



JOINT STORMWATER MANAGEMENT PROGRAM

MS4 Permit #MO-0136557

Coverage for:

Boone County, Missouri

City of Columbia, Missouri

University of Missouri (MU)

Revised December 2021

Prepared by:

Boone County Resource Management

City of Columbia Utilities Department

MU Department of Environmental Health and Safety

STORMWATER MANAGEMENT PROGRAM

For Boone County/City of Columbia/MU

Table of Contents

STORMWATER MANAGEMENT PROGRAM	1
Contact Information	4
Regulatory & Background Information	5
Water Quality & TMDLs in Boone County	6
Co-Permittee Information	8
Stormwater Program Review & BMP Iterative Process	9
MINIMUM CONTROL MEASURES	10
MCM 1 – Public Education and Outreach on Stormwater Impacts	10
MCM 2 – Public Involvement and Participation	20
MCM 3 – Illicit Discharge Detection and Elimination	28
MCM 4 – Construction Site Stormwater Runoff Controls	35
MCM 5 – Post-Construction Stormwater Management in New Development and Redevelopment	49
MCM 6 – Pollution Prevention and Good Housekeeping for Municipal Operations	58
TABLES	
Table 1. Impaired Waters of Boone County	
Table 2. TMDLs Located in the MS4 Plan Area	
Table 3. Target Audiences & Sources of Pollution	
Table 4. MCM 1 BMPs	
Table 5. MCM 2 BMPs	
Table 6. MCM 3 BMPs	
Table 7. MCM 4 BMPs	

Table 8. MCM 5 BMPs

Table 9. MCM 6 BMPs

APPENDICES

Appendix A. BMPs & Measurable Goals

Appendix B. County Inspection Reports

Appendix C. County Inspection Procedures and Checklist

Contact Information

The individuals listed below are the persons primarily responsible for the content of this SWMP and are listed as specified by section D.5.a of the permit.

Boone County:

Nicki Rinehart
Stormwater Coordinator
Boone County Resource Management
801 E. Walnut, Room 315
Columbia, MO 65201
(573) 886-4330
nfuemmeler@boonecountymo.org

City of Columbia:

Erin Keys, P.E.
Engineering & Operations Manager
Sewer and Storm Water Utilities
City of Columbia
Columbia, MO 65202
(573) 874-7502
erin.keys@como.gov

University of Missouri:

Ted Haeussler
Environmental Affairs Professional
MU Environmental Health & Safety
180 General Services Building
Columbia, MO 65211
(573) 882-3950
haeusslert@missouri.edu

Regulatory and Background Information

Regulatory:

This Joint Stormwater Management Plan (SWMP) has been developed in accordance with the Stormwater Phase II Final Rule requirements specified in Part D of the site-specific permit MO-0136557 for discharges from small regulated Municipal Separate Storm Sewer Systems (MS4s), as well as per state regulation 10 CSR 20-6.200 and federal regulations 40 CFR Parts 9 and 122.

Background:

Boone County is located in central Missouri. The County is bordered by the Missouri River, and the Counties of Cooper, Moniteau, and Cole on the south; by Howard County on the west; by the Counties of Randolph and Audrain on the north; and, by the Counties of Audrain and Callaway on the east. The total land area within the County is 691 square miles. The County is situated about 125 miles east of Kansas City and about 125 miles west of St. Louis. Major thoroughfares are Interstate Highway 70 and U.S. Highways 63 and 40.

Boone County has a population of 183,610 (2020 US census). The largest city is Columbia, with a population of 126,254. Columbia is the fourth most-populous and fastest growing city in Missouri. The City's current land mass is just over 66 square miles.

Columbia is the home of the University of Missouri, with more than 30,000 students, as well as Stephens College (548 students (2018-19)) and Columbia College (10,767 (2018-19)). Other towns in Boone County include Centralia (4,213 (2019)), Ashland (3,907 (2019)), Hallsville (1,771 (2019)), Sturgeon (990 (2019)) Rocheport (244 (2019)), Harrisburg (410 (2019)), Hartsburg (86 (2019)), Pierpont (56 (2019)), McBaine (10 (2019)) and Huntsdale (21 (2019)).

