Municipal Separate Storm Sewer System—MS4 Program

STORMWATER QUALITY MANAGMENT PLAN 2017

KPDES PERMIT NO. KYS000001
AI NO. 8235

REPORTING TO:
Kentucky Division of Water
Surface Water Permits Branch
300 Sower Boulevard
Frankfort, KY 40601

COMPILED AND SUBMITTED BY:
Louisville and Jefferson County
Metropolitan Sewer District
700 West Liberty Street
Louisville, KY 40203

CO-PERMITTEES:
City of Anchorage
City of Jeffersontown
City of St. Mathews
City of Shively
Louisville Metropolitan Government
Metropolitan Sewer District

msd
Safe, clean waterways

Stormwater Quality Management Plan
2017-2022 Permit Cycle
Proposed Table of Contents - Draft

EXECUTIVE SUMMARY

Introduction

Objective

The objective of the Stormwater Quality Management Plan (SWQMP) is to provide information to the Kentucky Division of Water (KDOW) on how each item in the Metropolitan Sewer District's (MSD) Municipal Separate Storm Sewer System (MS4) permit is addressed for compliance.

Purpose

As a river city, and a community with approximately 760 miles of streams and 38 miles of Ohio river shoreline, the purpose of MSD's MS4 program, as outlined in the SWQMP, is to address the Kentucky Pollutant Discharge Elimination System (KPDES) MS4 Phase 1 program requirements as specified in MSD's KPDES Permit KYS000001. The Kentucky Division of Water (KDOW) regulates MSD's MS4 Program. The SWQMP does not establish new regulatory requirements, but is to be utilized as a guide for compliance with the permit.

The SWQMP describes activities in the functional areas of responsibility that help protect and improve the water quality in our streams, as outlined in the current effective permit. This document is intended to reach a broad audience of Regulators, Officials, and the Public at-large. This document also provides MSD the opportunity to utilize adaptive management through the MS4 Annual Report. If program technologies change or programmatic approaches to the MS4 compliance are modified, alterations to the SWQMP through the annual reporting is a mechanism to achieve this without full permit modification and negotiation.

The focus areas included in the MS4 permit that are addressed in the SWQMP are as follows: Public Education, Outreach, Participation & Learning Experiences (PEOPLE), Illicit Discharge Detection and Elimination (IDDE), Industrial Program (IP), Construction Site Stormwater Runoff Controls (CS), Post-Construction Stormwater Runoff Controls (PC), Good Housekeeping and Pollution Prevention (GH/P2), Monitoring Programs (M), and Program Assessment and Reporting (PAR). Details of the plan are addressed in Chapter 2.

Regulatory Background

The Clean Water Act (CWA) (1972) was amended to prohibit the discharge of any pollutant to the waters of the United States from a point source unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit. Since amending the CWA in 1987, there is increasing evidence that there are additional and more diffuse sources of surface water pollution. Specifically, stormwater runoff draining large surface areas (agriculture and urban

lands) were found to be major causes of water quality impairment and non-attainment of designated beneficial uses.

The primary federal regulation pushing communities towards the goal of "fishable and swimmable water" is the Clean Water Act. Sections of the Clean Water Act which specifically are relevant to stormwater address:

- Regulation of stormwater discharges
- Water quality standards for water bodies receiving stormwater runoff
- Implications of non-attainment of water quality standards

The primary objective of the MS4 permit is the reduction of pollutant discharges to the Maximum Extent Practicable (MEP) from stormwater runoff. MSD is to implement the practices, policies, procedures and stormwater controls contained in the permit and addressed in this plan throughout the regulated area. MSD is required to develop and administer a Storm Water Quality Management Plan (SWQMP) and update as necessary to maintain compliance with the KPDES permit.

Stormwater Quality Management Plan Overview

The MSD MS4 permit (KPDES No. KYS000001) was issued with an effective date of February 1, 2017, for a term of five years. The bulk of the permit requirements are given under Chapter 2, Stormwater Quality Management Plan, which includes seven (7) tables/activities. This plan expands the Permit Tables to also include set verifiable performance measures for each activity.

MSD is required to develop a stormwater quality management program that is designed to reduce the discharge of pollutants to the maximum extent practicable (MEP). Rather than numeric limits, the MEP standard involves applying BMPs that are effective in reducing the discharge of pollutants in stormwater runoff through the use of known, available, and reasonable methods. MEP is an iterative standard, which evolves over time as urban runoff management knowledge increases. As such, MSD will continually assess the MS4 program to incorporate improved programs, control measures, BMPs, etc.

To the extent allowable by law, MSD will ensure legal authority to control discharges to and from those portions of the MS4 over which it has jurisdiction. This legal authority may be a combination of policy, statute, standard, permit, contract, order, or inter-jurisdictional agreements between permittees.

MSD is required to develop and implement a SWQMP with the objective of reducing the discharge of pollutants to the MEP. The SWQMP is a planning tool to define how the MS4 stormwater permit program will be administered. While it is not a part of the permit, it provides a more detailed description of the activities in the permit. The SWQMP addresses the seven Minimum Control Measures (MCMs).

The SWQMP covers the following:

- Public Education and Outreach – MSD will develop and implement a program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps the public can take to reduce pollutants in stormwater runoff.
- Public Involvement and Participation – MSD will participate in activities which may include representation on local storm water management work groups, public hearings, education volunteers, assisting with program coordination and monitoring efforts, per applicable state and federal requirements.
- Illicit Discharge Detection and Elimination Program – MSD will develop, implement and enforce a program to detect and eliminate illicit discharges into the Districts maintained and operated portions of the MS4.
- Construction Site Runoff Control – MSD will develop, implement and enforce a program to reduce pollutants in any stormwater runoff from construction activities that result in land disturbance of greater than or equal to one acre.
- Post-construction Site Runoff Control – MSD will develop, implement and enforce a program that addresses stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre.
- Pollution Prevention/Good Housekeeping – MSD will develop and implement an operations and maintenance program that includes a training component and has a goal of preventing or reducing polluted runoff from their daily operations, including maintenance.
- Reporting and Records Retention – MSD will comply with annual reporting requirements to KDOW and retention of supporting documents.

An annual review of the SWQMP is required as part of the Annual Report submittal. During this time, the prior year's activities and the need for changes in implementation strategies and schedules should be assessed. The MS4 stormwater permit specifies that the SWQMP may be modified over time by MSD to facilitate implementation of permit requirements. Modifications are to be made based on lessons learned and the effectiveness of the various BMPs.

Regulatory Submittal Requirements

From the Effective MS4 Permit, the following requirement for submittal of a SWQMP is stated:

> ***Within 180 days of the effective date of this permit****, MSD and its co-permittees shall submit a revised SWQMP that reflects any necessary changes to the stormwater quality management program to become compliant with this individual permit, including any necessary compliance schedules. This written plan shall detail the procedures the*

permittee will use to implement the required minimum control measures, and is a dynamic document that should be modified to meet the needs of the permittee...

MSD Program Goals

Upon completion of the permit negotiation process with KDOW in early 2017, Louisville MSD MS4 management, staff, and contractors participated in a facilitated discussion to outline the goals and vision for the newly effective permit cycle. Out of that workshop, the following program statement was developed:

The Louisville MS4 Program utilizes science and environmental education to raise awareness of human impacts on the water environment for continued progress toward a thriving Louisville Metro.

The merger of what is required and what MSD wants to achieve philosophically is reflected in the SWQMP for each permit item.

SWQMP Navigation

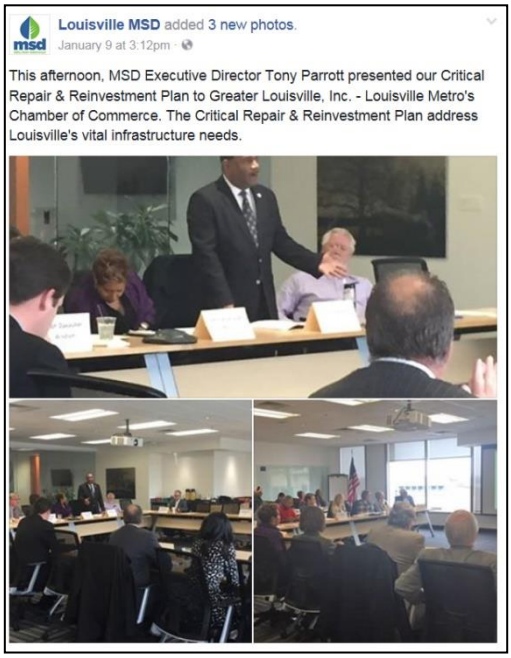
Each permit section includes the language from the permit with the specific SWQMP requirements, a description of background, and the SWQMP detail sections as organized in the layout shown in Figure 1.

x.x.x [SWQMP Numbering] [SWQMP Topic Heading] (PEOPLE Example)

[The top table in each section is taken directly from the permit]

Frequency or Measure of Success	Activity Required
[Permit table language outlining deliverable] I.E. Report the number of potential households and estimate the numbers of households were reached	**[Permit details on the requirement]** I.E. The permittee shall integrate MS4 stormwater quality topics in to existing print mass media, local government cable channel, social marketing materials, and/or new materials with the intent of affecting behavior change.

[The text body includes MSD language on specific activities to meet the intent of the permit table requirements] I.E. Public education through mass media message integration and distribution will continue to be released using the key messages for stormwater quality. Over the course of the permit, venues used may include Metro TV, radio, social media, website postings, locally-focused magazine articles and/or advertisements, newspaper inserts, bill inserts, posters, billboards, and flyers.



MS4 messages of protecting stormwater quality will continue to be integrated into existing mass media and social marketing materials. New materials may be created for the public education campaign. In recent years, MSD has used Twitter, Facebook, and other social media to share ways to protect water quality and updates regarding MSD's programs, including water quality.

In addition, MSD will continue to use face-to-face contact, Metro TV, Streamline updates, brochures, bill inserts, and catch basin markers distribution to volunteers. "Doorhanger" envelopes will continue to be used to distribute information, including materials regarding oil and grease blockages and illicit discharges into the MS4. MSD will continue to distribute educational and instructional materials to households in the vicinity of its maintenance and compliance investigation activities.

Figure 1. Sample SWQMP Detail Section

Summary

The SWQMP is developed to meet regulatory requirements outlined in the permit, while also providing information to the public, regulators, media, and others on the activities being performed every day in this community that improve water quality to the Maximum Extent Practicable. The SWQMP is meant to be a dynamic document that allows adaptive management of the MS4 program as new technologies develop, or new challenges occur. An example from the last permit term is the collection of data to locate and mitigate illicit discharges. Previous efforts entailed deploying hundreds of people to walk streams to locate and identify potential discharges. This process was significantly time consuming, and resource intensive. Through developing technology, a process to capture thermal imagery to identify hot spots where potential discharges were occurring was adopted. Through SWQMP modification, this change was incorporated into the program without full renegotiation of the permit.

Through the flexible process of updating (with subsequent acceptance) the SWQMP, MSD is able to make programmatic activity changes efficiently. This document also provides information that the public can understand regarding the MS4 program and details on activities to improve water quality.

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CHAPTER 1 SWQMP PLANNING

1.1 INTRODUCTION

Objective

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1.2 REGULATORY BACKGROUND

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1.3 STORMWATER QUALITY MANAGEMENT PLAN OVERVIEW

The MSD MS4 permit (KPDES No. KYS000001) was issued with an effective date of February 1, 2017, for a term of five years. The bulk of the permit requirements are given under Chapter 2, Stormwater Quality Management Plan, which includes seven (7) tables/activities. This plan expands the Permit Tables to also include set verifiable performance measures for each activity.

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To the extent allowable by law, MSD will ensure legal authority to control discharges to and from those portions of the MS4 over which it has jurisdiction. This legal authority may be a combination of policy, statute, standard, permit, contract, order, or inter-jurisdictional agreements between permittees.

MSD is required to develop and implement a SWQMP with the objective of reducing the discharge of pollutants to the MEP. The SWQMP is a planning tool to define how the MS4 stormwater permit program will be administered. While it is not a part of the permit, it provides a more detailed description of the activities in the permit. The SWQMP addresses the seven Minimum Control Measures (MCMs).

The SWQMP covers the following:

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An annual review of the SWQMP is required as part of the Annual Report submittal. During this time, the prior year's activities and the need for changes in implementation strategies and schedules should be assessed. The MS4 stormwater permit specifies that the SWQMP may be modified over time by MSD to facilitate implementation of permit requirements. Modifications are to be made based on lessons learned and the effectiveness of the various BMPs.

1.4 REGULATORY SUBMITTAL REQUIREMENTS

From the Effective MS4 Permit, the following requirement for submittal of a SWQMP is stated:

> *The stormwater quality management program is an integral part of the Commonwealth's overall watershed management program, in accordance with 401 KAR 5:060 and 40 CFR 122.26(d)(2), which includes non-point sources, wastewater treatment point*

sources, and combined sewer overflow point sources. A comprehensive SWQMP utilizing an integrated approach for prioritization and implementation is necessary to adequately address the watershed needs. Implementation of the SWQMP to effectively reduce pollutants (including floatables) in discharges from MS4s must include program elements that address public education, outreach, participation and learning experiences (PEOPLE), illicit discharge detection and elimination, industrial stormwater, construction site runoff control, post-construction stormwater management for new development and redevelopment, and good housekeeping and pollution prevention in municipal operations, monitoring, and performance assessment and reporting. The program shall be formalized in the Stormwater Quality Management Plan (SWQMP).

***Within 180 days of the effective date of this permit**, MSD and its co-permittees shall submit a revised SWQMP that reflects any necessary changes to the stormwater quality management program to become compliant with this individual permit, including any necessary compliance schedules. This written plan shall detail the procedures the permittee will use to implement the required minimum control measures, and is a dynamic document that should be modified to meet the needs of the permittee…*

Upon completion of the permit negotiation process with KDOW in early 2017, Louisville MSD MS4 management, staff, and contractors participated in a facilitated discussion to outline the goals and vision for the newly effective permit cycle. Out of that workshop, the following program statement was developed:

The Louisville MS4 Program utilizes science and environmental education to raise awareness of human impacts on the water environment for continued progress toward a thriving Louisville Metro.

The merger of what is required and what MSD wants to achieve philosophically is reflected in the SWQMP for each permit item.

1.5 REVIEW AND MODIFICATION REQUIREMENTS

Pursuant to the MS4 stormwater quality permit (*Section 2.2*), MSD is required to develop, implement and enforce a SWQMP. The SWQMP, along with the MS4 permit, are the two primary documents that guide the stormwater quality program. The SWQMP is a management plan that outlines strategies for addressing program elements identified in the permit to reduce the discharge of pollutants to our local water bodies.

The SWQMP will be updated and/or modified consistent with the requirements in the 2017 MSD MS4 Permit. Based on this framework, MSD has the opportunity to amend, modify, or enhance the programmatic details that comprise day to day permit compliance without the need for full

re-opening of the permit or re-negotiation. KDOW Acceptance of changes through the annual reporting process is all that is necessary to make SWQMP changes.

1.6 UPDATES TO SCHEDULE

The permit requires that the SWQMP be updated to reflect changes as part of the MS4 permit renewal, including implementation schedules. Per the permit, the SWQMP is a dynamic document that should be modified to meet the needs of MSD, updates to the implementation schedule and plan will be assessed and documented in the MS4 Annual Report.

The permit, effective February 1, 2017, references implementation during permit years. The following dates are associated with these years identified in the five year permit period.

- Permit Year 1: February 1, 2017 – January 31, 2018
- Permit Year 2: February 1, 2018 – January 31, 2019
- Permit Year 3: February 1, 2019 – January 31, 2020
- Permit Year 4: February 1, 2020 – January 31, 2021
- Permit Year 5: February 1, 2021 – January 31, 2022

The permit also establishes reporting milestones, due each year by November 15. MSD reports permit activities consistent with the fiscal year, from July 1 to June 30 of each year. The following summarizes dates and reporting periods associated with these milestones:

MS4 Reporting Milestones

Reporting Period	Submittal Date
July 1, 2016 – June 30, 2017	November 15, 2017
July 1, 2017 – June 30, 2018	November 15, 2018
July 1, 2018 – June 30, 2019	November 15, 2019
July 1, 2019 – June 30, 2020	November 15, 2020
July 1, 2020 – June 30, 2021	November 15, 2021
July 1, 2021 – June 30, 2022	November 15, 2022*

*If under a permit continuance

Section 2.7 of the permit includes compliance tables that define the maximum extent practicable for achieving permit requirements associated with each program element. The compliance tables outline the associated activity required and frequency or measure of success for each element task.

1.7 PERMIT RENEWAL AND LONG-TERM PLANNING

Each permit cycle, MSD enhances and improves the program through planning and activities, regulatory authority, environmental education programs and leadership. The requirements in the MS4 permit represent the Kentucky Division of Water's (KDOW's) determination of maximum extent practicable (MEP) for Louisville MSD and Jefferson County and co-permittee communities.

1.8 SUMMARY

The SWQMP is developed to meet regulatory requirements outlined in the permit, while also providing information to the public, regulators, media, and others on the activities being performed every day in this community that improve water quality to the Maximum Extent Practicable. The SWQMP is meant to be a dynamic document that allows adaptive management of the MS4 program as new technologies develop, or new challenges occur. An example from the last permit term is the collection of data to locate and mitigate illicit discharges. Previous efforts entailed deploying hundreds of people to walk streams to locate and identify potential discharges. This process was significantly time consuming, and resource intensive. Through developing technology, a process to capture thermal imagery to identify hot spots where potential discharges were occurring was adopted. Through SWQMP modification, this change was incorporated into the program without full renegotiation of the permit.

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CHAPTER 2 MSD FOURTH PERMIT CYCLE STORMWATER QUALITY MANAGEMENT PLAN

CHAPTER 2 MSD FOURTH PERMIT CYCLE STORMWATER QUALITY MANAGEMENT PLAN OVERVIEW

The Fourth Permit Cycle (# KYS000001, AI # 8235) was issued in January 2017 and became effective February 1, 2017 with a five year duration. The resulting MSD stormwater program is described in this chapter of the SWQMP. The Stormwater Quality Management Plan provides activities and methodologies controls which consist of a combination of best management practices (BMPs), control techniques and systems, design and engineering methods, public participation and education, and other appropriate provisions, designed to limit the discharge of pollutants from the MS4 conveyances which are environmentally beneficial and technically and economically feasible.

This chapter contains specific new, expanded, and/or modified activities to be incorporated into the SWQMP during the Fourth Permit Cycle. The narrative describes the activities, and the summary table is considered to be used as a compliance checklist for the SWQMP. Efforts have been made to describe the activities and to set verifiable performance measures for each activity in the Tables. The elements included:

- 2.1 – Public Education, Outreach, Participation and Learning Experiences (PEOPLE)
- 2.2 – Illicit Discharge Detection and Elimination (IDDE)
- 2.3 – Industrial Stormwater Program (IP)
- 2.4 – Construction Site Stormwater Runoff Controls (CS)
- 2.5 – Post-Construction Stormwater Runoff Controls (PC)
- 2.6 – Good Housekeeping/Pollution Prevention (GH/P2)
- 2.7 – Monitoring Programs (M)
- 2.8 – Program Assessment and Reporting (PAR)

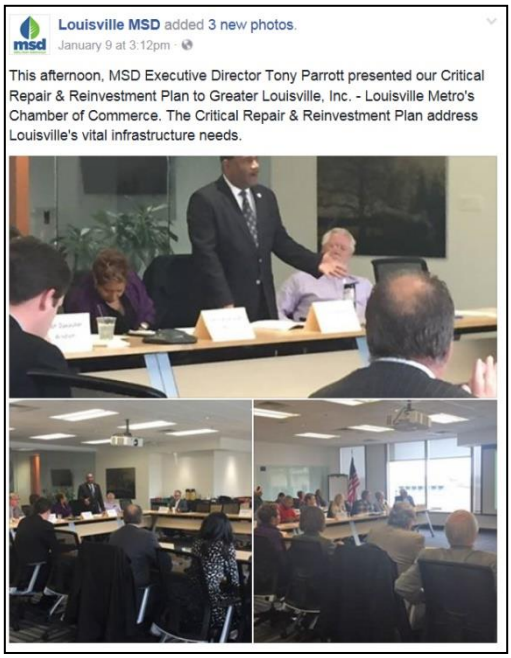
Each permit section includes the language from the permit with the specific SWQMP requirements, a description of background, and the SWQMP detail sections as organized in the layout shown in Figure 1.

x.x.x [SWQMP Numbering] [SWQMP Topic Heading] (PEOPLE Example)

[The top table in each section is taken directly from the permit]

Frequency or Measure of Success	Activity Required
[Permit table language outlining deliverable] I.E. Report the number of potential households and estimate the numbers of households were reached	**[Permit details on the requirement]** I.E. The permittee shall integrate MS4 stormwater quality topics in to existing print mass media, local government cable channel, social marketing materials, and/or new materials with the intent of affecting behavior change.

[The text body includes MSD language on specific activities to meet the intent of the permit table requirements] I.E. Public education through mass media message integration and distribution will continue to be released using the key messages for stormwater quality. Over the course of the permit, venues used may include Metro TV, radio, social media, website postings, locally-focused magazine articles and/or advertisements, newspaper inserts, bill inserts, posters, billboards, and flyers.



MS4 messages of protecting stormwater quality will continue to be integrated into existing mass media and social marketing materials. New materials may be created for the public education campaign. In recent years, MSD has used Twitter, Facebook, and other social media to share ways to protect water quality and updates regarding MSD's programs, including water quality.

In addition, MSD will continue to use face-to-face contact, Metro TV, Streamline updates, brochures, bill inserts, and catch basin markers distribution to volunteers. "Doorhanger" envelopes will continue to be used to distribute information, including materials regarding oil and grease blockages and illicit discharges into the MS4. MSD will continue to distribute educational and instructional materials to households in the vicinity of its maintenance and compliance investigation activities.

Figure 1. Sample SWQMP Detail Section

2.1 Public Education, Outreach, Participation, and Learning Experiences (PEOPLE)

The PEOPLE program objectives are to increase public awareness of stormwater quality issues associated with discharges from the MS4, promote stewardship of the Waters of the Commonwealth of Kentucky and Waters of the U. S. within the scope of the MS4 permit, and involve the public in developing and implementing lifelong habits and practices that contribute to an environmentally sustainable community.

The program is designed to provide outreach and learning experiences as well as participatory opportunities in watershed management to a variety of audiences including school classes, homeowners, families with young children and other groups of the general public, members of environmental organizations, construction industry stakeholders, manufacturing and commercial industry facility owners and operators, local agency staff and elected officials.

The Fourth Permit Cycle requires continued implementation and expansion of the public education program and public outreach activities in the community that focus on impacts from stormwater discharges to water bodies and the steps that the public can take to reduce pollutants in stormwater runoff, per applicable state and federal requirements. This measure includes continued compliance with state and local public notice requirements when implementing a public involvement/participation program.

PEOPLE Program Activities

The Fourth Permit Cycle requirement for the PEOPLE program is as follows:

- Continue the implementation and expansion of a public education program and conduct public outreach activities to educate the citizens about discharges to water bodies and the steps that the public can take to reduce pollutants in stormwater runoff, per applicable state and federal requirements. The public education and outreach activities are the sole responsibility of the permittee and any co-permittees and will be the metric used to determine compliance. The permittee shall prioritize public education and outreach efforts to focus on pollutants impairing or threatening the local waterways.
- Continue compliance with state and local public notice requirements when implementing a public involvement/participation program. Activities may include representation on local stormwater management work groups, public hearings, education for volunteers assisting with program coordination and monitoring efforts, per applicable state and federal regulations.

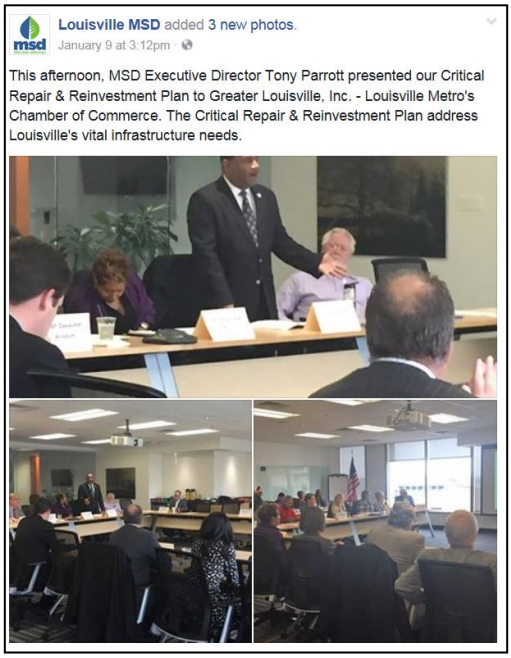
The remainder of this section reflects the individual activities associated with the SWQMP PEOPLE Plan. Where applicable, each outreach activity identifies the key items of Audience, Level, Objective, Outcome, Performance Based Measure and Likely Medium.

Table 2.1 PEOPLE has 18 element tasks that are described in the following sections and are congruent with the table activity numbering.

TABLE 2.1 - PEOPLE	
SWQMP ID	**PEOPLE General Public & Stakeholder Education Program**
2.1.1	General Public-Mass Media Integration/Distribution
2.1.2	General Public-Direct Interaction
2.1.3	General Public-Meeting Topic Integration
2.1.4	Volunteer Programs, Participation, Promotion or Support
2.1.5	MetroCall Hotline and MSD Customer Relations
2.1.6	Elected Officials
2.1.7	Public Speakers
2.1.8	News Media-Press Releases
2.1.9	MSD Web Site
2.1.10	Behavior Change Assessment Survey
2.1.11	Building Industry Association of Greater Louisville Land Development Committee Monthly Meetings and Developers Advisory Group
2.1.12	Greater Louisville Inc. Environmental and Water Committees
2.1.13	Construction Operators
2.1.14	Rain Garden Outreach
2.1.15	Green Infrastructure Demonstration Projects
2.1.16	Public Notification of Major Program Changes
Cooperative Efforts (MSD provides supportive or other non-lead role)	
2.1.17	Jefferson County MS4 Workgroup-Communication
2.1.18	Louisville Metro Office of Sustainability Assistance

2.1.1 General Public – Mass Media Integration/Distribution

Frequency or Measure of Success	Activity Required
Report the number of potential households and estimate the numbers of households were reached	The permittee shall integrate MS4 stormwater quality topics in to existing print mass media, local government cable channel, social marketing materials, and/or new materials with the intent of affecting behavior change.



Public education through mass media message integration and distribution will continue to be released using the key messages for stormwater quality. Over the course of the permit, venues used may include Metro TV, radio, social media, website postings, locally-focused magazine articles and/or advertisements, newspaper inserts, bill inserts, posters, billboards, and flyers.

MS4 messages of protecting stormwater quality will continue to be integrated into existing mass media and social marketing materials. New materials may be created for the public education campaign. In recent years, MSD has used Twitter, Facebook, and other social media to share ways to protect water quality and updates regarding MSD's programs, including water quality.

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2.1.2 General Public – Direct Interaction

Frequency or Measure of Success	Activity Required
Permittee shall present educational materials to the public at least six (6) event days per year; update booth material annually. Provide summary of the educational activities in Annual Report	The permittee shall present the "Key Messages" at community events, through the use of a display booth, "enviroscape" or other direct personal integration approaches.

General public education through direct interaction at community events will continue to be conducted using the key messages for stormwater quality as the primary focus. MS4 messages of stormwater quality are presented at community events through the use of a display booth, “enviroscape” stormwater model, or other direct personal integration approaches. Public education activities were significantly expanded during the Third Permit Cycle. Events for direct interaction opportunities may include, but are not limited to Waterfront Wednesday, Ohio River Sweep, tree planting events, and similar events.

2.1.3 General Public – Meeting Topic Integration

Frequency or Measure of Success	Activity Required
Permittee shall integrate water quality topics in MS4 public meetings at least six (6) events per year; provide summary of the events in the Annual Report	The permittee shall integrate MS4 stormwater quality topics, as feasible and appropriate into other MSD sponsored public meetings.

MSD facilitates and sponsors public meetings and events throughout the year to meet, interact and educate the public on a variety of topics and/or projects. As part of MSD's core values, MSD communicates the importance of public health, safety and protection, including messages related to stormwater quality. Where feasible and appropriate, MSD will incorporate stormwater quality and MS4 topics or educational materials into MSD-sponsored public meetings and events held for other programs including the Integrated Overflow Abatement Plan (IOAP), Wet Weather Team, and Pardon our Dust meetings.

2.1.4 Volunteer Programs Participation, Promotion or Support

Frequency or Measure of Success	Activity Required
Permittee shall have direct participation in at least three (3) events per year; and promote additional two (2) events per year, provide summary of volunteer opportunities the permittee participated, facilitate, or supported in the Annual Report	The permittee shall participate in, facilitate, encourage or support volunteer program opportunities on a case by case basis to optimize resources and potential to affect behavioral changes through participation events.

MSD has a history of promoting and facilitating local community volunteers. MSD will continue to make channels of communication open and available for volunteers to participate in community watershed related events and speak with environmentally related staff. Volunteer organizations and events will continue to be determined on a case-by-case basis, but may include the Louisville Nature Center, Ohio River Clean Sweep Day, Homearama, Louisville Free Public Library's How-To Festival, Louisville Zoo environmental programs, Adventures in Water Festival, and other activities. MSD provides financial and/or in-kind support to Volunteer Groups in the Community. Historically, MSD has provided support to the following groups, programs, and events:

- Kentucky Waterways Alliance
- Salt River Water Watch
- Louisville Metro Operation Brightside Eco-Drama
- Waterfront Wednesday Concert Series
- Local employer events for sponsorship and educational booths
- Rubbertown Community Advisory Council
- Greater Louisville Inc.
- Louisville Nature Center
- University of Louisville Center for Infrastructure Research
- Water Environment Reuse Foundation
- Other non-profit organizations

MSD will continue, on a case-by-case basis, to support and coordinate with volunteer monitoring programs being initiated by others. The coordination may include: advertising events, soliciting participation, and providing other resources, such as oversight staff, testing kits, and information from other MSD programs that might be helpful to the volunteers. The level of support may vary from program to program as needed. Watershed Watch will continue to receive financial support.

2.1.5 MetroCall Hotline and MSD Customer Relations

Frequency or Measure of Success	Activity Required
Permittee shall provide a summary of MS4 complaints and comments received in the Annual Report	The permittee shall provide support to the 24-hour central reporting hotline "Metro Call" and internet communication channels for use by the public and MSD employees to report complaints, spills, and illegal dumping.

Louisville Metro government and MSD combined resources to provide online services for those customers who wish to submit service requests to MetroCall or MSD's Customer Service Department over the Internet. Service Requests can now be made over the mobile application for iPhone and Android. In addition to entering a service request, customers can follow the status and progress of their request online. The MetroCall website is located at http://www.louisvilleky.gov/MetroCall/livehelp.htm.

The MetroCall phone number at 311 or (502) 574-5000 as well as the MSD Customer Relations phone number at (502) 587-0603 is answered 24 hours per day by staff instead of an answering machine. Calls to the Louisville Metro line are routed to and managed by MSD Customer Relations staff during Metro Government's non-business hours. Both telephone and internet communication modes allow the public and employees to report complaints, spills and illegal dumping. Incoming inquiries are recorded and coded in a central database and routed to the appropriate staff for follow-up, which is also recorded in the database. Citizens can contact MetroCall by phone or On Line Customer Services.

For more than 27 years, MetroCall 311 has been the city's customer service center. In 2016, MetroCall answered close to 287,000 calls for a total of over 5 million calls since 1989. In 2016, MetroCall also answered close to 8,500 emails and conduced over 17,000 live chat sessions. MSD will continue these activities.

2.1.6 Elected Officials

Frequency or Measure of Success	Activity Required
Permittee shall provide a summary of its attendance of meetings at Mayors and/or Council Member's discretion in the Annual Report	The permittee shall attend and participate at the discretion of Mayor's office and Louisville Metro Council members to address resident's concerns and questions.

Metro Council District Meetings

The Louisville Metro Council is comprised of 26 districts representing all of Jefferson County. Council meetings are held bi-monthly and are shown on Louisville Metro Television Channel 25. Metro Council District Meetings are open and available to the public to attend. The MSD Executive Director will continue to attend and participate in Metro Council District Meetings at the discretion of the Metro Council Members to address council members' concerns and questions pertaining to stormwater quality and the MS4 program.

2.1.7 Public Speakers

Frequency or Measure of Success	Activity Required
Permittee shall provide public speakers to various community stakeholders at least six (6) events per year	The permittee shall provide speakers to various community stakeholder groups that could benefit from environmental stormwater information.

MSD provides speakers to various community, special interest, and civic groups upon request to promote community awareness and involvement in stormwater quality topics and activities. The MSD staff will continue to attend and participate in community group meetings to educate and promote involvement of stakeholders in stormwater quality activities. Community groups to be addressed will be determined on a case-by-case basis, but may include the Master Gardener's Program, the Building Industry Association of Greater Louisville (BIA) and Contractors Associations, outdoor classrooms, PTA, school audiences, industrial community associations, planning agencies, watershed agencies, neighborhood associations, community clubs, boy/girl scouts, service organizations, and others. Activities may include participation and/or be coordinated with the Louisville Metro Departments, including, Safe and Healthy Neighborhoods, to identify potential community groups in need of speakers to discuss MS4 related topics and will follow the Strategic Plan.

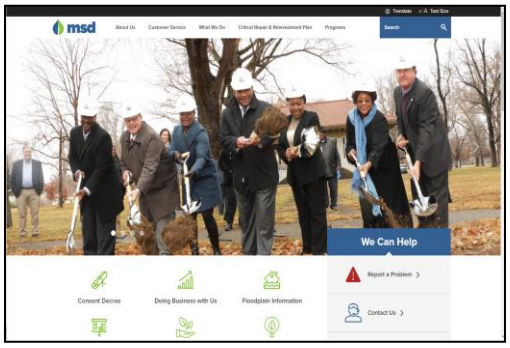
2.1.8 News Media – Press Releases

Frequency or Measure of Success	Activity Required
Permittee shall provide at least two (2) press releases per year highlighting public participation opportunities	The permittee shall provide press releases to the local news media highlighting opportunities for the public to participate in outreach and involvement events to make a positive difference through behavior change.

MSD will continue to provide press releases to the local news media highlighting new activities and opportunities for the public to participate in outreach and involvement events to encourage positive behavior modifications. Press releases promote the dispersion of stormwater quality educational and involvement messages to promote behavior changes that impacts water quality. Press releases will continue to be provided to the local news media to highlight the progress of the stormwater program and future challenges and opportunities for residents to make a positive difference through behavior change. In addition, MSD will continue to use Social Media, including but not limited to Twitter and Facebook provide updates to the public regarding infrastructure and programmatic elements.

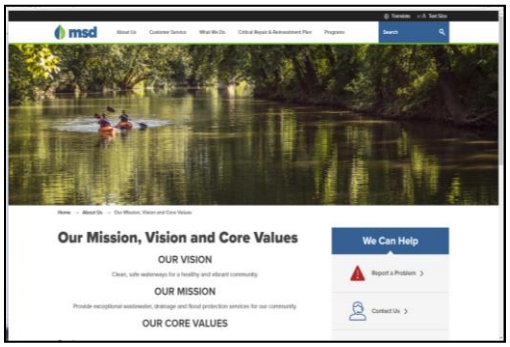
2.1.9 MSD Website

Frequency or Measure of Success	Activity Required
Permittee shall report summary of updates in the Annual Reports of Permit Years 2 and 4	The permittee shall review and revise the website with the "Key Messages" content and other related PEOPLE plan elements.



