policies of this Ordinance to prevent or minimize adverse effects from the proposed administrative adjustment.

5. Recording. The City Planner may require the applicant to record the administrative adjustment with the County Register of Deeds. The administrative adjustment shall be binding upon the landowners, their successors and assigns.

6. Subsequent Development. Development authorized by the administrative adjustment shall not be carried out until the applicant has secured all other permits required by this Ordinance or any other applicable provisions of the City. An administrative adjustment shall not ensure that the development approved as an administrative adjustment shall receive subsequent approval for other applications for development, unless the relevant and applicable portions of this Ordinance or any other applicable provisions are met.

7. Effect of Administrative Adjustment. Issuance of an administrative adjustment shall authorize only the particular modification that is approved in the administrative adjustment. An administrative adjustment, including any conditions, shall run with the land and not be affected by a change in ownership.

8. Expiration. Unless otherwise specified in the administrative adjustment, an application for a construction permit shall be applied for and approved within one year of the date of the approval of the administrative adjustment, otherwise the administrative adjustment shall become invalid. Permitted time frames do not change with successive owners.

9. Extension. Upon written request, only one extension of time may be granted by the City Planner for a period not to exceed six months for good cause shown.

10. Amendment. An administrative adjustment may be amended, extended or modified only in accordance with the procedures and standards established for its original approval.

H. Site Plan.

1. Purpose and Intent. The purpose and intent of this section is to establish procedures and standards for review and approval of development to ensure full compliance with the site and development standards of this Ordinance and other related City ordinances and state and federal regulations. Specifically, these site plan review procedures and standards are intended to:

   a) Consultation and Cooperation. Foster consultation and cooperation between property owners proposing to develop land and the City.

b) Balance Property Rights and Community Goals. Balance rights of the property owner with the development goals of the City and the rights of adjacent landowners.

c) Minimize Adverse Impacts on Investments of Surrounding Landowners. Minimize adverse impacts of development on the investments of surrounding landowners.

d) Minimize Impacts on Environment, Drainage, Soil Erosion, and Stormwater Control. Ensure site design minimizes negative impacts on the environment, drainage, soil erosion, and stormwater control.

e) Development Consistent With Surrounding Character and Goals of Comprehensive Plan. Ensure the arrangement, location and design of development is consistent with the character of the area and the goals of the Comprehensive Plan.

f) Minimize Impact on Roads. Ensure site design minimizes negative impacts on roadway capacity, the safety of motorists and pedestrians, utilities, and community facilities and services.

g) Safe and Efficient Circulation. Ensure safe and efficient circulation for motorized and nonmotorized traffic and pedestrians within and adjacent to sites.

h) Gradual Upgrade of Nonconforming Sites. Provide for the gradual upgrade of existing sites that do not conform with current standards.

i) Thorough Evaluation of Development. Ensure a thorough evaluation of development in relation to the goals of the Comprehensive Plan, with emphasis on preserving aesthetics, the environment, historic resources, property values, quality of life, and other public health, safety and welfare objectives.

2. Applicability. Unless exempted pursuant to § 8.3H.3: Exemptions, prior to the development of any new use or structure, any change of an existing use of land, the expansion or conversion of any use or structure, or any other development activity, a site plan shall be approved pursuant to the procedures and standards of this section. Construction plans will not be reviewed or a construction permit issued until a site plan is approved pursuant to the procedures and standards of this section.

3. Exemptions. The following shall be exempted from the requirements of this section:

a) One- or Two-Family Dwelling. The development or expansion of a one-family or two-family dwelling unit.

b) Dwelling Unit in Mobile Home Park. Placement of a dwelling unit in an approved mobile home park.

c) Internal Construction Not Increasing Intensity or Parking Requirement. The internal construction or change in the floor area of a structure that does not increase

gross floor area, increase the intensity of use or affect parking requirements on a site that meets all development and site design standards of this Ordinance.

d) Site Clearing Within Area Less Than 1/2 Acre. Grading, excavation, filling, soil removal, creation of ponds or clearing of trees within an area of less than 1/2 acre in size.

e) Temporary Uses. Temporary uses.

f) Minor Development or Expansion. Expansion or new structures up to and including 250 square feet in area.

4. Overview. Development for which a site plan is required pursuant to this section shall be subject to one of two processes: sketch plan review or full site plan review.

a) Sketch Plan Review. Sketch plan review is required of smaller sized development and development with potentially less impacts. Except for development in the CBTR District, it requires review and approval, approval with conditions or disapproval by the Site Plan Review Committee (SPRC). Sketch plan review in the CBTR District requires review and approval by the SPRC and review and final action by the Planning Commission.

b) Full Site Plan Review. Full site plan review is required of larger sized development, and development with potentially greater impacts. Except for development in the CBTR District, it requires review and approval, approval with conditions or disapproval of a preliminary site plan and then a final site plan by the SPRC. Preliminary site plan and then final site plan review in the CBTR District requires review and approval by the SPRC and then review and final action by the Planning Commission. The applicant may consolidate review of the preliminary site plan and final site plan. The preliminary site plan presents the proposed development concept with sufficient information to enable the review board to determine whether the concept complies with the review standards of this section. The final site plan requires submission of detailed information about the proposed development with exact dimensions, representing a firm commitment about development of the site.

5. Threshold for Sketch Plan Review and Full Site Plan Review. The thresholds for which type of development is subject to sketch plan review or full site plan review are set forth in Table 8.3-2.

Table 8.3-2: Threshold for Sketch Plan and Full Site Plan
[Amended 3-19-2007 by Ord. No. 1822]

Development Use/Expansion	Required Review	
	Sketch Plan	**Full Site Plan**
New Development — Residential		
Residential development, unless exempted		☑

Development Use/Expansion	Required Review	
	Sketch Plan	**Full Site Plan**
Residential care facilities (state licensed) that are permitted uses	☑	
Residential care facilities (state licensed) that require special use permit		☑
New Development — Nonresidential		
Construction of new building or structure		☑
Nonresidential development requiring special use permit		☑
Erection of wireless communication antenna on existing facility	☑	
Erection of wireless communication structure or towers		☑
Construction of essential public service buildings and storage areas		☑
Public and private golf courses, outdoor recreational uses, and parks, including principal structures, and parking areas		☑
Expansion		
An increase in the building floor area up to 1,500 square feet or 10% of the existing floor area, whichever is less, based on the cumulative total of the proposed expansion and any expansion within the last five years	☑	
An increase in the building floor area greater than that specified above		☑
An increase in parking or loading area over 10% or 6,000 square feet of pavement area, whichever is less	☑	
Change in Use		
Any change in the use of land or a building to a more intensive use, that may involve significant changes to features such as building appearance, parking needs, traffic flow, traffic volumes, buffering needs, hours of operation, noise, effluent discharge, drainage, lighting, and similar impacts	☑	
A change in use to a similar or less intensive use for a site that does not comply with current development standards (such as landscaping, signs, lighting or drainage)	☑	
A change from a nonconforming use, building, or site, to a more conforming situation	☑	
Other Type of Development		
Accessory open-air business	☑	
Architectural changes to a multiple-family residential structure (three or more units) or a nonresidential structure (only an elevation plan describing changes and construction materials is required if no changes to the use of the site are proposed)	☑	
Grading, excavation, filling, soil removal, creation of ponds or clearing of trees of one-half acre or more	☑	
Home occupations	☑	

6. Procedure. The Planning Commission is responsible for approval of all site plans. However, for all zone districts other than the CBTR zone district, the Planning Commission may annually delegated authority to approve site plans to the Site Plan Review Committee. Such a delegation is currently in effect, and is reflected in the procedures below. In the event the Planning Commission does not delegate site plan approval authority to the SPRC for one or more district(s) in the future, site plan review procedures for such district(s) shall be governed by the provisions below applicable to the CBTR district.

   a) Sketch Plan Review, Except in CBTR District. Sketch plan review shall follow the following procedure, except in the CBTR District.

      1) Initiation, Submission and Review of Application. The procedures and requirements for initiation of an application for sketch plan review, the application contents, fees, application submission and sufficiency determination shall comply with the relevant requirements of § 8.1: General Provisions.

      2) Initial SPRC review. Within a reasonable period of time after the application is determined sufficient, the Site Plan Review Committee (SPRC) shall review the application and prepare a written Staff Report on whether the application complies with the standards in § 8.3H.7: Standards. A copy of the Staff Report shall be provided to the applicant.

      3) Plan Complies/Approve. If the SPRC finds the sketch plan complies with the standards in § 8.3H.7: Standards, the sketch plan shall be approved.

      4) Plan Not Comply/Applicant Opportunity to Modify. If the Staff Report identifies changes that need to be made to the sketch plan to ensure it complies with § 8.3H.7: Standards, the applicant shall submit a modified sketch plan addressing the required changes.

      5) Action After Resubmittal. The SPRC shall review the sketch plan within a reasonable period of time after its resubmittal, and approve, approve with conditions or disapprove the application, based on the standards in § 8.3H.7: Standards. If the sketch plan is not resubmitted within 60 days of the date the SPRC provides the applicant the Staff Report, the application shall be considered withdrawn.

   b) Sketch Plan Review in CBTR District. The procedure for the review of a sketch plan in the CBTR District shall be the same as the procedure for a sketch plan established above (§ 8.3H.6.a), except that after the sketch plan is approved or approved with conditions by the SPRC, it shall be placed on the agenda of the next regularly scheduled Planning Commission meeting by the City Planner, along with a written report from the SPRC. At the meeting the Planning Commission shall review the sketch plan, the written report from the SPRC and all other relevant

information and testimony, and approve, approve with conditions or disapprove the sketch plan based on the standards in § 8.3H.7: Standards.

c) Full Site Plan Review, Except in CBTR District.

1) Preliminary Site Plan (optional).

(a) The procedures and requirements for initiation of an application for preliminary site plan review, the application contents, fees, application submission and sufficiency determination shall comply with the relevant requirements of § 8.1: General Provisions.

(b) Within a reasonable period of time after the application is determined sufficient, the SPRC shall review the application and prepare a written Staff Report on whether the application complies with the standards in § 8.3H.7: Standards. A copy of the Staff Report shall be provided to the applicant.

(c) If the SPRC finds the preliminary site plan complies with the standards in § 8.3H.7: Standards, the preliminary site plan shall be approved or approved with conditions.

(d) If the Staff Report identifies changes that need to be made to the preliminary site plan to ensure it complies with § 8.3H.7: Standards, the applicant shall submit a modified preliminary site plan or final site plan addressing the required changes.

(e) The SPRC shall review the preliminary site plan within a reasonable time after its resubmittal, and approve, approve with conditions or disapprove the application, based on the standards in § 8.3H.7: Standards. If the preliminary site plan is not resubmitted within 60 days of the date the SPRC provides the applicant the Staff Report, the application shall be considered withdrawn.

2) Final Site Plan. The procedure for the review of a final site plan shall be the same as the procedure for a preliminary site plan established in Subsection 6(a)(1) of § 8.3H: Site Plan. The final site plan shall be in substantial conformance with the preliminary site plan and comply with the standards in § 8.3H.7: Standards.

d) Full Site Plan Review in the CBTR District. The procedure for full site plan review in the CBTR District shall be the same as the procedure for full site plan review established above (§ 8.3H.6.c), except that after final site plan is approved or approved with conditions by the SPRC, it shall be placed on the agenda of the next regularly scheduled Planning Commission meeting by the City Planner, along with a written report containing the SPRC's findings. At the meeting, the Planning Commission shall review the final site plan, the written report, and all other

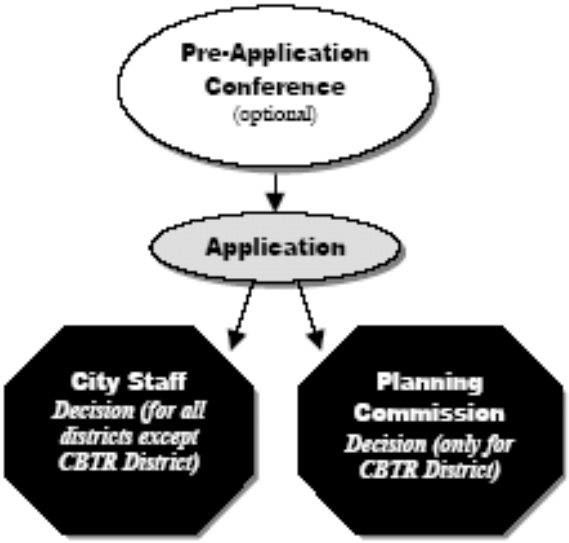
relevant information and testimony, and approve, approve with conditions or disapprove the plans based on the standards in § 8.3H.7: Standards.

7. Standards. A site plan shall be approved upon a finding that:

a) Uses. The uses in the site plan comply with § 4.1: Use Table.

b) Zone District Use Standards. The development and uses in the site plan comply with § 4.2: Use Standards.

c) Site Configuration. All elements of the site plan are harmoniously and efficiently organized in relation to topography, the size, and type of the lot, the land use character of adjoining properties and the types and size of buildings, and are consistent with any adopted plans for the area and standards or guidelines for location of structures on the site.



Site Plan Review

d) Not Adversely Affect Development or Improvement of Surrounding Property. The development proposed in the site plan does not adversely affect the normal and orderly development or improvement of surrounding property for uses permitted in Table 4.1, Use Table.

e) Not Adversely Impact on Surrounding Land Uses and Zoning. The development proposed in the site plan is harmonious with, and not harmful or injurious to existing and planned future uses in the immediate area. The proposed development will be coordinated with improvements serving the subject property and with the other developments in the vicinity.

f) Design and Development Standards in Historic Districts and CCBI). The development proposed in a site plan located within local historic districts, other historically designated areas or within the CCBD district conforms to all applicable design and development standards.

g) Preservation of Historic Resources. The site plan demonstrates judicious effort to preserve and protect historic resources to the greatest extent reasonable, and the site plan meets all federal, state, and local regulations pertaining to historic resources.

h) Open Space. Open space is distributed and conveniently located physically with respect to the overall development, will be accessible to all residents of the development and is located to meet the needs of the residents or occupants. Open space shall be rationally coordinated with open space features of adjacent areas and enhance the natural features of the site.

i) Preservation of Natural Features. The site plan demonstrates judicious effort to preserve the integrity of the land, existing topography, natural features (i.e., slopes, woodlands, etc.) and natural drainage patterns. Regulated and nonregulated wetlands are preserved or modified in a legal manner.

j) Preservation of Woodlands and Trees. The site plan demonstrates judicious effort to preserve existing woodlands, understory, and individual quality trees to the greatest extent reasonable.

k) Greenbelts, Landscaping, and Screening. Proposed landscaping complies with the standards of § 6.2: Landscaping, and all other applicable landscaping and screening requirements of the City. Greenbelts along public street frontage and buffer zones from adjacent zone districts shall be provided where required. Parking lot landscaping is provided as required in § 6.2: Landscaping. The amount, type, and minimum size of landscaping shall be identified in a plant list with appropriate labeling on the landscaping plan.

l) Stormwater Management. Stormwater management is consistent with all federal, state and City regulations. The development will not substantially reduce the natural retention storage capacity of any watercourse, increase the potential for flooding, or increase the stormwater runoff from the site. Provisions are made to accommodate stormwater that complements the natural drainage patterns and wetlands, prevents erosion and the formation of dust. On-site storage, sedimentation ponds, or plantings may be required to reduce stormwater runoff or to filter stormwater so that it is of an acceptable quality when it returns to the aquifer. Vegetation (preferably vegetation native to Southwest Michigan) shall be used in the stormwater management system when feasible. Stormwater runoff on paved areas shall be collected at intervals not obstructing the flow of vehicular or pedestrian traffic, and will not create standing water or cause unnecessary erosion of soil or other material. The proposed development shall comply with the regulations of the City of Kalamazoo's "Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones and Stormwater Quality Management." **[Amended 5-21-2007 by Ord. No. 1826]**

m) Soil Erosion Control. The site plan is designed to meet or exceed all soil erosion standards and regulations of the City.

n) Traffic Impacts and Mitigation. The site plan is designed so the location and design of driveways are safe in relation to streets giving access to the site and in relation to pedestrian traffic. Traffic improvements shall be planned to accommodate the needs of the development proposed in the site plan.

o) Access, Internal Streets, and Circulation. The site plan is designed so safe, convenient and well defined vehicular circulation is provided within and accessing the site. Access to the site is designed to minimize conflicts between vehicles and pedestrians, and with traffic using adjacent streets and driveways. All streets and driveways are in accordance with the standards of the City. Service drives are provided where needed, and meet requirements of City regulations.

p) Nonmotorized Transportation and Circulation. The site plan is designed so safe and convenient pedestrian and bicycle circulation is provided within and accessing the site, according to the City's Nonmotorized Transportation Plan, including sidewalks, pathways, walkways, trails, bicycle routes and paths, sky-walks, and/or other nonmotorized transportation corridors. In accordance with Section 6.1 M. of this ordinance, bicycle parking spaces shall be provided on all properties that are subject to the site plan review process. **[Amended 1-3-2011 by Ord. No. 1876]**

q) Emergency Vehicle Access. The site plan is designed so adequate access is provided for emergency vehicles to the site and all buildings or groups of buildings.

r) Parking and Loading Spaces. The number and dimensions of off-street parking and loading/unloading spaces, and the design of parking and loading areas, comply with the requirements of § 6.1: Off-Street Parking and Loading. The site provides barrier free parking and access in compliance with all applicable federal, state and City regulations.

s) Waste Receptacles. Waste receptacles (e.g., dumpsters, compactors and individual recycle stations) proposed in the site plan comply with all appropriate City regulations and are screened pursuant to § 6.3D: Screening of Waste Receptacles.

t) Exterior Lighting. Exterior lighting proposed in the site plan complies with § 6.6: Operational Performance Standards, and all other applicable City regulations. Exterior lighting is arranged so it is deflected away from adjacent properties and it does not impede the vision of traffic along adjacent streets.

u) Signs. Signage proposed in the site plan complies with Chapter 7: Signs, and is generally complementary with surrounding signage and does not impede adjacent traffic operations.

v) Storage of Potentially Hazardous Materials or Waste. Any uses in the site plan utilizing storing or handling of hazardous material provides secondary containment

facilities and documentation of compliance with all appropriate state and federal regulations.

ATTACHMENT G

CITY OF KALAMAZOO, MICHIGAN

ORDINANCE NO. 1826

AN ORDINANCE TO ADOPT PERFORMANCE STANDARDS FOR GROUNDWATER PROTECTION WITHIN WELLHEAD PROTECTION CAPTURE ZONES AND STORMWATER QUALITY MANAGEMENT AND TO AMEND SECTION 8.3 OF THE ZONING ORDINANCE (APPENDIX A OF THE CODE OF ORDINANCES)

WHEREAS, the Kalamazoo City Zoning Ordinance includes regulations that pertain to the submission, review and approval of site plans for development and redevelopment projects for properties within the city and includes specific information that must be provided on all site plans; and

WHEREAS, the site plan regulations contain language that pertains to storm water management and ground water protection measures that must be adhered to for all such projects; and

WHEREAS, the Department of Public Services has created a new set of regulations entitled Performance Standards for Groundwater Protection Within Wellhead Protection Capture Zones and Stormwater Quality Management, which are intended to be used during the site plan review process and in association with the Wellhead Protection Overlay Zoning District; and

WHEREAS, the Performance Standards provide more in-depth requirements that are intended to help safeguard the drinking water source for Kalamazoo and protect surface water quality from high-risk land use activities; and

WHEREAS, on April 11, 2007, the Planning Commission reviewed the draft of the Performance Standards and unanimously recommended its implementation and adoption by the City Commission; and

WHEREAS, the City Commission has determined that the implementation of the Performance Standards will promote the health, welfare, and safety of the community, will advance the continued economic growth and redevelopment of the City of Kalamazoo, and will help to protect the vital water resources in the city for the benefit of the citizens and business community; and therefore, it is in the best interest of the City to adopt the Performance Standards.

THE CITY OF KALAMAZOO ORDAINS:

Section 1: Section 8.3.H.7.L.and Section 8.3.H.7.X.of the Zoning Ordinance, Appendix A to the Code of Ordinances, City of Kalamazoo, Michigan are amended by adding the following language to both sections: *The proposed development shall comply with the regulations of the City of Kalamazoo's "Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones and Stormwater Quality Management."*

SEVERABILITY

If any section, subsection, sentence, clause, phrase or portion of this Ordinance is for any reason held invalid or unconstitutional by any Court of competent jurisdiction, said portion shall be deemed a separate, distinct and independent provision and such holding shall not affect the validity of the remaining portions of this Ordinance.

CERTIFICATE

The foregoing is a true and complete copy of an ordinance adopted by the City Commission of the City of Kalamazoo at a regular meeting held on May 21, 2007. Public notice was given and the meeting was conducted in full compliance with the Open Meetings Act, (PA 267, I976). Minutes of the meeting will be available as required by the Act, and the ordinance was duly recorded, posted and authenticated by the Mayor and City Clerk as required by the Charter of said City.

Hannah J. McKinney, Mayor

Scott A. Borling, City Clerk

CITY OF KALAMAZOO

PERFORMANCE STANDARDS

FOR

GROUNDWATER PROTECTION WITHIN

WELLHEAD PROTECTION CAPTURE ZONES

AND

STORMWATER MANAGEMENT

(REFERENCE ORDINANCES NO. 1825 and No. 1826)

ORIGINAL DOCUMENT PREPARED BY:
FISHBECK, THOMPSON, CARR & HUBER, INC.
AND THE CITY OF KALAMAZOO, MICHIGAN, 2007

REVISED BY THE CITY OF KALAMAZOO
SEPTEMBER 2015

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1.0 INTRODUCTION

This document provides Performance Standards (Standards) for groundwater protection within Wellhead Protection Time-of-Travel (Capture Zones) and for stormwater quality management throughout the City of Kalamazoo (City), Michigan. The objectives of this document are to define technical standards for site development that facilities located within the Capture Zones are required to attain for drinking water source protection, and to protect surface water quality by establishing acceptable stormwater quality management strategies throughout the City. The Standards are designed to be consistent with the objectives of the Wellhead Protection Program and maintain compliance with the City's municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) Permit Certificate of Coverage and the federally mandated Total Maximum Daily Load for phosphorus reduction within the Kalamazoo River Watershed.

These Standards were developed primarily for use of the Site Plan Review Committee and to supplement the City's Wellhead Protection Zoning Overlay Ordinance (Appendix A of the Kalamazoo Code of Ordinances, Chapter 3, Section 3.5) and the Stormwater System Ordinance (Chapter 29 of the City of Kalamazoo Code of Ordinances). The intent/purpose of the Wellhead Protection Zoning Overlay (WHP Overlay) Ordinance is to protect the groundwater supplies that serve as drinking water by defining non-compatible land uses within Capture Zones and to prevent their creation or establishment, including those that would prevent/limit the City's ability to obtain necessary well permits to replace or add new wells, and to minimize the risk to drinking water sources posed by both approved and non-conforming land uses by requiring compliance with the Standards established in this document. The objectives of the Stormwater System Ordinance are to provide environmental protection to surface waters by regulating discharges into the City's stormwater system, and provide the City with specific legal authority to find and eliminate illicit stormwater connections and discharges.

For the purposes of these Standards regarding Wellhead Protection, the City's Capture Zones have been divided into two groundwater contamination risk areas based on Time-of-Travel (Capture Zones) to a municipal well field: 1-Year Capture Zone = Area located within a 1-Year Capture Zone to a municipal wellfield; and 10-Year Capture Zone = Area located within a 10-Year, but outside the 1-Year, Capture Zone to a municipal wellfield.

In certain cases, more stringent standards have been developed for sites located closer to city wellheads. Consequently, proposed development of sites within the 1-Year Capture Zones is expected to implement greater controls than that within the 10-Year Capture Zones.

Section 5.0 “Stormwater Quality Management Criteria” also uses a 5-Year Capture Zone for purposes of stormwater discharge quality.

This document includes a variety of Best Management Practices (BMPs) related to groundwater and surface water protection and are considered commonly-accepted practices associated with groundwater and/or surface water protection. These BMPs were derived from a variety of sources, including “Low Impact Development Manual for Michigan - A Design Guide for Implementers and Reviewers” (SEMCOG, 2008), and “Michigan Nonpoint Source Best Management Practices Manual” (MDEQ, 2014).

Maps showing the Capture Zones are maintained by the Environmental Services Superintendent and the City Planner or their designee(s) and are available for viewing at the Department of Public Services, Environmental Services Division, 1415 North Harrison Street, and at the Community Development Center, 415 Stockbridge Avenue. Figure 1 “Wellhead Protection Zoning Overlay Map” is the official map reference of the WHP Overlay and includes the 1-Year and 10-Year Time-of-Travel Capture Zones and 2,000-foot State of Michigan Well Permit Isolation Boundaries from existing wells. Figure 2 “Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones and Stormwater Quality Management Reference Map” is the same as Figure 1, but also indicates the 5-Year Capture Zones.

The Standards are divided into nine sections, which follow this Introduction. Section 2.0 “Groundwater Contamination Risk Assessment” discusses what risk category to groundwater (i.e., higher or lower risk) the Zoning Districts and various land uses were designated. Also, supporting rationale for the designations is provided.

Section 3.0 “General Site Plan Review Standards” details standard practices expected of any site within the Capture Zones, particularly those sites in possession of regulated substances (defined in the WHP Overlay Ordinance).

Section 4.0 “Land-Use Specific Site Plan Review Standards” includes more specific standards for several particular higher-risk land uses that are prohibited in one or both of the Capture Zones.

Section 5.0 “Stormwater Quality Management Criteria” establishes technical standards that apply both inside and outside the Capture Zones for stormwater management. These standards are intended to address groundwater vulnerability and land-use risks; prevent or minimize pollutant loadings to ensure compliance with the City’s Stormwater NPDES Permit; and minimize potential adverse impacts to general surface water quality from stormwater runoff.

Section 6.0 “Treatment and Spill Containment” provides guidance regarding BMPs that can meet treatment requirements for stormwater quality, and provides required specifications, including spill containment cells and volumes, water quality swales, and proprietary systems.

Section 7.0 “Non-Conforming Land Uses” specifically addresses sites within the Capture Zones with existing non-conforming land uses pursuant to the WHP Overlay Ordinance, including the requirement for the implementation of BMPs and/or Spill Contingency Plans (SCPs) at those sites.

Section 8.0 “Potentially Applicable Environmental Regulations” discusses the requirement of developers to comply with all local, state, and federal regulations.

Section 9.0 “Contaminated Properties” communicates that there are cases that contaminated sites may require special considerations in the selection of BMPs.

2.0 GROUNDWATER CONTAMINATION RISK ASSESSMENT

Land-use zoning districts, as defined in the City's WHP Overlay Ordinance, are designated as either higher-risk or lower-risk for potential groundwater contamination, as shown in Table 1. Generally, higher-risk designations were assigned to zoning districts that allow land use activities that are either prohibited or restricted with conditions within Capture Zones. These zoning districts typically allow activities involving the storage and/or use of regulated substances.

Table 1
Zoning Risk Designations

Higher-Risk Zoning Districts
Commercial, Mixed Use (CMU)
Commercial, Neighborhood (CN-2)
Commercial, Community (CC)
Commercial, Central Business District (CCBD)
Commercial, Business, Technology, and Research (CBTR)
Manufacturing, Limited (M-1)
Manufacturing, General (M-2)
Public (P)
Institutional Campus (IC)
Lower-Risk Zoning Districts
Residential, Single-Dwelling (RS-4, RS-5, RS-7)
Residential, Duplex (RD-8, RD-19)
Residential, Multi-Dwelling (RM-15, RM-15C, RM-24, RM-36)
Residential, Mobile Home Park (RMHP)
Residential, Mixed Use (RMU)
Commercial, Neighborhood Office (CNO)
Commercial, (Local) Neighborhood (CN-1)
Commercial, Office (CO)

Next, land use activities were categorized as either higher-risk or lower-risk to groundwater after considering prohibitions and conditions within the WHP Overlay Ordinance and reviewing various documentation, including the "Guidance for Applications for State Wellhead Protection Assistance Funds Under the Safe Drinking Water Act" by the U.S. Environmental Protection Agency (EPA) Office of Groundwater Protection published in June 1987, the "Standard Industrial Classification" (SIC) code list, also published by the EPA, "Community Planning & Zoning for Groundwater Protection: A Guidebook for Local Officials" by Lillian Dean and Mark Wyckoff, 1991, and various ordinances and standards. Table 2 provides a list of high-risk land-use activities that pose potential threats to groundwater.

Table 2
High-Risk Land-Use Activities that Pose Potential Threats to Groundwater

Commercial
Analytical and clinical laboratories
Animal feedlots
Auto washes
Boat builders/refinishers
Car rental and service stations/automotive repair
Commercial establishments with fleets of trucks and cars
Concrete/asphalt/coal/tar companies
Drum recycling and cleaning
Dry cleaners and laundries
Equipment repair
Food processors/meat packers/slaughter houses
Fuel oil distributors/stores
Furniture stripping or refinishing
Gas stations
Junk and salvage yards
Motor vehicle repair/service shops
Pesticide application services/pesticide stores/retailers
Petroleum bulk storage (wholesale)
Photographic development
Printing
Salvage yards/impoundment lots
Truck or rail tanker cleaning
Wood preserving and treatment
Manufacturing
Chemical, paint, and plastics manufacturing
Furniture manufacturing
Metal manufacturing (including metal plating)
Mining operations/injection wells
Other manufacturing (textiles, rubber, glass, etc.)
Pulp and paper industry
Transportation
Airport maintenance/fueling areas
Governmental agencies with fleets of trucks and cars
Salt piles/sand-salt piles
Trucking/bus terminals
Vehicle maintenance operations (transportation/trucking, contractors/construction, auto dealers)
Utilities
Aboveground oil pipelines
Electric power generation substations
Waste Disposal
Landfills/dumps/transfer stations

Other higher-risk land-use activities are identified on the MDEQ document “Minimum Isolation Distances (From Contamination Sources and Buildings), Part 127, Act 368, P.A. 1978 And Act 399, P.A. 1976” (Attachment 1). This document specifies well isolation distances considered for the issuance of Type I well permits.

Generally, groundwater risk designations are used to help determine what land use Standards should be applied to protect groundwater as a condition for site plan approval. In addition, these Standards were designed for those land-use activities permitted within the 10-Year Capture Zones pursuant to the Wellhead Protection Capture Zones Ordinance that involve possession of a Regulated Substance exceeding 55 gallons aggregate for liquid materials or 440 pounds aggregate for dry weights.

3.0 GENERAL SITE PLAN REVIEW STANDARDS

The site plan review Standards detailed in this section apply to those facilities within Capture Zones in the City. This section is divided into five subsections: Site Design and Development or Redevelopment, Process Activities, Regulated Substance Storage Units, Fueling Establishments, and Waste.

3.1 SITE DESIGN AND DEVELOPMENT OR REDEVELOPMENT

3.1.1 CONSTRUCTION ACTIVITIES

An appropriate material and equipment maintenance and storage area shall be identified on the site plan. If construction equipment is to be temporarily stored in an open area:

- The storage site should not be located within the drip line of trees.

- The storage site shall not be within 100 feet of a watercourse, wetland, or stormwater sewer inlet(s), unless approved by the City. Runoff shall be diverted away from watercourses and wetlands.

- The construction site shall be designed and operated to prevent excess solids from being discharged into wetlands and surface waters, whether directly or via a municipal stormwater collection system.

- **Secondary containment is required for regulated substances stored in containers larger than typical household quantities during site construction activities**. These substances include, but are not limited to, fuels, oils, and lubricants. All regulated substances must be stored in a manner that diminishes the possibility of a release to soils and groundwater.

3.1.2 SOIL EROSION AND SEDIMENTATION CONTROL

Refer to Chapter 30 of the Kalamazoo Code of Ordinances “Soil Erosion and Sedimentation Control” regarding requirements to control soil erosion and sedimentation with respect to earth change activities within the City. Proper provision for water disposal and protection of soil surfaces is required 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.

3.1.3 DEWATERING

If dewatering (the temporary discharge of groundwater associated with a construction project requiring the need to maintain below grade excavation free from surface or subsurface infiltration of water) is necessary, a dewatering plan must be submitted to and approved by both the City's Environmental Services Division for water quality issues and the Engineering Division for sanitary and storm sewer capacity and condition issues. Conditional approval from the Director of Public Services or designee must be obtained prior to discharge. The plan will include items such as a map detailing pertinent dewatering activities, the proposed dewatering (pumping) rate, proposed period of dewatering activity, discharge entry point, discharge outfall location, dewatering contingency plan and emergency contact information, known historic parameters of concern (e.g., hydrocarbons, metals, volatile organic compounds, etc.), identification of known contaminated sites and any associated plumes within a radius of 1,000 feet of the dewatering points, dewatering sampling plan (frequency of sampling, parameters to be analyzed, etc.). At a minimum, Total Suspended Solids will be required to be controlled to less than 80 mg/L, routinely monitored as an indicator of effective sediment control, and reported to the City's Public Services Department, Environmental Services Division on a daily basis. Other requirements may be applicable, dependent upon site conditions and characteristics.

Sediment basins, filters, or other BMPs may be required to filter the dewatered water before it is discharged to surface water directly or via a stormwater collection system. Dewatering must be performed so that the velocity of the discharged water does not cause scouring of the receiving area. If the receiving area is a structural BMP (i.e., basin or sump), the design of the BMP should be based on the anticipated flow from the dewatered area. Sediment-laden water from cofferdams, trenches, and other areas that need to be dewatered shall be pumped through a geotextile material before the water is discharged to a watercourse. If the dewatered water is discharged through a filter to a county drain, permission must be obtained from the drain commissioner. Any proposed discharge to the sanitary sewer must be approved by the Wastewater Superintendent or designee.

The dewatering site should be inspected and its condition documented at least twice daily to ensure the pumping procedure is adequately controlling the excess water and that any filtering/sediment-reducing BMP is functioning properly (e.g., not clogged). If the BMP is not functioning properly, appropriate maintenance procedures for the specific BMP(s) must be performed immediately and/or the BMPs replaced with the appropriate new one(s).

3.1.4 FILL MATERIAL

Use of fill material containing regulated substances above any state and/or federal cleanup criteria for soils is prohibited in the 1-Year Capture Zones and the 10-Year Capture Zones. Throughout the Capture Zones where filling is required, efforts should be made to ensure the fill originates from a clean source (i.e., not contaminated with regulated substances). The fill source should be from a non-industrial area and not from sites of known or suspected contamination (i.e., MDEQ Part 201 facilities, Part 213 sites, or federal Resource Conservation and Recovery Act or Comprehensive Environmental Response, Compensation and Liability Act sites). If the source is from an agricultural area, care should be taken to ensure the fill does not include pesticides or former agricultural waste process byproducts, such as manure or decomposed organic material. Fill material should not be used from industrial and/or commercial sites where hazardous materials were used, handled, or stored or from unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil. Alternatives to using fill from construction sites include the use of fill material obtained from a commercial supplier of fill material or from soil pits in rural or suburban areas. However, care should be taken to ensure that these materials are also uncontaminated.

3.1.5 CONTAMINATED SITES

Site plans must take into consideration the location and extent of any contaminated soils and/or groundwater on the site and the need to protect public health and the environment. A depiction of the location and extent of contamination shall be submitted on or with the site plan. See Section 9.0 for discussion regarding contaminated properties.

Any site used to temporarily store contaminated soils (such as during removal of an UST) must do so in a designated area indicated on the site plan. This area should be located indoors. Alternatively, the soils/material shall be containerized in Michigan Department of Transportation (MDOT)-approved drums or covered with tarp or plastic and placed on a paved/impermeable material contained by a curb, dike, or berm. The storage area must be designed to prevent or minimize stormwater run-on to the area.

3.1.6 PARKING AREAS

Parking areas that are designed to accommodate 20 or more vehicles or exceed 6,000 square feet are considered “larger parking areas” and shall be paved with concrete, asphalt, or an equivalent smooth, impervious surface with a minimum of a 2% cross slope to prevent ponding of water. These areas should be served by an appropriate and approved stormwater treatment system as described in Section 5 “Stormwater Quality Management.” Surface areas where regulated materials are to be stored, transferred,

or otherwise have a potential use should be served with an approved treatment system. Within a 1-Year Capture Zone, the larger parking areas shall be controlled so that all runoff is directed to the collection system, prohibiting the potential migration offsite or into groundwater. Parking sites having limited or short-term use (i.e., churches or similar), with limited potential for contamination, may be granted exceptions or modifications to the above requirements where other controls or solutions will be incorporated.

3.1.7 FLOOR DRAINS AND DRY WELLS

General purpose floor drains must be connected to a public sanitary sewer system or an onsite holding tank (not a septic system) in accordance with state, county, and municipal requirements, unless a groundwater discharge permit has been obtained from the MDEQ. General purpose floor drains that discharge to groundwater or a stormwater collection system are prohibited.

Dry wells are a type of drainage well used for the underground disposal of stormwater runoff from paved areas, which include parking lots, streets, highways, residential subdivisions, building rooftops, agricultural areas, and industrial areas. Dry wells are prohibited within the 1-Year Capture Zone and within 200 feet from a Type I Public Water Supply well, and may require a pre-treatment BMP in a 5-Year Capture Zone. Dry wells must be located only in areas that receive clean water discharges and are required to be managed in accordance with Section 5 “Stormwater Quality Management Criteria.” Dry wells may also require a groundwater discharge permit from the MDEQ. The site plan must show the known and proposed location of any dry well(s).

3.1.8 WELLS

All currently functioning, proposed, and abandoned wells, including potable water wells and monitoring wells, should be indicated on the site plan.

The WHP Overlay Ordinance prohibits within any Capture Zone:

- Installation of a private water well for the purpose of drinking water or irrigation if, in the determination of the City’s Department of Public Services or the Kalamazoo County Health and Community Services Department, Environmental Health Division, public water service is reasonably available.

- Use of a private well, if said well is likely to cause an adverse impact to the public water supply.

- Installation or use of a water well not installed for the purpose of drinking water or irrigation, unless it is determined by the Department of Public Services that the well owner (or representative) has scientifically demonstrated that the well will not cause an adverse impact to the public water supply.

- Drilling for natural gas or petroleum, whether for exploration, production, or otherwise.

- Presence of an abandoned well, which is defined as any well that has either been discontinued for more than one year, is in such disrepair that its continued use for obtaining groundwater is impractical, has been left uncompleted, is a threat to groundwater resources, or is a health or safety hazard. A well shall not be considered abandoned if it has been properly plugged pursuant to the Groundwater Quality Control Act, Part 127, 1978 PA 368. When a well is plugged, formal well abandonment logs must be completed and provided to the City's Environmental Services Division, except in cases where wells were abandoned in the past and no well abandonment logs are available.

3.1.9 WELL ISOLATION DISTANCE REQUIREMENTS

Per the WHP Overlay Ordinance, "Within a capture zone, no person shall cause or allow uses or activities that would violate the terms and conditions set forth in the document 'Minimum Well Isolation Distances (From Contamination Sources and Buildings), Part 127, Act 368, P.A. 1978 and Act 399, P.A.1976' as prepared by the MDEQ, Water Division, as it may be amended." This document is presented as Attachment 1. These land use restrictions directly relate to the City's ability to replace or add new wells to its Public Water Supply System, since they are part of the permit criteria used by the MDEQ.

3.1.10 SEPTIC SYSTEMS

The construction or replacement of any privy, privy vault, septic tank, cesspool, or other facility intended or used for the disposal of domestic or non-domestic wastewater is prohibited within the 1-Year Capture Zones. Sites within the 10-Year Capture Zones must connect to the municipal sanitary sewer, where it is available. For sites where the municipal sanitary sewer is not available, all septic systems must comply with Kalamazoo County sewage disposal system requirements, including the acquisition of necessary permits. Flow restrictors and low-flow faucets for sinks and spray nozzles should be installed to minimize hydraulic loading to subsurface disposal systems. Floor drains may not be connected to septic systems. The locations of existing and proposed septic tanks and drain fields should be indicated on the site plan. Refer to Chapter 28 of the Kalamazoo Code of Ordinances "Wastewater Discharge Regulations and Enforcement Procedures" for other specific issues regarding wastewater.

3.2 PROCESS ACTIVITIES

3.2.1 REGULATED SUBSTANCE USE AREAS

The possession of regulated substances, including fuel in quantities that exceed 55 gallons aggregate for liquid materials or 440 pounds aggregate for dry weights, unless prepackaged and intended for retail sale or for commercial or household use (such as salt used in water softeners, fertilizers, pesticides, herbicides) is prohibited in the 1-Year Capture Zones and are only allowed in the 10-Year Capture Zones if engineering controls are designed and implemented consistent with the BMPs contained herein, the City's Fire Code, and applicable State of Michigan laws and regulations. Where otherwise permitted, sites where regulated substances are stored, used, or generated shall be designed to prevent spills and discharges of such materials to the environment. The storage or presence of a regulated substance in a manner in which the substance could reasonably enter the soils or groundwater is prohibited. A Spill Contingency Plan may be required. If a SCP is not available, Attachment 2 provides a SCP Template.

Floor surfaces in work areas shall be impervious to the types of materials that may be used or generated at the facility and, if necessary, should be sealed with an impermeable material. The work area floor should be pitched to an appropriate floor drain or collection area (e.g., holding tank). Alternatively, if floor drains are not used, or if they are located close to entranceways, then entrances should be designed to prevent stormwater runoff from entering the building and prevent spills from leaving the building. Curbing and internal floor berms should be used to isolate floor drains from spill-prone areas, where necessary.

Whenever possible, manufacturing and processing activities involving the possession or control of regulated substances should be conducted indoors. If indoor manufacturing/processing is not feasible, the potentially pollutant-generating activities should be segregated from nonpolluting activities and conducted on an impervious surface. The area should be covered, if possible and as appropriate. The surface should be graded to minimize run-on of stormwater and runoff of spills. The area must be adequately designed to prevent spilled regulated materials from escaping the area. Drains in these areas can be connected to the sanitary sewer, with approval and appropriate pretreatment, or to a holding tank meeting the specifications of this Standard. If potentially polluting activities cannot be covered, discharge of low-volume, high-frequency storms to the sanitary sewer should be considered.