Approximately 25% of the population lives in the rural areas of Boone County. According to the 2017 US Agriculture Census, there are 1,184 farms in the county with an average size of 180 acres. The total land used for farming is 212,732 acres.

Hydrology:

Boone County is bordered by the Missouri River on the southwest, and by Cedar Creek on the east. There are twenty-three sub-basins that are entirely or partially within the county boundaries. Drainage is mainly towards the Missouri River, from northeast to southwest. However, the extreme northeastern section of the county (Centralia) flows towards the Salt River. The largest watershed is Perche Creek which drains more than 70% of the landmass. Hinkson Creek, a 90 square mile watershed, is the single largest contributor to Perche Creek. Hinkson is fed by Grindstone Creek, Flat Branch, Hominy Branch, County House Branch, Meredith Branch, and Mill Creek. More than 90,000 people live in the Hinkson Creek Watershed.

Between Columbia and Ashland is the Bonne Femme Watershed. This area is well known for karst topography, with numerous caves, sinkholes and losing streams. The area also contains several state parks. Bonne Femme Creek feeds the cave system for the Devil's Icebox and Rockbridge State Park. Also, in this area is Three Creeks Conservation Area, maintained by the Missouri Department of Conservation. The streams running through these parks are designated as Outstanding State Resource Waters.

Water Quality and TMDLs in Boone County

Several area streams do not support warm water aquatic life or whole-body contact recreation. These streams have been listed on the State’s List of Impaired Waters as required by section 303(d) of the Clean Water Act (CWA). Once a waterbody is listed, a Total Maximum Daily Load (TMDL) must be developed to set the maximum amount of pollution that can enter the stream and still maintain water quality standards. The following table shows the waterbodies in Boone County that are on the 2020 Impaired Waters List (Section 303(d)).

Table 1: Impaired Waters of Boone County

Waterbody Name	Pollutant	Source	Miles/acres impaired	TMDL
Bonne Femme Creek	Bacteria	Rural NPS	14.8	
Cedar Creek	Unknown	Unknown	37.4	
Little Bonne Femme Creek	Bacteria	Unknown	9.0	
Bass Creek	Bacteria	Rural NPS	4.4	
Foster Creek	Ammonia	Ashland WWTP	2.0	
Fowler Creek	Low D.O.	Unknown	6.0	
Gans Creek	Bacteria	Unknown	5.5	
Grindstone Creek	Bacteria	Urban/Rural NPS	2.5	
Hinkson Creek	Bacteria	Urban/Rural NPS	26.4	
Hominy Branch	Bacteria	Runoff-various	1.0	
Turkey Creek	Bacteria	Unknown	6.3	
Lake of the Woods	Mercury	Atmospheric	3.0	
Philips Lake	Mercury	Atmospheric	32.0	

In streams where the identified pollutant is bacteria, the sources could be from wildlife or agriculture in the rural areas, leaky septic systems, sanitary sewer or lagoon overflows, or cross connected pipes in the suburban areas.

According to the 2017 National Agricultural Statistics Service (NASS) there were 22,370 head of cattle, 88,873 hogs and pigs, 1,441 sheep, 1,664 goats, 1,937 horses and ponies and 13,316 poultry in the county.

City of Columbia Integrated Management Plan (IMP) for Wastewater & Stormwater:

The City of Columbia completed the *Our Columbia Waters Integrated Management Plan for Wastewater and Stormwater* (IMP) in 2018. The goal of the IMP is to develop adaptable and affordable long-term recommendations that meet Columbia’s wastewater and stormwater management needs while addressing Clean Water Act obligations.

