City of Warren

Storm Water Management Plan

In accordance with NPDES Permit No. MI0053881

Submitted by:
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City of Warren Waste Water Treatment Plant
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Contents

City of Warren Storm Water Management Plan

General Requirements

In accordance with the Jurisdictional General Permit for Municipal Separate Storm Sewer Systems (MS4s), permit no. MI0053881, the City of Warren has prepared the following Storm Water Management Program (SWMP) Plan. As required in Part I.B of the permit, this SWMP is intended to progress toward accomplishing the following objectives:

1. Reduce the discharge of pollutants from the MS4 to the Maximum Extent Practicable (MEP). As stated in the permit, the MEP requirement shall be met by the following:
   - Implementing Best Management Practices (BMPs) to comply with the requirements in Part I.B.1-6 of this permit
   - Demonstrating that measurable goals were met for individual BMPs
   - Demonstrating the effectiveness or environmental benefit of each BMP.

2. Although not specifically stated in the permit, it is the intent of the City of Warren to utilize this SWMP to make progress toward reducing pollutants in storm water discharges from the MS4 as appropriate to be consistent with Total Maximum Daily Loads (TMDL) approved by the United States Environmental Protection Agency (USEPA). Within the City of Warren, the following TMDL applies: E. coli for the Red Run Drain and Bear Creek, Macomb and Oakland Counties (August 2006).

SWMP Development and Implementation

1. This SWMP plan is intended to meet the standard requirements of this permit. The City of Warren shall implement this SWMP plan upon submittal. This SWMP shall meet the requirements identified in Part I.B.1-6 of the permit.

2. Revisions to the SWMP may include schedules for phasing in storm water management actions to meet the standard requirements during the term of this permit.

3. All actions shall be implemented (i.e., put into action, operation, service, or practice) over the term of this permit.

Total Maximum Daily Loads (TMDL)

Although not specifically required in the permit, in order for the SWMP to be consistent with the requirements and assumptions of the E.coli TMDL for the Red Run Drain and Bear Creek, Macomb and Oakland Counties (August 2006), this SWMP shall identify and prioritize actions to reduce pollutants in storm water discharges from the MS4 in order to make progress in meeting the Water Quality Standards.

The following specific actions shall be taken by the City of Warren:

1. It is anticipated that by November 1, 2013, the City of Warren shall take at least one representative sample of a storm water discharge from at least 50 percent of the major discharge points discharging directly to surface waters of the state within the portion of the TMDL watershed in the urbanized area. A major discharge point is a pipe or open conveyance measuring 36 inches or more at its widest cross section. At a minimum, the sample shall be analyzed for E coli.

2. The City of Warren shall retain these results and report them in the annual progress report.

3. The City of Warren shall use these results and other available information to develop and prioritize actions to reduce the discharge of E. coli to be consistent with the TMDL. It is anticipated that this prioritization process will be completed with other agencies and jurisdictions within the Red Run subwatershed, such as the Macomb County Health Department and the Macomb County Public Works Office. Progress on this effort will be reported in the annual progress report.

Public Education Program (PEP) – Education and Outreach on Storm Water Impacts

The PEP shall promote, publicize, and facilitate watershed education for the purpose of encouraging the public to reduce or prevent the discharge of pollutants in storm water to the maximum extent practicable. Since combining or coordinating existing PEPs for public stewardship of water resources is encouraged by the Department, the City of Warren has contracted with the Clinton River Watershed Council to provide public education services. In addition, the City recognizes and utilizes the educational resources offered by the Department of Natural Resources and Environment, the Southeast Michigan Council of Governments, the Macomb County Public Works Office, the Macomb County Health Department, and the Michigan State University Extension.

The public education program has been developed to conduct public education on the following topics, based on the potential impact on the receiving waters:

1. Hazards associated with illicit discharges and the improper disposal of waste.

   The City of Warren encourages public reporting of the presence of illicit discharges or the improper disposal of materials into the City's MS4, and has developed and publicizes a hotline for public reporting. According to the Department, common illicit discharges are: construction site wastes and sediment, carpet cleaner wastes, household wastes and motor vehicle fluids from home owners, septic and other commercially-transported wastes, and commercial power washing (except residual street washing water discharges that are allowable under Part I.B.1.a).

2. The water body that would be potentially impacted by improper actions at or near a person's home

3. The availability, location, and requirements of facilities for the collection and/or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, grass clippings, leaf litter, animal wastes, and motor vehicle fluids
4. The acceptable application and disposal of pesticides, herbicides, and fertilizers, including the use of phosphorus-free fertilizer alternatives, as appropriate
5. Preferred car cleaning agents and procedures for noncommercial car washing
6. For property owners with a septic system, proper septic system maintenance and how to recognize system failure
7. For riparian land owners, management of riparian lands to protect water quality
8. Public responsibilities and stewardship in their watershed
9. The benefits of using native vegetation instead of non-native vegetation
10. Educate commercial, industrial, and institutional entities likely to have significant storm water impacts. At a minimum, commercial food services, primarily restaurants, shall be educated to prevent grease and litter discharges to MS4s

For all applicable topics, the PEP identifies the: Target audience(s), Key message(s), Delivery mechanism(s), Timetable, and Responsible party (or parties). In addition, methods for determining the effectiveness of the implemented PEP are identified. The current watershed-wide PEP is attached as Appendix 1.

Since the PEP is a collaborative effort between multiple public agencies and non-governmental organizations, revisions to the PEP may be made throughout the permit cycle. Revisions will be included in all annual reports required under Part 1.C.1.e.

Public Involvement and Participation

Public input is encouraged in all aspects of the SWMP. The following minimum actions shall be taken to encourage public input:

a. The City of Warren shall follow local public notice requirements, as appropriate, when notifying the public that a SWMP is or will be implemented. Copies of the SWMP plan shall be available for public review, and the public shall be notified of when and where it is available.
b. The City of Warren participates in the Red Run Subwatershed advisory group meetings for the purpose of encouraging public involvement in all aspects of the SWMP.
c. The City of Warren cooperates with the Clinton River Watershed Council (CRWC), who is an integral part of the SWMP. The City keeps the CRWC informed of activities under the SWMP;

provides them copies of the SWMP plan and welcomes input from the CRWC on the plan. The City also assists the CRWC in seeking volunteer assistance, including water quality monitoring support, and utilizes the CRWC to help meet permit requirements. The City of Warren fully supports the CRWC with their ongoing programs for water resource protection and enhancement.

Illicit Discharge Elimination Program (IDEP)

The City of Warren has developed, implemented, and enforces a program to detect and eliminate illicit connections and discharges to MS4s. The IDEP includes the following:

a. An ordinance and program to effectively prohibit illicit discharges into the MS4 owned or operated by the City of Warren that implements appropriate enforcement actions. The ordinance and program is intended to achieve the following objectives:

   (1) Regulate the contribution of pollutants to the MS4 owned or operated by the City of Warren.
   (2) Prohibit illicit discharges, including the direct dumping or disposal of materials into the MS4 owned or operated by the City of Warren.
   (3) Establish the authority to investigate, inspect, and monitor suspected illicit discharges into the MS4 owned or operated by the City of Warren.
   (4) Require and enforce elimination of illicit discharges and connections into the MS4 owned or operated by the City of Warren.

   Copies of the applicable City ordinances are available at the Clerk's Office and at the Engineering Department.

b. A program to find and eliminate illicit connections and discharges to the MS4 from commercial, industrial, private educational, public, and residential sources. The program to find and eliminate illicit discharges and connections includes the following:

   1) A storm sewer system map, showing the location of all discharge points the City of Warren owns or operates, and the names and location of all the surface waters of the state that receive discharges from the City's MS4. A separate storm sewer system includes: roads, catch basins, curbs, gutters, parking lots, ditches, conduits, pumping devices, and man-made channels. The storm sewer system map is maintained by the City Engineering department and can be made available to the Department upon request. System information is updated as discharge points are identified or added.

