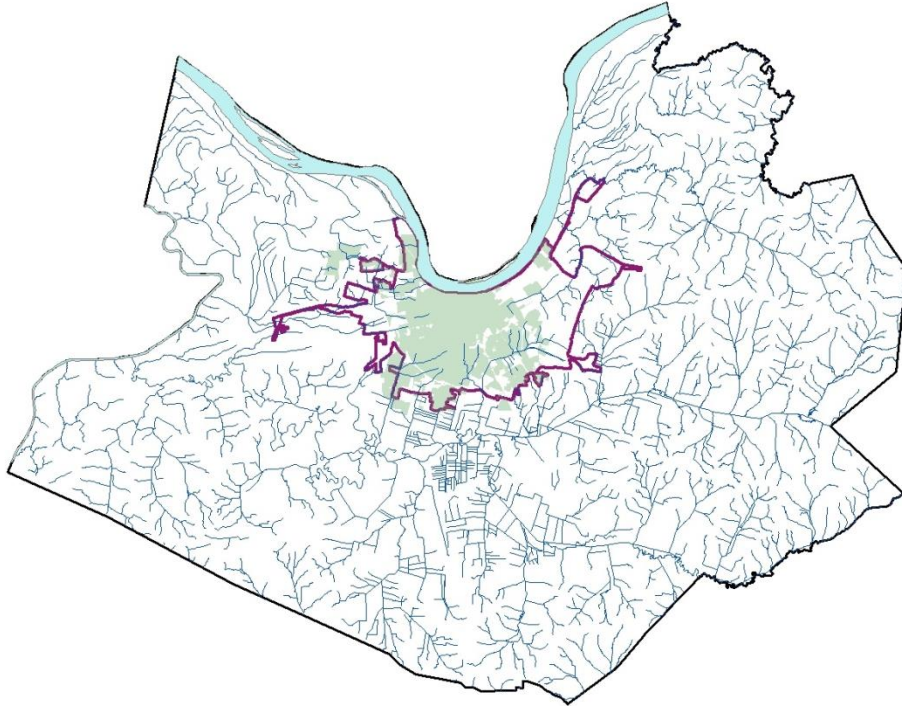


Owensboro & Co-Permittee Daviess County Storm Water Quality Management Plan



Third Permit Cycle

Updated September 2024

Prepared By:

City of Owensboro & Daviess County Fiscal Court



2018 Owensboro & Co-Permittee Daviess County Storm Water Quality Management Plan

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Community Background

Introduction

In 2003, for the first permit cycle the City of Owensboro, Daviess County, and the Kentucky Transportation Cabinet (KYTC) District 2, developed a Storm Water Phase II Plan to comply with the Kentucky Division of Water and Federal requirements. For this original permit cycle, the City of Owensboro took the lead as the permittee and Daviess County Fiscal Court and KYTC signed on as co-permittees. During the second permit cycle, the City of Owensboro again took the lead, and only had Daviess County Fiscal Court as a co-permittee. This will be the same set up for the third cycle. See **Attachment A** for a copy of the Memoranda of Agreement with Daviess County Fiscal Court.

The City of Owensboro and Daviess County Fiscal Court's MS4 boundary is based on the last U.S. Census' Urbanized Boundary which was completed in 2010. The Urbanized Boundary is 21,791 Acres, of that 52% (11,488 Ac) are within City limits, and 48% (10,303 Ac) are the responsibility of Daviess County Fiscal Court. The City of Owensboro enforces all MS4 regulations City wide, even if corporate boundary areas are outside of the MS4 regulated boundary. Implementation of this plan is a collaborative effort from both the City and County and their staff.

Community Information

Located along with southern banks of the Ohio River in the Western Kentucky Coal Field Region, Owensboro is the state's fourth largest City and the County seat of Daviess County. With a City population of 57,265, Owensboro's corporate limits houses approximately 59% of the County's population (96,656)¹. The city is positioned 32 miles southeast of Evansville, Indiana and approximately 100 miles southwest of Louisville, Kentucky. Owensboro maintains access to several major roadways, including US 60, US 231, and US 431. Via US 60 and US 231 Owensboro has access to I-64. The Audubon and Natcher Parkways also serve the area, with the Audubon providing a corridor to I-69 and the Natcher providing a corridor to I-65.

Within the Urban Service Area of Owensboro the main land uses are Agricultural and Residential. Per Owensboro Metropolitan Planning Commissions Comprehensive Plan, approximately 52% of the urban area is zoned agricultural and 25% is zoned residential. From 2005 to 2011 there is a continued trend of rising residential zoning². The business and

¹ U.S. Census Bureau, <https://www.census.gov/quickfacts/fact/table/daviesscountykentucky/PST045217>

² Owensboro Metropolitan Planning Commission, <http://www.iompc.org/documents/comprehensive-plan/>

professional zones are continuing to increase with coal and industrial zones are decreasing within the Urban Service Area.