Table 2: TMDLs Located in the MS4 Plan Area

Waterbody Name	Waterbody ID	Pollutant of Concern	EPA Approval Date
Hinkson Creek	1007, 1008	Unknown	2011

Hinkson Creek TMDL Collaborative Adaptive Management (CAM) Process:

The Hinkson Creek Collaborative Adaptive Management (CAM) process for the Hinkson Creek TMDL began in April 2012. CAM is a science-driven, stakeholder-based process for decision making while dealing with the scientific unknowns inherent in many physical and biological systems. It uses a continuing process to make changes and then to determine the effect of those changes. These diverse groups are synthesizing complex ecological, technical, political and economic variables to affect significant water quality improvements to Hinkson Creek. By learning as actions are implemented, we hope to find the most effective approach(es) to address the water quality challenges in the Hinkson Creek watershed.

The CAM process will end when either:

1. The biological community and other water quality indicators in Hinkson Creek improve to the point where the stream is no longer considered impaired, OR
2. If a specific pollutant is identified so that the normal water quality-based regulatory process occurs.

No ARAP has been completed for Hinkson Creek.

Co-Permittee Information

The three co-permittees, Boone County (County), City of Columbia (City) and University of Missouri (MU), have developed and implemented this program in order to protect water quality and effectively reduce stormwater pollutant runoff within their respective jurisdictions to the maximum extent practicable. **The area covered by this plan includes the entire County limits, excluding all incorporated municipalities, the entire corporate limits of the City, and MU properties located within Boone County.**

MU will serve as the coordinating authority for this joint SWMP; however, MU does not have regulatory authority over either of the other co-permittees. Responsibility for implementation of all MCMs will be shared jointly among the three co-permittees and discussed further in this report. This plan will be reviewed on an annual basis and updated as necessary.

The SWMP has been color-coded for ease of use. Information that applies to all three entities is shown in **green**, only the **City in purple**, only **MU in blue** and only the **County in red**.

Stormwater Program Review and BMP Iterative Process

An evaluation procedure known as the iterative process will be used to review each Best Management Practice (BMP) for its effectiveness. If the BMP is not effective in achieving its goal, the BMP will be modified and re-evaluated after implementation.

The City, County, and University of Missouri evaluate the Stormwater Management Program and all BMPs in the SWMP annually for effectiveness and to identify any areas of improvement. This information is available in the annual report.

In accordance with part D of the permit, the co-permittees will:

- Develop a SWMP that shall contain each of the six (6) MCMs described in Part E – Minimum Control Measures of the permit including all applicable requirements specified in Sections D.5.a –D.5.g of the permit.
- Fully implement each MCM in accordance with the approved SWMP.
- Revise the SWMP when necessary and submit the revised SWMP to the Water Protection Program’s MS4 Coordinator for review and rating.
- Implement the SWMP on all new areas added to the MS4 area as expeditiously as practicable.
- List in the MS4 SWMP Report any transfer of ownership, continuing authority, or responsibility that occurs in the MS4 area.

MINIMUM CONTROL MEASURES

MCM 1 – Public Education and Outreach on Stormwater Impacts

MCM Discussion: An informed and knowledgeable community is a key component to the success of a stormwater management program. The public education and outreach component coordinates a variety of activities and partners to support all the minimum control measures. Education and outreach are the backbone to a comprehensive stormwater management program that educates the public in many formats and on a variety of levels. Outreach can be printed material, online material, activities, training and events. Those receiving the education can be K-12 and college students, employees, interest groups, elected officials and the general public (see list of *Target Audiences* and *Sources of Pollution*, below). Connecting water quality to our everyday activities through a variety of elements can affect change in behavior and awareness.

Permit Requirement: Implement a coordinated and comprehensive stormwater education and outreach program. This will involve the distribution of educational materials to the community and outreach activities about the impacts of stormwater discharges on water bodies and steps the public can take to reduce pollutants in the stormwater runoff.