3.2.2 LOADING/UNLOADING AREAS

Loading/unloading areas used to transfer regulated substances shall be indicated on the site plan. The areas shall be paved with concrete or another material sufficiently impervious to the materials loaded and unloaded in that area. If possible, loading/unloading docks shall be isolated from storm drains and dry

wells to prevent potential spills from contaminating stormwater or discharging to the ground. If floor drains and/or dry wells already exist, inlets must be appropriately protected during loading/unloading operations to prevent pollutants to enter the storm sewer or infiltrate within pervious surfaces. If stormwater runoff is a concern in the loading/unloading dock, and the site is located within the 1-Year Capture Zone, the area shall be covered or enclosed and be designed to reduce stormwater run-on. If the loading/unloading dock is uncovered, grading and/or berms shall directly drainage to a dead-end sump or another appropriate collection device. A positive control valve should be installed on the drain. Alternatively, at the discretion of the Site Plan Review Committee, a precipitation valve may be installed in the curb, which may be left open to drain precipitation, except during loading/unloading. If tanker trucks are used to load/unload aboveground storage tanks (ASTs) or USTs containing regulated substances, full containment of the loading/unloading area should be considered and may be required.

The storage of spill response equipment should be indicated on the site plan. Storage should be in an area accessible to loading/unloading areas where regulated substances are transferred. A Spill Contingency Plan may be required. If a SCP is not available, Attachment 2 provides a SCP Template.

3.2.3 SPILL RESPONSE EQUIPMENT

Sites intending to use, store, or generate regulated substances in quantities meeting or exceeding 55 gallons for liquids or 440 pounds for solids are required to have emergency spill response equipment and must indicate on the site plan the locations for it and other similar equipment. Spill response equipment shall be located throughout the site so that spills may be contained in storage areas, loading/unloading areas, dispensing areas, and work areas, as appropriate. The specific types of spill response equipment to be stored shall reflect the types of chemicals and petroleum products stored onsite, other engineering controls present, the potential threat to site soils/groundwater, and the location of the site within the Capture Zones. A Spill Contingency Plan may be required. If a SCP is not available, Attachment 2 provides a SCP Template.

3.2.4 AGRICULTURAL USES

Only the application of agricultural chemicals, fertilizers, mineral acids, organic sulfer compounds, etc., as used in routine agricultural operations and applied under the “Generally Accepted Agricultural Management Practices” (GAAMPs) and consistent with label directions approved by the EPA or the Michigan Department of Agriculture are allowed.

3.2.5 VEHICLE WASHING

Commercial vehicle washing must be conducted on a wash pad. Wash areas must be paved with an impervious surface and bermed or curbed to prevent stormwater run-on and wash water runoff. The wash area shall be sloped for wash water collection, which may be discharged to a wash water recycling system, directly to the sanitary sewer (with approval and appropriate pretreatment), or to a dead-end sump (from which the material may be pumped to the sanitary sewer or to an offsite treatment facility). Because wastewaters from vehicle washing represent significant flows that can hydraulically overload an oil/grit separator, any such treatment device must be sufficiently sized to accept these volumes. The wash pad areas should be covered, if possible.

The cleaning of semi-trailer and tanker truck interiors may be approved in Capture Zones, if the following standards are met:

The interior of the semi-trailer should be swept, and all debris should be collected and properly disposed.

Dry cleaning methods should be used whenever possible. If rinsing the inside of the trailer is necessary, cleaning shall be conducted over an impervious surface. Wash water must not be discharged to the storm sewer or the ground. With approval and appropriate pretreatment, rinse water may be disposed to the sanitary sewer.

Wash water from the interior of tanker trucks or rail tankers shall be pumped directly into containers for appropriate offsite disposal or, with approval and appropriate pretreatment, must be pumped directly to a sanitary sewer drain. Rail tankers may not be cleaned in the 1-Year Capture Zones, unless the wash water can be completely contained and appropriately disposed.

3.2.6 PRESSURE WASHING/STEAM CLEANING

Pressure washing and steam cleaning activities are permitted within covered, completely contained areas, particularly where these methods replace cleaning/degreasing operations that would otherwise use solvents. Pressure washing and steam cleaning may be conducted on a sealed impervious surface that is completely contained and graded toward a drain that discharges either to the sanitary sewer (with approval and appropriate pretreatment), or a holding tank (not into the storm sewer or directly to site soils or groundwater). Alternatively, steam cleaning or pressure washing facilities may have zero-discharge recycling systems equipped with oil/water separators or other treatment devices.

The MDEQ has prepared a Guidance Document on Mobile Power Washing. This document contains further details regarding BMPs for these systems. The guidance document can be obtained at: http://www.oseh.umich.edu/pdf/deq-ead-tas-powrwash.pdf.

3.2.7 COOLING WATER

Closed-loop cooling systems should be considered to eliminate cooling water discharges in Capture Zones. Alternatively, non-contact cooling water may be discharged to a storm sewer, sanitary sewer, or stream provided all federal, state, and local discharge requirements are met. Discharge of cooling water to site soils/groundwater is not permitted without City approval.

3.2.8 ROAD SALT STORAGE AND USE

All salt and associated sand mix piles must be stored on an impermeable surface and covered with a waterproof material. Inside the 1-Year Capture Zone, salt shall be stored in indoor sheds surrounded by impervious paving. Stockpiles should not be located near surface waters, in flood plains, or areas with steep slopes, and shall be designed to prevent surface water runoff. Snow containing road salt should not be brought to sites inside the 1-Year Capture Zone for disposal. Alternative deicing chemicals include calcium chloride, magnesium chloride, Calcium magnesium acetate (CMA), and products that are mixtures of chlorides and organic compounds. Environmentally friendly snow and ice removal products and procedures are encouraged.

3.2.9 MATERIAL SUBSTITUTION/POLLUTION PREVENTION

Whenever possible, sites should select non-hazardous or less-hazardous chemicals for processes such as degreasing, cleaning, and plating that have historically used toxic materials. In addition, when possible, materials such as oils should be standardized throughout a site to reduce the quantity of leftover material and mixed waste. Practices that minimize waste generation, such as countercurrent solvent cleaning, are encouraged.

3.3 REGULATED SUBSTANCE STORAGE UNITS

A regulated substance storage unit is considered to be any UST, AST, drum, carboy, or other container used for the storage of one or more regulated substance(s) including silo, bag, tank wagon, box, glass, cylinder, total bin, truck body, rail car, tanker, or tool crib when used for permanent or temporary storage of regulated substances. The following standards apply to specific types of regulated substance storage units.

3.3.1 GENERAL PROVISIONS

Regulated substance storage units containing greater than 55 gallons for liquids or 440 pounds for solids are prohibited within the 1-Year Capture Zones.

Within the 10-Year Capture Zones, regulated substance storage units containing greater than 55 gallons for liquids or 440 pounds for solids shall be indicated on the site plan and are allowed if the following standards are applied.

- Unless other sufficient measures have been implemented at the site, these regulated substance storage units shall be completely contained, isolated from floor and storm drains, have sealed surfaces, comply with fire safety regulations, and should not be accessible to unauthorized personnel. Whenever possible, regulated substance storage units should be consolidated into one location for better control of material and waste inventory. All storage units shall be properly labeled as to contents and periodically inspected for evidence of leaks, improper storage, or potential hazards that may result in a release of regulated substances being stored in or transferred into or out of the storage unit. All doors, valves, or other openings through which a release could occur must be locked or otherwise secured when not in use.

- Regulated substances should be stored inside, whenever feasible. If it is not feasible, it is required that outside storage areas be covered, preferably with a roof. A curb or berm may be required along the perimeter of outdoor storage areas to prevent the run-on of uncontaminated stormwater from adjacent areas, as well as runoff of stormwater from the storage area. The area inside the curb should slope to a drain, then to a holding tank or sanitary sewer (if approved) with a positive control such as a lock, valve, or plug.

- Regulated substances stored outdoors must be in product-tight containers that are protected from weather, leakage, accidental damage, and vandalism. Sites storing regulated substances outdoors must implement security measures that are appropriate for the material stored and the nature of the site. Measures to be implemented, as appropriate, include:

    - Fencing the regulated substance storage unit or the entire site and locking or guarding entrance gates when the storage unit/facility is not in production or is unattended.

    - Ensuring that valves permitting direct outward flow of a container's contents have adequate security measures so they remain in the closed position when in non-operating or standby status.

- Preventing unauthorized access to starter controls of pumps.

- Providing facility lighting that will assist in the discovery of releases during hours of darkness and prevention of discharges occurring through acts of vandalism.

In addition, see Appendix A of the Kalamazoo Code of Ordinances (Zoning Ordinance) 6.6F for the section "Fire and Explosive Materials."

3.3.2 SECONDARY CONTAINMENT (FOR REGULATED SUBSTANCES OTHER THAN FUEL)

Secondary containment must be provided for regulated substance storage units. Secondary-containment facilities shall be designed and constructed so that potential polluting material cannot escape from the unit by gravity through sewers, drains, or other means directly or indirectly into a sewer or stormwater collection system or to the waters of the state, including groundwater. Secondary containment shall include protective measures, such as double walls, dikes, vaults, or impervious liners (both natural and synthetic).

Exterior secondary containment provided by dikes shall be constructed of poured concrete or a pre-manufactured containment tub. Concrete-block containment is prohibited in outdoor areas because it can easily crack and does not weather well. Exterior secondary-containment areas should be capable of containing 100% of the largest vessel or 10% of the total volume of tanks in containment, whichever is larger, plus freeboard to contain precipitation from a 25-Year storm. Alternatively, the vessel may be an Underwriters Laboratories, Inc.-approved, double-walled tank. If containment is provided by a dike, the containment must be higher than the 100-year flood level. When possible and as appropriate, exterior storage of regulated substances and their containment structures should be covered to protect the containers from exposure to precipitation. If this is not possible, the base of the dike should be sloped to a collection point or sump to allow for controlled removal of accumulated stormwater or spilled regulated substances. If the dike is penetrated by a drainage or conveyance pipe, the opening must be sealed on both sides to ensure a liquid-tight penetration. Drainage pipes must have a lockable valve. This valve must be kept closed and locked under normal conditions, until a determination is made by a trained individual that the discharge of the stormwater is acceptable (this may require a Stormwater Permit with Required Monitoring).. Discharge of accumulated stormwater from a secondary-containment structure containing petroleum products shall be pre-treated, as necessary, to meet all applicable water quality standards prior to discharge to soils, surface water, or a stormwater collection system.
Secondary containment for indoor ASTs may be provided by the building, as long as discharge from the AST cannot escape the building via floor drains, entrances, or any other means, and no specific

containment is required by other regulations. Although not permitted for outdoor containment structures, concrete-block containment may be used indoors with the City's approval.

For other specific requirements, refer to the Appendix A – Zoning Ordinance of the Kalamazoo Code of Ordinances, including 6.6G (Hazardous Materials) and H (Materials and Waste Handling), and 8.3.H.7.v requiring that any utilizing, storing, or handling of hazardous material must provide secondary containment facilities and documentation of compliance with all appropriate state and federal regulations.

3.3.3 ASTs

ASTs shall be certified, installed, operated, maintained, closed, or removed in accordance with MDEQ regulations and the local fire code. All ASTs must be indicated on the site plan. A copy of any required local or state AST registration document should be provided to the City's Environmental Services Division.

All ASTs containing flammable or combustible materials must meet the requirements of the MDEQ Rules for the Storage and Handling of Flammable and Combustible Liquids, and be found on the MDEQ website in the section LARA, Fire Services, Storage Tank Division.

No ASTs shall be located in direct contact with site soils. The tank should have sufficient ground clearance for visual inspection of the bottom of the AST for deterioration, unless the size of the AST prevents raising the tank, as required, or if the AST is a concrete-vaulted tank.

Any AST that is open to vehicle damage must be protected against impact with physical barriers. Any impervious dike utilized as secondary containment meets the requirements for a physical barrier. Objects used as physical barriers should be included in the site plan.

For ASTs not subject to the MDEQ Rules for the Storage of Flammable and Combustible Materials, the following conditions apply:

- Regulated substances must have secondary containment meeting the standards of Section 3.3.

- Tank piping must be located within secondary containment whenever possible and must be located below the product level.

- Piping must be designed so that liquid will not continue to flow by gravity or siphoning from the storage tank if the piping or fittings break.

- Fuel filling ports must have secondary containment beneath the fill area to prevent a release from reaching the pervious ground surface or storm drain/inlet.

- Tanks must be equipped with a shut-off valve, preferably an automatic shear valve, with the shut-off located inside the tank.

- For flood control, all exterior ASTs should have a monitoring system and secondary standpipe above the 100-year flood-control level for monitoring and recovery.

- Fill-pipe inlets must be above the elevation of the top of the storage tank.

- ASTs must have overfill protection, such as a visual liquid-level-indicator gauge or alarms.

3.3.4 USTs

USTs are prohibited within the 1-Year Capture Zones if 55 gallons aggregate for liquid material or 440 pounds aggregate for dry weights are exceeded and shall not be used in the 10-Year Capture Zones unless the use of ASTs is impractical. The USTs must conform to EPA, MDEQ, and local fire code requirements. The minimum requirements are outlined in the Proposed Rules for the Storage and Handling of Flammable and Combustible Liquids and Michigan Underground Storage Tank Rules. MDEQ requirements include such protective measures as secondary containment within Wellhead Protection Areas.

If new tanks are to be installed, a copy of all registration documents shall be provided to the City's Environmental Services Division. If existing USTs are to be closed, all MDEQ closure procedures must be followed, and a copy of the closure documents should be submitted to the City's Environmental Services Division. All current and proposed USTs must be indicated on the site plan.

3.4 FUELING ESTABLISHMENTS

Fueling establishments where storage, handling, or use of fuels exceed 55 gallons aggregate including, but not limited to, gasoline, diesel, kerosene, and jet fuel are prohibited in the 1-Year Capture Zones. ASTs and USTs are prohibited in the 10-Year Capture Zones, unless such tanks meet the minimum requirements outlined in the Proposed Rules for the Storage and Handling of Flammable and Combustible Liquids and Michigan Underground Storage Tank Rules. These rules require the use of secondary containment for storage tank systems within wellhead protection areas.

The fuel dispensing area must be paved with concrete or an equivalent smooth impervious surface (not asphalt) with a suggested 2 to 4% slope to prevent ponding of stormwater. The fuel dispensing area must be covered at least as far as the length that the hose and nozzle assembly may be operated, plus one foot. The cover must not drain onto the fuel dispensing area. The covered fuel dispensing area must be separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. Drains at the site should be labeled to indicate whether they flow directly to the sanitary sewer or storm sewer or if they flow through an oil/water separator. All stormwater shall be managed in accordance with Section 5.0.

All fuel dispensing nozzles should have automatic shut-off mechanisms to help prevent overfilling. Spill response equipment should be stored in the fuel dispensing area. The proposed location of this equipment should be indicated on the site plan.

ASTs and USTs at fueling areas must be in compliance with local, state, and federal regulations and comply with the Standards detailed in other portions of this document. In addition, when fueling is not the primary land use, whenever possible, fueling should be conducted at an offsite location better equipped to handle fuel and spills properly. If equipment/vehicle fueling is conducted onsite, fueling should be conducted in properly designed, designated areas, as indicated on the site plan.

The Standards detailed in this section also apply to existing, nonconforming fueling establishments in Capture Zones.

In addition, Appendix A of the Kalamazoo Code (Zoning Ordinance), Sections 4.2 N and O provide general use-specific standards for gasoline and fuel sales, with and without vehicle service or repair.

3.4.1 HOLDING TANKS

Floor drains should discharge to holding tanks if they are located where municipal sanitary sewers are not available, subsurface disposal systems are failing, or they are higher-risk facilities located in Capture Zones. Holding tanks should adhere to the Standards listed for ASTs and USTs, including secondary containment, unless otherwise approved by the City.

3.4.2 TRUCKS, TRAILERS, TANKERS, RAIL CARS, AND TOOL CRIBS

The possession of regulated substances in trucks, trailers, tanker trucks, rail cars, tool cribs, or similar vehicles is prohibited in the 1-Year Capture Zones where possession or control of a regulated substance

exceeds 55 gallons aggregate for liquid materials or 440 pounds aggregate for dry weights, unless allowed pursuant to the WHP Overlay Ordinance.

In the 10-Year Capture Zones, the possession of a regulated substance stored in trucks, trailers, tanker trucks, rail cars, tool cribs, or similar vehicles is prohibited, unless secondary containment is provided that is sufficient to contain the entire contents of the largest distinct compartment of the container. Sites must also implement appropriate security measures, such as those detailed in Section 3.3.1.

3.5 WASTE

3.5.1 SOLID WASTE

Solid-waste dumpsters must have lids and be stored on a paved surface, unless otherwise approved by the City. All dumpsters must be indicated on the site plan Refer to the Code of the City of Kalamazoo, including Chapters 15A and 31, for other specific requirements.

3.5.2 SCRAP METAL

Dumpsters and drums containing scrap metal that may contain residual chemicals or oils shall be stored on an impervious surface in an enclosed area or covered with an impervious liner to prevent accumulation of stormwater, whenever possible. Where stormwater may otherwise accumulate in the scrap metal collection units, drain plugs should be left in place to prevent discharge onto the ground. If necessary, such collection units should be located on an impervious surface with a separate collection catch basin containing an oil/grit separator that discharges to the municipal sanitary sewer (with prior approval and pretreatment) or a holding tank.

3.5.3 HAZARDOUS WASTES

Regulated Substances exceeding 55 gallons aggregate for liquids and 440 pounds aggregate for solids are prohibited within the 1-Year Capture Zones, and only allowed in the 10-Year Capture Zones if the site meets all applicable performance Standards contained herein.

If the site will generate, transport, recycle, or treat hazardous waste, the applicant shall indicate in the Water Resources and Environmental Protection Questionnaire the site's expected waste management status (e.g., small-quantity generator). Proposed hazardous waste accumulation areas should be indicated on the site plan. Hazardous waste management techniques must comply with all applicable federal, state, and local requirements.

When possible, hazardous-waste-generating operations at the site should be physically segregated from other operations. Work areas and all storage areas containing hazardous waste shall be located within a containment area with appropriately sealed floors and no direct access outside the facility.

Refer to the City of Kalamazoo Code of Ordinances, including Chapter 6, Sections 6.6G and 6.6H, for other specific requirements.

3.5.4 LIQUID WASTE PONDS

Open liquid-waste ponds are not permitted in Capture Zones without City approval. Any such ponds must be engineered to be protective of the site environment, particularly site groundwater, and comply with all applicable state and federal rules and regulations.

4.0 LAND USE SPECIFIC SITE PLAN REVIEW STANDARDS

This section highlights specific standards for certain land-use types identified in the Ordinance as being prohibited in specific Capture Zones or requiring site-specific review. All land uses should incorporate the general standards detailed in Section 3.0. Other use-specific standards not contained herein may be required and subsequently adopted, if determined to be a generally accepted industry standard.

4.1 BULK MIXING OF FERTILIZERS AND PESTICIDES

Lawn, garden, pesticide, and agricultural services with onsite bulk mixing or blending of fertilizers, pesticides, and other industry-related chemicals for commercial application are prohibited in the 1-Year Capture Zones when onsite quantities of these chemicals exceed 55 gallons aggregate for liquid materials or 440 pounds aggregate for dry weights.

The following standards apply to all facilities conducting bulk mixing of fertilizers, pesticides, and related materials within Capture Zones, including existing nonconforming sites in the 1-Year Capture Zones:

- Storage areas must be designed to protect these chemicals from possible theft, unauthorized use by untrained personnel, and temperature extremes. Outdoor storage areas shall be located within a permanently fenced area and should have a permanent roof to prevent precipitation and sunlight from entering the storage area. All storage areas shall have an impervious surface and secondary containment. Floor drains shall not be located in storage areas without City approval.

- Pesticides, fertilizers, and similar chemicals should be stored separately to minimize the possibility of cross-contamination in case of fire or other disaster. Smaller facilities may choose to construct a containment area with multiple storage compartments for pesticides and fertilizers.

- Mixing areas for pesticides should be located indoors or mixing should be done at the application site. Onsite mixing and loading areas shall have a spill-containment surface. For liquids, this surface shall be curbed, bermed, or sloped to contain spillage and drain into an impermeable liquid-tight containment structure. For non-liquid materials, this surface should be constructed to prevent water from flowing into the containment system.

- Facility piping from bulk storage tanks shall be installed aboveground to facilitate inspection for leaks.

- Truck rinse/cleaning areas shall be conducted within a containment area. The floor must be sealed with a suitable impermeable material. Washing areas shall drain into a watertight containment structure.

The application of agricultural chemicals, fertilizers, mineral acids, organic sulfur compounds, etc., as used in routine agricultural operations are not allowed unless consistent with existing Generally Accepted Agricultural Management Practices (GAAMPs), Michigan Department of Agriculture, and consistent with label directions approved by the EPA or Michigan Department of Agriculture.

4.2 DRY CLEANING FACILITIES

Dry-cleaning facilities are prohibited in the 1-Year Capture Zones where possession or control of a regulated substance exceeds 55 gallons aggregate for liquid materials or 440 pounds aggregate for dry weights.

The following standards apply to all dry-cleaning facilities within the Capture Zones, including existing non-conforming sites in the 1-Year Capture Zones:

- Documentation of compliance with MDEQ dry-cleaning regulations must be provided to the City upon request.

- The dry-cleaning area should be isolated from other site operations.
- Dry cleaners must provide secondary containment for machines containing solvents. The containment area should be impermeable and capable of holding 110% of the largest possible spill and should prevent the spill from reaching the sanitary sewer, storm drains, or soil.

The following BMPs should be considered and implemented whenever possible:

- Traditional dry-cleaning solvents may be replaced by petroleum solvents with a flash point greater than 140 degrees and with a specific gravity less than 1.0. These solvents present a lower fire hazard and are less mobile if released to the environment.

- Dry-to-dry machines are preferred to transfer machines because of the elimination of the need to transfer solvent-laden garments from a washer unit to a dryer unit, which reduces solvent vapor loss.

- A hamper enclosure or a room enclosure of impermeable construction may be installed to reduce solvent release during transfer.

- Distillation equipment designed to allow still bottoms to be removed without opening the still is preferred.

4.3 FUELING ESTABLISHMENTS

Fueling establishments where storage, handling, or use of fuels exceed 55 gallons aggregate including, but not limited to, gasoline, diesel, kerosene, and jet fuel are prohibited in the 1-Year Capture Zones. ASTs and USTs are prohibited in the 10-Year Capture Zones, unless such tanks meet the minimum requirements outlined in the most recent State of Michigan Rules for the Storage and Handling of Flammable and Combustible Liquids and Michigan Underground Storage Tank Rules. These rules require the use of secondary containment for storage tank systems within wellhead protection areas. Required standards include, but may not be limited to, the following.

- The fuel dispensing area must be paved with concrete or an equivalent smooth impervious surface (not asphalt) with a suggested 2 to 4% slope to prevent ponding of stormwater. The fuel dispensing area must be covered at least as far as the length that the hose and nozzle assembly may be operated, plus one foot. The cover must not drain onto the fuel dispensing area. The covered fuel dispensing area must be separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. Drains at the site should be labeled to indicate whether they flow directly to the sanitary sewer or storm sewer or if they flow through an oil/water separator. All stormwater shall be managed in accordance with Section 5.0.
- All fuel dispensing nozzles shall have automatic shut-off mechanisms to help prevent overfilling. Spill response equipment should be stored in the fuel dispensing area. The proposed location of this equipment shall be indicated on the site plan.

- ASTs and USTs at fueling areas must be in compliance with local, state, and federal regulations and comply with the Standards detailed in other portions of this document. In addition, when fueling is not the primary land use, whenever possible, fueling should be conducted at an offsite location better equipped to handle fuel and spills properly. If equipment/vehicle fueling is conducted onsite, fueling should be conducted in properly designed, designated areas, as indicated on the site plan.

The Standards detailed in this section also apply to existing, nonconforming fueling establishments in Capture Zones.

4.4 FURNITURE STRIPPING OR REFINISHING

The use of a site for furniture stripping or refinishing is prohibited in a 1-Year Capture Zone, if the site possesses a regulated substance exceeding 55 gallons aggregate for liquids and 440 pounds aggregate

for solids. If the use is allowed as consistent with the WHP Overlay Ordinance, the use may be allowed within the 10-Year Capture Zones, if it meets all applicable standards contained in this document. In addition, the following minimum standards should be attained to gain this approval:

- Chlorinated hydrocarbons, such as methylene chloride and tetrachloroethylene, which have a specific gravity greater than 1.0, should be avoided whenever possible. Replacements can include solutions containing either dimethylformamide and xylene or dimethyl adipate, dimethyl glutarate, and hydrated aluminum silicate. Other stripping agents are available that use a methylene chloride/phenol solution diluted with water, which reduces the quantity of methylene chloride used.

4.5 SCRAP AND SALVAGE OPERATIONS

Scrap and salvage operations including, but not limited to, those related to auto, appliance, and machine parts are prohibited in the 1-Year and 10-Year Capture Zones.

The WHP Overlay Ordinance, Section 4.2Y contains Use-Specific Standards related to scrap and salvage operations. The following Standards apply to all scrap and salvage operations located within Capture Zones including existing non-conforming sites in the 1-Year and 10-Year Capture Zones:

- The site plan shall be designed to consolidate, contain, and collect differing sources of hazardous substances into manageable point sources. For efficiency, and to prevent contamination of areas not specifically designed for certain activities, the site should be segregated into specific areas especially equipped for receiving, holding, dismantling, cleaning, inventory flow, parts storage, core storage, fuel storage, special waste storage, crushing, sales, shipping, receiving, and the office (as applicable to the proposed use). There should be a logical relationship between these areas so that salvaged materials flow smoothly from area to area and eventually offsite.

- The receiving area shall be designed for temporary storage prior to any dismantling or transfer to a longer-term storage area. This area shall have an impervious surface and be able to sufficiently contain damaged, leaking items. Fluid-containing items, including vehicles, should be inspected for leaks or unwanted contents at the time of receiving.

- Any fluid removal from salvaged items shall be conducted, as soon as possible after receiving the item, in an area equipped to drain fluids into appropriate collection containers.

- Any dismantling of fluid-containing items shall be conducted in an area equipped to drain fluids into appropriate collection vessels. The area must be able to contain spills from these vessels and from the work area .

- Steam cleaning of parts shall be conducted only when absolutely necessary and only in an area capable of fully containing associated wastewater for appropriate disposal.

- The site must have an established secure area to store certain components of vehicles and other materials that pose special hazards, such as mercury switches, air-bags containing sodium azide propellants, lead-acid batteries, tires, and oily rags. The site also must be able to accommodate storage of various fluids, which, depending on items received and processed, could include gasoline, diesel fuel, motor oil, transmission oil, power steering fluid, brake fluid, hydraulic fluid, differential fluid, antifreeze, windshield washer fluid, refrigerants, battery acid, cleaning solvents, and contaminated water. Waste fluid storage areas must conform with the Standards established in earlier portions of this document.

- Once all fluids have been drained and there is no more possibility of regulated substances reaching the ground, salvaged items may be stored in a long-term storage area until the item is sold or otherwise disposed.

- Scrap vehicles or other units brought into a commercial junk yard located within the Capture Zone must have all fluids removed in accordance with current federal, state, and local regulations before onsite crushing. However, the crushing area must be adequately contained to capture any residual fluids .

- Certain parts that can be remanufactured or rebuilt have intrinsic value, unless seriously damaged. These parts are removed and stored prior to being sold and will usually contain fluids and lubricants. Such parts shall be stored on an impervious, contained surface.

- Concrete or asphalt surfaces at junk and salvage yards must be properly designed to minimize cracking as they age. These surfaces are required to be sealed with epoxy or another chemical resistant material, as necessary.

4.6 MOTOR VEHICLE REPAIR/SERVICE SHOPS AND/OR BODY REPAIR

Motor vehicle repair/service shops and body repair shops are prohibited in the 1-Year Capture Zones where the possession or control of a regulated substance exceeds 55 gallons aggregate for liquid

materials or 440 pounds aggregate for dry weights. See the WHP Overlay Ordinance for relevant Use-Specific Standards and other conditions of use.

The following Standards apply to all motor vehicle repair/service shops and/or body repair shops operating within the Capture Zones, and the existing non-conforming sites in the 1-Year Capture Zones:

- Floor drains in service bays and vehicle washing areas must either be connected to a holding tank with a gravity discharge pipe, to a sump that pumps to a holding tank, or to an appropriately designed oil/grit separator that discharges to a municipal sanitary sewer. Also see Section 3.1.6.

- Vehicle washing is encouraged to be conducted at a commercial car wash, especially when cars only need to be washed occasionally. If vehicle washing is conducted regularly, it should be done either in a wash bay or on a wash pad, in accordance with the Standards detailed in Section 3.2.5.

- Service bay floors and service pits must be constructed of concrete and sealed with an impervious material to facilitate clean-up without using solvents . Also see Section 3.2 and 3.3 for other relevant standards.

- Areas where vehicles are stored or repaired must have provisions for containment of vehicle leaks and shall be paved with an impervious material. Also see Sections 3.2 and 3.3 for other relevant standards.

- Parts cleaning and degreasing should be isolated from other operations, preferably located within a containment area with no direct access outside the facility, and the floor must be sealed with a suitable impermeable material. Also see Sections 3.2 and 3.3 for other relevant standards.
- Auto body painting shall be done in a separate, secure area with no floor drains. Also see Sections 3.2 and 3.3.

4.7 PLATING AND ANODIZING

Metal plating, polishing, etching, engraving, anodizing, and similar processes are prohibited in the 1-Year Capture Zones where the possession or control of a regulated substance exceeds 55 gallons aggregate for liquid materials or 440 pounds aggregate for dry weights. Also see Sections 3.2 and 3.3 for other relevant standards.

The following Standards apply to all plating, polishing, etching, engraving, anodizing, and similar facilities within the Capture Zones, and the existing non-conforming sites in the 1-Year Capture Zones.

Facilities shall minimize or eliminate the use of particularly hazardous plating chemicals in accordance with prevailing industry BMPs. For example, the following chemical replacements should be implemented whenever possible:

- Replace hexavalent chromium solutions with trivalent chromium solutions (UME, website).

- Replace cadmium plating with zinc-nickel plating (UME, website).

- Substitute persulfate with sulfuric peroxide for copper etching where technically feasible (UME, website).

- Eliminate terpene usage by implementing a "no-clean" technology and glycol ethers usage by implementing a water-based process.

- Substitute cyanide plating solutions with alkaline zinc, acid zinc, acid sulfate copper, pyrophosphate copper, alkaline copper, copper fluoborate, electroless nickel, ammonium silver, halide silver, methanesulfonate-potassium iodide silver, amino or thio complex silver, no free cyanide silver, cadmium chloride, cadmium sulfate, cadmium fluoborate, cadmium perchlorate, gold sulfite, and cobalt-hardened gold (UME, website).

- Ion vapor deposition of aluminum may be used for corrosion protection in place of cadmium plating.

- Replace vapor degreasers, typically using trichloroethylene or 1,1,1-trichloroethane, with aqueous or semi-aqueous based cleaning systems.

The following process-related practices should be considered for implementation:

- Use deionized water in place of tap water to facilitate recycling and to minimize the generation of sludges.

- Reduce drag-out by one or more of the following methods: use wetting agents to decrease surface tension in the tank; lower the concentration of plating bath to the minimum possible; reduce the plating bath viscosity with higher bath temperature; proper rack and barrel design; use drip bars; increase drain time over the process tanks; decrease withdrawal rate of parts from the plating bath; shake, vibrate, or pass the parts through an air knife; angle drain boards between tanks; and/or install drainage boards between tanks.

- Install overflow systems on process baths for make-up water and flow restrictors on rinse tanks to control the flow rate of water.

- Reduce the frequency of bath dump by using filtration to remove suspended solids.

- Recover metals from solution using an electrowinning process.

- Regenerate the plating bath by activated carbon filtration to remove built-up organic contaminants.

- Conserve water by methods such as: using countercurrent or cascade rinse tank arrangements, installing a closed-loop system for rinse water, using spray rinsing, or rinse water agitation.

4.8 TRUCKING AND BUS TERMINALS

Trucking and bus terminals are prohibited in the 1-Year Capture Zones where the possession or control of a regulated substance exceeds 55 gallons aggregate for liquid materials or 440 pounds aggregate for dry weights .

The following standards apply to all trucking and bus terminals within the Capture Zones, including existing non-conforming sites in the 1-Year Capture Zones:

- All truck and bus parking at terminals must take place on an impermeable surface, except where otherwise approved by the City. In particularly high-risk areas, grading to a containment area (holding tank, curbing, etc.) may be required to reduce impact of potential leaks or spills in the area.

- If fueling takes place at the terminal, all requirements in Section 3.2 must be followed, in addition to those Standards described for ASTs and USTs in Sections 3.3 and 3.4.

- Vehicle maintenance must be conducted indoors in a contained area or offsite. Also see Sections 3.2 and 3.3.

- If onsite cleaning of trucks or buses is proposed to be conducted, full containment of wash water is required. Also see Sections 3.2 and 3.3.

- Onsite painting of trucks/buses is not permitted without City approval. Also see Sections 3.2 and 3.3.

- If regulated substances will be loaded on/off trucks or other vehicles, it is required that this activity be conducted on an impervious surface. Spill response equipment must be readily accessible to the loading/unloading area. Also see Sections 3.2 and 3.3.

5.0 STORMWATER MANAGEMENT CRITERIA

The general objectives of stormwater quality management in the City are to achieve predevelopment conditions with respect to stormwater runoff rates and volume to reduce/control flooding, maintain or increase the quality of surface water and groundwater resources, and maintain compliance with its Municipal Separate Storm Sewer System (MS4) Stormwater Program National Pollutant Discharge Elimination System (NPDES) Permit and associated Certificate of Coverage (COC). It is also recognized that the quality and sustainability of the City's drinking water (groundwater) resources can depend to some extent on the management of stormwater runoff.

Some general strategies for minimizing stormwater volume and improving stormwater quality management that should be included wherever possible are listed below:

- Accommodate stormwater that complements the natural drainage patterns, maintains the integrity of stream channels for both their drainage and biological functions, and protects wetlands.

- Reduce or maintain impervious surface area.

- Prevent erosion and sedimentation.

- Provide naturalized stormwater treatment for parking lot runoff using bioretention basins, rain gardens, filter strips, and/or other practices that can be integrated into landscaped areas and traffic islands where allowed and appropriate.

- Direct rooftop runoff to pervious areas such as yards, open areas, or vegetated areas (e.g., rain gardens), thus avoiding rooftop runoff to the roadway and stormwater collection system.

- Use native vegetation, where practical, to reduce the need for chemical applications and to enhance plant root absorption of infiltrated stormwater. Non-vegetative stormwater treatment structures will be incorporated, if naturalized treatment systems are not practical or consistent with the Standards discussed below.

- Maintain or increase groundwater recharge by allowing non-polluted stormwater infiltration in designated areas (e.g. non-WHPAs).

5.1 KEY DEFINITIONS

Best Management Practice (BMP): A structural or non-structural practice or combination of practices that are designed to prevent or reduce stormwater runoff and/or associated pollutants.

Bioretention (Rain Gardens): Shallow surface depressions planted with specially selected native vegetation to capture and treat stormwater runoff from rooftops, parking lots, and streets.

Buffer Strip: A defined zone of selected plantings along a surface water feature capable of filtering stormwater.

Catch Basin: A solid-walled stormwater inlet to the stormwater collection system that includes a sump to capture coarse sediments.

Channel Protection Performance Standard: Criteria that requires maintaining at 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 event.

Constructed Filter: Structures or excavated areas containing a layer of sand, compost, organic material, peat, or other media that reduce pollutant levels in stormwater runoff by filtering sediments, metals, hydrocarbons, and other pollutants.

Detention: The temporary storage of stormwater runoff to control peak discharge rates and provide gravity settling of sediments.

Detention Basin: A constructed basin that temporarily stores water before discharging into a surface water feature (e.g., dry basin: <24 hour drain-time; extended dry basin: 24-40 hours drain-time; and wet detention basin: permanent pool of water).

First Flush: The delivery of a highly concentrated pollutant loading during the early stages of a storm due to the washing effect of runoff on pollutants that accumulated on the land.

Flood Control Volume: The stormwater volume detained or infiltrated to protect downstream areas from flooding.

Green Roofs: Conventional rooftops that include a thin covering of vegetation allowing the roof to function more like a vegetated surface.

Groundwater Recharge: The replenishment of existing natural water bearing subsurface layers of porous stone, sand, gravel, silt or clay via infiltration.

Impervious Surface: A surface that prevents the infiltration of water into the ground such as roofs, streets, sidewalks, driveways, parking lots, and highly compacted soils.

Infiltration Practices: Natural or constructed land areas using permeable soils that capture, store, and infiltrate the volume of stormwater runoff into surrounding soil. Examples include but are not limited to dry wells, infiltration basins, infiltration trenches, and subsurface infiltration beds.

Infiltration/Retention Basin: A facility without a positive outlet in which stormwater runoff is collected and allowed to infiltrate into the ground.

Manufactured Treatment Devices: A pre-fabricated stormwater treatment structure utilizing settling, filtration, absorptive/absorptive materials, vortex separation (hydrodynamic separator), vegetative components, and/or other appropriate technology to remove pollutants from stormwater runoff.

New Jersey Corporation for Advanced Technology (NJCAT) Program: A private/public partnership that pools the best talents and diverse resources of business and industry, entrepreneurs, university research centers, utilities and government to promote the development and commercialization of exciting, new energy and environmental technologies, including the verification of stormwater MTDs.

New Jersey Department of Environmental Protection (NJDEP) Standard for Manufactured Treatment Devices: A list of third-party certified Manufactured Treatment Devices (MTDs) that were laboratory and/or field tested by the NJCAT Program and approved by the NJDEP to serve as acceptable BMPs. The most current listing available will be used as the list of acceptable MTDs for use in the City of Kalamazoo for removing pollutants from stormwater runoff.

Peak Discharge Rate: The maximum instantaneous rate of flow (volume of water passing a given point over a specific duration (such as cubic feet per second) during a storm, usually in reference to a specific design storm event.

Pervious Pavement: Infiltration technique that combines stormwater infiltration, storage, and structural pavement consisting of a permeable surface underlain by a storage reservoir.

Pretreatment: The additional measures taken to protect groundwater and/or surface water quality by removing pollutants from collected stormwater beyond those required to adequately collect and remove stormwater. Typically, pretreatment is accomplished by a BMP designed to provide controlled removal of oils and grease, course to fine sediments, and may provide for a containment area in the case of an accidental spill or other release.

Runoff: That portion of precipitation that does not infiltrate or evaporate but runs off to a surface water feature or stormwater collection system.

Sediment Basin: A man-made depression in the ground surface where runoff is collected and stored to allow suspended solids to settle out. Sediment basins may be wet or dry.

Sediment Forebay: A small, separate storage area located upstream to the inlet to a stormwater facility used to trap and settle incoming sediments.

Sediment Sump: A constructed sump or surface depression used to trap and settle incoming sediments. Generally smaller than a sediment basin or forebay.

Spill Containment Cell: A BMP designed to provide controlled removal of oils and grease, course to fine sediments, and other subject pollutants to protect groundwater and surface water resources, and to provide for a containment area in the case of a spill or other pollutant release.

Spill Containment Volume: The containment volume of stormwater required to protect groundwater and surface water from a release of regulated substances.

Stormwater Filter: An open drainage channel or depression, explicitly designed to filter runoff through a self-contained bed of sand to provide water quality treatment and spill containment.

Vegetated Filter Strip: A permanent, maintained strip of vegetation designed to slow runoff velocities and filter out sediment and other pollutants from stormwater.

Water Quality Swale: An open drainage channel or depression with an impermeable liner, explicitly designed to filter runoff through a self-contained bed of sand to provide water quality treatment and spill containment.

Water Quality Treatment Volume Standard: Criteria that requires a stormwater treatment volume that is intended to reduce or prevent water quality impacts of stormwater runoff by capturing and treating the initial “first flush” volume expected to contain the majority of pollutants.

5.2 UNIFORM STORMWATER STANDARDS

Project Site Size

For the purposes of Sections 5 and 6, a site:

- < ½ acre (21,780 square feet) is considered a "small site";
- ≥ ½ acre (21,780 square feet) up to 1 acre is a "medium site";
- ≥ 1 acre is considered a "large site"; and
- Parking lot(s) with a cumulative total of ≥ 20 parking places and/or exceeding a 6,000-square-foot area is considered a "larger parking area."

Required Stormwater Runoff Calculations and Associated Information

For all projects, the Uniform Stormwater Standard 1: Water Quality Treatment Volume Worksheet and the Uniform Stormwater Standard 2: Channel Protection Volume Worksheet are required to be completed. Also, if Manufactured Treatment Devices (MTDs) are being proposed for the site, the (MTD) Worksheet is required. In addition, the following information must also be provided on the Site Plan or as an attachment to the Site Plan: Percentage and volume of stormwater runoff proposed to be infiltrated; percentage and volume of stormwater runoff to be discharged to City storm sewer; percentage and volume of stormwater runoff to be discharged *directly* to surface water; and off-site surface water features (river, creek, pond) to *directly* receive stormwater runoff.

STANDARD 1: A water quality treatment runoff volume of one-inch generated from the entire site that contributes to runoff is required for medium sized sites, large sites, and those with larger parking areas. One inch also equals the 90 Percent Non-Exceedance Storm based on the closest weather station (Gull Lake). To calculate the *volume* in cubic feet of one inch of stormwater runoff: Multiply area contributing stormwater runoff (square feet) by 1/12 feet (0.083).

For the purpose of selecting the appropriate size of a stormwater Manufactured Treatment Device (MTD), the Water Quality Treatment F*low Rate* (Wq) shall be calculated based on the Rational Method Equation: Wq = CIA, where

Wq = Discharge in cubic feet per second (cfs)

C = Runoff coefficient depending on the characteristics of the drainage area
I = Rainfall intensity in inches/hour
A = Drainage area in acres

The runoff coefficient (C) shall be a weighted average that is based on the percentage of different surface types shown in the Uniform Stormwater Standard 1: Water Quality Treatment Volume Worksheet.

The rainfall intensity (I) to be used shall be 1.44 inches/hour (using 0.72 inches of the 1-year/30-minute storm for the area that represents a treatment volume equivalent to the 90 percent annual non-exceedance storm).

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

In addition:

- The MTD shall be designed to treat 100% of the flow without bypass at the calculated water quality treatment flow rate.
- The storm pipe shall be designed at a 10-year storm event.
- The MTD shall 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 storm sewer, hydraulics, etc.

To meet the objective of Standard 1, the BMP method(s) selected to treat the water quality volume shall be designed on a site-specific basis to achieve a minimum of 80 percent removal of Total Suspended Solids (TSS), as compared with uncontrolled runoff, or a discharge concentration of TSS that does not exceed 80 mg/L. Many BMPs are sufficient individually to achieve the required removal of TSS, or compliance can also be achieved through the use of a system of BMPs that cumulatively, reach the 80% reduction factor. **If MTDs are selected as BMPs, they are required to be NJCAT verified and NJDEP certified to satisfy the Water Quality Treatment Volume Standard.** 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.