Local Water Resources

TMDLs

Currently there are nine Total Maximum Daily Loads (TMDLs) within the MS4 boundary for Owensboro – Daviess County. There are 9 segments of streams that were added to the Waters with an approved TMDL listing in 2022. All of these segments are in Daviess County. Though none of these segments are within the MS4 boundary for Owensboro – Daviess County, a map has been added as **Attachment B** for reference.

<https://eec.ky.gov/Environmental-Protection/Water/Protection/TMDL/Pages/Approved-TMDLs.aspx>

Below is a listing of all TMDL locations.

Section	Impaired Use	Support Status	Indicator Bacteria	MS4 Boundary	City Limits
Blackford Creek 0.0-3.8	PCR	Nonsupport	E. Coli	No	No
Buck Creek 8.0 – 11.0	PCR	Nonsupport	E. Coli	No	No
Crooked Creek 0.0-3.05	PCR	Nonsupport	Fecal Coliform	No	No
Deserter Creek 0.0-3.1	PCR	Nonsupport	Fecal Coliform	No	No
Knoblick Creek 0.0-2.1	PCR	Nonsupport	Fecal Coliform	No	No
N Fork of Panther Creek 4.2-9.1	PCR	Nonsupport	Fecal Coliform	No	No
Panther Creek 0.1-2.95	PCR, SCR	Nonsupport (both uses)	E. Coli Fecal Coliform	No	No
Panther Creek 2.95-5.9	PCR	Nonsupport	Fecal Coliform	No	No
South Fork Panther Creek 9.55-14.0	PCR	Nonsupport	Fecal Coliform	No	No

303(d) Listing Impaired Water Bodies

The draft 2022 303(d) list was at Public notice from February 21 to April 22, 2023. Kentucky’s 2022 Integrated Report was submitted to the U.S. Environmental Protection Agency on June 9, 2023. The EPA approved Kentucky’s 2022 303(d) list on July 7, 2023. For impaired water bodies, there are 2 segments on the 303(d) listing that fall within or border the MS4 boundary. These 2 segments are listed below in the chart. There are a total of 31 impaired water bodies or segments within Daviess County per the Kentucky Division of Water’s 2022 Integrated Report. A map and a full chart of all listings within the County has been added to this report as **Attachment C**.

Section	Pollutant(s)	MS4 Boundary	City Limits
Burnett Fork 0.0-1.25	Nitrogen (Total), Phosphorus (Total), Sedimentation/Siltation	Yes	No
Gilles Ditch 0.0-5.4	Cause Unknown	Yes	Yes

305(b) Listing Assessed Water Bodies

In Daviess County 43 water bodies and/or segments have been assessed by the Division of Water, according to the 2022 Integrated Report. Of these 43, only 5 fall within or border the MS4 boundary. Two of the segments are impaired and lie within the MS4 Boundary. The segments are Burnett Fork 0.0 to 1.25 and Gilles Ditch 0.0 to 5.4. The remaining segments listed as unimpaired that border the MS4 Boundary are Pup Creek 2.3-6.7, Green River 0.0 to 27.9, and Green River 27.9 to 46.85. The Green River 0.0 to 27.9 borders the northwest MS4 boundary. The Green River 27.9 to 46.85 borders the southwest MS4 boundary. Pup Creek 2.3-6.7 borders the northeast corner of the MS4 boundary. All three of these bordering segments are categorized as a level 2 in the integrated report. Meaning the assessed designated uses are Fully Supporting, but not all designated uses are assessed. A map and chart of all listings within the County has been added as **Attachment D**.

Special Use Waters

The only water body in Daviess County recognized as a Special Use Water is an approximately 2 mile long section of the Ohio River from 760.7 – 758.7³. This section, though outside of the MS4 boundary, is a segment that the MS4 directly drains into. The Kentucky Division of Water has it listed as an Outstanding State Resource Water, and there are two federally listed threatened or endangered species in this segment of the Ohio River both of which are breeds of freshwater mussels (Sheepnose Mussel, and Rabbitsfoot Mussel). A map of the Special Use Water segment has been as **Attachment E**.

Unique Features

There are several unique features in Owensboro – Daviess County that impact the MS4 area. Flooding is a major event that has required local leaders to address mitigation and implementation of various storm water projects throughout the area. The southern portion of the MS4 area falls within the floodplain of Panther Creek and its tributaries that during flood events are inundated with backwater. In the last approximately 10 years the City has received over 30 million in Kentucky Infrastructure Authority (KIA) loans to help with major flood control and combination sewer system separation projects. These projects have had a major and lasting effect on the flooding and water quality in Owensboro – Daviess County. A map of the flood hazard areas within the MS4 boundary has been added as **Attachment F**.