In 2013, MSD rolled out its Stormwater Quality website, http://www.msdstormwaterquality.org/. The site uses the same content management system and templates as Project WIN and highlights core MS4 program areas of green infrastructure, industrial customers and construction oversight. The website includes a public library and scrolling homepage features section to display key stories, public notices, or events.

During the Third Permit Cycle, MSD created a website intended to promote green infrastructure, http://www.msdgreen.org/. The website was published in August 2014, and includes information about green infrastructure projects and the incentives program. MSD will continue to make updates to the website, including posting the Annual Report.



MSD is currently migrating both of these website's content to a newly-published main website (www.louisvillemsd.org).

2.1.10 Behavior Change Assessment Survey

Frequency or Measure of Success	Activity Required
Permittee shall provide summary in the Annual Report of the Baseline Survey in Permit Year one (1) and the Behavior Assessment in Permit Year four (4)	The permittee shall perform a statistical survey to gauge the population's knowledge of stormwater quality issues and establish baseline to assess the changes in behavior and outreach program effectiveness. The permittee shall utilize the survey results to refocus and reprioritize PEOPLE activities.

To understand public knowledge of MS4 ideas, concepts, initiatives and programs, past residential customer phone surveys and online surveys were conducted during the third permit cycle. MSD has performed 2,400 individual phone interviews and over 1,000 online surveys. Emphasis was placed on concepts identified to be the most relevant to the average consumer during the surveys and interviews.

In addition to serving as a baseline for the success of the initiatives, the results of the market survey also provided a frame of reference as to what the general population did and did not know to direct future marketing efforts. The survey results were used to determine a ranking of MS4 / stormwater concepts that were not understood or were misunderstood by the representation of the general public measured. This ranking will be used to provide a plan of what should be addressed, to which audiences, and in what depth.

This survey will be repeated in the Fourth Permit Cycle with a Baseline Survey in permit year one and Behavior Assessment performed in permit year four to assess changes in behavior and outreach program effectiveness. This assessment will be used to reprioritize and refocus the PEOPLE program in preparation for the Fourth Permit Cycle.

2.1.11 Building Industry Association of Greater Louisville Land Development Committee Monthly Meetings and Developers Advisory Group

Frequency or Measure of Success	Activity Required
Permittee shall participate in at least 75% of the meetings annually	The permittee shall attend Building Industry Association of Louisville land development committee and Developer Advisory Group meetings to address concerns and comments from the local homebuilder professional and provide information regarding changes in procedures, checklist, regulations, etc.

MSD has a long and productive history of engaging with the Building Industry Association (BIA) of Louisville. MSD is and will continue to attend Land Development committee meetings to address concerns and comments from the local homebuilder professional and provide information regarding changes in procedures, checklist, regulations, etc. MSD intends to participate in all of the monthly meetings.

MSD participates in these meetings regularly and anticipates that the venue will continue to play an important role in receiving information from the development community about their challenges to implement MSD's expectations. It is important to note that while MSD intends to participate in the meetings, the agenda and MSD speaking opportunities are controlled by the BIA. Furthermore, the venue will continue to be a way for MSD to communicate expectations and formulate approaches that meet MS4 program requirements.

2.1.12 Greater Louisville Inc. Environmental & Water Committees

Frequency or Measure of Success	Activity Required
Permittee shall participate in at least three (3) events per year	The permittee shall participate in committee meetings to address concerns and comments from key local development professionals and provide information regarding changes in construction procedures, checklist, regulations, etc.

MSD has and will continue to regularly participate in meetings with Greater Louisville Inc. Environmental and Water Committees (at least three annually). MSD anticipates that this venue will continue to play an important role in receiving information from the industrial, commercial and development communities about their challenges to implement MSD's expectations. Furthermore, the venue will continue to be a way for MSD to communicate expectations and formulate approaches that meet MSD program objectives.

2.1.13 Construction Operators

Frequency or Measure of Success	Activity Required
Permittee shall evaluate educational materials and/or multimedia presentations for the construction industry related to point and non-point source pollution and stormwater pollution annually	The permittee shall make available educational materials and/or multimedia presentations for the construction industry related to point and non-point source pollution, green infrastructure and stormwater pollution prevention measures for operational procedures and erosion and sediment controls.

MSD has hosted three Construction Field Day Events to assist construction operators, demonstrate new technologies and challenges to local construction contractors, and the engineering community. The objective of this activity is to provide direct interactions and learning experiences to the development community, beyond typical guidance materials distribution. MSD will develop a planning committee to institutionalize the planning process and better enable the conference to be successfully repeated in future years. MSD will host the event at facilities large enough to provide for several hundred participants in small break out classroom discussions and, if feasible, outdoor demonstrations or tours.

Field Day event dates have been shifted from summer events (during construction season) to winter dates to allow for larger attendance and participation from those within the contractor/construction industry. MSD will continue to coordinate with the local construction community to enhance participation and improve opportunities for MSD and participants.

MSD will continue to evaluate its educational materials and presentations related to point and non-point source pollution, green infrastructure, and stormwater pollution geared toward the construction industry on an annual basis. Materials that have been developed by MSD or that are currently on-hand at MSD partner agencies will be reviewed to determine their applicability with topics discussed with the construction audience. These materials will then be distributed where appropriate and/or utilized in presentations by MSD staff.

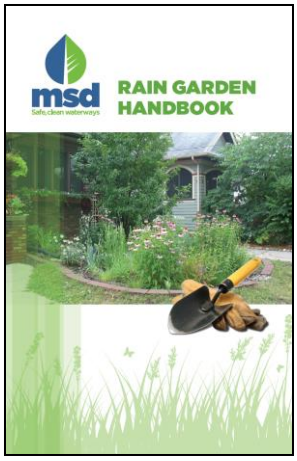
Meeting attendance and education materials distributed will be summarized in the Annual Report. Strategies will be identified to evaluate meeting attendance for current and future reference, and the addition of new materials and updated materials needed. Based on interest and knowledge evaluations, MSD will add missing information into presentations and create additional materials requested by the group.

2.1.14 Rain Garden Outreach

Frequency or Measure of Success	Activity Required
Permittee shall estimate handbook distribution and report in the Annual Report	The permittee shall maintain and update rain garden handbook with the intent of general public outreach. Consider expanding use to support residential, non-residential, professional, and non-professional audiences. The permittee shall evaluate changes and make updates at least every even numbered year.

The 4th edition of the "Rain Garden Handbook" is available online at www.louisvillemsd.org. The 4th edition includes an expanded plant list and more information about understanding urban stormwater and the role rain gardens play with infiltrating runoff.

On-site BMP retrofits for private residential properties including the installation of rain gardens will continue to be encouraged through educational campaigns, demonstration projects and incentives to residents. The Rain Garden Handbook will aid in that effort. Through its many interactions with public groups, such as neighborhood associations, MSD is seeking permission from private rain garden owners to make their information public.



2.1.15 Green Infrastructure Demonstration Projects

Frequency or Measure of Success	Activity Required
Permittee shall provide a Summary Report of Green Infrastructure demonstration projects in the Annual Report	The permittee shall monitor previously identified and constructed projects in outreach efforts aimed at demonstrating the feasibility and effectiveness of green infrastructure including, but not limited to rain gardens, green roofs, pervious pavement, bio-swales and infiltration. Prioritize, select and implement projects to support a variety of residential, non-residential, professional and non-professional audiences in MSD and co-permittee areas. Where feasible collaborate and/or cooperate with local government agencies, schools, co-permittees and/or private properties with significant use and exposure to the general public.

MSD has implemented several projects demonstrating the feasibility and effectiveness of green infrastructure. These projects include rain gardens, bio-swales and pervious pavement techniques. In addition, MSD had partnered with private entities to provide site feasibility assessment for incorporation of green such as rain gardens, bioretention, pervious pavements and green roofs on commercial development and re-development projects. Through its green infrastructure financial incentives program MSD will, wherever feasible, partner with local governmental agencies, schools, co-permittees, and/or private properties, which have significant use and exposure to the general public. MSD has incorporated lessons learned from its demonstration projects into construction, design, and operation & maintenance guidance and intermittently offers tours of some green infrastructure sites. MSD monitors all demonstration projects in the same manner as it monitors private development green infrastructure practices.

2.1.16 Public Notification of Major Program Changes

Frequency or Measure of Success	Activity Required
Permittee shall maintain and update as needed the notification system or program changes.	The permittee shall maintain a web site-based system to notify the public and affected stakeholders of proposed major program changes that will significantly impact stormwater runoff quality, negatively or positively. The public shall be given the opportunity to informally comment on proposed changes.

MSD provides and will continue to provide notification to the public and affected stakeholders regarding proposed program changes that will significantly impact stormwater quality negatively or positively through its existing website, the Stormwater Quality Webpage, the Green Infrastructure Website (when applicable). As a publically available document, the public is given the opportunity to comment.

MSD determines and will continue to determine the most effective communication methodology for public distribution of information. In some situations MSD's social media platforms will be utilized, in others, a press release will be generated and distributed via the media contact list developed as part of the News Media Press Release section of the permit.

2.1.17 Jefferson County MS4 Workgroup – Communication

Frequency or Measure of Success	Activity Required
Permittee shall attend at least two (2) meetings per year	The permittee shall participate in the Jefferson County MS4 Co-Permittee Workgroup meetings discussing program progress, challenges, activity changes, shared activity requests communication needs and lesson learned.

MSD has a long and productive history of facilitating an engaged dialogue with the Jefferson County MS4 Co-Permittee Workgroup. MSD will continue to convene the Jefferson County MS4 Workgroup, which is comprised of Jefferson County MS4 communities that are co-permitted with MSD (Louisville Metro, City of Anchorage, City of Jeffersontown, City of Shively, and City of St. Matthews). The meetings promote discussion among co-permitted communities on program progress, challenges, activity changes, shared activity requests, communication needs and lessons learned. MSD will continue to lead and facilitate the Jefferson County MS4 Workgroup meetings at least twice per permit year.

Within each permit cycle, the Jefferson County MS4 Workgroup increases collaboration. For example, the workgroup held a series of conference calls and meetings to develop the Fourth Permit Cycle permit tables. Additionally, the workgroup collaborated to improve and enhance the 2017 interlocal agreements and the Storm Water Quality Management Plan.

2.1.18 Louisville Metro Office of Sustainability

Frequency or Measure of Success	Activity Required
Permittee shall report its activities and support of the Louisville Metro Department of Sustainability initiatives in the Annual Report	The permittee shall continue to support Louisville Metro Office of Sustainability initiatives with development of guidance materials to be applied to new Metro Government Facilities incorporating green infrastructure

Sustain Louisville is a program promoted by Louisville Metro Government that promotes both Louisville Metro Government initiatives and actions that the public can take to improve the environment. In doing its own part, Louisville Metro Government serves as a foundational framework to shape citywide progress towards a vibrant, prosperous and healthy community. Sustain Louisville emphasizes three key objectives to successfully achieve the Office of Sustainability's mission and vision to embed sustainability into the culture of Louisville's citizens:

- Protect the environment and reduce Louisville's carbon footprint.
- Ensure the health, wellness and prosperity of all citizens.
- Create a culture of sustainability.

In addition, there is a link on the Louisville Metro Government website that promotes sustainability https://louisvilleky.gov/government/sustainability/sustain-louisville

MSD will continue to participate in the Louisville Metro sustainability initiatives whenever feasible.

2.2 Illicit Discharge Detection and Elimination (IDDE)

The objective of this portion of the SWQMP is to develop, implement and enforce programs that detect and eliminate illicit discharges into the MS4, Waters of the Commonwealth of Kentucky and Waters of the U.S. The program is designed to provide consistent direction, guidance and enforcement to MSD employees, community stakeholders and the public to detect and eliminate illicit discharges.

IDDE Program Activities

The Fourth Cycle MS4 Permit requires that the IDDE program be implemented throughout the permitted area of Jefferson County, and requires the following activities:

- Implement and enforce a program to detect and eliminate illicit discharges, that includes field screening such as dry weather screening and dry weather screening at industrial outfalls.
- Develop, if not already completed, a storm sewer system map, showing the locations of all known major outfalls, as defined in the fact sheet, and the names and locations of all surface waters that receive discharges from those outfalls. The comprehensive storm sewer system map shall also include the permittee's MS4 system (owned and/or operated by the permittee), including catch basins, pipes, ditches, flood control facilities (retention/detention ponds), and post-construction water quality BMPs. If mapping is completed using Geographical Information Systems (GIS) or Computer Aided Drafting (CAD) software, the permittee shall provide to the Division, at a minimum, the MS4 boundary and the mapped infrastructure in either ESRI shape file formats (to include the .shp, .shx, and .dbf files) or geo-referenced CAD drawings (.dwg file format). Permittees shall have the permit term to complete required mapping.
- Continue to effectively prohibit, through ordinance or other regulatory mechanism, non-stormwater discharges into the separate storm sewer system, define allowable non-stormwater discharges, including illegal dumping into the MS4 system. Implement a plan to detect and address non-stormwater discharges, including illegal dumping, to the MS4 system.
- Continue to inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of wastes.
- Continue to promptly evaluate, prepare and implement a response plan to correct related problems, if in the course of implementing the SWQMP, it is demonstrated that at any location sanitary sewer lines exfiltrate and such exfiltration migrates to the MS4.

The remainder of this section reflects the individual activities associated with the SWQMP IDDE Plan.

Table 2.2 IDDE has 11 element tasks that are described in the following sections and are congruent with the table activity numbering.

TABLE 2.2 -ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)	
SWQMP Task #	**IDDE Legal Prohibition/Control Authority**
2.2.1.	Assess Legal Prohibition/Control Authority
2.2.2.	IDDE Source Investigation and Elimination Procedures
2.2.3.	Public Illicit Discharge Report Investigation
2.2.4.	Dry Weather Screening
2.2.5.	Screening Follow-up
2.2.6.	Mapping - Stormwater Infrastructure Inventory
2.2.7.	Non-Industrial IDDE Program Enforcement
2.2.8.	Hazmat/Spill Unified Response Program
2.2.9.	MVA Mitigation Kit Program
2.2.10.	IDDE Identification SWPPP Training Integration
Cooperative Efforts (MSD provides supportive or other non-lead role)	
2.2.11.	KDOW Support

2.2.1 Assess Legal Prohibition/Control Authority

Frequency or Measure of Success	Activity Required
Permittee shall evaluate, once per permit cycle proposed changes in Wastewater Stormwater Discharge Regulations (WDRs) for consideration by MSD Board	The permittee shall evaluate existing ordinances and regulations with an emphasis on Article 5 of the WDRs to determine if they are sufficient relative to MSD's ability to implement an effective IDDE program per 40 CFR. 122.26(b) (2). The permittee shall periodically update WDRs as needed to identify and eliminate risk of illicit discharges due to changes in technology, industrial management processes, regulations or program modifications. The permittee shall provide a summary of the adoption of such changes and information about implementation, and effective date in the Annual Report.

The HMO and the Louisville Metro Integrated Emergency Incident Response program includes procedures to prevent, contain, and respond to spills that may discharge into a waterway or the municipal separate storm sewer. The Louisville Metro EMA, Public Health & Wellness Department, Fire Departments, Police, EMS, Coast Guard, EPA, USACE, and MSD Responders are on-call for hazardous materials discharge incident response.

MSD routinely evaluates existing ordinances and regulations with an emphasis on Article 5 of the WDRs to determine if they are sufficient relative to MSD's ability to implement an effective IDDE program pursuant to 401 KAR 5:060, Section 12(9)(b)3 and 40 CFR 122.26(b)(2). MSD will continue to identify and eliminate risk of illicit discharges due to changes in technology, industrial management processes, regulations or program modifications.

Based on the latest assessment of WDR contents that relate to IDDE, the following objectives provide MSD with the legal authority to meet permit compliance requirements:

- Prohibit non-stormwater discharges to the MS4 and require the removal of illicit connections to the MS4;
- Prevent improper disposal of chemicals and other materials into the MS4 that degrade water quality;
- Permit inspection, sampling, and monitoring for pollutants such as those associated with illicit discharges, improper disposal, and activities on industrial, commercial, residential, and construction sites; and
- Provide the necessary enforcement mechanisms pertaining specifically to illicit discharges spills, and dumping into the MS4.

2.2.2 IDDE Source Investigation and Elimination Procedures

Frequency or Measure of Success	Activity Required
Permittee shall provide in the annual report, a summary of the process changes to IDDE investigations	The permittee shall develop and implement a formal plan of illicit discharge detection including how to trace the source of an illicit discharge and procedures for removing or eliminating them once they are located or reported. The plan should also include the enforcement procedures outlined in the WDRs for illicit discharge elimination, which includes ten (10) days from the receipt of the Notice of Violation; the source of the illicit discharge shall submit a mitigation plan for removal.

MSD has historically, and currently updates IDDE procedures based on changing conditions or lessons learned through implementation. MSD's Industrial Waste Department continually updates these procedures in SOPs and training for staff. Any IDDE detection changes will be summarized in the MS4 Annual Report each year.

2.2.3 Public Illicit Discharge Report Investigation

Frequency or Measure of Success	Activity Required
Permittee shall provide in the annual report, a summary of the investigations of illicit discharges performed	The permittee shall continue to receive and investigate public reports of potential illicit discharges via customer service hotline, webpage reporting and MetroCall. The permittee shall update and perform customer service hotline staff training for receiving calls regarding potential illicit discharges and appropriate routing procedures.

The MSD IWD Incident Response staff conducts investigations of reported pollutant discharges by residents, businesses and public agencies. This includes responding to reports that come in via: Customer Service 24-hour Hotline, MSD webpage, referrals from other agencies and activities observed by staff while working in their assigned areas. The Wastewater/Stormwater Discharge Regulations provides MSD with the authorization to administer a compliance program with enforcement capabilities. MSD utilizes a HANSEN Information Management System to track incident responses and related enforcement. This activity provides MSD with the capability to respond and document illicit discharges reported by the general public and MSD staff utilizing MSD website or hotline.

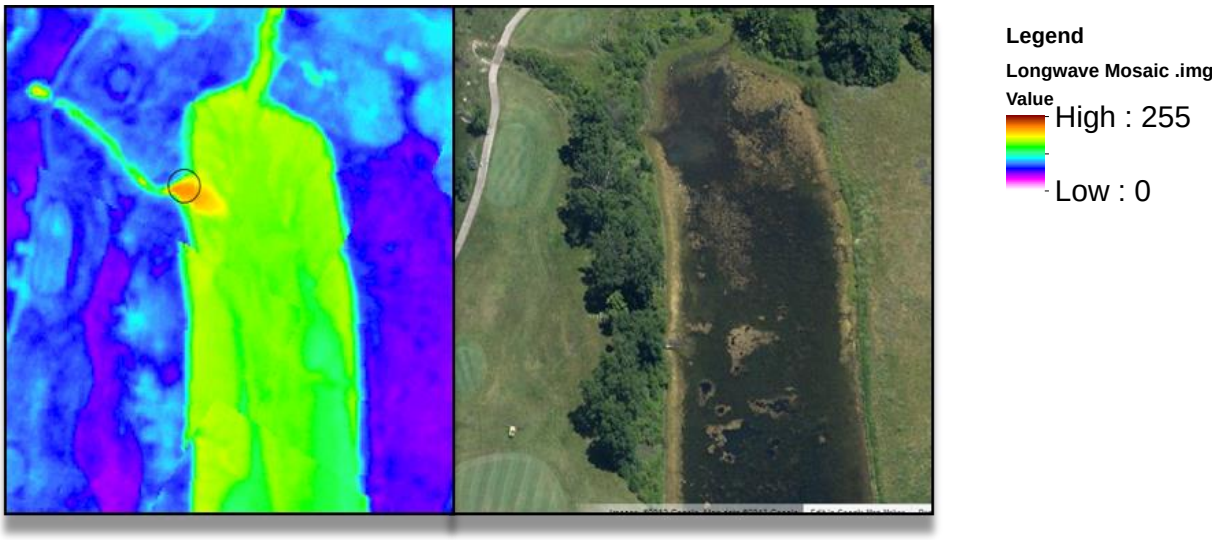
MSD will update and perform customer service hotline staff training for receiving calls regarding potential illicit discharges and appropriate routing procedures. MSD will include in the annual report the number of potential illicit discharges received through the hotline, metro call and the website.

2.2.4 Dry Weather Screening

Frequency or Measure of Success	Activity Required
Permittee shall provide in the annual report, a summary of the dry weather screenings performed.	The permittee shall conduct dry weather screening of representative outfalls. The recommended level of effort is twenty percent (20%) of the major outfalls per year. However, all the major outfalls shall be addressed within the permit term. The permittee shall also conduct dry-weather screenings at ninety percent (90%) of large industrial outfalls of industrial facilities once per permit cycle.

MSD performs outfall screening through a process originating with aerial thermo-photography. Aerial thermal-photography is performed in winter conditions appropriate for identifying potential illicit discharges. Analysis of the data results in a list of potential illicit discharges that are investigated by field crews for confirmation. When illicit discharges are identified, appropriate outreach, enforcement, or other actions are taken to eliminate illicit discharges. MSD will perform aerial thermo-photography once, at minimum, during the permit cycle.

This process meets the requirement to conduct dry weather screenings of ninety-percent (90%) of large industrial outfalls once per permit cycle. All MSD personnel are provided information on how to identify and report illicit discharges during mandatory Sewer Overflow Response Protocol training. MSD exceeds dry-weather screening requirements through the use of aerial-thermo photography and field work performed as a result of analysis and daily work activities of MSD personnel.

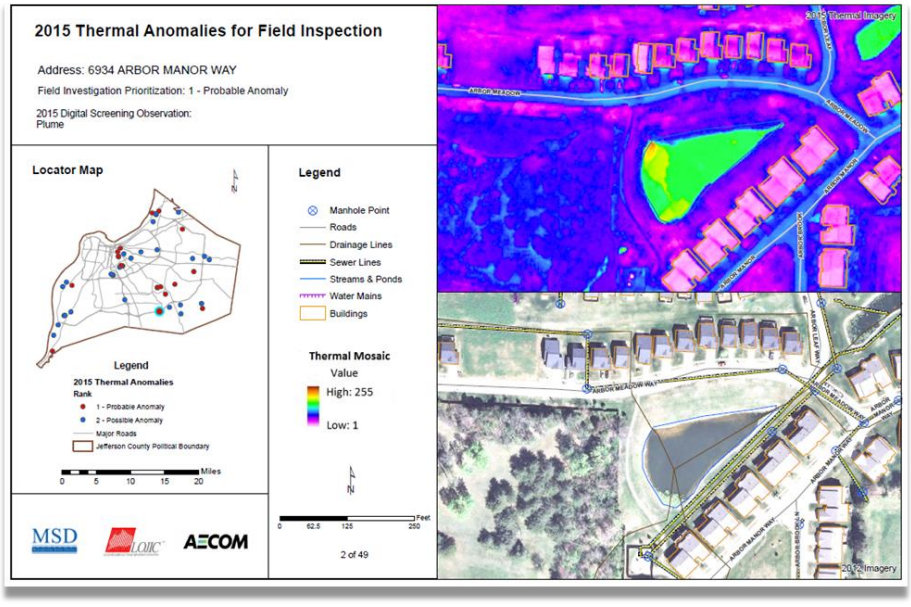


2.2.5 Screening Follow-up

Frequency or Measure of Success	Activity Required
Permittee shall starting in Permit Year One (1) inspect at least 25% of suspect outfalls per year	After the initial follow-up to insure the illicit discharge has been mitigated, the permittee shall re-evaluate outfalls that were previously found to have had contaminated discharges to determine the current status of those outfalls.

MSD was a pioneer in utilizing thermal imagery to detect illicit discharges, and captured data twice in the previous permit term. Each time the screening is analyzed, the follow-up should be more efficient due to locating existing features, such as natural springs. MSD historically has and will continue to follow up on suspected discharges. MSD identified and screened over 5,716 outfalls and other stormwater sources along streams in Jefferson County in the previous permit term. Through the thermal imagery screening process, anomalies are identified for desktop review. Once field investigation activities confirm a potential illicit discharge, and enforcement actions are complete, these locations are flagged for follow up screening to confirm mitigation.

Actively identifying and eliminating contaminated outfalls and other stormwater sources is a function of IWD's routine responsibilities. MSD will re-inspect at least 25% of the outfalls and other stormwater sources suspected to be contaminated per year. This task is augmented by the staff training with the intent that a large number of staff operating in the field will be able to recognize potential illicit discharges.



2.2.6 Mapping Stormwater Infrastructure Inventory

Frequency or Measure of Success	Activity Required
Permittee shall maintain a storm sewer system map.	The permittee shall continue to maintain the GIS Louisville Jefferson County Information Center (LOJIC) layers constituting its storm sewer system map, showing the location of all known major outfalls, and the names and location of all waters of the Commonwealth that receive discharges from those outfalls.

MSD has been a leader in system mapping for the last few decades through development and implementation of the Louisville and Jefferson County Information Consortium (LOJIC). MSD maintains and will continue to maintain an extensive drainage system electronic map through LOJIC. The data is utilized by many field and office staff throughout MSD for the daily implementation of their duties. This data far exceeds the requirements of this activity in that the entire known public drainage system, including pass-through drainage, is mapped rather than only the MS4 outfalls.

Information on LOJIC and its data is available at: http://www.lojic.org/

2.2.7 Non-Industrial IDDE Program Enforcement

Frequency or Measure of Success	Activity Required
Permittee shall report annually, including number of investigations, enforcement actions and referrals to KDOW, and follow-up investigations.	The permittee shall continue to utilize the Wastewater/Stormwater Discharge Regulations, related checklists and procedures for investigation of potential illicit discharges and elimination of illicit discharges.

Historically, MSD has been extremely active in the investigation, follow-up, mitigation, and enforcement of the WDRs for illicit discharges. MSD will continue to enforce the WDR and related policies, regulations and procedures for the enforcement of illicit discharges. Incidents of possible illicit discharges are immediately investigated by IWD and enforcement action is taken. This activity includes continued annual reporting of enforcement actions and referrals to KDOW.

2.2.8 HAZMAT/Spill Unified Response Program

Frequency or Measure of Success	Activity Required
Permittee shall report, if necessary, any changes to the policies and programs and procedures, in the annual report	The permittee shall continue to maintain and enforce the ordinances, policies, programs and procedures for response and containing spills that may discharge into the MS4. The spill response procedures outlined in Section 95.07 of the Louisville Metro Code of Ordinances relating to hazardous materials shall continue to be implemented and enforced.

MSD has a long history of participation in the Louisville Metro Coordinated Response Program. This group responds to all reported hazmat incidents – which occur throughout Jefferson County. The MSD IWD Pretreatment and Hazardous Materials programs address runoff pollution prevention controls via the Hazardous Material Spill Prevention and Control (HMPC) spill plan requirements. MSD will continue to maintain and when needed coordinate the improvement of ordinances, and improve MSD policies, programs and procedures for response and the containment of spills that may discharge into the MS4. MSD will report annually to the KDOW assessment findings and improvements.

2.2.9 MVA Mitigation Kit Program

Frequency or Measure of Success	Activity Required
Permittee shall report metrics for kit distribution and after-use collection in the annual report	The permittee shall continue motor vehicle accident (MVA) mitigation kit distribution program to meet Fire Department and emergency response spill containment needs.

MSD has assisted with mitigation of vehicle accidents for many years to provide an avenue to detect, mitigate, and prevent illicit discharges. The MSD IWD Motor Vehicle Accident Mitigation Program provides participating Fire Departments in Louisville Metro with mitigation kits to prevent fluids released from motor vehicle accidents from discharging into stormwater conveyances. MSD will continue the MVA (motor vehicle accident) mitigation materials distribution program to meet Fire Department and emergency response containment needs. MSD will report the amount of materials distributed and after-use collection.

2.2.10 IDDE Identification SWPPP Training Integration

Frequency or Measure of Success	Activity Required
Training shall occur at least once per year and the permittee shall report in the annual report the date of training and the number of staff participating in training	The permittee shall integrate techniques and practices to assist staff identify potential illicit discharges into facility and system operations and maintenance training.

MSD staff is trained to have a general competency level necessary to identify potential illicit discharges. Staff is instructed to contact the appropriate staff/hotline to make sure the appropriate MSD professionals can investigate to determine if an illicit discharge exists. When an investigation identifies an illicit discharge, MSD will take appropriate enforcement and corrective actions to eliminate the source of the illicit discharge.

MSD has incorporated this information into its existing Sewer Overflow Response Protocol (SORP) training. All MSD staff is required to participate in SORP training on an annual basis. Furthermore, key staff including crew managers/leaders, facility supervisors and other designated personnel are trained quarterly, with one quarterly session including IDDE topics.

MSD is continually incorporating best practices to improve staff capabilities in identifying potential illicit discharges. This activity is intended to provide the wide variety of MSD facility and office staff with the information needed to recognize potential illicit discharges during the normal course of their duties. This activity provides MSD with a day-to-day opportunity to identify potential illicit discharges and, in conjunction with aerial thermo-photography, more effective and efficient alternatives to performing a one-pass dry-weather field screening approach for identifying potential illicit discharges.

2.2.11 KDOW Support

Frequency or Measure of Success	Activity Required
Permittee shall summarize and include in the annual report any assistance given to the Kentucky Division of Water (KDOW) by MSD	As KDOW requests, the permittee shall accompany KDOW on inspection of KPDES stormwater permitted facilities in Jefferson County

MSD will accompany KDOW, upon request, to perform inspections of KPDES stormwater permitted facilities in Jefferson County. MSD will report these activities in the MS4 Annual Report. KDOW issues KPDES permits for all point-source and stormwater discharges from industrial facilities. The KPDES permits include a program to monitor and control pollutants in stormwater discharges from specific categories of industrial facilities. The program identifies priorities and procedures for inspections and establishes and implements the control measures for those discharges. The MSD industrial pretreatment and hazardous materials programs complement the KDOW permit and compliance programs for stormwater by referring potential illicit discharges to KDOW for enforcement action. MSD will continue to offer training to local industry and technical assistance in developing and implementing Facility HMPC and SWPPPs for compliance with local requirements.

2.3 INDUSTRIAL PROGRAM REQUIREMENTS (IP)

The objective of this portion of the SWQMP is to develop, implement and enforce programs to minimize pollutants and stormwater pollution in runoff from developed and re-developed areas. The program is designed to provide long-term stormwater best management practices to efficiently and effectively treat stormwater runoff from areas of new development and significant redevelopment. MSD's Industrial Waste Department (IWD) inspects and monitors commercial / industrial dischargers.

Industrial Program Activities

Integration of the Fourth Permit Cycle requirements for the Industrial Stormwater Program (IP) component of the MS4 Program is described in the remainder of this section. The MS4 Permit Table 3, Industrial Program Requirements, has 12 element tasks that are described in the following section and are congruent with the table activity numbering.

The Fourth Permit Cycle includes the following requirements:

- Implement the industrial stormwater program to control discharges of pollution to the MS4 from industrial and high-risk commercial facilities by utilizing the WDR, HMO and related checklists and procedures for identification of potential illicit discharges and elimination of illicit discharges/ unauthorized stormwater discharges.
- Continue to update the inventory of all potential industrial and commercial sites/sources that could contribute pollutant load to the MS4. This inventory shall include the name and address of the facility, contact person, and type of industry or commercial activities. This inventory shall be updated annually at a minimum and be made available to the KDOW upon request.
- Identify and periodically review the efficacy of risk factors to define facilities as "High Risk", "Moderate Risk" and "Low Risk". This identification of facilities shall be completed and submitted with the Annual Report at least once over the permit term or as required.
- Compare the datasets for local approved HMPC Plan facilities to the publicly available facility data from local and state environmental and emergency response agencies to address the completeness and accuracy of High Risk Industrial Facilities (HRIFs) identification at least once over the permit term.
- Update the list of HRIFs at least once over the permit term, to account for the most recently available North American Industry Classification System (NAICS), Standard Industrial Classification (SIC) codes, Toxic Release Inventory (TRI) data, MSD's HMPC

data and MSD's pretreatment program data with the goal of establishing a tiered list of industries to support priorities in MSD's industrial facility inspection program.

- Continue to inspect high priority facilities at least once every three (3) years and moderate risk facilities at least once every five (5) years.
- Require the high-risk industrial and commercial facilities to select, install, implement, and maintain control measures that promote prevention and source control for discharge of applicable pollutants of concern. This requirement may be addressed through the HMPC Plan and similar plans in order to meet federal and state requirements. The permittee shall continue to inspect the high-risk industrial and commercial facilities on a prioritized frequency to ensure compliance with the measure, summarizing inspections performed annually.
- Continue to require compliance with the industrial program requirements and continue to enforce the procedures outlined in Section 95.11 of the Louisville Metro Code of Ordinances relating to hazardous materials.
- Determine existing triggers in the new development and redevelopment plan and plumbing systems review process are sufficient to include appropriate industrial stormwater quality specialists/inspectors in the plan approval process.
- Utilize third party inspections for development of recommendations of efficacy of permittee inspections and enforcement. The permittee shall train staff who performs inspections and enforcement based upon the findings of the third party inspections as necessary.
- Update, if necessary, and distribute outreach materials (brochures, fact sheets, etc.) to HMPC Facilities and other commercial operations of concern to promote illicit discharge elimination awareness. Tracking of this distribution shall be reported in the Annual Report.

Table 2.3, Industrial Program Requirements, has 12 element tasks that are described in the following section and are congruent with the table activity numbering.

TABLE 2.3 INDUSTRIAL PROGRAM REQUIREMENTS (IP)	
SWQMP ID #	**IP 1 Legal Prohibition/Control Authority**
1.	Industrial IDDE Program Enforcement (KDOW Referrals)
2.	Industrial IDDE Program Enforcement (Legal Authority)
3.	Industrial Facility Inventory
4.	"High Risk" Facility Definition
5.	HRIF Inventory Update
6.	HRIF and High-Risk HMPC Inspection
7.	Industrial Facility Control Measures
8.	Enforcement / Inspections
9.	MSD Plan Review
10.	Industrial & Commercial Community Outreach
11.	Third Party Oversight Inspection
Cooperative Efforts (MSD provides supportive or other non-lead role)	
12.	KDOW Support

2.3.1 Industrial IDDE Program Enforcement (Implementation)

Frequency or Measure of Success	Activity Required
Permittee shall summarize in the annual report the industrial enforcement actions and referrals to Kentucky Division of Water	For industrial properties, the permittee shall continue to utilize the Wastewater/Stormwater Discharge Regulations, Hazardous Materials Ordinance and related checklists and procedures for identification of potential illicit discharges and elimination of illicit discharges/ unauthorized stormwater discharges. The permittee shall perform analysis of industry property data layer in LOJIC cross linking with properties holding a Hazardous Materials (spill) Prevention Control (HMPC) Plan to identify potential sites that should be added to the program with consideration for High Risk Industrial Facilities designation (determined in other activities).

MSD's IWD, a part of the Operations Support Services Division, inspects and monitors commercial/industrial dischargers and is also responsible for administering and enforcing the Hazardous Materials Ordinance. IWD also manages MSD's wastewater Pretreatment Program to ensure compliance with pretreatment standards. The IWD, as discussed in the items below, maintains the data using Hansen, LOJIC and other datasets to keep the data updated and accurate.