At a minimum, the Public Education and Outreach program shall include:

- 1.A.i *Define the target audiences and/or pollutants or sources of pollution the program is designed to address.*
- 1.A.ii *Distribute appropriate educational materials and/or media to the target audience(s) using methods and procedures determined by the MS4 Operators.*
- 1.A.iii *Create opportunities for residents to participate in the implementation of stormwater controls.*

MCM 1 Best Management Practices and Measurable Goals

BMP 1: Identify target audiences and/or pollutants or sources of pollution the program is designed to address.

Measurable Goal: Review and update target audiences and/or pollutants or sources of pollution the program is designed to address in Year 5 for the upcoming permit cycle. (All)

The purpose of this BMP is to create and maintain a public that is conscientious of the impacts that their behaviors have on local watersheds, in order to reduce pollution from residential and commercial/industrial activities. The intended outcome of this BMP is to provide the co-permittees with a list of target audiences and/or pollutants or sources of pollution for use in facilitating educational opportunities.

Target audiences for the City of Columbia and Boone County include municipal inspectors, contractors, developers, engineers, interest groups, general public, and schools.

Target audiences for the University of Missouri include faculty, staff, students, contractors, and event participants.

Table 3: Target Audiences and Sources of Pollution

Target Audience	Why the Audience was Chosen	Target Pollutants/ Sources of Pollution
Pet owners, pet adoption facilities	A rain or snow event can wash pet waste that has been left on the ground into the stormwater system and streams.	Pet Waste Bacteria, ammonia, and nutrients
Homeowners, commercial property owners, contractors, lawn care companies, facilities maintenance staff	Yard waste such as grass clippings, weeds, dried leaves and sticks disposed of near streams and storm drains can impact water quality and contribute to erosion. Fertilizer, pesticides and decaying yard waste in streams and creeks is attributed to low dissolved oxygen, more nutrients and high suspended solids.	Yard Maintenance Nutrients from fertilizers and pesticides, yard waste
Residential property owners, commercial property owners, contractors, facilities maintenance staff, public works/road and bridge staff	The use and storage of road salt can be a source of pollutants in winter months. Excess salt in waterways can lead to algal blooms, lower dissolved oxygen and are detrimental to aquatic life.	Winter Road Treatment and Storage Chlorides
Contractors, Design Professionals, Municipal Inspectors, MU Inspectors	Land disturbance activities include clearing, grading, excavating, transporting and filling. The main pollutant from land disturbance activities is sediment.	Land Disturbance Sediment, suspended solids, nutrients
Residential property owners	Household Hazardous Waste is any leftover household product that can catch fire, react or explode under the right circumstances. Examples of these include paint, household cleaners, batteries, pesticides and oils. If disposed of improperly, HHW can contaminate groundwater and streams.	Household Hazardous Waste Household hazardous waste chemicals, hazardous substances, tires, electronics
Residential homeowners, contractors	Failing or improperly installed septic systems can cause bacteria, nutrients	Private Sanitary Sewer Systems Bacteria, viruses, nutrients, ammonia

	and ammonia to leach into groundwater and streams, impacting water quality.	
Residential property owners, commercial property owners	Chlorinated pool water or saltwater that enters a stormwater system or stream can be harmful to aquatic life. Pollutants found in swimming pools include suspended solids, chlorides and pH levels outside the normal freshwater range.	Swimming Pools Suspended solids, chlorides, abnormal pH
Residential property owners, commercial property owners	FOGs are fats, oils, and grease found in cooking products, including butter, meat, cooking oil and food scraps. When built up in a sewer pipe, FOGs can cause sewer overflows and pollute streams.	Fats, Oils, and Grease
Commercial and Industrial property owners, Agriculture Producers	Stormwater runoff from industrial and agricultural sites can pick up metals, pesticides, fertilizers, sediment and trash into nearby streams. These pollutants can be toxic to aquatic life and water quality.	Industrial and Agricultural Activities Nutrients, heavy metals, sediment, suspended solids

BMP 2: Maintain an education and outreach program to educate strategically targeted audiences about annually selected topics that are pertinent and timely to local water quality issues.