Owensboro – Daviess County’s MS4 is split between two watersheds, the Ohio River and Green River. Within those watersheds there is approximately 3,599 Acres that are part of the combined sewer system (CSS). The CSS in the Owensboro MS4 area plays a distinctive role. Although the Ohio River represents the northern boundary of the MS4 area, very little storm

³ Kentucky Division of Water, <http://water.ky.gov/waterquality/Pages/SpecialUseWaters.aspx>

water actually drains directly into the river. The CSS allows a portion of the “first flush” to be treated at the wastewater treatment plant prior to discharging into the Ohio River. The City’s sanitary sewer company Regional Water Resource Agency (RWRA) is currently under a Consent Judgment with the Kentucky Division of Water and Environmental Protection Agency (EPA), and has a Community Long-Term Control Plan to address the CSS in Owensboro – Daviess County. **Attachment G** contains a map of the current CSS boundary and major watersheds.

Much of the Owensboro MS4 area derives its water supply from a well field. There are three zones of Wellhead Protection Areas that encompass a northeastern section of the MS4 area⁴. Such a designation is crucial for the prevention of contaminants entering the critical areas near the public water supply. See **Attachment H** for a map of the three Division of Water Protection Areas.

Within the MS4 area, there are several Kentucky Pollutant Discharge Elimination System (KPDES) permitted facilities representing a wide range of industries and activities. Within the MS4 limits there are 104 active KPDES permitted facilities as of August 9, 2018⁵. These range from industrial facilities, concrete plants, coal permits, and active construction sites. A map and chart of all active listings within the MS4 boundary has been added as **Attachment I**.

For reference, **Attachment J** shows the urbanized boundary of Owensboro – Daviess County’s MS4. This map also includes the major watersheds and outfalls.

⁴ Kentucky Division of Water, <http://water.ky.gov/groundwater/Pages/WellheadProtection.aspx>

⁵ Kentucky Division of Water, <http://water.ky.gov/permitting/Pages/default.aspx>, per site on 8/9/18

MCM 1: Public Education & Outreach

Summary

Public Education & Outreach allows greater support and compliance from the community through understanding and knowledge. When the community understands the responsibilities expected of them, they can better improve and protect the water quality of the MS4. To have a successful MCM 1 the MS4 strives to form partnerships, use educational materials, and reach diverse audiences. The KYG20 Permit outlines the following key components of MCM #1:

- Implement and maintain a public education program to distribute educational materials to the community or conduct equivalent public outreach activities in the community that focus on impacts from stormwater discharges to waterbodies and the steps that the public can take to reduce pollutants in stormwater runoff.
- Prioritize public education and outreach efforts to focus on pollutants impairing or threatening the local waterways.
- Utilize as guidance the KYTC Stormwater Education, EPA's Nonpoint Source Toolbox, or substitute alternate outreach materials that provide an effective equivalent.
- Demonstrate that the education and outreach efforts are targeted to the appropriate audiences and balanced between policy-makers, local citizens, and other stakeholders.
- Measure the understanding and adoption of the targeted behaviors among the targeted audiences.
- Measure the targeted audience understanding of their impacts on water quality and the adoption of the behavior changes resulting from the permittee's public education and outreach efforts.

Narrative

To help with the implementation of the public education program and meet the requirements of the KYG20 permit, Owensboro – Daviess County created a Stormwater Quality Advisory Committee (SWQAC) in permit cycle 1, which continues to meet quarterly. This committee includes but is not limited to developers, elected officials, engineers, citizens, emergency management, waste water treatment employees, and others. The SWQAC is a great outreach mechanism for the MS4, along with educational materials which are handed out at the communities various events. Some of the events the MS4 participated in and handed out materials included rain barrel classes, Arbor Day tree planting events, summer day camp educational classes, rain garden seminars, and events at the local science and history museum. At each of these events, the handouts were targeted towards the groups to be attending and ways they could reduce pollutants in the stormwater runoff.

The MS4 also prioritizes educational and outreach materials that focus on relevant pollutants. For example, in the spring the MS4's social media posts may focus on smart fertilizer tips and in the fall may concentrate on the City's free leaf pickup and why the leaves should be kept out of the curb and gutter. This allows a large outreach on Facebook to all who follow the City of Owensboro and Daviess County Fiscal Court. Also, the City and County websites give a great overview on what the MS4 program is and how the community can help achieve the water quality goal. The MS4 will also continue to use social media and the websites to educate the community about water quality, and inform them on upcoming events.

In the last permit cycle the MS4 utilized the KYTC outreach program, and also utilized materials from the EPA's toolbox, Project Wet booklets, as well as locally created handouts. During the summer day camp classes, the MS4 used enviroscares and project wet lessons and handouts to engage children. While, at events such as the Arbor Day tree planting local brochures were created focusing on the benefits of tree plantings for water quality. By focusing the educational materials towards the relevant audience, a greater impact and understanding is achieved.

The City and County also have revised the Public Improvement specifications to require all new inlets to be stamped with the message "Dump No Waste – Drains to Waterway" this allows continuous education throughout the community at all new inlets. This change helps to reduce pollution through educated citizens.

At the end of each year in the permit cycle, the City and County will review the measurable goals and determine what was accomplished during the particular year under review. If goals are not met as stipulated in the plan, all involved will assess why and outline all impediments in the required annual report. If necessary, the goals will be modified for the upcoming year.