2.3.2 Industrial IDDE Program Enforcement (Legal Authority)

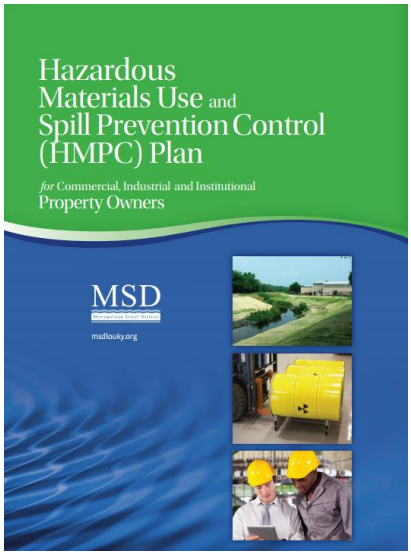
Frequency or Measure of Success	Activity Required
Permittee shall update as needed and maintain adequate legal authority to require compliance with this measure.	The permittee shall maintain adequate legal authority, per 401 KAR 5:060, Section 12(9)(b)3 and 40 CFR 122.26(b)(2), to require compliance and inspection of sites, inspection of priority industrial and commercial facilities, including establishing control measure requirements such as HMPC, Spill Prevention, Control and Countermeasure (SPCC) Plan and/or the Groundwater Protection Plan (GPP) for facilities that have a potential to discharge to the MS4 and enforce stormwater requirements.

In 1985, the governments of both the City of Louisville and Jefferson County adopted an ordinance requiring the submittal of a HMPC Plan by any business that manufactures, uses, or stores hazardous materials in excess of designated quantities. This plan must state how a business will respond to spills or discharges of these materials. The Ordinance also directs MSD to administer and enforce the program. MSD also has legal authority through the Wastewater / Stormwater Discharge Regulation (WDRs). The WDRs define the terms of compliance and resulting enforcement for industries discharging to the collection system and for industrial/commercial facilities which discharge stormwater to the MS4.

2.3.3 Industrial Facility Inventory

Frequency or Measure of Success	Activity Required
Permittee shall update annually and made available to the KDOW upon request	The permittee shall maintain an inventory of all potential industrial and commercial sites/sources that could contribute pollutant loads to the MS4.

MSD has developed an inventory of potential industrial / commercial sites / sources that could contribute pollutants to the MS4. The HMPC Program requires industrial and commercial facilities which maintain a reportable quantity of hazardous materials to submit a HMPC Plan. This list of entities along with those identified as potential industrial users through the pretreatment program is utilized in the threat matrix.



2.3.4 "High Risk" Facility Definition

Frequency or Measure of Success	Activity Required
Review "High Risk" facility definition each permit cycle	The permittee shall identify Risk Factors to define facilities as "High Risk", "Moderate Risk" and "Low Risk".

MSD has established risk factors within a threat matrix which is used to define "high risk" facilities in the community. This process is complex and incorporates defined attributes which indicate risk of illicit discharges and/or substantial pollutant loading to the MS4. MSD uses the definition to sort and distinguish Significant Industrial Users (SIUs) and qualifying facilities already included in HMO requirements. The threat matrix develops a numerical value which allows "moderate" and "low" risk facilities to be defined. Updates to the definition will be provided in the annual report.

2.3.5 High Risk Industrial Facility (HRIF) Inventory Update

Frequency or Measure of Success	Activity Required
Permittee shall summarize and report annually, the assessment and updates of any industrial facilities identified as "High", "Moderate", and "Low" risk	The permittee shall compare the datasets for local Approved HMPC Plan Facilities to the publicly available Facility data from local and state environmental and emergency response agencies to address the completeness and accuracy of High Risk Industrial Facilities identification. The permittee shall update the list of HRIFs at least once over the permit term, to account for the most recently available North American Industry Classification System (NAICS), Standard Industrial Classification (SIC) codes, Toxic Release Inventory (TRI) data, MSD's HMPC data and MSD's pretreatment program data with the goal of establishing a tiered list of industries to support priorities in MSD's industrial facility inspection program.

MSD began performing a baseline analysis to list potential high and moderate risk industrial facilities several years ago. Based on this analysis, a threat matrix was developed to identify “High”, “Moderate” and “Low” risk facilities. MSD has reported updates as required per the MS4 permit. The last complete update of high risk facilities was completed in 2016. MSD will report the assessment results and updates.

In addition to identifying HRIFs, "Moderate" and "Low" risk industrial facilities are identified to prioritize inspections. The prioritization results will be reported and updates summarized.

When the threat matrix was developed, MSD began performing a baseline comparison of the datasets for local approved HMPC Plan Facilities to the publicly available facility data from local and state environmental and emergency response agencies to address the completeness and accuracy of HRIFs identification. KDOW was notified of the potentially qualifying facilities that do not have state issued KDPES permits.

2.3.6 High-Risk and Medium Risk Facilities

Frequency or Measure of Success	Activity Required
Permittee shall report the summary of prioritized inspections completed, and any enforcement resulting from the inspections.	Based on the results of the updated HRIF assessment, the permittee shall inspect high-risk facilities at least once every three (3) years and moderate risk facilities at least once every five (5) years.

MSD developed the framework for assessing risk from industrial facilities in 2010. Historically MSD has performed inspections based on filtering facilities through this threat matrix. Based on the results of the updated HRIF inventory performed in task 2.3.5, MSD will continue to inspect high priority facilities at least once every three (3) years and moderate risk facilities at least once every five (5) years. Prioritized inspections will be completed and documented. Results of the inspections will be summarized and included in annual compliance demonstration reports.

2.3.7 Industrial Facility Control Measures

Frequency or Measure of Success	Activity Required
Permittee shall report annually on control measures required of the high-risk industrial and commercial facilities to ensure compliance with this measure	The permittee shall require the High Risk industrial and commercial facilities to select, install, implement, and maintain control measures that promote prevention and source control for discharge of applicable pollutants of concern. This requirement may be addressed through Hazardous Materials (spill) Prevention Control (HMPC) Plan and/or federal programs such as SPCC Plan and/or the GPP that are already implemented at the industrial and commercial facilities. The permittee shall require the applicable facilities to identify the specific control measures, good housekeeping and maintenance procedures, and employee training necessary.

In past years, hazardous material spills have caused or threatened to cause serious problems to the environment of Louisville and Jefferson County. In response to this, Louisville and Jefferson County adopted a Hazardous Materials Ordinance to prevent serious harm to the environment and reduce the likelihood of a problem from a hazardous material spill. The ordinance has been in place since 1985.

The ordinance requires that businesses which have hazardous materials on site must submit a plan for each business site as to how they will respond in the event of a hazardous material spill. An HMPC Plan must be submitted by any business which manufactures, uses, or stores hazardous materials meeting or exceeding minimum reportable quantities at their business location. Businesses that must submit plans are generally defined by an SIC code in the ordinance. Reportable quantities of hazardous materials shall include those contained in the most recent version of 40 CFR 302.4. Hazardous materials shall not include household wastes and other materials excluded by 40 CFR 261.4. Businesses which must submit plans are generally defined by an SIC code in the ordinance.

A comprehensive list of industrial, commercial, and government facilities are required to submit HMPC Plans or apply for an exemption from HMO requirements.

2.3.8 Enforcement / Inspections

Frequency or Measure of Success	Activity Required
Within six months of the permit issuance, the Permittee shall develop the required criteria or procedures to comply with this measure	The permittee shall develop criteria or procedures for site inspections and enforcement including criteria to address how the MS4 will use enforcement authorities to ensure compliance with the industrial program requirements. The permittee shall enforce the procedures outlined in Section 95.11 of the Louisville Metro Code of Ordinances relating to hazardous materials.

MSD has developed and implemented inspection procedures for site inspections. Authority to ensure compliance with the industrial program requirements is provided in the Hazardous Materials Ordinance and Wastewater/Stormwater Discharge Regulations. The procedures related to the MS4 program and hazardous materials ordinance are reviewed to determine if modifications are required. Training is provided to new IWD staff or as procedures and documentation are revised.

2.3.9 MSD Plan Review

Frequency or Measure of Success	Activity Required
Permittee shall assess at least every three (3) years and report changes to process in the annual report	The permittee shall determine if existing triggers in the new development and redevelopment plan and plumbing systems review process are sufficient to include appropriate industrial stormwater quality specialists/inspectors in the plan approval process.

As a matter of routine business, the MSD Development Review Department refers potential projects to the IWD for additional review. Periodically, MSD asesses if triggers in the new development and redevelopment plan and plumbing systems review process are sufficient to include appropriate industrial stormwater program personnel in the plan approval process. The existing plan review triggers provide a means to involve the IWD. This task is intended to refresh associated staff with the indicators and/or checklists used to trigger their involvement and provide a basis for an expanded plan review process.

Furthermore, the HMPC Plan is to be submitted on forms which are provided by MSD. A joint review is conducted by MSD and the Fire Department that has jurisdiction in the area of the business. Plans that are considered to be deficient will be returned to the business for correction and resubmission. Once approved, businesses will be responsible for implementing their plan including initiation of a training program for employees within their business.

2.3.10 Industrial & Commercial Community Outreach

Frequency or Measure of Success	Activity Required
The Permittee shall continue to identify materials developed and distribution estimates and summarize in the annual report	The permittee shall update as necessary and distribute outreach materials (brochure, fact sheets, etc.) to HMPC Facilities and other commercial operations of concern to promote illicit discharge elimination awareness.

MSD sends letters to businesses that MSD believes are required to submit an HMPC Plan, concerning the schedule for submission. Businesses which believe they should be exempt from a submission are required to submit an exemption request form as described in the letter. The HMPC Plan must be submitted on an application form provided by MSD. MSD IWD personnel review and approve plans and inspect the facility to verify the plan accurately identifies control measures. Plans that are considered to be deficient are returned to the facility for correction and resubmission. Once approved, businesses are responsible for implementing their plan including initiation of a training program for employees.

Historically, MSD has been very proactive in developing communication materials and coordinating with industrial and commercial customers. This communication includes dissemination of outreach materials on risk mitigation, and advisories of best practices. MSD will update, as necessary, outreach materials focused toward industrial/commercial sectors in order to promote IDDE awareness and related stormwater quality issues. MSD will continue to integrate these topics into existing outreach efforts. MSD anticipates that additional efforts, including development of new materials, will be necessary as the program continues to evolve. Based on the HRIF definition, prioritization, and inspection activities, materials will be developed focusing on relevant issues and audiences. Example materials will be provided in the MS4 Annual Report.

2.3.11 Third Party Oversight Inspection

Frequency or Measure of Success	Activity Required
Document training materials and the number of third party inspections conducted to be reported in the annual report	The permittee shall utilize third party inspections for development of recommendations of efficacy of permittee inspections and enforcement. Updates to training materials shall be administered for permittee personnel at least once per year, if necessary.

MSD developed Standard Operating Procedures (SOP) for third party inspections in previous permit cycles. This protocol is utilized by MSD's contractors to perform inspections and training with MSD IWD staff at least once per year. There is a detailed checklist that is utilized to perform the oversight inspection, and provides the baseline framework for the briefing with the inspector. MSD will continue to follow and modify the SOP as the Industrial Program evolves and submit documentation in the annual report.

2.3.12 KDOW Support

Frequency or Measure of Success	Activity Required
Permittee shall summarize and include in the annual report any assistance given to the KDOW by MSD	As KDOW requests, the permittee shall accompany KDOW on inspections of KPDES stormwater permitted facilities in Jefferson County.

MSD provides KDOW with site inspection support and requested information, documentation or reports for KPDES stormwater permitted facilities. The KDOW issues KPDES permits for all point-source and stormwater discharges from industrial facilities. The KPDES permits include a program to monitor and control pollutants in storm water discharges from landfills, hazardous waste treatment, disposal and recovery facilities and industrial facilities. In the annual report, MSD will provide a report summarizing assistance provided to KDOW.

2.4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL (CS)

The objective of this portion of the SWQMP is to develop, implement, and enforce programs to minimize pollutants and stormwater pollution in runoff from construction sites that discharge into the MS4, Waters of the Commonwealth of Kentucky and Waters of the U. S. The program is designed to provide consistent direction, guidance and enforcement of the construction industry in a community committed to sustainable growth and economic viability.

Construction Site Program Activities

The Fourth Permit Cycle Construction Site Storm Water Runoff Controls program includes the implementation of the following:

- Develop, if not completed, implement, and enforce a program to reduce pollutants in any stormwater runoff to the MS4 from Active Construction Sites.
- Evaluate requirements for construction site operators to implement appropriate erosion and sediment control BMPs that, at a minimum, shall be as protective as Kentucky's General Stormwater Permit for Construction Sites (KYR100000);
- Continue to administer an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance;
- Enforce requirements for construction site operators to implement appropriate erosion and sediment control BMPs;
- Implement procedures for site plan review which incorporate consideration of potential water quality impacts with the procedures outlined in Section 159.02 of the Louisville/Jefferson County EPSC Ordinance to assess whether the plan includes measures that address potential water quality impacts from construction prior to authorization of land disturbances;
- Utilize procedures for receipt and consideration of information submitted by the public through regular customer service communications;
- Continue to implement criteria and procedures for site inspection and enforcement including a required effort for bimonthly inspections for ninety percent (90) of active construction sites disturbing one acre or more and less than one acre if part of a larger common plan;
- Continue to implement enforcement procedures outlined in Section 159.05 of the Louisville/Jefferson County EPSC Ordinance, including an enforcement response plan;
- Maintain an inventory of all active public and private construction sites that result in a total land disturbance of greater than or equal to one acre and less than one acre that is

part of a larger common plan of development. Inventory should include the project's name, address, contact person, inspection dates, and any enforcement actions; and

- Follow the requirement that discharges from construction sites to high quality waters will protect existing in-stream water uses consistent with Kentucky General Stormwater Permit for Construction Sites (KYR100000).

This section reflects the individual activities, identified in the MS4 Permit Table 4 for MSD, associated with the SWQMP Construction Site requirements. The Construction Site Stormwater Runoff Control (CS) plan is a strategic approach that is assessed and updated on an ongoing basis. It is principally centered around enforcement of the EPSC ordinance originally passed in November 2000 by both the City of Louisville and Jefferson Fiscal Court governments and re-ratified by the Louisville Metro government September 2007.

MSD will continue to evaluate ways to document the program to support inter-departmental communication and budget planning with the intent to maintain/update the construction runoff control strategies.

Table 2.4, has 16 element tasks that are described in the following section and are congruent with the table activity numbering.

TABLE 2.4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL REQUIREMENTS (CS)

SWQMP ID #	Legal Prohibition/Control Authority and CS Maintenance Activities
2.4.1	Assess Legal Prohibition/Control Authority
2.4.2	Implement Legal Prohibition/Control Authority
2.4.3	Site Plan Review
2.4.4	Construction Site Inspection
2.4.5	Construction Site Inspection Frequency
2.4.6	Construction Site Inventory
2.4.7	Construction BMP Guidance Materials
2.4.8	On-site SWPPP
2.4.9	Construction Stormwater Runoff Control Program Inspection Refresher
2.4.10	Construction Inspector Training
2.4.11	Local Utility Construction General Permit Entities
2.4.12	MSD General Construction Permits Evaluation
2.4.13	Enforcement Tracking Log/Database
2.4.14	Third Party Oversight Inspection
Cooperative Efforts (MSD provides supportive or other non-lead role)	
2.4.15	Plan Development Process Identification
2.4.16	Metro IP & L Enforcement Coordination

2.4.1 Assess Legal Prohibition / Control Authority

Frequency or Measure of Success	Activity Required
Permittee shall summarize proposed changes enumerated by end of permit years one (1) and three (3) and report proposed changes in to Wastewater/Stormwater Discharge Regulations for consideration by MSD Board in the Annual Report	The permittee shall assess existing ordinance and regulations to identify changes needed to account for changes in standard of care (as directed by KDOW General Construction Permit KYR10), changes in technology, changes to development management process and related program needs in satisfaction 40 CFR 122.26(b)(15)(i) for construction activities that result in a land disturbance of greater than or equal to one acre and construction activity disturbing less than one acre that is part of a larger common plan of development that would disturb one acre or more.

MSD will review the legal controls to identify changes needed to account for changes in standard of care as directed by KDOW General Construction Permit, changes in technology, changes to development management processes and related program needs in satisfaction of 401 KAR 5:060, Section 12(a)(b)(4)a, b and 40 CFR 122.26(b)(15)(i) for construction activities that result in a land disturbance of greater than or equal to one acre and construction activity disturbing less than one acre that is part of a larger common plan of development that would disturb one acre or more.

MSD has the authority to modify some portions of the program, such as the Wastewater/ Stormwater Discharge Regulations with the approval of the MSD Board. However, it must have approval of Metro Council to modify/create any Louisville Metro ordinances such as the EPSC Ordinance. Where legally feasible, MSD will modify the related program elements, such as checklists, guidance manuals, and procedures that do not require the ordinance to be revised. However, if it becomes necessary to create new or modify existing ordinances or develop relevant regulations, MSD will move forward with that process.

In addition to EPSC Ordinance updates necessary to account for changes to the KDOW General Construction Permit, MSD will propose, as needed, modifications to the ordinance to comply with the General Construction permit. The EPSC Ordinance is available at: http://www.msdlouky.org/insidemsd/epsc.htm

2.4.2 Implement Legal Prohibition / Control Authority

Frequency or Measure of Success	Activity Required
Permittee shall require routine inspections of active construction sites with reasonable potential to discharge to MS4. A summary of these inspections and any enforcement actions resulting from these inspections shall be included in the Annual Report	The permittee shall continue to enforce existing ordinances and regulations intended to limit construction phase stormwater quality impacts from new construction and significant redevelopment.

MSD currently inspects land disturbing activities for compliance with the EPSC Ordinance. In addition, over the course of their daily activities, other city inspectors may refer potential violations to MSD for follow-up and enforcement action.

MSD will continue to enforce existing ordinances and regulations intended to limit construction-phase stormwater quality impacts from new construction and significant redevelopment. The program goal is to conduct inspections bi-weekly. The target of success is that at least 90% of active construction sites with reasonable potential to discharge to MS4 are inspected at least bi-monthly.

MSD administers the local EPSC Ordinance that requires an EPSC Land Disturbance Permit for each construction site in Louisville Metro that disturbs greater than 2,000 square feet. The MSD EPSC program includes inspection of MSD capital construction projects and private subdivision developments, as well as individual residential, commercial, and industrial construction sites. MSD field Inspectors routinely inspect EPSC BMPs on MSD construction projects and private development construction projects. Three levels of Construction Inspectors are primarily assigned EPSC inspection duties to include: permit release inspections, EPSC Ordinance compliance, and associated enforcement activities.

MSD tracks filed inspections performed by the Construction Inspection Department. The types of inspections performed include:

- EPSC compliance inspections;
- Subdivision site disturbance general permit release inspections;
- Enforcement request inspections which are typically referrals Customer Service Requests (CSR); and
- Builder-bond inspections of individual construction sites that are not in bonded subdivisions.

Compliance and Enforcement actions are also tracked enabling MSD to identify annual counts of:

- Field Correction Notices (FCNs) issued by the Inspectors. Each Correction Notice includes a list of required remedial actions;
- Notice of Violation (NOVs) issued for failure to comply with a Correction Notice;
- Stop Work Orders (SWOs) issued for non-compliant practices; and
- Fines that were imposed.

EPSC General Permits are required for utilities and public agencies that frequently perform multiple construction activities. An EPSC General Permit includes requirements for adequate erosion control BMPs as well as Post-Construction BMPs designed to limit stormwater runoff volume consistent with the MSD Green Design Manual Post-Construction Requirements. Building permits are issued through Louisville Metro and the plans, including the EPSC specifications, must receive approval from MSD and the Health Department.

2.4.3 Site Plan Review

Frequency or Measure of Success	Activity Required
Permittee shall review plans as needed and report the number of plans reviewed in the Annual Report	The permittee shall conduct site plan reviews in accordance with the procedures outlined in Section 159.02 of the Louisville/Jefferson County Erosion Prevention and Sediment Control Ordinance to assess whether the plans include measures that address potential water quality impacts from construction prior to authorization of land disturbance.

In accordance with Section 159.02 MSD reviews and approves EPSC plans and issues requisite site disturbance permits. Land disturbing activity subject to provisions under the ordinance is required to go through this plan review process. MSD will report the number of plans reviewed in the annual report.

Site Disturbance Permits are required for land disturbing activities subject to Type I and Type II reviews. The Type I review process applies to land disturbing activities subject to land use approval by the Louisville Metro Planning Commission, TRC, LD&T, Board of Zoning Adjustment or legislative body. Type II reviews are applicable to all land disturbing activities that do not require land use approval under the Development Code and include developments, demolition plans, site clearing, earth excavations or fills not performed with a specific project, and developments only needing a building permit to proceed to construction.

Type I projects on lands containing sensitive features require the submittal and approval of a EPSC Concept Plan along with, or as part of, the preliminary plan. Both Type I and Type II projects require the submittal and approval of an EPSC Detailed Construction plan along with, or as part of, the normal construction drawings.

2.4.4 Construction Site inspection

Frequency or Measure of Success	Activity Required
Permittee shall continue to implement the criteria and/or procedures for site inspections.	The permittee shall develop and implement criteria and/or procedures for site inspection. The procedures shall include an Enforcement Response Plan outlined in Section 159.05 of the Louisville/Jefferson County Erosion Prevention and Sediment Control Ordinance.

To ensure compliance with approved plans, MSD inspects land disturbing activities for compliance with Section 159.05 of the ordinance as a matter of daily business. The intent of the Ordinance is to pursue and secure negotiated compliance wherever practicable and effective prior to alternative enforcement measures being invoked. A Notice of Violation (NOV) and Stop Work Order (SWO) is issued in accordance with Section 159.05.

MSD has developed the following Standard Operating Procedures (SOPs) to document protocols for construction site inspections and oversight: the EPSC Construction Site Inspection (SOP CS-01) documents how inspections are conducted and documented as well as how enforcement procedures are implemented and tracked; and EPSC Inspector Field Verification Training (SOP CS-02) documents oversight inspection review responsibilities, frequency and standards.

2.4.5 Construction Site Inspection Frequency

Frequency or Measure of Success	Activity Required
Permittee shall report the number of inspections performed in the Annual Report	The permittee is required to conduct inspections bi-monthly of at least 90% of active sites.

MSD currently conducts inspections of active construction sites on a monthly basis or after at least 0.5 inch rain events of at least 90% of active sites. In accordance with Permit Cycle Four, MSD will begin to conduct inspections bi-monthly. In addition to these required inspections, MSD inspects other potential violations referred to MSD by the public, elected officials and other city and county inspectors. There are plans in development to employee additional internal inspectors, and to supplement with contract inspectors to provide coverage of the program commitments. MSD reports the number of inspections in the annual report.

2.4.6 Construction Site Inventory

Frequency or Measure of Success	Activity Required
Inventory continually updated as projects are permitted and projects are completed	The permittee shall maintain an inventory of all active public and private construction sites that result in a total land disturbance of greater than or equal to one acre and less than one acre that is part of a larger common plan of development. Inventory should include the project's name, address, contact person, inspection dates, and any enforcement actions issued to the project.

MSD currently tracks active construction sites as required by the MS4 permit. Sites are tracked using the Home Building and Service Request Inspection Report in the EPSC Enforcement Log database. Each site is assigned a water management number and records are managed with the aid of HANSEN Asset Management System, LOJIC GIS, and other related datasets. These datasets catalog construction site project names, addresses, primary site contacts, inspection dates, and enforcement actions. The Companion HANSEN Asset Management System, LOJIC GIS tools, are used to capture drainage infrastructure installed or modified as a result of the construction project. LOJIC is accessible at: http://www.lojic.org/.

2.4.7 Construction Best Management Practice (BMP) Guidance Materials

Frequency or Measure of Success	Activity Required
Permittee shall update the Design Manual and Standards Specifications as needed and make the updates publicly available	As needed to account for changes in the KDOW general construction permit(s), the permittee shall update the guidance materials facilitating current technology use, local plan review/inspection requirements and related implications, Design Manual chapters and Standard Specifications sections to address EPSC and other construction phase (waste concrete, fueling and repairs operations, etc.) topics including BMP selection, feasibility, design considerations, operation, maintenance, inspection checklist and related matters.

MSD has historically maintained a productive relationship with KDOW personnel that administer the KDOW General Construction Permit (KYR10) to ensure that guidance and information provided to contractors is current and accurate. MSD has coordinated with contractors to ensure that practices being implemented are consistent with the KYR10. MSD will continue to update the guidance materials facilitating current technology use, local plan review/inspection requirements, and related implications. Design Manual chapters and Standard Specifications sections address EPSC and other construction phases (waste concrete, fueling and repairs operations, etc) topics including BMP selection, feasibility, design considerations, operation, maintenance, inspection checklists, and related matters. Currently, MSD's standard procedures provide coverage under KYR10 requirements.

Construction Guidance is available to the public through the web at:
http://www.msdlouky.org/insidemsd/standard-drawings.htm

2.4.8 On-site Stormwater Pollution Prevention Plan (SWPPP)

Frequency or Measure of Success	Activity Required
Permittee shall document SWPPP procedures and expectations and make the procedures and expectations publicly available	The permittee shall continue the procedure for receiving Stormwater Pollution Prevention Plans (SWPPP) for qualifying construction sites.

Effective July 14, 2008, MSD instituted a requirement and procedure for receiving Stormwater Pollution Prevention Plans (SWPPP) for qualifying construction sites. This requirement was intended to make MSD requirements for a "BMP Plan" consistent with KDOW's KPDES General Construction Permit (KYR10) references to a "SWPPP." This requirement has been completed ahead of the requirement schedule.

The site plan checklist is available on MSD's website at:http://www.msdlouky.org/insidemsd/pdfs/chklist2.pdf.

Additionally, MSD provides a sample site grading and SWPPP plan sheet as guidance to developers on the website at: http://www.msdlouky.org/insidemsd/standard-drawings.htm.

2.4.9 Construction Stormwater Runoff Control Program Inspection Refresher

Frequency or Measure of Success	Activity Required
Permittee shall complete refresher review with Construction inspectors annually, reporting the date and the number of attendees in the Annual Report	The permittee shall review inspector practices with individual MSD and contract inspectors to communicate/confirm oversight responsibilities, documentation requirements, and frequency of inspection, inspection standards and protocols. The refresher review (performed on-site) will include EPSC and non-EPSC construction stormwater control metrics, the most current KDOW General Construction Permit and the current USEPA MS4 Program Evaluation Construction Site Checklist.

MSD has a long history of providing training to individual MSD and contract inspectors to communicate/confirm oversight responsibilities, best practices, documentation requirements, inspection frequency, inspection standards, and protocols. MSD currently provides, and will continue to provide the refresher review (performed on-site) includes EPSC, and non-EPSC construction stormwater control metrics, the most current KDOW General Construction Permit and the current EPA MS4 Program Evaluation Construction Site Checklist as outlined specifically in the permit requirement.

In addition to this requirement, MSD performs third party on-site EPSC refresher trainings in a one-on-one audit style format. These audits are beneficial in identifying program effectiveness and areas that the inspectors needed to focus and/or improve. The results of this program have prompted more frequent interactions with the inspectors and their management counterparts.

2.4.10 Construction Inspector Training

Frequency or Measure of Success	Activity Required
Permittee shall provide at least three (3) training opportunities annually reporting the date and the number of attendees in the Annual Report	The permittee shall continue construction inspector training program placing new emphasis on delivering similar messages and understanding between MSD inspectors (regular and contracted) and qualified local contractor inspectors.

MSD has partnered with JCPS for several years to facilitate this training. The training was the first program in the state focused on increasing the knowledge and accountability of contractors. While it can only be measured anecdotally, the training course has been a useful point of reference to improve the quality of inspections performed and provide creditability to the resulting BMP improvements/maintenance identification. Furthermore, it has raised the expectations and expedited the enforcement process by reducing the initial step of educating the private construction inspector on their responsibilities for evaluating the proper construction, operation and maintenance of BMPs.

Training sessions are held based on demand at least three times every year with participants ranging from Certified Plan Reviewer/Preparer, Contractors, Homebuilders and MSD personnel. In addition, personnel from other utility companies are certified. The training is currently focused on EPSC (but does include the same target audiences that are needed to train for post-construction practices. MSD will update this course as necessary for post-construction runoff control practices including green infrastructure).

In 2010 MSD instituted testing requirement(s) for construction contractor inspectors (MSD and permittee). Furthermore, MSD contract inspectors (used for staff supplementation) are required to have NICET certifications.

Information about the training program is available at: http://www.lifelonglearning4u.com/msd/index.htm

2.4.11 Local Utility Construction General Permit Entities

Frequency or Measure of Success	Activity Required
Permittee shall hold meetings with MSD's EPSC general permit holders as needed.	The permittee shall continue to coordinate policy level stakeholders from local utility agencies holding construction general permits from MSD to confirm inter-agency communication protocols and review changes to standard, policies, procedures, BMP operation expectations and related matters.

Over the last several years, there has been an increased and proactive effort for local utility representatives to meet on a recurring basis to coordinate on construction. MSD actively and routinely coordinates with policy level stakeholders from local utility agencies holding construction general permits from MSD to confirm inter-agency communication protocols and review changes to standards, policies, procedures, BMP operation expectations and related matters. Some of the general permit holders include, but are not limited to, the following: City of Louisville, Metro Parks, Jefferson County, LG&E, MSD, and LWC. MSD will continue this coordination going forward.

2.4.12 MSD General Construction Permits Evaluations

Frequency or Measure of Success	Activity Required
Permittee shall evaluate all general permits by the end of Permit Year three (3); and report general construction permits issued by MSD in the annual report	The permittee shall evaluate General Construction Permits issued by MSD to utilities and other entities to determine adequacy with revisions to the KDOW general construction permits, changes in permittee organization/practices, MSD standards, etc.

Not to be confused with general construction permits issued by the KDOW, this activity is focused on evaluating general permits MSD has issued to local utilities. MSD will evaluate General Construction Permits to determine adequacy with revisions to the KDOW general construction permits, changes in permittee organization/practices, MSD standards, etc. The activity is aimed at modifying the permits to define the changes in standards and expectations. This is a formal process and is important in reflecting changes to ordinances, policies and standards resulting from the changes in expectations communicated in KDOW's general permit issuances. MSD will modify its general construction permits to be reflective of KDOW's general construction permits as necessary to administer the related entities construction in Jefferson County.

2.4.13 Enforcement Tracking Log/Database

Frequency or Measure of Success	Activity Required
Permittee shall summarize in the annual report. A summary of the tracked enforcement actions issued shall be included in the annual report.	The permittee shall continue to track enforcement actions issues (SWO/NOVs) to support follow-up inspections and issuance of penalties and/or Notice of Compliance.

MSD tracks enforcement actions, including NOVs and SWOs, to support follow-up inspections and issuance of penalties and/or Notice of Non-Compliance. The data serves several functions including the identification of sites receiving some sort of enforcement notice or action and identifying sites that have resolved enforcement actions and penalties. This helps MSD to prevent its staff from inadvertently enabling a contractor to proceed with site work or project close-out without the necessary compliance inspections. It also is helpful in making sure that financial penalties are resolved in a timely matter.

Over time, MSD will continue to integrate in-the-field technology to support construction inspectors' ability to document and quickly communicate enforcement actions (NOVs, NODs and SWOs) with permittees. MSD equips some of its construction inspectors with laptop tablets so that they can reduce or eliminate the number of steps needed to issue a citation, document an enforcement action and facilitate/require BMP improvements on construction sites. MSD will continue supporting the inspection process with more field equipment as it becomes necessary.

2.4.14 Third Party Oversight Inspection

Frequency or Measure of Success	Activity Required
Document training materials and the number of third party inspections conducted	The permittee shall utilize third party inspections for development of recommendations of efficacy of permittee inspections and enforcement. Updates to training materials shall be administered for permittee personnel at least once per year, if necessary.

MSD currently conducts annual oversight inspections of MSD's inspectors. The oversight inspections are intended to address evaluation of inspector preparedness; knowledge of Erosion Prevention and Sediment Control (EPSC) best management practices (BMPs), Stormwater Pollution Prevention Plan (SWPPP) content, and MSD procedures and ordinances; evaluation of inspector's interaction with the Contractor and ability to enforce the SWPPP; evaluation of the inspector's consistency with Good Housekeeping/Pollution Prevention (GH/P2); evaluation of inspector's follow-up procedures and data entry of their inspections. The findings from the annual third party oversight inspections are utilized to educate and train personnel.

2.4.15 Plan Development Process Identification

Frequency or Measure of Success	Activity Required
Permittee shall make up-to- date guidance documents publicly available. A summary of the revised guidance materials shall be included in the Annual Report	The permittee shall review and update, as needed guidance materials identifying the process that developers must follow to obtain related construction permits, including process flow charts and checklists.

There is a long and established history of MSD providing guidance on the plan review/submittal process. Over the years, several documents have been utilized to communicate with the development community the complex process of construction plan approval involving several Metro Louisville government agencies, utilities and MSD. The means of communication includes, but is not limited to: the Design Manual, PowerPoint presentations, handbooks, memorandums, and web pages. While the current publically available document appears to reflect the current procedures, this task is aimed at periodically determining if it still meets that objective and implementing modifications accordingly. More information is available at: http://www.msdlouky.org/insidemsd/epsc.htm MSD will continue to review and update, as needed, guidance materials identifying the process that developers must follow to obtain related construction permits, including process flow charts and checklists.

2.4.16 Metro Construction Review Enforcement Coordination

Frequency or Measure of Success	Activity Required
Permittee shall hold at least one (1) conference every other year starting in Permit Year one (1)	The permittee shall coordinate program enforcement actions with Metro Inspections, Permits and Licensing (IP&L), as necessary, to support overall site compliance with an emphasis on Notices of Deficiency, Notices of Violation, and Stop Work Orders issued by MSD and implications on land disturbances and "in building" activities.

There is a long and productive history of coordination with Louisville Metro to ensure enforcement of construction requirements. MSD will continue to coordinate construction program enforcement actions with Develop Louisville to emphasize Notices of Deficiency (NODs), Notices of Violation (NOVs) and Stop Work Orders (SWOs) issued by MSD and implications on land disturbance and "in building" activities. MSD's enforcement policies allow MSD to issue a SWO to halt work on land disturbing activities that has failed to comply with EPSC requirements, while Develop Louisville has responsibility for applying enforcement on activities on or inside the structures. MSD and Metro Construction Review regularly communicate, when appropriate, to make each other aware of enforcement activities that halt work. This is done in an effort to, when appropriate, delay approval of other inspection issues until enforcement issues are resolved. This activity is intended to continue and institutionalize those lines of communications and cooperation.

MSD interacts with Develop Louisville staff at Building Industry Association of Greater Louisville (BIA) meetings, the annual MSD Field Day event, and quarterly co-permittee meetings.

2.5 POST-CONSTRUCTION CONTROLS (PC)

The objective of this portion of the SWQMP is to develop, implement and enforce programs to minimize pollutants and stormwater pollution in runoff from developed and re-developed areas. The program is designed to provide long-term stormwater best management practices (BMPs) to efficiently and effectively treat stormwater runoff from areas of new development and significant redevelopment.

Post-Construction Program Activities

The Fourth Permit Cycle requires the following:

- Continue to enforce an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects.

- Continue to enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development. MSD's program must ensure that controls are in place that would prevent or minimize pollutant loads from post-construction discharges to the MS4.

- Implement post construction stormwater pollution control strategies, which include structural and/or non-structural BMPs to the maximum extent practicable.

- Conduct site plan reviews for compliance with stormwater management requirements including the on-site stormwater runoff treatment standard. This standard requires all new development and redevelopment projects to, in combination or alone, implement management measures that are designed, built, and maintained to infiltrate, evapo-transpire, harvest and reuse stormwater runoff produced from an 80th percentile precipitation event.

- Maintain an inventory and map of post-construction stormwater controls, including retention ponds, detention basins, and stormwater quality treatment facilities. This inventory should be updated annually.