The effective removal of TSS and implementation of other stormwater control strategies by other proposed BMPs will be estimated by reference sources such as: “Low Impact Development Manual for Michigan,” SEMCOG, 2008; “Non-Point Source Best Management Practices Manual,” MDEQ, 2014;

"Urban Runoff BMP Pollutant Load Reduction Worksheet Calculator," MDEQ, 1999; and any other City of Kalamazoo acceptable industry standard technical manuals used for estimating stormwater pollutant load reductions by BMPs. **The Uniform Stormwater Standard 1: Water Quality Treatment Volume Worksheet must be prepared and submitted to demonstrate compliance with this Standard.**

STANDARD 2: 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 event, or 2.37 inches (Source: Rainfall Frequency Atlas of the Midwest, Bulletin 71, Midwestern Climate Center, 1992). **This standard is required for medium and large sites. If the post-development volume of runoff is equal to or less than the volume of runoff from the existing site then 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.

Compliance with this requirement for the medium and large sites is determined by calculating the existing ("pre-development") and post-development runoff volume and rate for the 2-year and smaller events. If the post-development volume or rate exceeds the existing volume or rate, then appropriate controls or design changes shall be implemented to make post-development runoff volume and rate equal to or less than the existing levels for all storms up to the 2-year, 24-hour event. If site conditions challenge or prohibit feasibility of meeting this standard, the applicant should consider the incorporation of green infrastructure requirements. If extended detention is used as a post-construction stormwater runoff control, additional BMPs will likely be needed to maintain the pre-development volume and peak rate levels for all storms up to the 2-year, 24-hour event. The Rational Method Equation will be used to calculate whether BMPs are necessary to meet the Channel Protection Performance Standard.

The appropriate use, implementation, and estimated effectiveness stormwater control strategies by proposed BMPs will be determined by reference sources such as: "Low Impact Development Manual for Michigan," SEMCOG, 2008, and "Non-Point Source Best Management Practices Manual," MDEQ, 2014, and any other City of Kalamazoo acceptable industry standard technical manuals. **The Uniform Stormwater Standard 2: Channel Protection Volume Worksheet is required to demonstrate compliance with this Standard.**

STANDARD 3: A **flood control performance standard** is required to ensure stormwater entering the City MS4 is ≤ than the existing (pre-development) conditions and on-site retainage is properly designed to protect neighboring properties. The City Engineer or designee will review each site plan for approval on a case-by-case basis to determine if the proposed strategy meets industry standards and is appropriate for the specific site.

STANDARD 4: On large sites, a minimum 25-foot **naturally vegetated buffer** system shall be incorporated along all perennial streams, wetlands, and other surface water features to protect water quality, reduce erosion and sedimentation, reduce the potential for flooding, and enhance aesthetics and wildlife habitat. On medium sites, a 20-foot buffer is required; on small sites, a 15-foot naturally vegetated buffer is required.

STANDARD 5: All reasonable efforts will be made to **maintain and protect wetlands**. If loss cannot be avoided, wetland mitigation must be accomplished on the same site, be pre-approved by the City, and must adhere to the standards as described in the Wetland Mitigation Section under Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended – regardless of the size of the wetland.

STANDARD 6: All reasonable efforts will be made to **maintain and protect the floodplain** area. If a loss cannot be avoided, a floodplain mitigation of a 2:1 ratio of new floodplain area to former floodplain area must be accomplished within the same stormwater system sub-drainage basin (the land area that drains to a single city outfall), and pre-approved by the City.

STANDARD 7: In all areas, the maximum design flow rate or volume of stormwater discharged from the site shall not impair or exceed the capacity of the downstream stormwater collection system, open channel, watercourse, wetland, or overland flow path.

STANDARD 8: A Stormwater Management Practices Operations and Maintenance Agreement is required by and between the City of Kalamazoo and the owner of the property that has incorporated stormwater management practices (e.g. manufactured treatment devices, infiltration/detention basins, subsurface infiltration bed, bioretention, vegetated swale, dry wells, vegetative roofs, porous pavement, etc.). All BMPs are required to be listed and shown on the Site Plan by the subject property owner(s). See Attachment 3.

Table 3
Site Size Applicability to Stormwater Standards

	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6	Standard 7	Standard 8
Small Sites	—	—	X	15-foot buffer	X	X	X	X
Medium Sites	X	X	X	20-foot buffer	X	X	X	X
Large Sites	X	X	X	25-foot buffer	X	X	X	X

5.3 STORMWATER DISCHARGE STANDARDS

The following additional requirements address stormwater discharge strategies as related to: the proposed land use and associated groundwater contamination risk assessment; the site's location in regard to Wellhead Protection Capture Zones (Ordinance 1825); the zoning district (as defined in the City Code of Ordinances); potential to directly impact surface water features; volume that enters the City's storm sewer (MS4); and any other relevant physical characteristics of the site. Stormwater discharge strategies have been incorporated into the following City-adopted Stormwater Discharge Standards that must be met at development and re-development sites that require site plan review or otherwise deemed necessary to maintain regulatory compliance for the Stormwater NPDES Permit or objectives of the MDEQ-approved WHPP. The Standards apply to the areas as described below.

STANDARD A: Within the 1-Year Capture Zones, sites with allowed higher-risk land uses (Tables 1 and 2) and/or those exceeding 55 gallons aggregate for liquids and 440 pounds aggregate for dry weights, must discharge to surface water with pretreatment and have a spill containment volume. This can be accomplished by solid-wall pipes that discharge to a defined stormwater collection system, surface water feature, or detention area.

STANDARD B: Within the 1-Year Capture Zones associated with lower-risk land uses, surface water discharge with pretreatment is preferred but groundwater infiltration may be allowed if pretreatment is provided. Larger parking areas (see Standard E) and regulated substance storage areas are required to have pretreatment, and may be required to have a spill containment volume.

STANDARD C: Within the 5-Year Capture Zones associated with higher-risk land uses (Tables 1 and 2), and/or those exceeding the 55-gallon/440-pound aggregate thresholds for regulated substances, stormwater infiltration is allowed only with pretreatment; a spill containment volume may be required. Larger parking areas are required to have pre-treatment regardless of discharge strategy.

STANDARD D: In lower-risk land use areas within the 5-Year Capture Zones, infiltration is allowed, but may require pretreatment depending upon site-specific analysis, regarding items such as larger parking areas and regulated substance areas.

STANDARD E: Parking areas within a 1-Year or 5-Year Capture Zone designed to accommodate 20 or more vehicles or exceed 6,000 square feet (larger parking areas) should be paved with concrete, asphalt, or an equivalent smooth impervious surface with a minimum 2% cross slope to prevent ponding of water. These parking areas shall be controlled so that all runoff is directed to a collection system with pretreatment, thus minimizing the potential of flows with pollutants to migrate offsite or into groundwater.

Parking sites having limited or short-term use (i.e., churches or similar) with limited potential for releases of regulated substances inside the 5-Year Capture Zones, but outside the 1-Year Capture Zones, may be granted exceptions or modifications to the above requirements.

STANDARD F: Within the 10-Year Capture Zones, stormwater infiltration is preferred with lower-risk land uses, but larger parking areas and regulated substance storage areas on larger sites may require pretreatment. Spill containment volume may be required for higher-risk land use areas.

STANDARD G: In areas outside the Capture Zones, infiltration of stormwater is preferred to promote groundwater recharge. All lots or parcels should retain and infiltrate stormwater onsite, unless drainage agreements between adjacent property owners are obtained or the site is limited to only surface water discharge. Certain large sites with higher-risk land uses and those with larger parking lots may require pretreatment.

Table 4 summarizes the discharge strategy in different land-use risk types.

Table 4
Stormwater Discharge Strategy
Infiltration to Groundwater and MS4 Connection

Capture Zone	Applicable Standards	Higher-Risk Land Use[1] and/or Above Quantity Thresholds[1]	Lower-Risk Land Use
1-Year Capture Zones	A, B, E	● No stormwater infiltration. ● Pretreatment with spill containment volume[3] is required and reduction in peak flow may be required to connect to MS4.	● Stormwater infiltration may be allowed with pretreatment. ● Larger parking areas[2] and regulated substance areas require pretreatment, reduction in peak flow, and may require spill containment volume[3] prior to connection to MS4.
5-Year Capture Zones	C, D, E	● Stormwater infiltration may be allowed with pretreatment. ● Pretreatment is required for Larger parking areas[2] and regulated substance areas; spill containment volume[3] may be required. ● 10% reduction in existing flows may be required to connect to MS4.	● Pretreatment may be required for stormwater infiltration, pending site-specific evaluation. ● Larger parking areas[2] and regulated substance areas require pretreatment. ● 20% reduction in existing flows may be required to connect to MS4.
10-Year Capture Zones	E, F	● Stormwater infiltration allowed pending site-specific evaluation. ● Larger parking areas[2] require pretreatment; regulated substance areas may require spill containment volume[3]. ● 30% reduction in existing flows may be required to connect to MS4.	● Stormwater infiltration preferred. ● Larger parking areas[2] and regulated substance areas for large sites may require pretreatment. ● 40% reduction in existing flows may be required to connect to MS4.
Outside Capture Zones	E, G	● Stormwater infiltration required. ● Larger parking areas[2] require pretreatment; regulated substance areas may require spill containment volume[3]. ● 50% reduction in existing flows may be required to connect to MS4.	● Stormwater infiltration required. ● Larger parking areas[2] may require pretreatment prior to connection to MS4. ● 75% reduction in existing flows may be required to connect to MS4.

[1]See Tables 1 and 2 for Higher-Risk Land Use designations.
Regulated Substance Thresholds: 55 gallons aggregate for liquids and 440 pounds aggregate for dry weights.
[2]20 or more parking spaces or >6,000-square-foot paved area.
[3]See Section 6 for requirements.

6.0 TREATMENT AND SPILL CONTAINMENT

Acceptable types of BMPs that can meet treatment, storage, and spill containment requirements for stormwater quality can be found in the following documents: Low Impact Development Manual for Michigan (SEMCOG, 2008) and the Michigan Nonpoint Source Best Management Practices Manual (MDEQ, 2014).

Spill Containment Volume

A spill containment volume may be required as an additional component of pretreatment for both surface and groundwater discharges for certain higher risk land uses and within certain Capture Zones as specified below:

Spill Containment Volume is required to protect both groundwater and surface water from pollutant spills in: all of the 1-Year Capture Zone Higher-Risk Land Use and/or for sites above regulated substance thresholds; certain 1-Year Capture Zone Lower-Risk Land Use areas; certain 5-Year Capture Zones and 10-Year Capture Zones with Higher-Risk Land Use, and/or for sites above regulated substance thresholds. In higher-risk land use areas, spill containment may also be required regardless of proximity to capture zones, if it is deemed appropriate to safeguard environmentally sensitive areas.

The Spill Containment Volume is equivalent to 30% of 0.5 inch of runoff per impervious acre (30% of 1,815 cubic feet). The volume is given by the following equation:

V = Spill Containment Volume
= 30% of 1,815 cubic feet per impervious acre
= 30% of 13,577 gallons per impervious acre
= 4,073 gallons per impervious acre

A minimum spill containment volume of 400 gallons shall be provided. The minimum volume is allowable only on small sites where proprietary treatment systems are used.

In general, measures meeting Spill Containment standards must have an impermeable barrier between the treated material and the groundwater; have provisions for the capture of oil, grease, and sediments; and meet the volume requirements. Spill containment may be provided by one of the following BMPs:

- Spill-containment cell
- Water quality swale

- Proprietary stormwater treatment system

These measures are described in the following sections.

6.1 SPILL-CONTAINMENT CELL

A spill-containment cell may be used to trap and localize incoming sediments and to capture slug pollutant loads from accidental spills of regulated substances (spill containment volume). A spill-containment cell, which is depicted in Figure 3, must have the following characteristics:

General Specifications

- The spill-containment cell shall be a wet basin with an impermeable bottom and sides to the design high-water level.

- The minimum surface area shall be 25% of the required volume.

- The length-to-width ratio shall be a minimum of 3:1 and a maximum of 4:1 to allow for adequate hydraulic length, yet minimize scour velocities.

- The minimum hydraulic length shall be equal to the length specified in the length-to-width ratio.

- The minimum diameter of the transfer pipe, between the spill containment cell and the infiltration basin, shall be 12 inches.

- The overflow structure from the spill containment cell shall be sized for the peak inflow from a 10-year rainfall event.

- The top-of-berm elevation between the spill-containment cell and the basin shall be a minimum of one foot below the outer berm elevation.

- The spill-containment cell shall have a minimum one-foot-deep sump below the inlet pipe for sediment accumulation.

- The outlet structure from the spill-containment cell shall be designed to draw water from the central portion of the water column within the cell, to trap floatables, and to contain sediments. The crown of the inlet end of the transfer structure pipe shall be located vertically, a minimum of 1 foot below the

normal water level and a minimum of 1.5 feet from the bottom of the spill-containment cell (minimum depth of the permanent pool is 2.5 feet).

Material Specifications

- The spill-containment cell shall be lined with impermeable materials extending up to the design high-water elevation. A minimum 18-inch-thick clay layer or an impermeable liner protected with a minimum 12 inches of soil cover are acceptable alternatives.

- Maximum allowable permeability shall be 1 x 10-7 centimeter per second (cm/sec), as determined by the geotechnical consultant for clay placement or manufacturer's certificate for liner products.

- A 40-millimeter polyvinyl chloride liner is an acceptable impermeable material.

- Maintenance.

- Maintenance responsibility shall be vested with the owner or authorized operator.

6.2 WATER QUALITY SWALES

Water quality swales may be used for spill containment on smaller sites of less than 1/2 acre, or larger sites where space is limited and/or a permanent pool of water is not desirable. Figure 4 depicts a dimensioned water quality swale. The water quality swale shall be sized to contain the spill-containment volume without release. Following is a summary of required characteristics of a water quality swale:

Pretreatment Criteria

- A minimum 25-foot vegetated buffer is required between directly contributing impervious surfaces and the water quality swale.

Controls

- Inlet pipes shall not be fully submerged at normal pool elevations.

- All inlet pipes must enter this swale for pretreatment.

- A manhole or catch basin shall be required immediately downstream of the water quality swale.

- The swale and outlet shall be sized to pass the 10-year design flood.

- A 4-inch perforated-pipe underdrain shall be placed along the center length of the swale and bedded in coarse aggregate.

- Upland construction areas shall be completely stabilized prior to final swale construction. The detention basin may be constructed first, as a temporary erosion control measure during construction.

- Inlets and outlets require energy dissipation and transition from outlet to open channel.

- Inlets shall have a riprap apron to dissipate the velocity of incoming stormwater runoff. The following minimum square yards of riprap shall be provided based on pipe diameter.

Pipe Diameter (inches)	Riprap (square yards)
12 to 18	4
21 to 36	12
42 to 60	24

Geometry

- The swale shall have a minimum bottom width of two feet.

- Side slopes shall be 3:1 (horizontal:vertical) or flatter.

- The sand filter shall be placed to a depth of 24 inches below the swale invert.

- The sand filter media shall meet at least MDOT Class II requirements for granular materials.

- Six inches of coarse aggregate shall be placed below the sand filter.

- The filter fabric shall be a nonwoven geotextile with a minimum weight of 3.5 ounces per square yard, a minimum coefficient of permeability of 0.02 cm/sec, and apparent opening size ranging between 70 to 120 U.S. standard sieve size.

- The course aggregate shall be washed, rounded-stone aggregate, 1.5 to 3 inches in diameter, or other City-approved aggregate with void ratio adjusted accordingly (i.e., MDOT 6A, Ve = 0.33).

- The bottom and sides of the swale shall be lined with an impermeable liner.

Public Safety

- The swale shall be designed for a maximum depth of 2 feet of water.

- If the water quality swale receives runoff from a higher-risk land use or zoning district, as indicated in Section 2.1 Groundwater Contamination Risk Assessment, the owner/operator shall indicate in the site's SCP actions to be taken to contain the spill prior to leaving the downstream manhole/catch basin.

Maintenance

Maintenance responsibility shall be vested with the owner or authorized operator. At a minimum, a maintenance plan shall include the following components:

- Sediment shall be removed when it reaches a depth equal to 50% of the water-quality depth. A visual inspection shall be conducted at least once per year.

- The sand filter shall be replaced, if the swale fails to infiltrate.

- If a pollutant spill occurs, permeable soil shall be removed and disposed in accordance with applicable regulations. Clean permeable fill shall replace it.

- Eroded and barren areas shall be re-vegetated as soon as possible. Trash and debris shall be removed on a regular schedule. Outlets and underdrain outlets shall be inspected annually.

6.3 STORMWATER MANUFACTURED TREATMENT DEVICES

If Manufactured Treatment Devices (MTDs) are proposed to be used, the MTD Worksheet is required to be prepared and submitted to determine compliance with these Standards. In addition, a Stormwater Best Management Practice Operations and Maintenance Agreement between the City and the Landowner or Designee is required.

Catch Basin/Inlet Inserts

Only small sites are allowed to use City-approved catch basin/inlet inserts that provide treatment through vertical (gravity-based) flow only. These systems require a suitable treatment media (filter) for the subject contaminants of concern at the subject site. Typically, these systems are used on small higher-risk sites (e.g., gasoline stations or larger parking lots) where the larger hydrodynamic separators are not practical. Detailed hydraulic calculations shall be provided to demonstrate that the system will treat the first one-half inch of rainfall (the first flush) and have the capacity to allow flows from the 10-year storm to pass without causing surface ponding.

Hydrodynamic Separators

Many proprietary stormwater systems may not achieve full spill containment volumes as a stand-alone practice. Proprietary stormwater treatment systems can be used alone or in combination with other BMPs to meet the treatment criteria. Acceptable proprietary stormwater treatment systems must be NJCAT verified and NJDEP certified. See the Manufactured Treatment Device requirements in the Uniform Stormwater Standard 1 section.

7.0 NONCONFORMING LAND USES

A nonconforming use is defined as any existing use that, as of the effective date of the WHP Overlay Ordinance (2007), would otherwise be prohibited within a designated Capture Zone.

7.1 CONFORMANCE WITH STANDARDS

Existing nonconformities will be allowed within a capture zone only if in accordance with Chapter 9 "Nonconformities" of Appendix A (Zoning Ordinance) of the City of Kalamazoo's Code of Ordinances.

In addition, nonconforming land uses pursuant to the WHP Overlay Ordinance must meet the requirements of the Standards established in this document and/or shall prepare an Environmental Services Division-approved Spill Contingency Plan (SPC). The City reserves the right to approve/determine which option(s) is to be implemented for the specific circumstance.

7.2 SPILL CONTINGENCY PLANNING

Proposed land uses that are allowed within the 10-Year Capture Zones that have in possession regulated substances in quantities exceeding 55 gallons aggregate for liquids and 440 pounds aggregate for solids are required to conform to the specific land use standards within this document and/or have a SCP for the site. In addition, nonconforming land uses within any Capture Zone are also required to conform to these standards and/or have a SCP. An example template of a SCP is provided in Attachment 2. Any existing SCPs for the site may be submitted to the Environmental Services Division for review and approval to meet these requirements, as discussed in Section 7.2.5.

Finally, a SCP may be required if the proposed land use poses a direct or potential significant adverse impact to a surface water feature, such as a river, stream, pond, lake, or wetland.

7.2.1 REGULATED SUBSTANCE INVENTORY

The City's Department of Public Services and Department of Public Safety collaborate in the collection of chemical storage information for the purposes of the Wellhead Protection Program, Stormwater Management Program, and the Fire Fighters Right-to-Know Program. All businesses are required to complete Part 1 "Kalamazoo Department of Public Safety Right-to-Know Questionnaire" to comply with the Michigan Fire Prevention Code, Act No. 207, P.A. of 1941 as amended. If a business is located within a Wellhead Protection Area, they are also required to complete Part 2 "Drinking Water Protection

Questionnaire" to comply with the City of Kalamazoo Ordinance No. 1825 (Wellhead Protection Zoning Overlay) and Ordinance No. 1826 (these Performance Standards). These forms are provided in the Site Plan Application Packet.

These forms can also be found, completed, and submitted on-line at www.kalamazoocity.org/chemicalforms. Select the "Chemical Inventory and Storage Form" and complete the required parts as required. If preferred, you can print out the forms and complete manually and return via US mail to:

Environmental Services Division
Department of Public Services
ATTN: Environmental Programs Manager
1415 N. Harrison Street
Kalamazoo, MI 49007

It is recommended that a business keep an inventory that identifies all regulated substances stored at the site in containers exceeding either 10 pounds for liquids or 100 pounds for solids. For each regulated substance, the inventory should identify the type of storage container, storage location(s), and typical and maximum storage quantities in each storage location. The site should maintain a file of current Material Safety Data Sheets (MSDS) that includes the hazardous components and percentage by weight of each regulated substance on the inventory. This MSDS file should be readily accessible in the event of an emergency. Section 3.0 of the SCP template (Attachment 2) provides an example table that can be used for a Regulated Substance Inventory.

7.2.2 RELEASE POTENTIAL ANALYSIS

The site should develop a written analysis of the potential for a release of each regulated substance stored at the site. This analysis should consider the potential for release during transfer of the regulated substance to and from the storage area, during storage of the regulated substance, and during use of the regulated substance. In addition, the site should evaluate the likely size of a release for each scenario, as well as the likely destination of the release (e.g., to a floor drain, sump, storm drain, etc.). The information may be compiled in table form for ease of data compilation and use. An example table is found in Section 4.0 of the SPC (Attachment 2).

7.2.3 RELEASE PREVENTION MEASURES

Considering each potential release identified as part of Section 7.2, the site should identify in writing release prevention measures that will minimize the likelihood and/or reduce the impact of such a release at the site. These measures could include work practices, housekeeping practices, inspection practices, and/or structural controls (e.g., secondary containment). These prevention measures may be included in the example table found in Section 4.0 of the SCP (Attachment 2).

7.2.4 RELEASE RESPONSE PROCEDURES

The SCP should identify procedures to be followed in the event of a release of a regulated substance. Written procedures should be established both for minor releases, which pose no danger to health or the environment and can be handled by trained employees in the immediate vicinity of the release, and for significant releases that have one or more of the following characteristics:

- The spill cannot be contained safely by site personnel.
- Sufficient resources are not available at the site to contain the spill.
- The spilled material has entered the site's drain system (sanitary or storm) and cannot be contained.
- The spilled material has entered site soils or a vegetated area.

In addition, the SCP should include the following:

- Identification of responsibilities of various site personnel in the event of an emergency.
- Internal site emergency notification procedures (chain-of-command reporting).
- Emergency contact information, including, at a minimum:
  - Key site personnel/emergency coordinators.
  - At least one 24-hour emergency contact.
  - Local emergency response agencies (e.g., police department, fire department, ambulance).
  - Local, state, and federal environmental agencies.
  - At least one spill response contractor able to respond to the site in the event of a significant spill.
- An inventory of onsite spill response equipment.

The SCP should also address methods to determine proper disposal of waste generated by a release of regulated substances. Section 5.0 of the template SCP (Attachment 2) provides an example format to document release response procedures.

7.2.5 USE OF OTHER EMERGENCY RESPONSE PLANS

Many sites using or storing regulated substances are required under state or federal environmental laws to develop a written spill response plan, such as a Pollution Incident Prevention Plan (PIPP) or a Spill Prevention Control and Countermeasure (SPCC) Plan. Sites may also be required to prepare a Hazardous Waste Contingency Plan or Stormwater Pollution Prevention Plan (SWP3). Provided that all of the elements described above are included in one or more existing emergency response plans, the site may substitute the existing plan(s) for the SCP required within these Performance Standards. If the existing plan(s) addresses part, but not all, of the requirements detailed in Sections 7.1 to 7.2.4, the site may prepare an addendum to the existing plan(s) so that all requirements are met.

8.0 POTENTIALLY APPLICABLE ENVIRONMENTAL REGULATIONS

Facility operators subject to regulation under the WHP Overlay Ordinance and these Performance Standards must comply fully with all existing applicable federal, state, and local regulations in addition to any of the requirements herein. These other requirements may include, but are not limited to, material storage, spill prevention, recordkeeping, emergency response, transport, and disposal of hazardous substances, hazardous wastes, liquid industrial waste, or other potentially polluting materials. No discharge to surface water or groundwater, including direct and indirect discharges of waste, waste effluent, wastewater, pollutants, or cooling water, shall be allowed without approval from federal, state, county, and local agencies. The project and related improvements shall be designed to protect land and water resources from pollution, including pollution of soils, groundwater, rivers, streams, lakes, ponds, and wetlands. For example, storage tanks are required to be secondarily contained within the City's Capture Zones.

Specific areas that the State of Michigan regulate as part of their environmental regulations that pertain to proper management of Regulated Substances include, but are not limited to: underground and above-ground storage tanks; oil and other polluting materials material storages above state-specified thresholds; spill response plans; solid and liquid waste discharges and disposal; hazardous wastes generation, handling, storage and disposal; groundwater discharge; surface water discharge; stormwater discharges into the waters of the state; management of contaminated properties; and response and reporting upon discovery of contamination.

9.0 CONTAMINATED PROPERTIES

If the subject property contains soil and/or groundwater contamination, site-specific requirements may apply. See the MDEQ Post-Construction Storm Water Runoff Controls Program Compliance Assistance Document (MDEQ, 2014) for specifics regarding stormwater. Contact the Kalamazoo District MDEQ Office for answers to questions regarding all state environmental regulations pertaining to all contaminated sites.

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FIGURES

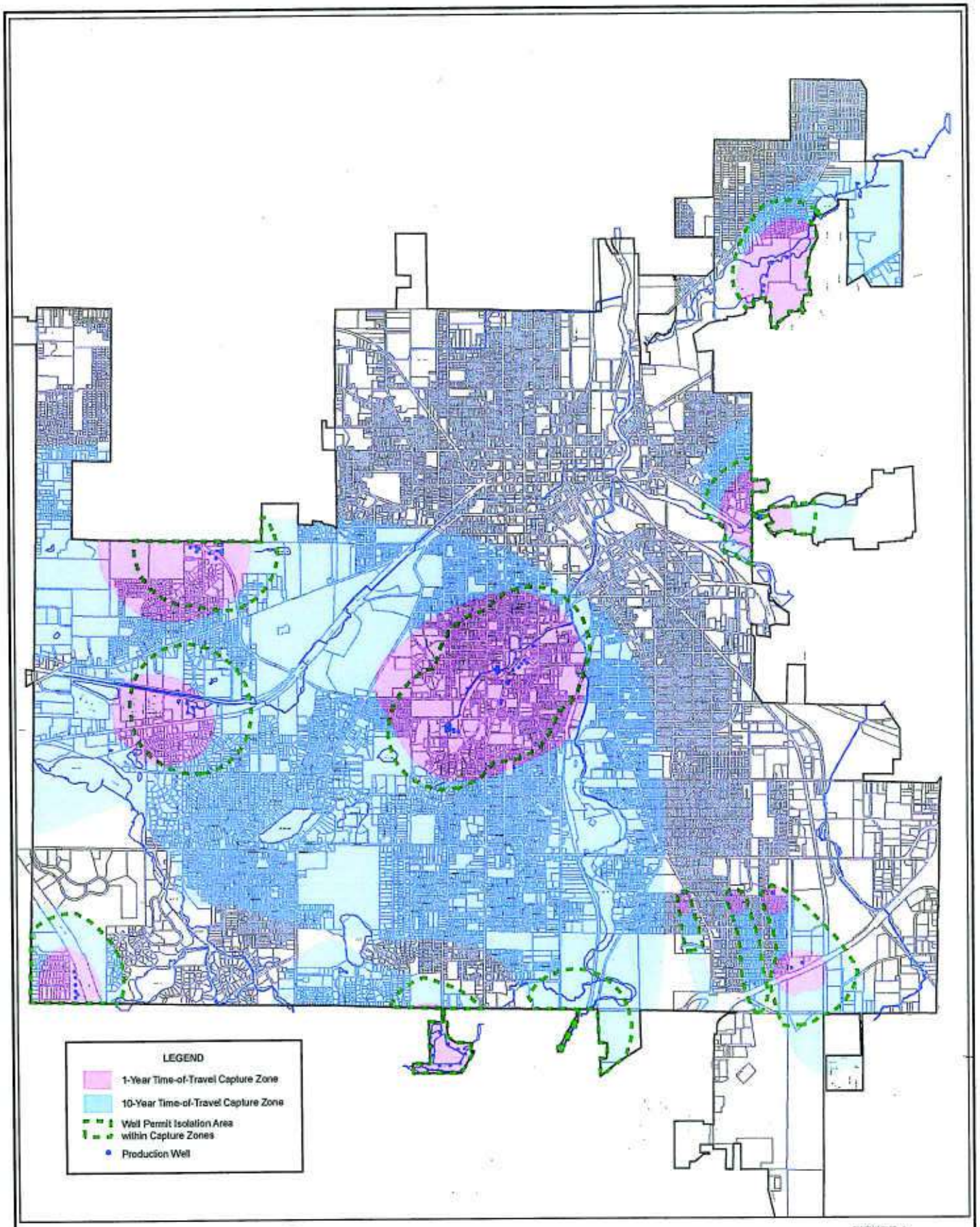


FIGURE 1

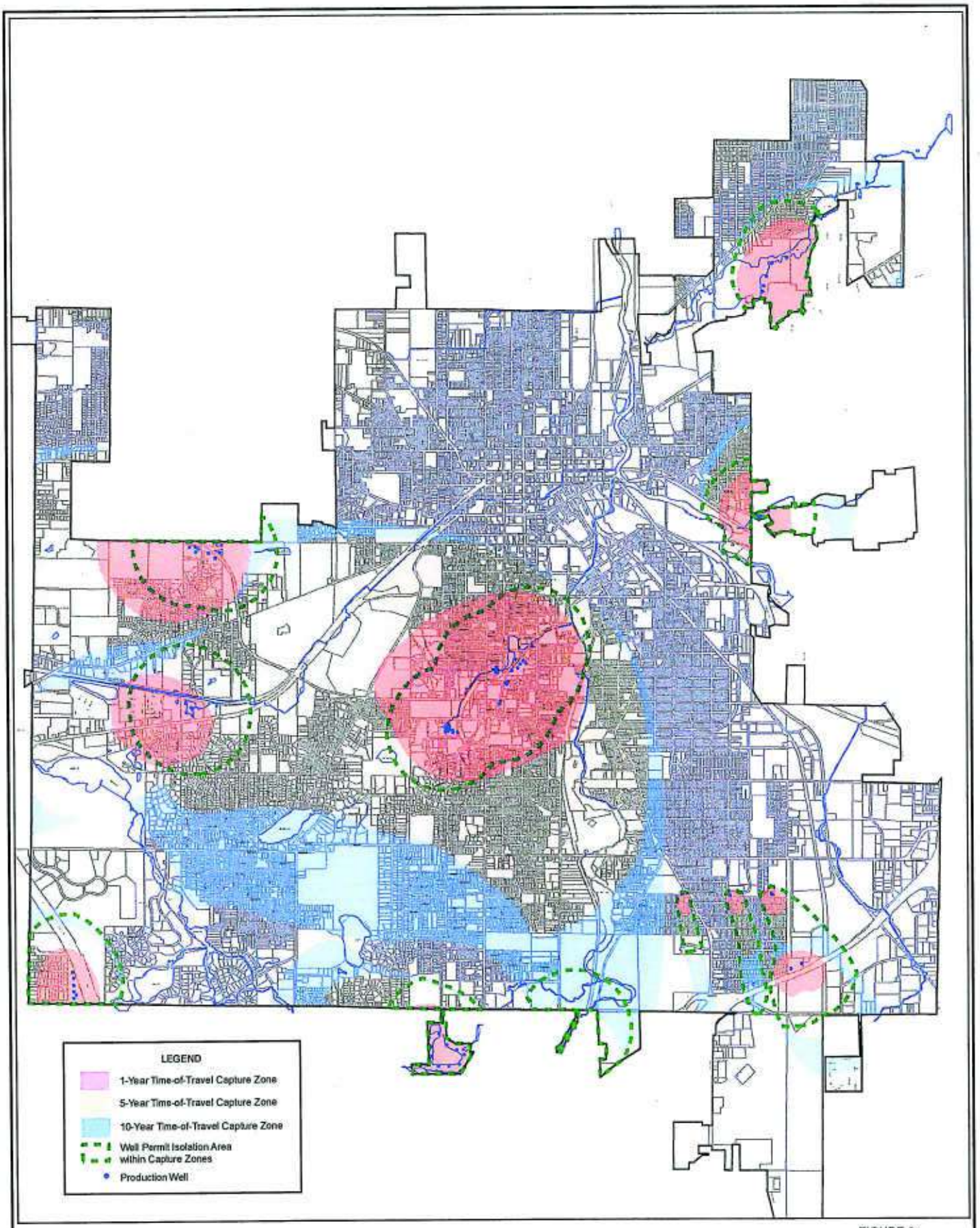
THE CITY OF Kalamazoo

Wellhead Protection
Zoning Overlay

N

0 1,500 3,000 6,000 Feet

Prepared by the
Environmental Services Division
March 2007



THE CITY OF Kalamazoo

Performance Standards For Groundwater Protection
Within Wellhead Protection Capture Zones
And Stormwater Quality Management
Reference Map

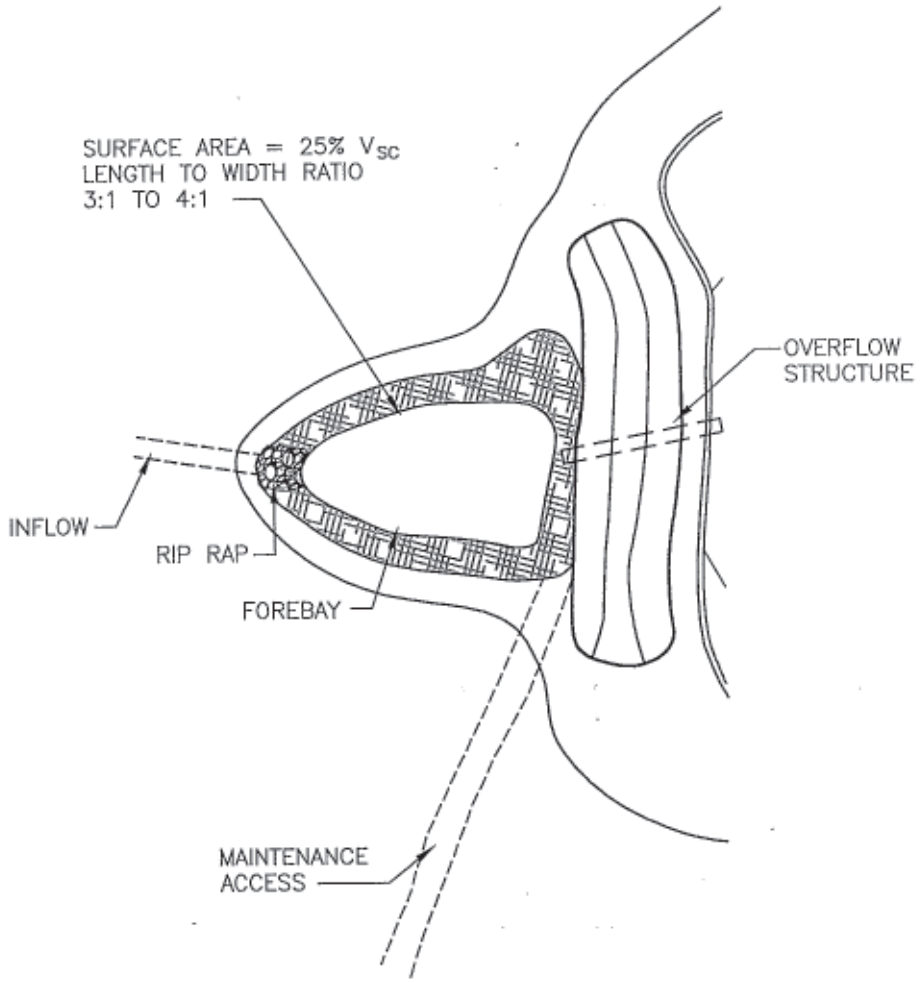
N

0 1,500 3,000 6,000 Feet

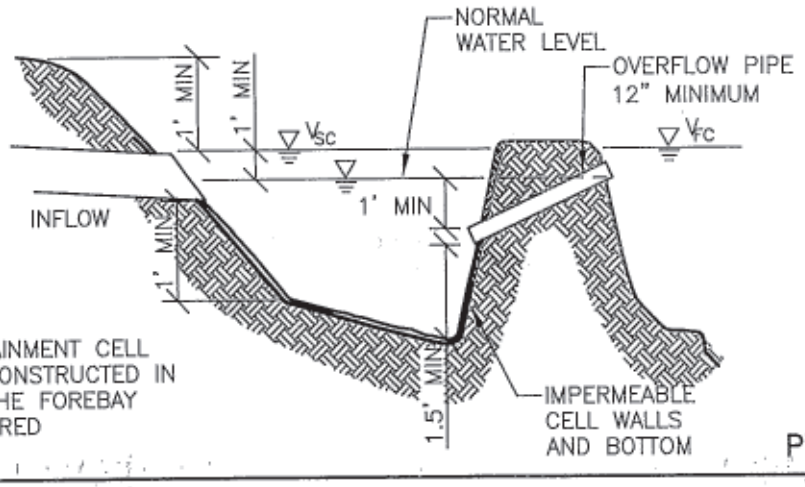
FIGURE 2

Prepared by the
Environmental Services Division
March 2007

SPILL CONTAINMENT CELL



PLAN VIEW



NOTE:
SPILL CONTAINMENT CELL SHALL BE CONSTRUCTED IN PLACE OF THE FOREBAY WERE REQUIRED

PROFILE

fic&h

engineers
scientists
architects
constructors

fishbeck, thompson, carr & huber, inc.

Hard copy is intended to be 8.5"x11" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

City of Kalamazoo
Kalamazoo County, Michigan

Performance Standards for Groundwater Protection and Stormwater Quality Management

PROJECT NO.

FIGURE NO.
3

PLOT INFO: F:\WORK\KALAMAZOO\FIGURE-4.DWG DATE: 12/22/2006 TIME: 11:13:43 AM USER: ACS

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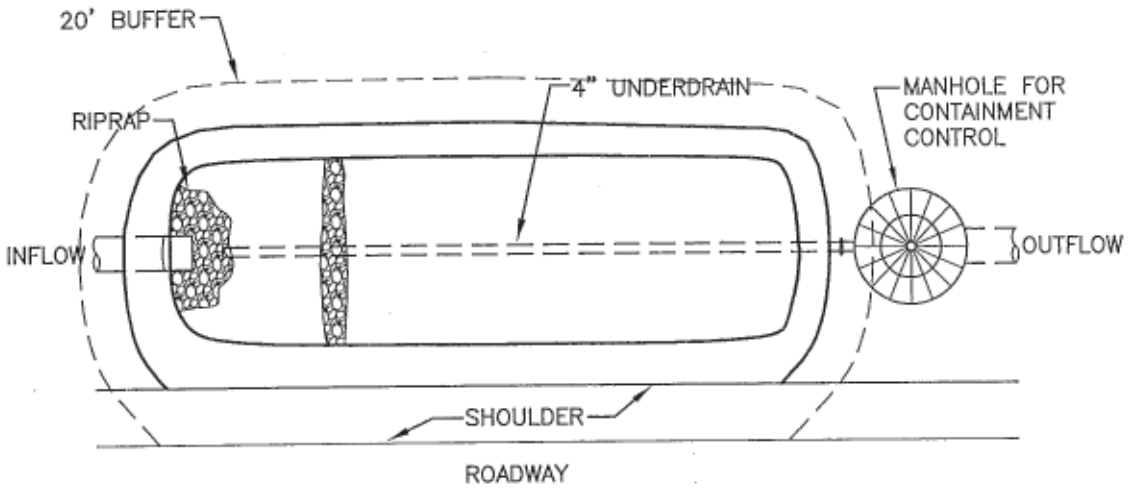
WATER QUALITY SWALE



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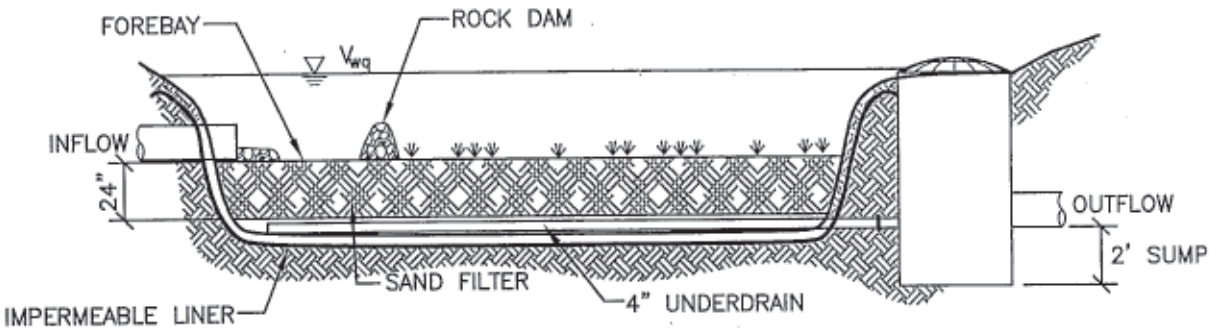

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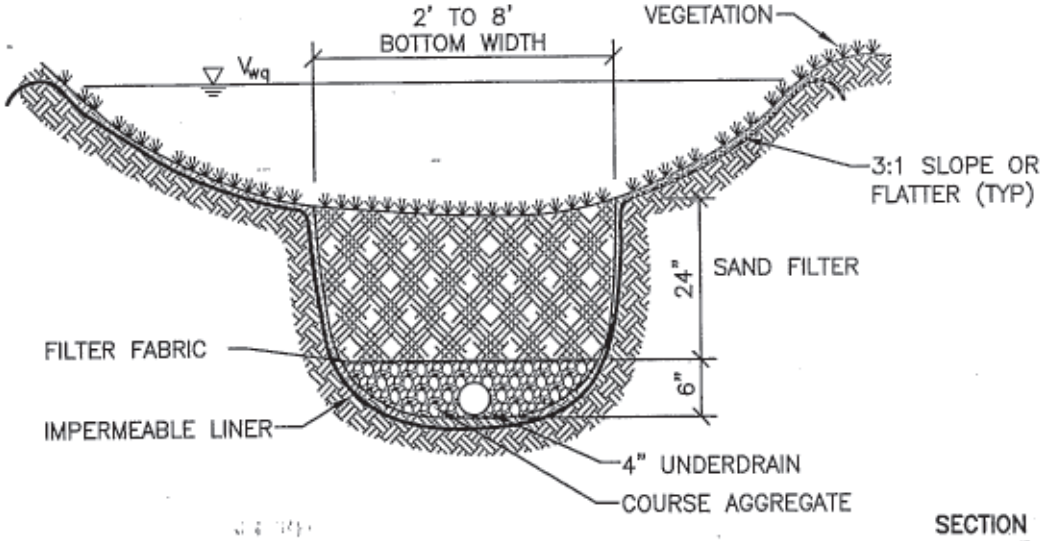

SECTION

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City of Kalamazoo
Kalamazoo County, Michigan

Performance Standards for Groundwater Protection and Stormwater Quality Management

PROJECT NO.