The City, County, and MU maintain a list of all education and outreach programs conducted throughout the year, along with a participation roster (when feasible) and dates for each activity. The purpose of this BMP is to increase awareness and promote positive behavior changes in the MS4 communities by providing non-point source pollution and water quality awareness in the community. The intended outcome of this BMP is to maintain a public that is conscientious of the impacts that their behaviors have on local watersheds in order to reduce pollution from residential and industrial activities. All co-permittees will evaluate this BMP annually.

Measurable Goal: Compile a list of all education and outreach programs conducted throughout the year. (All)

The City works with a wide variety of groups to create a holistic stormwater education program that educates about the benefits of improved stormwater quality and provides specific techniques to improve stormwater quality while raising overall awareness of stormwater quality issues.

The County's education and outreach program focuses on the impacts of stormwater discharges on waterbodies and steps that can be taken to reduce pollutants in stormwater runoff by distributing a variety of

educational materials and conducting outreach activities. The County compiles event information, documenting content and participation.

Each semester, MU conducts courses as part of its curriculum in a number of disciplines that concentrate on, or touch upon, issues of water quality and/or environmental management practices.

BMP 3: Maintain a list of all K-12 public and private schools. (City, County)

The purpose of this BMP is to increase awareness and promote positive behavior changes in the MS4 communities. The intended outcome of this BMP is to provide non-point source pollution and water quality awareness in the community. The City and County will evaluate this BMP annually.

Measurable Goal: Maintain a database of schools, identifying those providing stormwater education, and designated contacts.

The City's list provides insight and availability for scheduling outreach programs as well as an ability for the schools to provide feedback on the outreach program provided.

The County provides multiple stormwater presentations to several school districts within the County. The County's Stormwater Educator will track schools providing stormwater education and provide a report of schools educated annually.

This BMP is not applicable to MU.

BMP 4: Develop and distribute stormwater education and outreach materials.

The purpose of this BMP is to increase awareness and promote positive behavior changes in the MS4 communities. The intended outcome of this BMP is to provide non-point source pollution and water quality awareness in the community. The co-permittees will evaluate this BMP annually.

Measurable Goal: Develop brochures, fact sheets, public service announcements, etc. Update educational materials as necessary to remain current on local water quality issues. Track where materials were distributed and quantity of materials created. (All)

The City develops and updates educational materials as necessary. While the City tends to focus on interactive ways to engage the public at events, educational materials are distributed when needed. For example, the City utilizes wetland scavenger hunt game, to educate the public about stormwater and wetlands. The City also utilizes a watershed at school events and utilizes coloring pages to engage the kids.

The County develops and updates educational materials as necessary. Various stormwater-related brochures are located at the front counter of Boone County Resource Management. These brochures are provided quarterly. The same brochures are sent to Boone County Road & Bridge annually. The *Living With Karst*

brochure is sent to Rock Bridge Memorial State Park annually. Boone County will track the number of brochures provided and evaluate the distribution trend.

MU develops and updates educational materials as necessary.

Measurable Goal: Prepare and distribute materials at events. Review and update educational materials annually. (All)

The City chooses the right type of public engagement for the right event. Materials are distributed at events. The City will record how many materials are distributed. Education materials are reviewed and updated as needed.

The County records how many materials are distributed at each event.

This measurable goal does not currently apply to MU.

BMP 5: Conduct education and outreach activities.

The purpose of this BMP is to increase awareness and promote positive behavior changes in the MS4 communities. The intended outcome of this BMP is to provide nonpoint source pollution and water quality awareness and positive behavior change in the community. The co-permittees will evaluate this BMP annually.