- Require new development or redevelopment to establish and enter into a long-term maintenance agreement. This maintenance agreement shall include maintenance-plan approved management practices for property owners. Alternatively, the permittee may establish other enforceable mechanisms for requiring long-term maintenance of structural and non-structural BMPs. Such authorities shall allow the MS4, or its designee, to conduct inspections of the management practices and also account for transfer of responsibility in leases and/or deed transfers. The agreement shall also allow the MS4s, or its designee, to perform necessary maintenance or corrective actions

neglected by the property owner/operator, and authority to recover costs from the property owner/operator when the owner/operator has not performed the necessary maintenance.

This section reflects the individual activities, identified in the MS4 Permit Table 5 for MSD, associated with the SWQMP Post-Construction Site Plan (PC). The PC plan is a strategic approach that is assessed and updated on an ongoing basis. The plan will be principally centered on the evaluation of existing post-construction policies, including the Land Development Code and standard drawings including but not limited to riparian zones, setbacks, tree canopy and cluster development.

Table 2.5, has 21 element tasks that are described in the following section and are congruent with the table activity numbering. The remainder of this section reflects the individual activities associated with the SWQMP Post-Construction Plan.

TABLE 2.5. POST-CONSTRUCTION (PC) STORMWATER RUNOFF CONTROL FOR NEW DEVELOPMENT AND REDEVELOPMENT

SWQMP ID #	Legal Prohibition/Control Authority and PC Plan Prohibition/Control Authority
2.5.1	Assess Legal Prohibition/Control Authority
2.5.2	Implement Legal Prohibition/Control Authority
2.5.3	Site Plan Review
2.5.4	Stormwater Infrastructure Inventory
2.5.5	Post-Construction BMP Inventory Update
2.5.6	Post-Construction Inspector Training
2.5.7	Inspect “Credit” Basins
2.5.8	Inspection Plan Procedures for Treatment BMPs
2.5.9	Post-Construction and Green Infrastructure BMP Guidance Materials
2.5.10	Plan Preparers & Reviewers Training (MSD Facilitates)
2.5.11	Project DRI
2.5.12	User Fee Credits (Green Infrastructure Incentives) Program Planning
2.5.13	Stream Restoration Inspection and Maintenance
2.5.14	Certified/qualified Construction BMP Inspector Program
2.5.15	Stormwater runoff quality treatment standard for all new development and redevelopment projects
2.5.16	Private BMP Maintenance Agreement Assessment/Long Term O & M
Cooperative Efforts (MSD provides supportive or other non-lead role)	
2.5.17	Green Infrastructure Demonstration Site(s)
2.5.18	Rain Barrels Partnerships
2.5.19	No Mow/Riparian Zone
2.5.20	Urban Reforestation – MS4
2.5.21	Regional Basin Retrofit Analysis

2.5.1 Assess Legal Prohibition/Control Authority

Frequency or Measure of Success	Activity Required
Permittee shall make assessments as needed, and report proposed changes in the WDR for consideration by MSD Board.	The permittee shall assess existing Wastewater/Stormwater Discharge Regulations and other relevant ordinances and regulations, to identify changes needed to account for changes in standard of care, changes in technology, changes to development management process and related program needs for new development and redevelopment projects that disturb greater than or equal to one acre and construction activity disturbing less than one acre, including projects less than one acre that are part of a larger common plan of development.

MSD continues to assess and update the existing EPSC Ordinance, Wastewater/Stormwater Discharge Regulations, and other relevant ordinances and regulations to identify necessary changes to address post-construction regulations for new or redevelopment projects including both individual developments and projects that are part of a larger common plan of development.

MSD has the authority to modify some portions of the program, such as the Wastewater/Stormwater Discharge Regulations with MSD Board approval. However, it must have approval of Metro Council to modify or create new ordinances. MSD has modified the WDRs to incorporate post-construction program requirements and will continue to make assessments as needed to propose guidance materials changes. MSD has also modified the related program elements, such as the Design Manual and Standard Drawings, development plan review checklists, and internal procedures that do not require a Louisville Metro ordinance to be revised.

2.5.2 Implement Legal Prohibition / Control Authority

Frequency or Measure of Success	Activity Required
Permittee shall summarize enforcement actions in the annual report. The permittee shall include the number of inspections and enforcement actions	The permittee shall enforce existing ordinances and regulations intended to limit long-term stormwater quality impacts from new construction and significant redevelopment.

MSD regulates post-construction stormwater runoff controls through the Wastewater / Stormwater Discharge Regulations and the Design Manual, MSD performs post-construction inspections to confirm that property owners maintain green infrastructure. MSD will continue to enforce the WDRs and follow through with existing policies and regulations intended to limit long-term stormwater quality impacts from new development and qualifying redevelopment. Inspections and enforcement actions will be adjusted as needed to correspond with Metro Council decisions.

2.5.3 Site Plan Review

Frequency or Measure of Success	Activity Required
Permittee shall continue to conduct site plan reviews	The permittee shall conduct site plan reviews through procedures for reviewing development plans for compliance with stormwater management requirements.

MSD continues to review development plans for compliance with stormwater management requirements with the intent of routinely inspecting stormwater quality treatment BMPs with reasonable potential to discharge pollutants of concern to the MS4. As the number of public and private stormwater quality treatment BMPs increase, it is anticipated that inspection resource demands will increase to verify proper construction, operation and maintenance. This requirement continues to be satisfied as a matter of regular business and the plan review staff responsibilities.

2.5.4 Stormwater Infrastructure Inventory

Frequency or Measure of Success	Activity Required
Permittee shall update the GIS LOJIC System as data becomes available	The permittee shall continue to maintain the GIS-LOJIC layers incorporating system changes from new development plans, MSD projects and related system projects.

Historically, MSD has been a leader in system mapping in Kentucky, and proactively updates this system to reflect conditions accurately. MSD will continue to maintain the GIS LOJIC layers incorporating system changes from new development plans, MSD projects, and related system projects. MSD has extensive sets of spatial and attribute data managed by MSD's GIS Department, LOJIC, and LOJIC partner agencies. As this data was developed through an intense plan conversion and field data collection effort, it has been maintained to include changes, improvements, and modifications. MSD incorporates changes from new developments through the Development Team and on-site MSD/LOJIC staff as new development projects are approved for construction. Similarly, other system improvements and modifications are incorporated into the datasets.

Much of the LOJIC data is publically available through a series of interactive mapping tools administered by LOJIC such as the "Standard Information Map" available at: http://www.lojic.org/standard/viewer.htm. More information about LOJIC is available at: http://www.lojic.org/.

2.5.5 Post-Construction BMP Inventory Update

Frequency or Measure of Success	Activity Required
Permittee shall incorporate related data on an ongoing basis; Permittee shall assess data to identify and fill dataset gaps every other year	The permittee shall develop and maintain an inventory and map of post-construction stormwater controls, including retention ponds, detention basins, and stormwater quality treatment facilities. The permittee shall update LOJIC and Hansen datasets to reflect the location, extent, and condition of post-construction stormwater quality BMPs.

MSD maintains Hansen and LOJIC tools to effectively track post-construction infrastructure, also known as green infrastructure. These systems aid in reporting green infrastructure metrics for construction, operation, maintenance, and enforcement, including the integration of new development, redevelopment, and other system changes. MSD will continue to track green infrastructure in Hansen and the GIS.

2.5.6 Post-Construction Inspector Training

Frequency or Measure of Success	Activity Required
At least two trainings per year for the inspectors of Post-Construction BMPs. Report in the annual report, the dates of training, # of attendees, and subject matter	The permittee shall provide training to the inspectors including internal staff that have been designated to inspect the effectiveness of the post-construction BMPs, as well as, the local residents who are required to provide operation and maintenance of privately-owned Post-Construction BMPs.

MSD has expanded its inspector training program to support the Wastewater/Stormwater Discharge Regulations (WDRs) by requiring annual green infrastructure self-inspections to be completed by a Qualified Post-Construction Inspector (QPCI). The QPCI course is held on demand, at least twice annually and is open to the public. In addition to the publicly available course, MSD requires that its inspectors attend the QPCI training that is held internally, and pass an exam to become certified.

MSD is providing training, in addition to the QPCI course, to internal staff much more frequently than the minimum requirement. This primarily takes place at the weekly plan review and inspection staff meetings. Emphasis is placed on design and inspection of green infrastructure and lessons learned through demonstration projects, private development and redevelopment activities. Training is documented in the MS4 Annual Report.

2.5.7 Inspect "Credit" Basins

Frequency or Measure of Success	Activity Required
Permittee shall continue to perform spot check inspections for at least 50% of qualifying facilities annually and summarize for the annual report	The permittee shall inspect private flood control basins, (retention ponds) receiving a stormwater utility user fee credit (reduction) to determine ability to fulfill original, current, and projected drainage demands. Continue to enforce, per existing basin credits documentation requirements, necessary to fulfill maintenance agreements and long-term system integrity.

MSD promotes and encourages stormwater utility customers to participate in its credits policy, where the user has the option to receive a stormwater drainage fee reduction by incorporating additional basin capacity, retention volume, and educational signage. MSD will continue to inspect these stormwater control systems to monitor their effectiveness and the adequacy of the maintenance schedule. This process includes communication with the property owner to identify maintenance and improvements necessary to fulfill long-term system integrity. MSD will continue to spot inspect at least 50% of qualifying facilities and summarize these inspections in the annual report.

2.5.8 Inspection Procedures for Treatment BMPs

Frequency or Measure of Success	Activity Required
Permittee shall continue to perform spot check inspections for at least 20% of treatment BMPs annually. All BMPs should be inspected by the end of the permit cycle. A summary of this activity shall be included in the annual report	The permittee shall update inspection and oversight protocol for private stormwater quality treatment BMPs to facilitate long-term maintenance demands including requirements for qualified private inspection of private BMPs with local government oversight access inspection and controls, as needed.

MSD developed an inspection and oversight protocol for private stormwater quality treatment BMPs that includes requirements for qualified private inspection of private BMPs. Privately owned BMPs are required to be inspected by a Qualified Post-Construction Inspector (QPCI) and an inspection report is to be submitted to MSD at least annually. MSD also performs oversight inspection of the private stormwater quality treatment BMPs. The procedure for these inspections includes applicable checklist and review items to address issues including private BMP owner maintenance responsibilities, inspector qualifications, frequency, documentation and related expectations. MSD oversight inspections are performed by completing spot check inspections for at least 20% of qualifying treatment BMPs annually with all BMPs inspected by the end of the permit cycle. A summary of these inspections will be documented in the annual reports for this permit cycle. MSD is reviewing a process that would allow private owners to pay a fee to MSD for these inspections. This process is currently in the development stage.

2.5.9 Post-Construction and Green Infrastructure BMP Guidance Materials

Frequency or Measure of Success	Activity Required
Permittee shall update the guidance materials specifically the Design Manual chapters and Standards Specifications sections and make the document publicly available	The permittee shall evaluate and update the guidance materials facilitating current technology use and to reflect local plan review, construction site inspection and post-construction inspection requirements. Design Manual chapters and Standard Specifications sections to address long-term BMP operation, inspection and maintenance including checklists. "Green Infrastructure" is a combination of natural and engineered infrastructure that is designed to reduce the environmental footprint of the system. In terms of stormwater, green infrastructure can effectively manage stormwater runoff through the use of infiltration, biofiltration, detention, and other stormwater management techniques.

Since requirements for post construction water quality were put into place in 2013, MSD has provided guidance on the design, construction, inspection, and maintenance of practices. MSD will continue to evaluate and update guidance materials, including the MSD Design Manual, to reflect local plan review, construction site inspection and post-construction inspection requirements. Section 18 of the Design Manual addresses green infrastructure design, long-term operation, inspection, maintenance, and financial incentives. The Green Management Practice (GMP) manual also provides engineering design fact sheets that emphasize the process for sizing, constructing and maintaining the GMPs. Construction details, design, operation, and maintenance checklists are provided with each fact sheet.

MSD periodically updates Section 18 to address lessons learned. Section 18 includes a diverse range of design strategies intended to support decision making by property owners and architects. For example, there is a design strategy for "green parking" with photographs and illustrations of several types of GMPs working together in a parking lot. The intent is to give the designer a variety of ideas for incorporating green infrastructure in a way that also supports aesthetic expectations for their customers and employees.

In 2016, MSD solicited public and stakeholder comments on Section 18 and held workshops to discuss potential updates. Various sections of the design manual were updated based on these workshops and a summary of updates is available in the crosswalk document. The Design Manual is publicly available at: http://www.msdlouky.org/insidemsd/standard-drawings.htm.

2.5.10 Plan Preparers and Reviewers Training Update (MSD Facilitates)

Frequency or Measure of Success	Activity Required
Permittee shall continue to offer at least two (2) events annually. A summary of workshops topics and attendance shall be submitted in the annual report	The permittee shall provide available content, such as EPA web casts, through periodic training classes, workshops and meetings for designers, planners, and developers including emphasis on green infrastructure, post-construction planning, and design procedures for structural and non-structural BMPs, pollutant removal and inspection. MSD shall incorporate comments from stakeholders in the plan review process from designers to internal MSD review staff to facilitate training sessions to address evolving technologies and lessons learned.

MSD has historically made available, at least twice a year, periodic training classes, workshops and meetings for designers, planners, and developers. This includes emphasis on green infrastructure, post-construction planning, and design procedures for structural and non-structural BMPs, pollutant removal and inspection. MSD will continue to offer this service going forward.

Furthermore, MSD employees attend in-house training classes taught by the MSD Training Department. The training instructs Infrastructure and Flood Protection Division (I&FP) workers on regulatory requirements as well as field installation procedures for BMPs. The training provided is continually updated to address evolving technologies and lessons learned. MSD will provide available content, such as periodic EPA webcasts, to provide emphasis on post-construction stormwater runoff control practices, including green infrastructure, post-construction planning, and design procedures for structural and non-structural BMPs, pollutant removal and inspection. A summary of workshop topics offered and the number in attendance will be reported in the MS4 Annual Report.

2.5.11 Project DRI

Frequency or Measure of Success	Activity Required
Permittee shall provide program progress summarizing cost, number and type of projects in the annual report	The permittee shall continue to implement Drainage Response Initiative (DRI) program aimed at identifying and solving the local drainage problems in Jefferson County.

MSD and the merged Louisville Metro Government responded to the increasing concerns of the public by initiating a partnership called “Project DRI” to tackle Louisville’s most pressing stormwater drainage issues in early 2003. After many years constructing improvements to the major channels and outlet systems for flood events, MSD shifted the focus of its drainage program to the neighborhood level. The goal of Project DRI is a well maintained and functioning drainage system for every neighborhood within the drainage service area.

At the onset of Project DRI, MSD had thousands of outstanding service requests. Most of them had unscheduled work orders for addressing maintenance issues related to the stormwater collection system by MSD crews. Many of these issues dated back to the early 1990s, which means that they were at least 10 years old.

The first phase of Project DRI began in early 2003, to coincide with the start of merged government. This phase committed $67 million to address the most severe problems on record. The effort included 428 capital drainage projects constructed by private contractors, and 2,592 work orders completed by MSD crews during a period of 2½ years. Nearly all the allocated money was used for pipe, concrete and labor since MSD staff and contractors planned and designed this work. The endeavor was a huge success because it resolved drainage problems for thousands of Louisville Metro residents. The initial phase of DRI ended in June 2005.

Phase 2 of DRI started immediately where the first phase had left off. Construction began in the summer of 2005, on the next cycle of 374 capital projects at a value of $35 million, as well as 1,641 maintenance work orders for an additional $20 million. Phase 2 began to address chronic standing water problems in older subdivisions with inadequate or nonexistent storm collection systems.

Phase 3 of Project DRI, which began in January 2008, extended through the summer of 2012. This endeavor involved investing another $25 million in Louisville Metro drainage infrastructure. In addition to efforts that were associated specifically with Project DRI, MSD’s crews performed routine and preventive maintenance for the drainage infrastructure of Louisville Metro. This work entailed the routine cleaning of more than 30,000 catch basins; mowing of over 16 miles of large channels and the levee; removal of obstructions in the system; repair of cave-ins over storm facilities; and scheduled cleaning of concrete and earthen ditches. Spread throughout the

three phases of Project DRI, this work included almost 150,000 work orders valued at approximately $14.5 million.

Phase 4 of Project DRI began in July 2012, and extended through the summer of 2015. Phase 1, 2 and 3 included the completion of almost 170 projects and investing $9 million in Louisville Metro drainage infrastructure. Phase 5 of the DRI began in July 2015. There are approximately 166 projects planned to be completed by July 2018, with a total construction dollar value of approximately $8.4 million. Altogether, Project DRI will result in a more than $130 million reinvestment in Louisville's drainage infrastructure.

MSD is now in a better position than ever to be able to respond promptly to customers' drainage needs because of Project DRI and the large capital investments that have been made since 2003. With innovative planning and prioritization, the gap has been closed between initial call and completion of needed repair or improvements. The effectiveness of Project DRI in resolving longstanding and persistent neighborhood drainage problems have been widely recognized by community officials and residents.

2.5.12 User Fee Credits (Green Infrastructure Incentives) Program Planning

Frequency or Measure of Success	Activity Required
Permittee shall evaluate incentives as needed.	The permittee shall evaluate enhancements to the utility user fee credits program for green infrastructure and post- construction BMPs based on post-construction lessons learned.

MSD assessed the feasibility of implementing a utility user fee credits program for green infrastructure and post-construction BMPs. It was determined that an incentive policy was viable. The policy was developed and adopted by the MSD and became effective August 1, 2011. This program promotes stormwater utility customers to participate through the option to receive a short-term incentive, known as a stipend to offset construction costs. It also provides a long-term (10-year renewable) incentive through drainage service charge reductions for incorporating green stormwater best management practices on their property.

2.5.13 Stream Restoration Inspection and Maintenance

Frequency or Measure of Success	Activity Required
Permittee shall continue to provide in the annual report, summarized stream reaches and maintenance. Permittee shall assess or implement at least one restoration project per year starting in Permit Year two (2)	The permittee shall identify restored stream reaches that MSD has maintenance responsibilities. The permittee shall also determine status of restored reaches and identify, prioritize/schedule and implement maintenance needs. MSD shall prioritize, design, and implement restoration practices on at least one stream segment per year.

MSD has been involved in or lead 32 stream restoration efforts over the past 10 years. An inventory of restored reaches was performed in the last permit cycle to evaluate the overall condition and to identify potential maintenance factors.

The evaluation considered the extent and severity of erosion, bank instability, trash/litter, invasive species and riparian corridor condition. Restored stream reaches were prioritized for maintenance activities based upon these factors. Additionally, MSD performs stream assessments as part of other projects related to sewers. MSD will continue to revise and evaluate the condition of stream reaches consistent with the MS4 permit requirements.

A summary of the stream reaches and maintenance performed will be provided in the MS4 Annual Report for Permit Year two (2).

2.5.14 Certified/Qualified Construction BMP Inspector Program

Frequency or Measure of Success	Activity Required
Permittee shall continue to administer Qualified Post Construction Inspector training and include summary of activities in the annual report	The permittee shall enhance the Qualified Post Construction Inspector training program to identify and hold accountable third party private BMP inspectors to facilitate periodic operation and maintenance of private facilities resulting from the credits program, regulations changes and demonstration projects.

During the previous permit cycle, MSD developed a Qualified Post-Construction Inspector (QPCI) training course to educate third-party inspectors on long-term stormwater BMPs and green infrastructure practice maintenance and operation requirements. The QPCI training program provides the legal authority to private BMP owners to be held accountable for maintenance and operation of their facilities. The procedure for inspections includes applicable checklist and review items to address issues including private BMP owner maintenance responsibilities, inspector qualifications, frequency, documentation and related expectations. The program will be periodically updated based upon lessons learned.

In summer of 2016, MSD entered into a national partnership with the Water Environment Federation and several other large municipal sewer and drainage utilities to develop a GMP construction inspection certification program called the National Green Infrastructure Certification Program (NGICP). MSD expects to hold certification courses using NGICP training and exam materials on an as-needed basis in the coming months to meet construction industry training demand. Updates to this partnership with outcomes will be provided in the MS4 Annual Report.

2.5.15 Stormwater Runoff Quality Treatment Standard for All New Development and Redevelopment Projects

Frequency or Measure of Success	Activity Required
Permittee shall continue to administer a local treatment standard for addressing stormwater runoff quality.	The permittee shall continue to administer an on-site stormwater runoff quality treatment standard, to be adopted by ordinance or other regulatory mechanism for all new development and redevelopment projects at any location within Louisville Metro. The proposed local standard will require, in combination or alone, management measures that are designed, built and maintained to infiltrate, evapo-transpire, harvest and reuse stormwater runoff, or otherwise manage the stormwater runoff quality. The standard shall be based, at a minimum, on an analysis of precipitation records to determine the equivalent surface depth of runoff (e.g. 0.60 inches) produced from an 80th percentile precipitation event.

MSD has developed an on-site stormwater runoff quality treatment standard that requires, in combination or alone, management measures that are designed, built and maintained to infiltrate, evapo-transpire, harvest and reuse stormwater runoff, or otherwise manage the stormwater runoff quality. The standard is based on an analysis of long-term precipitation records at the National Weather Service station at the Louisville International Airport. It was determined and verified that the equivalent surface depth of runoff produced from an 80th percentile precipitation event is 0.60-inches.

MSD has integrated the standard into a Green Management Practice (GMP) selection process that is documented in the Green Infrastructure Design Manual, Section 18.3. It identifies a Water Quality Volume and provides several means to address that volume.

2.5.16 Private BMP Maintenance Agreement Assessment/Long Term O & M

Frequency or Measure of Success	Activity Required
Permittee shall continue to require all new development and redevelopment projects to have this agreement	The permittee shall require all new development or redevelopment to establish and enter into a long-term maintenance agreement and maintenance plan approved management practices for property owners. Alternatively, the permittee may establish other enforceable mechanisms for requiring long-term maintenance of structural and non-structural BMPs. Such authorities shall allow the MS4, or its designee, to conduct inspections of the management practices and also account for transfer of responsibility in leases and/or deed transfers. The agreement shall also allow the MS4s, or its designee, to perform necessary maintenance or corrective actions neglected by the property owner/operator, and authority to recover costs from the property owner/operator when the owner/operator has not performed the necessary maintenance.

MSD developed a long-term maintenance agreement which requires property owners to maintain post-construction green infrastructure on their site. The long-term maintenance agreement allows MSD to conduct inspections, account for transfer of responsibility in leases or deed transfers and perform maintenance or corrective actions that were not addressed by the property owner/operator. The agreement includes responsibilities, inspection, operation and maintenance schedules. These agreements also allow MSD to conduct oversight inspections, account for transfer of responsibility in leases or deed transfers, and perform maintenance or corrective actions that were not addressed by the property owner/operator. MSD continues to require the execution of these agreements, and they are lodged and attached to the relevant properties.

2.5.17 Green Infrastructure Demonstration Site(s)

Frequency or Measure of Success	Activity Required
Permittee shall report its role and activities, lessons learned, and overall project progress and summarize for the annual report	The permittee shall continue, in cooperation with Louisville Metro Mayor's administration, University of Louisville and other local agencies, to pursue development of stormwater quality and green infrastructure interpretative center(s) at strategic location(s) around Jefferson County with the intent of providing a positive highly visible platform to promote the viability and desirability of green infrastructure BMPs. Where feasible explore the opportunity for BMP evaluation and pre-/post-monitoring.

MSD has constructed several green infrastructure demonstration projects to be viewed by the public to encourage people who see them to adopt the practices. Projects include: rain gardens, green roofs, pervious pavement, bio-swales and infiltration beds. MSD will continue to collaborate with local entities where feasible to implement these projects and maximize public exposure. MSD will summarize its role, activities, lessons learned, and green projects in the MS4 Annual Report.

MSD will continue, in cooperation with Louisville Metro Mayor's administration, University of Louisville and other local agencies, to pursue development of stormwater quality and green infrastructure interpretative center(s) at strategic location(s) around Jefferson County with the intent of providing a positive, highly visible platform to promote the viability and desirability of green infrastructure BMPs. MSD will continue to monitor BMPs and projects, where feasible or advantageous to assess performance.

2.5.18 Rain Barrels Partnerships

Frequency or Measure of Success	Activity Required
Permittee shall report its role, lessons learned and overall programs progress and summarize for the annual report	The permittee shall explore the opportunity for MSD to continue program with Louisville Nature Center that provided public guidance to construct and maintain rain barrels.

There is a productive history between MSD and the Louisville Nature Center to provide environmental education and support rain barrel outreach for residential stormwater management. MSD will continue to partner, when possible, with the Louisville Nature Center in an educational capacity to provide interested parties and stakeholders with information and guidance on how to install and maintain a rain barrel. MSD will summarize its role, activities, lessons learned, and overall project progress in the annual report.

2.5.19 No Mow/Riparian Zone

Frequency or Measure of Success	Activity Required
Permittee shall report its role and activities, lessons learned, and overall project progress and summarize for the annual report	The permittee shall assess existing mowing areas as part of maintenance activities to determine if the original need or impetus still exists. Opportunities to adjust the mowing contracts to include or exclude mowing areas will be incorporated into those contracts as they are rebid or renewed. Areas that are removed from the mowing list will be considered for "no mow" signage and education.

During the previous permit cycle, MSD performed a desktop exercise to determine which existing mowing areas could potentially become designated “no mow” areas. MSD identified existing mowing areas that could be removed from the mowing program and installed signage to identify these areas as “no mow” zones. MSD will continue to assess its mowing program for changes in an effort to improve riparian zones in Jefferson County.

2.5.20 Urban Reforestation – MS4

Frequency or Measure of Success	Activity Required
Permittee shall report its role and activities, lessons learned, and overall project progress and summarize for the annual report	The permittee shall create a grant funding mechanism to provide incentives for the planting of trees in the MS4 area and improve tree canopy for the benefit of stream health and water quality. The co-permittee will budget to provide grant funding of private or public grantees to plant 1000 trees per year in the MS4. Funds will be administered in accordance with water quality goals, and on a first-come first-serve basis.

Historically, MSD has played a significant role in urban heat island and urban tree canopy studies in Louisville, with regards to the impacts on stormwater. MSD will continue to collaborate with Louisville Metro Government, communities, businesses, industries, non-profit groups, and neighborhood associations to enhance the city's water quality through reforestation efforts.

MSD will budget to plant 1,000 trees per year in the MS4 area through partnerships with a variety of public and private entities.

2.5.21 Regional Basin Retrofit Analysis

Frequency or Measure of Success	Activity Required
Permittee shall by the end of Permit Year four (4) produce a technical memo outlining findings and recommendations	The permittee shall assess the regional flood control basins to determine if there is potential for enhancement to the basin or the outlet structure to provide additional capture for smaller water quality events. A technical memo and recommendation outline shall be provided prior to the end of Permit Year four (4).

In recent years, MSD performed a prioritization analysis to determine water quality retrofit potential for existing regional flood control basins. This analysis considered several factors to determine retrofit feasibility and potential water quality benefits, including drainage area size, downstream benefit, and constructability. Using the prioritized list, MSD has been moving forward with preliminary design for select basin sites and performing stakeholder outreach.

By the end of Permit Year 4, MSD will produce a technical memo outlining progress, findings, and recommendations for this initiative.

2.6 GOOD HOUSEKEEPING / POLLUTION PREVENTION (GH/P2)

The objective of this portion of the SWQMP is to develop, implement, and track programs to minimize pollutants and stormwater pollution in runoff from operations and maintenance activities that have the potential to discharge pollutants into the MS4, waters of the Commonwealth of Kentucky, and other waters of the U. S. The program is designed to provide consistent direction, guidance, and reinforcement to MSD employees as they meet the organization's commitment to the vision of clean, safe waterways for a healthy, vibrant community.

Good Housekeeping Program Activities

This SWQMP section addresses activities that will be performed during the Fourth Permit Cycle for MSD's continued efforts to limit stormwater pollution from its own activities and facilities.

The Fourth Permit Cycle requires the following:

- Develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. The permittee is encouraged to use training materials that are available from EPA, the state or other organizations. The permittee shall include training to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance.
- Maintain public streets, roads and highways, including pollutants discharged as a result of deicing application and storage practices must implement alternative measures that might benefit stormwater quality from runoff from roadway and salt bin storage locations and will not affect public safety.

Table 2.6 lists 10 element tasks that are described in the following section and are congruent with the table activity numbering.

TABLE 2.6. GOOD HOUSEKEEPING/POLLUTION PREVENTION (GH/P2) PROGRAMS FOR MUNICIPAL FACILITIES)

SWQMP ID #	GH/P2 Plan Maintenance and Update
2.6.1	Stormwater Pollution Prevention Plans for MSD Operations
2.6.2	Training on MSD Facility SWPPPs
2.6.3	Maintenance Staff Training on Pollution Prevention
2.6.4	Pesticides Management
2.6.5	Incident Response Staff Training
2.6.6	MSD Capital Project Control
2.6.7	MSD Stormwater Quality BMP Data
2.6.8	Catch Basin and Storm Sewer Cleaning
2.6.9	Channel Maintenance
Cooperative Efforts (MSD provides supportive or other non-lead role)	
2.6.10	Stormwater Pollution Prevention Plans for Co-Permittee Operations

2.6.1 Stormwater Pollution Prevention Plans for MSD Operations

Frequency or Measure of Success	Activity Required
Permittee shall assess plans within six (6) months of major facility changes or at least once every two years by the facility superintendents and operation managers who make up the SWP3 Committee	The permittee shall periodically update and implement SWPPPs (also known as BMP Plans or Stormwater Plans) to control the discharge of pollutants from POTWs and other applicable MSD-owned facilities as defined in 40 CFR 122.26 including wastewater treatment plants and major operating facilities. SWPPPs will include provisions for maintenance activities on facility grounds, materials and equipment storage, security, preventative maintenance, risk identification and assessment, materials inventory, floor drain protection/controls, inspections and records.

MSD's WQTCs are issued discharge permits for wastewater that have also included requirements for stormwater best management practice plans since the 1980s. The permits also require WQTC's to have groundwater protection plans, hazardous materials spill plans, and disaster response plans.

MSD also maintains internal standards manuals and inspection programs for employee health and safety and emergency preparedness and response.

The existing facility plans, policies, and manuals are incorporated into a separate document that facilitate that the MS4 requirements for a SWPPP are met. MSD will periodically update and implement the SWPPPs to control the discharge of pollutants from the WQTCs and other applicable MSD-owned major operating facilities.

The updated SWPPPs include provisions for maintenance activities on facility grounds, materials and equipment storage, security, preventative maintenance, risk identification and assessment, materials inventory, floor drain protection/controls, inspections and records. Re-assessment of the SWPPP will occur within six months of major facility changes or at least once every two years by the facility supervisors, operators and managers who make up the SWPPP Committee.

2.6.2 Training on MSD Facility SWPPPs

Frequency or Measure of Success	Activity Required
Permittee shall starting in Permit Year one (1) utilize third party inspectors to address at least three (3) SWPPP issues annually and summarize training and attendance for the Annual Report	The permittee shall utilize third party inspectors working with the facility SWPPP Committees to perform routine training of key SWPPP issues

There has been success over the past few years to enhance the communication internally through interactive training on SWPPPs at MSD facilities. MSD will utilize the facility SWPPP Committee members to continue to perform routine training of key SWPPP issues. MSD will to continue to address at least three SWPPP issues annually and summarize training and attendance for the Annual Report.

2.6.3 Maintenance Staff Training on Pollution Prevention

Frequency or Measure of Success	Activity Required
Permittee shall report the number of staff attending related training and include in the Annual Report	The permittee shall provide training to key maintenance staff on good housekeeping activities related to stormwater quality in MSD operations including but not limited to: green infrastructure operation and maintenance, fleet and building maintenance, and stormwater conveyance/drainage system maintenance.

Over the last several years, MSD has proactively engaged employees internally to proactively perform preventative measures to minimize the risk of stormwater pollution at MSD facilities through interdepartmental communications. MSD provides training to key maintenance staff on good housekeeping activities related to stormwater quality in MSD operations including but not limited to: green infrastructure operation and maintenance, fleet and building maintenance, and stormwater conveyance/drainage system maintenance. MSD documents the number of staff attending related training and reports attendance in the MS4 Annual Report.

2.6.4 Pesticides Management

Frequency or Measure of Success	Activity Required
Permittee shall track employees with related state certifications.	The permittee shall utilize Commonwealth of Kentucky pesticide management registration and certifications to qualify MSD employees applying pesticides. The permittee shall develop and maintain a list of pesticides used and stored, including storage locations.

While MSD does not manage pesticide treatment or application, it does use herbicides, which are managed through the Commonwealth of Kentucky herbicide management registration and certifications to qualify MSD employees applying herbicides. MSD maintains a database of chemicals used and stored, including storage locations. The MSD Training Department maintains records of employees with state certifications and ensures that re-certifications are obtained. MSD includes the number of employees who receive this training in the MS4 Annual Report.

MSD discourages the use of herbicides on residential lawns through the environmental education programs.

2.6.5 Incident Response Staff Training

Frequency or Measure of Success	Activity Required
Permittee shall continue to report incident response staff training participation	The permittee shall provide training to unified incident response staff on related stormwater issues including good housekeeping, IDDE, construction, post-construction BMP/controls and program management.

MSD provides training to unified incident response staff on related stormwater issues including good housekeeping, IDDE, construction, post-construction, BMP/controls and program management. MSD will report incident response staff training participation in the Annual Report.

The training is intended to provide information to the incident response staff to support their recognition of the controls while responding to incidents. The raised awareness supports identification of longer term implications and needs resulting from the incidents.

2.6.6 MSD Capital Project Control

Frequency or Measure of Success	Activity Required
Permittee shall summarize changes to MSD Capital Project requirements, as necessary	The permittee shall, for MSD directed capital, rehabilitation and reconstruction projects, disturbing more than one acre, performed by a contractor, ensure the contract documents/agreements/work orders will include stipulations that require the work be designed/performed/implemented/constructed under the same standards for construction and post-construction stormwater quality that MSD requires of private development it regulates.

All wastewater and stormwater facilities within Jefferson County, whether they be public or private, shall be designed, constructed, improved and/or altered to conform to all MSD design and construction regulations, standards and specifications. This policy also applies to all wastewater and stormwater facilities, whether they be public or private, designed, constructed, improved and/or altered in areas outside Jefferson County that are maintained and/or operated by MSD, pursuant to an inter-local agreement authorized under KRS 6:5.200. This policy applies to all MSD employees, contractors, consultants, and individuals or entities designing and/or constructing these wastewater and stormwater facilities. The applicable MSD design and construction regulations, standards and specifications shall include but not be limited to the following: MSD Wastewater/Stormwater Discharge Regulations; MSD Design Manual, Standard Specifications and Drawings; Louisville/Jefferson County Erosion Prevention and Sediment Control Ordinance (LMCO Chapter 159), Louisville Metro Floodplain Management Ordinance (LMCO Chapter 157), and Hazardous Materials Ordinance (LMCO Chapter 95), or as may from time to time be amended. While the state requirement is for land disturbance of more than one acre, the MSD requirement applies to any project that disturbs 2,000 square feet of land. MSD will summarize changes to MSD Capital Project requirements in the MS4 Annual Report.

Post-construction BMPs are required for all projects disturbing one acre of land or greater, including MSD capital projects. Requirements are enforced through the Wastewater/Stormwater Discharge Requirements (WDRs), effective August 1, 2013. MSD reviews projects to meet the requirements set forth in the Design Manual, WDRs, EPSC, and Floodplain Management Ordinances. The reviews and permits are tracked in the Project Activity Tracking system and the Hansen Information Management System.