FIGURE NO.
4

PLOT INFO: F:\WORK\KALAMAZOO\FIGURE-9.DWG DATE: 3/22/2007 TIME: 1:31:51 PM USER: ACS

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ATTACHMENTS

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION
GROUNDWATER SECTION – WELL CONSTRUCTION UNIT

MINIMUM WELL ISOLATION DISTANCES

(From Contamination Sources and Buildings)
Part 127, Act 368, P.A. 1978 And Act 399, P.A. 1976

The following lists sources of contamination and the well isolation distances required from those sources by state codes. The Michigan Department of Environmental Quality and local health departments have authority to issue deviations from these minimum isolation distances on a case by case basis. Criteria for issuance of deviations are set forth in R 325.1613 of the Rules for Part 127, and R 325.10809 of the Rules for Act 399.

* = For the isolation distances marked with a single asterisk, the isolation distance is for a source of contamination which is not specifically listed in the rules. However, the source of contamination is interpreted as belonging in a general contamination source group (example - a sewage holding tank is the same as a septic tank) which is listed in the rules, and therefore, the isolation distance listed in this document is required.

** = For the isolation distances marked with a double asterisk, the isolation distance is from a source of contamination which is not specifically named in the rules. However, the Michigan Department of Environmental Quality has established a recommended isolation distance based on the contaminant involved, the risk to public health, and other factors. Under the general authority of a health officer's responsibility to protect the public health, health officers may modify this recommended isolation distance, either increasing or decreasing it, on a case by case basis.

	REQUIRED MINIMUM ISOLATION DISTANCE (FEET)		
CONTAMINATION SOURCE	**Part 127, Act 368 PA 1978**	**Act 399, PA 1976**	
		IIb and III	I and IIa
Agricultural chemical/ fertilizer storage or preparation area	150	800	2000
Animal/poultry yard	50	75	200
Brine wells/injection wells	**150	**800	**2,000
Building or projection thereof	3	3	3
Cemetery/graves	**50	*75	*200
Cesspool	50	75	200
Chemical Storage	150	800	2,000
Contaminant plumes, known (Act 307, LUST sites, etc.)	**150	**800	**2,000
Drainfield	50	75	200
Drywell	50	75	200
Footing Drains	10	10	10
Fuel/chemical storage tanks – Underground or abovegrade and associated piping			
depot/tank farm	300	800	2,000
1,100 gal. or larger, without secondary containment	300	800	2,000
1,100 gal. or larger with secondary containment	50	800	2,000
less than 1,100 gal. that store motor or heating fuel for noncommercial purpose or consumptive use on premises where fuel is stored	50	800	2,000
less than 1,100 gal. that store motor fuel for commercial purpose	*50	800	2,000
located in a basement, regardless of size	*50	800	2,000
Grease trap	50	*75	*200
Kennels	50	*75	*200
Landfill or dump sites (Active or Inactive)	800	800	2,000

Liquid Petroleum (LP) Tanks (See comments on last page)			
Liquid waste draining into the soil	50	*75	200
Metering station for pipelines	*300	*300	*300
Municipal wastewater effluent or sludge disposal area (land surface application or subsurface injection)	300	800	2,000
Oil or gas well	300	300	300
Other wastewater handling or disposal unit	50	*75	*200
Petroleum product processing or bulk storage	300	800	2,000
Pipelines gas, oil, etc.	*300	*300	*300
natural gas (See comments on last page)			
Privy/Outhouse	50	75	200
Seepage pit	50	75	200
Septic tank	50	75	200
Septage waste (land application area)	800	800	2,000
Sewage holding tank	50	*75	*200
Sewage lagoon serving a single family dwelling	50	75	200
Sewage lagoon effluent – land application area	50	800	2,000
Sewage or liquid waste draining into soil	50	*75	*200
Sewage pump chamber, transfer station, or lift station	50	75	200
Sewers Buried gravity sewer (sanitary or storm) - Service weight or heavier ductile-iron or cast iron, or schedule 40 PVC, all with watertight joints	10	75	200
Buried pressure sewer (sanitary or storm) Watertight joints (pressure tested after installation to 100 psi), equivalent to Schedule 40 or SDR 21, and meets or exceeds ASTM Specifications D1785-91 or D2241-89	10 (by written deviation only)	75	200
Buried gravity or pressure sewer (sanitary or storm), constructed of materials not meeting the specifications listed in the two categories above, or the materials are unknown	50	75	200
Sump pit Receiving other than household waste (footing drain, roof drain, etc.)	10	10	10
Receiving household waste (laundry, softener backwash, sink waste, etc.)	50	75	200
Surface water (lake, river, stream, pond, ditch, etc.)	10	75	200
Unfilled space below ground surface (except an approved basement, basement offset, or crawl space beneath single family dwelling)	10	10	10

Comments: Natural gas and liquid petroleum (LP) are not considered sources of ground water contamination because of the volatile gas nature of the fuels. If leaks occur, the gases escape into the atmosphere. Leaked gases do not migrate downward into the soil. Wells should be sufficiently isolated from natural gas lines or LP tanks to minimize the potential for damage to the lines or tanks during well construction or repair, trenching of water lines, etc., and to allow accessibility to the well.

SPILL CONTINGENCY PLAN

SITE NAME:

SITE ADDRESS:

FISHBECK, THOMPSON, CARR & HUBER, INC. Engineers • Scientists • Architects
4775 Campus Drive, Kalamazoo, MI 49008 Telephone: 269-375-3824

1.0 INTRODUCTION

The purpose of the Plan is to establish procedures to be implemented in the event of a release of Regulated Substances, as well as describe measures implemented to reduce the likelihood of such a release. For the purposes of this document, Regulated Substances are defined in the City of Kalamazoo Code of Ordinances Appendix A: Chapter 3, Section 3.5, The Wellhead Protection Overlay District, as including the following:

- (insert list when decided upon)

This facility is located within a City of Kalamazoo groundwater protection area. Uncontrolled releases of Regulated Substances within such areas have an elevated risk of compromising area drinking water. Therefore, the primary goal of this plan is to protect drinking water supplies located in the vicinity of this facility.

2.0 FACILITY INFORMATION

This facility is described as follows:

Facility Name:	
Street Address:	
Mailing Address:	
Facility Telephone Number:	
Facility Operator Name:	
Facility Operator Telephone Number:	
24-Hour Emergency Contact Person:	
24-Hour Emergency Telephone Number:	
Description of Facility Operations:	
SCP Preparer Name:	
SCP Preparer Title:	
SCP Preparer Affiliation:	
Original Date of SCP Preparation:	

3.0 REGULATED SUBSTANCE INVENTORY

The following is an inventory of Regulated Substance storage areas that includes all Regulated Substances stored at the site in containers exceeding either 10 pounds for liquids or 100 pounds for solids:

Storage Area	Regulated Substance	Type of Container	Typical Quantity in Storage Area	Maximum Quantity in Storage Area

4.0 RELEASE POTENTIAL AND PREVENTION ANALYSIS

For each Regulated Substance contained in the inventory in Section 3.0, the Facility must document in the following table the potential causes of releases (spills, leaks, etc.) to the indoor or outdoor portions of the facility, both from storage areas and use areas. The Facility must also document measures initiated to help prevent a release of Regulated Substances (e.g., inspections, work practices, good housekeeping and training), contain a release (e.g., secondary containment or diversions from the outside environment) or minimize the environmental impact of a release. If different types of Regulated Substances have virtually identical storage, use, potential for release, potential destination of release and prevention measures, those substances may be listed together in the table.

Regulated Substance(s)	Storage/Use Area	Potential Types/Causes of Release in Area(s)	Potential Destination of Release (check all that apply)	Release Prevention or Minimization Measures
	Storage Areas:		☐ Storm Sewer Drain ☐ Soil ☐ Dry Well/Catch Basin ☐ Sump ☐ Surface Water ☐ Other: ☐ Floor Drain	
	Use Areas:		☐ Storm Sewer Drain ☐ Soil ☐ Dry Well/Catch Basin ☐ Sump ☐ Surface Water ☐ Other: ☐ Floor Drain	
	Storage Areas:		☐ Storm Sewer Drain ☐ Soil ☐ Dry Well/Catch Basin ☐ Sump ☐ Surface Water ☐ Other: ☐ Floor Drain	
	Use Areas:		☐ Storm Sewer Drain ☐ Soil ☐ Dry Well/Catch Basin ☐ Sump ☐ Surface Water ☐ Other: ☐ Floor Drain	
	Storage Areas:		☐ Storm Sewer Drain ☐ Soil ☐ Dry Well/Catch Basin ☐ Sump ☐ Surface Water ☐ Other: ☐ Floor Drain	
	Use Areas:		☐ Storm Sewer Drain ☐ Soil ☐ Dry Well/Catch Basin ☐ Sump ☐ Surface Water ☐ Other: ☐ Floor Drain	

Regulated Substance(s)	Storage/Use Area	Potential Types/Causes of Release in Area(s)	Potential Destination of Release (check all that apply)	Release Prevention or Minimization Measures
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain ☐ Soil ☐ Sump ☐ Other:	

Regulated Substance(s)	Storage/Use Area	Potential Types/Causes of Release in Area(s)	Potential Destination of Release (check all that apply)		Release Prevention or Minimization Measures
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	
	Storage Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	
	Use Areas:		☐ Storm Sewer Drain ☐ Dry Well/Catch Basin ☐ Surface Water ☐ Floor Drain	☐ Soil ☐ Sump ☐ Other:	

5.0 RELEASE RESPONSE PROCEDURES

The Facility must identify procedures to be followed in the event of release of a Regulated Substance. These procedures must take into account both minor releases, which pose no danger to health or the environment and can be handled by trained employees in the immediate vicinity of the release, and for significant releases that have one or more of the following characteristics:

- The spill cannot be contained safely by site personnel.
- Sufficient resources are not available at the site to contain the spill.
- The spilled material has entered the site drain system (sanitary or storm) and cannot be contained.
- The spilled material has entered site soils or a vegetated area.

INTERNAL EMERGENCY CONTACTS		
Primary Emergency Contact:	Phone Number:	Responsibilities:
Secondary Emergency Contact:	Phone Number:	Responsibilities:
24-Hour Emergency Contact:	Phone Number:	Responsibilities:
Other Onsite Personnel Contacted		
Name:	Phone Number:	Responsibilities:
Name:	Phone Number:	Responsibilities:
Name:	Phone Number:	Responsibilities:
Name:	Phone Number:	Responsibilities:
EXTERNAL EMERGENCY CONTACTS		
Police Department:	Phone Number:	
Fire Department:	Phone Number:	
Hospital:	Phone Number:	
Ambulance Service:	Phone Number:	
City of Kalamazoo Environmental Division	??	
City of Kalamazoo Wastewater Treatment Plant	269-337-8157	
MDEQ Kalamazoo District Office	269-567-3500	
MDEQ 24-Hour Pollution Emergency Alert System	800-292-4706 (for MDEQ-reportable spills)	
National Response Center	800-424-8802 (for EPA-reportable spills)	
Spill Response Contractor:	Phone Number:	

EMERGENCY RESPONSE PROCEDURES
Internal Notification Procedures (chain-of-command):
Procedures to be followed for a minor release:
Procedures to be followed for a significant release:
Facility Evacuation Procedures:
Local, State and Federal Environmental Agency Emergency Notification Procedures:

EMERGENCY SPILL RESPONSE EQUIPMENT ONSITE	
Type:	Location:
Type:	Location:
Type:	Location:
Type:	Location:
Type:	Location:
Type:	Location:
Type:	Location:

7.0 EMPLOYEE TRAINING

The facility must train all employees who handle Regulated Substances or work in the vicinity of Regulated Substance storage or use areas. Thus, the following groups of employees and/or individuals will be trained on the release procedures outlined in the previous section. This training will take place within one month of the completion of this SCP and then annually. In addition, all new hires requiring training will receive the training within one month of hire. A training log is available as Appendix A.

8.0 SCP UPDATES

The SCP must be updated every two years or when any of the following occur:

- There is a change in ownership at the facility.
- The use, storage or types of Regulated Substances at the facility change.
- Changes, structural or otherwise, are made at the facility that will affect the anticipated flow direction or final destination of any release from a Regulated Substance storage or use area (e.g., regarding the property, paving, building additions, additional structural controls).

An SCP Update Log is provided as Appendix B.

9.0 SCP AVAILABILITY

The SCP is stored onsite in the following locations:

APPENDIX A – SCP ANNUAL TRAINING LOG (COPY AS NECESSARY)

TRAINER:	DATE:
TRAINEE SIGN-IN:	

APPENDIX B – SCP UPDATE LOG

DATE:	UPDATED BY:	REASON:

STORMWATER
WORKSHEETS

UNIFORM STORMWATER STANDARD 1: WATER QUALITY TREATMENT VOLUME WORKSHEET	
Applies to development/re-development Sites ≥ 1/2 acre and parking lots with ≥20 parking spaces and/or exceeding 6,000 square-foot area ("larger parking area")	
Developer must treat first 1-inch of stormwater runoff to remove 80% of total suspended solids (TSS) and any other identified pollutants of concern. One-inch of runoff also equals the 90% non-exceedance storm, based on the closest weather station (Gull Lake).	
	Result
1. Calculate the *volume* of one-inch of stormwater runoff, multiply area contributing runoff (ft^2) by 1/12 foot (0.083).	ft^2
The Rational Method Equation will be used to calculate BMP design flow rates: Wq-CIA, where C = Runoff Coefficient; I = Rainfall Intensity (inches per hour); A = Drainage Area (Acres)	
2. Calculate Area (A) of site in square feet and divide by 43,560 ft^2.	acres
3. Calculate rainfall intensity in inches/hours by using 1.44 inches/hour (1-yr/30-minute storm)	1.44 inches/hour
4. Calculate Runoff Coefficient by using a weighted average that is based on the appropriate percentage of different surface types existing at the site. Runoff Coefficient ranges for various ground cover are shown in the table below.	
5. Use the Rational Method Equation: Wq = Area (acres) x 1.44 inches/hour x Runoff Coefficient =	ft^3/sec
	(treatment volume)
Simplified Table of Rational Method Runoff Coefficients (C)	
Surface Cover	Runoff Coefficient, C
Lawns	0.1
Forest	0.15
Cultivated land/gardens	0.25
Meadow	0.3
Asphalt streets and parking lots	0.9
Brick streets	0.8
Roofs	0.9
Concrete streets and parking lots	0.9
6. List and provide a Figure showing the locations of all proposed BMPs to meet the Water Quality Treatment Volume.	BMP Treatment Volume (ft^3)
Manufactured Treatment Device (MTD) (e.g. Hydrodynamic Separators)[See MTD WORKSHEET]	
Constructed Wetland	
Wet Ponds/Retention Basins	
Extended Detention/Dry Pond	
Vegetated Filter Strip	
Vegetated Filter Swale	
Constructed Filters	
Vegetated Roofs	
Other (list)	
Total Treatment Volume (ft^3)	
If Treatment Volume ≥ 1-inch volume for project site, Uniform Stormwater Standard 1 is met.	
7. A signed Stormwater Best Management Practices Operations & Maintenance Agreement between the City and the Landowner or Designee is required (City Form provided).	
PROJECT NAME:	
PROJECT ADDRESS: DATE:	

UNIFORM STORMWATER STANDARD 2: CHANNEL PROTECTION VOLUME WORKSHEET	
Applies to development/re-development sites ≥ 1 acre.	
	Result
1. Calculate pre-development stormwater runoff volume.	ft^3
2. Calculate post-development stormwater runoff volume.	ft^3
3. Difference in pre and post development stormwater runoff volume.	ft^3
If post-development stormwater runoff volume is ≤ pre-development stormwater runoff volume, Uniform Stormwater Standard 2 is met (#4 and #5 below are nor necessary).	
If post-development stormwater volume is > pre-development stormwater runoff volume, appropriate controls/BMPs or site design changes have to be implemented to make post-development runoff volume and rate ≤ the pre-development levels for all storms up to the 2-year, 24-hour event, or 2.37-inches.	
4. Calculate the volume of 2.37 inches of stormwater runoff by multiplying area contributing runoff (ft^2) by 0.2 feet.	ft^3
5. List and provice a Figure showing the locations of all proposed BMPs to meet the Channel Protection Volume	Protection Volume (ft^3)
Bioretention (e.g. rain gardens)	
Vegetated Filter Strip	
Vegetated Filter Swale	
Vegetated Roof	
Infiltration Basin	
Infiltration Trench	
Subsurface Infiltration Bed	
Dry Well	
Level Spreader	
Pervious Pavement	
Capture/ Reuse	
Other (list)	
Total Treatment Volume (ft^3)	
If Protection Volume ≥ 2.37-inches for project site, Uniform Stormwater Standard 2 is met.	
6. A signed Stormwater Best Management Practices Operations & Maintenance Agreement between the City and the Landowner or Designee is required (City Form provided).	
PROJECT NAME:	
PROJECT ADDRESS: DATE:	

MANUFACTURED TREATMENT DEVICE WORKSHEET	
Applies to projects that propose the use of Manufactured Treatment Devices (MTDs)	
1. All MTDs must be verified bu the New Jersey Corporation for Advanced Technology (NJCAT) and certified by the New Jersey Department of Environmental Protection (NJDEP)	
2. The NJDEP 50% Certified TSS Removal Rate approximates 80% TSS reduction for the Kalamazoo area (the required TSS removal rate).	
3. All MTDs are based on treatment flow rates. The required MTD flow rate will be determined bu the completion of the Uniform Stormwater Standard 1: Water Quality Treatment Volume Worksheet.	
4. The MTD shall be designed to treat 100% of the flow without bypass at the calculated water quality treatment flow rate.	
5. The storm pipe shall be designed at a 10-yr storm event.	
6. The MTD shall have the capacity to handle the designed 10-year storm pipe flows without losing floatables or sediment.	
7. MTD Selection Details	Result
Selected MTD Manufacturer(s)	
Selected MTD Manufacturer Model(s)	
Cummulative MTD Water Quality Treatment Flow Rate	
Total BMP Treatment Flow Rate from Water Quality Treatment Volume Worksheet	
Required Water Quality Treatment Volume from Water Quality Treatment	
8. A signed Stormwater Best Management Practices Operations & Maintenance Agreement between the City and the Landowner or Designee is required (City Form provided).	
PROJECT NAME:	
PROJECT ADDRESS: DATE:	

ATTACHMENT H

Response to MDEQ Comments in Letter dated May 20, 2016
Described in "Appendix 1: Comments on City of Kalamazoo MS4 Permit Application"
Regarding City of Kalamazoo 2015 Application for Reissuance of the NPDES MS4 Permit

Additional Information to Supplement

Textual Response

Questions 32 - 59

Revised Attachment H

"Post-Construction Stormwater Runoff Program"

and

"Stormwater Best Management Practices Operations & Maintenance Agreement"

and

"Wellhead Protection and Stormwater Compliance Checklist"

(See Table 8)

ATTACHMENT H

POST-CONSTRUCTION STORMWATER RUNOFF PROGRAM

Permit Application Questions 32 – 59

ORDINANCES

Appendix A of the Code of Ordinances – Zoning Ordinance, Section 8.3.H. contains the "Specific Standards and Applications for Development Approval." The specific section for stormwater management is 8.3.H.7l which references Ordinance No. 1826 "Performance Standards for Groundwater Protection Within Wellhead Protection Capture Zones and Stormwater Quality Management" (Standards). These comprehensive standards are the current requirements addressing specific stormwater management issues.

The exisiting standards (Ordinance No. 1826) – which require the treatment of the first one-half inch of runoff - will be revised by October 1, 2015 to better align itself with the new Permit that requires treating the first one-inch. The post-construction stormwater runoff from new and re-development projects for sites one acre or larger to include: Revised Water Quality Treatment Performance Standards; revised Channel Protection Performance Standards; continued Site Specific Requirements for contaminated sites; continued use of Site Plan Review; and revised Long-Term Operation and Maintenance of BMPs. An additional standard will address certain sites less than one acre in size to a lesser set of standards. The following is a summary of draft standards to be finalized by October 1, 2015.

Water Quality Treatment Performance Standard

Volume

The intent of the Water Quality Performance Standard is to reduce or prevent water quality impacts of stormwater runoffby 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 minimum treatment volume for stormwater within the City of Kalamazoo will be one inch of runoff generated from the entire site. Coincendently, one inch is also the 90 Percent Annual Non-Exceedance Storm based on the closest weather station (Gull Lake) – another acceptable method to determine minimum treatment volumes.

The calculation used will be: Area contributing stormwater runoff (square feet) x 1/12 feet (0.083 feet).

Total Suspended Solids

In addition, the method to treat the one inch runoff volume shall be designed on a site-specific basis to achieve a minimum of 80% removal of 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% standard design treatment rates. All selected BMP structure stormwater treatment flows must be currently third-party certified by the New Jersey Department of Environmental Protection (NJDEP) to meet 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 thst the required removal of TSS but when properly applied as 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.

Channel Protection Performance Standard

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 resulting from development by maintaining 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 event or 2.37 inches (Source: Rainfall Frequency Atlas of the Midwest, Bulletin 71, Midwestern Climate Center, 1992). Pre-development level means the runoff flow volume and rate for the last land use prior to the planned new development or re-development. If the post-development volume or rate exceeds the exisitng volume or rate, then appropriate controls or design changes shall be implemented to make the post-development runoff volume and rate equal to or less than the exisiting levels for all storms up to the 2-year, 24-hour event. If site conditions challenge or prohibit feasibility of meeting this standard, the applicant should consider the incorporation of green infrastructure requirements. If extended detention is used as a post-construction stormwater runoff control, additional BMPs will likely be needed to maintain the pre-development volume and peak rate levels for all storms up to the 2-year, 24-hour event.

Runoff Volume and Peak Runoff Rate

The **Rational Method Equation** formula will be used to calculate the whether a BMP is suitable to meet the Channel Protection Performance Standard. The Rational equation is the simplest method to determine peak discharge from drainage basin runoff.

Rational Equation: $Q = CIA$ where

Q = Peak discharge, cfs
C = Rational method runoff coefficient
I = Rainfall intensity, inch/hour
A = Drainage area, acre

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

The assumed "I" value used will be 2.12 inches/hour that approximates the 1-year 15-minute storm event for the region and represents a treatment volume equivalent to the 90% annual non-exceedance storm event.

The system shall treat 100% of the flow without bypass at the calculated Q, based on an intensity (I) of 2.12 in/hr.

The storm pipe shall be designed at a 10-year 24-hour storm event.

The treatment unit will have the capacity to handle the designed 10-year storm pipe flows without losing floatables or sediment.

Long-Term Operations and Maintenance Agreement for Stormwater BMPs

The revised Performance Standards will require a long-term O & M Agreement for any property implementing stormwater BMPs.

STORMWATER AGREEMENT

THIS AGREEMENT, effective _____, 20__, between the City of Kalamazoo, a Michigan municipal corporation, whose address is 241 West South Street, Kalamazoo, Michigan, Kalamazoo, Michigan 49007 (City) and Name of Landowner _____
Status of Landowner; i.e. Individual(s) or Companies _____
whose address is Address of Landowner _____ (Landowner).

Recitals:

A. The City is regulated under the U.S. Environmental Protection Agency's (EPA) Phase II Stormwater Program since it has a municipal separate storm sewer system (identified in the Performance Standards as MS4). Therefore, the City is required to have a National Pollutant Discharge Elimination System (NPDES) Permit for its discharge of stormwater. The Michigan Department of Environmental Quality (MDEQ) administers the NPDES permit program for the State of Michigan (33 U.S.C. 1251 et seq., P.L. 92-500, 95-217) under Part 31, Water Resources Protection, of Michigan's "Natural Resources and Environmental Protection Act", 1994 PA 451 (NREPA).

B. Landowner owns real estate in the City at Address(es) for Agreement _____, Kalamazoo, MI 4900_ - Parcel No(s) Parcel Numbers _____- and which is more specifically described in Exhibit A (Property).

C. Landowner uses the Property for multi-family residential, commercial, and industrial purposes, or a combination of those uses. Landowner is making improvements to the Property that require approval under the City's Site Plan Review process, or is modifying the existing stormwater discharge system on the Property that either impacts the City's system or the retention of stormwater on the Property. As a result of those uses, improvements or modifications, Landowner agrees: (i) to install and maintain stormwater best management practices (BMPs) on the Property in accordance with approved plans and conditions; and (ii) to ensure that the BMPs continue serving the intended function in perpetuity.

D. Before signing this Agreement the Landowner, including its representatives, contractors or agents, has reviewed or had the opportunity to review the Performance Standards, work sheets or other documents maintained by the City relating to the City's regulation of its Stormwater Program and this Agreement.

THEREFORE, in consideration of the above recitals and the covenants, conditions, and restrictions stated below, the parties agree as follows:

1. *Recitals.* The above recitals are acknowledged as true and correct, and are incorporated by reference into this paragraph.

2. *Installation and Maintenance.* Landowner is solely responsible for the installation, maintenance and repair of the stormwater BMPs.

3. *Inspections and Repairs.* Landowner shall regularly inspect, maintain, repair or replace the private stormwater BMPs consistent with the Manufactured Treatment Device (identified in the Performance Standards as MTD) as recommended by the manufacturer, and those recommendations provided in the "Low Impact Development Manual for Michigan – A Design Guide for Implementers and Reviewers" (Southeast Michigan Council of Governments and MDEQ, 2008), and "Michigan Nonpoint Source Best Management Practices Manual" (MDEQ, 2014).

4. *Submittal of Reports.* Landowner shall annually submit a report to the City – on the form provided by the City – regarding stormwater BMPs Operation & Maintenance for each of the MTDs and other BMPs. Landowner shall deliver the report to the City's Environmental Programs Manager either by mail to 1415 N. Harrison Street, Kalamazoo, MI 49007, via fax at 269-337-8535, or via e-mail to the current manager, talandaj@kalamazoocity.org, within 30 calendar days of the inspection date.

5. *Modifications to the Stormwater System*. Landowner shall contact the City for approval prior to any design modifications to the stormwater treatment and/or conveyance system on the Property.

6. *City's Access to the Property*. Landowner, its successors and assigns, hereby grants the City, its authorized agents and employees, the right to enter upon the Property to inspect the stormwater BMPs whenever the City reasonably considers an inspection necessary in carrying out the intent and purpose of this Agreement. For example, an inspection may occur: (i) to follow-up on reported deficiencies in Landowner's exercise of stormwater BMPs; or (ii) to address lack of submitted documentation Landlord is required to submit to the City; or (iii) to respond to citizen complaints. The City shall provide Landowner with copies of the inspection findings, including any directive to perform maintenance, repairs or replacements, if necessary, to the stormwater conveyance system on the Property.

7. *Default by Landowner/Remedies*. If Landowner fails to maintain the stormwater BMPs and associated stormwater conveyance system in good working condition acceptable to the City, the City may enter upon the Property and take whatever steps necessary to correct deficiencies, including those identified in the inspection report. Landowner is responsible to pay the costs the City incurred for those repairs. The City will provide an itemized list of the repairs in an invoice to

Landowner, which is due within 30 days of the date on the invoice. To secure any amount owed by Landowner to the City under this Paragraph, the City has the right to place a lien against the Property in the same manner as delinquent taxes, including accruing interest, penalties and administrative expenses until the lien is fully satisfied.

It is expressly understood and agreed that the City is under no obligation to routinely inspect, maintain or repair the stormwater BMPs or stormwater conveyance system; and in no event shall this Agreement be construed to impose those obligations on the City.

8. *No Liability of the City*. This Agreement imposes no liability of any kind whatsoever on the City and the Landowner agrees to hold the City harmless from any liability if the stormwater BMPs and/or stormwater conveyance system failure to operate properly.

9. *Compliance with other Laws.* This Agreement does not replace or change the requirements of the Landowner to comply with all other applicable federal, state and local laws, rules and regulations; specifically including, without limitation, Ordinance No. 1825 (Wellhead Protection Overlay), Ordinance No. 1826 (Performance Standards for Groundwater Protection Within Wellhead Protection Capture Zones and Stormwater Management) and Chapter 29 of the Code of Ordinances (Stormwater System).

10. *Binding Effect/Third Parties*. This Agreement is binding on and shall inure to the benefit of the parties to this Agreement and their respective successors. Neither party may assign this Agreement without the prior written consent of the other party. The parties do not intend to confer any benefits on any person, firm, corporation, or other entity which is not party to this Agreement.

11. *Governing Law.* This Agreement is governed under applicable Michigan law. Both parties had the assistance of or the opportunity to seek legal counsel regarding the signing of this Agreement. Therefore, no construction or ambiguity of this Agreement is resolved against either party.

12. *Waiver.* A party does not waive any of its rights under this Agreement if that party fails to complain about an act or omission by the other party, no matter the duration of that act or omission. And a waiver by either party, whether expressed or implied, of any breach of a provision in this Agreement is not considered a waiver or consent to any subsequent breach of this same or other provision.

13. *Exhibits.* This Agreement includes the following exhibits Landowner agrees to provide:

    Exhibit A: Legal description of the real estate for which this Agreement applies ("Property").

    Exhibit B: Location map(s) showing a location of the Property and an accurate location of each stormwater BMP affected by this Agreement.

    Exhibit C: A List of all stormwater BMPs, including Manufacturer, Model, and locational reference to Exhibit B.

14. *Headings.* Headings in this Agreement are for convenience only and are not intended to interpret or construe its provisions.

15. *Entire Agreement/Counterparts.* This Agreement supersedes all agreements previously made between the parties relating to the subject matter. There are no other understandings or agreements between them. The parties may sign this Agreement in counterparts, which together shall comprise a single agreement, and the effective date for which is the date it is signed by both parties.

16. *Authorization.* Each of the parties represents and warrants to the other that this Agreement and its execution by the individual(s) on its behalf are authorized by the city commission, the board of directors or other governing body or organizational agreement of that party.

17. *Definitions.* The terms set forth in this Agreement shall have the same meaning as commonly used, except any term that is defined under statutes, ordinances or laws identified above, or any other applicable state statute shall have the meaning set forth under that ordinance, statute or law, including any subsequent amendments.

18. *Recording.* The City reserves the right to file a memorandum reflecting the existence of this Agreement with the Kalamazoo County Register of Deeds.

LANDOWNER

_____
By: Name of Signee
Its: Title of Signee

STATE OF MICHIGAN }
} ss.
COUNTY OF KALAMAZOO }

The foregoing instrument was acknowledged before me on _____, 20___, by _____.

_____
Notary Public
Kalamazoo County, Michigan
My commission expires: _____

CITY OF KALAMAZOO

_____
By: James J. Baker, P.E.
Its: Director of Public Services

STATE OF MICHIGAN }
} ss.
COUNTY OF KALAMAZOO }

The foregoing instrument was acknowledged before me on _____, 20__, by James J. Baker, P.E., Director of Public Services, City of Kalamazoo.

_____
Notary Public
Kalamazoo County, Michigan
My commission expires: _____

Prepared By & After Recording Return To:
The Office of City Attorney - Clyde Robinson, City Attorney
241 West South Street
Kalamazoo, MI 49007
(269) 337-8185

THE CITY OF Kalamazoo

Community Planning & Economic Development
245 N Rose Street, Suite 100 • Kalamazoo, MI 49007
(269) 337-8026 • www.kalamazoocity.org
www.kalamazoocity.org/siteplanreview

ATTACHMENT I

CITY OF KALAMAZOO – SITE PLAN APPLICATION & CHECKLIST

Site Plan Review is an administrative process through the Site Plan Review Committee. The Committee is comprised of members of many City Departments, including Public Safety, Public Services, Building and Trades, Community Planning and Economic Development (CPED).

The first step in Site Plan Review, Is the Pre-Application meeting. If you have not yet scheduled this meeting, please contact us at 269-377-8044 or email us at siteplan@kalamazoocity.org. The Pre-Application meeting allows applicants to ask questions about their plan, the process, this checklist as it relates to their project, or to finalize an application with staff. Staff contact for Site Plan Review is Bobby Durkee and may be reached at above lister number or durkeer@kalamazoocity.org

All Site Plans must be developed using this checklist. You will use this checklist as your cover page to your Site Plan. Using this checklist, provide all information pertinent to the project and note on which plan page the information can be found. Assistance and questions with this form or the process can be answered by CPED staff at any point during the process.

SITE PLAN REVIEW REQUIREMENTS

- Drawn at an engineering scale of between 1”=50’ or 1”=20’ with a north arrow
- Name, address, email, phone number of property owners, applicant, and firms/professionals involved in the project. *Verify property address with City Assessor’s Office*
- Address, legal description, and Parcel Identification Number (PIN) of subject property.
- All plans *must* be submitted in an **electronic format (PDF) plus one hard copy in 11”x17” format, one physical copy of application and supporting document required.**
- Supporting documents such as surveys, environmental reports, stormwater worksheets and stormwater agreements if required.
- Application is not complete until the application completed in full and fee are submitted.

DEPOSIT & FEES

You can find a copy of our fee schedule here: https://www.kalamazoocity.org/cpdfeeschedule/file

COMPLETED APPLICATIONS

Once completed, please submit this checklist and your completed site plan in PDF format to siteplan@kalamazoocity.org. If you have any questions, please visit www.kalamazoocity.org/siteplanreview or call 269-377-8044**.** Only completed applications following all Site Plan Review requirements will be accepted.

SITE PLAN REVIEW CHECKLIST

APPLICANT INFORMATION		
Applicant Name:		
Applicant Mailing Address:		
Applicant City:	Applicant State:	Applicant ZIP Code:
Applicant Phone:	Preferred Contact: ☐ Email ☐ Phone	
Applicant Email:		
PROPERTY OWNER INFORMATION		
Owner Name:		
Owner Mailing Address:		
Owner City:	Owner State:	Owner ZIP Code:
Owner Phone:	Preferred Contact: ☐ Email ☐ Phone	
Owner Email:		
PROPERTY INFORMATION		
Property Address:		
Parcel Identification Number (PIN):		

EXISTING CONDITIONS: All projects should provide information related to the site's existing conditions. Projects involving no new construction of buildings or additions less than 1,500 square feet and those not increasing a site's impervious coverage more than 10%, do not need to include a topographic site survey.

Site Plan Review Checklist Item	Site Plan: Found on Page
Vicinity Maps illustrating adjacent streets and existing structures (within 200'), zoning, land use, and 2025 Master Plan Land Development designation of adjacent parcels.	
Note presence of special district or designation such as:	
➢ Historic District	
➢ Brownfield Redevelopment Authority	
➢ State/Federal List for Soil/Groundwater Contamination – If yes, also contact MEGLE	
➢ Endangered/rare species/habitat area -if yes, also contact MDNR	
➢ Required reporting for RCRA/US EPA Hazardous Waste Handler site (note site type: small quantity generator, large quantity generator, transporter, treatment/storage/disposal, notifier, other)	
➢ Solid Waste Facility	
➢ Baseline Environmental Assessment (BEA)	
➢ Tax capture or deferment area (such as CIA, TIF, NEZ, etc.)	
➢ Natural Features Protection – 2025 Master Plan	
➢ Wellhead Protection Area	

SITE PLAN REVIEW CHECKLIST -COMPLETE IN FULL, ITEMS THAT DON'T APPLY MARK 'NA' AND NOTE WHY

EXISTING CONDITIONS: All projects should provide information related to the site's existing conditions. Projects involving no new construction of buildings or additions less than 1,500 square feet and those not increasing a site's impervious coverage more than 10%, do not need to include a topographic site survey.	
Site Plan Review Checklist Item	Site Plan: Found on Page
Location and type of existing features on the subject property and on adjacent properties, such as woods, wetlands, streams, rivers, lake, drains, 100-year flood plains, floodway, wetland, soil contamination, groundwater contamination etc. Also required are:	
➢ Topography (2' contour lines labeled with USGS datum)	
➢ Tree Inventory (note all trees 10" or greater at diameter breast height or dbh on the site with species type, condition, and remain/ remove status)	
If project disturbs an area greater than 1 acre within 500' of a lake or steam, EGLE permit req'd.	
Location, dimensions, and/or capacities of existing property lines; lots; recorded and unrecorded easements (including County drains); all utilities, including water, sewer, electric, gas, phone, cable, Internet, etc.; wells and cisterns, hydrants; Fire Department Connections, rights-of-way (including sidewalk, trails, landscaping, lighting, pavement, notes on vacation, etc. within it); and points of access	
Location of existing buildings and structures (such as signs, light fixtures, refuse areas, parking areas, fences, drainage, above/underground storage tanks, Fire Department Connection, fire service with backflow prevention type etc.) on the subject property, including setbacks, structure use, if planned to remain or be demolished, and age of structure if to remain.	
PROPOSED SITE PLAN: The following is the checklist of plan details and documentation required for the proposed site plan. Provide all information relevant to project. Please check with the Senior Development Planner if you are unclear on any provision prior to making application.	
PLANNING & ZONING ITEMS:	
Alignment with 2025 Master Plan	
Building Location, including distance from property lines and	
Building elevations, including number of stories and locating doors windows, facade materials, signage, and lighting	
Off-street parking (vehicle and bicycle) & loading, including location, barrier free, quantity, dimensions, signage	
All on-site lighting, including location, height, type, wattage	
Signage - type, location, and size	
Site Access for All Modes (vehicle, pedestrian, bicycle, transit) including location, dimension, radii, materials, signage	
Impervious surface, pre an post construction	
Refuse location & screening	
Landscape Plan, including fences, walls, plant schedule (number, size, species), and incorporate of existing trees and vegetation	

SITE PLAN REVIEW CHECKLIST-COMPLETE IN FULL, ITEMS THAT DON'T APPLY MARK 'NA' AND NOTE WHY

PROPOSED SITE PLAN: The following is the checklist of plan details and documentation required for the proposed site plan. Provide all information relevant to project. Please check with the Senior Development Planner if you are unclear on any provision prior to making application.	
BUILDING & TRADES	
Soil erosion control measures	
Final site grading/topography (2' contour lines labeled with USGS datum)	
USGS first floor elevation of buildings	
Locations, dimensions, area, use and construction type of all buildings	
ADA accessible routes	
Occupant egress path from all structures	
KDPS – FIRE MARSHALL	
Installation of Knox Box	
Proper location & sizing of:	
➢ Fire Department Connection (FDC)	
➢ FDC Signage	
➢ Hydrants	
➢ Water mains serving fire protection systems	
➢ Building identification (street number & name)	
Protective bollards	
Vehicular access & circulation	
On-site Storage or Use of Hazardous Chemicals. *Permit from Fire Marshall may be required*	
➢ SDS information	
➢ Right to Know Survey/Chemical Inventory Storage Form Part I	
➢ Wellhead Protection/Chemical Inventory Storage Form Part II	
➢ Classify hazard class of site and/or structure(s)	
PUBLIC SERVICES – TRANSPORTATION & UTILITIES	
Location and dimensions of new rights-of-way	
Site access for all modes (vehicle, pedestrian, bicycle, transit) including location, approach type, dimension, radii, materials, signage	
Access & circulation of site or proposed street network	
Improvements to existing off-site rights-of-way for all modes (vehicle, pedestrian, bicycle, transit)	
Timeline of proposed right of way work, street closures, lane restrictions or sidewalk closures.	
Location and dimension of proposed traffic control measures, including acceleration, deceleration, and passing lanes, traffic signals or signs, etc.	
Location and dimension of utilities & easements for gas, electric, phone, cable, etc.	

SITE PLAN REVIEW CHECKLIST-COMPLETE IN FULL, ITEMS THAT DON'T APPLY MARK 'NA' AND NOTE WHY

PROPOSED SITE PLAN: The following is the checklist of plan details and documentation required for the proposed site plan. Provide all information relevant to project. Please check with the Senior Development Planner if you are unclear on any provision prior to making application.	
Public Services - Environmental/Wellhead Protection	
Wellhead Protection Area (WHPA)	
➢ Stormwater Compliance with Performance Standards	
➢ Groundwater Infiltration Compliance	
Manufactured Treatment Device Worksheet	
Hazardous Material Storage present? If yes, complete Hazard Material Storage Forms 1 & 2	
Management of abandoned wells, cisterns, and above or underground storage tanks, including information on installation, operation, capping, or removing	
Installation of new well (temporary or permanent) with or without a Reduced Principle Backflow Prevention Assembly.	
Soil contamination present? If yes, MEGLE approval required for proposed stormwater infiltration.	
Property/site drains present? Detail connection to sanitary or storm sewer, on-site holding tank with pumping/disposal plan, or other.	
Detail direct or indirect discharge into or toward a storm sewer, drain, wetland, pond, lagoon, or other surface water feature?	
Detail all grade changes, cutting, and fill, including management of existing vegetation and soil erosion and/or sedimentation.	
Public Services – Stormwater Management	
Stormwater structures and systems, including size of development area (small 1/2 acre or less, medium 1/2 to 1 acre, and large 1+ acres)	
If there is any change (increase or decrease), complete:	
➢ Uniform Standard 1: Water Quality Treatment Volume Work sheet	
➢ Uniform Standard 2: Chanel Protection Volume Worksheet	
Geothermal Wells on the property.	
Site Discharge Calculation Worksheet Properly buffer water features on adjacent properties If site is to discharge into a County drain and/or is adjacent to an MDOT street, please contact appropriate authority for more information, additional standards, and permitting	
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Site Discharge Calculation Worksheet Properly buffer water features on adjacent properties If site is to discharge into a County drain and/or is adjacent to an MDOT street, please contact appropriate authority for more information, additional standards, and permitting	

PROPOSED SITE PLAN: The following is the checklist of plan details and documentation required for the proposed site plan. Provide all information relevant to project. Please check with the Senior Development Planner if you are unclear on any provision prior to making application.	
Public Services - Water	
Location & capacity of water main, water service, and hydrants.	
➢ For new water service also detail:	
➢ Size of line required	
➢ Use for fire service	
➢ Domestic meter size required	
➢ Irrigation meter size required	
➢ For new public water mains:	
➢ Located in public right-of-way -or -	
➢ Located in easement dedicated to COK	
➢ MDEQ PA399 Permit Application	
Quantity of new hydrants _____	
Fire Service (note: existing systems may require inspection & upgrade)	
➢ Locate cross-connections	
➢ Backflow prevention devices	
Public Services – Sanitary Sewer	
Sanitary sewer service lateral location and sizing	
➢ All existing & proposed new, including identification & depth of	
➢ underground utility crossings	
Invert elevation of existing lateral at ROW/easement lines which will continue to be active.	
Invert Elevation of proposed new lateral at ROW/easement line.	
Sanitary main U.S. invert elevation.	
Sanitary main D.S. invert elevation.	
Compliance with Chapter 28 of the City of Kalamazoo Ordinances & Engineering Best Practices	
Discharge Basis of Design Flow Rate, per connection: (Residential – Multi-Family 3+; Commercial – Restaurant, Laundry Facility, Manufacturing, Hotel/Motel, Medical, and others as required)	
➢ Contribution Per REU: (gpd)	
➢ Total REU's with justification/calculation	
➢ Average Flow Rate(gpm)	
➢ Peaking Factor with justification/calculation	
➢ Peak Flow Rate(gpm)	
If a new connection is proposed, a Sanitary Sewer Connection Application Form is required	

SITE PLAN REVIEW CHECKLIST-COMPLETE IN FULL, ITEMS THAT DON'T APPLY MARK 'NA' AND NOTE WHY

PROPOSED SITE PLAN: The following is the checklist of plan details and documentation required for the proposed site plan. Provide all information relevant to project. Please check with the Senior Development Planner if you are unclear on any provision prior to making application.	
Summary of Site Calculations	
Gross site area	
Area of site covered with impervious and semi-pervious surfaces	
Number and type of housing units	
Square footage of commercial, manufacturing, or institutional uses - site total and by floor area per building	
Number of vehicle & bicycle parking spaces provided, including barrier-free	
Number of trees (at or greater than 10" (dbh) saved and/or removed with proposed plan, including species type, size, and health	
Estimated number of vehicle trips per day generated by the proposed use (refer to ITE trip generation)	
If generating more than 1,000 vehicle trips/day are generated, a complete traffic impact analysis	
Light grid/illumination plan, if required.	
If requiring 20 or more parking spaces or impervious surface greater than 6,000 square feet, complete the following:	
➢ Water Quality Treatment Volume worksheet	
➢ Chanel Protection Volume Worksheet	
Calculations for proposed sewer main, sewer lead, water main, water service, and hydrants.	