BMPs

The Owensboro – Daviess County MS4 program will focus on the following in order to address MCM 1:

- Continue efforts related to the Storm Water Quality Advisory Committee (SWQAC)
- Develop relevant and applicable materials for public education
- Utilize social media to reach the public in a more effective way
- Broadcast Public Service Announcements (PSAs) to inform the public about storm water issues and community activities on the local TV channel
- Address the views and concerns of all sectors of the community, including minorities and traditionally disadvantaged groups
- Educate younger children about the importance of water quality

Measureable Goals

The Owensboro – Daviess County MS4 will work to achieve the following measureable goals for MCM 1:

- Create and distribute promotional items with the MS4's environmental message throughout the community especially at outreach events
- Utilize media and social media to advertise water quality message
- Utilize the statewide program of radio and television PSA's and track the number aired in the MS4 area each year
- Send illicit discharge violators brochures on water quality along with the notice of deficiency letters
- Continue the SWQAC and promote the meetings for new members to attend

MCM 2: Public Involvement & Participation

Summary

Public Involvement and Participation can provide larger public support, shorter implementation schedules, a wider base of expertise and economic benefits, and a pathway to other programs. When citizens are able to play an active role in the water quality program through development and involvement it allows citizens to feel a part of the process. Citizen volunteers also allow fewer obstacles as they are a free, valuable, and intellectual resource. Furthermore, the participation allows networking between the community and MS4 governmental authorities. To have a successful MCM 2 the MS4 utilizes public notices for involvement opportunities as well as implementing the best BMPs to further the program. The KYG20 Permit outlines the following crucial requirements of MCM #2:

- Implement a public involvement/participation program that complies with applicable KY and local public notice requirements.
- Programs activities may include representation on local stormwater management workgroups or advisory councils, public notices, and public hearings, facilitating education volunteers, storm drain marking, riparian planting, stream clean-up events, or an effective equivalent. The program shall provide public notice of opportunities by methods designed to reach the intended audience.

Narrative

The MS4's SWQAC again has a major role in the implementation of this MCM. SWQAC is not only an education and outreach mechanism, but also a way to involve and engage the public for participation in all steps of the MS4's water quality program. The SWQAC will continue to meet quarterly through this permit cycle to help engage citizens by allowing them to discuss any issues they may have, and allow them to provide input.

The MS4's participation events are advertised via press releases by the City. To further participation in the last permit cycle both the City and County heavily utilized social media such as Facebook. For example the Arbor Day tree planting events were advertised on Facebook multiple times by both agencies which reached hundreds and gave a very diverse group of participants at the event.

Other events the MS4 has participated in include rain barrel workshops, rain garden workshops, and tree planting events. To help reach disadvantaged groups the City, County, and local sanitary sewer company often partner to allow reduced or free participation costs. The networking with other agencies and organizations is key to the success of the MS4 program for both cost sharing and audiences reached. The City and County also cater some events to where

all can participate regardless of age. For example, at the tree planting event all holes were pre-drilled and the MS4 gave rides to the planting area to allow children and elderly the opportunity to help in the riparian planting.

Some of the other ways the MS4 engages stakeholders includes economic incentives to citizens and businesses to help with water quality. Some of these incentives include free City leaf pickup in the fall / winter, and free limb pickup in the spring / summer. The City also uses the Neighborhood Alliance Program to reach all areas of the City for free bulk trash pickup once a year. This allows citizens to have a free mechanism to get rid of old furniture, appliances, or large items that otherwise would have fees to dispose of. Daviess County Fiscal Court also offers a “Cash for Trash” program where non-profits are given money for every mile of roadway they clean. The County has occasionally provided free hazardous waste pickup events and in addition the solid waste transfer station always allows free oil and anti-freeze drop off.

As with all of the measureable goals, at the end of each year during the review of the annual report, the MS4 will review the goals and determine what was accomplished during the year. If changes in goals are needed after assessment, the MS4 will outline the are not met as stipulated in the plan, all involved will assess why and outline all obstacles in the annual report and make changes if needed for the upcoming year.

BMPs

The Owensboro – Daviess County MS4 program will focus on the following in order to address MCM 2:

- Encourage participation in all storm water related activities
- Continue efforts related to the Storm Water Quality Advisory Committee (SWQAC)
- Keep volunteers involved in projects to improve water quality and promote the water quality awareness message.
- Target specific population sectors such as ethnic, minority, and low income communities for participation in events

Measureable Goals

The Owensboro – Daviess County MS4 will work to achieve the following measureable goals for MCM 2:

- Insure press releases and other methods such as social media prior to all SWQAC meetings and public participation events
- Ensure that SWQAC meets quarterly
- Utilize volunteers in continues participation events, with a focus on specific population sectors