2.6.7 MSD Stormwater Quality BMP Data

Frequency or Measure of Success	Activity Required
Permittee shall every other year assess datasets for completeness and ability to support staff scheduling stormwater-quality BMPs MSD is responsible for maintaining	The permittee shall update LOJIC and Hansen datasets to identify stormwater-quality BMPs located on MSD properties, rights-of-way and easements that MSD is responsible for operating and/or maintaining. The datasets will be updated in a manner to support ongoing prioritization and tracking of operation and maintenance.

MSD continuously updates the LOJIC and Hansen datasets to identify stormwater-quality BMPs located on MSD properties, rights-of-way and easements that MSD is responsible for operating and/or maintaining. The datasets are updated in a manner to support ongoing prioritization and tracking of operation and maintenance.

For this permit term, MSD will assess the datasets for completeness and their ability to support staff scheduling for maintenance of the stormwater-quality BMPs that MSD is responsible for maintaining.

2.6.8 Catch Basin and Storm Sewer Cleaning

Frequency or Measure of Success	Activity Required
Permittee shall summarize and include in the Annual Report	The permittee shall continue to clean catch basins and sewers (closed pipe systems) to prevent debris from entering receiving streams and address drainage/flooding issues in MSD area based on known priorities and information gathered from the customer hotline.

Historically, MSD has proactively performed routing maintenance on sewers and catch basins, as well as reactively to customer complaints. MSD will continue to clean catch basins and sewers (closed pipe systems) to prevent debris from entering receiving streams and to address drainage/flooding issues in the MSD service area based on known priorities and information gathered from the customer hotline, web-based contact forms, and hot spot inspections. These efforts are summarized and included in the MS4 Annual Report.

2.6.9 Channel Maintenance

Frequency or Measure of Success	Activity Required
Permittee shall summarize and include in the Annual Report	The permittee shall continue to maintain open channel system in MSD area based on priorities and information from the customer hotline including ditch cleanings, ditch regrading, drainage obstruction removals, erosion repairs, floodwall levee maintenance, headwall install/repair, concrete channel installation, tree removal, driveway apron restoration, routine mowing and closed pipe installations.

Historically, MSD has maintained the open channel network based on data received from customers, field personnel, or known hotspots. MSD will continue to maintain the open channel drainage system in its service area based on priorities and information from the customer hotline, web-based contact forms, and hot spot inspections. Channel maintenance includes ditch cleanings, ditch regrading, drainage obstruction removals, erosion repairs, floodwall levee maintenance, headwall installations and repairs, concrete channel installation, tree removal, driveway apron restoration, routine mowing, and closed pipe installations. MSD summarizes and includes these activities in the Annual Report.

2.6.10 Stormwater Pollution Prevention Plans for Co-Permittee Operations

Frequency or Measure of Success	Activity Required
Permittee shall assist in the review of at least one (1) facility annually	The permittee shall provide co-permittees with periodic 3rd-party technical assistance and/or review of the facility stormwater pollution prevention plans (SWPPPs, BMP plans, or Stormwater Plans and BMPs) and/or site visit/walkthrough to help identify opportunities to improve the effectiveness of the plans and their implementation.

MSD provides 3rd-party technical assistance and/or review of the co-permittee's (City of Anchorage, City of Jeffersontown, City of Shively, and City of St. Matthews) facility stormwater pollution prevention plans (SWPPPs, BMP plans, or Stormwater Plans and BMPs). Based on requests, site visits or walkthroughs to help identify opportunities to improve the effectiveness of the plans and their implementation will be performed. The permit requires at a minimum that MSD shall assist in the review of at least one facility annually. MSD will report on these activities in the MS4 Annual Report.

2.7 MONITORING

The objective of this portion of the SWQMP is to enhance and continue implementation and track monitoring and sampling of the MS4, Waters of the Commonwealth of Kentucky, and Waters of the U. S. The program is designed to provide accurate, reliable data that can be used to distill information to determine the efficacy of the MS4 SWQMP and other environmental improvement programs in a clean, green and growing community.

In addition, Section 2.4 of the permit addresses Total Maximum Daily Loads (TMDLs) and Impaired Waters with associated monitoring efforts. The permit requires that MSD use an adaptive management approach to progress toward achieving assigned wasteload allocations identified in streams with established TMDLs by reducing discharges for listed pollutants to the maximum extent practicable. MSD is required to implement water quality control measures that are specifically selected to achieve the wasteload allocations for the TMDL's pollutant of concern. The permit also requires that within 12 months of the permit effective date that MSD document that the monitoring program is tracking water quality trends for pollutant(s) of concern for TMDL streams at LTMN locations. MSD will submit this TMDL and Impaired Waters assessment by February 1, 2018.

The permit requires that for waters that lack an approved TMDL, MSD evaluate best management practices and assess their effectiveness in minimizing pollution to impaired water bodies. Section 2.4.2 of the permit also requires that water quality monitoring be conducted at MSD's long term monitoring network sites for MS4 sources for at least three storm events over the course of the permit term. Where TMDLs are developed and approved during the permit term, the permit outlines the process to update the SWQMP to address pollutants of concern.

Monitoring Program Activities

The Fourth Permit Cycle requires the following:

- Continue implementation, and track monitoring and sampling of the MS4 and Waters of the Commonwealth of Kentucky.
- Provide the most accurate, reliable data practicable that can be used to determine efficacy of the MS4 SWQMP and other environmental improvement programs.
- Continue to provide trend analysis data to support long-term assessments of local waterways and program performance.

MSD performs monitoring on behalf of all the co-permittees. This section reflects the individual activities associated with the SWQMP Monitoring Program Plan.

Table 2.7, has 10 element tasks that are described in the following section and are congruent with the table activity numbering.

TABLE 2.7 MONITORING (M)	
SWQMP ID #	**M Monitoring Plan Maintenance and Update**
2.7.1	Long-Term Monitoring Network (LTMN)
2.7.2	Monitoring Summary
2.7.3	Trend Analysis
2.7.4	Flow Estimate to Support Quarterly Ambient Monitoring
2.7.5	Monitoring Location Maintenance
2.7.6	Precipitation Estimate
2.7.7	Water Quality Standards
2.7.8	Location Mapping
2.7.9	Sampling Methodology and Test Procedures
2.7.10	Annual Data Summary

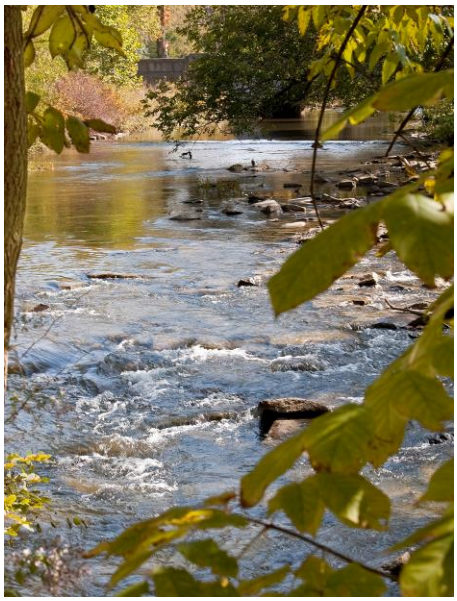
2.7.1 Long Term Monitoring Network (LTMN)

Frequency or Measure of Success	Activity Required
Permittee shall provide datasets electronically with annual report	The permittee shall continue the existing program of the collection of long-term data on stream quality and habitat for at least 28 LTMN locations selected to support the various types of data collected. This program includes: **Continuous** – pH, conductivity, temperature, dissolved oxygen, and stream flow. **Quarterly** – Ambient monitoring for Total Suspended Solids (TSS); E. coli; Total Nitrogen (as N) Oil and Grease, Total Recoverable Copper and pH. **5/month (May-October)** - Recreational monitoring for E. coli. **Once Every Two Years** – Biological sampling and/or evaluation rotating to include: algae, fish and benthic macro invertebrates. .

MSD will continue the existing program of long-term data collection of stream quality and habitat at 28 LTMN locations. Locations are listed in Appendix A of the MS4 permit. The LTMN sampling for this permit includes the replacement of fecal coliform with E. coli sampling in the existing recreational contact monitoring. The LTMN program includes the following data collection:

Continuous In-Stream Water Quality and Flow Monitoring

Sonde monitors will be maintained and the data collected by telemetry for pH, conductivity, temperature, dissolved oxygen, percent dissolved oxygen and stream flow. On-line access to this data is maintained by USGS and is not prescribed by this permit.



Quarterly Water Quality Grab Samples

Samples will be collected and analyzed for the following parameters once per quarter at each of the LTMN locations. Sample collection will occur regardless of precipitation except in the case of physical danger to the sample technician.

- Total Suspended Solids (mg/l)
- E. coli (#/100 ml)
- Oil & Grease (mg/l)
- Copper, Total Recoverable (mg/l)
- Total Nitrogen (as N)
- pH (Standard Units)

Seasonal 5/Month Recreational Contact Monitoring

Five grab samples per month during the recreational contact season (May-Oct) will be collected at each of the LTMN locations for E. coli.

Biennial (Once Every 2 Years) Biological Monitoring

Biologic and habitat sampling and/or evaluation rotating to include: algae, fish and benthic macro invertebrates will be performed every other year at each of the LTMN locations.

2.7.2 Monitoring Summary

Frequency or Measure of Success	Activity Required
Permittee shall summarize and include in annual report	The permittee shall provide a summary of monitoring collection efforts and results in the annual report.

MSD will continue to provide a brief narrative summary of the monitoring and sample collection efforts, the results found, and will include the summary in the annual report. This will be supplemented with an electronic transmittal (compact disc or other media) of the complete data record.

For LTMN sites located in waters that are designated as impaired on the 303(d) list that the MS4 discharges into, monitoring will be performed for those pollutants attributed to MS4 sources for at least three storm events over the course of the permit term.

2.7.3 Trend Analysis

Frequency or Measure of Success	Activity Required
Permittee shall, at least once per permit cycle, provide synthesis report	The permittee shall perform trend analysis to support long-term assessments of local waterways and program performance. Report analysis through the "Synthesis Reports" at least once every permit cycle.

Since the 1990s, MSD has collected and analyzed data from the monitoring network to make programmatic decisions and to assess trends. MSD will continue to perform trend analysis to support long-term assessments of local waterways and program performance. MSD will report analysis through the "Synthesis Reports" at least once every permit cycle. This report compares water quality measurements for habitat, biological monitoring, laboratory samples, stream flow measurements, and sondes to applicable water quality standards. The report is grouped by watershed, and graphical representations allow readers to see the status of monitoring series and their trends at all locations in a watershed.

2.7.4 Flow Estimates to Support Quarterly Ambient Monitoring

Frequency or Measure of Success	Activity Required
Permittee shall provide available data and include in annual reports	The permittee shall utilize total precipitation estimates over the previous twenty-four (24) hour period to estimate flow. When flow is measured with in stream gauging equipment, that data will be utilized rather than precipitation based estimates.

MSD has an established rain gauge network that allows for the tracking of rainfall for analysis. MSD will continue to utilize total precipitation estimates over the previous twenty-four hour period to estimate wet weather flow at sample locations that do not have a flow meter or gauge. Where stream flow is measured with in-stream gauging equipment, data will be used instead of precipitation-based estimates. All data will be summarized and included in the MS4 Annual Report.

2.7.5 Monitoring Location Maintenance

Frequency or Measure of Success	Activity Required
Permittee shall summarize activities and include in annual reports	The permittee shall continue its collaboration with United States Geological Survey (USGS) on flow gauges and monitoring locations maintenance and data management.

MSD will continue to collaborate with USGS on the operation of 25 flow gages throughout the service area. USGS maintains the flow gages, manages flow data and provides access to the data through the National Water Information System website http://waterdata.usgs.gov/ky/nwis .

2.7.6 Precipitation Estimate

Frequency or Measure of Success	Activity Required
Permittee shall continue to make rain gauge network data available on-line	The permittee shall continue to maintain the continuous rain gauge network and on-line public access to that data.

Over the past decades, MSD has built, implemented, and maintained a robust rainfall monitoring network. MSD currently operates and maintains 40 rain gauges in and around Jefferson County. The data from these gauges can be accessed at http://raingauge.louisvillemsd.org .

2.7.7 Water Quality Standards

Frequency or Measure of Success	Activity Required
Permittee shall apply the most stringent standard	The permittee shall compare stream monitoring analytical results to the applicable water quality standards for each parameter of the monitoring program. The most stringent applicable standard shall be used for comparison. Constituents that exceed applicable Water Quality Standards shall be highlighted. The permittee shall include a discussion of possible pollutant sources through the annual report.

One of the benefits of MSD's long term monitoring network, is that there have been years of water quality data collected to help support efforts to meet water quality standards. MSD will continue to compare analytical results of the stream monitoring to the most stringent applicable water quality standards for each parameter of the monitoring program. Constituents that exceed applicable Water Quality Standards shall be highlighted. When data indicate that illicit discharges may be present that are causing or contributing to exceedances of applicable water quality standards, follow-up investigation will be performed per IDDE procedures. Discussion of possible pollutant sources will be included through annual compliance reports.

2.7.8 Location Mapping

Frequency or Measure of Success	Activity Required
Permittee shall maintain the monitoring stations reflected in mapping system	The permittee shall maintain the geo-coded monitoring station locations and descriptions through related geographic datasets and databases.

MSD has maintained a robust database of monitoring location details for several years. Geographic monitoring station locations and descriptions will continue to be maintained through related geographic datasets and databases (LOJIC and Hansen). Locations are also listed in Appendix A of the MS4 permit.

2.7.9 Sampling Methodology and Test Procedures

Frequency or Measure of Success	Activity Required
Permittee shall perform the sampling methodology to insure compliance with 40 CFR 122.26 and 136, and provide a summary of as-needed updates to the QAPP in the annual report	The permittee shall perform the sampling methodology according to the EPA stormwater application regulation at 40 CFR 122.26. The permittee shall perform the analyses according to the procedures approved under 40 CFR Part 136, unless other test procedures have been specified. The permittee shall assess the monitoring Quality Assurance Project Plan (QAPP), and update as needed.

MSD has submitted a Quality Assurance and Project Plan (QAPP) that established the guiding principles for the environmental data collection effort. The QAPP reflects the framework for sampling methodology in accordance with the EPA storm water application regulations at 40 CFR 122.26. Analyses will be conducted according to procedures approved under 40 CFR Part 136, unless other test procedures have been specified.

2.7.10 Annual Data Summary

Frequency or Measure of Success	Activity Required
Permittee shall provide a summary electronically with the annual report	The permittee shall submit a stormwater monitoring report annually. The monitoring reports shall include: status of implementation of the monitoring program, methods of evaluating data, graphical summaries of the data, and an explanation/discussion of the data for each component of the monitoring program. The monitoring data/results obtained each year will be submitted electronically with the Annual Report. A narrative data analysis shall be submitted annually within the Annual Report.

Historically, MSD has provided annual reporting on MS4 related sampling data. MSD will continue to submit a stormwater monitoring report annually. Datasets for laboratory analyses will be reported electronically with the Annual Report. The monitoring report shall include: Status of implementation of the monitoring program, data, results, methods of evaluating the data, graphical summaries of the data, and an explanation/discussion of the data for each component of the monitoring program. Monitoring results obtained each year will be submitted electronically with the Annual Report. A narrative data analysis and percent of exceedances report shall be submitted in each MS4 Annual Report. MSD will also submit the most recent Synthesis Report as part of the Annual Data Summary.

2.8 PROGRAM ASSESSMENT AND REPORTING (PAR)

The objective of this portion of the SWQMP is to develop a system of assessing the performance of MSD's MS4 program in terms of activities performed and outcomes generated, in both the short-term and long-term, in support of transparent communication with the regulating community and public as a requirement of the Fourth Permit Cycle.

PAR Program Activities

This section reflects the individual activities associated with the SWQMP Program Assessment and Reporting (PAR) Plan.

Table 2.8 lists seven element tasks that are described in the following section and are congruent with the table activity numbering.

TABLE 2.8 PROGRAM ASSESSMENT AND REPORTING (PAR)

SWQMP ID #	PAR
2.8.1	Activity Measures Reporting
2.8.2	PEOPLE
2.8.3	Illicit Discharge Trend Analysis
2.8.4	Industrial/IDDE Compliance Actions Portal
2.8.5	Post-Construction Inspection Database
2.8.6	Six-Level Program Assessment Methodology
2.8.7	Cooperative Annual Report

2.8.1 Activity Measures Reporting

Frequency or Measure of Success	Activity Required
Permittee shall develop and retain Annual Reports for three years beyond permit term.	As described in the specific activity listings, the permittee shall compile information necessary to provide in the annual report. The metrics defined by "Measure of Success" shall be reported and kept for program assessment purposes. The permittee shall track the appropriate metrics through existing databases/spreadsheets to support staff assignments and budget development.

Historically, MSD has compiled and produced an annual report to address programmatic achievements and activities performed throughout the fiscal year. MSD will continue to compile the information necessary to provide in the MS4 Annual Report. The metrics defined by the "Frequency or Measures of Success" will be reported and kept for program assessment purposes. MSD will utilize other metrics tracked through existing databases/spreadsheets to support staff assignments and budget development.

As applicable, some data may be provided electronically or made available through web applications and not submitted in hard-copy format. In particular, this will be the case for large datasets such as monitoring data and requested GIS data.

MSD's MS4 Annual Reports will be retained in electronic form for at least three years beyond permit term.

2.8.2 PEOPLE

Frequency or Measure of Success	Activity Required
Permittee shall, by the end of Permit Year one (1), summarize tracking procedures and results and include with Annual Report.	The permittee shall continue activity tracking to support consistent coordination and integrated reporting in a way that enables the variety of MSD staff to report their individual activities, target audiences, and related metric.

MSD has a historically robust and extensive public outreach and education program related to stormwater. MSD will continue to implement an activity tracking procedure by the end of permit year one. This will support consistent coordination and integrated reporting by the wide variety of MSD staff. It is anticipated that the procedure will include the following reporting: individual activities, target audiences, and related metrics.

MSD created an MS4-Calendar resource in their email/scheduling system. The resource can be copied on scheduled events and viewed as a calendar to easily locate outreach events and other trainings or meetings for compliance tracking. This system allows MSD staff from multiple departments to easily copy the shared calendar and send a follow-up response to the event to track materials and attendees.

2.8.3 Illicit Discharge Trend Analysis

Frequency or Measure of Success	Activity Required
Permittee shall provide, during Permit Year Five (5) a report of trends and potential implications of IDDE investigations.	The permittee shall perform a trend analysis of illicit discharge investigations and enforcement actions over the term of the permit.

MSD will perform a trend analysis of illicit discharge investigation and enforcement actions over the term of the permit, by the end of Permit Year five (5). This will support goal-setting and provide a basis to refocus the illicit discharge identification and elimination activities in the Fourth Permit Cycle. It is anticipated that this data will also provide insight into the PEOPLE plan needs for the fifth permit term.

2.8.4 Industrial/IDDE Compliance Actions Portal

Frequency or Measure of Success	Activity Required
Permittee shall maintain and report progress summarized in the Annual Report.	The permittee shall maintain a Compliance Actions Web Portal supplementing existing databases for functionality for internal use to expedite follow-up inspections of HRIFs.

MSD has well established tools to track Industrial/IDDE compliance. MSD will continue to maintain tools to track Industrial and IDDE compliance. This will include updating the Threat Matrix spreadsheet in conjunction with Hansen to collect and maintain data reported by the Industrial Waste Department. MSD will maintain an Industrial Inspection Compliance Actions Portal.

2.8.5 Post Construction Inspection Database

Frequency or Measure of Success	Activity Required
Permittee, shall maintain and report progress summarized in the Annual Report.	The permittee shall maintain a Compliance Actions Database for internal use to expedite follow-up inspections of private post-construction BMPs.

In 2013, MSD updated its Hansen to track long-term inspections for green infrastructure projects. This process begins at the plan review stage where a green infrastructure application is added for sites with proposed green infrastructure practices. After the project is reviewed and constructed, a green infrastructure license is issued in Hansen to track the long-term operation of the project by triggering alerts to solicit annual self-inspection documentation from the property owner and follow-up inspections by MSD every five years. Letters requesting self-inspection reports from property owners and notifying them of MSD inspections are currently sent manually and entered into Hansen. For MSD inspections resulting in enforcement, the MSD Finance Department is notified to remove the property owner's stormwater credit or bill the partner for a prorated amount to the construction stipend provided.

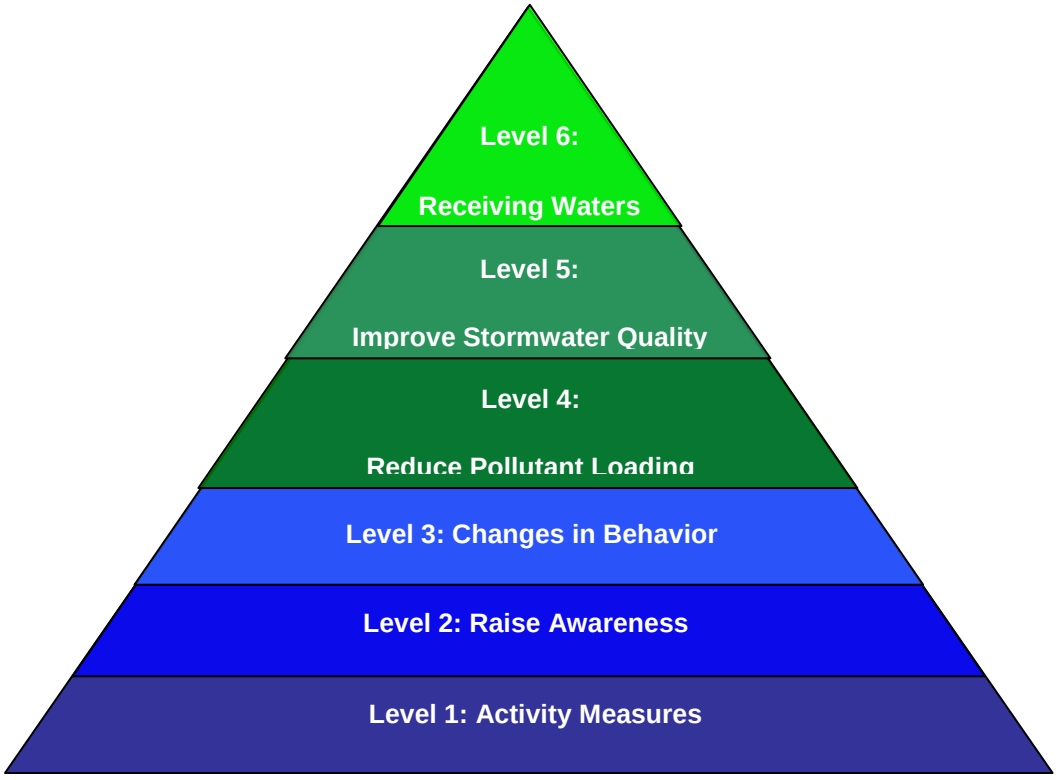
MSD will continue to maintain a Compliance Actions Database for internal use to expedite follow-up inspections of private post-construction BMPs. This tool is particularly important as the number of private and public stormwater quality treatment BMPs increases and amplifies MSD's inspection and/or oversight inspection responsibilities. MSD currently tracks post-construction (green infrastructure) sites and inspections in Hansen Asset Data Management System.

MSD plans to continue to update Hansen to include automated features and design a mobile user interface for data collection during inspections. Hansen will continue be used to track green infrastructure inspections and enforcement. While MSD already has a robust set of database tools to support its construction inspection program, it anticipates that a desktop portal linked to that data will reduce the time and expense involved in identifying and communicating those day-to-day programmatic needs and daily work scheduling tasks.

2.8.6 Six Level Program Assessment Methodology

Frequency or Measure of Success	Activity Required
Permittee shall continue to assess performance with the six-level program and report on progress in Annual Reports	The permittee shall continue to evaluate and report portions of the six-level program EPA began advocating in 2008 to assist MS4 programs in identifying success and future areas of focus.

MSD developed and continues to implement applicable portions of the six level program the EPA began advocating in 2008 to assist MS4 programs identify success and future areas of focus.



2.8.7 Cooperative Annual Report

Frequency or Measure of Success	Activity Required
Permittee shall prepare and submit Annual Report in a timely manner	The permittee shall coordinate and cooperate with co-permittees in compilation of the annual compliance demonstration reports

MSD will coordinate and cooperate with co-permittees in compilation of the annual compliance reports. Ultimately, the co-permittees will be responsible for their own annual reports, just as they were for their portions of the SWQMP. As in past years, Co-permittees will submit certification statements (see 2016 Annual Report) certifying the information in their Annual Reports is accurate. However, MSD will continue to provide leadership and assistance to the co-permittees as they compile the reports and adjust their programs to best take advantage of the opportunity with MS4 program partners.

APPENDIX A - DEFINITIONS, ACRONYMS AND UNITS

DEFINITIONS

Baseline. The existing conditions. An initial set of observations or data used as a comparison or starting point from which the magnitudes of an alternative's effects are measured.

BIA, Building Industry Association of Greater Louisville. MSD coordinates with this organization to educate the development and construction community on the requirements of the stormwater quality permit.

BMPs, Best Management Practices. Management procedures, equipment or facilities that either prevents pollutants from contaminating runoff or that treat runoff before it enters a stream. BMPs may also reduce runoff velocity or volume in order to prevent stream degradation from excessive erosive forces. BMPs also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

BOD, Biochemical Oxygen Demand. A measurement of the amount of oxygen used by the decomposition of organic material over a specified time period (usually 5 days) in a wastewater sample. Used as a measurement of the readily decomposable organic content of water. Also referred to as BOD5, this is a measure of the amount of oxygen required by microbes to consume the pollutants in a sample of water during the five days after the sample is taken.

CFR, Code of Federal Regulations. A codification of the general and permanent rules published by the Federal Register by the executive departments and agencies of the federal government.

Clean Water Act. The MS4 permit is a result of the 1987 amendments to the Clean Water Act, where congress mandated that the EPA address non-point source pollution in stormwater runoff.

Consent Decree. A judicial decree expressing a voluntary agreement between parties to a suit, especially an agreement by a defendant to cease activities alleged by the government to be illegal in return for an end to the charges.

CPESC, Certified Professional in Erosion and Sediment Control. A CPESC is a recognized specialist in soil erosion and sediment control by EnviroCert International, Inc. CPESCs have educational training, demonstrated expertise, experience in controlling erosion and sedimentation, and meet certification standards.

CPSWQ, Certified Professional in Stormwater Quality. A CPSWQ is a recognized specialist in stormwater quality by EnviroCert International, Inc. CPSWQs have educational training, demonstrated expertise, experience in managing storm water quality, and meet certification standards.

CRS, Community Rating System. The CRS was developed by the National Flood Insurance Program (NFIP) and is a voluntary incentive-based program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Benefits of participation in the program include reduced flood insurance premium rates and reduced flood risk due to community action to meet the goals of the CRS.

CS, Construction Site stormwater management. One of the requirements under the NPDES stormwater program to address erosion prevention and sediment control issues on construction sites.

CSO, Combined Sewer Overflow. an outfall identified as a combined sewer overflow or CSO in MSD's KPDES permit for the Morris Forman WQTC from which MSD is authorized to discharge during wet weather. Dry Weather CSO - An overflow from a permitted outfall identified as a combined sewer overflow or CSO in MSD's Morris Forman WQTC KPDES permit that is not the result of a wet weather event. Wet Weather CSO - An overflow from a permitted outfall identified as a combined sewer overflow or CSO in MSD's Morris Forman WQTC KPDES permit that is the result of a wet weather event. Combined sewers carry both sanitary waste and stormwater drainage. CSOs are outlets that dump excess water from the sewers into streams and rivers, keeping the sewers from backing up into homes, businesses and streets when it rains.

CSS, Combined Sewer System. The portion of MSD's Sewer System designed to convey municipal sewage (domestic, commercial, and industrial wastewaters) and stormwater runoff through a single-pipe system to MSD's Morris Forman WQTC or CSOs. The system of drainage pipes built in the urban area of the City of Louisville after a public water supply was provided in the 1860s. The CSS conveys combined stormwater and sewage away from urbanized areas into local streams during wet weather. During dry weather sewage is channeled to the treatment plant. The MS4 does not include the CSS area.

DO, Dissolved Oxygen. A measurement of the amount of oxygen dissolved in water, typically expressed in mg/L.

DRI, Drainage Response Initiative. Project DRI is a partnership between Louisville Metro government and MSD that was created to respond to local drainage issues.

EPA, Environmental Protection Agency. The US federal agency responsible for regulating environmental hazards.

EPSC, Erosion Prevention and Sediment Control. EPSC measures and best management practices are designed to reduce sediment runoff and erosion from occurring on construction sites and other locations.

FEMA, Federal Emergency Management Agency. An agency of the US Department of Homeland Security that was created to coordinate response to disasters, recovery efforts, and disaster preparation and planning.

Floodplain Management Ordinance. The local ordinance enacted in 1997. The FPO has specific requirements for storage of hazardous materials in the floodplain as well as limits on development and redevelopment.

GDP, General Discharge Permit. A general discharge permit is issued to a category of dischargers and covers all projects or activities associated with their permit.

GH, Good Housekeeping. Those programs and activities performed to reduce pollution by not creating it or by not releasing it from the source at municipal facilities. Good Housekeeping goes hand in hand with Pollution Prevention (P2). GH includes materials substitution by use of less-toxic alternatives, management procedures that minimize the quantity of waste generated, housekeeping practices that reduce spillage and recover materials, reuse of materials recovered and recycling of waste.

GIS, Geographic Information System. An information system for capturing, storing, analyzing, managing and presenting data which are spatially referenced. MSD uses GIS platforms to efficiently and effectively manage and store data associated with its storm sewer system and stormwater permit. This capability includes producing maps, displaying the results of data queries, and conducting spatial analysis.

Gray Infrastructure. Constructed structures such as treatment facilities, sewer systems, stormwater systems, or storage basins. The term “gray” refers to the fact that such structures are typically made of, or involve the use of concrete.

Green Infrastructure. An adaptable term used to describe an array of materials, technologies, and practices that use natural systems—or engineered systems that mimic natural processes—to enhance overall environmental quality and provide utility services. As a general principal, green infrastructure techniques use soils and vegetation to infiltrate, evapotranspirate, and/or recycle stormwater runoff. Examples of green infrastructure include green roofs, porous pavement, rain gardens, and vegetated swales. “Green” infrastructure is a combination of natural and engineered infrastructure that is designed to reduce the environmental footprint of the system. In terms of stormwater, green infrastructure can effectively manage stormwater runoff through the use of infiltration, biofiltration, detention and other stormwater management techniques.

HANSEN®. Trademark name of the database and software program used by MSD for recording, tracking, and reporting geocoded data. HANSEN® houses MSD sewer and drainage system asset data, the MIDAS property and permit data, the customer service request data and the pretreatment program permit and hazardous materials response program data. HANSEN® geocoded tables are theme layers in the LOJIC GIS.

HMO, Hazardous Materials Ordinance. First adopted in 1986, the local HMO requires HMPC plans and local HAZMAT release reporting. The amended HMO was approved July 2, 2007.

HMPC, Hazardous Materials (spill) Prevention and Control. Local facilities that store reportable quantities of hazardous materials are required to file a plan application with MSD. There are currently over 3,000 approved plans. HMPC plans include requirements for adequate secondary containment, training, release response and reporting requirements.

HSPF, Hydrological Simulation Program – FORTRAN. A comprehensive package developed by the USEPA for simulation of watershed hydrology and water quality for both conventional and toxic organic pollutants. The program incorporates hydrology and water quality to allow the integrated simulation of land and soil contaminant runoff processes with in-stream hydraulic and sediment-chemical interactions.

IDDE, Illicit Discharge Detection and Elimination. One of the requirements under the NPDES stormwater program to address non-stormwater discharges into waterways through regulatory measures, identification and removal.

IWD, Industrial Waste Department. The MSD Industrial Waste Department is part of the Regulatory Services Division. It administers the WDRs through the industrial pretreatment program, the customer service request response and HAZMAT incident response program, and the HMO through the hazardous materials plan program. The motor vehicle accident (MVA) mitigation program is also administered by IWD.

JCPS, Jefferson County Public Schools. JCPS is the local county-wide public school system. MSD coordinates with JCPS on several public education, outreach and involvement initiatives associated with the stormwater permit.

KDOW, Kentucky Division of Water. (In the Department for Environmental Protection in the Environment and Public Protection Cabinet). Responsible for issuing all permits for discharges into the waters of the Commonwealth.

KEEC, Kentucky Environmental Education Council. The KEEC is a state agency within the Education Cabinet. The goal of the KEEC is to improve Kentuckians' understanding of their environment and to provide them with the knowledge they need to make their own informed decisions.

KEPSC, Kentucky Erosion Prevention and Sediment Control. A qualified inspector program in erosion prevention and sediment control. The program has introductory and qualification courses and an exam to test participants on their understanding of erosion and sediment control. The material and exam is based on the KPDES general permit for construction. Participants who have passed the exam are listed as qualified inspectors in Kentucky.

KPDES, Kentucky Pollutant Discharge Elimination System. Any National Pollutant Discharge Elimination System permit issued to MSD by the Cabinet pursuant to the authority of the Clean Water Act and Kentucky Revised Statues (KRS) Chapter 224 and the regulations promulgated thereunder. KPDES is the state regulatory permitting program through which MSD's stormwater program is directed.

KPPC, Kentucky Pollution Prevention Center. The KPPC at the University of Louisville provides pollution prevention and energy efficiency services to Kentucky's businesses, industries, state government agencies and communities. KPPC also provides free, non-regulatory waste assessments to Kentucky businesses.

KRS, Kentucky Administrative Regulations. Administrative regulations published by the Kentucky Legislative Commission. An unofficial posting of the KAR is available via the Commission's website at www.lrc.ky.gov.

KWA, Kentucky Waterways Alliance. A non-profit organization that promotes networking, communication and mutual support among groups, government agencies, and businesses working on waterway issues. MSD provides financial assistance to KWA for its volunteer stream monitoring program.

KYTC, Kentucky Transportation Cabinet. The Kentucky Transportation Cabinet operates storm sewers on their properties and state road and highway rights-of-way within the Louisville Metro MS4.

LDMD, Louisville Downtown Management District. A designated 61-block area within the Central Business District with services designed to enhance the physical environment of downtown including improvements for better security, maintenance, cleanliness and marketing.

LIMS, Laboratory Information Management System. This database houses the monitoring location and analytical results for MSD monitoring.

LLW, Living Lands and Waters. An organization that promotes the riparian restoration of watersheds and mobilizes local volunteers to participate in stream clean up, planting and invasive species removal efforts.

LMDPHW, Louisville Metro Department of Public Health and Wellness. A branch of the Louisville Metro Government operating under the direction of the Mayor and Louisville Metro Council, with the role of improving health and wellness in the Louisville Metro area.

LMEMA, Louisville Metro Emergency Management Agency. A branch of the Louisville Metro Government responsible for preparation, mitigation, response, and recovery from natural and manmade disasters.

LMFD, Louisville Metro Fire Department. A branch of the Louisville Metro Government that provides fire protection, prevention, environmental protection, education, building inspection, and fire cause determination throughout the Louisville Metro area.

LMPD, Louisville Metro Police Department. A branch of the Louisville Metro Government and built through the merger of the City of Louisville and Jefferson County governments. LMPD provides law enforcement, security, and education for the Louisville Metro area.

LNC, Louisville Nature Center. A community resource that provides nature education and recreation for community members to enjoy. Projects and resources are sponsored by community donations and supported by MSD.

Loading. Pounds of pollutants per day in running water calculated as concentration in parts per million (mg/L) multiplied by water flow in million gallons per day (MGD) multiplied by 8.34 pounds per gallon: Parts/million × million gallons/day × 8.34 pounds/gallon = pounds/day.