Description of Project:

_____

_____

_____

_____

Applicant name & Signature

_____

_____

Date:

_____

SITE PLAN REVIEW RESOURCES

- Zoning Ordinance
- 2025 Master Plan
- 2015 Michigan Building Code
- 2015 Michigan Residential Code
- 2015 Michigan Mechanical Code
- 2015 Michigan Plumbing Code
- ADA - ICC A117.1-2009
- Chapter 28, Kalamazoo Code of Ordinances, as Amended, as Amended
- Soil Erosion and Sedimentation Control - Chapter 30, Kalamazoo Ordinances, as Amended
- Flood Plain Management - Chapter 29 City of Kalamazoo Ordinances, as Amended
- Chapter 38 of the City of Kalamazoo's Code of Ordinances, as Amended
- MMUTCD
- NACTO
- Complete Streets Policy, City of Kalamazoo
- ITE Trip Generation
- MDEQ - Uniform Stormwater Standards 1-4
- Title 40 of the Code of Federal Regulations (CFR) as Amended, US EPA
- Natural Resources and Environmental Protection Act (NREPA), Act 451 of 1994 Part 41, as Amended Recommended Standards for Wastewater Facilities, Current Addition (10 States Standards)
- Standard Construction Specifications for Wastewater, City of Kalamazoo, Current addition
- Wellhead Protection Zoning Overlay - Chapter 3, Section 3.5, Ordinance No. 1825 as Appendix A
- Performance Standards for Groundwater Protection Within Wellhead Protection Capture Zones and Stormwater Quality Management - Ordinance No. 1826 as Appendix A, Chapter 8, Section 8.3
- Phase II Stormwater NPDES Permit
- https://kalamazoopublisafety.org/fire/marshall
- Maker of Acceptable Knox Box (www.knoxbox.com)
- USEPA Safe Drinking Water Act, 42 U.S.C. §300f et seq. (1974)
- MDEQ, Michigan Safe Drinking water Act 1976 PA 399, as Amended
- Recommended Stardards for Water Works, Current Addition (10 States Standards)
- City of Kalamazoo's Standard Specifications for Water Main and Service Installation, Current Edition
- www.protectyourwater.net

THE CITY OF Kalamazoo

PERMIT APPLICATION (For Part 91)
SOIL EROSION AND SEDIMENTATION CONTROL

Community Planning and Economic Development
245 N Rose Street, Ste 100
Kalamazoo, MI 49007
269-337-8026

OFFICE USE ONLY

Permit Number
Date Issued
Expiration Date

1. APPLICANT (Please check if applicant is the landowner or designated agent*)

Name ☐ Landowner ☐ Designated Agent			
Address			
City	State	Zip Code	Area Code/Telephone Number

2. LOCATION

Section	Town	Range	Township	City/Village	County
Subdivision	Lot No.	Tax ID Number	Street Address		

3. PROPOSED EARTH CHANGE

Project Type: ☐ Residential ☐ Multi-family ☐ Commercial ☐ Industrial ☐ Land Balancing

Describe Project		Size of Earth Change (acres or square feet)
Name of and Distance to Nearest Lake, Stream, or Drain	Date Project to Start	Date Project to be Completed

4. SOIL EROSION AND SEDIMENTATION CONTROL PLAN (Refer to Rule 323.1703)

Note: ___ complete sets of plans must be attached.	Estimated Cost of Erosion and Sediment Control
	Plan Preparer's Name and Telephone Number Area Code ( )

5. PARTIES RESPONSIBLE FOR EARTH CHANGE

Name of Landowner (if not provided in Box No. 1 above)			Address	
City	State		Zip	Area Code/Telephone Number
Name of Individual "On Site" Responsible for Earth Change			Company Name	
Address	City	State	Zip Code	Area Code/Telephone Number

6. PERFORMANCE DEPOSIT (If required by the permitting agency)

Amount Required $ _____ ☐ Cash ☐ Certified Check ☐ Irrevocable Letter of Credit ☐ Surety Bond				
Name of Surety Company				
Address	City	State	Zip Code	Area Code/Telephone Number

I (we) affirm that the above information is accurate and that I (we) will conduct the above described earth change in accordance with Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, applicable local ordinances, and the documents accompanying this application.

Landowner's Signature	Print Name	Date
Designated Agent's Signature*	Print Name	Date

*Designated agent must have a written statement from landowner authorizing him/her to secure a permit in the landowner's name.

Soil Erosion Sedimentation Control (SESC) Program Plan Evaluation Checklist

YOU MUST SUPPLY THE FOLLOWING DOCUMENTS AND INFORMATION

Project Name: _____

Reviewing Agency: _____

	SESC Plans	Comments:
1	☐ Scaled Drawing (< 200' = 1")	
2	☐ Legal Description	
3	☐ Site Location Sketch	
4	☐ Proximity to Lakes & Streams	
5	☐ Predominate Land Features	
6	☐ Contours/Slope	
7	☐ Soils	
8	☐ Limits of Earth Change	
9	☐ Drainage & Dewatering Facilities	
10	☐ Timing & Sequence of Earth Change	
11	☐ Temporary SESC Measures (location, install & removal info)	
12	☐ Permanent SESC Measures (location & install info)	
13	☐ Maintenance Program for Permanent SESC Measures	

Project Plan Evaluation Status

☐ Approved

☐ Not Approved (Provide Reason)

Reason: _____

_____

SESC Plan Reviewer Name: _____ Date Reviewed: _____

Project Name/Landowner: _____ SESC Permit # _____

Anticipated Start Date: _____

Anticipated End Date: _____

Construction Sequence	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temporary SESC Measures Installed												
• Silt Fence	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Rock Access Road	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Erosion Control Blankets	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Inlet protection	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Sediment Basins	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Other:	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Strip & Stockpile	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Rough Grading	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Building Construction	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Final Grade	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Permanent SESC Measures Installed	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Sediment Basins	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Seeding/Mulch/Landscaping – Vegetation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
• Pavement/Rock	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Removal of Temporary SESC Measures	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Briefly describe the maintenance plan (include responsible party) for each temporary and permanent SESC measure.

Measure	Responsible Party	Maintenance Plan
Silt Fence		
Buffer Strips		
Catch Basins/Inlets		
Street Sweeping		
Seeding/Mulch		
Storm Ponds/Sediment Basins		
Other:		

ATTACHMENT J

Stormwater Treatment Unit Inspection Report

Vertical Flow-Thru Treatment Unit (Filter Insert)

Inspections to be performed and reported annually.

Inspection Date: _____

Inspector's Name: _____ **Title:** _____

Company Performing Inspection (if performed by off-site company): _____

Treatment Unit Site Information

Business Name: _____ **Site Address:** _____

Contact Person: _____ **Title:** _____

Phone Number: _____ **Fax Number:** _____

Email Address: _____

Manufacturer & Model of Treatment Unit(s) Installed: _____

Number of Treatment Units Installed/Inspected: _____

Observed Condition of Treatment Unit(s)

Leaves and/or other debris in sediment chamber and/or filter media ☐

Leaves, debris and sediment in and around treatment unit is restricting stormwater flow into and through unit ☐

Sediment

Less than 1 inch of sediment in sediment chamber ☐

Several Inches of sediment in sediment chamber ☐

More than 5 Inches of sediment in sediment chamber ☐

Filter Media

Filter media fairly clean, only requiring surface cleaning ☐

Filter media is dark and covered with a sediment layer ☐

Filter media is completely plugged with sediment and/or debris ☐

The unit must be maintained on a regular schedule to prevent saturation of the filter media by contaminants and blockage from sedimentation and debris buildup. Maintenance can be accomplished by removing cover, vacuuming debris and sediment from the sediment chamber with a wet/dry vacuum and replacing the filter media if necessary. A typical recommended change-out of the filter media would be every 4 to 6 months. Sedimentation maintenance may be needed more often depending on the location and season. A clean-out after heavy leaf fall is recommended.

Maintenance/Repair Needed on Treatment Unit(s)

No repair or maintenance needed at this time ☐

Sediment & debris need to be removed and filter media cleaned ☐

Sediment & debris need to be removed and filter media replaced ☐

Unit is **not** functioning properly and needs to be repaired ☐

Item(s) needing repair: _____

Maintenance/Repair Performed on Treatment Unit(s)

Sediment chamber has been cleaned ☐

Filter media has been cleaned ☐

Filter media has been replaced ☐

Necessary repairs have been made ☐

Necessary repairs have not been done but are scheduled to be completed ☐

Comments: _____

Mail this report to: Department of Public Services, 1415 N. Harrison Street, Kalamazoo, MI 49007
Email this report to: ATTN: Environmental Programs Manager, **talandaj@kalamazoocity.org** and
Email to: **chemicalinventoryforms@kalamazoocity.org**
Fax to: ATTN: Environmental Programs Manager, **269-337-8535**
Contact: Environmental Programs Manager, 269-337-8583

Note: Please contact the manufacturer or supplier of your stormwater treatment unit for detailed instructions on maintenance of your particular unit.

Stormwater Treatment Unit Inspection Report

Horizontal Flow In-Line Treatment Unit

Inspections to be performed and reported annually.

Inspection Date: _____

Inspector's Name: _____ **Title:** _____

Company Performing Inspection (if performed by off-site company): _____

Treatment Unit Site Information

Business Name: _____ **Site Address:** _____

Contact Person: _____ **Title:** _____

Phone Number: _____ **Fax Number:** _____

Email Address: _____

Manufacturer & Model of Treatment Unit(s) Installed: _____

Number of Treatment Units Installed/Inspected: _____

Observed Condition of Treatment Unit(s)

The depth of oil and sediment in the unit can be measured from the ground surface.

Sediment	Oil
Less than 1 inch of sediment on bottom ☐	No oil on water surface ☐
1 to 7 Inches of sediment on bottom ☐	Oily sheen on water suface ☐
More than 7 Inches of sediment on bottom ☐	More than 1/8 inch of oil on water surface ☐

Generally, annual maintenance is recommended but the required maintenance frequency will vary with the amount of pollution on your site (number of hydrocarbon spills, amount of sediment, etc.). It is recommended that the frequency of maintenance be increased or reduced based on local conditions. Maintenance should be performed immediately after an oil spill or once the sediment depth reaches the values specified in your unit manufacturer's maintenance specifications. Maintenance of these units is performed from the surface via vacuum truck. These units must be maintained to ensure long-term environmental protection through continual performance.

Maintenance/Repair Needed on Treatment Unit(s)

No repair or maintenance needed at this time ☐

Vactoring of oils and/or sediment needed ☐

Unit is **not** functioning properly and needs to be repaired ☐

Item(s) needing repair: _____

Maintenance/Repair Performed on Treatment Unit(s)

Oil and/or sediment has been vactored out of unit ☐

Necessary repairs have been made ☐

Necessary Repairs have not been done but are scheduled to be completed ☐

Comments: _____

_____

Mail this report to: Department of Public Services, 1415 N. Harrison Street, Kalamazoo, MI 49007
Email this report to: ATTN: Environmental Programs Manager, **talandaj@kalamazoocity.org**
and Email to: **chemicalinventoryforms@kalamazoocity.org**
Fax to: ATTN: Environmental Programs Manager, **269-337-8535**
Contact: Environmental Programs Manager, 269-337-8583

Please contact the manufacturer or supplier of your stormwater treatment unit for detailed instructions on maintenance of your particular model.

THE CITY OF Kalamazoo

Stormwater Structure Inspection/Maintenance
Data Collection Form

Date: _____ Time: _____ Inspector(s): _____

Name of Site: _____ Location: _____

Structure Type: ☐ Retention Pond ☐ Check Dams ☐ Vegetative ☐ Other _____

I. Reason for Inspection

☐ Initial ☐ Routine ☐ Follow-up ☐ Response to Complaint

II. Observed Conditions

☐ No apparent need for maintenance at this time

☐ Excessive vegetation

☐ Excessive sedimentation build-up

☐ Excessive accumulation of debris

☐ Outfall/pipe structure damage

☐ Outfall/pipe structure sediment build-up

☐ Other and/or Comments: _____

III. Maintenance Performed Date(s) _____

☐ Removed excessive vegetation

☐ Removed excessive sedimentation

☐ Removed excessive debris

☐ Repaired outfall/pipe structure damage

☐ Removed sedimentation from outfall/pipe structure

☐ Other: _____

Comments: _____

ATTACHMENT K

City of Kalamazoo Stormwater Assets (2021 Update)

Most stormwater assets can be viewed on the City's online GIS by selecting:

https://www.kalamazoocity.org/maps

Click the tab "About" and then click on "Maps & GIS". Then click on "Continue to Property Mapping" and then click on the "Layers" tab (located on the lower left side of the screen). Next check the box labeled "Public Stormwater".

To view the Legend, click on the "Layers Menu" (located on the upper left of the screen) and select "Show Legend".

These maps can be printed and will include the legend on the map. To print, select the "Tools" box (located on the upper right of the screen) and the Tools bar will appear . Click on the "Print" box to select the desire printing options.

Specific maps that include all the stormwater assets and their locations are kept in the Water Resources Division at the City's facility at 1415 N. Harrison Street, Kalamazoo, MI 49007. Hard copies are available upon request using the following link: https://protectyourwater.net/contact/. For additional information refer to Figures 3, 5 and 6, and Tables 1, 4, 5 and 6.

In summary, the following are 2021 statistics detailing the stormwater collection system (MS4). There is a total of approximately 452 outfalls shown on Figure 3, with the following breakdown:

- 354 City of Kalamazoo Outfalls with ~170 to ground that are included in the inspections since most are near a surface water feature
- 74 are attributed to other MS4s (52 MDOT, 13 KCRC, 8 Portage, 1 KCDC)
- 4 are private outfalls
- 20 have been removed/deleted

Additionally, the City's structural assets include:

- approximately 11,543 catch basins/inlets
- approximately 4,741 manholes
- approximately 251 leaching basins
- approximately 195 culverts
- approximately 187 miles of storm main + 46 miles of connection pipe
- 16 City-owned pretreatment sites
- 8 detention and retention basins
- approximately 256 private pretreatment sites
- native vegetive buffers around south Crosstown Pond and select areas at Milham Park

Stormwater Jurisdictional Discharge Points

There are *74 discharge "outfall" points from the City's MS4 to other MS4s*. Figure 1 shows all stormwater discharge points (outfalls and City MS4 to Non-City MS4 exit locations), indicating the receiving waters and MS4 interconnecting jurisdiction. Table 1 lists the outfall and action status and Table 2 lists the City MS4 to non-City MS4 connections. Of the 74 City MS4 *to* non-City MS4 discharge points, 2 go into the City of Portage's MS4, 4 into the Kalamazoo County Road Commission's MS4, and 68 into the Michigan Department of Transportation's (MDOT's) MS4. There are seven retention/detention basins.

2018-2019 Inspections

<u>Outfalls (354)</u>
For 2018, there were 65 total stormwater outfalls investigated, 11 of those were outfalls to the ground.

For 2019, there were a total of 104 stormwater outfalls investigated, 23 of those (including 1 within northern Portage City limits) were outfalls to ground.

<u>Catch Basins/Inlets & Manholes</u>
For 2018-2019, there were hundreds of catch basins/inlets and manholes inspected and repaired. Maintenance and use of the on-line and internal GIS databases continues and a new program is in development to assist in tracking stormwater complaints, repairs, and replacements including tracking and forecasting (estimated for completion 2020-2021).

<u>Pre-treatment Units (12)</u>
For 2018, 6 units were inspected and maintained as needed.

For 2019, 6 units were inspected and maintained as needed.

<u>Detention & Retention Basins (8)</u>
For 2018 and 2019, there were a total of 7 basins inspected with plans for maintenance in 2020. One basin at 2716 S. Burdick Street was last inspected in 2016 due to access issues because it is landlocked.

<u>Reported Stormwater Controls Trouble Reports</u>
For 2018 and 2019, there were a total of 178 trouble reports that were responded to.

Response to MDEQ Comments in Letter dated May 20, 2016
Described in "Appendix 1: Comments on City of Kalamazoo MS4 Permit Application"
Regarding City of Kalamazoo 2015 Application for Reissuance of the NPDES MS4 Permit
(Updated 2021)

Additional Information to Supplement

Textual Response

Questions 60 - 84

Attachment K:

1. "Work Practice to Update Stormwater Asset Inventory and Mapping"

Attachment L2:

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

Attachment M2:

3. "Stormwater System Operations and Maintenance Plan"
4. "Stormwater System Cleaning Tracking Table" Example
5. "Outfall Stormwater Sewershed Map" Example

Table 2:

6. Table "Municipal Operations/Good House-Keeping for Pollutants, BMPs and Stormwater Program Assessment"
7. "Street Sweeping Policy"

Figure 7:

8. Figure "Designated Areas for Snow Plowing & Street Sweeping"

WORK PRACTICE

City of Kalamazoo
Public Services Department
Stockbridge Facility

WP Number: WP_Eng39	**Computer Path: * see procedure below ***
Title: **Updates to Stormwater Asset Inventory and Mapping**	**Written By: Jane McDonagh** **Date: August 9, 2016**
	Reviewed By:
	Approved By

I. PURPOSE AND SCOPE: This work practice has been written to describe and standardize the practice of collecting as-builts, GPS points, or any design and drawings of the storm system located in the City of Kalamazoo.

II. REQUIREMENTS: Ensure all information pertaining to the addition and elimination of storm structure inventory within the City of Kalamazoo is collected, and the GIS database and map are updated.

III. RESPONSIBILITIES:

- **It is the responsibility of the engineer, developer, contractor, or project manager to maintain a set of as-built drawings. An electronic copy or hard copy of the as-builts shall be provided to the City of Kalamazoo upon completion of the project.**
- **It is the responsibility of the Records Supervisor to scan in the as-builts if necessary, and place them in the Public Services project folder within 60 days. It will be the responsibility of the Records Supervisor to submit the as-built information to the Senior Systems Analyst (GIS) in the IT department for implementation into the GIS database and stormwater system G.I.S. overlay map within 90 days (quarterly).**
- **It is the responsibility of the Lead Drafter to update the storm map with the addition or elimination of storm structures on a quarterly basis.**

IV. PROCEDURE

Work Practice

- **Gather all as-built information and file in project folder to be placed on the Eng Records drive. H:\STORM\PROJECTS**
- **The Lead Drafter will update the storm map J:\SYSTEM WIDE MAPS\STORM-SYSMAP.DWG**

- **Submit the following information for the GIS storm map http://www.geoquickserver.com/mapviewer/?sitename=envservices**

- **Systems Analyst (GIS) personnel will add the following to the GIS database and on-line stormwater map layer:**

    1. **Storm Structure:**
        1. **Storm ID number**
        2. **Type**
        3. **Location**
        4. **Material**
        5. **Section number**
        6. **Jurisdiction**
        7. **Double Basin Y or N**
    2. **Storm Pipe:**
        1. **ID number**
        2. **Size (Diameter)**
        3. **Material**
        4. **Main Segment Y or N**
        5. **Culvert Segment Y or N**

V. REFERENCES:

Map & file locations:

- **H:\STORM\PROJECTS**

- **J:\SYSTEM WIDE MAPS\STORM-SYSMAP.DWG**

- **http://www.geoquickserver.com/mapviewer/?sitename=envservices**

WORK PRACTICE REVISION HISTORY

Revision	Date	Approval

Work Practice

ATTACHMENT L

CITY OF KALAMAZOO

DEPARTMENT OF PUBLIC SERVICES
FLEET SERVICES FACILITY
415 STOCKBRIDGE AVENUE
KALAMAZOO, MICHIGAN 49001

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

January, 2017

Department of Environmental Quality (DEQ)
Water Resources Division (WRD)
Storm Water Pollution Prevention Plan (SWPPP) Template
Template Revision Date: 3/12/2015

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12.0 Figure 1 - Facility Site Map
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14.0 Visual Assessment Procedures
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17.0 Comprehensive Site Inspection Form
18.0 Visual Assessment Report Form
19.0 Employee Training Form
20.0 Annual SWPPP Review Report Form
21.0 DEQ Spill or Release Report

1.1 GENERAL FACILITY INFORMATION

Facility Information:

Name of Facility: City of Kalamazoo Fleet Services Facility
Facility Address: 415 Stockbridge Avenue, Kalamazoo MI 49001
County: Kalamazoo
Standard Industrial Classification (SIC) Code: 37
Owner or Authorized Representative: City of Kalamazoo, Department of Public Services

Facility Contact Information:

- Name: Gary Doorlag
- Title: Shop Supervisor - Acting Fleet Manager
- Telephone: 269-337-8162
- Email Address: doorlagg@kalamazoocity.org
- Mailing Address: 415 Stockbridge Avenue, Kalamazoo, MI 49001

Facility Contact information to be aware of:
The "Facility Contact" was specified in the application. The permittee may replace the facility contact at any time, and shall notify the Department in writing within 10 days after replacement (including the name, address, email address, if available, and telephone number of the new facility contact).

a) The facility contact shall be (or a duly authorized representative of this person):
for a corporation, a principal executive officer of at least the level of vice president, or a designated representative, if the representative is responsible for the overall operation of the facility from which the discharge described in the permit application or other NPDES form originates,
for a partnership, a general partner,
for a sole proprietorship, the proprietor, or
for a municipal, state, or other public facility, either a principal executive officer, the mayor, village president, city or village manager, or other duly authorized employee.

b) A person is a duly authorized representative only if:
the authorization is made in writing to the Department by a person described in paragraph a. of this section; and the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the facility (a duly authorized representative may thus be either a named individual or any individual occupying a named position).

Certified Storm Water Operator

Information: Name: Gary A Doorlag
Certification Number & Expiration Date: 12605 expires July, 2019
Telephone: 269-337-8162
Email Address: doorlagg@kalamazoocity.org
Is the Certified Operator an employee at the facility: **X Yes** No
If the answer to the above question is "No" then include the Certified Operator's business name and mailing address:

Permit Information:

General Permit Number: MIG610336
Certificate of Coverage (COC) or Individual Permit Number: MIG610336
COC or Individual Permit Effective Date of Coverage: September 28, 2009
Receiving Waters: Portage & Arcadia Creeks, and Kalamazoo Mainstream 3 Corridor
Required Monitoring: Yes **X No**

Identify the Total Daily Maximum Load (TMDL) listed on COC: Kalamazoo River TMDL for Phosphorus

Brief Industrial Activity Description:

The Department of Public Services, Equipment and Fleet Services, is responsible for repair and maintenance of City

vehicles and heavy equipment within the Department of Public Services as well as a portion of Parks and Recreatior Public Safety, and City Hall vehicles and equipment. They are also responsible for the underground fuel system located at the site used for City fleet/vehicle fueling.

If this facility is a seasonal facility describe the seasonal operation and what months the facility will be operating:

2.0 STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this SWPPP. The members of the team and their primary responsibilities (i.e. implementing, maintaining, record keeping, submitting reports, conducting inspections, employee training, conducting the annual compliance evaluation, testing for non-storm water discharges, signing the required certifications) are as follows·

NAME & TITLE	RESPONSIBILITY
Gary A Doorlag, Equipment Services Supervisor/Acting Fleet Manager	Primary SWPPP contact; overall administration of SWPPP; signing the required certifications
Ryan Stoughton, Senior Civil Engineer Waste Water	Secondary SWPPP contact; implementing maintaining, record keeping, submitting reports
Scott Managhan, Environmental Services Technician III	Conducting inspections, testing for non-stormwater discharges
Steve Rochow, Environmental Services Technician III	Conducting inspections, testing for non-stormwater discharges
Steve Skalski, Assistant City Engineer, Certified Stormwater Operator	Annual Compliance Evaluation
John P. Paquin, Water Resources Division Manager	MS4 Watershed General Permit/Phase II Program compliance

3.1 SITEMAP

Preparing a site map or sketch is the first step in assessing the facility. See the DEQ Industrial Storm Water Certified Operator Training Manual for additional information.

The facility's site map includes all applicable items listed in the permit, which include:

1) Buildings and other permanent structures
2) Storage or disposal areas for significant materials
3) Secondary containment structures and descriptions of what they contain in the primary containment structures
4) Storm water discharge points (which include outfalls and points of discharge), numbered or otherwise labeled for reference
5) Location of storm water and non-storm water inlets (numbered or otherwise labeled for reference) contributing to each discharge point

6) Location of NPDES permitted discharges other than storm water
7) Outlines of the drainage areas contributing to each discharge point
8) Structural runoff controls or storm water treatment facilities
9) Areas of vegetation (with brief description such as lawn, old field, marsh, wooded, etc.)
10) Areas of exposed and/or erodible soils and gravel lots
11) Impervious surfaces (roofs, asphalt, concrete, etc.)
12) Name and location of receiving waters
13) Areas of known or suspected impacts on surface waters as designated under Par 201 (Environmental Response) of the NREPA.

See Figure 1 for Facility Site Map.

4.0 SIGNIFICANT MATERIALS

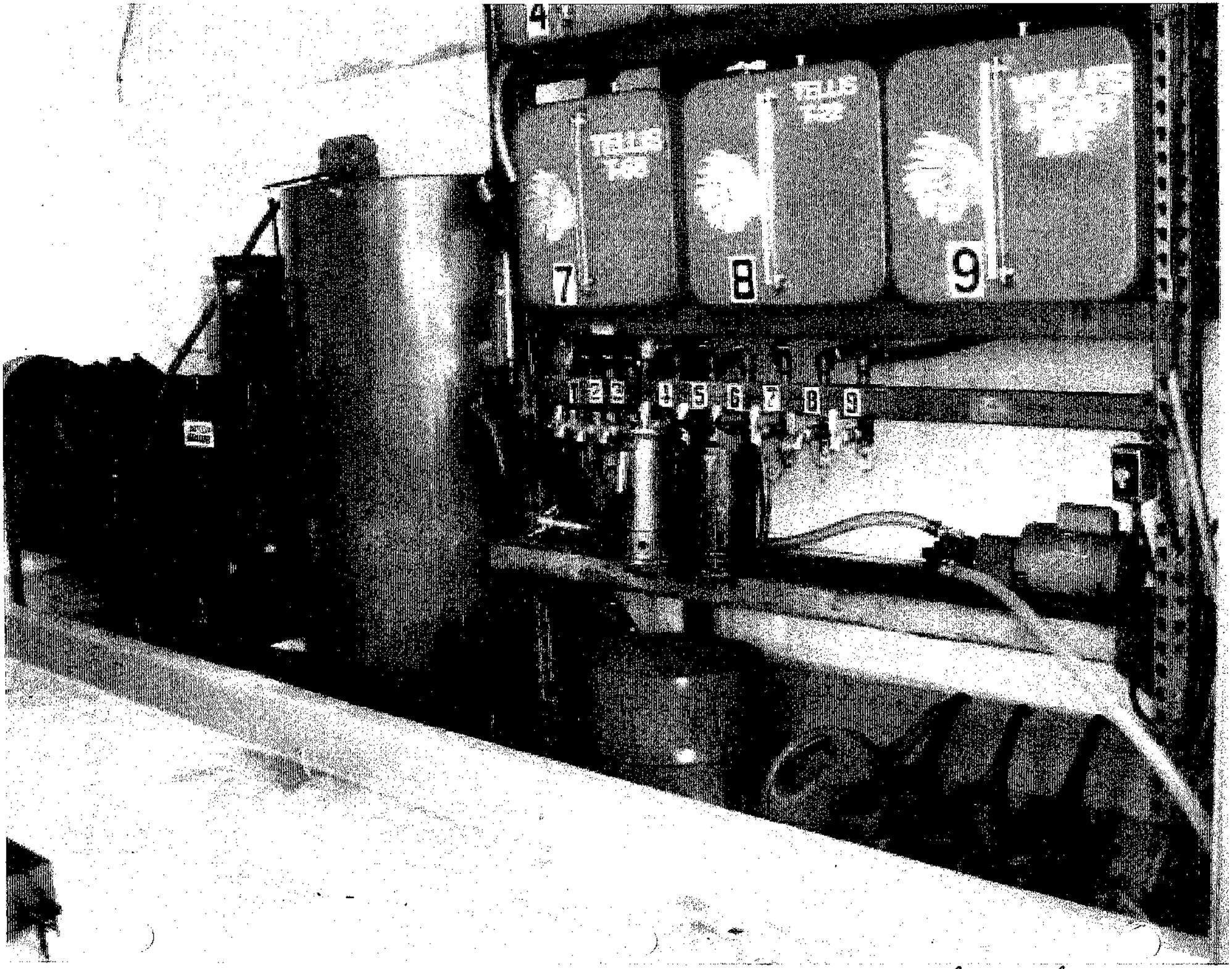
Definition of significant material which could degrade or impair water quality including but not limited to

- Raw Materials
- Fuels
- Solvents
- Detergents
- Plastic pellets
- Finished materials (i.e. metallic products)

TABLE 1A: Significant Materials in Vehicle Maintenance Building

Significant Material	Storage Capacity	Quantity on Site 11-1-16	Quantity Used Last 12 Months
Waste Oil	350 qallons	50 gallons	2015 qallons
Global antifreeze	65 qallons	48 qallons	220 qallons
Permeant antifreeze	65 qallons	93 qallons	110 qallons
2 Cycle Oil	65 gallons	20 gallons	5 gallons
Universal Tractor fluid	65 gallons	40 gallons	55 gallons
Diesel fuel	65 qallons	56 qallons	
Tellis T-22	65 qallons	13 qallons	
Dynalife L-EP	3 - 5 gallon pails	S15 gallons	
Rotella T sea 10 w motor oil	1- 5 gallon pail	:::;5 gallons	
Donax TD Fluid	1 -5 gallon. pail	:::;5 gallons	
Mobil Grease X 4 P 222	1 -5 qallon pail	:::;5 qallons	
Mobil lux EPI	1 -5 gallon pail	:::;5 qallons	
JCB Special gear oil plus	3-5 gallon pails	S15 gallons	
Non-Chlorinated brake cleaner	55 qallon drum	45 gallons	55 qallons
Waste antifreeze	55 Qallon drum	45 gallons	Picked up bv waste hauler
15w40 cj4 oil	55 gallon drum	:::;55 gallons	110 gallons
Hyd oil 10 weight	500 gallons	400 gallons	500 gallons
Tellis T 68 oil	55 qallon drum	45 gallons	
85-140 qear oil	2- 55 gallon drum	97 gallons	
Wolf head synthetic ATF	55 gallon drum	40 qallons	100 qallons

15w40 motor oil	500 gallons	350 qallon	1144 gallons
Chevron grease	55 gallon drum	55 gallons	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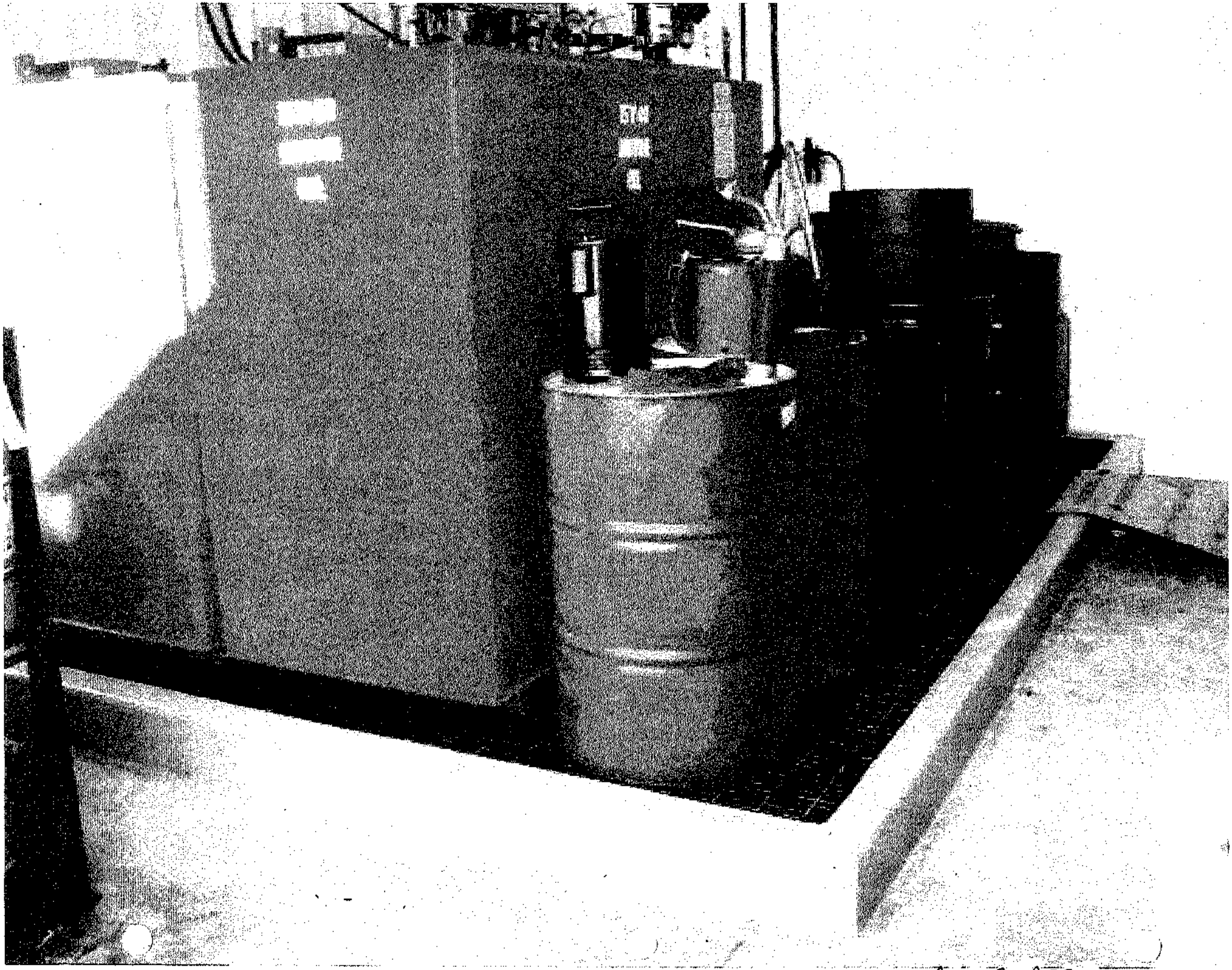


TABLE 1B - SIGNIFICANT MATERIAL INVENTORY AND DESCRIPTION 01 INDUSTRIAL ACTIVITY OR SIGNIFICANT MATERIAL STORAGE AREAS

Section Listed in General Permit	Storage Areas / Activity Areas	Significant Materials	Exposure Method	Reasonable Potential Evaluation (high,medium,low)	Inlet(s)	Outfalls(s)
1) Loading, unloading, and other material handling operations	Underground fuel storage tanks	(1) 6000 gallon diesel fuel (2) 6,000 gallon gasoline	Spills	Low	Two CBs upgradient from Aqua Shield Unit	STOWKC2231
	Fuel pumps	Diesel fuel and unleaded gasoline	Spills	Medium	Two CBs upgradient from Aqua Shield Unit	STOWKC2231
	Top dirt, sand and gravel storage areas	Soil, sand and gravel	Direct runoff	Medium	None	None
	Indoor storage area in maintenance garage	Waste oil, antifreeze, mineral spirits, motor oil, tractor fluid, diesel fuel, transmission fluid, grease, gear box oil, brake cleaner.	Leaks and spills	High		STOWKC2231
2) Outdoor storage including secondary containment structures	Underground fuel storage tanks	(1) 6000 gallon diesel fuel (2) 6,000 gallon gasoline	Leaks	Low	Two inlets upgrading from Aqua Shield Unit	STOWKC2231
	Top dirt, sand and gravel storage	Soil, sand and gravel	Direct runoff	Medium	None	None
	Recycling dumpsters, misc. equipment and parts storage, tree trimming piles, back-up generator	General refuse, grease, hydraulic fluids, hydraulic oil, oil, coolant, grey water, scrap metal, diesel	Leaks - primarily direct runoff.	Low	Inlets upgrading from Aqua Swirl Unit	STOWKC2231
	Asphalt storage (minimal)	Asphalt	Direct runoff	Low	None	None

TABLE 1B CONTINUED

Section Listed in General Permit	Storage Areas / Activity Areas	Significant Materials	Exposure Method	Reasonable Potential Evaluation (high,medium,low)
3) Outdoor manufacturing or processing activities	None			
4) Significant dust or particulate generating processes	None			
5) Discharge from vents, stacks, and air emission controls	None			
6) On-site waste disposal practices	None			
7) Maintenance and cleaning of vehicles, machines and equipment	Maintenance garage (inside)	Waste oil, antifreeze, mineral spirits, motor oil, tractor fluid, diesel fuel, transmission fluid, grease, gear box oil, brake cleaner.	Spills, leaks	Medium
	Truck wash	Vehicle dirt and associated materials	Direct runoff	Low (runoff is designed to flow to sanitary inlets)
8) Areas of exposed and/or erodible soils	Top dirt, sand and gravel storage	Soil, sand and gravel	Direct runoff	Medium

9) Sites of Environmental Contamination listed under Part 201	None
10) Areas of significant material residues	None
11) Areas where animals congregate (wild or domestic) and deposit wastes	None
12) Other areas where storm water may contact sianificant materials	None

- ./ Any chemical the facility is required to report pursuant to section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA)
- ./ Polluting Materials - Oil and any material, in solid or liquid form, identified as polluting material under the Part 5 Rules (Rules 324.2001 through 324.2009 of the Michigan Administrative Code)
- ./ Hazardous Wastes as defined in Part 111 of the Michigan Act
- ./ Fertilizers
- ./ Pesticides
- ./ Waste Products (i.e. ashes, slag, sludge, plant waste, animal waste)

During the significant materials identification phase, all sources of potential storm water contamination need to be identified. Both the inside and outside of the facility must be inventoried to determine the materials and practices that may be sources of contamination to storm water runoff. Note the identification phase must address residual contaminants which may be found on items stored outside.

4.1 Inventory of Exposed Significant Materials

The permit requires a general inventory of significant materials that could enter storm water. For each material listed the SWPPP shall include the ways in which each type of material has been or has reasonable potential to become exposed to storm water (e.g. spillage during handling; leaks from pipes, pumps, or vessels; contact with storage piles, contaminated materials or soils; waste handling and disposal; deposits from dust or overspray; etc.). In addition, the SWPPP must identify the inlet(s) spilled significant materials may enter and the discharge point(s) through which the spilled significant material may be discharged.

See Table 1 for Significant Material Inventory

4.2 Description of Industrial Activities & Significant Material Storage Areas

The permit requires industrial facilities to evaluate the reasonable potential for contribution of significant materials to storm water runoff from at least the following areas or activities:

1) Loading, unloading, and other material handling operations
2) Outdoor storage including secondary containment structures
3) Outdoor manufacturing or processing activities
4) Significant dust or particulate generating processes
5) Discharge from vents, stacks, and air emission controls
6) On-site waste disposal practices
7) Maintenance and cleaning of vehicles, machines, and equipment
8) Areas of exposed and/or erodible soils
9) Sites of Environmental Contamination listed under Part 201 (Environmental Response) of the NREPA
10) Areas of significant material residues
11) Areas where animals congregate (wild or domestic) and deposit wastes
12) Other areas where storm water may contact significant materials

For each applicable item, the permit requires a written description of the specific activity or storage plan along with the written description of the activities or storage areas, a description of the significant materials associated with those items must be included.

See Table 1 for Industrial Activity and Significant Material Storage Area

4.3 List of Significant Spills

The permit requires a list of significant spills and significant leaks of polluting materials that occurred at areas that are exposed to precipitation or that otherwise discharge to a point source at the facility. The listing shall include spills that occurred over the three years prior to the effective date of a certificate of coverage

The listing shall include the date, volume, exact location of release, and actions taken to clean up the material and/or prevent exposure to storm water runoff or contamination of surface waters of the state. Any release that occurs after the SWPPP has been developed shall be controlled in accordance with the SWPPP and is cause for the SWPPP to be updated as appropriate within 14 calendar days of obtaining knowledge of the spill or loss. If there have been no spills of polluting materials, state that in this section.

Question: Have there been any significant spills or significant leaks of polluting materials in the last 3 years
X Yes X No

If the answer above is "Yes" then input the applicable information in the table below:

Significant Spills and Significant Leaks of Polluting Materials Table		
Location & Date	Material & Volume	Corrective Actions Taken

4.4 Summary of Sampling Data

The permit requires a summary of existing storm water discharge sampling data (if available) describing pollutants in storm water discharges associated with industrial activity at the facility. The summary shall be accompanied by a description of the suspected sources of the pollutants detected. (If there is no storm water discharge sampling data, state that in this section.)

Question: Is there any storm water discharge sampling data available? X Yes D No
If the answer to the above question is "Yes" then summarize the information below and maintain the data with the SWPPP file.