- Continue economic incentive programs throughout the MS4 for water quality

MCM 3: Illicit Discharge Detection and Elimination

Summary

An illicit discharge by KYG20 definition is any discharge to the MS4 that is not composed entirely of stormwater except discharges pursuant to a KPDES permit (other than the KPDES permit for discharges from the MS4 resulting from firefighting activities or other de minimis activities allowable under the MS4 regulations) and other discharges referenced in 40 CFR 122.26(d)(2)(iv)(B)(1). These untreated discharges can contribute high levels of pollutants into receiving waterbodies, which when high enough can degrade the receiving water's aquatic wildlife as well as human health. Recognizing the detrimental effects that illicit discharges can have on receiving waters, the MS4 is required to develop and implement a program that can detect and eliminate these illicit discharges. To have a successful MCM 3 the MS4 keeps a map of the storm sewer system, has ordinances as well as appropriate enforcement procedures, addresses illegal dumping into the MS4 through a written plan, as well as implements the best BMPs to further the program. The KYG20 Permit outlines the following specific requirements of MCM #3:

- Implement and enforce an ordinance that prohibits illicit discharges
- Develop and implement a written plan to address illicit discharges including illegal dumping that includes:
 - Procedures for locating priority areas likely to have illicit discharges.
 - Procedures for field assessment activities, including dry-weather screening of representative outfalls. The recommended level of effort is twenty percent (20%) of the major outfalls per year, with all of the major outfalls being addressed this permit term.
 - A mechanism and protocols in place that provide for the public reporting of spills and other discharges.
- Develop and maintain a storm-sewer system map showing the location of the following:
 - All known major outfalls
 - Named receiving waters
 - MS4 system including catch basins, pipes, ditches, flood control facilities, post-construction BMPs, and private post-construction BMPs which have been approved by the MS4

Narrative

The City of Owensboro and Daviess County Fiscal Court have both passed ordinances regarding illicit discharges that include regulatory mechanisms and enforcement procedures, see **Attachment K** for a copy of the City and County ordinance. These ordinances will be

monitored and revised if needed to meet the requirements of the current permit. When the MS4 detects an illicit discharge the violator is not only sent a letter outlining the ordinance violation, but also informational brochures regarding illicit discharges and why water quality matters. Illicit discharges are handled through the ordinances, but the MS4 also uses the Illicit Discharge Detection and Elimination (IDDE) Plan for proper protocols.

In the last permit cycle the IDDE Plan was written by the MS4, see **Attachment L** for a copy. The plan states procedures locating problem areas, finding the source, correcting the illicit connections, and documentation for any actions taken. The protocol for dry screenings major outfalls is also outlined. The plan also goes over procedures for the public reporting violations, and the processes the City and County will follow regarding the violations. The City in the last permit cycle also has an online / app reporting program that helps track violations and enforcement procedures, and both entities still utilize contact numbers for any issues encountered.

To encourage citizens, and to prevent illicit discharges before they happen, the County solid waste transfer station allows free oil and anti-freeze drop off in addition to the free drop off locations provided by private businesses throughout the MS4. In the last permit cycle the City and County also hosted a free hazardous waste pickup event. These events help alleviate possible illicit discharges by giving free and safe ways to dispose of these items.

To help educate citizens about water quality, all new inlets in the City and County are required to have stamped on them "Dump No Waste – Drains to Waterway". By stamping all the inlets, the hope is to further educate citizens who otherwise may have assumed the inlets water would be treated prior to being discharged, which is a common misconception.

The largest improvement in the last permit cycle for the MS4 was the growth of the storm system map. The City and County have been working on increased mapping of the MS4 system, and combining the maps into one centralized database. In the last year of the second permit cycle the MS4 increased linear miles mapped by 63%. The MS4 also added new asset fields such as post-construction to allow easy mapping and documentation of approved post-construction additions, as well as a field to denote if a lake or stream is on the impaired list. The MS4 will continue these mapping efforts while utilizing the KY Geoportal⁶ site for GIS file downloads related to the MS4. Field verifying mapped assets will also play a major role in the next permit cycle to verify the system is mapped correctly. A copy of the GIS database will be provided electronically.

⁶ KY Division of Geographic Information, <http://kygeonet.ky.gov/>

BMPs

The Owensboro – Daviess County MS4 program will focus on the following in order to address MCM 3:

- Identify major illicit discharge sources
- Update and continue to improve the MS4 storm system map with storm system assets
- Educate citizens, especially violators, about the hazards associated with illicit discharges and the reporting of spills
- Promote awareness of illicit discharges through the storm drain markings
- Prohibit illicit discharges throughout the MS4 with the enforcement mechanisms in the ordinances

Measureable Goals

The Owensboro – Daviess County MS4 will work to achieve the following measureable goals for MCM 3:

- Advertise citizen complaint system app / website / and phone numbers for violators
- Conduct dry-weather screenings at an average of 20% of outfalls a year or all outfalls within the permit cycle
- Update and verify storm sewer map
- Enforce City and County ordinances and track illicit discharge complaints and results of the inspections and enforcement
- Ensure all newly constructed inlets are stamped as required by the Public Improvement Specifications