LOJIC, Louisville and Jefferson County Information Consortium. The local ArcView GIS project founded by MSD in partnership with the Louisville Water Company, Louisville Metro Government and the Jefferson County Property Valuation Administration. LOJIC mapping capabilities include physical, commercial, socioeconomic and political geographic information. The LOJIC ArcView and the Hansen® data tables are linked. LOJIC mapping is available to the public at www.lojic.org.

LTMN, Long Term Monitoring Network. System of in-stream monitoring locations that have a data sonde continuously recording water quality parameters and USGS flow gages. Samples are taken and laboratory analyses performed for other pollutants of concern as described in this SWQMP. Data is available online at http://waterdata.usgs.gov/ky/nwis.

M, Stream Monitoring. One of the requirements under the NPDES stormwater program to monitor improvements to local water quality and the overall effectiveness of permit activities.

mg/L, Milligrams per Liter. Unit of concentration of pollutants in water in parts per million.

MGD, Million Gallons per Day. Unit of measure for water flow used to calculate pollutant loading.

MIDAS, Metro Information, Development and Assets System. The portion of the Hansen® database used by Louisville Metro government for permit and inspection programs.

MS4, Municipal Separate Storm Sewer System. Jefferson County contains MS4s operated by MSD, Anchorage, Jeffersontown, St. Matthews, and Shively. The Kentucky Transportation Cabinet also operates storm sewers on their properties and state road and highway rights-of-way within the other Metro MS4s. Louisville Metro Government provides for stormwater conveyance in public streets and parks.

MSD, the Louisville and Jefferson County Metropolitan Sewer District. MSD is responsible for wastewater collection, conveyance and treatment, stormwater drainage and flood control within its District except for those drainage areas operated by the co-permittees and those areas located outside the boundaries of the MS4 drainage service area. MSD is also responsible for response, mitigation, notification, and reporting of overflows, including unauthorized discharges. MSD administers the Louisville Metro Erosion Prevention and Sediment Control Ordinance, the Floodplain Ordinance, the Hazardous Materials Ordinance and the Wastewater/Stormwater Discharge Regulations. www.msdlouky.org

NICET, National Institute for Certification in Engineering Technologies. NICET is an examining body whose function is to evaluate the qualifications of those who apply for certification in engineering technology fields. www.nicet.org

NOD, Notice of Deficiency. Permittees not meeting the regulatory intent of their permit may receive a NOD. A NOD includes the deficient item or items and necessary corrective actions.

NOV, Notice of Violation. Permittees not meeting the regulatory requirements of their permit may receive a NOV. A NOV may include the item or items in violation, corrective actions and fines incurred.

NPDES, National Pollutant Discharge Elimination System. NPDES is the federal regulatory permitting program through which MSD's stormwater program is directed.

NPS, Nonpoint Source. Nonpoint source pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, and eventually deposits them into lakes, rivers, wetlands and other waterbodies. Nonpoint source pollutants often include excess fertilizers and herbicides from agricultural and residential areas, oil and grease from urban areas, sediment from improperly managed construction sites and eroding streambanks, and bacteria and nutrients from livestock and pet wastes.

OHWM, Ordinary High Water Mark. Ephemeral streams that are tributary to other waters of the U. S. are also waters of the U. S., as long as they possess an OHWM. The upstream limit of waters of the United States is the point where the OHWM is no longer perceptible (see 51FR 41217). An ephemeral stream that does not have an OHWM is not a water of the United States. The frequency and duration at which water must be present to develop an OHWM has not been established for the USACE regulatory program. District engineers use their judgment on a

case-by-case basis to determine whether an OHWM is present. http://www.epa.gov/owow/wetlands/regs/nwpfinal.pdf

Operations Support Services. MSD Division responsible for maintenance activities on MSD assets including the combined sewer system, the separate sewer system, and the flood protection system.

P2, Pollution Prevention. Those programs and activities performed to reduce pollution by not creating it or by not releasing it from the source. P2 includes materials substitution by use of less-toxic alternatives, management procedures that minimize the quantity of waste generated, housekeeping practices that reduce spillage and recover materials, reuse of materials recovered and recycling of waste.

PAR, Program Assessment and Reporting. One of the requirements under the NPDES stormwater program to evaluate the stormwater program on a regular basis to determine program improvement and progress, and to document activities for regulatory compliance.

Pathogen. An organism capable of causing disease, including disease-causing bacteria, protozoa, and viruses.

PC, Post-Construction stormwater runoff and pollutant controls. One of the requirements under the NPDES stormwater program to manage stormwater runoff and maintain stormwater best management practices in a sustainable fashion to allow effective long-term stormwater treatment.

PCR, Primary Contact Recreation. PCR is a surface water use of full-body contact recreation that includes immersion of the head and face, such as swimming.

PEOPLE, Public Education, Outreach, Participation and Learning Experiences. One of the requirements under the NPDES stormwater program to improve the knowledge of the general public and target audiences to make individual behavior changes to improve stormwater quality.

PER, Program Evaluation and Reporting. One of the requirements under the NPDES stormwater program to evaluate the stormwater program on a regular basis to determine program improvement and progress, and to document activities for regulatory compliance.

POTW, Publicly Owned Treatment Works. Wastewater collection, conveyance and treatment utility owned and operated by a public agency. MSD is a POTW.

Project XL, Project eXcellence in Leadership Program. The US EPA national pilot program designed to allow selected sewage treatment agencies to test whether better and more cost-effective methods can be used to improve water quality.

PRR, Preliminary Response Report. A report issued by IWD in response to a hazardous materials release incident call and investigation. The report is issued to the responsible party and directs them to immediate corrective actions that are required. PRRs and inspection findings are reviewed by the IWD Response Group.

PS, Point Source. Point source pollution is a single, identifiable point discharge of pollution. An example of a point source discharge would include a sewage treatment plant or an industrial discharge facility.

QA/QC, Quality Assurance/Quality Control. This is a process to check the quality of work and activities.

S&F, Solids and Floatables. Materials in sewage that are large enough to be visibly recognizable. Most solids and floatables in combined sewage are comprised of street litter and debris, but some plastic and paper products flushed down toilets stay in a visibly recognizable form, and are objectionable to some people.

Sanitary Sewer. A pipe or conduit (sewer) intended to carry wastewater or water-borne wastes from homes, businesses, and industries to the publicly owned treatment works.

SCR, Secondary Contact Recreation. SCR is a surface water use for recreational contact with surface waters that does not include full-body immersion.

SEC, Specific Electrical Conductance. The measure of the electrical conductance of water normalized to a unit length and a unit cross-section at a specific temperature.

SIU, Significant Industrial User. As defined by the EPA, any industry which is designated as such by the MWRA on the basis that the industrial user has a reasonable potential for adversely affecting the operation of the collection system or treatment plant, or violating any pretreatment requirement.

SOP, Standard Operating Procedure. These procedures are defined by MSD and are followed by MSD staff and personnel.

SSO, Sanitary Sewer Overflow. Any discharge of wastewater to waters of the United States from MSD's Sewer System through a point source not authorized by a KPDES permit, as well as any release of wastewater from MSD's Sewer System to public or private property that does not reach Waters of the United States, such as a release to a land surface or structure that does not reach Waters of the United States; provided, however, that releases or wastewater backups into buildings that are caused by blockages, flow conditions, or malfunctions in a building lateral, or in other piping or conveyance system that is not owned or operationally controlled by MSD are not SSOs.

SSS, Sanitary Sewer System**.** The portion of MSD's sewer system designed to convey only municipal sewage (domestic, commercial, and industrial wastewaters) to MSD's WQTCs.

Stream. Surface water channel having well-defined banks and bed, either constantly or intermittently flowing. "Ephemeral stream" means a watercourse which only flows in direct response to precipitation in the immediate watershed, or in response to the melting of a cover of snow and ice, and which has a channel bottom that is above the local water table. An ephemeral stream is a water of the United States, provided it has an OHWM. "Intermittent stream" means a steam or part of a stream that does not flow continuously throughout the calendar year; but that has a bed below the local water table for at least one (1) month of the calendar year during which it obtains its flow from both surface water and ground water discharge. The term does not include an ephemeral stream. "Perennial stream" means a stream or part of a stream that flows continuously during all of the calendar year as a result of ground-water discharge or surface runoff. The term does not include "intermittent stream" or "ephemeral stream".

Surface Waters. Those waters having well-defined banks and beds, either constantly or intermittently flowing; lakes and impounded waters; marshes and wetlands; and any subterranean waters flowing in well-defined channels and having a demonstrable hydrologic connection with the surface.

SWO, Stop Work Order. A permit holder or regulatory authority may issue a stop work order for permit violations within their jurisdiction.

SWPPP, Stormwater Pollution Prevention Plan. A plan for stormwater discharge that when implemented will decrease nonpoint source pollution.

SWQMP, Stormwater Quality Management Program. All activities undertaken that improve the quality of stormwater runoff into the waters of Jefferson County.

TARC, Transit Authority of River City. Louisville Metro's public transportation system.

TDS, Total Dissolved Solids. The fine particles that are suspended in water as measured by a laboratory analysis. TDS are typically small enough to pass through a sieve size of two micrometers.

TMDL, Total Maximum Daily Load. A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

TTO, Total Toxic Organics. The sum of the analytical results greater than 0.01 mg/L of a list of toxic organics as specified by EPA.

TSS, Total Suspended Solids. The fine particles suspended in water as measured by a laboratory analysis. High TSS causes adverse water quality conditions for sensitive aquatic organisms.

TVS, Total Volatile Solids. TVS includes organic compounds of animal or plant origin.

Unauthorized Discharge. (a) any discharge of wastewater to waters of the United States from MSD's Sewer System or WQTCs through a point source not authorized by a KPDES permit and (b) any Bypass at MSD's WQTCs prohibited pursuant to the provisions of 40 CFR § 122.41(m)(2) and (4) or 401 KAR 5:065, Section 1(13)(a) and (c).

USACE, U.S. Army Corps of Engineers. A branch of the US Government, made up of civilians and military members with a wide diversity of disciplines. From biologists, engineers, geologists, hydrologists, natural resource managers, to other professionals needed within this entity. The Corps plans, designs, builds, operates, and regulates water resources projects that are crucial to the citizens of the United States.

USGS, United States Geological Survey. A division of the US Government, Department of Interior. USGS is the sole science agency for the Department of Interior.

WAH, Warm Water Aquatic Habitat. "Warm Water Aquatic Habitat" or "WAH" means any surface water and associated substrate capable of supporting indigenous warm water aquatic life.

WASP, Water Quality Analysis Simulation Program. This is a model created by the EPA to model contaminant fate and transport in surface waters.

Water. From KRS 224.01 (33) "Water" or "waters of the Commonwealth" means and includes any and all rivers, streams, creeks, lakes, ponds, impounding reservoirs, springs, wells, marshes, and all other bodies of surface or underground water, natural or artificial, situated wholly or partly within or bordering upon the Commonwealth or within its jurisdiction; Effluent ditches and lagoons used for waste treatment which are situated on property owned, leased, or under valid easement by a KPDES-permitted discharger are not considered to be waters of the Commonwealth.

WATERS. Watershed Approach to Environmentally Responsible Stewardship. This MSD report on water quality programs and activities was published annually from 2000 through 2004.

Watershed. Land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean.

WDR, Jefferson County Wastewater/Stormwater Discharge Regulations. The WDR applies to all users of the sewer collection system as well as the MS4. It contains regulations that prohibit discharge of materials that could cause damage to the sewer system or the environment in

WDR Section 2. WDR Section 5 prohibits discharges to stormwater conveyances. Penalties and enforcement are authorized by WDR Section 6. MSD's IWD administers the WDR.

WQS, Water Quality Standards. Standards that set the goals, pollution limits, and protection requirements for each waterbody. These standards are composed of designated (beneficial) uses, numeric and narrative criteria, and antidegradation policies and procedures.

WQTC, Water Quality Treatment Center. MSD owns and operates five wastewater treatment centers in Louisville Metro. These include the Morris Forman, Derek R. Guthrie, Hite Creek, Cedar Creek and Jeffersontown WQTCs.

ACRONYMS & UNITS

BIA	Building Industry Association of Greater Louisville
BMP	Best management practice
BOD	Biochemical oxygen demand
CFR	Code of Federal Regulations
cfs	Cubic feet per second
cfu	Colony forming unit
COD	Chemical oxygen demand
CPESC	Certified Professional in Erosion and Sediment Control
CPSWQ	Certified Professional in Stormwater Quality
CRS	Community Rating System
CS	Construction Site
CSO	Combined sewer overflow
CSRs	Customer Service Requests
CSS	Combined sewer system
CWA	Clean Water Act
DAG	Developers Advisory Group
DMR	Discharge monitoring report
DO	Dissolved oxygen
E. Coli	Escherichia Coli
EMS	Emergency Management Service
EPA	U.S. Environmental Protection Agency
EPSC	Erosion Prevention and Sediment Control
FEMA	Federal Emergency Management Agency
FOG	Fats, oils, and grease
FPO	Floodplain Management Ordinance
FY	Fiscal year
GDP	General Discharge Permit
GH	Good Housekeeping
GH/P2	Good Housekeeping/ Pollution Prevention
GIS	Geographic Information System

GPD	Gallons per day
GPP	Groundwater Protection Plan
HMO	Hazardous Materials Ordinance
HMPC	Hazardous Materials (spill) Prevention and Control
HRIFs	High Risk Industrial Facilities
HSPF	Hydrological Simulation Program – FORTRAN
IDDE	Illicit Discharge Detection and Elimination
IOAP	Integrated Overflow Abatement Plan
IP	Industrial Program
IPCC	Intergovernmental Panel on Climate Change
IWD	Industrial Waste Department
JCPS	Jefferson County Public Schools
JTown	Jeffersontown
KAR	Kentucky Administrative Regulations
KDEP	Kentucky Department of Environmental Protection
KDOW	Kentucky Division of Water
KEEC	Kentucky Environmental Education Council
KEPSC	Kentucky Erosion Prevention and Sediment Control
KPDES	Kentucky Pollutant Discharge Elimination System
KPPC	Kentucky Pollution Prevention Center
KRS	Kentucky Revised Statute
KWA	Kentucky Waterway Alliance
KYTC	Kentucky Transportation Cabinet
LDMD	Louisville Downtown Management District
LEED	Leadership in Energy and Environmental Design
LG&E	Louisville Gas & Electric
LIMS	Laboratory Information Management System
LLW	Living Land & Water
LMDPHW	Louisville Metro Department of Public Health and Wellness
LMEMA	Louisville Metro Emergency Management Agency
LMFD	Louisville Metro Fire Department
LNC	Louisville Nature Center

LOJIC	Louisville and Jefferson County Information Consortium
LTCP	Long-Term Control Plan
LTMN	Long Term Monitoring Network
LWC	Louisville Water Company
M	Monitoring
mg/L	Milligrams per liter
MGD	Million gallons per day
MIDAS	Metro Information, Development and Assets System
MS4	Municipal Separate Storm Sewer System
MSD	Louisville and Jefferson County Metropolitan Sewer District
MVA	motor vehicle accident
NEXRAD	Next-Generation Radar
NFIP	National Flood Insurance Program
NICET	National Institute for Certification in Engineering Technologies
NMC	Nine Minimum Controls
NOAA	National Oceanographic and Atmospheric Administration
NOD	Notice of Deficiency
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NWS	National Weather Service
O&M	Operations and Maintenance
OHWM	Ordinary High Water Mark
ORSANCO	Ohio River Sanitation Commission
OSHA	Occupational Safety and Health Administration
P2	Pollution Prevention
PAR	Program Assessment and Reporting
PC	Post construction
PCR	Primary Contact Recreation
PE	Professional Engineer
PEOPLE	Public Education, Outreach, Participation and Learning Experiences
PER	Program Evaluation and Reporting

PIO	Public Information and Outreach
PM	Preventive maintenance
POTW	Publicly owned treatment works
Project DRI	Project Drainage Response Initiative
Project WIN	Project Waterway Improvements Now
Project XL	Project eXcellence in Leadership Program
PRR	Preliminary Response Report
PS	Point Source
PVA	Jefferson County Property Valuation Administrator
PVC	Polyvinyl chloride
QA/QC	Quality Assurance / Quality Control
QAPP	Quality Assurance Project Plan
RBP	Stream Rapid Bioassessment Protocol
ROW	Right-of-way
RTC	Real time control
S&F	solids and floatables
SCADA	Supervisory Control and Data Acquisition
SCR	Secondary Contact Recreation
SEC	Specific Electrical Conductance
SIU	Significant Industrial User
SMMP	Stormwater Management Master Plan
SOP	Standard Operating Procedure
SORP	Sewer Overflow Response Protocol
SPCC	Spill Prevention, Control and Countermeasure
SSDP	Sanitary Sewer Discharge Plan
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary sewer overflow
SSOP	Sanitary Sewer Overflow Plan
SSS	Sanitary sewer system
SWMM	Stormwater and Wastewater Management Model
SWO	Stop work order
SWPPP	Stormwater Pollution Prevention Plan

SWQMP	Stormwater Quality Management Plan
TARC	Transit Authority of River City
TDS	Total Dissolved Solids
TMDL	Total maximum daily load
TSS	Total suspended solids
TTO	Total Toxic Organics
TVS	Total Volatile Solids
UAA	Use Attainability Analysis
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WAH	Warm Water Aquatic Habitat
WASP	Water Quality Analysis Simulation Program
WATERS	Watershed Approach to Environmentally Responsible Stewardship
WDR	Wastewater/Stormwater Discharge Regulations
WEF	Water Environment Federation
WERF	Water Environment Research Foundation
WLA	Waste Load Allocation
WQT	Water quality tool
WQTC	Water Quality Treatment Center
WWT	Wet Weather Team

APPENDIX B-1 MS4 PROGRAM BACKGROUND

B1.1 MS4 PROGRAM OVERVIEW

The Stormwater Quality Management Plan is a tool to improve water quality in Louisville Metro pursuant to the Municipal Separate Storm Sewer System (MS4) Permit, effective February 1, 2017. Louisville is permitted by the Kentucky Division of Water (KDOW) along with co-permittees of Louisville Metro and the Cities of Anchorage, Jeffersontown, Shively, and St. Matthews. MS4 Permit requirements stem from the US EPA Clean Water Act of 1972, which was amended to regulate nonpoint source discharges in the late 1980s under the National Pollutant Discharge Elimination System (NPDES) authority. The program recognizes that rain washes pollutants into municipal storm drains, including runoff polluted from litter, pet waste, fertilizer, failing septic systems, construction sites, and other sources. MSD and its co-permittees are regulated through the Commonwealth of Kentucky's Kentucky Pollutant Discharge Elimination System (KPDES) permit program. Per Kentucky Administrative Regulations (KAR) Title 401 5:055 "Scope and Applicability of the KPDES Program", discharges from separate storm sewer systems must be covered by a KPDES permit.

B1.2 MSD Authorization and Drainage Utility Establishment

The establishment of Louisville's drainage utility began in the mid-1980s to address water quality issues as well as flood control and drainage problems. MSD was authorized to form a Drainage Service Area District in 1985. A community-wide drainage authority was transferred by the City of Louisville and Jefferson County to MSD, establishing a stormwater utility. MSD was authorized to provide stormwater drainage and flood protection for the developed areas of Louisville and Jefferson County outside the five small cities that provided their own drainage services. In 2004, the city of Prospect elected to join MSD's drainage service area, reducing the number of small cities in Jefferson County that provided their own drainage services to four. Funding is provided through a stormwater drainage fee that applies to all residential, commercial, and industrial customers in the service area.

MSD began monitoring stormwater quality at 28 locations in area streams in collaboration with USGS in 1988. Long-term trends in water quality were needed to gauge the effectiveness of MSD's sewer expansion program. At the time, stormwater runoff quality was not yet regulated, but soon would be with the amendments to the 1990 Clean Water Act that required Large (>250,000 population) Municipal Storm Sewer Systems (MS4s) to apply for permits for the stormwater runoff that passed through their systems and discharged into streams.

MSD's drainage service area boundary was originally defined in formal agreements with City and County governments. The MSD Drainage Service Area was limited to the developed areas of Jefferson County until January 1, 2010, when the drainage service area was expanded to the Jefferson County boundary. It was determined that all property owners in Jefferson County,

outside the five small cities that maintained separate drainage services, were entitled to drainage and flood protection services from MSD for public waters.

For developing areas, the MSD Board established a schedule of fees to be paid by developers to help defray the cost of drainage services that MSD furnished and for the approval of plans for proposed drainage facilities to be built. Regional stormwater drainage facilities serving more than a single development, such as a retention basin, can be more appropriate and more cost-effective than larger drainage channels. Developers with property served by regional facilities share the facilities' capital cost based on the capacity that each development requires. MSD maintains ownership of regional facilities for operation and maintenance.

B1.3 First Permit Cycle (1994-1999)

In November 1990, EPA published the final NPDES Phase 1 regulations (40 CFR 122.26) for stormwater discharges from large and medium municipal separate storm sewer systems to comply with the 1987 Clean Water Act amendments. The regulations listed the Louisville and Jefferson County urbanized areas collectively as a “large” MS4 with a population of greater than 250,000. The new stormwater regulations defined a two-part MS4 permit application process. MSD, as the stormwater drainage utility, was the primary agency responsible for compliance with the regulations.

MSD and co-permitted communities, regulated under the KPDES MS4 stormwater discharge permit, included the City of Anchorage, the City of Louisville and Jefferson County Fiscal Court, the City of Jeffersontown, the City of Prospect, the City of Shively, the City of St. Matthews, and the Kentucky Transportation Cabinet District 5. Each co-permittee was responsible for the MS4 compliance activities associated with the permit.

MSD submitted Part 1 of the permit application in late 1991 and Part 2 in early 1993. Part 1 of the stormwater permit application included the following components:

- Overview of MSD authority and description of authority required by regulations
- Use of ordinances and other controls to limit discharges to the Publicly Owned Treatment Works, a description of the separate storm sewer system and a description of source identification
- Existing precipitation data, existing receiving stream water quality data, field screening analysis of illicit connections and a stormwater discharge characterization plan summarizing existing monitoring analyses and plan for additional monitoring
- Description of existing structural and source control programs and illicit connection disconnection program development plan
- Description of fiscal resources dedicated to the MS4 program

MSD submitted Part 2 of the MS4 permit application in 1993 with the following components:

- Update of legal authority adequacy
- Identification of major outfall locations and inventory of industrial dischargers
- Characterization of discharges through monitoring and analysis of runoff from various land uses
- Description of proposed stormwater discharge program management including commercial and residential areas, illicit discharges, industrial discharges, and construction site erosion control

KDOW issued the first KPDES MS4 stormwater discharge permit, KYS000001, to MSD and its co-permittees in 1994. This was the first KPDES (NPDES) MS4 Phase 1 permit issued in Kentucky, and one of the first in EPA Region IV. This five-year permit included the components outlined in the application as identified above. Stream monitoring, in collaboration with USGS, continued and annual reports were submitted to KDOW as required by the permit. A major effort was made to develop and implement an EPSC Ordinance during the permit term.

B1.4 Second Permit Cycle (2000 – 2011)

The second MS4 permit was issued to MSD and the co-permittees effective May 1, 2000, and expired March 31, 2004. It was issued as a four-year permit to coincide with the Salt River Basin cycle. It was administratively continued after the 2004 expiration date.

For the second permit cycle, Louisville Metro Government was a co-permittee on the MS4 Discharge Permit with MSD and the incorporated cities of Anchorage, St. Matthews, Jeffersontown, and Shively. Louisville Metro Government provided comprehensive but varying concentration of public services to the urban core and the unincorporated suburban neighborhoods. The Cities of Anchorage, Jeffersontown, St. Matthews, and Shively owned, operated, and maintained the stormwater drainage infrastructure within their city limits. The small city of Prospect elected to join MSD's service area in 2004, and was thereby covered under MSD's MS4 permit.

To define roles and responsibilities with the co-permittees during the second permit cycle, MSD entered into cooperative agreements with each of these entities to provide annual reporting, stream monitoring, and illicit discharge detection and elimination activities associated with the stormwater program. The co-permittees defined cooperative activities in their SWQMP narrative and measurable goals tables.

B1.5 Third Permit Cycle (2011- 2016)

The third MS4 permit was issued to MSD and the co-permittees effective August 1, 2011, and expired July 31, 2016. It was issued as a five-year permit.

In 2012, MSD was audited by the EPA Region IV MS4 Enforcement office, and received a compliance evaluation inspection letter in March 2013. MSD provided additional data requested in a response dated April 25, 2013. The evaluation requested resolution of the following three MS4 program components:

- Co-permittee interlocal agreements
- Industrial inspection and enforcement program procedures
- Construction inspection and enforcement program procedures

MSD addressed these program components and has provided further updates on program enhancements, including signed co-permittee interlocal agreements, co-permittee certification statements, third-party industrial inspector training, review and updates for construction and industrial standard operating procedures, and overall expansion of construction and post-construction training and inspection programs to meet needs associated with green infrastructure requirements.

MSD has a cooperative agreement with each of the co-permittees to provide outreach and involvement, illicit discharge and industrial programs, construction and development oversight, post-construction and long-term stormwater quality, good housekeeping and pollution prevention, monitoring, and record keeping and information infrastructure.

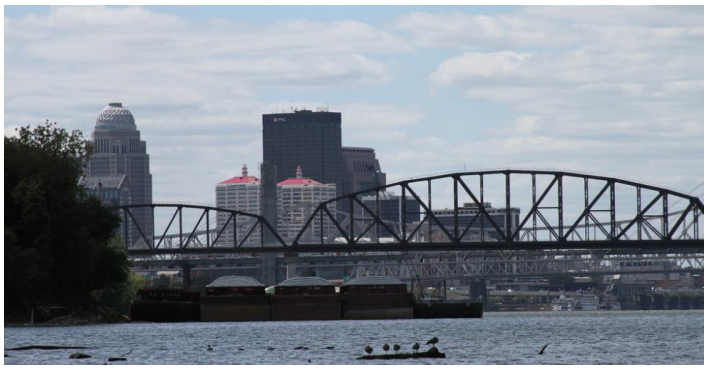
In January 2016, MSD submitted a permit renewal request to administratively extend the permit beyond the August 1, 2016 expiration date pending permit issuance for the fourth permit cycle.

APPENDIX B-2 LEGAL AUTHORITY AND ENFORCEMENT

B2.1 REGULATORY AUTHORITY AND ENFORCEMENT

MSD is responsible for wastewater collection, conveyance and treatment, stormwater drainage and flood control within its District, except for those drainage areas operated by the co-permittees and those areas located outside the boundaries of the MS4 drainage service area. MSD is also responsible for response, mitigation, notification, and reporting of overflows, including unauthorized discharges. MSD administers the Louisville Metro Erosion Prevention and Sediment Control Ordinance, the Floodplain Ordinance, and the Hazardous Materials Ordinance.

B2.1.1 LOCAL REGULATORY AUTHORITY



MSD was formed by state law in 1946 to take over the operation and maintenance of the City of Louisville's combined sewer system and sanitary sewer system. Sewage treatment was added when MSD completed construction of the Morris Forman Water Quality Treatment Center in 1958. Responsibility for stormwater drainage was not given to MSD until 1986, when MSD, Jefferson County, and the City of Louisville entered into an Interlocal Agreement whereby MSD gained the additional responsibility for drainage throughout Louisville and Jefferson County with the exception of four cities: Anchorage, Jeffersontown, St. Matthews, and Shively, who opted to retain drainage responsibilities.

B2.1.1.1 Kentucky Revised Statutes (KRS) 76.005 through 76.230

KRS 76 is MSD's enabling statute. KRS 76 permits a city of the first or second class, and the county containing such a city, to establish a Metropolitan Sewer District. KRS 76 establishes the procedures that govern MSD and enumerates specific powers delegated to MSD. Administratively, KRS 76.080 and KRS 76.085 authorize MSD to review and approve all plans for new sewer and drainage facilities. KRS 76.080 empowers MSD to approve and revise all plans for the county. However, KRS 76.085 limits MSD's review and approval power of privately constructed sewers to the extent that MSD may examine, inspect, and investigate facilities constructed by private entities to ensure that the facilities are sufficient for the purposes for which they are designed.

B2.1.1.2 Louisville City Ordinance 33.100

The Louisville and Jefferson County MSD was created by this ordinance. Incorporated within this Ordinance are all of the statutory provisions of KRS 76. Like the Statute, it limits MSD to ensure that facilities are sufficient for the purposes for which they are intended.

B2.1.1.3 Storm Water Drainage Interlocal Agreement with Louisville Metro (formerly City of Louisville and Jefferson County) of 1986

This agreement authorized MSD to provide stormwater drainage and flood protection for the developed areas of Louisville and Jefferson County outside the four small cities that provide their own drainage services. When the drainage service district was created a stormwater drainage fee was also adopted based on a residential service unit of 2,500 square feet of impervious surface.

This cooperative agreement between the City of Louisville, Jefferson County, and MSD delegated to MSD all authority, powers and abilities held by the City and the County relating to flood control, and Storm and Surface Water Drainage Systems and Facilities. This Interlocal Agreement delegates to MSD the responsibility for drainage plan review for “any person or organization removing, constructing, enlarging, altering, repairing, relocating, or demolishing a storm sewer, natural water course, or other drainage facility.” Anyone constructing or altering drainage must first submit a plan for MSD approval. MSD must review the plan to ensure that the drainage facilities are “capable of handling storm waters flowing onto the improvement site from other areas, as well as storm water from the site itself.” In addition, the drainage system must be designed to discharge into a watercourse, drainage channel, or other storm water facility.

B2.1.1.4 KPDES Permits

The Clean Water Act created the NPDES program as a means of controlling point source pollution. The NPDES controls point source pollution through a permitting system. Authority under the permitting system has been delegated to the states. The Kentucky Division of Water issues the KPDES permits for a variety of discharges, including stormwater runoff.

B2.2.1.5 Interlocal Agreements

During the third MS4 permit cycle, MSD and the co-permittees entered into interlocal agreements to further define the roles and responsibilities of the co-permittees and MSD. The interlocal agreements included financial responsibilities to implement MS4 programmatic requirements.

B2.1.2 WASTEWATER/STORMWATER DISCHARGE REGULATIONS

The Wastewater/Stormwater Discharge Regulations (WDRs) contain regulations affecting the use of public and private sewers and drains, regulating the discharge of waters and wastes into the public sewer system, and providing for corrective action, liabilities, and penalties for the violation of these provisions. They also provide the framework for the implementation and enforcement of MSD's Post Construction Program.

The WDRs were most recently updated effective August 1, 2013. The 2013 amendments to the regulations included the following:

- Define projects/developments that are required to implement green infrastructure
- Define plan review of project application, submittal, review standards, and criteria
- Require green infrastructure to benefit stormwater quality and reduce localized flooding
- Require a stormwater quality maintenance agreement
- Require a Qualified Post-Construction Inspector (QPCI) program to perform self-inspections for green infrastructure maintenance and performance

B2.1.3 HAZARDOUS MATERIAL ORDINANCE (HMO)

Adopted in 1985, MSD is designated as the Administering Agency for the HMO. The ordinance mandates that those who manufacture, use, or store a reportable quantity (RQ) of hazardous materials onsite must file a plan with MSD. The plans are reviewed and approved by MSD. The Health Department, the fire department of local jurisdiction, and any other appropriate agency may also review and have input, however final approval remains with MSD. The ordinance provides for 14 requirements that the plan must meet for MSD approval. Plans that do not meet the requirements may be rejected; rejections may be appealed. The HMO requires regulated facilities to have a plan approved by MSD that includes materials inventory, location, container types, secondary containment, spill control materials, posted procedures, and notification requirements. The HMO regulates all facilities that store a RQ of any hazardous material onsite for more than 10 days, provided that the material is not otherwise in transit. Characteristically hazardous wastes not otherwise listed have a default local RQ of 100 pounds.

The HMO spill notification requirements apply to all users of the stormwater drainage system, including motor vehicles. Any release into a stormwater conveyance is reportable under the HMO. The MSD Motor Vehicle Accident Mitigation Program provides all participating Fire Departments in Louisville Metro with absorbent material in order to prevent hazardous materials released from motor vehicle accidents from escaping into stormwater conveyances and/or the sanitary sewer system. Containers are provided to collect contaminated absorbent material and the containers are returned to MSD for proper disposal of material and recycling of containers.

The HMO and the Louisville/Jefferson County Metro Government Emergency Operations Plan (EOP) includes procedures to prevent, contain, and respond to spills that may discharge into a waterway or the municipal separate storm sewer.

MSD's Enforcement Response Plan (ERP) provides guidance to MSD's Industrial Waste Department and Legal Division staff on investigating and enforcing violations of the Wastewater/Stormwater Discharge Regulations (WDR) and HMO. The ERP specifies how enforcement actions are escalated in the event of noncompliance and allows for violations with aggravating circumstances to be recommended to receive more severe enforcement action.

B2.1.4 FLOODPLAIN MANAGEMENT ORDINANCE

The Commonwealth of Kentucky has taken several steps to reduce the hazard of flooding. Chapter 151 of the KRS (approved in 1966) is the state statute that addresses the development of floodplain areas. KDOW is designated by KRS 151 as the state coordinating agency for the National Flood Insurance Program (NFIP). As the coordinating agency, KDOW assists local governments and state agencies in answering all questions concerning the program. The most pertinent sections of KRS 151 are:

- KRS 151.250, establishes the requirements for obtaining a floodplain development permit.
- KRS 151.125, establishes the authority and powers of the secretary of the Energy and Environment Cabinet to administer KRS 151.
- KRS 151.320, requires the Judge Executive of each county or the Mayor or Chief Executive Officer of each city to concurrently enforce with the cabinet, within their respective counties and cities, the provisions of KRS 151.250 or 151.280 and the rules and regulations issued thereunder.

Louisville Metro's 2006 Floodplain Management Ordinance, last amended in 2015, designates MSD as the Administering Agency. The purpose of the Floodplain Ordinance is to maximize safe use of flood prone areas, to maintain that flood levels are not increased, and to minimize public and private losses from flooding. In 2016 and 2017, MSD led review of the ordinance and facilitation of a Floodplain Management Ordinance Workgroup to review the ordinance for updates.

The Floodplain Management Ordinance covers activities in Local Regulatory Conveyance Zones, streams, and floodplains. Many of the regulations adopted within the ordinance reflect requirements from other sources, such as the NFIP, the Commonwealth's Model Ordinance, or the Community Rating System (CRS) program guidelines.

KDOW and MSD are both primary permitting agencies, although additional permits or approvals may be required from other agencies, depending upon the circumstances. KDOW requires an *Application for Permit to Construct Across or Along a Stream* while MSD requires an *Application for a Permit to Develop in a Local Regulatory Floodplain or in a Local Regulatory Conveyance Zone*. MSD and Louisville Metro Government uphold stormwater quality efforts through enforcement of the Floodplain Management Ordinance (FPO). The Good Housekeeping Minimum Control Measure requirement of the Permit, specifically, Capital Project Control requirements, facilitates MSD's reviews of plans for construction and post-construction projects that may impact stormwater quality. The FPO has specific requirements for storage of hazardous materials in the floodplain as well as limits on development and redevelopment, such as implementing a no-disturbance clause inside stream buffers.

B2.1.4.1 Floodplain Mapping and the Community Rating System

FEMA supports an all-hazards approach to mitigation, as does the Community Rating System (CRS). It makes economic sense that mitigation programs address as many hazards as are appropriate. An all-hazards approach also ensures that staff, programs, construction standards, and public information messages are consistent and mutually supportive.

Floodplain management activities including floodplain mapping, outreach, drainage maintenance, flood mitigation, and the Floodplain Management Ordinance allowed Louisville Metro to achieve a Class 3 CRS rating, which reduces flood insurance rates by up to 35%.