Section 319 Nonpoint Source Pollution Grant was awarded to the forum of Greater Kalamazoo to update the existing Portage and Arcadia Creeks Watershed Management Plan to meet the EPA's nine watershed management plan elements. As part of this project, limited wet weather sampling of storm water runoff was conducted at existing and future sites of best management practices.

One of the selected locations for sampling was the 415 Stockbridge facility since it has an existing AquaSwirl stormwater treatment structure. Two sampling locations were used: an "AquaSwirl In" (Inlet) which is an inlet immediately up gradient to the AquaSwirl, and "AquaSwirl Out" (Outlet) immediately at the AquaSwirl discharge point prior to Portage Creek.
The total stormwater collected area was 1.91 acres.

Results of the one-time composite sampling event were as follows:

Inlet – Total Suspended Solids (TSS): 155 mg/L;
Total Phosphorus (TP): <0.01 mg/L.

Total Phosphorus (TP): <0.01 mg/L.

Estimated site specific annual loads (lbs/yr) for total phosphorus and total suspended solids for the Inlet are as follows:

Outlet – Total Suspended Solids (TSS): 103 mg/L;

TP: 0.04 lbs/ac/yr; 0.07 lbs/yr
TSS: 1,134 lbs/ac/yr; 2,167 lbs/yr

In summary, the current AquaSwirl unit is preventing an estimated 737 lbs of sediment annually from entering Portage Creek.

4.5 Actions Taken to Investigate Illicit Connections

The permit requires that the SWPPP include a description of the actions taken to identify and eliminate illicit connections to the storm sewer system. All illicit connections to Municipal Separate Storm Sewer Systems (MS4s) or waters of the state should be permanently plugged or re-routed to the sanitary sewer system, in accordance with the authorization from the local Wastewater Treatment Plant. Any discharge from an illicit connection is a violation of the conditions of this permit.

Actions taken to investigate and eliminate any illicit connections to the storm sewer system:

5.0 NON-STRUCTURALCONTROLS

Non-structural controls are practices that are relatively simple, fairly inexpensive, and applicable to a wide variety of industries or activities. Non-structural controls are intended to reduce the amount of pollution getting into the surface waters of the state and are generally implemented to address the problem at the source. They do not require any structural changes to the facility. These are typically everyday types of activities undertaken by employees at the facility. Many facilities may already have nonstructural controls in place for other reasons. The permit requires that the SWPPP shall, at a minimum, include each of the following non-structural controls:

5.1 Preventative Maintenance Program (Routine Inspection Program)

Description of Area or Equipment	Tasks	Frequency
Underground Storage Tanks (USTs)	Inspect for leaks using stick reading, fuel pump reading, and Veederroot tank monitoring system. Check for damage or other maintenance needs.	Monthly, except Veederroot tank monitoring system records daily.
UST Fuel Dispensing Pumps	Inspect for spills and leaks (stains, odors)	Monthly, or sooner if/as discovered and reported.
Top soil, sand and gravel storage area	Inspect for erosion/sedimentation problems	Monthly, or after significant rainfall event.
Metal dumpster storage area	Inspect that lid is on when not in use; check for damage	Monthly
Vehicle Maintenance Building; Oil Storage Room	Inspect for leaks	Daily
AquaSwirl Stormwater Treatment Unit	Inspect for sediment and floatables; remove material by vactor truck as necessary	Annually
General outside property area	Inspect for sediment and debris – remove as necessary	Monthly

The permit requires written procedures and a schedule for routine preventive maintenance which includes inspection and maintenance of storm water management and control devices (e.g. cleaning of oil/water separators and catch basins) as well as inspecting and testing plant equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters. Generally the focus of this permit requirement is on exterior items. A written report of the inspection and corrective actions shall be maintained on file and shall be retained for three years. See the DEQ Industrial Storm Water Certified Operator Training Manual for additional information.

The Routine Inspection Form is in Section 16.0.

If this requirement is addressed in other facility procedures, reference those procedures here:

5.2 Housekeeping Procedures (Routine Inspection Program)

The permit requires that the SWPPP include written procedures and a schedule to implement routine good housekeeping inspections to maintain a clean, orderly facility. Good housekeeping inspections are intended to reduce the potential for significant materials to come in contact with storm water. The routine good housekeeping inspections should be combined with the routine inspection for the preventative maintenance program. Generally the focus of this permit requirement is on exterior areas. A written report of the inspection and corrective actions shall be maintained on file and shall be retained for three years. See the DEQ Industrial Storm Water Certified Operator Training Manual for additional information.

The Routine Inspection Form is in Section 16.0.

If this requirement is addressed in other facility procedures, reference those procedures here:

The table below describes the Routine Inspection Program Procedures:

Description of Area or Equipment	Tasks	Frequency
Underground Storage Tanks (USTs}	Inspect for leaks using stick reading, fuel pump reading, and Veederroot tank monitoring system. Check for damage or other maintenance needs.	Monthly, except Veederroot tank monitoring system records daily.
UST Fuel Dispensing Pumps	Inspect for spills and leaks (stains, odors)	Monthly, or sooner if/as discovered and reported.
Top soil, sand and gravel storage area	Inspect for erosion/sedimentation problems	Monthly, or after significant rainfall event.
Metal dumpster storage area	Inspect that lid is on when not in use; check for damage	Monthly
Vehicle Maintenance Building; Oil Storage Room	Inspect for leaks	Daily
AquaSwirl Stormwater Treatment Unit	Inspect for sediment and floatables; remove material by vactor truck as necessary	Annually
General outside property area	Inspect for sediment and debris - remove as necessary	Monthly

5.3 Comprehensive Site Inspection & Visual Assessments of Storm Water Discharges

The permit requires written procedures and a schedule for comprehensive site inspection. The inspections shall include but not be limited to, the areas and equipment identified in the preventive maintenance program and good housekeeping procedures. The inspection shall also include a review of the routine preventive maintenance reports, good housekeeping inspections reports, and any other paperwork associated with the SWPPP. The comprehensive site inspection shall be conducted by the Industrial Storm Water Certified Operator quarterly. At a minimum one inspection shall be performed within each of the following quarters: January - March, April - June, July - September, and October - December.

The permittee may request Department approval of an alternate schedule for comprehensive site inspections. Such a request may be made if the permittee meets the following criteria: the permittee is in full compliance

TABLE 5 HOUSEKEEPING INSPECTION FORM

Date:_____ Time:_____

Print:_____ Signature:_____

Areas Inspected	Observation	Corrective Actions Taken

with the permit, the permittee has an acceptable SWPPP, the permittee has installed and/or implemented dequate structural controls at the facility, the permittee has all required inspection reports available at the facility, and the permittee has an Industrial Storm Water Certified Operator at the facility.

A report of the comprehensive site inspection results shall be prepared and retained for three years. The report shall include the following information:

- Date of the inspection
- Name(s}, title(s), and certification number(s) of the personnel conducting the inspection
- Precipitation information (i.e. a description of recent rainfall or snow events)
- All observations relating to the implementation of control measures
- Any required revisions to the SWPPP resulting from the inspection
- A certification stating the facility is in compliance with this permit and the SWPPP, or, if there are instances of noncompliance, they are identified

The Comprehensive Site Inspection Form is in Section 17.0. Comprehensive

site inspection schedule:

Visual Assessments of Storm Water Discharges
****CHECK YOUR GENERAL PERMIT FOR APPLICABILITY****

The permit requires written procedures and a schedule for quarterly visual assessments of storm water discharges. The visual assessments shall be conducted by the Industrial Storm Water Certified Operator. At a minimum one visual assessment shall be performed within each of the following quarters: January - March, April - June, July - September, and October - December. If the Department has approved an alternate schedule for the comprehensive site inspection, the visual assessment may likewise be conducted in accordance with the same approved alternate schedule.

Visual assessment training/informational tutorials are available on the DEQ, WRD Industrial Storm Water webpage or by clicking on the following links:

Part 1: https://www.youtube.com/watch?v=rhXbA 1R VZk&feature=youtu.be
Part 2: https://www.youtube.com/watch?v= AdGziksz g&feature=youtu.be Part 3: https://www.youtube.com/watch?v=Zia jZM6Avlq&feature=youtu.be

The Visual Assessment Report Form is in Section 18.0.

Ivisual Assessment schedule:

SEE SECTION 14.0 FOR THE VISUAL ASSESSMENT PROCEDURE

5.4 Material Handling & Spill Prevention / Clean-Up Procedures

The permit requires a description of material handling procedures and storage requirements for significant materials. Equipment and procedures for cleaning up spills shall be identified in the SWPPP and made available to the appropriate personnel. The procedures shall identify measures to prevent spilled materials or material residues on the outside of the containers from being discharged into storm water.

The SWPPP may include, by reference, requirements of either a Pollution Incident Prevention Plan (PIPP) prepared in accordance with the Part 5 Rules (Rules 324.2001 through 324.2009 of the Michigan Administrative Code); a Hazardous Waste Contingency Plan (HWCP) prepared in accordance with 40 CFR 264 and 265 Subpart D, as required by Part 111 of the Michigan Act; or a Spill Prevention Control and Countermeasure (SPCC) plan prepared in accordance with 40 CFR 112.

Question: Does the facility have any additional material handling & spill/ clean-up procedures on file in addition to the SWPPP? No X Yes

If the answer is "No" complete the table below
If the answer is "Yes" then reference the procedures and where they are located here and complete the table below as necessary:

Spills and leaks together are the largest industrial source of storm water pollution. Thus, this SWPPP specifies material handling procedures and storage requirements for significant materials. Equipment and procedures necessary for cleaning up spills and preventing the spilled materials from being discharged have also been identified. All employees have been made aware of the proper procedures. See the DEQ Industrial Storm Water Certified Operator Training Manual for additional information.

The DEQ, WRD Industrial Storm Water program spill report compliance assistance document should be kept with the SWPPP. Download the document from the DEQ, WRD Industrial Storm Water webpage or by clicking on the following link: http://www.michigan.gov/documents/deq/wrd-isw-permit info-spill-reportjng 3987917.pdf

If material handling and spill prevention / clean-up procedures are not addressed in other facility documents (referenced above) then the table below needs to be completed:

Potential Spill Area	**Material Handling & Storage** &	**Spill Response Procedures**
UST Fuel Dispensing Pumps	**Procedures** Auto-shutoffs; spill storm	**Equipment** Oil dry; fire extinguisher;
Vehicle Maintenance Oil		Oil dry; fire extinguisher; storm drain cover; contact
Top soil, sand and gravel	Create and maintain berm between storage area	

SEE TABLE 2 FOR SPILL KIT INVENTORY

5.5 Soil Erosion & Sedimentation Control Measures

The permit requires the identification of areas which, due to topography, activities, or other factors, have a high potential for significant soil erosion. Areas commonly prone to soil erosion are: gravel lots, bare earth or gravel at material handling areas around storm water inlets, areas with concentrated storm water runoff into streams or ditches, and access roads over open streams or ditches. Control measures must be implemented in areas prone to soil erosion and sedimentation. More information on soil erosion and sedimentation control may be obtained from the DEQ, Water Resources Division District Office.

Question: Is dust suppression material used on site? D Yes X No

If "Yes" then describe the actions implemented to prevent an unauthorized discharge to the storm sewer system or surface waters of the state:

Question: Are there areas of the site that are prone to soil erosion and/or sedimentation? D Yes X No If "Yes" then complete the table below:

Soil Erosion & Sedimentation Control Measures Table	
Areas Prone to Soil Erosion or Sedimentation	Control Measures Implemented
Space to list additional areas of concerns and control measures if necessary:	

5.6 Employee Training Program

The permit requires a description of employee training programs have been implemented to inform appropriate personnel at all levels of responsibility of the components and goals of the SWPPP. Recent modifications to the General Permits have included a requirement for annual employee training. An employee training video is available at the DEQ, WRD, Industrial Storm Water webpage or by clicking on the following link: https://www.youtube.com/watch?v=IGgvsztguRA&feature=youtu.be

Employee training will be a major component in ensuring the success of the facility's SWPPP. The more knowledgeable all employees are about the facility's SWPPP and what is expected of them, the greater the chance that the plan will be effective. The following is a description of the employee training programs to be implemented to inform appropriate personnel at all levels of responsibility of the components and goals of the SWPPP (i.e. good housekeeping practices, spill prevention and response procedures, waste minimization practices, informing customers of facility policies, etc.).

The Employee Training Form is in Section 19.0.

Employee Training Frequency:
Employee Traininq Program Description:

5.7 TMDL Requirements

The permit requires that if there is a Total Maximum Daily Load (TMDL) established by the Department for the receiving water, which restricts the discharge of any of the identified significant materials or constituents of those materials, then the SWPPP shall identify the level of control for those materials necessary to comply with the TMDL.

The TMDL means the amount of pollutant load a water body, such as a lake or stream, can assimilate and still

meet water quality standards. If a receiving water body does not meet the water quality standards for a specific pollutant, the DEQ will establish the appropriate daily maximum load for that pollutant to allow the water body to again meet water quality standards. If a permitted facility is expected to discharge that specific pollutant in its storm water to that water body, the General Permit requires the facility to list actions it will take to meet that TMDL requirement.

The applicable TMDLs will be identified on the Certificate of Coverage (COC).

See the DEQ, WRD, Industrial Storm Water Webpage for additional TMDL information or click this link for the TMDL compliance assistance document:: http://www.michigan..gov/documents/deq/wrd-isw-permit-info-tmdl 3987907.pdf

Question: Is there a TMDL Requirement listed on the COC? **X** Yes **D** No

If the answer to the above question is "Yes" then complete the table below:

add additional spaces as necessary	*add additional spaces* as *necessary*	
TMDL POLLUTANT:	**CURRENT ANNUAL LOADING:**	**BEST MANAGEMENT PRACTICES:**
Phosphorus		AquaSwirl Stormwater Treatment System treats all stormwater for sediment and floatables prior to being discharged into Portage Creek.

TMDL POLLUTANT:	**TMDL POLLUTANT:**	**CURRENT**	**BEST MANAGEMEN**
Add additional spaces as *necessary*			

5.8 List of Significant Materials Still Present

The permit requires the identification of significant materials expected to be present in storm water discharges following implementation of non-structural preventative measures and source controls. Non-structural controls are used to reduce pollutants at the source before they can get into the storm water runoff. In some cases, these types of controls will not be enough. A list of significant materials expected to be present in storm water discharges after implementation of nonstructural controls must be included in the SWPPP. The materials listed below will be addressed through the use of structural controls. (If there will be no significant materials present after the implementation of non-structural controls, state that in this section.)

Significant Material	Location and Control Measure:	Impacted Inlet(s):	Impacted Discharge Point(s):

6.1 STRUCTURAL CONTROLS

The permit requires that where implementation of non-structural controls does not control storm water discharges in accordance with water quality standards, the SWPPP shall provide a description of the location, function, and design criteria of structural controls for prevention and treatment.

Structural controls may be necessary:

1. To prevent uncontaminated storm water from contacting or being contacted by significant materials; or
2. If preventive measures are not feasible or are inadequate to keep significant materials at the site from contaminating stormwater. Structural controls shall be used to treat, divert, isolate, recycle or reuse.

Examples of structural controls include the following:

1. Signs and LabelS
2. Paving

./ Fences
./ Security Systems
./ Temporary and Permanent Coverings
.! Storm Water Conveyances
./ Diversion Dikes
./ Gradinng
.I drip pans
.i Secondary Containment
.I Catch Basin Inserts
.I Vegetative Filters
.I Oil/Water Separators

These types of controls are physical features that control and prevent storm water pollution. They can range from preventive measures to collection structures to treatment systems. Structural controls will typically require construction of a physical feature or barrier. Below is a description of the structural controls used at the facility. See the DEQ Industrial Storm Water Operator Training Manual for additional details on structural controls.

Question: Are structural control measures used at the facility? **No** **X** Yes

If answer above is "Yes" then complete the appropriate information in the table below.

Structural Controls Used at the Facility•,		
Description of structural control(s)	Location of structural control(s)	Significant Materials intended to be managed by the structural control(s)
AquaSwirl Concentrator is located on the eastern portion of site upgradient from Portage Creek. It is designed to pre-treat/capture sediments & P		

7.0 NON-STORM WATER DISCHARGES

The permit requires that all discharge locations be evaluated for the presence of non-storm water discharges. Any unauthorized storm water discharges must be eliminated, or covered under another NPDES permit.

Storm water shall be defined to include all of the following non-storm water discharges provided pollution prevention controls for the non-storm water component are identified in the SWPPP.

Question: Is any of the 10 non-storm water discharges listed below applicable to the facility? X No **D** Yes
If the answer is "Yes" then complete the appropriate sections of the table below:

Check the Applicable Non Storm Water Discharges at the Facility:		Pollution Prevention Controls Implemented:	Impacted Inlet(s):	Impacted Discharge Point(s):
D	1. Discharges from fire hydrant flushing			
D	2. Potable water sources including water line flushin			
D	3. Water from fire system testing and fire fighting training without burned materials or chemical fire suppressants			
D	4. Irrigation drainage			
D	5. Lawn watering			
D	6. Routine building wash-down that does not use detergents or other compounds			
D	7. Pavement wash waters where contamination by toxic or hazardous materials has not occurred (unless all contamination by toxic or hazardous materials has been removed) and where detergents are not used			
D	8. Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated g			
D	9. Uncontaminated ground water			
D	10. Foundation or footing drains where flows are not contaminated with process materials such as solvents			

Discharges from firefighting activities are authorized by the permit, but are exempted from the requirement to be identified in the SWPPP.

8.0 ANNUAL REVIEW

The permit requires that the permittee shall review the SWPPP annually after it is developed and maintain written summaries of the reviews. Based on the review, the permittee shall amend the SWPPP as needed to ensure continued compliance with the terms and conditions of the permit. The annual review is to be retained on site for three years and depending on the general permit is required to be submitted to the DEQ district office on or before January 10 of each year.

The Annual Review Report Form is in Section 20.0.

Specify the month the Annual SWPPP Review will be performed: September

9.0 INDUSTRIAL STORMWATER CERTIFIED OPERATOR UPDATE

The permit requires that if the Industrial Storm Water Certified Operator is changed or an additional Industrial Storm Water Certified Operator is added, the permittee shall provide the name and certification number of the new Industrial Storm Water Certified Operator to the Department. If a facility has multiple Industrial Storm Water Certified Operators, the name and certification number of the Industrial Storm Water Certified Operators shall be included in the SWPPP.

10.0 RECORD KEEPING

The permittee and the city shall maintain records of all SWPPP related inspection and maintenance activities. Records sha also be kept describing incidents such as spills or other discharges that can affect the quality of storm water runoff. All such records shall be retained for three years. The following records are required by the permit:

- ./ Routine preventive maintenance inspection reports
- ./ Routine good housekeeping inspection reports
- ./ Comprehensive site inspection reports
- ./ Documentation of visual assessments
- ./ Employee training records
- ./ Written summaries of the annual SWPPP review

11.0 SWPPP CERTIFICATION

The permit requires that the SWPPP shall be reviewed and signed by the Certified Storm Water Operator(s) and by either the permittee or an authorized representative in accordance with 40 CFR 122.22. The SWPPP shall be retained on-site at the facility which generates the storm water discharge.

I certify under penalty of law that the storm water drainage system in this SWPPP has been tested or evaluated for the presence of non-storm water discharges either by me, or under my direction and supervision. I certify under penalty of law that this SWPPP has been developed in accordance with the General Permit and with good engineering practices. To the best of my knowledge and belief, the information submitted is true, accurate, and complete. At the time this plan was completed no unauthorized discharges were present. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Permittee or Authorized Re resentative
Printed Name & Title: Gar Doorlag Floot supervisor
Signature & Date: Gary Doorlag 12-19-16

Industrial Storm Water Certified 0 erator
Printed Name & Certification Number: Gary Doorlag 1-12605
Signature & Date: Gary Doorlag 1J--1°f-10

Space to list additional Industrial Storm Water Certified Operators if Necessary	
Printed Name & Certification Number	Signature & Date

13.0 TABLE 1 - SIGNIFICANT MATERIAL INVENTORY AND DESCRIPTION OF INDUSTRIAL ACTIVITY OR SIGNIFICANT MATERIAL STORAGE AREAS

Instructions - Fill out the applicable areas or activities in the corresponding sections. Add more lines as needed. Once you have described the area or activity, list the significant materials that are associated with the areas or activities, the exposure methods, and evaluate the level of exposure. Once that is completed indicate the inlet(s) and discharge point(s) that would be impacted if significant materials were discharged from the areas or activities described.

Section Listed in General Permit	Storage Areas / Activity Areas	Significant Materials	Exposure Method	Reasonable Potential Evaluation (high medium low)	Inlet(s)	Discharge Point(s)
1) Loading, unloading, and other material handling operations						
2) Outdoor storage including secondary containment structures						
3) Outdoor manufacturing or processing activities						
4) Significant dust or particulate generating processes						
5) Discharge fromvents, stacks, and air emission controls						
6) On-site waste disposal practices						

13.0 TABLE 1 CONTINUED

Section Listed in General Permit	Storage Areas / Activity Areas	Significant Materials	Exposure Method	Reasonable Potential Evaluation (hiah medium low)	Inlet(s)	Discharge Point(s)
7) Maintenance and cleaning of vehicles, machines and equipment						
8) Areas of exposed and/or erodible soils						
9) Sites of Environmental Contamination listed under Part 201						
10) Areas of significant material residues						
11) Areas where animals congregate (wild or domestic) and deposit wastes						
12) Other areas where storm water may contact significant materials						

14.0 VISUAL ASSESSMENT PROCEDURES

1. List the discharge point(s) (as indicated on the SWPPP map):

   a) Is there substantially identical discharge points? D Yes X No
   If "Yes" then complete a) and b) below, if "No" go to Number 2.

   b) Describe the justification for the substantially identical discharge points determination?

   c) List the schedule for alternating the substantially identical discharge points:

2. Describe the monitoring (sampling) location for each discharge point

3. List the Qualified Personnel that will collect the water sample:

4. Training for the Qualified Personnel includes viewing the Visual Assessment Webinar and/or the 3 Visual Assessment Tutorials on the DEQ, WRD Industrial Storm Water webpage. Check the appropriate box below:

   D Yes

   D No, however a copy of the training materials used are included with this procedure.

5. List the sampling equipment used for the collecting the water sample(s):

6. Complete a) through c) below to describe the storm event information.

   a) Describe how qualifying storm events are determined (including nature of the event):

   b) Describe how each discharge point was evaluated to determine when a discharge would begin:

   c) Describe what would constitute an adverse weather condition that would prevent sample collection:

7. Describe how the samples will be collected (Determine the timing sequence for water sample collection from the discharge points):

8. Describe the water sampling instructions that the Qualified Personnel will follow:

9. Described how observations made by the Qualified Personnel will be documented during the discharge (include nature of the event):

10. Describe the sample storage procedures if applicable:

11. Describe the procedures the Industrial Storm Water Certified Operator will follow to perform the visual assessment(s) of the water sample(s):

15.0 TABLE 2 - SPILL KIT INVENTORY

List the spill response equipment that will be maintained in each location or locker (refer to MSDSs to determine recommended clean-up methods and supplies):

Person responsible for maintaining this inventory:

Locker number or location	Absorbents (pads, booms, kitty litter, etc.)	Tools (shovels, brooms, squeegees, etc.)	Personal Protective Equipment (rubber gloves, boots, masks, etc.)	Other Supplies (warning tape, labels, markers, MSDSs, etc.)

Label each spill kit with the words "SPILL KIT' and the necessary emergency telephone number(s) or pager number(s) of persons to be contacted in case of a spill or leak that is beyond the training and equipment available on or near each spill locker:

Facility Responsible Person/Phone Number:
Spill Response Contractor {if any)!Phone Number:
DEQ District Office Phone Number:
DEQ 24-Hour Emergency Spill Reporting Hot-Line: ***1-800-292-4706 (PEAS Number)***

Stencil the following warning on each spill kit:

"WARNING: NEVER HOSE DOWN A SPILL!
CLEAN IT UP PROMPTLY AND DISPOSE OF THE WASTE PROPERLY."

16.0 ROUTINE INSPECTION FORM

Date: Time:

Inspector Information	
Print Name:	j Signature:

Areas Inspected	Observation	Corrective Actions Taken

17.0 COMPREHENSIVE SITE INSPECTION FORM

Date: Time:

Certified Operator Information	
Print Name:	Signature:

Precipitation Information
Check the most appropriate box that represents the weather condition during the inspection:
D Drv D Rain D Snow D Other explain:

Compliance Certification Statement
Based on the results of this inspection the facility is in compliance with the general permit and the SWPPP:
DYes D No explain:

Areas Inspected	Observation	Corrective Actions Taken
Routine Inspection Report Paoerwork		

18.0 VISUAL ASSESSMENT REPORT FORM

Visual Assessment Sample Information		
Facility Name:	,COC No. QLNPDES Permit No:	
Industrial Storm Water Certified Operator Name:		
Name / Title of person collecting sample if other than Cert. Operator:		
Date of Comprehensive Inspection:	11s this a substitute sample? ONo D Yes Explain:	
Discharge Point # / Name:	!Substantially Identical Discharge Point? ONo DYes List:	
Description of sample collection location:		
Date / Time Discharge Began:	Date / Time Sample Collected:	Date / Time Sample Examined:
For rain events - if sample was collected > 30 minutes from start of discharge, provide explanation:		
Snowmelt D	Rainfall D Inches:	If rain event - previous storm ended > 72 hours prior to start of this event? ONo DYes

Observations	
Color: ☐ None ☐ Yes (describe):	Floating Solids: ☐ No ☐ Yes (describe):
Oil Films/ Sheens: D None D Flecks D Globs D Sheen D Other Describe a earance of film/sheen:	
Foam (gentl shake sample): D No D Yes Settleable Solids: D No D Yes (describe):	Suspended Solids: D No D Yes (describe):
Odor: D None D Musty D Sewage D Sulfur D Sour D Hydrocarbons D Chemical D Other describe : Turbidity/Clarity: D Clear D Slightly Cloudy D Cloudy D Milky 0 Other (describe): Picture of sample taken (required): D No D Yes Storage location: Receiving waters observed? D N/A D No D Yes (describe):	

low-up:
Based on the visual observation, are there unnatural characteristics in the discharge (cloudiness, color, sheen, etc.)? D No OYes
Potential sources of observed unnatural characteristics D N/A .QLdescribe:
Implemented/ recommended corrective action(s) D N/A .QLdescribe: Scheduled date for correction:

I certify that the above information is correct	
Certified Operator Signature	Date

RETAIN THIS FORM FOR A MINIMUM OF 3 YEARS

19.0 EMPLOYEE TRAINING FORM

loate of Session:

Trainer Information	
Print:	!Signature:

Training Session Information
Topics Covered:

Attendee Name	Attendee Signature

20.0 ANNUAL SWPPP REVIEW REPORT FORM

Facility Information	
Designated Name:	Certificate of Coverage No. QLIndividual Permit No.:
Facility Address:	County:
Facility Contact Information	
Name:	Telephone No.:
Email Address:	Certification No.:
Backup Facility Contact Information	
Name:	Telephone No.:
Email Address:	Certification No.:
Industrial Storm Water Certified Operator Information	
Name:	Telephone No.:
Email Address:	Certification No.:
Space to list additional operators if applicable:	

The SWPPP Checklist on the DEQ, WRD Industrial Storm Water webpage should be used to review the facility's SWPPP and before the following 10 questions are completed.

1. Facility qeneral information is current and accurate	YesO	NoO	
2. Site map is current and accurate	YesO	NoO	
3. SiQnificant material inventory is current and accurate	YesO	NoO	
4. New exposures, processes and related controls have been documented appropriately in the SWPPP	YesO	NoO	NAO
5. Spills have been recorded and reported as appropriate	YesO	NoO	NAO
6. Employee SWPPP traininQ was conducted and documented	YesO	NoO	
7. Records of routine preventative maintenance and housekeeping inspections are available in the SWPPP file	YesO	NoO	
8. Comprehensive site inspections have been completed, certified and filed in the SWPPP file	YesO	NoO	
9. Visual Assessments have been completed and the reports have been filed in the SWPPP file	YesO	NoO	NAO
10. Corrective actions noted in the inspection reports have been completed	YesO	NoO	
11. The SWPPP is compliant with the permit and has been reviewed and signed by the Certified Storm Water Operator and the permittee or designated representative	YesO	NoO	
Additional Comments:			

I certify that the above information is correct:	
Name:	!Signature/ Date:

SUBMIT THIS FORM TO THE DEQ, WRD DISTRICT OFFICE IDENTIFIED ON YOUR CERTIFICATE OF COVERAGE ON OR BEFORE JANUARY 10TH OF EACH YEAR

21.0 DEQ SPILL OR RELEASE REPORT

DE€1.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

SPILL OR RELEASE REPORT

NOTE: Some regulations require a specific form to use and procedures to follow when reporting a release. Those forms and procedures MUST be used and followed if reporting under those regulations. This report form is to aid persons reporting releases under regulations that do not require a specific form. This report form is not required to be used. To report a release, some regulations require a facility to call the PEAS Hotline at 800-292-4706, or DEQ District Office that oversees the county where it occurred, and other regulating agencies and provide the following information. A follow-up written report maybe required. Keep a copy of this report as documentation that the release was reported. If you prefer to submit this report electronically by FAX or e-mail, contact the regulating agency for the correct telephone number or e-mail address. See the DEQ website on Spill/Release Reporting for more reporting information.

Please print or *type all Information.*

NAME AND TITLE OF PERSON SUBMITTING WRITTEN REPORT

TELEPHONE NUMBER (provide area code)

NAME OF BUSINESS

STREET ADDRESS

CITY | STATE | ZIP CODE

BUSINESS TELEPHONE NUMBER (provide area code)

Site IDENTIFICATION NUMBER AND OTHER IDENTIFYING NUMBERS (if applicable)

RELEASE LOCATION (provide address if different than business, if known, and give directions to the spill location. Include nearest highway, town, road intersection, etc.)

COUNTY | TOWNSHIP | TIER/RANGE/SECTION (if known)

RELEASE DATA. Complete all applicable categories. Check all the boxes that apply to the release. Provide the best available information regarding the release and its impacts. Attach additional pages if necessary.

DATE & TIME OF RELEASE (if known) __'__'__ am/pm

DATE & TIME OF DISCOVERY __'__'__ am/pm

DURATION OF RELEASE (if known) _____ days _____ hours _____ minutes

TYPE OF INCIDENT
- D Explosion
- D Fire
- D Leaking container
- D Loading/unloading release
- 0 Pipe/valve leak or rupture
- D Vehicle accident
- O Other _____

MATERIAL RELEASED (Chemical or trade name)	CAS NUMBER or HAZARDOUS WASTE CODE	ESTIMATED QUANTITY RELEASED (indicate unit c,9, lb$, gals, eu ft or ydsJ	PHYSICAL STATE RELEASED (indicate if solid, liquid, or gas)
0 CHECK HERE IF ADDITIONAL MATERIALS LISTED ON ATTACHED PAGE.			

FACTORS CONTRIBUTING TO RELEASE
- 0 Equipment failure
- 0 Operator error
- 0 Faulty process design
- D Training deficiencies
- D Unusual weather conditions
- 0 other

SOURCE OF LOSS
- 0 Container
- 0 Railroad car
- 0 Pipeline
- D Ship
- O Tank
- D Tanker
- D Truck
- D other _____

TYPE OF MATERIAL RELEASED
- 0 Agricultural: manure, pesticide, fertilizer
- 0 Chemicals
- 0 Flammable or combustible liquid
- D Hazardous waste
- 0 Liquid industrial waste
- D Oil/petroleum products or waste
- O Salt
- D Sewage
- D Other _____
- D Unknown

MATERIAL LISTED ON or DEFINED BY
- 0 CAA Section 112(r) list (40 CFR Part 68)
- 0 CERCLA Table 302.4 (40 CFR Part 302)
- 0 EPCRA Extremely Hazardous Substance (40 CFR Part 355)
- D Michigan Critical Materials Register or permit
- 0 NREPA Part 31, Part 5 Rules polluting material
- 0 NREPA Part 111 or RCRA hazardous waste
- cf NREPA Part 121 liquid industrial waste
- Other list _____
- 0 Unknown

IMMEDIATE ACTIONS TAKEN
- 0 Containment
- 0 Dilution
- 0 Evacuation
- 0 Hazard removal
- 0 Neutralization
- 0 System shut down
- D Diversion of release to treatment
- D Decontamination of persons or equipment
- D Monitoring
- O Other _____

RELEASE REACHED

Distance from spill location to surface water, in feet

- D Surface waters (include name of river, lake, drain involved) _____
- 0 Drain connected to sanitary sewer (include name of wastewater treatment plant and/or street drain, if known) _____
- D Drain connected to storm sewer (include name of drain or water body it discharges into, if known) _____
- O Groundwater (indicate if it is a known or suspected drinking water source and include name of aquifer, if known) _____
- 0 Soils (include type e.g. clay, sand, loam, etc.) _____
- 0 Ambient Air
- 0 Spill contained on impervious surface

EXTENT OF INJURIES, IF ANY

WAS ANYONE HOSPITALIZED?
OYes NUMBER HOSPITALIZED·_
ONo

TOTAL NUMBER OF INJURIES TREATED ON-SITE:

DESCRIBE THE INCIDENT, THE TYPE OF EQUIPMENT INVOLVED IN 'HE RELEASE, HOW THE VOLUME OF LOSS WAS DETERMINED, ALONG WITH ANY RESULTING ENVIRONMENTAL DAMAGE CAUSED BY THE RELEASE. IDENTIFY WHO IMMEDIATELY RESPONDED TO THE INCIDENT (own employee$ ot <::onifa<=kif - ineludc cloanup comp-any name, eonhu:;t person, and telephone number). ALSO IDENTIFY WHO 010 FUR'THER CLEANUP ACTIVITIES. IF PERFORMED OR KNOWN WHEN REPORT SUBMITTED

0 CHECK ;IERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE

ESTIMATED QUANTITY OF ANY RECOVERED MATERIALS AND A DESCRIPTION OF HOW THOSE MATERIALS WERE MANAGED -Onclude dispo·al melhod if applicablo)

0 CHECK HERE IF DESCRIPTION OR ADDITIONAL COMMENTS ARE INCLUDED ON ATTACHED PAGE

ASSESSMENT OF ACTUAl. *OR* POTENTIAL HAZARDS TO HUMAN HEALTH (include known acute or immediate am.lchronic or delayed offcc.ts. and where appropriate. advice rr_nan:;:lina medical attention necessary for exoosedlodlvlduals..\

.U Cl:j;J.;IS:IIERE IF DESCRIPTION OR ADDITIONAL COMMENIS 8Bla INCb!IQiQ Qt; 8116!<I|fil>J' GE

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY NOTIFIED:

INITIAL CONTACT BY: 0 Telephone 0 Fax O Email O Other

DATE/TIME INITIALCONTACT:

0 PEAS: 800-292-4706 Log Number Assigned

D DEQ District or Field Office
D Baraga OGwinn
0 Bay City 0 Jackson
Dcadillac 0 Kalamazoo
D Crystal Falls D Lansing, DNewberry
0 Gaylord OWarren
D Grand Rapids OWyoming
DEQ OHIC-Ofoc:atic-ns are subject to changa

Divisions or Offices Contacted:
0 AirQuality
0 Land & WaterManagement
D Office Geological survey
D Remediation and Redevelopment ODetroit
D Waste and Hazardous M.iterials
D Water Bureau

NAME AND TITLE OF PERSON MAKING INITIAL REPORT:

DEQSTAFF CONTACTED & PHONE NUMBER:

OTHER ENTITIES NOTIFIED:

	Date:	Time:
0 National Response Center(NRC): 800-424-8802		
0 US Coast Guard Office: 0 Detroit 0 Grand Haven 0 Sault Ste. Marie		
0 US Department of Transportation		
0 US Environmental Protection Agency		
0 911 (orprimary publicsafety answering point)		
D Local Fire Department		
D Local Police and/or State Police		
D Local Emergency Planning Committee		
0 State Emergency Response Commission via MI SARA Title III Program		
D Wastewater Treatment Plant Authority		
0 Hazmat Team		
0 Local Health Department		
0 Department of Labor & Economic Growth MIOSHA		
D Department of Labor & Economic Growth Fire Safety		
D Michigan Department of Agriculture: 800-405-0101		
OOther		

PERSON CONTACTED & PHONE NUMBER:

DATE WRITTEN REPORT SUBMITTED

SIGNATURE OF PERSON SUBMI TTING WRITTEN REPORT

THE CITY OF Kalamazoo
Department of Public Services
Environmental Services Division

Figure 1: Public Services Stockbridge Facility Site Map

NORTH

0 40 80 160 Feet

The maps from the City of Kalamazoo's GIS are not at Survey accuracy. The City of Kalamazoo assumes no legal responsibility for the information contained on this map.

THE CITY OF Kalamazoo
Department of Public Services
Environmental Services Division

Figure 2: Public Services Stockbridge Facility Drainage Features

NORTH

0 45 90 180 Feet

The maps from the City of Kalamazoo's GIS are not at Survey accuracy. The City of Kalamazoo assumes no legal responsibility for the information contained on this map.

Response to MDEQ Comments in Letter dated May 20, 2016
Described in "Appendix 1: Comments on City of Kalamazoo MS4 Permit Application"
Regarding City of Kalamazoo 2015 Application for Reissuance of the NPDES MS4 Permit
(Updated 2021)

Additional Information to Supplement

Textual Response

Questions 60 - 84

Attachment K:

1. "Work Practice to Update Stormwater Asset Inventory and Mapping"

Attachment L2:

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

Attachment M2:

3. "Stormwater System Operations and Maintenance Plan"
4. "Stormwater System Cleaning Tracking Table" Example
5. "Outfall Stormwater Sewershed Map" Example

Table 2:

6. Table "Municipal Operations/Good House-Keeping for Pollutants, BMPs and Stormwater Program Assessment"
7. "Street Sweeping Policy"

Figure 7:

8. Figure "Designated Areas for Snow Plowing & Street Sweeping"

ATTACHMENT L2

Procedure for Updating and Revising the Existence, Location, Structural Stormwater Controls, and Potential to Discharge Pollutants to the Surface Waters of the State (January, 2017)

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 of Kalamazoo 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/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.
6. Discharge of pollutants of concern to impaired waters.

The Public Services Safety Coordinator will keep current a chemical storage inventory of Public Service facilities and prepare annual updates titled “Material Report.”

If the city determines that a new SWWP/SOP is required or an existing one revised, one will be prepared/revised, submitted to MDEQ, and implemented according to the MDEQ guidelines. In addition, if a SWPPP is not warranted but stormwater BMPs are necessary, the City will implement them as appropriate.