MCM 4: Construction Site Runoff Control

Summary

Polluted stormwater runoff from construction sites is a major concern for MS4s, as sediment is a major pollutant of concern for water quality. Though sediment is a runoff pollutant on various sites, construction sites sediment runoff rates are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. To help keep construction site runoff out of waterbodies MS4 operators are required to have an ordinance or other regulatory mechanism in place that states the mandatory erosion and sediment controls. In addition the MS4 must have procedures for site plan review, site inspection and enforcement, mechanisms to ensure compliance, and a process to receive information from the public. The KYG20 Permit outlines the following requirements of MCM #4:

- The ordinance or other regulatory mechanism shall include, at a minimum:
 - Requirements for construction site operators to implement appropriate erosion and sediment control BMPs that, at a minimum, shall be protective as KYR10.
 - Requirements for construction site operators to control waste at the construction site that may cause adverse impacts to water quality.
 - Requirements for NOI for those sites one acre and greater, or less than one acre in size that are part of a larger common plan of development or sale.
 - Site-plan review to affirm compliance with local ordinances, which incorporate consideration of potential water-quality impacts.
 - Establishment of authority for receipt and consideration of information submitted by the public.
 - Establishment of authority for site inspections and enforcement of control measures.
- Develop, implement, and enforce a program to reduce pollutants in stormwater runoff from active construction sites. The program shall include, at a minimum:
 - A permitting process with plan review to affirm compliance with local ordinances, inspection, and enforcement capability for all projects subject to this program as described above.
 - Procedures for periodic inspections of all known permitted construction sites during construction to verify proper installation and maintenance of required erosion and sediment controls.
 - Development and implementation of an enforcement strategy that includes escalating enforcement remedies to respond to issues of non-compliance.

- Inventory projects and prioritize sites for inspection. The inventory should track the results of inspections, enforcement procedures taken, if any.
- A training program for MS4 staff in the fundamentals of erosion prevention and sediment control and in how to review erosion and sediment control plans or Stormwater Pollution Prevention Plans.
- Procedures for providing educational and training measures for construction-site operators or, if applicable, shall adopt procedures for notifying construction-site operators of available education and training opportunities.

Narrative

Owensboro and Daviess County both passed updated stormwater ordinances during the last permit cycle. These ordinances, included in **Attachment K** outline the regulatory mechanisms for construction sites. This outlines the requirements for land disturbance, permitting, site inspections, and enforcement. Both ordinances also require a KYR10 to be submitted to the Kentucky Division of Water for sites with disturbances greater than 1 acre, or those that are part of a larger common development plan.

To ensure the KY Division of Water requirements as well as the local ordinances are followed site plan review is key. The MS4 reviews the development plans to determine if the operators and owners are in compliance. Locally these sites are also issued what is referred to as a Cut / Fill Permit. This is the local permit given stating land disturbance is allowed. Part of the check list for a Cut / Fill Permit ensures the KYR10 has been filed for the site. By issuing these local permits, and regularly checking the KY Division of Waters permit site, a list of all active sites can be established by the MS4.

The list of active sites is used by both the City and County for monthly inspections to ensure compliance with local and state requirements. When inspections are completed any violations are noted and the operators or owners of the sites are notified. The notifications outline the next enforcement steps through the notice of deficiency, and escalating notice of violations. The time periods allotted for corrections are noted on the inspection forms when given to violators. By completing monthly inspections and giving notices the City and County are able to help control the construction site runoff and aid in water quality. When necessary the MS4 also gives educational materials to developers with reoccurring issues. For example, if silt fence is continually installed incorrect the Kentucky Erosion and Sediment Control (KEPSC) guideline books with examples of J-hooks and maintenance schedules for silt fences are handed out. Educating violators is key in preventing water quality issues.

The MS4 also utilizes contact numbers previously mentioned in MCM#3 for any public comments regarding construction. The City also has the app / website for public comment or concerns encountered.

BMPs

The Owensboro – Daviess County MS4 program will focus on the following in order to address MCM 4:

- Update City and County ordinances as needed to ensure proper erosion and sediment controls are in place
- Continue standardized site plan review, site inspection and enforcement
- Track all active and expired KYR10 permitted sites
- Provide educational opportunities and materials to site operators and owners, especially violators
- Utilize KEPSC training materials for construction sites.