2) Identification of areas prioritized by the City of Warren for dry-weather screening or other investigation methods for the purpose of maximizing the detection and elimination of illicit discharges.

3) A plan and procedures to perform dry-weather screening of each MS4 discharge point on a routine basis.

The City expects to complete its dry weather screening of all City-controlled storm water discharge points by the end of 2013. Follow up dry weather screening of all estimate 820 discharge points will commence again in 2014 and be completed by the end of 2018.

At a minimum, dry-weather screening shall include recorded observations of MS4 discharge point flows and receiving water characteristics, including: water clarity, color, and odor; the presence of suds, oil sheens, sewage, floatable materials, bacterial sheens, algae, and slimes; staining of the banks and unusual vegetative growth. MS4 discharge structures shall be observed for unusual vegetative growth, staining, undocumented connections, and integrity of the structure.

If flow is observed from the MS4 discharge point, then the City of Warren shall do one of the following:

- Where an illicit discharge and its source are obvious, it shall be eliminated, and additional analysis or sampling is not required, or
- Conduct a field assessment of the dry-weather flow to analyze for the presence of ecoli.

4) If an illicit discharge is detected, but the source has not been identified, the source shall be confirmed by one or more of the following methods: indicator parameter testing, which may include chemical and bacterial sampling; dye testing; video testing; smoke testing; documented visual observation or physical indicators; homeowner surveys and surface condition inspections for on-site sewage disposal systems; and drainage area investigations. The discharge of tracer dyes shall be authorized in accordance with Part I.A.2.a. of this permit.

Dry Weather Screening Follow-Up Program

The recommended follow-up program will allow the City to better define where they can concentrate future resources for removing illicit connections.

Step 1

Conduct Dry Weather Field Screening for the major and minor outfalls and discharge points in the storm sewer system in which flow was observed and sampled for detectable parameters. Dry weather sampling protocol will be used to re-inspect and monitor the outfalls and discharge points where both flow and a sample parameter were found. These “suspect” outfalls and discharge points will be sampled two more times during the term of the City’s Storm Water permit. This re-sampling program will allow the City to determine if the observed parameter is

a chronic problem for the outfall or was only a conditional observation associated with the time of the sampling program.

The information to be collected for each outfall is: the site ID; the date and time of the inspection; qualitative data consisting of odor, oil sheen, and other observations; quantitative data consisting of ecoli samples and other chemical parameters as necessary; estimated flow rate; date of last storm; and the amount of rainfall in the last storm.

The source identification process at each location, which exhibits dry weather flow, consists of utilizing ecoli analysis as the primary indicator of an illicit connection. If ecoli levels are low, but City personnel still suspect that an illicit connection exists, then ammonia or detergents are used as secondary indicators.

Identified outfalls are visited and if dry-weather flow exists, samples of that flow are collected. Those samples are then usually analyzed for ecoli. The samples are then ranked based on the following categories:

1. E-Coli greater than 10,000 cfu/100 ml
2. E-Coli greater than 5,000 cfu/100 ml, but less than 10,000 cfu/100 ml
3. E-Coli greater than 1,000 cfu/100 ml, but less than 5,000 cfu/100 ml
4. High ammonia and detergent levels

Further drainage system and sub-system investigation proceeds upstream based on the rankings of the pollutants found in the samples. Those falling into category one are investigated first, those falling into category two are investigated next, etc. The same criteria are also used when tracing the pollutants upstream into the drainage sub-districts to determine which branch of the drainage system to investigate first (steps 2 and 3 below).

Once the pollutant of concern is traced to an area between two access points (usually manholes) to the storm sewer, source identification proceeds as in Step 4 below.

Step 2

Review of Previous Records. Once a problem outfall is identified, available records for both the storm and sanitary sewer system network in the outfall service area are collected. Information on past reported pollution problems and special studies will be reviewed to identify potential areas that might be the source of pollution in the outfall. This would include past complaints, smoke-testing studies, in-pipe video camera inspections, or past actions to disconnect an illicit connection. This review will include existing land use information, and industrial or commercial uses which may be a part of the City's pretreatment program in the outfall service area will be located. The review is intended to isolate higher probability sub-drainage areas where a pollution source exists.

Step 3

Manhole-to-manhole upstream inspections. Next, a manhole-to-manhole inspection is conducted on the high-probability sub-drainage areas by the City's illicit connection identification team. A search, test, and locate technique will be required. The investigation may operate in a sub-drainage area or for the entire outfall depending on the size of the area and probability of pollutants originating in sub-drainage areas.

The strategy for each problem outfall drainage area may be different. For example, the first manhole to inspect could be the location of the highest probability sub-drainage area. Presence of dry weather flow would be the key element of the techniques. Sampling that occurred at manholes in Step 1 could be useful for selecting a sub-drainage area. If flow exists, a sample will need to be taken to determine if the flow is polluted with the suspect parameter(s) identified at the main storm water outfall. If a pollution problem is not confirmed, it is likely that a manhole in a different location would be inspected for flow and a sample drawn from that location. Once a pollution problem in a sub-drainage area is found, additional testing and inspections may simply move to the next upstream manhole until the problem is located between two manholes.

Step 4

Suspected Source Testing: Once the manhole inspection and testing program has narrowed the outfall area to a single manhole, source testing will be necessary. The City of Warren's Department of Public Services has previously exercised "right-of-entry" authority to correct improper connections. Suspected source testing may be conducted by using smoke testing, fluorometric dye testing, or pipe line video camera inspection techniques that are commonly employed for testing sewer integrity.

The City has defined a policy for correcting illicit connections. There may be differences according to whether the land use with the violation is a commercial, industrial or residential use. When a Notice of Violation (NOV) is issued, a set period of time to correct the violations is included in the NOV. Failure to comply with the NOV may result in court action to correct the problem.

Facilities that are found to not have a direct illicit connection to the storm sewer system but which are causing pollution in the storm sewer system through storm runoff will be cited to correct the problem. If the facility is an industrial use, the City will verify that the facility has filed for an industrial NPDES storm water permit. If filing has occurred for an industrial use, but a storm water pollution problem exists, the Michigan Department of Natural Resources and Environment will be notified of the violation and requested to take action against the industrial permit holder.

5) Procedures for eliminating illicit discharges and pursuing enforcement action, including responding to spills and emergency situations. The procedure shall specify measures for

expeditious response to, and elimination of, each identified illicit discharge, spill, and emergency situation. The City of Warren has developed a system to track the elimination status of illicit discharges and enforcement actions. The system also tracks confirmation that illicit connections are removed or the discharge permanently ceased. Records associated with this activity available to the Department upon request.