Report Name : Material Report		
Run Date : 1/24/2017		
Material Name	**Manufacturer Name**	**Chemical Areas**
#2 Diesel	Lakeside Refining Company	Stockbridge Oil Room
[Ethylenedinitrilo]-Tetraacetic Acid Disodium Salt	Avantor Performance Materials, Inc.	Environmental Services Lab
[Ethylenedinitrilo]-Tetraacetic Acid Disodium Salt	Avantor Performance Materials, Inc.	Harrison Lab
2-Propanol	Fisher Scientific Chemical Division	Environmental Services Lab
2-Propanol	Fisher Scientific Chemical Division	Harrison Lab
3M Body Shop Clean-Up Car Wash Soap	3M Automotive Aftermarket Division	Stockbridge Storage Room 2
75176 Battery Cleaner & Acid Detector	KAR Products	Stockbridge Oil Room
Accu-Tab SI Calcium Hypochlorite Tablets	Axiall, LLC	Pump Stations
Acetic Acid 50% (v/v) Aqueous Solution	Ricca Chemical Company	Environmental Services Lab
Acetic Acid 50% (v/v) Aqueous Solution	Ricca Chemical Company	Harrison Lab
Acetic Acid, Glacial	Fisher Scientific	Harrison Lab
Acetic Acid, Glacial	Fisher Scientific	Trace Organics Lab
Acetone	Fisher Scientific Chemical Division	Environmental Services Lab
Acetone	Fisher Scientific Chemical Division	Harrison Lab
Aervoe Stake Dip - Bulk	Aervoe Industries Incorporated	Stockbridge Storage Room 1
Aervoe Stake Dip - Bulk	Aervoe Industries Incorporated	Storage Room
Aervoe Survey Marking Paint 207 White; Aervoe Survey Marking Paint 224 Flo Green; Aervoe Survey Marking Paint 229 Flo Pink	Aervoe Industries Incorporated	Stockbridge Storage Room 1
Aervoe Survey Marking Paint 207 White; Aervoe Survey Marking Paint 224 Flo Green; Aervoe Survey Marking Paint 229 Flo Pink	Aervoe Industries Incorporated	Storage Room
AF-1133	Axchem, Inc.	Stockbridge Oil Room
AF-3430	Axchem, Inc.	Stockbridge Oil Room
Ag/AgCl Reference Electrode Filling Solution	Thermo Electron Corporation	Environmental Services Lab
Ag/AgCl Reference Electrode Filling Solution	Thermo Electron Corporation	Harrison Lab
Air Brake Anti-Freeze	Haldex Brake Systems	Stockbridge Field Supervisors Area
Air Tool Lubricant	Blaster Corporation	Stockbridge Storage Room 2
All Season Select Lubricant	Ingersoll-Rand - (NC)	Stockbridge Storage Room 2
Ammonia Cyanurate Reagent	Hach Company	Pump Stations
Ammonia Electrode Filling Solution	Thermo Fisher Scientific	Environmental Services Lab
Ammonia Electrode Filling Solution	Thermo Fisher Scientific	Harrison Lab
Ammonia Salicylate Reagent	Hach Company	Pump Stations
Ammonium Chloride	Fisher Scientific Chemical Division	Environmental Services Lab
Ammonium Chloride	Fisher Scientific Chemical Division	Harrison Lab
Ammonium Hydroxide	Fisher Scientific	Harrison Lab
Ammonium Hydroxide	Fisher Scientific	Trace Organics Lab
Ammonium Hydroxide, Trace Metal Grade	Fisher Scientific	Environmental Services Lab
Ammonium Hydroxide, Trace Metal Grade	Fisher Scientific	Harrison Lab
Ammonium Molybdate	Ricca Chemical Company	Environmental Services Lab
Ammonium Molybdate	Ricca Chemical Company	Harrison Lab
Ammonium Molybdate Tetrahydrate	Fisher Scientific Chemical Division	Environmental Services Lab
Ammonium Molybdate Tetrahydrate	Fisher Scientific Chemical Division	Harrison Lab
Ammonium Persulfate 98+%	Fisher Scientific	Environmental Services Lab
Ammonium Persulfate 98+%	Fisher Scientific	Harrison Lab
Antimony Potassium Tartrate Trihydrate	Fisher Scientific Chemical Division	Environmental Services Lab
Antimony Potassium Tartrate Trihydrate	Fisher Scientific Chemical Division	Harrison Lab
Arrest Rust Remover/Surface Prep	Correlated Products	Stockbridge Field Supervisors Area
Beaver Bea Coil	Beaver Research Company	Harrison Stockroom
Beaver Bea Coil	Beaver Research Company	Stockroom Harrison
Beaver Bolt Buster	Beaver Research Company	Stockbridge Storage Room 1

Beaver Kleer Vu Glass Cleaner	Beaver Research Company	Stockbridge Storage Room 1
Beaver Kleer Vu Glass Cleaner	Beaver Research Company	Stockbridge Storage Room 2
Beaver Master Lube N/C Eco 4 Way Penetrating Lubricant	Beaver Research Company	Harrison Stockroom
Beaver Master Lube N/C Eco 4 Way Penetrating Lubricant	Beaver Research Company	Stockbridge Storage Room 1
Beaver Master Lube N/C Eco 4 Way Penetrating Lubricant	Beaver Research Company	Stockroom Harrison
Beaver Soy Lease DW	Beaver Research Company	Stockbridge Field Supervisors Area
Beaver Speed Air Tool Cleaner & Lubricant	Beaver Research Company	Harrison Stockroom
Beaver Speed Air Tool Cleaner & Lubricant	Beaver Research Company	Stockroom Harrison
Bee Bopper II Wasp & Hornet Spray	ARI (GA)	Harrison Stockroom
Bee Bopper II Wasp & Hornet Spray	ARI (GA)	Stockroom Harrison
Bet Co Deep Blue Glass and Surface Cleaner 10804-00	Betco Corporation	Harrison Stockroom
Bet Co Deep Blue Glass and Surface Cleaner 10804-00	Betco Corporation	Stockroom Harrison
Betco AF315 Disinfectant 315	Betco Corporation LTD	Harrison Stockroom
Betco AF315 Disinfectant 315	Betco Corporation LTD	Stockroom Harrison
Betco Ciitrufoam Organic All Purpose Cleaner 066	Betco Corporation	Harrison Stockroom
Betco Ciitrufoam Organic All Purpose Cleaner 066	Betco Corporation	Stockroom Harrison
Betco Push Drain Maintainer 133, Drain Maintainer, Floor Cleaner, Spotter	Betco Corporation LTD	Harrison Stockroom
Betco Push Drain Maintainer 133, Drain Maintainer, Floor Cleaner, Spotter	Betco Corporation LTD	Stockroom Harrison
Betco Rest Stop Virucidal Ready-to-Use Germicidee Cleaner Disinfectant Deodorant Product #: 126361	Betco Corporation	Harrison Stockroom
Betco Rest Stop Virucidal Ready-to-Use Germicidee Cleaner Disinfectant Deodorant Product #: 126361	Betco Corporation	Stockroom Harrison
Betco Sure Bet II Bathroom Cleaner 314	Betco Corporation LTD	Harrison Stockroom
Betco Sure Bet II Bathroom Cleaner 314	Betco Corporation LTD	Stockroom Harrison
Bismark Brown Y	Alfa Aesar Thermo Fisher Scientific Chemicals, Inc.	BioAssay Lab
Bismark Brown Y	Alfa Aesar Thermo Fisher Scientific Chemicals, Inc.	Harrison Lab
Bleach - Sodium Hypochlorite - NSF	Haviland Products Company	Building 20A
Bleach - Sodium Hypochlorite - NSF	Haviland Products Company	Harrison
Bleach - Sodium Hypochlorite - NSF	Haviland Products Company	Pump Stations
Brij-35	Fisher Scientific	Environmental Services Lab
Brij-35	Fisher Scientific	Harrison Lab
Brij-35 (21% Solution)	OI Analytical	Environmental Services Lab
Brij-35 (21% Solution)	OI Analytical	Harrison Lab
Bromothymol Blue Indicator, 0.04% (w/v)	Ricca Chemical Company LLC	Harrison Lab
Bromothymol Blue Indicator, 0.04% (w/v)	Ricca Chemical Company LLC	Trace Organics Lab
Buffer Solution Hardness 1 pH 10.1 ± 0.1	Hach Company	Environmental Services Lab
Buffer Solution Hardness 1 pH 10.1 ± 0.1	Hach Company	Harrison Lab
Bugs B Gone	Sea Foam Sales Comany	Stockbridge Storage Room 2
Bux Dri Slide	Cortec Corporation	Stockbridge Storage Room 2
Calcium Chloride	Fisher Scientific	Environmental Services Lab
Calcium Chloride	Fisher Scientific	Harrison Lab
Calcium Hypochlorite, Powder	Avantor Performance Materials, Inc.	Environmental Services Lab
Calcium Hypochlorite, Powder	Avantor Performance Materials, Inc.	Harrison Lab
ChemStation Heavy Duty Cleaner	One Way Products	Stockbridge Storage Room 1&2
ChemStation Vehicle Wash & Wax	One Way Products	Building 21
ChemStation Vehicle Wash & Wax	One Way Products	Harrison

Chloroform	Fisher Scientific	Environmental Services Lab
Chloroform	Fisher Scientific	Harrison Lab
Citgo Gasolines, All Grades Unleaded	Citgo Petroleum Corporation (TX)	Harrison & Stockbridge - Underground Fuel Tanks
Citgo No. 2 Diesel Fuel, Low Sulfur, All Grades	Citgo Petroleum Corporation (TX)	Harrison & Stockbridge - Underground Fuel Tanks
Clarion® Green A/W Oil 32	Citgo Petroleum Corporation (TX)	Building 11A
Clarion® Green A/W Oil 32	Citgo Petroleum Corporation (TX)	Harrison
Clini-Clean Phosphate-Free Formula	Northeast Lab Services, Inc.	Stockbridge Oil Room
Coilhose Pneumatics ATL 128 Air Tool Lubricant	Coilhose Pneumatics/Acme Automotive	Stockbridge Storage Room 2
Contact Cleaner 2000® Precision Cleaner	CRC Industries, Inc.	Harrison Stockroom
Contact Cleaner 2000® Precision Cleaner	CRC Industries, Inc.	Stockroom Harrison
Cool Cutting Fluid (120078)	Beaver Research Company	Harrison Stockroom
Cool Cutting Fluid (120078)	Beaver Research Company	Stockroom Harrison
CRC Diesel Air Brake Anti-Freeze & Conditioner	CRC Industries, Inc.	Stockbridge Storage Room 2
CRC Freeze-Off Super Penetrant	CRC Industries, Inc.	Stockbridge Storage Room 2
CRC Mass Air Flow Sensor Cleaner	CRC Industries, Inc.	Stockbridge Storage Room 2
CRC White Lithium Grease	CRC Industries, Inc.	Stockbridge Storage Room 2
Crystal Violet	Fisher Scientific	BioAssay Lab
Crystal Violet	Fisher Scientific	Harrison Lab
Cupric Sulfate Pentahydrate	Fisher Scientific Chemical Division	Environmental Services Lab
Cupric Sulfate Pentahydrate	Fisher Scientific Chemical Division	Harrison Lab
Cyanide Standard, 1000 ppm CN-	Ricca Chemical Company LLC	Environmental Services Lab
Cyanide Standard, 1000 ppm CN-	Ricca Chemical Company LLC	Harrison Lab
D Gel Emergency Fuel Treatment	E-ZOIL Products, Inc.	Stockbridge Storage Room 2
Daybreak	Certified Labs, Div. of NCH Corp.	Stockbridge Oil Room
De-Ice 55 (Liq. Ice & Snow Melter)	Correlated Products	Stockbridge Field Supervisors Area
Dex Cool	Ashland	Stockbridge Oil Room
Digestion Solution for COD	Hach Company	Environmental Services Lab
Digestion Solution for COD	Hach Company	Harrison Lab
Disinfectant Cleaner Pine Oil	One Way Products	Pump Stations
Double Junction Outer Filling Solution	Thermo Fisher Scientific Water and Lab Products	Environmental Services Lab
Double Junction Outer Filling Solution	Thermo Fisher Scientific Water and Lab Products	Harrison Lab
DPD Total Chlorine Reagent Powder Pillows	Hach Company	Harrison Lab
DPD Total Chlorine Reagent Powder Pillows	Hach Company	Trace Organics Lab
Drierite Desiccant - Anhydrous	W.A. Hammond Drierite Co., Ltd.	Environmental Services Lab
Drierite Desiccant - Anhydrous	W.A. Hammond Drierite Co., Ltd.	Harrison Lab
DTE Oil Heavy Medium Lubricating Oil ISO VG 68	Exxon Mobil Corporation	Building 21
DTE Oil Heavy Medium Lubricating Oil ISO VG 68	Exxon Mobil Corporation	Harrison
Dye-Sol or Car-O-Sol	Med-Tek Corporation	Stockbridge Oil Room
Eezy-Kleen Waterless Hand Cleaner with Pumice	Lad Chemicals, Inc.	Stockbridge Oil Room
Equalizer Ultra High Solids Floor Finish #549	Hillyard Industries	Harrison Stockroom
Equalizer Ultra High Solids Floor Finish #549	Hillyard Industries	Stockroom Harrison
Ethylenediaminetetraacetic Acid, Disodium Salt Dihydrate	Fisher Scientific Chemical Division	Environmental Services Lab
Ethylenediaminetetraacetic Acid, Disodium Salt Dihydrate	Fisher Scientific Chemical Division	Harrison Lab
Exmark Premium Hydro Oil	Exmark Manufacturing Co., Inc.	Stockbridge Storage Room 2
Fabulous B'laster PB Powerful Penetrating Catalyst	Blaster Corporation	Harrison Stockroom

Fabulous B'laster PB Powerful Penetrating Catalyst	Blaster Corporation	Stockroom Harrison
Ferric Chloride	Fisher Scientific	Environmental Services Lab
Ferric Chloride	Fisher Scientific	Harrison Lab
Ferric Chloride Solution DWG Grade	PVS Technologies, Inc. (MI)	
FerroVer Iron Reagent	Hach Company	Pump Stations
Food Grade Penetrating Oil	CRC Industries, Inc.	Harrison Stockroom
Food Grade Penetrating Oil	CRC Industries, Inc.	Stockroom Harrison
Formula 271 Se-lect	State Chemical Manufacturing Company	Pump Stations
Fuel Injector Cleaner	Berkebile Oil Company, Inc	Stockbridge Field Supervisors Area
Gasoline Fuel System Cleaner	MotorVac Technologies, Inc.	Stockbridge Field Supervisors Area
Glucose-Glutamic Acid	LabChem Inc.	Environmental Services Lab
Glucose-Glutamic Acid	LabChem Inc.	Harrison Lab
Grease Buster	Total Solutions	Stockbridge Field Supervisors Area
Hand Cleaner Deluxe Lotion	One Way Products	Pump Stations
Hexafloc 144LM	Hexagon Chemical Company	Stockbridge Oil Room
Hexafloc SB-61KX	Hexagon Chemical Company	Stockbridge Oil Room
Hillyard Aresenal Restroom Cleaner	Hillyard Industries	Harrison Stockroom
Hillyard Aresenal Restroom Cleaner	Hillyard Industries	Stockroom Harrison
Hillyard Clean Assist Take Down Cherry #466	Hillyard Industries	Harrison Stockroom
Hillyard Clean Assist Take Down Cherry #466	Hillyard Industries	Stockroom Harrison
Hillyard Extra Strength CSP Cleaner	Hillyard Industries	Harrison Stockroom
Hillyard Extra Strength CSP Cleaner	Hillyard Industries	Stockroom Harrison
Hillyard Pine-O-Ciide II Pine Odor Disinfectant Cleaner Deordorant	Hillyard Industries	Harrison Stockroom
Hillyard Pine-O-Ciide II Pine Odor Disinfectant Cleaner Deordorant	Hillyard Industries	Stockroom Harrison
Hillyard Quick & Clean Hil-Glo #1015	Hillyard Industries	Harrison Stockroom
Hillyard Quick & Clean Hil-Glo #1015	Hillyard Industries	Stockroom Harrison
Hillyard Quick & Clean Oil Stainless Steel Cleaner	Hillyard Industries	Harrison Stockroom
Hillyard Quick & Clean Oil Stainless Steel Cleaner	Hillyard Industries	Stockroom Harrison
Hillyard Super Hil-Aire Fresh & Clean	Hillyard Industries	Harrison Stockroom
Hillyard Super Hil-Aire Fresh & Clean	Hillyard Industries	Stockroom Harrison
Hillyard Windo-Clean +	Hillyard Industries	Harrison Stockroom
Hillyard Windo-Clean +	Hillyard Industries	Stockroom Harrison
Hydrochloric acid	Fisher Scientific Chemical Division	Environmental Services Lab
Hydrochloric acid	Fisher Scientific Chemical Division	Harrison Lab
Hydrofluosilicic Acid	Alexander Chemical Corporation	Pump Stations
Hypophosphorous Acid, 50%	Fisher Scientific	Harrison Lab
Hypophosphorous Acid, 50%	Fisher Scientific	Trace Organics Lab
Imidazole, 99%	Fisher Scientific	Environmental Services Lab
Imidazole, 99%	Fisher Scientific	Harrison Lab
Industrial AW46 Hydraulic Oil	Pinnacle Oil Holdings, LLC	Building 11D
Industrial AW46 Hydraulic Oil	Pinnacle Oil Holdings, LLC	Harrison
Industrial AW46 Hydraulic Oil	Pinnacle Oil Holdings, LLC	Stockbridge Oil Room
Instant Patch Tape	Kool Seal, Inc.	Pump Stations
Intercool P-300	Interstate Chemical Co. (PA)	Admin Building
Intercool P-300	Interstate Chemical Co. (PA)	Harrison
IrrodaButane Fuel No CFCs	Solder-It, Inc.	Stockbridge Storage Room 2
Iso-Heet Premium Fuel Line Antifreeeze & Water Remover	Gold Eagle Company	Stockbridge Storage Room 2
Kendall Fleet Supreme EC SAE 15W-40	Phillips 66 Lubricants	Stockbridge Oil Room
Kilz Up Shot Overhead Stain Sealer, Interior Oil-Base	MasterChem Industries, Inc.	Harrison Stockroom

Kilz Up Shot Overhead Stain Sealer, Interior Oil-Base	MasterChem Industries, Inc.	Stockroom Harrison
Kimball Midwest Ultra Pro Max Aerosol Paint	Kimball-Midwest	Stockbridge Storage Room 2
Kleen Lube II	Lad Chemicals, Inc.	Pump Stations
Kop-Flex Standard Coupling Grease KSG	Regal-Beloit	Harrison Stockroom
Kop-Flex Standard Coupling Grease KSG	Regal-Beloit	Stockroom Harrison
KSS Kalsanco Spot & Stain Remover	Betco Corporation	Harrison Stockroom
KSS Kalsanco Spot & Stain Remover	Betco Corporation	Stockroom Harrison
KSS Liquid Crème Cleanser Mild Abrasive	KSS Enterprises	Harrison Stockroom
KSS Liquid Crème Cleanser Mild Abrasive	KSS Enterprises	Stockroom Harrison
KSS Strong Heavy Duty Bowl Cleaner Broad Spectrum (Hospital Use) Disinfectant	KSS Enterprises	Harrison Stockroom
KSS Strong Heavy Duty Bowl Cleaner Broad Spectrum (Hospital Use) Disinfectant	KSS Enterprises	Stockroom Harrison
LA-CO Slic-tit Heavy Duty Thread Sealing Compound	LA-CO Industries, Inc./Markal Co.	Harrison Stockroom
LA-CO Slic-tit Heavy Duty Thread Sealing Compound	LA-CO Industries, Inc./Markal Co.	Stockroom Harrison
L-Ascorbic Acid	Fisher Scientific Chemical Division	Environmental Services Lab
L-Ascorbic Acid	Fisher Scientific Chemical Division	Harrison Lab
Lead In HNO3 1000ug/ml, 10,000ug/ml	Plasma Chem Corp	Stockbridge Oil Room
L-Glutamic Acid	Fisher Scientific Chemical Division	Environmental Services Lab
L-Glutamic Acid	Fisher Scientific Chemical Division	Harrison Lab
Liquid Powder Tracing Dye	NorLab	Harrison Lab
Liquid Powder Tracing Dye	NorLab	Ind. Services Lab
Low Viscosity Hy-Gard Transmissiona and Hydraulic Oil	Phillips 66 Lubricants	Stockbridge Storage Room 2
Lubriplate	Lubriplate Lubricants Co.	Harrison Stockroom
Lubriplate	Lubriplate Lubricants Co.	Stockroom Harrison
Lustre Premium Furniture Polish	One Way Products	Pump Stations
Mac's 1072 Battery Terminal Cleaner	Automotive Redistribution Center c/o Balkamp, Inc	Stockbridge Storage Room 2
Mac's 4810 Brake Parts Cleaner, Low VOC Formula	Niteo Products, LLC	Harrison Stockroom
Mac's 4810 Brake Parts Cleaner, Low VOC Formula	Niteo Products, LLC	Stockroom Harrison
Mac's 7216 Premium Starting Fluid	Niteo Products, LLC	Harrison Stockroom
Mac's 7216 Premium Starting Fluid	Niteo Products, LLC	Stockroom Harrison
Mac's 8700 Carb, Choke & Throttle Body Cleaner	Niteo Products, LLC	Stockbridge Storage Room 2
Mac's Premium Performance Multi-Purpose Wheel Bearing and Chaassis Grease	Valvoline LLC	Stockbridge Storage Room 1
Magnesium Chloride	Fisher Scientific	Environmental Services Lab
Magnesium Chloride	Fisher Scientific	Harrison Lab
Magnesium Sulfate Heptahydrate	Fisher Scientific	Environmental Services Lab
Magnesium Sulfate Heptahydrate	Fisher Scientific	Harrison Lab
Magnifloc® 496C Flocculant	American Cyanamid Company - (Clorox Company)	Stockbridge Oil Room
Magnifloc® 592C Flocculant	American Cyanamid Company - (Clorox Company)	Stockbridge Oil Room
ManVer® Hardness Indicator	Hach Company	Environmental Services Lab
ManVer® Hardness Indicator	Hach Company	Harrison Lab
Methanol, Purge and Trap Grade	Fisher Scientific	Environmental Services Lab
Methanol, Purge and Trap Grade	Fisher Scientific	Harrison Lab
Methyl Orange	Fisher Scientific Chemical Division	Environmental Services Lab
Methyl Orange	Fisher Scientific Chemical Division	Harrison Lab
Mineral Spirits Naptha-Solvent	Americhem Sales Corporation	Building 21
Mineral Spirits Naptha-Solvent	Americhem Sales Corporation	Harrison

Mobil 1 15W-50 Advanced Fuel Synthetic Motor Oil	Exxon Mobil Corporation	Stockbridge Storage Room 2
Mobil Mobilith SHC PM 460 Synthetic Grease	Exxon Mobil Corporation	Harrison Stockroom
Mobil Mobilith SHC PM 460 Synthetic Grease	Exxon Mobil Corporation	Stockroom Harrison
MRN-22	Diversey Wyandotte Corporation	Stockbridge Oil Room
Muriatic Acid 22 Degree	Haviland Products Company	Pump Stations
N-1-Naphthylethylenediamine Dihydrochloride	Avantor Performance Materials, Inc.	Environmental Services Lab
N-1-Naphthylethylenediamine Dihydrochloride	Avantor Performance Materials, Inc.	Harrison Lab
NAPA Kool Cooling Syystem Treatment	Wix Filtration Products Division, Affinia Group	Stockbridge Storage Room 2
NAPA Mac's Brake Fluid 45-032	NAPA AUTO PARTS	Stockbridge Storage Room 2
Nickel In HNO3 1000ug/ml, 10,000ug/ml	Plasma Chem Corp	Stockbridge Oil Room
Nitric Acid (55-68%) 42 Degrees	Vigoro Industries, Inc.	Stockbridge Oil Room
Nitric Acid Trace Metal Grade	Fisher Scientific	Environmental Services Lab
Nitric Acid Trace Metal Grade	Fisher Scientific	Harrison Lab
Nitrite Standard Solution	Hach Company	Environmental Services Lab
Nitrite Standard Solution	Hach Company	Harrison Lab
No Sweat! Pipe Insulator	Continental Research Corporation	Harrison Stockroom
No Sweat! Pipe Insulator	Continental Research Corporation	Stockroom Harrison
o-Phosphoric Acid, 85% W/W, HPLC	EM Science	Environmental Services Lab
o-Phosphoric Acid, 85% W/W, HPLC	EM Science	Harrison Lab
Orange 88 Degreaser Multi-Purpose Cleaner Degreaser	Warsaw Chemical Co., Inc.	Building 20
Orange 88 Degreaser Multi-Purpose Cleaner Degreaser	Warsaw Chemical Co., Inc.	Harrison
Original Gorilla Glue	Gorilla Glue Company	Harrison Stockroom
Original Gorilla Glue	Gorilla Glue Company	Stockroom Harrison
Palladium In HNO3 2,000 ug/ml Matrix Modifier	Plasma Chem Corp	Stockbridge Oil Room
Percol® 726	Ciba Specialty Chemicals Water Treatments, Inc.	Stockbridge Oil Room
Permachem Reagents DPD Free Chlorine Reagent	Hach Company	Harrison Lab
Permachem Reagents DPD Free Chlorine Reagent	Hach Company	Trace Organics Lab
Permachem Reagents DPD Free Chlorine Reagent	Hach Company	Pump Stations
Permachem Reagents DPD Total Chlorine Reagent	Hach Company	Pump Stations
Permachem Reagents DPD Total Chlorine Reagent	Hach Company	Harrison Lab
Permachem Reagents DPD Total Chlorine Reagent	Hach Company	Trace Organics Lab
Permachem Reagents PhosVer 3 Phosphate Reagent	Hach Company	Harrison Lab
Permachem Reagents PhosVer 3 Phosphate Reagent	Hach Company	Trace Organics Lab
Permachem Reagents PhosVer 3 Phosphate Reagent	Hach Company	Pump Stations
Permatex High Tack Spray-A-Gasket Sealant	ITW Permatex	Stockbridge Storage Room 2
pH Reference Material	ERA a Waters Company	Environmental Services Lab
pH Reference Material	ERA a Waters Company	Harrison Lab
pH Reference Material	ERA a Waters Company	Trace Organics Lab
Phenolphthalein Solution 1%	Fisher Scientific	Environmental Services Lab
Phenolphthalein Solution 1%	Fisher Scientific	Harrison Lab
Phenylarsine Oxide Solution 0.00564N	Fisher Scientific	Environmental Services Lab

Phenylarsine Oxide Solution 0.00564N	Fisher Scientific	Harrison Lab
Phoenix 27-XL Pipe Joint Lubricant, Water Dispersible	JTM Products, Inc. (Solon, OH)	Stockbridge Storage Room 1
Phosphorus	Hach Company	Environmental Services Lab
Phosphorus	Hach Company	Harrison Lab
Potassium Biiodate	Fisher Scientific Chemical Division	Environmental Services Lab
Potassium Biiodate	Fisher Scientific Chemical Division	Harrison Lab
Potassium Hydroxide	Fisher Scientific Chemical Division	Environmental Services Lab
Potassium Hydroxide	Fisher Scientific Chemical Division	Harrison Lab
Potassium Iodide	Fisher Scientific Chemical Division	Environmental Services Lab
Potassium Iodide	Fisher Scientific Chemical Division	Harrison Lab
Potassium Nitrate	Fisher Scientific	Environmental Services Lab
Potassium Nitrate	Fisher Scientific	Harrison Lab
Potassium persulfate	Fisher Scientific	Environmental Services Lab
Potassium persulfate	Fisher Scientific	Harrison Lab
Potassium Phosphate Dibasic	Fisher Scientific Chemical Division	Environmental Services Lab
Potassium Phosphate Dibasic	Fisher Scientific Chemical Division	Harrison Lab
Potassium Phosphate, Monobasic	Fisher Scientific Chemical Division	Environmental Services Lab
Potassium Phosphate, Monobasic	Fisher Scientific Chemical Division	Harrison Lab
Power Plus Degreaser OW 234	One Way Products	Building 21
Power Plus Degreaser OW 234	One Way Products	Harrison
Power Steering Fluid 9832	Warren Oil Company, Inc.	Stockbridge Storage Room 2
Praestol K 144 L Flocculant	Solenis LLC	Building 2B
Praestol K 144 L Flocculant	Solenis LLC	Harrison
Premium Gear Oil (MP) 85W-140	Citgo Petroleum Corporation (TX)	Building 21
Premium Gear Oil (MP) 85W-140	Citgo Petroleum Corporation (TX)	Harrison
Pro Link Foaming Germiciidal Cleaner	Pro-Link, Inc.	Stockbridge Storage Room 2
ProGuard Premium R&O 220	Lyden Oil Company	Building 21
ProGuard Premium R&O 220	Lyden Oil Company	Harrison
R&O 100	Pinnacle Oil Holdings, LLC	Building 21
R&O 100	Pinnacle Oil Holdings, LLC	Harrison
Readycult Coliforms 100	Merck	Harrison Lab
Readycult Coliforms 100	Merck	Trace Organics Lab
Reagent Alcohol 200 & 190 Proof	Decon Laboratories, Inc.	Environmental Services Lab
Reagent Alcohol 200 & 190 Proof	Decon Laboratories, Inc.	Harrison Lab
Reagent Alcohol 200 &190 Proof	Decon Laboratories, Inc.	Environmental Services Lab
Reagent Alcohol 200 &190 Proof	Decon Laboratories, Inc.	Harrison Lab
Reference Electrode Filling Solution	Thermo Fisher Scientific	Environmental Services Lab
Reference Electrode Filling Solution	Thermo Fisher Scientific	Harrison Lab
Regular Unleaded Gasoline	Lakeside Refining Company	Stockbridge Oil Room
Rock Salt	American Rock Salt Company LLC	Building 27
Rock Salt	American Rock Salt Company LLC	Harrison
RootX	General Chemical Company	Harrison Stockroom
RootX	General Chemical Company	Stockroom Harrison
Rust-Oleum High Performance Enamel Flat Black	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Flat Black	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Gloss White	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Gloss White	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Hunter Green	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Hunter Green	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Light Blue	Rust-Oleum Corporation	Harrison Stockroom

Rust-Oleum High Performance Enamel Light Blue	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Light Machine Gray	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Light Machine Gray	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Primer Flat Gray Primer	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Primer Flat Gray Primer	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Safety Blue	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Safety Blue	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Safety Orange	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Safety Orange	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Safety Purple	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Safety Purple	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum High Performance Enamel Safety Red	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum High Performance Enamel Safety Red	Rust-Oleum Corporation	Stockroom Harrison
Rust-Oleum Industrial Choice Multi Purpose Enamel Safety Yellow	Rust-Oleum Corporation	Harrison Stockroom
Rust-Oleum Industrial Choice Multi Purpose Enamel Safety Yellow	Rust-Oleum Corporation	Stockroom Harrison
S-722 Foaming Degreaser	Beaver Research Company	Harrison Stockroom
S-722 Foaming Degreaser	Beaver Research Company	Stockroom Harrison
Salicylic Acid, Sodium Salt, 99+%	Fisher Scientific	Environmental Services Lab
Salicylic Acid, Sodium Salt, 99+%	Fisher Scientific	Harrison Lab
Saob Component A	Orion Research (The Schrafft Center)	Stockbridge Oil Room
Secodyne 450	Secodyne, Incorporated	Stockbridge Oil Room
Selenium In HNO3 1000ug/ml, 10,000ug/ml	Plasma Chem Corp	Stockbridge Oil Room
Sodium Acetate Anhydrous	Fisher Scientific Part of Thermo Fisher Scientific Thermo Electronic LLS India PVT. LTD.	Environmental Services Lab
Sodium Acetate Anhydrous	Fisher Scientific Part of Thermo Fisher Scientific Thermo Electronic LLS India PVT. LTD.	Harrison Lab
Sodium Hexametaphosphate Food Grade	Innophos	Pump Stations
Sodium Hydrosulfite	Vimax Industries Inc.	Stockbridge Oil Room
Sodium Hydroxide	Fisher Scientific	Environmental Services Lab
Sodium Hydroxide	Fisher Scientific	Harrison Lab
Sodium Hypochlorite 12.5%	Ulrich Chemical, Inc.	Stockbridge Oil Room
Sodium Persulfate >98%	Fisher Scientific	Environmental Services Lab
Sodium Persulfate >98%	Fisher Scientific	Harrison Lab
Sodium Phosphate	Fisher Scientific	Environmental Services Lab
Sodium Phosphate	Fisher Scientific	Harrison Lab
Sodium Sulfate Anhydrous	Mallinckrodt Inc.	Environmental Services Lab
Sodium Sulfate Anhydrous	Mallinckrodt Inc.	Harrison Lab
Sodium Tetraborate Decahydrate	Fisher Scientific Chemical Division	Environmental Services Lab
Sodium Tetraborate Decahydrate	Fisher Scientific Chemical Division	Harrison Lab
SPADNS2 (Arsenic-Free) Fluoride Reagent, AccuVac Ampulees	Hach Company	Harrison Lab
SPADNS2 (Arsenic-Free) Fluoride Reagent, AccuVac Ampulees	Hach Company	Pump Stations

SPADNS2 (Arsenic-Free) Fluoride Reagent, AccuVac Ampulees	Hach Company	Trace Organics Lab
Spartan Citro Shield Furniture Polish	Spartan Chemical Company, Inc.	Harrison Stockroom
Spartan Citro Shield Furniture Polish	Spartan Chemical Company, Inc.	Stockroom Harrison
Spartan SparCling Restroom Disinfectant	Spartan Chemical Co., Inc. (Maumee)	Harrison Stockroom
Spartan SparCling Restroom Disinfectant	Spartan Chemical Co., Inc. (Maumee)	Stockroom Harrison
Spartan SSE Carpet PreSpray & Spotter	Spartan Chemical Co., Inc. (Maumee)	Harrison Stockroom
Spartan SSE Carpet PreSpray & Spotter	Spartan Chemical Co., Inc. (Maumee)	Stockroom Harrison
Speed Crete Blue Line	Euclid Chemical Company (Cleveland)	Stockbridge Field Supervisors Area
Spray Nine Grez-Off Heavy Duty Degreaser	ITW Permatex	Stockbridge Storage Room 1
SSR Coolant Code DC 010	Degussa-Huls Corporation (NJ)	Stockbridge Oil Room
Sta-Bil Storage Fuel Stabilizer	Gold Eagle Company	Stockbridge Storage Room 2
Sta-Lube Synthetic Brake & Caliper Grease	CRC Industries, Inc.	Stockbridge Storage Room 2
Standard Tire Fix A Flat Inflator & Sealer	ITW Global Tire Repair, Inc.	Stockbridge Storage Room 2
Star Brite Star Tron Enzyme Fuel Treatment	Starbrite Inc	Harrison Stockroom
Star Brite Star Tron Enzyme Fuel Treatment	Starbrite Inc	Stockroom Harrison
State ADH II Spray Adhesive	State Industrial Products	Stockbridge Storage Room 2
State Apple Orchard Kontrol	State Industrial Products	Harrison Stockroom
State Apple Orchard Kontrol	State Industrial Products	Stockroom Harrison
State Formula 190-X Liquid Weed Killer	State Industrial Products	Harrison Stockroom
State Formula 190-X Liquid Weed Killer	State Industrial Products	Stockroom Harrison
State Mint Action Bowl & Urinal Cleaner Product #: 121158	State Industrial Products	Harrison Stockroom
State Mint Action Bowl & Urinal Cleaner Product #: 121158	State Industrial Products	Stockroom Harrison
State Shut Your Trap Dry Drain Treatment	State Industrial Products	Harrison Stockroom
State Shut Your Trap Dry Drain Treatment	State Industrial Products	Stockroom Harrison
State Zero In SOK Flying & Crawling Insect Killer	State Industrial Products	Harrison Stockroom
State Zero In SOK Flying & Crawling Insect Killer	State Industrial Products	Stockroom Harrison
STIHL High Performance 2-Cycle Engine Oil	Omni Specialty Packaging, LLC	Harrison Stockroom
STIHL High Performance 2-Cycle Engine Oil	Omni Specialty Packaging, LLC	Stockroom Harrison
Sulfuric Acid	Fisher Scientific	Environmental Services Lab
Sulfuric Acid	Fisher Scientific	Harrison Lab
Sulfuric Acid	Fisher Scientific	Ind. Services Lab
Sulfuric Acid Standard 0.500 N	Hach Company	Environmental Services Lab
Sulfuric Acid Standard 0.500 N	Hach Company	Harrison Lab
Super Friendly Air'it Super Friendly Freeze'It	Control Company	Stockbridge Oil Room
Teflon-Daikin	Norton Co./Saint-Gobain - (MA)	Stockbridge Oil Room
Tellis T-22	Sopus Products	Stockbridge Oil Room
Tellis T-68	Sopus Products	Stockbridge Oil Room
Tier One 10w30	Pinnacle Oil Holdings, LLC	Stockbridge Oil Room
Tier One 5w20	Pinnacle Oil Holdings, LLC	Stockbridge Oil Room
Tier One Lubricants Dexos 1 5w30	Nu-Tier Brands, Inc.	Stockbridge Oil Room
TISAB Solution for Fluoride Determination	EMD Millipore Corporation	Environmental Services Lab
TISAB Solution for Fluoride Determination	EMD Millipore Corporation	Harrison Lab
Total Ionic Strength Adjustment Buffer (TISAB II), with CDTA	Ricca Chemical Company LLC	Environmental Services Lab
Total Ionic Strength Adjustment Buffer (TISAB II), with CDTA	Ricca Chemical Company LLC	Harrison Lab
TR XI-740	Degussa-Huls Corporation (NJ)	Stockbridge Oil Room
UGL Drylok Fast Plug	United Gilsonite Laboratories	Stockbridge Storage Room 2
Ultra Cleen Professional Fuel System Cleaner	Gold Eagle Company	Stockbridge Storage Room 2
Un-Believ-Able! Un-Goo Grease Oil, Tar & Adhesives Remover	Core Products Co., Inc.	Harrison Stockroom

Un-Believ-Able! Un-Goo Grease Oil, Tar & Adhesives Remover	Core Products Co., Inc.	Stockroom Harrison
United Laboratories Aero-Weld Aerosol PVC Purple Primer United 132	United Laboratories (IL)	Harrison Stockroom
United Laboratories Aero-Weld Aerosol PVC Purple Primer United 132	United Laboratories (IL)	Stockroom Harrison
United Laboratories Crevice Creeper, United 172	United Laboratories (IL)	Harrison Stockroom
United Laboratories Crevice Creeper, United 172	United Laboratories (IL)	Stockroom Harrison
United Laboratories Footlocker Slip Resistant Textured Epoxy Coating United 124	United Laboratories (IL)	Harrison Stockroom
United Laboratories Footlocker Slip Resistant Textured Epoxy Coating United 124	United Laboratories (IL)	Stockroom Harrison
United Laboratories Jungle Wipes United 678	United Laboratories (IL)	Harrison Stockroom
United Laboratories Jungle Wipes United 678	United Laboratories (IL)	Stockroom Harrison
United Laboratories Ten Strike Safe-Way Cleaner United 88	United Laboratories (IL)	Harrison Stockroom
United Laboratories Ten Strike Safe-Way Cleaner United 88	United Laboratories (IL)	Stockroom Harrison
United Laboratories United 455 Liqui-Zyme Odor Eliminator Ciimarron	United Laboratories (IL)	Harrison Stockroom
United Laboratories United 455 Liqui-Zyme Odor Eliminator Ciimarron	United Laboratories (IL)	Stockroom Harrison
United Laboratories United 67 ESA Total Washroom Cleaner	United Laboratories (IL)	Harrison Stockroom
United Laboratories United 67 ESA Total Washroom Cleaner	United Laboratories (IL)	Stockroom Harrison
United Laboratories United 77 Biatron Organic Digester and Liquid Drain Cleaner	United Laboratories (IL)	Harrison Stockroom
United Laboratories United 77 Biatron Organic Digester and Liquid Drain Cleaner	United Laboratories (IL)	Stockroom Harrison
Universal Pag Oil R134a Synthetic Refrigerant Oil	FJC, Inc.	Stockbridge Storage Room 2
Valvoline All-Fleet Plus Heavy Duty Diesel SAE 15W-40 Engine Oil	Valvoline LLC	Harrison Stockroom
Valvoline All-Fleet Plus Heavy Duty Diesel SAE 15W-40 Engine Oil	Valvoline LLC	Stockroom Harrison
Valvoline Dex/Merc Automatic Transmission Fluid	Valvoline LLC	Harrison Stockroom
Valvoline Dex/Merc Automatic Transmission Fluid	Valvoline LLC	Stockroom Harrison
Valvoline Full Synthetiic SYN Power 5W-30	Valvoline LLC	Stockbridge Storage Room 2
Valvoline Premium Conventional SAE 10W-30 Motor Oil	Valvoline LLC	Harrison Stockroom
Valvoline Premium Conventional SAE 10W-30 Motor Oil	Valvoline LLC	Stockroom Harrison
WD-40	WD-40 Company	Stockbridge Storage Room 2
Weld-On 700 PVC, Clear, Low VOC	IPS Corporation	Harrison Stockroom
Weld-On 700 PVC, Clear, Low VOC	IPS Corporation	Stockroom Harrison
Whitmore's Decathlon PG 46 Synthetic Air Compressor Lubricant	Whitmore Manufacturing Company	Building 21
Whitmore's Decathlon PG 46 Synthetic Air Compressor Lubricant	Whitmore Manufacturing Company	Harrison
Wolfs Head ATF	Wolf's Head Lubricants	Stockbridge Oil Room
Worthington Propane	Worthington Cylinder Corporation	Harrison Stockroom
Worthington Propane	Worthington Cylinder Corporation	Stockroom Harrison
X-Pando Pipe Joint Compound	X-Pando Products Company	Harrison Stockroom
X-Pando Pipe Joint Compound	X-Pando Products Company	Stockroom Harrison

Zenex Zenagasket Silicone Gasket Maker, Low Volatility, Hi-Temp, Red, RTV	Zenex International	Harrison Stockroom
Zenex Zenagasket Silicone Gasket Maker, Low Volatility, Hi-Temp, Red, RTV	Zenex International	Stockroom Harrison
Zenex ZenaLube White Lithium Grease	Zenex International	Harrison Stockroom
Zenex ZenaLube White Lithium Grease	Zenex International	Stockroom Harrison
Zenex ZenaSeal Silicone Sealant, Low Volatility, Clear, RTV	Zenex International	Harrison Stockroom
Zenex ZenaSeal Silicone Sealant, Low Volatility, Clear, RTV	Zenex International	Stockroom Harrison
Zinc Acetate (Granular)	Avantor Performance Materials, Inc.	Environmental Services Lab
Zinc Acetate (Granular)	Avantor Performance Materials, Inc.	Harrison Lab
Zinc In HNO3 1,000ug/ml, 10,000ug/ml	Plasma Chem Corp	Stockbridge Oil Room
Zinc Sulfate Heptahydrate	Fisher Scientific Chemical Division	Environmental Services Lab
Zinc Sulfate Heptahydrate	Fisher Scientific Chemical Division	Harrison Lab

Response to MDEQ Comments in Letter dated May 20, 2016
Described in "Appendix 1: Comments on City of Kalamazoo MS4 Permit Application"
Regarding City of Kalamazoo 2015 Application for Reissuance of the NPDES MS4 Permit
(Updated 2021)

Additional Information to Supplement

Textual Response

Questions 60 - 84

Attachment K:

1. "Work Practice to Update Stormwater Asset Inventory and Mapping"

Attachment L2:

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

Attachment M2:

3. "Stormwater System Operations and Maintenance Plan"
4. "Stormwater System Cleaning Tracking Table" Example
5. "Outfall Stormwater Sewershed Map" Example

Table 2:

6. Table "Municipal Operations/Good House-Keeping for Pollutants, BMPs and Stormwater Program Assessment"
7. "Street Sweeping Policy"

Figure 7:

8. Figure "Designated Areas for Snow Plowing & Street Sweeping"

ATTACHMENT M2

Stormwater System Operations and Maintenance Plan

Access to a two-person crew and a vactor truck is currently being arranged within the current Department of Public Services re-organizational structure. It is anticipated that regular access to this crew for approximately three days a week to clean storm sewer will be realized during the first quarter of 2017.

“Stormwater System Cleaning Tracking Tables” have been developed and will be used by our crew to methodically track the progress of cleaning all sections of the storm sewer by defined manhole to manhole segments. A separate Stormwater System Cleaning Tracking Table will be prepared for each stormwater outfall, listing all pertinent storm sewer infra-structure (catch basins, inlets, and manholes) within the area designed to collect runoff to discharge at the specifically noted outfall (“stormwater sewersheds”). These specific tables will be prepared by evaluating various storm sewer maps, including existing stormwater outfall contribution figures.

Attached are examples of both a stormwater outfall contribution figure and a Stormwater System Cleaning Tracking Table, specifically prepared for Outfall STOWKC16639.

The City of Kalamazoo recognizes 373 stormwater outfalls within its jurisdiction that it is responsible for under the MS4 NPDES Permit. The stormwater sewersheds for these outfalls contain approximately 11,000 catch basins/inlets and over 4,600 manholes (see Attachment K). Consequently, our preliminary estimate is that it will take approximately seven to 10 years to clean the entire stormwater infrastructure, based on available labor hours, weather limitations, and other contingencies. For example, the “dedicated” vactor will also have to respond to emergency water main breaks, and labor forces will have to be assigned to higher priority emergency work as needed.

The comprehensive storm sewer cleaning program will provide information to prioritize catch basins and inlets that may require more frequent cleaning relative to others; subsequently, until the first full cycle of storm sewer cleaning has been completed, the routing storm sewer cleaning program will serve as a preliminary protocol. To supplement the newly acquired information, the City will use its tracking records for requests for storm sewer cleaning (see attached table for query over the last few years). Repeat locations can generally be categorized as priority areas. For example, there are multiple listings for 2232 Crosswind approximately 11 months apart, Greenleaf Blvd., Lay Blvd, etc. This report, along with the information generated from the routing cleanings, will be generated every reporting period so that priority areas can be identified and updated.