Measurable Goal: Staff at least ten (10) community events (e.g., Earth Day), make presentations to citizen's groups and present to schools and industry (e.g. Stream table demonstrations). (City, County)

The City uses the aforementioned educational materials to distribute at the outreach events, activities, and presentations. These events provide opportunities to have long form conversations about stormwater and water quality, as well as a chance to thoroughly answer questions that may arise. The City records event information, including content and participation, and evaluates audience attendance.

The County's education and outreach program focuses on the impacts of stormwater discharges on waterbodies and steps that can be taken to reduce pollutants in stormwater runoff. The County records event information including content and participation and evaluates audience attendance and impressions trends.

Measurable Goal: Conduct courses that educate students on stormwater issues and/or water quality and track those courses. (MU)

Each semester, MU conducts courses as part of its curriculum in a number of disciplines that concentrate on, or touch upon, issues of water quality and/or environmental management practices.

BMP 6: Maintain Hinkson Creek Physical Habitat GIS Data Viewer.

The purpose of this BMP is to provide the public with information about Hinkson Creek. The intended outcome of this BMP is to increase awareness and promote positive behavior changes in the MS4 communities. The County will evaluate this BMP annually.

Measurable Goal: Maintain Hinkson Creek Physical Habitat GIS Data Viewer by reviewing annually and updating when pertinent data becomes available. (County)

The County maintains the Hinkson Creek Physical Habitat GIS Data Viewer on the www.helpthehinkson.org website. This BMP is evaluated annually by tracking web views/hits.

This BMP is not applicable to the City or MU.

BMP 7: Maintain and review dedicated stormwater resource websites and social media platforms.

The purpose of this BMP is to increase awareness and positive behavior changes in the MS4 communities by providing a place to educate the community about the impacts of stormwater runoff, permit and inspection requirements, and general watershed information. The intended outcome of this BMP is to educate the community about the impacts of stormwater runoff, permit and inspection, requirements, and general watershed information. The co-permittees will evaluate this BMP annually.

Measurable Goal: Maintain and review stormwater resource websites and social media platforms at least annually. (All)

The City maintains www.como.gov/utilities/stormwater and reviews and updates as necessary. The City utilizes the Communications Department to revise and update the website. The IT Department ensures the website is stable and in working order. The City can evaluate posts by the number of interactions on social media. The City also utilizes Google analytics to evaluate page views.

The County maintains www.showmeboone.com/stormwater, www.helpthehinkson.org, www.cavewatershed.org, Boone County, Missouri Stormwater Facebook page, and the Boone County Stormwater YouTube Channel. The County reviews and updates posted information as necessary. The County tracks the number of visits/hits and online plays. A report will be provided annually.

MU maintains <http://ehs.missouri.edu/ehs/env/stormwater>, and reviews and updates as necessary.

BMP 8: Provide the public with proper, publicly announced, disposal opportunities for household hazardous waste to minimize the presence of these chemicals in local waterways.

Many household products are hazardous because they contain chemicals that are toxic, corrosive, flammable, or reactive. Improper disposal can cause these products to find their way into receiving streams and lakes. The purpose of this BMP is to prevent disposal of hazardous waste in local waterways and increase awareness and promote positive behavior changes in the MS4 communities. The intended outcome of this BMP is to provide safe disposal of hazardous waste materials. The co-permittees will evaluate this BMP annually.

Measurable Goal: Hold a special co-permittee coordinated Household Hazardous Waste collection event annually as funding permits. This event may include the collection of used tires and e-waste. (All)

The City, County, and MU partners with the Mid-Missouri Solid Waste District to host a Household Hazardous Waste collection event annually. The amount of waste collected will be reported annually.

Measurable Goal: Continue the twice a month City of Columbia Household Hazardous Waste Collection Program. This collection event takes place between and including the months of April through November. (City)

The City manages a twice a month City of Columbia Household Hazardous Waste Collection Program on the first and third Saturday of the month from 8 a.m. to 12 p.m. The Solid Waste Department assists in running the program and providing staff for the program. The program is on the City's website at:

<https://www.como.gov/utilities/columbias-solid-waste-utility/household-hazardous-waste/>

The website provides information on what makes a product hazardous which increases the public's knowledge of hazardous waste. It also gives examples of common household hazardous waste, as well as, how to store and transport hazardous waste materials.