Notification Procedures

Upon confirmation and identification of the responsible party for an illicit connection or discharge to the City's MS4, the City will follow the following protocol for notification of all affected parties:

1. A notice of violation (NOV) will be prepared and sent via registered mail to the property owner from whom the illicit connection has been confirmed. The NOV will contain a cease and desist order, or a timetable for removal of the illicit connection, based on the applicable City Ordinance, or State Law.
2. Since all storm sewers in Warren ultimately discharge to a County Drain, the Macomb County Public Works Office will be sent a copy of every NOV. Should an illicit connection be identified by City crews to be discharging directly to a County Drain, the Public Works Office will be notified by phone the same day, with follow up correspondence describing the connection, location, and type of discharge, sent via regular mail shortly thereafter.
3. If an illicit discharge is identified from a malfunctioning septic tank, a NOV will be sent as in #1 above, and a copy of the NOV forwarded to the Macomb County Health Department. If the illicit discharge can be rectified by connection to an available City sanitary sewer, the City of Warren will provide the lead in enforcing the needed correction. If City sewer is not available; the City will defer to the Health Department for enforcement of the needed corrections.
4. Should an illicit connection be identified as originating in or from a sewer under the jurisdiction of the Michigan Department of Transportation (MDOT) or the Macomb County Road Commission, the Warren/Sterling Heights MDOT TSC office or the Macomb County Road Commission will be notified as in #2 above.
5. If the defect causing the illicit discharge is determined to be in City right-of-way, and if the defect is due to deteriorated City utilities or a situation for which direct responsibility cannot be assigned to a particular party, the City of Warren Water Division will be notified of the situation, and will perform the needed correction.

c. Program to train staff, especially those involved in illicit discharge-related activities and those who have field jobs with the potential for witnessing illicit discharges and connections. At a minimum, the training shall include the following:

- The definition of illicit discharges, illicit connections, and sanitary seepage
- Techniques for locating illicit discharges, including field screening, source identification, and recognizing illicit discharges and connections
- Methods for eliminating illicit discharges and the proper enforcement response
- Proper procedures for responding to spills and emergency situations
- A training schedule and a requirement for the initial training of appropriate staff, with refresher training every three (3) years

Specific program goals for the IDEP are as follows:

Illicit Discharge Elimination Plan (IDEP)

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Field Verification	Reconfirm the number of outfalls within the MS4. In 1995, under the Phase I permit application process, a consultant to the City supposedly inspected all outfalls within the municipal separate storm water drainage system. Since then the City staff have revisited all 268 outfalls as defined in the original permit. The results of those inspections yielded a change in the number of outfalls to be permitted and monitored under the renewed permit. 78 locations were determined not to be outfalls to waters of the State or a County Drain from a City storm sewer, but instead to be locations within the City storm sewer system. Of those 78, 62 locations were released from further monitoring by the MDEQ during permit renewal discussions in 2001. 16 locations were investigated further to determine if they needed to remain in the permit. When the 2008 COC was issued, the City revisited the definition of an outfall and concluded that the 177 permit points were not inclusive of all locations that should be permitted. Actions are ongoing to locate and screen the original locations and those that should be added. The City expects the total number of outfalls once complete to be around 820.	Warren	To be addressed in the 2012 annual report	Summarized in annual report and listed in appendix supplementing the SWMP.
	Verify new outfalls associated with new construction.	Warren	Ongoing throughout permit period	Summarized in annual report.
Map Updates	Warren will annually update the outfall map with newly constructed or newly identified point sources.	Warren	Annual Report	Incorporate the results of investigations outlined throughout the IDEP

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Dry Weather Screening (Prioritizing)	During dry weather, the City will re-inspect and monitor the outfalls and discharge points where both flow and a sample parameter was found when the Part 1 sampling program was conducted. The following data is collected: the site ID; the date and time of the inspection; qualitative data consisting of odor, oil sheen, and other observations; quantitative data consisting of eColi testing, and estimated flow rate; date of last storm; and the amount of rainfall in the last storm.	Warren	Completion of all 820 outfalls expected by end of 2013. Second review of all outfalls to be completed by end of 2018.	# of outfalls that have a chronic problem
	If screening indicates a suspect illicit discharge/connection, a sample will be collected for analyzed for *E. coli*. Elevated results will require additional investigation. Further drainage system and sub-system investigation proceeds up stream based on the rankings of the pollutants found in the samples. Those falling into category one are investigated first, those falling into category two are investigated next, etc.	Warren	Ongoing throughout permit period	Summary of samples taken and results in annual report.
	The City will review previous records including: past complaints, smoke-testing studies, in-pipe video camera inspections, or past actions to disconnect an illicit connection, existing land use information, and industrial or commercial uses which may be a part of the City's pretreatment program in the outfall service area. This will aid in determining the probable drainage area where the illicit connection is located.	Warren	Current Practice	Include results in annual report.
	The City will perform manhole to manhole upstream inspections (and sample as needed) on the high-probability sub-drainage areas to determine the location of the illicit connection.	Warren	Current Practice	Summary of samples taken and results in annual report.

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Notification Procedures	Once the manhole inspection and testing program has narrowed the outfall area to a single manhole, source testing will be necessary. Sites which test positive will receive a Notice of Violation (NOV) and have a set period of time to correct the violation(s). Facilities that are found to not have a direct illicit connection to the storm sewer system but which are causing pollution in the storm sewer system through storm runoff will be cited to correct the problem.	Warren	Current Practice	- # of illicit connections verified - # of NOV's issued
	1.) A notice of violation (NOV) will be prepared and sent via registered mail to the property owner from whom the illicit connection has been confirmed. The MCPWO will receive a copy of each NOV as all storm sewers in Warren ultimately discharge to a County Drain	Warren	Current Practice	- # of NOV's issued - correspondence to be included in Annual Report
	2.) Should an illicit connection be identified by City crews to be discharging directly to a County Drain, the Public Works Office will be notified by phone the same day, with follow up correspondence describing the connection, location, and type of discharge, sent via regular mail shortly thereafter.	Warren MCPWO	Current Practice	- # of NOV's issued - correspondence to be included in Annual Report

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
	3.) If an illicit discharge is identified from a malfunctioning septic tank, a NOV will be sent as in #1 above, and a copy of the NOV forwarded to the Macomb County Health Department. If the illicit discharge can be rectified by connection to an available City sanitary sewer, the City of Warren will provide the lead in enforcing the needed correction. If City sewer is not available; the City will defer to the Health Department for enforcement of the needed corrections.	Warren MCHD	Current Practice	- # of connections to City sanitary sewer - # of NOV's sent to MCHD
	4.) Should an illicit connection be identified as originating in or from a sewer under the jurisdiction of the Michigan Department of Transportation (MDOT) or the Macomb County Road Commision, the Warren/Sterling Heights MDOT TSC or the Road Commsion office will be notified as in #2 above.	Warren MDOT MCRC	Current Practice	- # of NOV's issued - correspondence to be included in Annual Report
	5.) If the defect causing the illicit discharge is determined to be in City right-of-way, and if the defect is due to deteriorated City utilities or a situation for which direct responsibility cannot be assigned to a particular party, the City of Warren Water Division will be notified of the situation, and will perform the needed correction.	Warren	Current Practice	- # of corrections performed - Results to be included in Annual Report

Notes:

For IDEP purposes, dry weather is considered to be, at a minimum, 48 hours without precipitation or snow melt to ensure observation of only dry weather flows.

All dye testing will comply with MDEQ requirements.

Illicit Discharge Elimination Plan (IDEP)

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
I. Active Illicit Connections – A direct connection to the storm sewer system that is continuously or frequently conveying an illicit discharge.	1.) Volume of illicit discharge. 2.) Relative concentration or "strength" of illicit discharge. 3.) Known water quality concerns in the receiving waters as reported by the MCHD. Further prioritized (if necessary) by the following additional criteria: a.) Pollution level of receiving County Drain; b.) Beneficial uses of receiving water at termination of County Drain; c.) Impaired or threatened water bodies; d.) Threatened or endangered fauna or flora.	Warren	As identified	All eliminated illicit discharges/connections will be documented in the annual report. Additionally, the prioritization and/or elimination schedule for any existing illicit discharges/connections will be provided in the annual report.
II. Active Illicit Seepage – An illicit discharge that is not the result of an illicit connection and does not represent a sustained, concentrated illicit discharge.	1.) Volume of illicit discharge. 2.) Relative concentration or "strength" of illicit discharge. 3.) Known water quality concerns in the receiving waters as reported by the MCHD. Further prioritized (if necessary) by the following additional criteria: a.) Pollution level of receiving County Drain; b.) Beneficial uses of receiving water at termination of County Drain; c.) Impaired or threatened water bodies; d.) Threatened or endangered fauna or flora.	Warren	As identified	All eliminated illicit seepage will be documented in the annual report. Additionally, the prioritization and/or elimination schedule for any existing illicit seepage will be provided in the annual report.