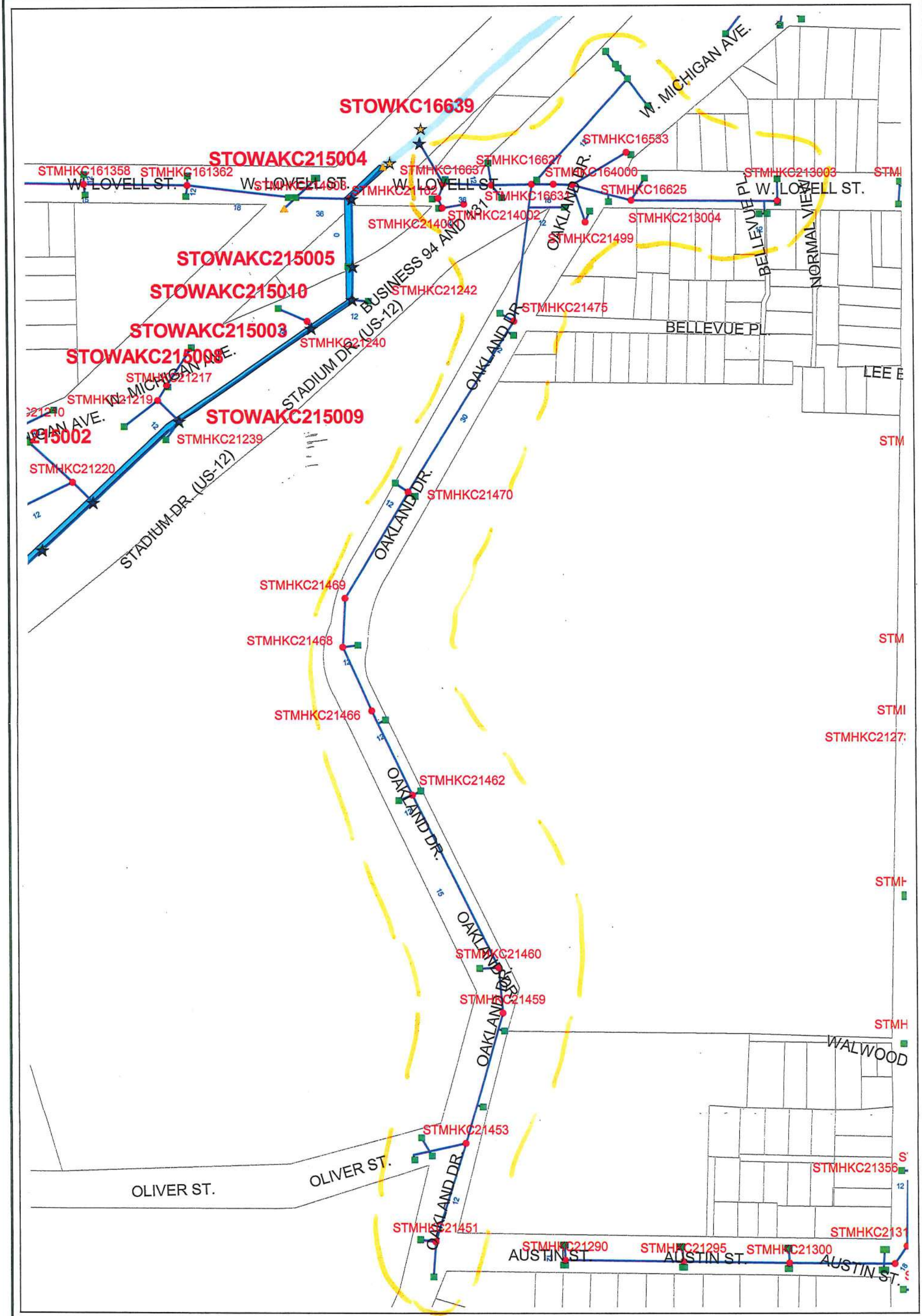
The protocol for removing sediment from catch basins is as follows:

1. When a storm sewer complaint is received, a work order is prepared either by a written form and later tracked on a spreadsheet or done directly on a computer using the tracking spreadsheet.
2. The work order is then provided to a Water Resources Division Supervisor to evaluate.
3. If warranted, the Supervisor then assigns a crew to perform a site visit to perform the cleaning.
4. Proper street traffic control signage is placed prior to any actual cleaning as necessary.
5. If sediment exists on the catch basin or inlet, it is cleaned up prior to removing the lid.
6. The catch basin and inlet are then cleaned out of water and sediment by use of a vactor truck. The accumulated material and water is then deposited at the Wastewater Treatment Plant, as described in the Stormwater System Operation and Maintenance Plan.
7. Upon field work completion, the work order is completed with the proper information regarding the problem and solution, the number of the storm sewer asset(s), and turned into the crew's Supervisor. The work order completion information is then logged into the database.

Prior to each Stormwater Program Progress Report (every two years), the City will note and evaluate its progress and cleaning strategy and will include an assessment of the cleaning program within its Stormwater Program Progress Reports, including any updates for higher prioritized cleaning locations.

STORMWATER SYSTEM CLEANING TRACKING TABLE

OUTFALL:	**STOWKC16639**	Number CBs/ILs: 36				
Water Feature:	**Arcadia Creek**					
	CONDITION		Indicate with	Indicate with	Indicate with	
	ASSESSMENT	Catch Basins/Inlets	x	☒	☒	
		(Upstream to Downstream)	≤ 50% Sediment	≥ 50% Sediment	Structure Issues	COMMENTS
	Storm Main Segment					
Upstream Manhole	STMHKC21451	1				
Downstream Manhole	STMHKC21453	2				
		3				
		4				
		5				
Upstream Manhole	STMHKC21453	1				
Downstream Manhole	STMHKC21459	2				
Upstream Manhole	STMHKC21459	1				
Downstream Manhole	STMHKC21460					
Upstream Manhole	STMHKC21460	1				
Downstream Manhole	STMHKC21462	2				
Upstream Manhole	STMHKC21462	1				
Downstream Manhole	STMHKC21466					
Upstream Manhole	STMHKC21466	1				
Downstream Manhole	STMHKC21468					
Upstream Manhole	STMHKC21468	0				
Downstream Manhole	STMHKC21469					
Upstream Manhole	STMHKC21469	1				
Downstream Manhole	STMHKC21470	2				
Upstream Manhole	STMHKC21470	1				
Downstream Manhole	STMHKC21475	2				
Upstream Manhole	STMHKC21475	1				
Downstream Manhole	STMHKC164000	2				
		3				
		4				
		5				
		6				
Upstream Manhole	STMHKC213003	1				
Downstream Manhole	STMHKC213004	2				
		3				
		4				
		5				



THE CITY OF Kalamazoo

EXAMPLE:
Outfall Stormwater Sewershed Map

LEGEND

- Manhole
- Catch Basin
- Outfall to Water
- Outfall to Ground
- Private Outfall
- Inlet Outfall
- Leaching Basin
- Culvert End
- Storm Sewer
- City Limits

N

100 0 100 200 Feet

The maps from the City of Kalamazoo's GIS are not at surveyor accuaracy. The City of Kalamazoo assumes no legal responsibility for the information contained on these maps.

Catch Basin Cleaning Activities Guidance Document

Catch Basin Cleaning

Catch Basin Cleaning Activities

Catch basins are included in storm sewer system designs in order to remove solids such as gravel, sand, oils, and organic material carried by storm water. Catch basins also contain elevated concentrations of metals (attached to the solids) from street runoff or drainage from industrial, commercial and residential properties. In order to maintain the storm sewer systems effectiveness, catch basins must be periodically cleaned out. The Department of Environmental Quality (DEQ) Water Bureau (WB) and Waste and Hazardous Materials Division (WHMD) oversee environmental regulations pertaining to this activity. The Michigan Occupational Safety and Health Administration (MIOSHA) within the Department of Labor and Economic Growth oversee confined space entry and other worker health and safety standards.

In the past, the waste generated from the catch basin cleaning activities was typically discharged back into the storm sewer system. This type of discharge is unauthorized per Part 31, Water Resources Protection (Part 31) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) and is therefore illegal. The combined solid and liquid waste stream (solid/liquid waste) from cleaning storm sewers systems is legally defined as “liquid industrial waste” pursuant to Part 121, Liquid Industrial Wastes (Part 121) of NREPA.

The following are options recommended to properly deal with the waste stream generated from catch basin cleaning activities:

1. Have the waste transported to drying beds to separate the solid/liquid waste. This is usually performed at a publicly owned treatment plant or at a privately owned permitted facility where the liquid portion of the waste stream is separated from the solids and treated.

2. Request permission from the local wastewater treatment plant operator to discharge the combined solid/liquid waste into the sanitary system. Most treatment plants will require pre-treatment prior to the discharge. All applicable local ordinance provisions must be followed.

3. When conducting catch basin maintenance activities where the above options are not available, the following method can be used as long as there are no discharges to surface waters during dry weather conditions.

- Conduct visual inspection to ensure the water in the sump has not been contaminated. If necessary, collect a grab sample of the water and look for signs of contamination such as visible sheen, discoloration, obvious odor, etc. See the EPA Visual Inspection guidance for more tips. If there is any doubt of the quality of the water, it should be collected into the Vactor truck and treated as waste under Part 121 or Part 115 Solid Waste Management (Part 115) of NREPA.

- Using a sump pump, or any other pumping mechanism, remove the majority of water in the sump of the basin without disturbing the solid material below. Do not use pumps connected to the Vactor truck's holding tank.

- The clear water may then be directly discharged to one of the following:
    - Sanitary system (with prior approval from local sewer authority)
    - Curb and gutter
    - Back into the storm sewer system as long as it is contained within the system during dry weather condition to ensure no discharge into surface water
    - Applied to the ground adjacent to the catch basin (evenly distributed at a maximum rate of 250 gallons/acre/year)

- The remaining liquid/solid in the sump should be collected with a Vactor truck and disposed of off-site in accordance with Parts 115 or 121.

The entity whose catch basin is being cleaned is responsible for meeting the generator requirements under Part 121. See the Liquid Industrial Waste Generator guidance for more information.

The entity transporting the solid/liquid waste must meet the applicable transporter requirements. A local, state, or federal government may use its own vehicle to service catch basins or other parts of the sewer system without being a permitted and registered transporter under the provisions of the Hazardous Materials Transportation Act, 1998 PA 138, as amended (HMTA).

If the local government contracts with a private company to transport the liquids generated from cleaning the catch basins or other parts of the sewer system, that entity must be registered and permitted as a uniform liquid industrial waste transporter under the provisions of HMTA.

The transporter must notify the WHMD about their activity and obtain a site identification number. Follow the instructions and links to the form EQP5150 and online paying option posted at www.deq.state.mi.us/wdspi. There is a fee.

A uniform hazardous waste manifest must accompany the load, or a consolidated manifest may be used per Operational Memo 121-3, when the liquid waste is transported over public roadways by the local government or by a contract transporter. Keep the records at least three years from shipment. The waste transporting portion of the vehicle and/or containers used to

transport the waste must be kept closed except when adding or removing the waste, and the exteriors must be kept free of the liquid waste and residue.

The facility accepting the solid/liquid waste must meet operating requirements:

- They must notify the WHMD that they are operating a liquid industrial waste designated facility, obtain a site identification number, and meet operating requirements under Part 121. This includes practices to prevent unauthorized discharge of the waste, sign manifests, and keep required records. If waste containers are used, they must be kept closed and protected from the weather, fire, physical damage and vandals.

- The discharge of the liquids into the treatment plant that is permitted by the WB must meet the wastewater treatment plant requirements. Any other discharge of the liquids would require a separate DEQ discharge permit.

- The resulting solid waste must be managed under Part 115 requirements. Dispose of the solid waste in a licensed landfill. Contact the landfill authority for their specific disposal requirements, including any tests they require to document the solids are not hazardous or liquid waste. Do not use the solids as fill on local government or private property, or for any other use, unless it meets the conditions of being an inert material according to the solid waste rules R299.4114 through R299.4118. See the Waste Characterization Guidance for information how to determine if the waste is hazardous or not.

Street sweeping activities are also subject to the above solid waste requirements. Street sweeping involves the use of specialized equipment to remove litter, loose gravel, soil, pet waste, vehicle debris and pollutants, dust, de-icing chemicals, and industrial debris from road surfaces. See the BMPs for Street Sweeping and Parking Lot and Street Cleaning.

Follow-up Answers Can be Found as Follows:	
Topic	**Contact:**
Using the solids as fill or other use under Part 115	Duane Roskoskey at 517-335-4712
Part 121 transportation requirements and HMTA	WHMD District Office
Managing waste under Part 31, or general questions regarding this guidance	Mark Fife at 517-241-8993
Confined space entry requirements	MIOSHA Consultation, Education and Training Division at 517-322-1809

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ATTACHMENT N

TOTAL MAXIMUM DAILY LOAD (TMDL) IMPLEMENTATION PLAN

Permit Application Questions 85 – 88

Background

The City of Kalamazoo 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 U.S. EPA and the MDEQ in August, 2002. The City of Kalamazoo collects 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 MDEQ, Water Resources Division at the Kalamazoo District Office. The 2014 Annual Report Submittal for the Cooperative Agreement was submitted on February 27, 2015.

MS4 Discharge Permit TMDL Implementation Plan

The City of Kalamazoo 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 Attachment O. 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. (Table 2); public education and outreach (Table 3); Construction SESC Program; and required Post-Construction Stormwater Controls via the Site Plan Review process. These prioritized BMPs and methods of evaluating their effectiveness are all contained within Table 2, Table 3, and the previously referenced Attachments for the relevant written procedure/policy.

Monitoring Plan

The monitoring plan associated with this Permit to assess the effectiveness of the BMPs currently implemented or to implemented, in making process toward achieving the TMDL pollutant load reduction requirement, will include two monitoring events pursuant to the TMDL portion of the new Permit, as follows.

First Monitoring Event

It is understood that the extensive water quality monitoring performed in 2013-14 by Kieser & Associates as reported in "Urban Watershed Monitoring – One Decade after Management Plan Implementation" associated with the Portage & Arcadia Creek Subwatershed will quality as the first of the minimum two sampling events required during this new Permit cycle. In summary, the 2013-14 sampling project partners included the Forum of Greater Kalamazoo, City of Kalamazoo, City of Portage, City of Allegan, K & A, and MDEQ, and was designed to compare water quality data obtained in 2001 to assess whether the BMPs implemented since the implementation of the Portage & Arcadia Creek Watershed Management Plan were effective. The sampling methods included the use of automated sampling at the mouths of the creeks during both wet and dry events, and included the parameters rainfall, flow, Total Phosphorus (TP), Total Suspended Solids (TSS), temperature, Dissolved Oxygen, pH, conductivity and oxygen reduction potential. The details of the sampling study results are contained in the above-referenced document.

Second Monitoring Event

The second required monitoring event to be performed by the City of Kalamazoo will be performed in 2018 during a month that is common to one of the periods during the 2013-14 events, and will include the collection of in-stream samples at/near the mouth of both Portage and Arcadia Creeks. The minimum parameters to be used will be TP and TSS. However, other parameters will be considered and will be dependent upon available resources. Water quality information obtained from other sources (e.g. dry-weather outfall sampling) may be used to supplement the water quality database for the overall assessment of changes in water quality during the comparative periods.

The City will most likely use City sampling staff to collect the samples and use its certified laboratory and/or contracted laboratory to analyze the samples. However, if grant opportunities become available, the City may expand the second monitoring event to more closely align with the 2013-14 project which was grant supported. 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.

ATTACHMENT O

Lake Allegan/Kalamazoo River Watershed TMDL Implementation Strategic Plan for 2012 and Beyond - Revision 2021 (KRWC & COK)

Issues	Solutions	Actions	Agency/ Group	Funding Options	Priority	Phosphorus Reduction Potential	Progress											
							2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
oil TMDL Issues																	
Water quality monitoring is needed to address fate and transport processes of P in the river system.	Fund new analyses and continue monitoring throughout the watershed. Continue to compile all available analysis conducted within the Kalamazoo River Watershed	1) Continue to obtain funding sources for data analysis and water quality monitoring.	PSs, K&A, KRWC	PSs, grants	S	3	Funding obtained (CMI #2013-0511)	---	Funding obtained (#2015-0519)	---	---	---	---	---	Determine data use by EGLE and where funds can be spent efficiently	Determine data use by EGLE and where funds can be spent efficiently	Determine data use by EGLE and where funds can be spent efficiently
		2) Conduct water quality monitoring and data analysis. Historically: Morrow Lake study by K&A, DEQ/Allegan WWTP & KWRP monthly; Lake Allegan monitoring from Apr-Sept, Allegan WWTP & KWRP instream monitoring - 1x/2wk April to September.	PSs, K&A, KRWC, DEQ	PSs, grants	S	3	Ongoing	Completed weekly river sampling entire 2014, increased monitoring frequency in lake during TMDL months	Regular bi-weekly sampling completed for river stations; monthly in-lake sampling completed; intensive year-long sampling in Morrow Lake completed	Ongoing	WWTP and MDEQ regular sampling conducted April - September 2017	WWTP and MDEQ regular sampling conducted April - September 2018	WWTP regular sampling conducted April-September 2019	EGLE sampling postponed to 2021 due to pandemic	EGLE regular sampling conducted April - September 2021		EGLE regular sampling conducted April - September 2023
Acquire more comprehensive river data from throughout the watershed by multiple sources	TMDL Implementation Committee compile, analyze, and distribute data from multiple sources. More data is added value to understand the ecosystem, not necessarily for use in evaluating delisting	1) Work to obtain data relevant to the Kalamazoo River and the TMDL	TMDL, PSs, KRWC, USGS, Superfund, Oil Spill	PSs, grants, PRPs	S	3	---	Organizing for 2015	Finalized for 2016	Additional samples collected above/below Albion, Marshall, Olivet, Battle Creek	MS4s submitted sampling plans as part of new permit(s)	MS4s: Portage & Arcadia Creeks Watershed Mgt Plan	Initiating partnership with Georgia Pacific to collaborate on data collection/sharing	Continuing partnership with Georgia Pacific to collaborate on data collection/sharing	Partner with Georgia Pacific to collaborate on data collection/sharing. Identify other sources of water quality data; compile for trends.	Partner with Georgia Pacific to collaborate on data collection/sharing. Identify other sources of water quality data; compile for trends.	Partner with Georgia Pacific to collaborate on data collection/sharing. Identify other sources of water quality data; compile for trends.
		2) Seek funding of USGS gaging stations in the watershed to obtain long term, quality data.	PSs, DEQ, MDOT, USGS, DNR	PSs, DEQ, MDOT, USGS, DNR	S	3	---	DEQ basin sampling completed	Funded by City of Kalamazoo, USGS	City Kalamazoo funded USGS gauges: 11 groundwater, 2 surface water	City Kalamazoo funded USGS gauges: 11 groundwater, 2 surface water	City Kalamazoo funded USGS gauges: 11 groundwater, 3 surface water	City Kalamazoo funded USGS gauges: 11 groundwater, 3 surface water		Investigte new USGS guage installation feasibility	Investigte new USGS guage installation feasibility	Investigte new USGS guage installation feasibility
Determine innovative actions to meet TMDL goals, such as wetland restoration projects, Lake Allegan rough fish removal, dam removal, and conservation easements	Research solutions from other watersheds for applicability in the Kalamazoo River Watershed	1) Determine ecological benefits towards TMDL goals	TMDL, KRWC, DEQ	PSs, grants	S	3	---	---	---	---	Superfund PRP interest in rough fish removal, Georgia-Pacific Carp tagging/tracking pilot study Lake Allegan	Georgia Pacific Box net pilot study 10K carp removal from Lake Allegan	Georgia Pacific 5-yr carp mgt removal from Lake Allegan	Georgia Pacific 5-yr carp mgt removal from Lake Allegan	Georgia Pacific 5-yr carp mgt removal from Lake Allegan; pursue urban tree canopy funding opportunities; Kalamazoo River concrete channel restoration within City of Battle Creek.	Georgia Pacific 5-yr carp mgt removal from Lake Allegan; pursue urban tree canopy funding opportunities; Kalamazoo River concrete channel restoration within City of Battle Creek.	Georgia Pacific 5-yr carp mgt removal from Lake Allegan; pursue urban tree canopy funding opportunities; Kalamazoo River concrete channel restoration within City of Battle Creek.
		2) Use the Landscape Level Wetland Functional Analysis tool (available on line) to identify key historic wetlands to restore. Identify partners who can assist with wetland restorations and conservation easements (e.g. SWMLC, conservation district, NRCS, USFWS).	DEQ	grants	L	3	Ongoing	LLWFA done for more subwatersheds	LLWFA presentation at July TMDL mtg	Complete; funding obtained for further watershed education	Van Dalson Foundation funded Allegan local govt outreach by KRWC	---	---		Review the LLWFA tool and connect it's to potential new projects	Review the LLWFA tool and connect it's to potential new projects	Review the LLWFA tool and connect it's to potential new projects
		3) Seek funding for implementation projects.	TMDL, KRWC	PSs, grants	L	3		Conservation priorities determined by grad student team	319 grant proposals submitted Oct (3-4 total)	Battle Creek River land conservation project and Portage-Arcadia Green Infrastructure granted	KVCC 319 for green infrastructure, I&E SWMLC 319 for land conservation, I&E	KVCC 319 for green infrastructure downtown campuses completed	Completed KVCC 319 project; Proposed Calhoun County MRG project - not ranked high enough to pursue	Submitted grant for GLRI funding for Urban Tree Canopy project - Not awarded funding; proposed funding for culvert replacement for bank stabilization and habitat improvement in Minges Brooks in Battle Creek. Not ranked high enough for submittal;	Submit grant for GLRI Urban Tree Canopy project for Lake Allegan watershed. Support Gun River WMP development. Submit Watershed grant to develop watershed wide WQ monitoring program with emphasis on phos analysis.	Investigate options for Michigan 319 Planning and Implementation grants. Investigate options for additional funding within the watershed (e.g. Community Foundations, Midwest Glacial Lakes Partnership, Sustain Our Great Lakes) Target the Gun River area implementation projects based on newWMP.	Investigate options for Michigan 319 Planning and Implementation grants. Investigate options for additional funding within the watershed (e.g. Community Foundations, Midwest Glacial Lakes Partnership, Sustain Our Great Lakes) Target the Gun River area implementation projects based on newWMP.
Lack of understanding by the general public of the inputs of phosphorus into the Kalamazoo River Watershed.	Education plan for school-age students and the general public.	1) Continue with overall TMDL public events: Kanoe the Kazoo, Krazy for the Kazoo, Konnect with the Kazoo	TMDL, KRWC	PSs, MS4 permittees, grants	S	3	Ongoing	Kanoe the Kazoo and Krazy for the Kazoo held	13 Kanoe the Kazoo paddle events; 8 communities hosted Krazy for Kazoo cleanups	14 Kanoe the Kazoo paddle events; 7 community hosted Krazy for Kazoo cleanups	6 Kanoe the Kazoo paddle events; 8 river cleanup events held throughout watershed	8 Kanoe the Kazoo paddle events; and river cleanup events held in the watershed	7 Kanoe the Kazoo paddle events; 2 river cleanup events held throughout watershed	2 river cleanup events held throughout the watershed (Battle Creek and Charlotte); Konnect with the Kazoo remote event	Kanoe the Kazoo, Krazy for the Kazoo, Konnect with the Kazoo	Kanoe the Kazoo, Krazy for the Kazoo, Konnect with the Kazoo	Kanoe the Kazoo, Krazy for the Kazoo, Konnect with the Kazoo
		2) Implement public education plans developed by MS4 permitees and point sources (per the Cooperative Agreement), Encourage sharing of education strategies and resources.	TMDL, KRWC	PSs, MS4 permittees, grants	S	3	Under development	Public education plan implementation by smaller TMDL communities	Ongoing; see individual signatory reports and Attachment 7	Ongoing; see individual signatory reports and Attachment 7	Ongoing; see individual signatory reports	Ongoing; see individual signatory reports	Working with Kazoo County MS4 group to form cooperative	Working with Kazoo County MS4 group to form cooperative; FB posts, newspaper articles on stormwater, signatory websites, municipal newsletters, KRWC newsletters	FB posts, signatory websites; newspaper articles; Radio ads; local farmers market w/stormwater messaging; municipal newsletters, KRWC newsletters, Provide link "buttons" to link to the KRWC educational website.	FB posts, signatory websites; newspaper articles; Radio ads; local farmers market w/stormwater messaging; municipal newsletters, KRWC newsletters, One Watershed Campaign	FB posts, signatory websites; newspaper articles; radio ads; local farmers market w/stormwater messaging; municipal newsletters, KRWC newsletters One Watershed Campaign
		3) Seek additional partnerships and opportunities to educate the public and school-age students.	TMDL, KRWC	PSs, MS4 permittees, grants	L	3	Under development	Discussions underway with MS4 communities and other partners	Kalamazoo and Battle Creek worked with other partners to host community rain barrel sale; over 100 new rain barrels reducing TP	Kalamazoo and Battle Creek worked with other partners to host community rain barrel sale; over 80 new rain barrels reducing TP	Engaged MS4 permittees from Kazoo County in potential partnership with TMDL	Engaged MS4 permittees from Kazoo County in potential partnership with TMDL	Presented to 11 different groups during 2019 to discuss waterheds, stormwater impacts	Partnership with City of Battle Creek, Kalamazoo and potentially Marshall for "Water Quality Wednesday" and other radio messaging; Children's Water Festival; Battle Creek Farmer's Market, Battle Creek City Fair	Partnership with City of Battle Creek, Kalamazoo and potentially Marshall for "Water Quality Wednesday" and other radio messaging; Children's Water Festival; Battle Creek Farmer's Market; Earth Day Participation; Public Utilities Week; City of Kalamazoo Block Parties	Children's Water Festival; Battle Creek City Fair; Battle Creek Farmer's Market; Earth Day Participation; Public Utilities Week; City of Kalamazoo Block Parties
t Source Issues																	
Address stormwater footprint and impact due to growth and development	Develop and implement pollution prevention and good housekeeping per the cooperative agreement for each municipality	1) WWTP facilities to maintain and implement stormwater assessments and BMPs	PSs	PSs	S	1	Ongoing	Stormwater performance standards adopted by 7 TMDL communities	Stormwater standards adopted, revised by 11 TMDL communities	---	Industrial stormwater permits in place	Industrial stormwater permits in place	Industrial stormwater permits in place	Industrial stormwater permits in place	Industrial stormwater permits in place	Industrial stormwater permits in place	Industrial stormwater permits in place
		2) Other municipal departments/operations develop/implement pollution prevention and good housekeeping plan. Pollution prevention/good housekeeping activitiesare to be described in the municipal annual reports. Encourage employee training program. Also, use SEMCOG trainings as an example.	PSs	PSs	S	1	Ongoing	PP/GH activities implemented by smaller TMDL communities	PP/GH activities ongoing; employee training done at 7 communities	PP/GH activities ongoing; employee training done at 3 communities	Ongoing; see individual signatory reports	Ongoing; see individual signatory reports	Ongoing; see individual signatory reports	Ongoing; see individual signatory reports	Ongoing; see individual signatory reports	Ongoing; see individual signatory reports	Ongoing; see individual signatory reports
Impacts of drinking water system pipe treatment and iron suppression additives & P concentrations	Compile data and analyze impacts of treatments and additives	1) Research and compile data of current practices by municipalities and others	PSs	PSs	S	2	---	Reviewed Kalamazoo's P additives	---	---	Study performed- Corrosion Control Chemical Analysis of Kalamazoo System	Corrosion Control Chemical Analysis of Kalamazoo System Report was evaluated and changes were made to chemical feed.	Monitoring of P concentrations at stormwater/Kalamazoo River locations.		Compile current practices from TMDL municipalities	Update current practices of TMDL Municipalities	
		2) List appropriate and cost-effective alternative pipe treatments and share with TMDL group	PSs	PSs	S	2	---	---	---	---	---	---	---	---	Compile list of alternative practices	Alternate practices discussion	---
Stay up-to-date on new technologies for P removal	Share treatment process information	Tours, presentations, and discussions at PS meetings	PSs	PSs	S	1	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Stay informed of P loading from point sources and how loading impacts the overall TMDL goals	Compile data and analyze impacts to TMDL goals	Educate TMDL group of P loading. The group has been consistently meeting the point source goal for several years. Revist the value of tabulating data montly.													Use each quarterly meeting to review previous quarter point source P loading and relationship to the TMDL goal	Use each quarterly meeting to review previous quarter point source P loading and relationship to the TMDL goal	Use each quarterly meeting to review previous quarter point source P loading and relationship to the TMDL goal
-Point Source Issues																	
NPS P from urban and urbanizing areas	Utilize NPS loading analysis and build-out analysis to prioritize P reductions	1) Zoning ordinances or programs that emphasize stormwater management and Green Infrastructure (GI)	TMDL, KRWC	319 Grant	S	1	Ongoing	Ongoing	Education for municipal leaders ongoing	Funding obtained for Green Infrastructure tour in 2017	Held green infrastructure tours (August 2017)	---	COK Zoning Ordinance, Natural Features Overlay	COK Zoning Ordinance, Natural Features Overlay; City of Battle Creek Sustainability Plan; Calhoun County Stormwater Technical Reference Manual	COK Zoning Ordinance, Natural Features Overlay; City of Battle Creek Sustainability Plan; Calhoun County Stormwater Technical Reference Manual	COK Zoning Ordinance, Natural Features Overlay; City of Battle Creek Sustainability Plan; Calhoun County Stormwater Technical Reference Manual	COK Zoning Ordinance, Natural Features Overlay; City of Battle Creek Sustainability Plan; Calhoun County Stormwater Technical Reference Manual
		2) Use resulting data from watershed build-out analysis to educate public/municipalities about P loading. Education on the build out analysis needs to be expanded beyond WWTP operators to planning commissions and other municipal officials	TMDL, KRWC	319 Grant, PSs	S	1	Ongoing	Meetings and presentations at 8 TMDL communities, other local municipalities	Meetings and presentations at 5 TMDL communities (including 4 townships in Gun River area)	Complete	TMDL annual meeting October 2017, other communities and public participated	TMDL quarterly meetings	TMDL quarterly meetings	TMDL quarterly meetings	TMDL quarterly meetings	TMDL quarterly meetings	TMDL quarterly meetings
		3) Identify areas excluded from MS4s and areas with high stormwater contribution (using NPS loading analysis results)	DEQ, PSs, KRWC, K&A	319 Grant	S	1	Ongoing	---	---	---	---	---	---	---	Review *NPS Modeling of P Loads* (K&A, 2001) and use consultant to help identify areas where efforts can be maximized.	Review *NPS Modeling of P Loads* (K&A, 2001) and use consultant to help identify areas where efforts can be maximized.	Review *NPS Modeling of P Loads* (K&A, 2001) and use consultant to help identify areas where efforts can be maximized.
		4) Determine strategy to best provide data, TMDL info, loadings, BMPs and stormwater policy to these entities	TMDL, KRWC	319 Grant	S	1	Ongoing	Ongoing	Ongoing	Complete	---	---	Goals/outcome re-evaluation in process	Goals/outcome re-evaluation in process	Work with Conservation Districts (other County entities) within the TMDL area to help disseminate information to agricultural areas, update Kalamazooriver.net website.	Work with Conservation Districts (other County entities) within the TMDL area to help disseminate information to agricultural areas, update Kalamazooriver.net website.	Work with Conservation Districts (other County entities) within the TMDL area to help disseminate information to agricultural areas, update Kalamazooriver.net website.
		5) Track and support policy and BMP implementation	TMDL, KRWC, PSs	319 Grant	S	1	---	---	See table in Attachment 1	Complete	---	---	Goals/outcome re-evaluation in process	Goals/outcome re-evaluation in process	Work with Conservation Districts (other County entities) and municipalities within the TMDL area to collect information on installed BMPs. Work with consultant to compile and track data.	Work with Conservation Districts (other County entities) and municipalities within the TMDL area to collect information on installed BMPs. Work with consultant to compile and track data.	Work with Conservation Districts (other County entities) and municipalities within the TMDL area to collect information on installed BMPs. Work with consultant to compile and track data.
		6) Address TMDL P reductions in MS4 permit required plans and similar plans required by the Cooperative Agreement (e.g. PEP, IDEP prioritization, Post Construction Controls. Pollution Prevention and Good Housekeeping)	MS4s, Villages, Townships, Counties, KRWC	319 Grant	S	1	Ongoing	---	Ongoing; See Attachment 1	Complete	---	---	---	---	---	---	---
		7) Look for stormwater retrofit opportunities	TMDL, KRWC, DEQ	PSs, 319 Grant	L	1	---	---	---	Ongoing	K&A analysis for stormwater footprint in City of Galesburg	K&A analysis for stormwater footprint in City of Portage	---	---	Work with municipalities to plan for retrofits during other improvement projects.	Work with municipalities, ag producers, property owners to plan for retrofits during other improvement projects.	Work with municipalities, ag producers, property owners to plan for retrofits during other improvement projects.
What are the P and sediment loading reductions associated with Superfund site remediation projects?	Pursue data from EPA/PRPs for streambank restoration/remediation; determine if EPA/PRPs are tracking reductions	Review resulting P and sediment loading reductions from streambank restoration projects. Stay informed and provide comments on projects if signatories have concerns.	KRWC, DEQ,		S	2	Obtained	---	---	Ongoing	---	---	---		Consultant assessments	Consultant assessments	Consultant assessments
Quantify P loading from Agricultural areas to identify hot spots	Identify priority agricultural BMP implementation areas for highest TMDL benefits	Develop implementation strategies to prioritize and address hot spots. This will be done through the Gun River Watershed Management Planning Project. There will be an agricultural tillage inventory. Implementation committee members are encouraged to join the watershed steering committee and attend meetings. There may also be opportunities to assist with the inventory. Similar inventories should be conducted in other agricultural subwatersheds in the future. Once the inventory is completed, Allegan Conservation District should consider seeking implementation funding.	TMDL, KRWC, Conservation Districts, NRCS, Gun Lake Tribe	319 Grants, GLRI, NRCS Farm Bill	S	1	Funding obtained	---	---	---	TMDL quarterly meetings	TMDL quarterly meetings	TMDL quarterly meetings	TMDL quarterly meetings	TMDL quarterly meetings; identify areas using *NPS Modeling of P Loads* (K&A, 2001), engage Conservation Districts and seek 319 implemention funding	TMDL quarterly meetings; identify areas using *NPS Modeling of P Loads* (K&A, 2001), engage Conservation Districts and seek 319 implemention funding	TMDL quarterly meetings; identify areas using *NPS Modeling of P Loads* (K&A, 2001), engage Conservation Districts and seek 319 implemention funding
Permanent Agricultural BMPs for P reductions	Implementation of conservation programs including drainage tile management, conservation tillage, buffer strips and cover crops. Work with the Allegan Conservation District and the NRCS for implementation. Focus on more permanent conservation measures such as drainage tile management. Gun River is highest priority.	Obtain funding	TMDL, KRWC, DEQ, Tribe, Cons. Districts, SWMLC, NRCS, Farmland Preservation Boards	GLRI, private foundations	L	1	Pursuing funding	Lead organization identified	HWWF continues to seek funding; work ongoing to pass farmland pres. ordinance in Kazoo Co	Ongoing effort to pass farmland pres. ordinance in Kazoo Co	Farmland Preservation - presentation made to Kazoo County Commissioners	---	---	---	Seek funding for implementation projects in the Gun River Watershed once the inventory is completed	Develop Ag BMP projects and seek funding	Develop Ag BMP projects and seek funding

S = Short-term (<3 years) planning and/or implementation
L = Long-term (>3 years) planning and implementation
1, 2, 3 refer to the highest to lowest potential for phosphorus reductions with implementation

Department of Agriculture & Rural Development

Commercial Pesticide Application Certification Categories

Commercial applicators who apply for certification or register applicator status must designate the type of pesticide application(s) they will make on the appropriate MDARD application form. Click on the Commercial Pesticide Application Certification Categories document as your guide.

Certification and/or registered applicator status is achieved by taking exam(s) and/or receiving training. There is a study manual and examination for each category of pesticide application. Study manuals, for select categories of pesticide application, may be viewed and downloaded at the Michigan State University Pesticide Education Web Site. Manuals may also be ordered by mail or picked up from some Michigan State University County Extension Offices. Visit the web site or check your local phone book for the nearest extension office.

Contact MDARD at (517) 284-5653 for more specific information regarding categories of pesticide application in Michigan.

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Pesticide Safety & Education

Welcome to the MSU Pesticide Safety Education Program. PSEP is here to offer certification training and updates for pesticide applicators as well as to provide education and information for applicators and the general public about pesticide safety.

Join now to receive email notifications of PSEP updates and workshops! To receive information on upcoming recertification training opportunities, Core and Category Review workshops, and any hot topics Michigan pesticide applicators need to know, look at the information to your left.

BY POPULAR DEMAND! Pesticide Safety and Education Program Email Notification!

Join now to receive monthly emails! To receive Pesticide Safety Education Program updates:

1. Send an email to: **listserv@list.msu.edu**
2. Copy and paste the following in the body of the email: **Subscribe PSEPAPPLICATORS**
3. Click send.

You will receive a confirmation email that will require your response.

To opt out of the list:

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Department of Agriculture & Rural Development

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Pesticide Applicator Certification Process

- Emergency Rule Amending Rule 7, R 285.636.7

  A new emergency rule filed on December 30, 2020 by Michigan Department of Agriculture and Rural Development (MDARD) Director Gary McDowell extended pesticide applicator credential expiration dates as part of the state's continued COVID-19 response. Applicators whose license expired on December 31, 2019 or December 31, 2020 will have those licenses extended to June 30, 2021. In addition to extending the expiration date, the rule gives applicators six additional months to renew their credential via continuing education courses.

- Pesticide Applicator Certification/Registration Application
- Examination Process and Instructions

  The Michigan Department of Agriculture and Rural Development (MDARD) offers two ways to take Certified Pesticide Applicator and Registered Technician exams: Paper-based testing through MDARD and Computer-based testing through Metro Institute.

- Pesticide Application Certification Details & FAQ
- Commercial Pesticide Application Certification Categories
- List of Study Manuals by Applicator Type
- Registered Applicator Trainer Manual

STORMWATER SYSTEM CLEANING TRACKING TABLE

OUTFALL:	**STOWKC16639**	Number CBs/ILs: 36				
Water Feature:	**Arcadia Creek**					
	CONDITION		**Indicate with**	**Indicate with**	**Indicate with**	
	ASSESSMENT	**Catch Basins/Inlets**	x	☒	☒	
		(Upstream to Downstream)	**≤ 50% Sediment**	**≥ 50% Sediment**	**Structure Issues**	**COMMENTS**
	Storm Main Segment					
Upstream Manhole	STMKC21499	1				
Downstream Manhole	STMHKC16625					
Upstream Manhole	STMHKC16625	0				
Downstream Manhole	STMHKC164000					
Upstream Manhole	STMHKC164000	1				
Downstream Manhole	STMHKC16631	2				
		3				
		4				
		5				
		6				
Upstream Manhole	STMHKC16631	1				
Downstream Manhole	STMHKC16627	2				
Upstream Manhole	STMHKC16627	1				
Downstream Manhole	STMHKC16637					
Upstream Manhole	STMHKC214002	1				
Downstream Manhole	STMHKC214001					
Upstream Manhole	STMHKC214001	1				
Downstream Manhole	STMHKC211062					
Upstream Manhole	STMHKC21162	1				
Downstream Manhole	STMHKC16637					

Michigan Department of AGRICULTURE & Rural Development

PESTICIDE CERTIFICATION-REGISTRATION CATEGORIES

CATEGORY	DESCRIPTION		CATEGORY	DESCRIPTION
1A Field Crops	This includes applicators who use pesticides for the production of field crops; cereal grains, feed grains, beans, soybeans, sugarbeets, forage.		6 Right-of-Way Pest Management	This includes applicators who use pesticides in the maintenance of any of the following: public roads, ditch banks, electric power lines, pipelines, railway rights-of-way, parking lots, tennis courts, similar noncrop areas.
1B Vegetable Crops	This includes applicators who use pesticides for the production of vegetable crops; tomatoes, potatoes, snap beans, celery, onions, cucurbits, cole crops, sweet corn.		7A General Pest Management	This includes applicators who use pesticides in, on, or around any of the following: food-handling establishments, human dwellings, institutions such as schools and hospitals.
1C Fruit Crops	This includes applicators who use pesticides for the production of tree fruit; apples, cherries, pears, peaches, plums, nuts, blueberries, strawberries, grapes, and raspberries.		7B Wood Destroying Pest Management	This includes applicators who use pesticides in, on, or around structures for the management of wood-destroying pests, such as any of the following: termites, powder post beetles, carpenter ants, wood-destroying fungi.
1D Livestock Pest Management	This includes applicators who use pesticides on animals; cattle, swine, sheep, horses, goats, other livestock, poultry. A person who use pesticides on or in places where animals are confined.		7D Vertebrate Pest Management	This includes applicators who use pesticides to manage vertebrate pests, such as birds, rats, or mice.
2 Forest Pest Management	This includes applicators who use pesticides in any of the following areas: forests, forest nurseries, Christmas tree plantations, forest seed-producing areas.		7E Interior Plant Pest Management	This includes applicators who use pesticides in the maintenance of plants at inside locations, such as any of the following: homes, offices, shopping malls, stores, similar sites.
2A Wood Preservation	This includes applicators who use pesticides for preserving wood products.		7F Mosquito Management	This includes applicators who use pesticides to manage mosquitoes in an outside environment.
3A Turfgrass Pest Management	This includes applicators who use pesticides to manage pest of turf grasses.		7G Domestic Animal Pest Management	This includes applicators who use pesticides to control pests associated with small domestic animals, such as cats and dogs.
3B Ornamental Pest Management	This includes applicators who use pesticides to manage pests of ornamental plants in exterior areas, such as evergreens, shrubs, and shade trees.		8 Public Health Pest Management	This includes state, federal, or other government employees who use pesticides in public health programs for the management of pests that have medical and public health importance, excluding mosquitoes.
4 Seed Treatment	This includes applicators who use pesticides on any of the following: seeds, corns, tubers, rhizomes, stolons, other plant parts used or propagation.		9 Regulatory Pest Management	This includes state, federal, or other government employees who use pesticides in the management of regulated pests.
5 Aquatic Pest Management	This includes applicators who use pesticides which are applied to lakes, ponds, streams, marshes, or ditches and tributaries which flow into them or which are applied to surfaces that contact such bodies of water to manage aquatic pest. This category does not include applicators who engage in mosquito management.		10 Demonstration and Research Pest Management	This includes individuals who demonstrate to the public the proper use, and techniques of application of pesticides, who supervise the demonstrations, or who conduct field research with pesticides and, in so doing, use restricted-use pesticides.
5A Swimming Pools	This includes applicators who use pesticides in maintaining public or private swimming pools to manage algae, bacteria, or other swimming pool pests.		AE Aerial	Applicators who apply pesticides by aircraft.
5B Microbial Pest Management	This includes applicators who use pesticides in any of the following to manage bacteria, fungi, algae or viruses; cooling towers, air washers, evaporative condensers, pulp and paper mills, sewer treatment, other applications.		FUM Fumigation	Includes the application of a fumigant for structural, soil borne, stored commodity and greenhouse pests.
5C Sewer Line Pest Management	This includes applicators who use pesticides in sewer lines for root control.			

Revised 08/2011