B2.1.5 ENFORCEMENT RESPONSE PLAN

MSD developed an Implementation Plan for Illicit Discharge Detection and Elimination and Industrial Programs and revised the existing Enforcement Response Plan (ERP) to facilitate enforcement with respect to eliminating illicit discharges. The ERP was revised concurrently with revisions to the WDRs that became effective in 2013. The effective ERP provides guidance to MSD's Industrial Waste Department and Legal Division staff on investigating and enforcing violations of the Wastewater/Stormwater Discharge Regulations (WDR) and Hazardous Materials Ordinance (HMO). The ERP specifies how enforcement actions are escalated in the event of noncompliance and allows for violations with aggravating circumstances to be recommended to receive harsher enforcement action.

CO-PERMITTEE CERTIFICATION
MS4 STORMWATER QUALITY MANAGEMENT PLAN
KPDES PERMIT NUMBER KYS000001

THE CITY OF ANCHORAGE is designated as a co-permittee covered by the Municipal Separate Storm Sewer System (MS4) permit that was issued by the Kentucky Division of Water under the Kentucky Pollutant Discharge Elimination System (KPDES) program. **THE CITY OF** ANCHORAGE has prepared the attached Stormwater Quality Management Plan for the permit cycle effective February 1, 2017.

Under the terms of KPDES Permit No. KYS000001 and implemented through an interlocal agreement with Louisville and Jefferson County Metropolitan Sewer District, **THE CITY OF** Anchorage certifies that it has responsibility for the following:

- Construction oversight in addition to the regulatory inspections conducted by Louisville MSD pursuant to the Erosion Prevention and Sediment Control Ordinace, Chapter 159;
- Drainage system and outfall mapping;
- Drainage system operation and maintenance;
- Road maintenance and upkeep, including snow and ice removal and related stormwater management activities;
- Drafting and implementing fleet and facility stormwater pollution prevention plans;
- Reporting and refering potential illicit discharges observations by municipal employees or other reports from residents to MSD for investigation and potential enforcement;
- Inspection, operation, maintenance and/or applicable certification that permanent (also known as post-construction) water quality devices, controls, and management practices are operating effectively;
- Implementation of education and outreach within the City of ANCHORAGE to compliment the education and outreach provided by MSD which is tailored to local water bodies pollutants of concern;
- Preparation and timely submittal of annual compliance demonstration report to MSD according to agreed upon formats and standards; and

Certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the above statements are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

CITY OF Anchorage
Name: Renee Major Signature: Renée Major
Title: City Administrative Officer Date: 5 July 2017

3.2 COMPLIANCE ACTIVITIES REPORT FOR THE CITY OF ANCHORAGE

The KPDES Large MS4 stormwater discharge permit program requirements are classified into seven Program Elements, each designated with an acronym. The Program Elements include: Illicit Discharge Detection and Elimination (IDDE), Construction Site Runoff Controls (CS), Post-construction Controls (PC) Good Housekeeping/Pollution Prevention (GH), Public Education/Outreach Programs (PE), Monitoring (M) and Reporting (R).

The Co-Permittees individually and collectively continue to perform the required activities specified in KPDES Permit # KYS000001. This subsection will focus on those activities for which the City of Anchorage, Kentucky was responsible during the permit period and will document the compliance tasks performed by City of Anchorage during the period of July 1, 2016– June 30, 2017.

3.2.1 Illicit Discharge Detection and Elimination (IDDE)

The City of Anchorage has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform certain IDDE tasks. Therefore, only those tasks performed by the City of Anchorage are listed in this report. MSD performs illicit discharge investigation and follow up throughout Louisville Metro, including the City of Anchorage. Previously, most of the City of Anchorage did not have sanitary sewers. With the June 2008 completion of the Hazelwood Extension of its sanitary sewer, the City of Anchorage brought 95 properties previously on septic systems onto an MSD-operated sewer system. Of the approximate 800 residences in Anchorage, 425 residences are now estimated to be on MSD-operated sewer systems. Recently, MSD installed a gravity interceptor sewer in the southwest quadrant of Anchorage. The Anchor Estates Pump Station Elimination Project eliminated three pump stations in Anchorage, adding approximately 30 septic-tank properties to new sewer service, and providing future expansion for other areas on the south side of Anchorage. The project was completed August 2016. Presently, the City of Anchorage has obtained approval to extend the sewer service to two additional residences and provide future expansion of sewer service to the east/southeast quadrant of the City. With an additional 73 residences to be added in the future.

3.2.1.1 Illicit Discharge / Illegal Dumping Ordinance IDDE-4

The City of Anchorage enforces its illegal dumping ordinance and posts signs that prohibit dumping at locations that are problem areas. City of Anchorage staff investigates areas regularly and responds to resident complaints. In the past year, the City has had no occasion to report illicit dumping or discharge to MSD.

3.2.1.2 Provide education on the revised Wastewater Discharge Regulations IDDE-5

The City of Anchorage provides education on their local ordinance(s) that prohibit illicit connections and illegal dumping. Anchorage has no waste water treatment plants, but does have three (3) pumping stations. The City of Anchorage has marked all Catch Basins throughout the City with markers informing the public that there is no dumping into the basins and that these basins drain to local creeks. Currently, there are a total of 111 No Dumping Decals located throughout the City. All commercial properties and the Anchorage school system have marked all their Catch Basins. The City of Anchorage monthly newsletter

periodically contains information on the prohibition of dumping into catch basins and drains, and proper disposal of leaf and grass debris.

3.2.2 Construction Site Runoff Controls (CS)

The City of Anchorage has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform certain CS program tasks. MSD administers the Erosion and Sediment Control Ordinance. The City of Anchorage requires contractors to show proof of EPSC Certification before they can obtain a Zoning Compliance Certificate. A copy of their certification is attached to their building permit. The City's Public Works department checks worksites to insure EPSC measures are in place. The City's Flood Safety Officer reviews residential building plans for any increase in impervious surface that will exceed 20% of the lot size. During this term, the Flood Safety Office reviewed 27 sites for drainage issues or potential problems. Anchorage ordinances require any lot with more that 20% impervious to retain excess runoff on site.

3.2.2.1 Erosion Prevention and Sediment Control Plan (EPSC) CS-1

An EPSC Plan with provisions for Best Management Practices (BMPs) to keep sediment on-site (silt fences, staked bales, sediment ponds, gravel mats, etc.) and to capture sediment that would enter local or on-site drainage systems is required for any new development within the City of Anchorage. Fifty-three (53) trenching permits were issued by the City Forester in the last year for various projects from new homes to fence and cable wire installations. Any stockpiled soils are required to be contained by silt fencing. Thirty-six (36) Zoning Compliance Certificates were issued for building projects where contractor or sub was required to be EPSC certified.

The City of Anchorage has an approved EPSC General Permit issued by MSD for Public Works activities.

3.2.2.2 Training for Operators CS-3

The City of Anchorage ensures that appropriate staff members attend training for equipment operators and construction managers that describes the proper installation and maintenance of construction site BMPs. The Director of Anchorage Public Works attended the EPSC training class and became re-certified in November 2014.

3.2.2.3 Scheduled Inspections of BMPs CS-5

The City of Anchorage city officials check construction sites to ensure that the EPSC Ordinance is being followed. The Public Works Director visits all construction projects to review compliance with permits. The City of Anchorage reviews plans to ensure the proposed work does not increase or inappropriately divert storm water runoff. The City of Anchorage requires a specific drainage retention plan approval when the construction plans call for a 20% or more impervious area or if neighboring properties are affected.

3.2.3 Post Construction Controls (PC)

The City of Anchorage has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform certain PC program tasks. MSD performs the PC-1, Watershed Planning, Post Construction tasks on behalf of the City of Anchorage. The City of Anchorage Flood Safety Officer reviews construction plans and meets with contractors and homeowners

where there may be runoff issues. The City's Flood Safety Officer met with 27 property owners this year to review and remedy storm water/drainage/impervious surface issues. Storm water retention is discussed with contractors and homeowners for projects increasing impervious surface in excess of 20% of the lot size. Bio-swale, rain garden, rain barrel, and other information is discussed with and given (when requested) to contractors and homeowners. This information is also readily available at Anchorage City Hall.

3.2.3.1 Pilot BMP Project PC-2

Over the permit term, the City of Anchorage was required to complete a minimum of three BMP Pilot Projects. Anchorage adopted and continues a policy to not install curbs on city streets so that runoff filters through nearby pervious areas. Residents are required to outlet downspouts into yards or channel to French drains, bio swales, dry wells, etc., to filter runoff before it enters a stream. The City's Annual Canopy Campaign is an effort to repopulate the tree canopy within the City of Anchorage, especially adjacent to roadways. The Annual Canopy Campaign takes place each fall. Through this program, the City pays for one half the cost of a canopy-type tree as determined by the City Forester and Forestry Board and professional planting of the tree selected by the residents. These trees are designated for the right-of-ways only. Last year, residents planted 51 canopy trees and an additional 15 dogwood trees. The City also offers a Spring Tree Give-away Program. In 2017, 300 one-inch caliper trees were given free of charge to Anchorage residents for planting anywhere on their properties. The City of Anchorage has a tree preservation ordinance that requires one tree replacement for every one to three trees removed depending on the trunk caliper of the replacement tree. The City of Anchorage has an on-going hazardous tree removal program for trees in the City's right-of-ways. Dead or dying trees are removed, and other trees are pruned, as needed. Trees removed by the Anchorage Public Works Department are chipped and taken to a mulch operation which turns it into compost and mulch. The City of Anchorage has been a "Tree City USA" for 28 years and achieved the Growth Award status level for seven years by continuing to provide increased awareness and public education of accepted urban forestry practices.

3.2.3.2 Built-Upon Area Reductions PC-3

The City of Anchorage adopted the Land Development Code provisions of Cornerstone 2020. Many provisions in the Land Development Code version that Anchorage follows favor smaller homes on larger lots than traditional zoning allows so that there is a reduction in impervious surface. The streets are narrower and easements adjacent to the drainage swales are wider in order save trees and to provide more green space. The City of Anchorage's floor-area-to-open-space ratio requirement requires more open space than Louisville Metro's floor-area-to-open-space ratio. Residents are required to outlet downspouts into yards or French drains, rain gardens, bio swales, etc. to filter runoff before it enters a stream. The City of Anchorage requires lots with more than 20% of impervious surface to have alternative measures in place to retain on the lot excess stormwater created by the additional impervious surface. Often recommended are rain gardens, dry wells, French drains, retention ponds, bio swales, etc.

3.2.3.3 Source Controls PC-4

City of Anchorage facilities have approved HMPC plans. The City of Anchorage maintains salt storage in a covered building. The salt under roof is also covered with tarps. The City of Anchorage has a refueling area for Public Works vehicles. The area is diked so that spills are controlled and maintained. A spill management system controls any spilled fuel in the dike

area, and allows rainwater to be removed without causing erosion to the ground. Employees are required to stay with vehicles while refueling. In addition, a sign is posted reminding employees of this policy. The City of Anchorage investigates downspout connectivity to the streams. Residents are required to daylight their downspout or direct to a French drain rather than flow entering the stream directly.

3.2.4 Good Housekeeping / Pollution Prevention (GH)

By agreement with the Anchorage Fire Department, all public works vehicles that are heavily soiled (dirt, salt, asphalt, etc.) must be washed inside the Anchorage Firehouse. The Firehouse has a containment pit to catch the material so it can be disposed of properly. City policy dictates that any vehicle cleaned outside is washed with an environmentally safe soap only.

3.2.4.1 Street Maintenance GH-1

The City of Anchorage follows the EPSC General Permit requirements. Street maintenance in Anchorage is performed on an as-needed basis. During any roadway repair all remaining unused material is swept up and disposed of properly. Staked bales and silt fencing are used to minimize impacts of construction. Public roads are constructed without curbs, allowing the runoff to be filtered through the nearby grasses.

3.2.4.2 Street Sweeping GH-2

The City of Anchorage picks up trash along all of the roadways within its city limits monthly or more often, if needed. An annual Litter Abatement spreadsheet can be reviewed with the Public Works Director showing miles of road cleaned, number of bags collected and total cost. The City of Anchorage uses a leaf vacuum to keep the culverts and ditch lines clear of leaves during the fall and maintaining a list by month of ditch areas cleaned/restored. Leaves collected throughout the fall are taken to a mulch operation which turns leaves into compost and mulch. Road culverts are cleaned weekly in the fall to remove leaves. A City of Anchorage stormwater management and control ordinance requires property owners to maintain both natural and man-made drainage channels on their properties. It is unlawful for to deposit leaves, grass clippings, or other forms of debris in the drainage channels.

3.2.4.3 Catch Basin Cleaning GH-3

Catch basins were checked and cleaned by hand 51 times including before and/or after rain events. During this term, all catch basins were inspected and serviced while in the field documenting data for a new outflow map of the City. Outlets are plugged so that debris cannot get into the stream. This debris is taken to a landfill.

3.2.4.4 Storm Sewer Cleaning GH-4

Storm sewer cleaning is performed on an as-needed basis. Anchorage Public Works only needed to perform 3 culvert inspections this year. Through an agreement with the Anchorage Fire Department, blocked Anchorage culverts are flushed with a high-pressure hose and the debris collected. Debris is taken to a landfill, as needed. During this term, no culverts required flushing.

3.2.4.5 Channel Maintenance GH-5

Grass drainage channels in Anchorage are mowed no lower than 6-inches. Debris is removed from channels and sent to a landfill. Concrete channels are cleaned of sediment manually. Staked hay bales and silt fencing are required during channel maintenance where heavily accumulated siltation needs removal. Anchorage Public Works inspected 18 channels this year.

3.2.4.6 Pollution Prevention for De-Icing GH-6

The City of Anchorage inspects and adjusts its two salt spreaders distribution rates before and during any long-term snow events. Salt spreaders are adjusted to minimize the amount of overspray. The salt is pre-wetted with calcium chloride and Magic O, a distillers' by-product combined with magnesium chloride, as an additive to salt and brine. Anchorage uses a brine road pre-treatment mixed with Magic O for ice and snow weather conditions. Regular salt treated with Magic O melts ice in weather as low as zero degrees, reducing the total amount of regular salt used to remove snow in Anchorage. Pushing the snow off the roadway is the preferred method for snow removal. The City applied 4 tons of salt, zero gallons of Magic O, and zero gallons of brine this year. The City of Anchorage Public Works does yearly Internet research and employees attend training to learn about new application technologies.

3.2.4.7 BMP Inspections GH-7

Good Housekeeping/Pollution Prevention BMPs are inspected regularly by the Public Works Director.

3.2.4.8 BMP Maintenance GH-8

Good Housekeeping / Pollution Prevention BMPs are maintained on a regular basis. The Public Works crew inspects the building and grounds on a daily basis to assure materials and stock are stored properly.

3.2.4.9 Pollution Prevention for Herbicides and Pesticides GH-9

In the last seven years, the City of Anchorage has used no pesticides and only minimal herbicides, and is committed to continue on this course. No herbicides or pesticides are stored.

3.2.4.10 Continuation of Existing Programs GH-10

An outside contractor continues to collect municipal waste, yard waste and recyclables weekly. The yard waste is taken to a compost site. The City, under the direction of Jefferson County, requires recyclable paper bags for yard waste. Approximately 84% of the City of Anchorage residents participate in the recycling program. The City of Anchorage utilizes a private contractor to reclaim its used oil and antifreeze. The City maintains a collection tank for used oil. This year, 90 gallons of oil and zero gallons of antifreeze were reclaimed and removed.

3.2.5 Public Education/Outreach Programs (PE)

In a large metropolitan area, the impact of the actions of the citizens can cause great harm to the environment if the actions are careless or uninformed, or can have great benefit if the actions are positive. Individual behavior repeated by many people has a cumulative effect.

3.2.5.1 Public Education Programs PE-1

Water quality issues are discussed in the monthly newsletter and on the City of Anchorage's website at www.cityofanchorage.org. The website includes information on the City of Anchorage's Tree Preservation Program and the Storm water Management ordinance. The newsletter has contained information on the recycling program, leaf pick-up schedules, rain gardens, swimming pool drainage, and mosquito control. This year, 16 articles in the city's newsletter contained information relating to recycling, yard waste, lawns, drainage, and forestation. This year at the annual city meeting, the City provided an information booth offering rain barrel, storm water management brochures, and other water quality printed information. Approximately 150 residents attended this event. The City of Anchorage continues to offer the "Forestry Handbook," which is free, to Anchorage residents. The City works with developers who install innovative "green" storm water control, and encourage the developers to allow the City and other organizations to observe the installation, and become more educated about rain gardens, retention ponds, and other storm water retention and water quality. Throughout the year, City Council was advised on four separate occasions of storm water and drainage related issues.

3.2.5.2 Earth Day PE-2

The City of Anchorage does not have separately planned activities for Earth Day, but they do celebrate Arbor Day. Coordinated through the Anchorage Forestry Board, Arbor Day's celebration focuses on tree-related activities often coordinated with the Anchorage Public School. Past activities have included identifying tree species, clearing invasive plants, spreading wood chips on the Anchorage horse trails, the Emerald Ash Bore, replacing dying trees, and identifying tree diseases and decline This year 300 free trees were given to Anchorage residents for planting on their properties.

3.2.5.3 Litter Control PE-3

The City supplies the garbage bags and is responsible for disposing of the collected debris. In addition, the City's Public Works Department regularly collects litter and debris from public right-of-ways.

3.2.5.4 Internal Training PE-5

The City Administrative Officer and Public Works Director have attended MS4 presentations by MSD staff. All public works employees will receive SWQMP training three to four times a year. Training will be in the area of IDDE, IDE-4, CS, CS-3 etc. Other areas of training will be spill prevention, disposal of contaminates, etc.

3.2.6 Monitoring (M)

The City of Anchorage has an interlocal agreement with MSD to perform the Monitoring requirements of the MS4 permit.

3.2.7 Reporting (R)

The City of Anchorage provides information on implementation of the MS4 permit requirements to MSD. The City of Anchorage has an interlocal agreement for MSD to prepare the Annual Report.

3.3 Financial

This section is a summary of the City of Anchorage's SWQMP budget for FY 2017 as amended June 2017:

City of Anchorage FY 2017 Total Operating Budget: $2,839,339				
Drainage	**Bridge/Culvert Repair**	**City Drainage Officer**	**Forestry Budget**	**Litter Cleanup**
$6,700	**$86,125**	**$1,500**	**$39,846**	**$944**

CITY OF ST. MATTHEWS PROGRAM OVERVIEW

The City of St. Matthews, Kentucky has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform required activities specified in the KPDES Permit No. KYS000001to reduce discharge of pollutants and prohibit illicit discharges. The City of St. Matthews was incorporated as a sixth-class city in March of 1950. Since that time, the City's limits have expanded as several neighborhoods been annexed. Since 2000, all residences annexed into the City of St. Matthews, by an ordinances passed by the city council, still pay a storm water fee to MSD. For these specific areas, the City of St. Matthews is not responsible for storm drainage. These areas, and the date they were annexed are as follows:

- Springlee – September 2000
- Plymouth Village – July 2000
- Fairmead – September 2000
- Cherrywood – September 2000
- Broadfields – July 2000
- Springwood – July 2014

The Permit included requirements for support of existing programs plus several new initiatives to increase public awareness of water quality issues and to promote a sense of stewardship for the streams in Jefferson County. The City of St. Matthews has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform certain public education program tasks. Therefore, only those tasks performed by the city are listed in this report.

TABLE 1. PUBLIC EDUCATION, OUTREACH, PARTICIPATION, AND LEARNING EXPERIENCES (PEOPLE)

The City of St. Matthews publishes and distributes a newsletter at least four times per year to all residential property owners within the city limits. This newsletter is an excellent vehicle with which to provide information to the citizens and to alert them to issues and programs that affect the community. In the past, small narratives have been periodically provided to inform residents of drainage problems and ways to report them. The City implements an annual drainage improvement program to address surface drainage concerns throughout the city. Typically, drainage projects affecting approximately one block have a public information meeting prior to finalizing the design to solicit input from the public on the problems as well as possible solutions.

The City will continue to utilize its newsletter to provide details about the leaf pickup and yard waste bag/sticker program available to its citizens. Specific program details include scheduled leaf pickup dates for areas of town, and phone number/contacts for problems or requests for additional pickups.

The City has revamped its website. www.stmatthewsky.gov. The website provides another," at your fingertip," source for property and business owners to find the specific information such as leaf pickup, storm damage pickup, recycling programs, etc.. A featured link informs property owners how to choose the correct tree in order to reduce utility costs while maintaining pedestrian and vehicular safety.

Within the website, there is a link for property owners to place a request for a tree to be planted in the R/W at their house. This program not only greens up the city, it gives its residents a viable option to help improve the area at no cost to themselves individually.

The city implements a pet waste cleanup program where we have installed pet waste disposal receptacles at all three (3) of our public parks and at City Hall. The receptacles are equipped with bags the owners can use to pick up and dispose of the animal waste. The receptacles are emptied at least twice per week.

In an effort to inform the public, its often best to start with children. The 3rd grade class from St. Matthews Elementary have come to tour City Hall and learn how the City operates. During that time we host a 20 min education class involving the duties of our Public Works Dept. A large portion of the time is dedicated to storm water and how the drainage systems operate.

The City has a program to reduce the number of off-street parking pads within the public right of way. This activity will reduce the amount of impervious surfaces and replace with grass; thus decreasing surface runoff and providing additional filtering of runoff before entering the separate storm sewer systems. This program provides property owners wanting this service an easy and free solution. Once the resident contacts the City; City forces will remove the pad, haul away the material, regrade the area, & then restore the disturbed area back to turf.

TABLE 2. ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

The IDDE program is intended to detect and eliminate illicit connections and improper disposal to the MS4. St. Matthews has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform certain IDDE tasks. Therefore, only those tasks performed by the City of St. Matthews are listed in this report. MSD performs illicit discharge investigation and follow-up through out Louisville Metro, including the City of St. Matthews.

In 2011 the City of St. Matthews contracted with HDR to develop a GIS system to map the City's drainage facilities. The interactive site can be used to display all pipes, direction of flow, and sizes. Many of the systems which constructions plans were available can be accessed from the site. In 2017 the City and HDR began the process of redeveloping the existing GIS system to modernize the system.

In 2008 the City of St. Matthews put together a hotline list and distributed the list to all its residents via a Newsletter sent to residents four times a year. The intention was to provide a quick and easy to use reference for residents. The hotline provides a directory for city personnel from police to council members. Amongst those numbers on the list is a direct line for individuals to report illegal dumping or illegal discharge into the storm sewer system. The goal is to simplify the reporting process of this illegal act, and to inform the appropriate people so that quick action can be taken. The city has also added this directory of numbers to the St. Matthews website. http://www.stmatthewsky.org/

The City has two fulltime employees that are dedicated to Code Enforcement. A part of their daily duties are associated with investigating and enforcing our illegal dumping ordinance.

Signs are posted in areas which continue to be problem areas. City maintenance staff performs inspections at these sites throughout the year in an effort to reduce dumping & improve enforcement.

TABLE 3. CONSTRUCTION SITE STORMWATER RUNOFF CONTROL REQUIREMENTS (CS)

Sedimentation and erosion from land disturbing activities can have severe impacts to stream systems. The City of St. Matthews has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit to perform certain CS program tasks. MSD administers and enforces the Erosion & Sediment Control Ordinance. Therefore, only those tasks performed by City of St. Matthews are listed in this report.

St. Matthews obtains EPSC and Site Disturbance Permits from MSD on applicable projects constructed with Public Works crews and projects bid out. The City holds themselves and their contractors to the same EPSC standards as private contractors working within the City.

Before a building permit is granted, the developer needs to pay a review fee to MSD for plan approval on all storm and sanitary design. MSD is responsible for all sanitary systems located within St. Matthews, but it does not maintain the storm water system (with the exception of the six areas annexed after 2000). Prior to any approvals, MSD confirms with the City of St. Matthews that there are not any existing complaints or reported problems in the project area.

The City of St. Matthews has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, however MSD administers approval and inspection on EPSC and Site Disturbance Permits for construction projects within the City. For private construction, a city official or representative periodically inspects sites for compliance with the EPSC Ordinance. Should a violation occur, St. Matthews will request MSD's assistance to bring the site into compliance.

TABLE 4. POST-CONSTRUCTION (PC) STORMWATER RUNOFF CONTROL FOR NEW DEVELOPMENT AND REDEVELOPMENT

Best Management Practices for managing the increase in impervious area and controlling the subsequent increases in runoff quantity, velocity and pollutant migration include planning for on-site capture systems, protecting stream corridors, and implementing regulations and policies. The City of St. Matthews has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform certain PC program tasks. Therefore, only those tasks performed by the City of St. Matthews are listed in this report.

The City of St. Matthews is known as an urban environment populated with many mature trees and the City intends to keep it that way. Following the ice and wind storms in 2008, the City increased its tree planting efforts in an effort to maintain this atmosphere. We have committed to planting at least 100 new trees (1.5 – 2.5 inches in diameter) throughout the City. The City's maintenance crews planted the new trees in public parks and in public rights of way. Should residents want a tree in front of their house, inside the City R/W, they can request a tree on the City's website.

In the fall of 2017 the City is preparing to break ground on the revitalized City Hall Campus. We are removing an existing asphalt parking lot and replacing it with pervious concrete pavers. Below the pavers we are increasing the stone base an additional 5 inches to gain additional storage. The overall footprint of the site increases on site storage by 17%. As part of this project the city is installing an oil water separator to treat all water leaving the campus.

In years past, the City of St. Matthews developed a Storm Water Drainage Master Plan in order to provide a separate storm sewer system for its residents. The City is in its final stages of development of the Master Plan and continuously maintains the areas previously constructed. The plan is continuously updated to handle ongoing issues. The following are a list of projects performed during the last reporting period.

TABLE 5. GOOD HOUSEKEEPING/POLUTION (GH) PREVENTION FOR MUNICIPAL OPERATIONS

The City of St. Matthews abides by the EPSC General Permit regulations. Street maintenance is performed on an as-needed basis, the city utilizes Louisville Metro's annual contract to resurface local streets. All storm drainage projects are finalized with resurfacing to assure positive drainage. St. Matthews uses inlet protection (stone bags and magnetic inlet filters) and/or silt fence on its storm sewer projects to minimize soil and debris entering the storm sewer system. Throughout the year, on an as needed basis, city crews remove storm debris from public rights-of-way and transport to the landfill.

The majority of the City's streets are not curbed. This drainage system allows water to run-off into adjacent yards and into small yard inlets. The small yard inlets or catch basins allow time for the storm water runoff to infiltrate the greenscape prior to entering the storm sewer system. The City uses a private street sweeping company, Sweep All, to clean all curbed streets. This reduces the amount of pollutants that enter the separate storm sewer system by removing sediment and debris from streets and disposing of them properly. Street sweeping is performed on an as needed basis (min of 2 times per year)

Storm sewers are cleaned as needed by city employees or contract services. The usual problem areas are routinely checked. During the fall months, when catch basin blockages are at their highest, City forces use vacuum systems to remove leaves throughout the community's rights of way. Debris is transported to a landfill.

Beginning in the winter of 2007, the City of St. Matthews began experimenting with the use of Geomelt, a natural anti-icing fluid derived from sugar beets in its street salting program. The use of this material is expected to allow a reduction of the use of salt as well as fewer applications, which translates into a much more environmentally friendly solution to snow and ice response that uses less fuel and causes less wear and tear on equipment

Dumpsters in St. Matthews are required to be fenced for litter control. All garbage cans that are proposed or replaced within the city parks are equipped with lids to limit animal access and to reduce litter resulting from wind. Twice a week, City forces empty the trash in all public trash cans to decrease the occurrence of cans over flowing. All City salt storage facilities are covered with permanent roofs. New developments and redevelopments within the City of St. Matthews require downspouts to discharge onto surface areas or rocked French drains rather than tied directly to the storm sewers. The City (Public Works, Fire & Rescue, and Police) refuel all vehicles at commercial fueling stations to limit the occurrence of unmanaged spills.

The City contracts out the collection of municipal waste, yard waste, and recyclables weekly to Rumpke. The City has operated a leaf collection program citywide since 1990 to assist residents in the collection and disposal of leaves during the fall season. This activity provides the residents a strong incentive to rake leaves in a timely manner and is important in that it dramatically reduces sediment and debris from the separate storm sewer systems and its discharge waters.

This program provides for two leaf pickups along each residential street throughout the City during the fall months. The Fall Newsletter identifies an approximate schedule for each street. Signs are posted approximately 1 week in advance of the pickup to provide residents time to rake leaves to the front of their properties.

The City of St. Matthews has been actively replacing all open throat catch basins with grated type basins where possible. This program provides improved capture and removal of debris from grates, rather than allowing the debris to enter the separate storm sewer system.

TABLE 6. MONITORING (M)

St. Matthews has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 Permit. St. Matthews provides an annual report which documents the compliance tasks performed during the individual permit periods.

TABLE 7. REPORTING (R)

St. Matthews has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 Permit. St. Matthews provides an annual report which documents the compliance tasks performed during the individual permit periods.

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CO-PERMITTEE CERTIFICATION
MS4 STORMWATER QUALITY MANAGEMENT PLAN
KPDES PERMIT NUMBER KYS000001

THE CITY OF JEFFERSONTOWN is designated as a co-permittee covered by the Municipal Separate Storm Sewer System (MS4) permit that was issued by the Kentucky Division of Water under the Kentucky Pollutant Discharge Elimination System (KPDES) program. **THE CITY OF JEFFERSONTOWN** has prepared the attached Stormwater Quality Management Plan for the permit cycle effective February 1, 2017.

Under the terms of KPDES Permit No. KYS000001 and implemented through an interlocal agreement with Louisville and Jefferson County Metropolitan Sewer District, **THE CITY OF JEFFERSONTOWN** certifies that it has responsibility for the following:

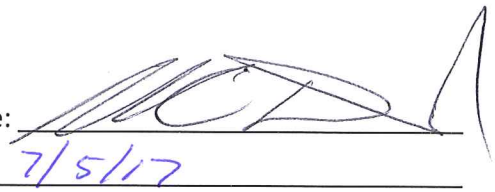
- Construction oversight in addition to the regulatory inspections conducted by Louisville MSD pursuant to the Erosion Prevention and Sediment Control Ordinance, Chapter 159;
- Drainage system and outfall mapping;
- Drainage system operation and maintenance;
- Road maintenance and upkeep, including snow and ice removal and related stormwater management activities;
- Drafting and implementing fleet and facility stormwater pollution prevention plans;
- Reporting and referring potential illicit discharges observations by municipal employees or other reports from residents to MSD for investigation and potential enforcement;
- Inspection, operation, maintenance and/or applicable certification that permanent (also known as post-construction) water quality devices, controls, and management practices are operating effectively;
- Implementation of education and outreach within the City of Jeffersontown to compliment the education and outreach provided by MSD which is tailored to local water bodies pollutants of concern;
- Preparation and timely submittal of annual compliance demonstration report to MSD according to agreed upon formats and standards; and

Certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the above statements are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

CITY OF JEFFERSONTOWN

Name: Bill Dieruf

Title: Mayor

Signature: 

Date: 7/5/17

CITY OF JEFFERSONTOWN MS4 PROGRAM NARRATIVES AND MEASURABLE GOALS

The City of Jeffersontown has an inter-local agreement with MSD, the primary co-permittee of the MS4 permit. The co-permittees collectively perform the required activities specified in KPDES Permit #KYS000001. This section will focus on the activities for which the City of Jeffersontown is responsible.

Table 1. Public Education, Outreach, Participation, and Learning Experiences (PEOPLE)

The City of Jeffersontown includes media, such as articles and stormwater messages, on the City's website, Facebook page, or Twitter account. Information regarding public services and participation opportunities are made available through these social media outlets. The education and outreach program is in place to educate the community on erosion and sediment control, floodplains and floodways, pollution of streams and water quality efforts to protect wildlife and the human element. This expanded program includes events such as "Gaslight Clean-Up", "Gutter Gremlins", "Bright Spot", "Tree Treasure Program", and the "Jefferson Gardens". Records of events and activities supported or promoted by the City are included in the annual report.

The City will also continue to implement the "Clean-N-Green Jeffersontown" program (formerly the "Spruce Up Jeffersontown" program) to include public education on the effects of liter, trash and illegal dumping. This program supplies garbage bags and clean-up materials to volunteers, and provides disposal of the collected debris. The number of events will be reported in the annual report.

The City also utilizes a work release programs to maintain a level of standard of litter control. The tons of litter or number of trash bags collected monthly is summarized in the annual report.

Stormwater awareness training for City officials and employees takes place annually, and includes training for the Mayor, Administrator, and Maintenance Director. Educational materials are available to all City employees. Sign-in sheets and summaries of training events will be included in the annual report.

The City is developing educational materials, such as boards and signs, to be placed in public areas, such as along biking/walking trails, that will be used to engage residents. A summary of events and educational materials developed will be included in the annual report.

Other cooperative events which Jeffersontown takes part in as either a supportive or non-lead role includes the Kentucky Stormwater Association (KSA), where the City is represented at a minimum of 75% of regular KSA meetings. The City also utilizes the Kentucky Transportation Cabinet (KYTC) Toolkit of public education materials, and is a member of the Coalition of Neighborhoods which is focused on litter control, community beautification, and neighborhood stormwater management issues. Events attended and educational materials used will be reported in the annual report.

Table 2. Illicit Discharge Detection and Elimination (IDDE)

The City of Jeffersontown has already mapped their stormwater system, and has continued to maintain and update their storm sewer GIS data, as needed, such as following annexations. Updates will be included in the annual report.

The City continues to enforce their illicit discharge/illegal dumping ordinance by posting signs prohibiting dumping at specific locations which have been designated problem areas. The City has a Memorandum of Agreement (MOA) with MSD that contains provisions for tracking and responding to resident complaints. Site inspections for known dumping sites will continue to take place.

Illicit discharge detection and elimination education continues to be provided by the City on the proper disposal of leaf debris and other materials which may impact stormwater quality. Educational materials are disseminated through monthly e-newsletters, the City's website, text messages, social media, and general notices to the public.

Table 3. Construction Site Stormwater Runoff Control Requirements

The City of Jeffersontown has an inter-local agreement with MSD to perform certain Construction Site Runoff program tasks. While MSD performs the Erosion Prevention and Sediment Control (EPSC) plan reviews and inspections, as a co-permittee, Jeffersontown will educate key staff in EPSC measures so that issues can be mitigated as soon as possible. The City attends quarterly program meetings to be educated on the MS4 program and other stormwater related programs that are occurring in Jefferson County. A City of Jeffersontown official inspects construction sites in partnership with MSD to ensure the EPSC ordinance is being followed using a standardized checklist. Design engineers are encouraged by the City to attend EPSC training certification courses offered by MSD. Cooperative efforts are documented in the annual report.

To assist and educate developers, contractors, and the general public on the EPSC practices in Jeffersontown, the City has developed and will continue to distribute educational handouts specific to EPSC practices. The City also uses the KYTC Environmental Resource Handbook, which contains one-page factsheets on EPSC activities.

Table 4. Post-Construction Stormwater Runoff Control for New Development and Redevelopment

Over the previous permit term, the City of Jeffersontown was required to complete a minimum of three BMP Pilot Projects. One of the projects the City of Jeffersontown implemented was a no-mow forest restoration area on a steep slope of Veteran's Park above Chenoweth Run. Also, the wooded riparian buffer along Chenoweth Run is protected in City easements. Lastly, approximately 80% of City of Jeffersontown's grass channels have at least a ten-foot buffer strip, which filters runoff before it reaches the stream and helps improve water quality. The City will continue to provide oversight for these ongoing projects. Also, in association with these and other post-construction BMPs, Jeffersontown has developed a checklist for reviewing post-construction BMPs. The post-construction runoff control checklist is also incorporated into the construction approval process.