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Responsibility	Warren will work with the property owner to correct the discharge. Warren will verify if the illicit discharge was caused by past city action or inaction and repair as needed in City right of way. On-site illicit connections that are determined to have occurred due to private action or inaction will be repaired by the Property owner on site.	Warren Property Owner	As-located, and as city resources allow. Private Property repairs –90 day ROW repairs –180 days	Report corrective actions completed in annual report.
Verification	Upon completion of corrective actions, Warren will conduct a follow up dye test to confirm correction.	Warren	As identified	Report verification in annual report.
Sanitary Sewer Maintenance	Maintenance and inspection of existing sanitary sewers. This includes the following activities, as necessary: jet cleaning, manhole inspections, closed circuit television (CCTV) inspections.	Warren	As personnel and funding allow	Report maintenance activities in annual report. (Ex. miles cleaned or inspected, # of manholes inspected, etc.)
	Routine maintenance and inspection of existing sanitary sewers identified as “problem” areas. This activity will include increased frequency of jet cleaning. “Problem” areas will be determined based on outfall screening, proximity of sanitary sewer to storm sewer, the integrity of sanitary sewer and log of residential sewer complaints (filed by street)	Warren	Performed as needed based on indicators of cross-flow between the sanitary and storm sewers	- # of “problem areas” jet cleaned
Sanitary Sewer Rehabilitation	Rehabilitation of sanitary sewers. Sanitary sewers will be prioritized based upon routine maintenance and inspection. Rehabilitation efforts may include: grouting, cured-in-place pipe (CIPP) lining and replacement.	Warren	Performed as need identified and funding allows.	Document method and location of any rehabilitation efforts in annual report.

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
New Construction of Sanitary Sewer	New sanitary sewers must pass low-pressure air testing witnessed by City personnel, prior to acceptance by Warren	Fund & perform testing & inspection – Contractor or Developer Witness & acceptance – Warren	Prior to acceptance of any new sanitary sewer	Document new sewers constructed and accepted in annual report.
OSDS Identification	MCHD and Warren will dye test all known septic fields to determine performance and risk to nearby storm sewers	MCHD Warren	Initially Completed in 2001	Report problems identified in annual report.
OSDS Correction	Warren will work with the property owner to correct and eliminate the source of the illicit discharge associated with failing OSDS. Extension of City sanitary sewer will be performed by the City if needed.	Responsible for correction and associated costs – Property Owner, Warren	Current Practice - as identified	Document corrective actions in annual report.
OSDS Verification	Follow up inspections will be performed by Warren IDEP, and reported to MCDPH	Warren	As identified	Report verification in annual report.
Legal Authority	City of Warren Storm Water Ordinance 80-497 adopted July 9, 1996.	Warren	Current Practice	Not applicable
Regulate the contribution of pollutants to the drainage system	Section 41-140 (b) of the City's Code of Ordinances defines acceptable discharges to the City's drainage system. All other discharges not defined are treated as illicit, and are prohibited.	Warren	Current Practice	Not applicable

Goal	Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Prohibit illicit connections and illicit discharges	Section 41-140 (b) of the City of Warren Code of Ordinances gives legal authority to prohibit illicit connections and discharges including the direct dumping or disposal of materials other than stormwater into the drainage system.	Warren	Current Practice	Not applicable – ordinance is currently enforced
Require compliance with ordinances, permits issued by the permittee, contracts or orders	Section 41-161 through 41-170 of the City of Warren Code of Ordinances provide the means for enforcing compliance with the City's Storm Water Ordinance.	Warren	Current Practice	Not applicable – ordinance is currently enforced
Conduct all inspections, surveillance and monitoring procedures necessary to determine compliance with ordinances, permits issued by the permittee, contracts, orders, and the terms and conditions of this permit.	Section 41-145 through 41-150 of the City's Storm Water Ordinance provide the mechanism for performing all inspections necessary to ensure compliance with the primary ordinance.	Warren	Current Practice	Not applicable – ordinance is currently enforced

Post-Construction Storm Water Control for New Developments and Redevelopment Projects

The City of Warren has developed, implemented, and enforces standards through ordinances or implemented departmental procedures to address post-construction storm water runoff from all new and redeveloped projects that disturb one (1) acre or more, including projects less than one (1) acre that are part of a larger common plan of development or sale that would disturb one (1) acre or more. The program includes the following general requirements:

- A *minimum treatment volume standard* to address water quality impacts
- *Channel protection criteria*, as applicable, to address resource impairment resulting from flow volumes and rates.
- Operation and maintenance requirements
- Enforcement mechanisms with recordkeeping procedures
- A requirement for the project developer to prepare and implement site plans, which shall incorporate the requirements of this section of the permit.

The City of Warren shall retain records associated with this activity in accordance with Part I.C.1. of this permit.

The City of Warren shall establish structural storm water BMP design standards to the standards of the Macomb County Public Works office found in Part 5 – Managing Storm water Runoff and Appendix G – Hydrology of the County design standards for Stormwater Management. **The City will require that all development or redevelopment projects that discharge directly into a State or County-owned system obtain a permit from the applicable State or County agency prior to discharge.**

Current Storm Water Management Efforts

Post-construction storm water runoff from all new and redeveloped projects that disturb one (1) acre or more, including projects less than one (1) acre that are part of a larger common plan of development or sale that would disturb one (1) acre or more shall ensure that adequate drainage is designed for each development and redevelopment project based on the 10 year, one-hour design storm.

1. If the site drains directly to a City storm sewer, the existing capacity of the sewer is evaluated, and if adequate to accept the new flow, the new connection is permitted.
2. If the City sewer is not large enough to accept the new flow, on-site detention is required for the difference between the generated flow, and the available capacity.
3. If the site drains directly to a County Storm Drain, the developer is referred to the Macomb County Public Works Office for a permit to discharge.
4. If the site drains directly to an MDOT-controlled storm sewer, a restricted outlet is required by MDOT, and the site is developed to provide the on-site storage dictated by the given outlet rate.

5. All sites shall obtain and remain in compliance with the required soil erosion control permit and NPDES permits as applicable.

The City of Warren Master Stormwater Plan was last updated in 1974 by Hubbel, Roth and Clark Consulting Engineers. The thrust of that document was to determine the current system capabilities to convey runoff from the 10 year 1 hour design rain event. It is important to note, that since that document was prepared, no major drains have been constructed. The existing trunk drainage system, or system of County Drains is the same today as it was then, excepting the addition of the Hartsig Relief Drain in section 32 of the City.

The Conclusions of that report were:

- The existing trunk storm sewers serving the City have an average of 50% or less of the capacity needed for run-off from the 10 year design frequency rain.
- The deficiencies in capacities of existing systems cause flooding of City streets, parking lots and private properties.
- The Red Run Drain, to which all City drains are discharging, is undersized and needs improvement.
- Most of the drains located south of the Red Run, are deficient in capacities, and relief drains are needed city-wide.
- The improved drains located north of the Red Run, and some located south of it, including Branches A, B, D, E, and F, 14 Mile Road Drain, Walker Drain, Martin Road East Branch, Bear Creek South Branch and Service Road Drains installed in connection with the I-696 construction, have adequate capacities for run-off from a 10 year frequency rain and do not require relieving.