Measureable Goals

The Owensboro – Daviess County MS4 will work to achieve the following measureable goals for MCM 4:

- Continue to inspect active sites monthly that require KYR10 permit coverage
- Track and document all inspections and violations
- Ensure all active permitted sites have a KEPSC qualified, or approved equal, personnel on site
- Monitor and revise ordinances if necessary to guarantee erosion and sediment controls

MCM 5: Post-Construction Stormwater Management in New Development and Redevelopment

Summary

Runoff from areas undergoing new development and redevelopment has been shown to significantly affect receiving waterbodies. Prior planning to minimize these pollutants is known as post-construction runoff control. Post-construction runoff has two substantial impacts. First is the quality of the runoff which can be altered by development and include oil, grease, pesticides, heavy metals, and nutrients. The second kind of runoff impact is quantity of runoff. Increased impervious surfaces interrupt the natural percolation of water causing quick and plentiful runoff. To reduce these pollutants in post-construction runoff the MS4 has implemented ordinances, best management practices, and ensured long-term operation and maintenance of these controls. The KYG20 Permit outlines the following specific requirements of MCM #5:

- The design of post-construction controls shall attempt to maintain pre-development runoff conditions (peak flow and volume) or be as equally protective.
 - Develop, adopt, and implement an ordinance or other regulatory mechanism that addresses post-construction stormwater runoff from new and redevelopment projects that disturb at least one acre, and projects less than one acre that are part of a larger common plan of development or sale, located within the MS4.
 - Include an on-site stormwater runoff quality treatment standard based on 80th percentile precipitation event.
 - Include standards for runoff control that are considered sufficient to protect existing in-stream water uses for development and redevelopment.
- For projects that cannot meet this water-quality treatment standard, the MS4 may allow: off-site mitigation and payment-in-lieu.
 - The off-site mitigation option entails implementing measures to enhance infiltration/evapotranspiration/reuse that may be implemented at another location in the same watershed as the original project
 - The payment-in-lieu option allows the owner/operator of a construction site to choose to make a payment in lieu of post-construction BMPs.
- Review and evaluate policies with a goal of identifying regulatory impediments to the installation of green infrastructure, and report the findings.
- Develop and implement project review, approval, and enforcement procedures for new development and redevelopment projects that includes:
 - Written procedures for the site-plan review and approval process

- Written procedures to demonstrate and document that post-construction stormwater measures have been installed per design specifications
- Require BMP owners to establish and enter into long-term maintenance practices.
- Verify all stormwater management practices are operating correctly and are properly maintained with the goal of completing an inspection of all BMPs within the MS4 during the permit cycle.
- Create a program to notify the BMP owner or operator of deficiencies during a maintenance inspection.
- Document the number and types of projects reviewed for new and redevelopment considerations and the types of BMPs installed including green infrastructure and buffers.

Narrative

In the last permit cycle the City and County added a chapter to the Owensboro Metropolitan Public Improvement Specifications (PI Specs) to solely address KYG20 post-construction. This specification outlined the requirements for onsite stormwater runoff quality treatment standards. Both the City and County also added requirements in the respective ordinances. Chapter 14 of the PI Specs for Owensboro – Daviess County outlines the requirements, calculations, examples, guidance, and eleven standards for various BMPs. Both the City and County also note the MS4 is open to other BMPs, with proper supportive documentation showing how the system works to treat the runoff as required for the site. The PI Specs also gives credits for open-space preservation, trees, shrubs, and vines, and preserving existing trees.

These requirements from the ordinance and PI Spec are reviewed during the MS4s site plan review process. The developers are also required to ensure long term maintenance of the systems, and the BMP locations are mapped. In the permit cycle all BMPs will be verified installed and functioning by the MS4. If there are any issues, the MS4 will enforce in accordance to the ordinance, and also may ask the developer to retain an engineer to state the system is functioning as designed.

The City also has multiple post-construction BMPs throughout the MS4 that are maintained and owned by the City. These BMPs include rain gardens, infiltration basins, as well as manufactured systems such as suntree units. The manufactured systems are on a scheduled cleaning cycle to insure the system is functioning properly.

To help with water quantity standards the PI Specs also require storm water detention when post-development runoff exceeds pre-development runoff. This aids the MS4 in reducing the flooding issues that are prevalent in the area.

The City and County have also been very supportive with community outreach events that focus on post-construction projects. For example multiple rain gardens were constructed in the MS4 over the last permit cycle through the KY Extension Office in partnerships with Regional Water Resource Agency (RWRA), the City, and County. During the rain garden workshops the Extension Office also taught a half day course on how to create a rain garden at home, and touched on water quality education. Additionally, the Extension Office, RWRA, the City, and County partnered multiple times to put on rain barrel classes. The participants were educated and then were able to make and take home a rain barrel for a minimal cost, which reaches to more diverse groups in the community.

BMPs

The Owensboro – Daviess County MS4 program will focus on the following in order to address MCM 5:

- Review and revise, if needed, ordinances and public improvement specifications related to structural and non-structural best management practices for post-construction
- Inspect approved post-construction BMPs each permit cycle
- Continue support of post-construction education events

Measureable Goals

The Owensboro – Daviess County MS4 will work to achieve the following measureable goals for MCM 5:

- Continue site plan review, inspection, and enforcement for post-construction BMPs on private developments in the MS4
- Map approved post-construction BMPs in the MS4
- Inspect approved post-construction BMPs in each permit cycle, with a goal of 20% each year
- Support post-construction education events each year of the permit cycle