The City has adopted and observes the water quality provisions of Cornerstone 2020 which represents a vision of how Louisville and Jefferson County's metro-government will be changing over the next twenty years.

The City of Jeffersontown's Public Works Department has an approved Hazardous Materials Use and Spill Prevention Control (HMPC) Plan to cover such items as salt storage areas and refueling areas. All dumpsters located within the City of Jeffersontown must be covered and fenced. The City continues to monitor these point source areas and maintains a high level of control for possible runoff, using a checklist.

Table 5. Good Housekeeping and Pollution Prevention for Municipal Operations

Street-maintenance in Jeffersontown is performed on an as-needed basis and follows EPSC requirements. As part of street sweeping efforts, the number of bags of trash collected and miles of roadway cleaned are tracked as part of the Litter Abatement Program and reported in the annual report.

Catch basins are mapped and will continue to be marked with “No Dumping” signs, as needed. Additionally, storm sewers are inspected and cleaned as needed, especially prior to a rain event. Stormwater channels and ditches are maintained on a regular schedule, and debris removed from stormw channels is disposed of properly. The City will continue to utilize a standard inspection checklist for bi-annual inspections of drainage easements and stormwater channels. The online citizen request tracker is also used to target areas where maintenance is needed.

The City performs annual inspections on de-icing equipment and calibrates the salt spreader, as needed. Monthly inspections are performed and documented at the Public Works Department by key staff trained in Good Housekeeping and Pollution Prevention activities. A Spill Inventory Form is used by the City to track spills and cleanup actions taken. Inspections and spills are reported in the annual report. Herbicides and pesticides are applied by properly licensed staff.

A contractor has been hired to collect municipal waste weekly, yard waste, and recyclables weekly. A component of the MS4 education and public participation program within Jeffersontown includes educating the public on the effects of pollution on streams, which benefits the waste collection program.

The City regularly attends co-permittee meetings with MSD and will continue to actively participate in the co-permittee partnership and explore opportunities to collaborate and share resources, as well as participate in peer reviews for program enhancements.

Table 6. Monitoring

The City of Jeffersontown has an interlocal agreement with MSD to perform the monitoring requirements of the MS4 permit.

Table 7. Performance Assessment and Reporting

The City of Jeffersontown has an interlocal agreement with MSD, the primary co-permittee on the MS4 permit, to perform annual reporting. The City of Jeffersontown submits its annual report to MSD for submittal to the Division of Water in the appropriate time frame developed by MSD.

CITY OF JEFFERSONTOWN SWQMP TABLES

TABLE 1. PUBLIC EDUCATION, OUTREACH, PARTICIPATION, AND LEARNING EXPERIENCES (PEOPLE)

The City of Jeffersontown has an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.

Element Task	Frequency or Measure of Success	Activity Required
Public Education Programs	Permittee shall provide records of articles, newsletters, or social media messages published per year describing "green" activities being supported or promoted by the City of Jeffersontown to be supplied in the annual report.	The permittee shall continue to include media, such as articles, on the City's website or post messages using social media, such as Facebook or Twitter, that makes information regarding public services and participation opportunities available to the public and disseminates information through the Jeffersontown website, www.jeffersontownky.gov. The permittee shall continue to implement the "Clean-N-Green Jeffersontown" program to include public education on the effects of liter, trash and illegal dumping. It will also provide beautification efforts to promote a healthy lifestyle and balance between the environment and everyday living. The program will educate the community on erosion and sediment control, floodplains and floodways, pollution of streams and water quality efforts to protect wildlife and the human element. This expanded program includes events such as "Gaslight Clean-Up", "Gutter Gremlins", "Bright Spot", "Tree Treasure Program", and the "Jefferson Gardens".
"Clean-N-Green Jeffersontown"	Permittee shall provide clean-up materials for clean-up events and report a summary of events in the annual report.	The permittee shall provide public participation activities for youth organizations, civic clubs, and residents of Jeffersontown such as "Clean-N-Green Jeffersontown" where the permittee supplies the necessary items, such as garbage bags and the permittee shall be responsible for proper disposal of collected debris.
Litter Control	Permittee shall track tons of litter or number of trash bags collected monthly and provide a summary in the annual report.	The permittee shall continue to provide litter abatement to reduce the trash into local waterbodies. The permittee may choose to continue utilizing work release programs to maintain a level of standard of litter abatement, or an effective equivalent.
Internal Training of City Officials and Employees	Permittee shall continue to train Mayor, Administrator, and Maintenance Director on stormwater issues. Permittee shall conduct annual stormwater awareness training for employees. A summary and sign-in sheets will be provided in the annual report.	The permittee is required to continue the training of the City's Mayor, City Administrator and Maintenance Director by attending MS4 presentations or an effective equivalent. The permittee shall continue to provide education of new trends and programs that could benefit the City and community or an effective equivalent. The permittee shall make educational materials available to employees concerning the prevention of stormwater pollution.
External Training	Permittee shall continue to conduct annual education outreach in public areas, such as biking/walking trails. A summary of events and materials developed will be included in the annual report.	The permittee shall develop educational materials, such as boards and signs, to be placed in public areas, such as along biking/walking trails, that will be used to engage residents. The permittee has developed a bike/walking master plan that addressed goals and objectives as well as policy issues relative to floodplains, erosion and sediment control and the impact to streams and drainage ways. This bike/walking trail will be used to conduct education training series or an effective equivalent shall be developed.

Cooperative Efforts (Jeffersontown provides supportive or other non-lead role)		
Element Task	**Frequency or Measure of Success**	**Activity Required**
Kentucky Stormwater Association (KSA)	Permittee shall participate in at least 75% of regular KSA meetings.	The permittee or co-permittee shall attend meetings or presentations discussing various MS4 programs and meeting topics/presentations as applicable, such as the MS4 Workgroup Meetings or an effective equivalent.
Kentucky Transportation Cabinet (KYTC)- Public Education Material	Permittee shall use the applicable materials to educate the citizenry.	The permittee shall use the KYTC Toolkit materials for education, if applicable, or an effective equivalent.
Jeffersontown – Coalition of Neighborhoods	Permittee shall report activities and programs participated and/or coordinated.	The permittee shall continue to coordinate and assist in the implementation of a variety of community events focused on litter control, community beautification and neighborhood stormwater management issues. The permittee shall promote and encourage the integration of stormwater quality themes and topics identified in the PEOPLE plan with Homeowner Associations and other interested groups.
TABLE 2. ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)		
The City of Jeffersontown has an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.		
Element Task	**Frequency or Measure of Success**	**Activity Required**
Mapping	Permittee shall continue to maintain and update their storm sewer system map, as needed. Updates will be included in the annual report.	The permittee shall maintain and update a storm-sewer system map, showing the location of all known major outfalls, as defined herein, and the names and location of all waters of the Commonwealth that receive discharges from those outfalls. Their comprehensive storm sewer system map shall also include publicly owned catchbasins, pipes, ditches, flood control facilities (retention/detention ponds), and post-construction water quality BMPs. If this mapping is completed using Geographical Information Systems (GIS) or Computer Aided Drafting (CAD) software, the permittee shall provide to the Division of Water, at a minimum, the MS4 boundary and the mapped infrastructure in either ESRI shape file formats (to include the .shp, .shx, and .dbf files) or geo- referenced AutoCAD drawings (.dwg file format).
Illicit Discharge/Illegal Dumping Ordinance	Permittee shall coordinate with MSD to investigate problem dumping areas and respond to resident complaints. The number of investigations and complaints will be provided in the annual report.	The permittee shall continue to enforce its illegal dumping ordinance and post signs that prohibit dumping at locations that are problem areas. The permittee shall also continue to provide a first line quick response system used to track complaints and concerns from the community in an effort to minimize the response time to various community issues, as well as implement the Memorandum of Agreement (MOA) with MSD that contains provisions for the tracking and enforcement of illicit discharges. The permittee shall also continue to perform site inspections of various known dumping sites in an effort to provide and improvement enforcement of ordinance. This effort minimizes the impact of the illegal dumping on stormwater quality.
Provide Education on Illicit Discharge Detection and Elimination	Permittee shall develop and implement targeted educational materials.	The permittee shall provide education on illicit discharges such as proper disposal of leaf debris, and other illicit discharges that have an impact on stormwater quality. The permittee shall use a monthly e-newsletter, City's website, text messages, social media, general notices advertised to the public, or an effective equivalent.

Cooperative Efforts (Jeffersontown provides supportive or other non-lead role)		
Element Task	**Frequency or Measure of Success**	**Activity Required**
Co-permittee Meetings	Permittee shall attend and actively participate in each co-permittee meeting.	The permittee shall attend and actively participate in quarterly co-permittee meetings to learn what other co- permittees are encountering and work towards cohesive solutions County- wide.
TABLE 3. CONSTRUCTION SITE STORMWATER RUNOFF CONTROL REQUIREMENTS (CS)		
The City of Jeffersontown has an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.		
Element Task	**Frequency or Measure of Success**	**Activity Required**
Jeffersontown/MSD Partnership	Permittee shall attend/coordinate quarterly program meetings with MSD to partner of projects.	The permittee has an inter-local agreement with MSD to perform certain Construction Site Runoff program tasks. While MSD performs the Erosion Prevention and Sediment Control (EPSC) plan reviews and inspections, as a co-permittee, Jeffersontown shall continue to educate key staff in EPSC measures so that issues can be mitigated as soon as possible. The permittee shall continue to attend quarterly program meetings to be educated on the MS4 program and other stormwater related programs that are occurring in Jefferson County.
Erosion Prevention and Sediment Control (EPSC) Plan	Permittee shall continue to develop and distribute training handouts for all staff and general public.	The permittee shall continue to develop and distribute educational handouts that will highlight the basic requirements of EPSC practices of Jeffersontown development activity for developers, contractors, and the general public on EPSC practices. The permittee shall also make use of KYTC's Environmental Resource Handbook.
Scheduled Inspections and Maintenance of BMPs	The Permittee shall utilize a standardized checklist that will document compliance.	The permittee shall inspect construction sites in partnership with MSD to ensure that the EPSC Ordinance is being followed by utilizing a standardized checklist.
Cooperative Efforts (Jeffersontown provides supportive or other non-lead role)		
Element Task	**Frequency or Measure of Success**	**Activity Required**
Construction Development Plan Process	The Permittee shall review and update the guidance document and make it publicly available.	The permittee shall review and update, as needed and through collaboration with MSD, guidance materials identifying the process that developers must follow to obtain related construction permits, including process flow charts and checklists. The permittee will continue to work with MSD through an inter-local agreement to review EPSC plans, as part of the application and construction drawing submittal, for approval.
Collaborative Guidance and Training	Permittee shall report cooperative activities in the annual report.	The permittee shall work with MSD to educate design engineers on various construction site stormwater runoff controls and standards that are required to be incorporated into the site construction documents.

CITY OF JEFFERSONTOWN SWQMP TABLES

TABLE 4. POST-CONSTRUCTION (PC) STORMWATER RUNOFF CONTROL FOR NEW DEVELOPMENT AND REDEVELOPMENT		
The City of Jeffersontown has an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.		
Element Task	**Frequency or Measure of Success**	**Activity Required**
Pilot BMP Projects	The Permittee shall provide a checklist of each development activity that qualifies for review and provide copies to the Community Development Director for incorporation into the development file.	The permittee shall continue to provide oversight for the following ongoing projects or an effective equivalent. During the last MS4 permit term, the City of Jeffersontown was required to complete a minimum of three BMP Pilot Projects. Firstly, Jeffersontown implemented a no-mow forest restoration area on a steep slope of Veteran's Park above Chenoweth Run. Also, the wooded riparian buffer along Chenoweth Run is protected in City easements. Lastly, approximately 80% of City grass channels have at least a ten-foot buffer strip, which filters runoff before it reaches the stream.
Build-Upon Area Reductions	Permittee shall continue enforcement of Cornerstone 2020.	Cornerstone 2020 is a comprehensive plan with details on how Louisville- Jefferson County's metro government will be changing over the next 20 years with an estimated population boon of 60,000 people added to the area. The plan encompasses the environment, transportation, commerce, and overall quality of life for the citizens of Louisville. Jeffersontown has adopted the provisions of Cornerstone 2020. The permittee shall continue the enforcement of the Cornerstone 2020's water quality provisions or an effective equivalent.
Source Controls	Permittee shall develop a quarterly checklist to document compliance.	The permittee shall continue to enforce the Hazardous Materials Use and Spill Prevention Control (HMPC) plans that have been approved. These plans include, but are not limited to, salt storage areas and refueling areas are to be covered and all dumpsters located within Jeffersontown must be covered and fenced. The permittee shall continue to evaluate these point source areas for possible runoff using a quarterly checklist to document compliance.
Cooperative Efforts (Jeffersontown provides supportive or other non-lead role)		
Element Task	**Frequency or Measure of Success**	**Activity Required**
Collaborative Guidance and Training	The Permittee shall produce quarterly reports to track success of educational material and runoff designs.	The permittee shall continue to use a post-construction run-off control checklist that will be incorporated into the construction approval process whereby each contractor will be required to document compliance with current standards at bond release or final approval.

CITY OF JEFFERSONTOWN SWQMP TABLES

TABLE 5. GOOD HOUSEKEEPING/POLLUTION PREVENTION FOR MUNICIPAL OPERATIONS

The City of Jeffersontown has an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.

Element Task	Frequency or Measure of Success	Activity Required
Street Maintenance	Permittee shall perform quarterly inspections of maintenance efforts to gauge success.	The permittee shall continue to follow the EPSC requirements during its street maintenance activity and incorporate additional BMPs during general street maintenance as needed.
Street Sweeping	Permittee shall perform quarterly inspections of maintenance efforts to gauge success and track the number of bags of trash collected from roadways, as well as the miles of roadway cleaned annually.	The permittee shall continue the street sweeping activities, except in winter months, to reduce the amount of trash and debris from the roadways.
Catch Basins	The Permittee shall continue to maintain a map of all catch basins along with direction of flow and perform updates as needed.	The permittee shall continue to map and identify all City-maintained catch basins and inlets, determining direction of flow and drainage course. The permittee shall continue to implement the "FROG No Dumping! Drains to our Creeks" program, in collaboration with MSD, or an effective equivalent.
Storm Sewer Cleaning	The Permittee shall continue to utilize a standard inspection checklist of all storm sewer systems inspected and maintained.	The permittee shall continue to vacuum storm sewers, as needed. The permittee shall continue to utilize a standard inspection checklist for bi-annual (twice per year in spring & fall) inspections for drainage easements and stormwater channels within Jeffersontown. The online citizen request tracker through the City's website may be used to target areas where maintenance is needed.
Channel Maintenance	Permittee shall continue to utilize a standard inspection checklist for inspections of stormwater channels and ditches.	The permittee shall continue to maintain concrete channels on an as-needed basis. The permittee shall continue to maintain grass channels on a regular schedule. Proper disposal of debris removed from drainage channels shall be maintained. The online citizen request tracker through the City's website may be used to target areas where maintenance is needed.
Pollution Prevention for De-icing	Permittee shall perform inspections of de-icing equipment annually.	The permittee shall perform annual inspections on de-icing equipment and continue to calibrate the salt spreader as needed.
BMP Inspection and Maintenance	Permittee shall continue to train key staff within the Public Works Department and use of a detailed inspection report for monthly inspections.	The permittee shall continue to inspect and maintain the Good Housekeeping/Pollution Prevention BMPs employed by the City. The permittee shall continue to utilize a checklist in detailing the monthly inspections. A Spill Inventory Form will continue to be utilized by the City to track spills and cleanup actions taken.

CITY OF JEFFERSONTOWN SWQMP TABLES

Element Task	Frequency or Measure of Success	Activity Required
Pollution Prevention for Herbicides and Pesticides	Permittee shall maintain employee licensure.	The permittee shall continue to use properly licensed staff for the application of herbicides and pesticides.
Continuation of Existing Programs	The Permittee shall continue to move towards larger recycling city-wide and provide public education on the effects of pollution on the stormwater system.	The permittee shall continue to hire a contractor to collect municipal waste weekly and yard waste and recyclables every other week or have an effective equivalent. The permittee shall expand the "Clean-N-Green Jeffersontown" program to include public education on the effects of litter, trash, and illegal dumping on stormwater quality. It will educate the community on erosion and sediment control, floodplains and floodway, the effects of pollution on streams, and water quality efforts to protect wildlife and the human element, or an effective equivalent.
Stormwater Pollution Prevention Plans for Co-permittee Operations	Permittee shall attend regular meetings to maintain consistency.	As requested by co-permittees, the permittee shall provide periodic peer review of various stormwater pollution prevention plans and procedures to help identify opportunities to improve the effectiveness of the plans and implementation. The permittee shall provide a collaborative effort to manage stormwater issues across all co-permittees throughout the county.

TABLE 6. MONITORING (M)

The City of Jeffersontown has an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.

TABLE 7. PERFORMANCE ASSESSMENT AND REPORTING (PAR)

The City of Jeffersontown has an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A. The City of Jeffersontown shall submit its annual report to MSD for submittal to the Division of Water in the appropriate time frame developed by MSD.

CO-PERMITTEE CERTIFICATION
MS4 STORMWATER QUALITY MANAGEMENT PLAN
KPDES PERMIT NUMBER KYS000001

LOUISVILLE METRO is designated as a co-permitte covered by the Municipal Separate Storm Sewer System (MS4) permit that has been issued by the Kentucky Division of Water under the Kentucky Pollutant Discharge Elimination System (KPDES) program. **LOUISVILLE METRO** has prepared the attached Stormwater Quality Management Plan for the permit cycle effective February 1, 2017.

Under the terms of KPDES Permit No. KYS000001, and implemented through a Memorandum of Understanding with Louisville and Jefferson County Metropolitan Sewer District, **LOUISVILLE METRO** certifies that it has responsibility for the following:

- Construction oversight and permitting in addition to that provided through Louisville MSD by the Erosion Prevention and Sediment Control Ordinance, Chapter 159;
- Implement education and outreach at the applicable levels of neighborhood and local community that compliment the education and outreach provided by MSD tailored to local waterbodies pollutants of concern;
- Inspection, operation, maintenance and/or applicable certification that permanent (also known as post-construction) water quality devices, controls, and management practices are operating effectively;
- Road maintenance including snow and ice removal related stormwater management activities;
- Preparation and implementation of fleet and facility stormwater pollution prevention;
- Report and refer potential illicit discharges observations by municipal employees or other reports from residents to MSD for investigation and potential enforcement;
- Preparation and timely submittal of annual compliance demonstration report to MSD according to agreed upon formats and standards; and
- Administration of other codes and ordinances including, but not limited to, solid waste management, animal control and land development

Certification: that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the above statements are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false

LOUISVILLE METRO

Name: Patrick Stevens

Title: EHS Coordinator

Signature: Pat Stevens

Date: 6/28/17

LOUISVILLE METRO GOVERNMENT – PARKS

Public Education, Outreach, Participation, and Learning Experiences (PEOPLE)

- Newsletter

Frequency or Measure of Success	Activity Required
Permittee shall report the number of newsletter recipients	Louisville Metro Government – Parks shall employ its monthly newsletter at least twice during the year to discuss pollution prevention information.

Illicit Discharge Detection and Elimination (IDDE)

- Training session(s) for applicable staff

Frequency or Measure of Success	Activity Required
Permittee shall report number of staff trained per year	Louisville Metro Government – Parks shall require staff to attend training on the recognition and reporting of illicit discharges as provided by MSD.

Construction Site Stormwater Runoff Control Requirements (CS)

- City construction projects to follow construction site BMP requirements

Frequency or Measure of Success	Activity Required
Permittee shall summaries the contracts, city code officer inspection log of sites and will include with the annual report	Louisville Metro Government – Parks shall require all contracts specify compliance with the Erosion Prevention and Sediment Control Program requirements and require that in-house projects be inspected for compliance.

Post-Construction Stormwater Runoff Control for New Development and Redevelopment (PC)

- Tree-green space replacement to provide future ground cover

Frequency or Measure of Success	Activity Required
Permittee shall continue the memorandum-for-record filed yearly by participating departments	Louisville Metro Government – Parks shall maintain or increase the total amount of trees or other green space/grounds covered on its properties, in accordance with appropriated resources.

Good Housekeeping/Pollution Prevention for Municipal Operations

- Municipal Facility SWPPPs

Frequency or Measure of Success	Activity Required
Permittee shall revise SWPPPs as needed and retain the revised SWPPPs on file	Louisville Metro Government – Parks shall maintain and revise, as needed, MS4 SWPPPs for applicable “industrial” type facilities.

- Staff Training

Frequency or Measure of Success	Activity Required
Permittee shall retain copies of training records and training references as provided	Louisville Metro Government – Parks shall train staff, as needed, on the SWPPP requirements.

- Parks Ground Maintenance

Frequency or Measure of Success	Activity Required
Permittee shall continue the memorandum-for-record filed yearly by the department	Louisville Metro Government – Parks shall develop and implement a Pesticide, Herbicide and Fertilizer (PHF) Program which includes required certification of applicators, reporting on the number of certifications, procedures for the storage and proper use of PHFs and the corresponding measures to protect MS4s and receiving waters from the PHFs.

Monitoring (M)

- Louisville Metro Government, and its agencies (Parks), have an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.

Performance Assessment and Reporting (PAR)

- Louisville Metro Government, and its agencies (Parks), have an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A. Louisville Metro Government – Parks shall submit its annual report to MSD for submittal to the Division of Water in the appropriate time frame developed by MSD.

LOUISVILLE METRO GOVERNMENT – PUBLIC WORKS & ASSETS

Public Education, Outreach, Participation, and Learning Experiences (PEOPLE)

- Website

Frequency or Measure of Success	Activity Required
Permittee shall report the number of hits received on an annual basis and revise as needed	Louisville Metro Government – Public Works & Assets shall maintain the website, www.louisville.gov, as it addresses littering, water quality, recycling, snow removal, pollution prevention and air quality..

Illicit Discharge Detection and Elimination (IDDE)

- Mapping

Frequency or Measure of Success	Activity Required
Permittee shall complete and submit to the Division of Water within 24 months of the effective date of this permit	Louisville Metro Government – Public Works & Assets shall develop and maintain a store-sewer system map, showing the location of all known major outfalls, as defined herein, and the names and location of all waters of the Commonwealth that receive discharge from those outfalls. If this mapping is completed using Geographical Information Systems (GIS) or Computer Aided Drafting (CAD) software, the permittee shall provide to the Division of Water, at a minimum, the MS4 boundary and the mapping infrastructure in either ESRI shape file format geo-referenced AutoCAD drawings.

- Training session(s) for applicable staff

Frequency or Measure of Success	Activity Required
Permittee shall report number of staff trained per year	Louisville Metro Government – Public Works & Assets shall require staff to attend training on the recognition and reporting of illicit discharges as provided by MSD.

Construction Site Stormwater Runoff Control Requirements (CS)

- City construction projects to follow construction site BMP requirements

Frequency or Measure of Success	Activity Required
Permittee shall summaries the contracts, city code officer inspection log of sites and will include with the annual report	Louisville Metro Government – Public Works & Assets shall require all contracts specify compliance with the Erosion Prevention and Sediment Control Program requirements and require that in-house projects be inspected for compliance.

Post-Construction Stormwater Runoff Control for New Development and Redevelopment (PC)

- Tree-green space replacement to provide future ground cover

Frequency or Measure of Success	Activity Required
Permittee shall maintain records of trees removed and planted by participating departments	Louisville Metro Government – Pubic Works & Assets shall maintain or increase the total amount of trees or other green space/grounds covered on its properties, in accordance with appropriated resources.

Good Housekeeping/Pollution Prevention for Municipal Operations

- Municipal Facility SWPPPs

Frequency or Measure of Success	Activity Required
Permittee shall revise SWPPPs as needed and retain the revised SWPPPs on file	Louisville Metro Government – Public Works & Assets shall maintain and revise, as needed, MS4 SWPPPs for applicable “industrial” type facilities.

- Staff Training

Frequency or Measure of Success	Activity Required
Permittee shall retain copies of training records and training references as provided	Louisville Metro Government – Public Works & Assets shall train staff, as needed, on the SWPPP requirements.

- Metro Government Environmental Program

Frequency or Measure of Success	Activity Required
Permittee shall revise the Environmental Program and manual as needed	Louisville Metro Government – Public Works & Assets shall make recommendations to incorporate the Mayor's Green Initiative Strategies within the Metro Environmental Program Manual, as needed.

Monitoring (M)

- Louisville Metro Government, and its agencies (Public Works & Assets), have an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.

Performance Assessment and Reporting (PAR)

- Louisville Metro Government, and its agencies (Public Works & Assets), have an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A. Louisville Metro Government – Public Works & Assets shall submit its annual report to MSD for submittal to the Division of Water in the appropriate time frame developed by MSD.

LOUISVILLE METRO GOVERNMENT – ZOO

Public Education, Outreach, Participation, and Learning Experiences (PEOPLE)

- Environmental Outreach Events

Frequency or Measure of Success	Activity Required
Permittee shall conduct at least four environmental outreach event annually	Louisville Metro Government – Zoo shall conduct annual environmental outreach events such as the Earth Day event, night safaris, School-at-the-Zoo, Wetland Program or an effective equivalent.

Illicit Discharge Detection and Elimination (IDDE)

- Training session(s) for applicable staff

Frequency or Measure of Success	Activity Required
Permittee shall report number of staff trained per year	Louisville Metro Government – Zoo shall require staff to attend training on the recognition and reporting of illicit discharges as provided by MSD.

- Stormwater Improvements

Frequency or Measure of Success	Activity Required
Permittee shall retain project reports and documents	Louisville Metro Government – Zoo shall continue to partner with MSD on identified improvements to the drainage and monitoring systems for control of flow and contamination of Stormwater from facilities.

Construction Site Stormwater Runoff Control Requirements (CS)

- City construction projects to follow construction site BMP requirements

Frequency or Measure of Success	Activity Required
Permittee shall summaries the contracts, city code officer inspection log of sites and will include with the annual report	Louisville Metro Government – Zoo shall require all contracts specify compliance with the Erosion Prevention and Sediment Control Program requirements and require that in-house projects be inspected for compliance.

Post-Construction Stormwater Runoff Control for New Development and Redevelopment (PC)

- Louisville Metro Government, and its agencies (Zoo), have an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.

Good Housekeeping/Pollution Prevention for Municipal Operations

- Municipal Facility SWPPPs

Frequency or Measure of Success	Activity Required
Permittee shall revise SWPPPs as needed and retain the revised SWPPPs on file	Louisville Metro Government – Zoo shall maintain and revise, as needed, MS4 SWPPPs for applicable “industrial” type facilities.

- Staff Training

Frequency or Measure of Success	Activity Required
Permittee shall retain copies of training records and training references as provided	Louisville Metro Government – Zoo shall train staff, as needed, on the SWPPP requirements.

- Metro Government Environmental Program

Frequency or Measure of Success	Activity Required
Permittee shall revise the Environmental Program and manual as needed	Louisville Metro Government – Zoos shall make recommendations to incorporate the Mayor’s Green Initiative Strategies within the Metro Environmental Program Manual, as needed.

Monitoring (M)

- Louisville Metro Government, and its agencies (Zoo), have an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A.

Performance Assessment and Reporting (PAR)

- Louisville Metro Government, and its agencies (Zoo), have an inter-local agreement with MSD, the primary Co-Permittee on this MS4 permit; the responsibilities are divided according to the Part I, Section A. Louisville Metro Government – Zoo shall submit its annual report to MSD for submittal to the Division of Water in the appropriate time frame developed by MSD.

CO-PERMITTEE CERTIFICATION
MS4 STORMWATER QUALITY MANAGEMENT PLAN
KPDES PERMIT NUMBER KYS000001

THE CITY OF SHIVELY is designated as a co-permittee covered by the Municipal Separate Storm Sewer System (MS4) permit that was issued by the Kentucky Division of Water under the Kentucky Pollutant Discharge Elimination System (KPDES) program. **THE CITY OF** SHIVELY has prepared the attached Stormwater Quality Management Plan for the permit cycle effective February 1, 2017.

Under the terms of KPDES Permit No. KYS000001 and implemented through an interlocal agreement with Louisville and Jefferson County Metropolitan Sewer District, **THE CITY OF** SHIVELY certifies that it has responsibility for the following:

- Construction oversight in addition to the regulatory inspections conducted by Louisville MSD pursuant to the Erosion Prevention and Sediment Control Ordinace, Chapter 159;
- Drainage system and outfall mapping;
- Drainage system operation and maintenance;
- Road maintenance and upkeep, including snow and ice removal and related stormwater management activities;
- Drafting and implementing fleet and facility stormwater pollution prevention plans;
- Reporting and refering potential illicit discharges observations by municipal employees or other reports from residents to MSD for investigation and potential enforcement;
- Inspection, operation, maintenance and/or applicable certification that permanent (also known as post-construction) water quality devices, controls, and management practices are operating effectively;
- Implementation of education and outreach within the City of SHIVELY to compliment the education and outreach provided by MSD which is tailored to local water bodies pollutants of concern;
- Preparation and timely submittal of annual compliance demonstration report to MSD according to agreed upon formats and standards; and

Certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the above statements are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

CITY OF SHIVELY
Name: JOHN HAYWOOD
Title: DIRECTOR PUBLIC WORKS

Signature: John Haywood
Date: 6-28-17

SECTION 5.5 COMPLIANCE ACTIVITIES REPORT FOR THE CITY OF SHIVELY

The Co-Permittees individually and collectively continue to perform the required activities specified in KPDES Permit # KYS000001. This section will focus on those activities for which the City of Shively was responsible.

Public Education/Outreach Programs

The City of Shively has an interlocal agreement with MSD, the primary Co-permittee on the MS4 permit, to perform certain public education program tasks. Therefore, only those tasks performed by the City of Shively are listed on this report.

The City of Shively maintains a website, www.shivelyky.gov. Public education also takes place through quarterly newsletters, which addresses services including recycling, leaf pick-up, junk pick-up and catch basin cleaning.

Illicit Discharge Detection and Elimination (IDDE)

The City of Shively's Works Department Employees and Code Enforcement Officers will attend Sewer Overflow Response Protocol (SORP) training provided by MSD.

The Shively Fire Department performs spill mitigation at motor vehicle accident sites to clean up and remove automotive fluids and prevent them from washing into a stormwater conveyance.

The Shively Police Department patrols local streets and upon discovering any illicit dumping has occurred, will notify the works department to remove the debris.

Construction Site Runoff Controls (CS)

The City of Shively has an interlocal agreement with MSD, the primary Co-Permittee on the MS4 permit, to perform certain CS program tasks. MSD administers the Erosion Prevention and Sediment Control (EPSC) Ordinance in all of Jefferson County, including Shively. The City of Shively Code Enforcement Officer also inspects construction sites as needed. The officer may issue a citation for violations of Shively city code, or may refer the site to MSD for enforcement action. The City of Shively has an approved EPSC General Permit issued by MSD for Public Works activities.

Post Construction Controls (PC)

Shively adopted the provisions of Cornerstone 2020. Shively has a practice of not installing paved curbs and gutters on residential streets. Grass swales are used to collect street runoff that flows into the Mill Creek Cutoff of the Ohio River.

Shively will collaborate with MSD to install an infiltration garden in Shively Park. The purpose of the project will be to provide stormwater infiltration and educate Shively residents on the benefits of stormwater management at their homes.

Good Housekeeping / Pollution Prevention and Source Controls

The components of the drainage system require routine inspections and maintenance. Street maintenance by Shively is performed as needed. The City of Shively follows the EPSC General Permit requirements.

The City of Shively manually collects debris along roadways and clean catch basins as needed. The debris is sent to the landfill. Storm sewers are cleaned as needed with a pressure auger and debris is sent to the landfill. Drainage ditch channels are routinely monitored and debris collected is sent to the landfill.

The City of Shively facilities have approved HMPC plans. De-icing salts are stored in a covered building. The City of Shively calibrates salt spreaders as needed. Salt is pre-wetted with calcium chloride to maximize effectiveness. Good Housekeeping/Pollution Prevention BMP's are inspected regularly by the City Maintenance Director and are regularly maintained. The City of Shively does not use pesticides. Herbicides are used sparingly.

The city has a weekly pick-up of solid waste, recyclables and yard waste. The city recycles cardboard, newspaper, aluminum, glass and plastic.

A private contractor removes used motor oil from the city's maintenance facility.

Monitoring (M)

The City of Shively has an interlocal agreement with MSD to perform monitoring requirements of the MS4 permit. Watershed monitoring performed on the Mill Creek Cutoff characterized the water quality downstream from the City of Shively MS4.

Reporting (R)

The City of Shively ha an interlocal agreement with MSD to perform the Annual Reporting function. Shively provides MSD with the information regarding its MS4 program activities for the Annual Reporting.

3.5.7 Reporting (R)

The City of Shively has an interlocal agreement for MSD to perform the Annual Reporting function. Shively provided MSD with the information regarding its MS4 program activities for this Annual Report.

4.0 SWQMP Measurable Goals Table

Task	BMP- Activity Description	Milestone Product/Measurable Goal	Measure(s) of Success	Contributing Parties	Year 1 PY 16-17	Year 2 PY 17-18	Year 3 PY 18-19	Year 4 PY 19-20	Year 5 PY 20-21
1. MCM1 PUBLIC EDUCATION AND OUTREACH									
	A. Local MS4 Activities								
	Issue quarterly newsletter.			Director Public Works/City Clerk	x	x	x	x	x
	Post information on the city's electronic sign, located on Dixie Highway.			City Clerk	x	x	x	x	x
	Distribute literature at city events. Easter Egg Hunt, Trunk or Treat and Light Up Shively.			Public Works Director	x	x	x	x	x
	B. Cooperative Efforts with copermittees or other partners								
	Encourage local schools to perform community service by labeling catch basins and picking up litter.	Number of students involved and invitations issued.	Implement programs.	School Administrations/Public Works Director	x	x	x	x	x
	Link to MSD website.		Number of hits.	Shively City Clerk/MSD	x	x	x	x	x
2. MCM2 PUBLIC INVOLVEMENT/PARTICIPATION									
	A. Local MS4 Activities								
	Distribute information at city events.								
	Easter Egg Hunt, Trunk or Treat and Light Up Shively.			Director Public Works	x	x	x	x	x
	B. Cooperative Efforts with copermittees or other partners								

3. MCM3 ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)										
	A. Local MS4 Activities									
	Shively Fire Department will mitigate automotive fluid spills.			Shively Fire Department						
	B. Cooperative Efforts with copermittees or other partners									
	Works department and code enforcement officers will attend SORP training.	Number of employees attending.		Public Works Director/MSD						
4. MCM4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL										
	A. Local MS4 Activities									
	Code Enforcement Officers will inspect sites.			Shively Code Enforcement						
	B. Cooperative Efforts with copermittees or other partners									
5. MCM5 POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT										
	A. Local MS4 Activities									
	Construct a 100 ft. bio-swale in Shively Park.			Director Public Works		x				
	B. Cooperative Efforts with copermittees or other partners									
	Construct an infiltration basin Located on property owned by The Brown-			Public Works Director/Bro						

	Forman Distillery.			wn-Forman					
6. MCM6 POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS									
	A. Local MS4 Activities								
	Manually clean catch basins and storm sewers.				x	x	x	x	x
	Construct an addition to the salt storage building.	Deliveries of salt and the loading of trucks will be contained under roof.		Works Department Employees	x	x	x	x	x
	B. Cooperative Efforts with copermittees or other partners								

msd
Safe, clean waterways

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