The recommendations derived from the conclusions all centered around the concept of increasing capacity to convey the 10 year rain event. This included $79 Million (1979 dollars) in total recommended drainage construction, including improving the Red Run Drain and installation of many new County relief drains throughout the City. Since that time, only one of the proposed improvements – installation of the Hartsig Relief Drain in 1979-80, was completed.

Consequently, the City's drainage system is composed of a few areas with adequate capacity, at the time of the report, and a majority of areas with less than the desired (at that time)10-year design event runoff capacity.

An emphasis has always been placed on transportation of flow away from Warren as quickly as possible. The majority of Warren was developed in the 60's and 70's under that concept. When the Phase I regulation were introduced, Warren was already 97% developed. Consequently, most Warren properties are not designed to accommodate any reduction in outlet rate. Site redevelopment is the primary means by which property use is changed, but unfortunately local ordinances which dictate paved parking areas, and the size of that parking, result in little change to existing runoff rates.

All opportunities that exist to reduce peak flows, improve runoff quality, and protect sensitive areas downstream of Warren, must be mostly centered around the redevelopment process. In order to change existing policy to accommodate this permit's requirements and give Warren the ability to begin to make a positive impact on stormwater quality, the City Council will have to adopt changes to the existing Stormwater Ordinance. The City's storm water coordinator will propose the following revisions to the City's Planning Commission:

Adoption of the Macomb County Standards for new development and redevelopment, found in Part 5 – Managing Storm water Runoff and Appendix G –Hydrology of the County design standards for Stormwater Management as applicable, within the City's MS4. This standard shall apply to post-construction storm water runoff from all new and redeveloped projects that disturb one (1) acre or more, including projects less than one (1) acre that are part of a larger common plan of development or sale that would disturb one (1) acres or more. This includes the following Minimum Treatment Volume Standards and Channel Protection Criteria:

Minimum Treatment Volume Standard

The *minimum treatment volume standard* shall be one inch of runoff from the entire site, or the calculated site runoff from the 90 percent annual non-exceedance storm for the region or locality according to the statewide analysis by region for the 90 Percent Annual Non-Exceedance Storms is summarized in a memo dated March 24, 2006, which is available on the Internet at www.michigan.gov/deqstormwater; under Information, select "Municipal Program/MS4 Permit Guidance," then go to the Storm Water Control Resources heading.

Treatment methods shall be designed on a site-specific basis to achieve the following:

- A minimum of 80 percent removal of total suspended solids (TSS), as compared with uncontrolled runoff, or
- Discharge concentrations of TSS not to exceed 80 milligrams per liter (mg/l)

A *minimum treatment volume standard* is not required where site conditions are such that TSS concentrations in storm water discharges will not exceed 80 mg/l.

Channel Protection Criteria

The *channel protection criteria* established in this SWMP is necessary to maintain post-development site runoff volume and peak flow rate at or below existing levels for all storms up to the 2-year, 24-hour event. Existing levels means the runoff volume and peak flow rate for the last land use prior to the planned new development or redevelopment. Since the vast majority of the City of Warren is already densely developed, the existing runoff volumes and peak flow rates are likely to be relatively unchanged by any new development of redevelopment, but it will be the responsibility of the proposed development to address this concern. Per the Macomb County Public Works Office Design

Standards, the CP Volume for a 2-yr storm must be stored and released over a period of at least 24 hours.

All structural and vegetative BMPs installed as a requirement under this section of the SWMP shall include a plan for maintaining maximum design performance through long-term operation and maintenance (O & M). The City of Warren will develop, track, and enforce a program through the ordinance or other regulatory mechanism to ensure long-term O & M plans for the water quality treatment and channel protection controls the City requires. The City shall make records associated with this activity available to the Department upon request.

Specific program goals for Post Construction Storm Water Control are as follows:

Post Construction Storm Water Management Program for New Development and Redevelopment Projects

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
New Developments and Redevolpment that Discharge to MDOT or Macomb County Sewers The sewers will be sized to convey the 10 year, 1 hour design storm. The outlet rate is set by the agency with ownership of the receiving sewer.	MDOT RCMC MCPWO Warren	Current Practice	- # of permits issued - # of on-site retainage facilities
New Developments that Discharge to Local Sewers Discharge Rates The City will attempt to adopt the Macomb County Standards for new development on parcels one acre or larger or on parcels that are part of larger develop that will disturb one or more acres in total.	Warren	To be submitted to City Council for adoption, May of 2012, expected final adoption by end of 2012.	Adoption and enforcement of Macomb County Standards
New Development Storm Sewer Design that Discharge to Local Sewers The City will require all storm sewers to be designed to convey the 10 year one hour design storm.	Warren	Current Practice and proposed practice under proposed ordinance revisions scheduled by end of 2012.	- # of permits issued - # of on-site retainage facilities

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Redevelopment Discharge Rates For parcels with a disturbed area of over one acre, the per acre discharge rate will be based on the Channel Protection criteria in the SWMP. Otherwise the permitted discharge rate will remain unchanged from current conditions.	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- # of permits issued - # of on-site retainage facilities
Current Redevelopment Storage Requirements On-site storage requirements are determined using the Oakland County Standard for 10-year storage volume, and the discharge rate determined by the City. **Future Redevelopment Storage Requirements** In addition to current practice, on-site storage requirements for redeveloped properties with a disturbed area greater than one acre will be computed based on the Channel Protection criteria in the SWMP.	Warren Warren	Current Practice Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- # of permits issued - # of on-site retainage facilities

Post Construction Storm Water Management Program for New Development and Redevelopment Projects

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
SESC Measures The City requires every site that is newly developed or redeveloped to obtain a SESC permit from the MCPWO, and to establish vegetation on disturbed areas as soon as practical, weather permitting.	MCPWO Warren	Current Practice – Implemented as new projects are submitted	Number of permits issued
Approved Outlets The City requires that all new developments have an internal drainage system that connects to a public storm sewer	Warren	Current Practice – Implemented as new projects are submitted	Number of taps to public storm sewer
Catch Basins The city requires all newly constructed catch basins have a minimum 2 foot deep sump.	Warren	Current Practice – Implemented as new projects are submitted	Number of catch basins with sumps installed each year
Site Drainage Requirements The City requires all runoff generated on the site travel through the required internal drainage system and not to offsite properties	Warren	Current Practice – Implemented as new projects are submitted	Number of sites approved

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Sediment and Debris Removal at New and Redeveloped Sites The City will require BMP technology for 80% sediment and debris removal from parcels with disturbed areas greater than 1 acre in size	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - Amount of sediment and debris removed
Discharge Rates and Stormwater Storage The City will require a rate of discharge control pursuant to the Channel Protection provisions of the SWMP on new development, in conjunction with applicable BMP's that function in concert with forced stormwater storage.	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - Number of sites with a controlled discharges *and* BMP's that facilitate storage

Post Construction Storm Water Management Program for New Development and Redevelopment Projects

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
New Structural BMP's (Revised Ordinance) Each approved new structural BMP will be logged in a database at the Public Service Department	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - # of structural BMP's
BMP Maintenance (Revised Ordinance) The property owner will be required to maintain a log of all maintenance of the particular BMP, consistent with type of technology being utilized.	Warren MCPWO	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - Maintenance logs will be included in Annual Report
BMP Inspection and Enforcement (Revised Ordinance) An inspection of each BMP will be performed by a representative of the Public Service Department at least once every two years. Any site deficiencies observed, or failure to maintain log or the BMP in accordance with the site plan or building permit approval will be treated as a violation of the City's stormwater ordinance, and enforcement of the needed corrections will proceed per that ordinance (80-497).	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - # of deficiencies will be included in the Annual Report

Post Construction Storm Water Management Program for New Development and Redevelopment Projects