MCM 6: Pollution Prevention & Good Housekeeping for Municipal Operations

Summary

This minimum control measure requires the MS4 to examine and change as needed their own actions to help ensure a reduction in the amount and types of pollution that can enter waterways. By examining the facility operations it allows the MS4 to note possible problem areas, pollutants of concern at each site, and good housekeeping BMPs that are relevant to each specific site. In order to have a successful MCM #6 the MS4 needs to develop and implement an operations and maintenance program and provide employee training. Both of these have an ultimate goal of preventing or reducing pollutant runoff from the municipal operations into the MS4. The KYG20 Permit requires the following requirements of MCM #6:

- Develop and implement a written Operation and Maintenance (O & M) plan that includes a training component for municipal staff with the goal of preventing or reducing pollutant runoff from municipal operations.
- Include employee training to prevent and reduce stormwater pollution resulting from activities such as parks and open space maintenance, fleet and building maintenance, new construction and land disturbances, stormwater system maintenance, and green infrastructure maintenance.
- Include an inventory of municipal facilities owned and operated by the MS4 including, maintenance activities, maintenance schedules, and ongoing written inspection procedures for structural and non-structural BMPs. These BMPs shall be designed to reduce floatables and other pollutants discharged from the separate storm sewers; provide controls for reducing the discharge of pollutants from municipally-owned and operated streets, roads, highways, municipal parking lots, maintenance and storage yards with exposed bulk materials and/or fuel storage facilities that have the potential to discharge pollutants of concern to the storm sewer system, and fleet maintenance shops with outdoor storage areas. BMPs are needed to control runoff from salt/sand storage locations and snow disposal areas operated by the MS4, as well as waste transfer stations. The O & M plan must incorporate procedures for properly disposing of waste (such as dredge spoil, accumulated sediments, floatables, and other debris) removed from the separate storm sewers and areas listed above.

Narrative

The City and County both have written O&M plans that were updated in the last permit cycle. The O&Ms programs not only cover the requirements of good housekeeping, but the entire KYG20 permit as a whole. The O&M program incorporates the IDDE plan (**Attachment**

L), monitoring plan (**Attachment M**), outfall inspections, and illicit discharge inspections, along with other logs and documentation required in each annual report. By having all information centralized in one program manual it allows easier implementation of the program.

One of the key components of the O&M program is documentation of the maintenance activities, schedules, and inspections. Each City and County operated facility is noted in the O&M plan with specific notes regarding location (if MS4 or CSS), as well as notes on possible pollutants from the sites. For the storm sewer system itself, RWRA films and cleans the MS4 system as requested by City and County, and also regularly cleans the CSS. These quantities are documented in the annual report each year. The City also has a stormwater crew that cleans, mucks, and cuts City maintained ditches and basins. Any issues encountered during the inspections are noted as well. The inspection map and schedule are also part of the O&M plan.

On site controls for reducing or eliminating pollutants are found on MS4 owned sites. Both salt storage areas are covered and secondary containment BMPs are found around high risk pollutants such as fueling areas and brine containers. The City also purchased a closed cycle street sweeper during the first permit cycle and it is regularly used to clean the streets. Other good housekeeping measures include free leaf pickup in the fall / winter and free limb pickup in the spring / summer for City residents. Owensboro – Daviess County also has a free recycle center to help residents reduce litter and minimize environmental impacts. The County’s transfer station also accepts oil and antifreeze for free to help prevent illegal dumping.

Educating employees is also essential. Staff directly related to the MS4 program attend trainings offered through Kentucky Stormwater Association (KSA), and related webinars. Other municipal staff is trained with webinars, videos, and / or informational bulletins related to specific operations.

BMPs

The Owensboro – Daviess County MS4 program will focus on the following in order to address MCM 6:

- Reduce pollutant discharge from high pollutant areas such as streets, salt storage areas, and waste transfer stations
- Collect leaves, yard waste, and limb and dispose of them at the transfer station or landfill
- Offer oil and anti-freeze collection to help prevent illegal dumping
- Inspect facilities on a regular basis
- Continue filming and cleaning of storm system and track
- Train employees to prevent and reduce storm water pollution

Measureable Goals

The Owensboro – Daviess County MS4 will work to achieve the following measureable goals for MCM 6:

- Continue and document employee training
- Continue leaf / yard waste pickup and street sweeping in the City of Owensboro and track tonnage
- Maintain the City / County facilities inventory
- Clean and maintenance the MS4 maintained system as needed including catch basins, basins, and inlets

Attachments

Attachment A

Memoranda of Agreement

Attachment B

Proposed TMDL Map

Attachment C

303(d) Chart and Map

Attachment D

305(b) Chart and Map

Attachment E

Special Use Waters Map

Attachment F

Flood Hazard Areas Map

Attachment G

CSS & Major Watersheds Map

Attachment H

Water Protection Areas Map

Attachment I

Active Permit Sites Chart

Attachment J

Major Watersheds and Outfalls Map

Attachment K

City and County Stormwater Ordinances

Attachment L

IDDE Plan

Attachment M
Monitoring Plan

Attachment N
Measureable Goals Table