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Preliminary Site Plan Reviews for BMP's When required by MDOT, RCMC or sometimes the City, guidelines for the amount of storage, or outlet rate, or stormwater quality control are given to each developer at the time the concept for the development is approved by the Planning Commission.	MDOT RCMC Warren MCPW	Current Practice	Number of sites approved with BMP's
Building Permit Applications At the time of building permit application, the design details of the required outlet control, and storage area, are reviewed by the jurisdiction with authority over the storm sewer connection, and any required changes worked out between the City and developer.	MDOT RCMC Warren MCPW	Current Practice	Number of building permits issued with BMP's
City Site Plan Requirements for BMP's (Revised Ordinance) City BMP requirements would be included in the Site Plan Requirements information packet distributed by the Planning Department, to all prospective developers.	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	Adoption of revised stormwater ordinance

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Preliminary Site Plans Showing BMP's (Revised Ordinance) Potential developers would be required to show all stormwater outlet controls, storage areas, and other BMP's on the preliminary site plan submitted for Planning Commission approval.	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - # of site plans with BMP's
City Preliminary Site Plan Approval (Revised Ordinance) Preliminary site plan approval would include language detailing the type of outlet control, storage, or other BMP required as a condition of development.	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - # of site plans with BMP's
City Building Permit Requirements (Revised Ordinance) Prior to issuance of a final building permit, the design details of the required outlet control, and storage area, would be reviewed by the Engineering Division and any required changes worked out between the City, or other permitting agency, and the developer	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - # of building permits issued requiring BMP's

Post Construction Storm Water Management Program for New Development and Redevelopment Projects

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Commercial and Industrial Facilities The City's Building and Engineering Divisions enforce the "Michigan Building Code" for Commercial and Industrial permit review and construction.	Warren	Current Practice	Number of permits issued for commercial and industrial facilities
Stormwater Compliance Review A separate storm water compliance review will be implemented at the time of building permit application which will require the applicant to: a. Submit a written description of all daily processes that will take place outside of the building, and show the locations of these processes on the site plan. b. List all materials that will be stored outdoors, and show the storage methods and locations of each different material on the site plan.	Warren	Ordinance to be presented to City Council in May of 2012, and adopted by end of 2012.	- Adoption of revised stormwater ordinance - # of reviews completed - # of building permits issued

Construction Storm Water Runoff Control

The Department has determined that Part 91 of the Michigan Act and Michigan's Permit-by-Rule (Rule 323.2190) are qualifying local programs for the control of wet weather discharges from construction activities that result in land disturbance of greater than or equal to one (1) acre, or disturb less than one (1) acre that is part of a larger common plan of development or sale. A qualifying local program provides control for soil erosion, off-site sedimentation, and other construction-related wastes, consistent with the Federal Phase 2 storm water control requirements for MS4 permittees. The Macomb County Public Works Office is the Part 91 permitting entity within the City of Warren.

To ensure adequate protection of the MS4, the City of Warren has developed and implemented the following:

a. A procedure to provide notice as follows when pollutants are discharged from construction activity in violation of Section 9116 of Part 91 of the Michigan Act, Michigan's Permit-by-Rule at R 323.2190(2)(a), or the prohibition of non-storm water discharges in Part I.A.1.c. of this permit; and the pollutants enter the MS4 owned or operated by the City of Warren:
   1) Notify the Part 91 permitting entity and the Department when soil and sediment are discharged, or
   2) Notify the Department when other wastes are discharged.

   If the City suspects the discharge may endanger public health or the environment, the violations shall be reported in accordance with Part I.C.2.a. of this permit.

b. A procedure to ensure that preliminary site plans adequately allow space for future soil erosion and sedimentation controls, as applicable.

c. A procedure for the receipt and consideration of complaints or other information submitted by the public regarding construction activities discharging wastes to the MS4.

Specific program goals for Construction Storm Water Control are as follows:

Construction Stormwater Runoff Control

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Site Plan Reviews Construction Permits are not issued until the MCPWO is satisfied with the proposed erosion and sedimentation control measures	MCPWO Warren	Current Practice – as new projects are submitted	Number of permits issued
New Construction and Site Redevelopment The City requires that all new construction and site redevelopment obtain a Soil Erosion and Sedimentation Control (SESC) Permit from the Macomb County Public Works Office prior to obtaining a permit from the City.	MCPWO Warren	Current Practice	Number of permits issued
Complaint Hotline The City of Warren has a central complaint agency call the "Service Division." Complaints of any kind, including SESC complaints, are routed through that office and dispersed directly to the responsible City Department or Departments.	Warren	Current Practice	Number of complaints received and addressed
SESC Deficiencies All current Engineering Division inspectors are certified storm water operators, and are trained to look for deficiencies in soil erosion control practices. Observed deficiencies in SESC practices are reported immediately to the site manager if available, and the MCPWO	Warren MCPWO	Current Practice – Based upon observation	Number of deficiencies reported

Pollution Prevention/Good Housekeeping for Municipal Operations

Municipal operations cover a wide variety of activities and land uses that are potential sources of storm water pollutants. These operations include, but are not limited to, roadways, parking lots, transportation and equipment garages, fueling areas, warehouses, stockpiles of salt and other raw materials, open ditches and storm sewers, turf and landscaping for all municipal properties, including parks, and waste handling and disposal areas.

The City of Warren has developed, implemented, and ensures compliance with a program of operation and maintenance of BMPs, with the ultimate goal of preventing or reducing pollutant runoff to the maximum extent practicable from municipal operations that discharge storm water to the surface waters of the state. The City draws upon BMP guidance and training materials that are available from federal, state, or local agencies, or other organizations, such as the Southeast Michigan Council of Governments, (SEMCOG), the Macomb County Public Works Office, and the Clinton River Watershed Council (CRWC).

The program contains the following elements:

a. Employee/Contractor Training

The City of Warren shall ensure there is training for appropriate staff on topics that affect the water quality entering the MS4, such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, storm water system maintenance, and any other activity included in the standard requirements of Part I.B.6 of this permit. Timing for training shall include the following:

- For existing employees, one (1) training session prior to the expiration of this general permit cycle
- For new employees, one (1) training session during the first year of employment
- For contractors, the City shall ensure that they are trained before they perform the contract work. The City will accomplish this by either conducting the training or providing training materials relating to storm water management activities, which may include local pollution control specifications, before contractors perform work for the City.

b. Structural Storm Water Control Effectiveness

Structural storm water controls include, but are not limited to, vegetated swales; infiltration, sedimentation and bioretention facilities; storm water devices (e.g., catch basins and oil/water separators); and any controls installed or operated by the City of Warren to remove pollutants from storm water. Structural Storm Water Controls shall have routine maintenance performed, and maintenance schedules shall be adequate to maintain pollution removal effectiveness at design performance and to ensure that the controls are maintained in a condition (e.g.,

adequately stabilized, seeded, functional) to reduce contribution of pollutants to the surface waters of the state.

1) The City inspects all such controls at a frequency appropriate for the BMP design and site conditions. Inspection frequencies are identified in the table contained in this section of the SWMP.

2) A summary list of municipal properties and structural storm water controls owned or operated by the City is included in this section of the SWMP. This list includes the type and number of municipal properties and includes addresses of the property locations.

Municipal Properties

City Hall
One City Square
Warren, Michigan 48092
Catch Basins = 17

37th District Court
8300 Common Road
Warren, Michigan 48093
Catch Basins = 4

Department of Public Works
12801 Stephens
Warren, Michigan 48089
Catch Basins = 7

Fire Department/Fire Station #2
Administrative Offices
23293 Schoenherr
Warren, Michigan 48089
Catch Basins = 6

Fire Station #1
8321 E. 9 Mile Road
Warren, Michigan 48089
Catch Basins = 0

Fire Station #3
23620 Ryan Road
Warren, Michigan 48091
Catch Basins = 3

Fire Station #4
6361 Chicago
Warren, Michigan 48092
Catch Basins = 9

Fire Station #5
29900 Hoover
Warren, Michigan 48093
Catch Basins = 2

Fire Station #6
3090 E. 12 Mile Road
Warren, Michigan 48092
Catch Basins = 2

Burnette Branch Library
22005 Van Dyke Ave.
Warren, Michigan
Catch Basins = 2

Busch Branch Library
23333 Ryan Road
Warren, Michigan 48091
Catch Basins = 0

Parks Maintenance and Forestry
32601 Warkop
Warren, Michigan 48093
Catch Basins = 5

Owen Jax Recreation Center
8207 E. Nine Mile Rd.
Warren, Michigan 48089
Catch Basins = 7

Police Headquarters
29900 Civic Center Drive
Warren, Michigan 48093
Catch Basins = 5

Sanitation Division/Recycling Yard
25601 Flanders
Warren, Michigan 48089
Catch Basins = 4

Stilwell and Joseph Coach Manors
26600 Burg
Warren, Michigan 48089
Catch Basins = 20

Warren Community Center
5460 Arden
Warren, Michigan 48092
Catch Basins = 32

Waste Water Treatment Plant
32360 Warkop
Warren, Michigan 48093
Catch Basins = 17

Water Division
12821 Stephens
Warren, Michigan 48089
Catch Basins = 19

Parks

Altermatt Park
4811 Toepfer
Warren, MI 48091
Catch Basins = 4

Austin-Dannis Park
5200 Stephens
Warren, MI 48091
Catch Basins = 5

Bates Park
32601 Warkop
Warren, MI 48093
Catch Basins = 1

Burdi Park
7000 12 Mile Rd.
Warren, MI 48092
Catch Basins = 10

Busse Park
5002 Frazho
Warren, MI 48091
Catch Basins = 12

Butcher Park
4700 Martin
Warren, MI 48091
Catch Basins = 0

City Square Park
8155 City Square South
Warren, MI 48093
Catch Basins = 11

Eckstein Park
31810 Davy
Warren, MI 48092
Catch Basins = 0

Groesbeck Park
22221 Memphis
Warren, MI 48091
Catch Basins = 4

Halmich Park
3001 13 Mile Rd.
Warren, MI 48092
Catch Basins = 24

Hartsig Park
2701 Martin
Warren, MI 48092
Catch Basins = 5

Jaycee Park
11371 Timken
Warren, MI 48089
Catch Basins = 0

Licht Park
30100 Campbell
Warren, MI 48093
Catch Basins = 12

McGrath Park
13300 Leisure
Warren, MI 48088
Catch Basins = 1

Miller Park
14500 Masonic
Warren, MI 48088
Catch Basins = 8

Rentz Park
12000 Herbert Ave.
Warren, MI 48089
Catch Basins = 4

Rinke Park
28500 Arsenal
Warren, MI 48093
Catch Basins = 3

Shaw Park
22001 Warner
Warren, MI 48091
Catch Basins = 7

Steinhauser Park
3101 Frazho
Warren, MI 48091
Catch Basins = 3

Trombly Park
14775 Alvin
Warren, MI 48089
Catch Basins = 6

Underwood Park
13700 Sidonie
Warren, MI 48089
Catch Basins = 14

Veterans Park (Formerly Council Park)
27400 Campbell
Warren, MI 48093
Catch Basins = 13

Wiegand Park
8700 Toepfer
Warren, MI 48089
Catch Basins = 8

Winters Park
13000 St. Andrews
Warren, MI 48089
Catch Basins = 7

Warren is also responsible for maintenance of two existing small storm water detention basins, one at the intersection of Denton and Miller roads and the other at the intersection of Dimas and Mary Ann roads. The basins are designed as dry basins, so the only maintenance performed by the City is routine mowing. No sediment is removed from these facilities.

The location information shall be updated whenever new municipal properties and structural storm water controls are added. A listing of specific storm water BMPs installed at each property shall be provided with the first bi-annual progress report. The location information is maintained by the City Engineering Division and, upon request, can be provided to the Department for review.

3) The City of Warren has implemented procedures to dispose of the following materials in accordance with Part 111 (hazardous waste), Part 115 (solid waste), and Part 121 (liquid industrial waste) of the Michigan Act: operation and maintenance waste, such as dredge spoil, accumulated sediments, floatables, and other debris the permittee removes from the MS4.

The City of Warren Division of Public Works is responsible for the cleaning and maintenance of all storm sewers and open ditches, which service the City. The Macomb County Public Works Office is responsible for the cleaning and maintenance of all enclosed and open County Drains which traverse the City. The Oakland County Drain Commissioner's Office oversees the maintenance activities required on the Red Run Drain.

No large open drains are the City of Warren's responsibility for maintenance. The City's system consists of enclosed storm sewers up to ten feet in diameter, and small roadside ditches along the few gravel and asphalt roads remaining in the City.

The Public Works Division utilizes two vactor trucks to clean out catch basins, and jet and clean storm sewers. They also utilize backhoes and other scraping and excavating equipment to clean out and reestablish grade in roadside ditches. The spoils obtained from those activities are disposed of in the following manner. Catch basin sediment, and sewer jetting debris is collected dumped at the ash lagoon of the City's waste water treatment plant. The liquid products are fed back into the plant for processing, the solids settle out, and eventually go to a licensed landfill.

Soil and sediment resulting from ditch-cleaning activities is hauled to the Public Works yard, where it is picked up by a contract hauler, and disposed of at a landfill.

4) When the City adds facilities or structural controls for water quantity or pollution treatment or removal, it shall design and install the controls based on the *minimum treatment volume standard*, *channel protection criteria*, and requirements for operation and maintenance established under Part I.A.8. of the general permit.

c. Roadways, Parking Lots, and Bridges

1. The City of Warren shall construct, operate, and maintain its streets, roads, highways, parking lots, and other permittee-owned or operated impervious infrastructure in a manner so as to reduce the discharge of pollutants into the MS4 and the surface waters of the state, including pollutants related to snow removal practices.

2. The City of Warren shall strive to reduce the runoff of TSS from all of its paved surfaces to the maximum extent practicable, as compared to annual loading from runoff with no suspended solids controls.

TSS reductions may be achieved by any combination of pollution prevention (e.g., improved materials handling, or altered land uses or traffic patterns), removal (cleaning streets and catch basins), or treatment (settling filtration or infiltration).

Reductions of sediment from activities otherwise regulated or prohibited, such as sediment track-out or runoff from construction sites, shall not be counted toward the TSS reduction goal.

Catch Basin Cleaning Program

The Department of Public Works is responsible for cleaning all City catch basins, and operates under a schedule which dictates that each catch basin is inspected on average once every five years. Catch basins found to be deteriorated during the inspection are either repaired by DPW forces at that time, or turned into the Engineering Division for repair. Catch basins found to be in need of cleaning during the inspection are cleaned by the DPW at that time.

The Engineering Division also inspects catch basins that are reported by the public to be deteriorated. Those catch basins warranting repair are put on a list and a repair program formulated every one to two years depending on the availability of funding.

The City will maintain the effectiveness of its current catch basin cleaning program. The map denoting the areas of the City to be cleaned will be included in each annual report.

Street Sweeping Program

The City of Warren will maintain its aggressive street sweeping program which results in the reduction of sediments and accessory pollutants to the City's MS4 and Macomb County's drainage system.

The Department of Public Works is responsible for sweeping all City major and local roads. Current practices dictate that each street under City jurisdiction be swept a minimum of three times each year.

As a method of assessing progress in storm water pollution prevention, the City's bi-annual progress reports shall provide an estimate of the TSS loading reduction achieved.

3. Salt and sand applied for improved traction is prevented from entering MS4s and receiving steams to the maximum extent practicable. Good housekeeping practices are in place at salt and sand storage facilities to prevent the discharge of salt and sand from these areas. The City also complies with the salt storage requirements of the Part 5 Rules (Rules 324.2001 to 324.2009 of the Michigan Administrative Code).

Winter snow and ice management carefully balances road safety considerations and water quality issues, which may be caused by pollution from deicing compounds. The City's approach to applying salt or plowing snow from roads during winter conditions is based on the relative importance of the roadway. Major roads are plowed or receive salt first because they carry the highest volume of traffic. Residential streets may not even be plowed or receive a salt application depending on the duration of the ice or snow conditions and the magnitude of problems. MDOT has responsibility for deicing and snow clearance on interstate roads. The rate of application is controlled following standard recommended practices of the Michigan Department of Transportation (MDOT).

4. The City of Warren shall investigate and implement appropriate BMPs to control dust and suspended solids in runoff from the few remaining unpaved roads in the City.

5. The City does not use coal tar emulsions to seal asphalt surfaces.

d. Fleet Maintenance and Storage Yards/Facilities

1) The City of Warren has developed Storm Water Pollution Prevention Plans (SWPPPs) for all municipal fleet maintenance and storage yards/facilities that are not regulated as industrial activities and has a certified storm water operator to oversee storm water controls at all facilities with SWPPPs.

2) The SWMP shall identify its fleet maintenance and storage yard facilities (including those for nested jurisdictions, if applicable), and shall indicate if a SWPPP has been developed for each facility and if it was implemented under the supervision of a certified storm water operator.

Fleet Maintenance and Storage Facilities:

Facility Name and Address	SWPPP Developed	Certified Storm Water Operator
Department of Public Works 12801 Stephens Warren, Michigan 48089	Voluntary	Yes
Sanitation Division/Recycling Yard 25601 Flanders Warren, Michigan 48089	Facility has separate permit	Yes
Waste Water Treatment Plant 32360 Warkop Warren, Michigan 48093	Facility has separate permit	Yes

3) The completed SWPPPs shall be signed by the facility manager and the certified storm water operator or Storm Water Program Manager, as applicable, and retained on-site at the facility which generates the storm water discharge. The City shall retain the SWPPP, reports, log books, storm water discharge sampling data (if collected), and supporting documents in accordance with Part 1.C.1.b and e of this permit.

4) Fleet maintenance activities include, but are not limited to, adding or changing vehicle fluids, including fuel, lubrication, mechanical repairs, parts degreasing, and vehicle or equipment washing. Storage yards include, but are not limited to, areas where vehicles are stored or impounded, and where vehicle and road maintenance materials and other chemicals in bulk are stored and handled. Discharge of vehicle or maintenance facility wash water is not authorized by this permit. Vehicles and equipment shall be maintained for clean and effective operation to prevent impacts on storm water quality.

5) The City of Warren also investigates and implements appropriate BMPs to prevent the discharge of pollutants to the MS4 from the storage, collection, transport, and disposal of refuse by the permittee or for the permittee under contract.

e. Managing Vegetated Properties

The City of Warren minimizes the discharge of pollutants related to the management of vegetation on land that the permittee owns or operates. BMPs required under this measure include:

1) A process to train employees and contractors on the proper storage, handling, and use of pesticides, herbicides, and fertilizers before they handle or apply them

2) Use of only phosphorus-free fertilizers on turfgrass. Phosphorus may be added to turfgrass only if soils are tested for nutrients (nitrogen/phosphorus/potassium) a minimum of every four (4) years and a need for phosphorus is demonstrated. Phosphorus fertilizers shall be applied to lands that the City owns or operates only as prescribed in the soil test results.

3) A program to minimize storm water impacts from all of the City's managed vegetated properties

Pollution Prevention and Good Housekeeping Activities

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Catch Basin Inspections Repair or Replace defective and storm sewer catch basin structures	Warren	Current Practice – 20 % of the catch basins are inspected each year. Deteriorating catch basins are repaired annually or bi-annually as funding allows	Number of structures rehabilitated and nature of improvements
Roadside Ditch Maintenance Scrape and excavate roadside ditches to reestablish grade and maintain proper drainage.	Warren	Current Practice – on an as-needed basis	- volume of spoils delivered to WWTP
Detention Pond Maintenance Maintain two existing dry stormwater detention basins	Warren	Current Practice – City mows as needed	To date, no sediment has been removed, however, if sediment is accumulated, it will be removed and documented in annual report
Storm Sewer Maintenance Jet and clean storm sewers with vactor trucks to allow the conveyance of stormwater	Warren	Current Practice – On an as-need basis	- volume of debris dumped at the WWTP

Pollution Prevention and Good Housekeeping Activities

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Catch Basin Cleaning Program Clean catch basin sumps with Vactor Truck	Warren DPW	Current Practice – each catch basin is cleaned once every five years	- # of sumps cleaned - volume of sediment delivered to the City's WWTP
Street Sweeping Program All city streets will be swept to reduce sediment and accessory pollutants to the City's MS4 and Macomb County's drainage system.	Warren DPW	Current Practice – each city street is swept three times a year	Amount of debris and sediment collected
Deicing Practices The City stores salt under a dome on City property and the salt is applied according to MDOT standards. Residential streets may not even be plowed or receive a salt application depending on the duration of the ice or snow conditions and the magnitude of problems.	Warren	Current Practice – As needed, weather dependent.	Amount of salt dispersed by DPW

Pollution Prevention and Good Housekeeping Activities

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanisms
Vehicle Maintenance All fleet maintenance will be performed inside the City's DPW garage, Sanitation garage, or Water Division garage so no fluids or greases are discharged to the storm sewer system.	Warren	Current Practice	Not applicable. Any changes in practice will be noted in Annual Report.
Proper Disposal of Wash Water The City owns and operates an indoor commercial-style fleet car wash with automatic wash systems, and manual wand type systems where all city vehicles and equipment are cleaned.	Warren	Current Practice – As needed	Volume of material collected. Number of and type of washes recorded.
Catch Basin Labeling All new catch basins covers and/or outfalls will be labeled "Dump No Waste! Drains to Waterways" with a medallion on the curb or other approved identifier	Warren	Beginning in 2006 Labeling applied during annual catch basin repair program	Number of catch basins repaired annually.

Pollution Prevention and Good Housekeeping Activities

Actions/Commitments	Lead Agency	Schedule	Evaluation Mechanism
Flood Control Projects New flood management projects shall assess the impacts on the water quality of the receiving water(s)	Army Core of Engineers, Red Run Drain Authority, MCPWO	Current Practice – as new projects are submitted	Number of permits submitted for flood management control structures.
City Right-Of-Way A DPW foreman will visit and evaluate each location to determine the necessity of applying herbicides. If herbicides are required, only weed killer will be applied.	Warren DPW and Licensed Contractor	As needed based upon observation, but not to exceed the number of applications established by Federal and State regulations.	The annual City contract for application of weed killer will be included in each annual storm water report for review.
Park Properties, City Building Maintenance A DPW foreman will visit and evaluate each location to determine the necessity of applying weed killer. Annual soil testing will be performed and fertilization will be dependent upon	Warren DPW and Licensed Contractor	Herbicide application will be on an as needed based upon field observation, but not to exceed the number of applications established by Federal and State regulations. Fertilizer will be applied if needed after an annual soil test of each property.	The annual City contract for application of weed killer and fertilizer will be included in each annual storm water report for review.
Private Properties Permittee does not control use of these products on private property, unless the overuse becomes a point source issue in the public storm sewer	Warren IPP Team	During annual inspections	Number of facility inspections.