Measurable Goal: Annual prescription drug take-back event hosted by Boone County Sheriff's Office. (County)

The Boone County Sheriff's Office, in partnership with the Youth Community Coalition and law enforcement agencies throughout Boone County, conducts a prescription drug take back event annually, coinciding with the National Drug Take Back event sponsored by the Drug Enforcement Agency. This effort provides the community with appropriate disposal of expired, unused, or unwanted prescription medications. Benefits include cessation of inappropriate distribution and protection of ground source water from improper disposal.

Measurable Goal: Continue to provide MU faculty, staff, and students with the means to properly dispose of hazardous materials. (MU)

MU maintains a hazardous materials disposal facility which is managed by MU Environmental Health & Safety (MU EHS). MU EHS collects, transports, and disposes of all unwanted hazardous materials on the MU campus. MU EHS provides training for all individuals who handle hazardous materials on the proper handling, storage, and disposal of hazardous materials.

Measurable Goal: Maintain the MU EHS website which provides information on the proper handling and disposal of hazardous materials. (MU)

MU EHS maintains a website which provides information on the proper handling and disposal of hazardous materials.

BMP 9: Continue to implement and maintain public involvement/participation activities to engage citizens and continue to form partnerships that reach a diverse audience.

The various practices incorporated into the MS4 education programs encourage a variety of public participation and involvement. Other programs train volunteer educators and encourage a wide range of community groups to participate in a variety of stormwater improvement activities such as tree planting, community gardens, litter pickups and proper hazardous waste disposal. Social media outlets have provided a new means to engage and involve the public and are appropriate for the significant college student population in our MS4. The purpose of this BMP is to engage citizens and form partnerships to reach a diverse audience. The intended outcome of this BMP is to raise awareness and positive behavior changes.

Measurable Goal: Annually track the number of volunteers/volunteer organizations and activities that provide for public involvement/participation. (All)

The City garners volunteer participation and involvement of diverse groups through programs like TreeKeepers, composting workshops, Household Hazardous Waste Program, Adopt-A-Spot and a variety of formal and informal cleanup events. Citizens volunteers are participants in the Adopt-A-Rain garden program to maintain rain gardens in public rights of way and involve the community in stormwater retrofits to improve water quality. The City website has information about these volunteer opportunities which are available to all residents including those at MU and the County.

The City utilizes volunteers to organize and host a monthly stream clean up within the watersheds. This group of volunteers, known as the Columbia Crawdads, also acts as volunteer educators.

The County will continue to track the number of volunteers/volunteer hours for public involvement/participation activities including stream monitoring events, clean-up events, and Adopt-A-Road programs. A list of volunteer organizations is kept up to date. The County will continue to volunteer with the Lakes of Missouri Volunteer Program and Missouri Stream Teams and report annually on volunteer efforts.

MU students are continually engaged in stormwater related activities through groups such as the University of Missouri Environmental Science Club, Sustain Mizzou, Water and Environmental Technologists, Greeks Go Green, Student Environmental Design Association, Environmental Law Society, Journal of Environmental and Sustainability Law, Mizzou Student Group of US Green Building Council, Forestry Club, Horticulture Club, Environmental Leadership Office, Missouri Water Environment Association, MU Student Chapter of the Soil and Water Conservation Society, Science, Health and Environmental Journalism at Mizzou, MU Sustainability Office, Science Communication and Public Engagement, and the Mizzou Water and Environmental Technologists. These activities will continue as interest warrants.

Measurable Goal: Track number of storm drains marked annually. (All)

The City works with the community as well as school groups to place storm drain markers annually. These groups are trained on how to place the storm drain markers on storm drains as well as where the most effective places are. The City orders the storm drain markers on an as-needed basis, and will record the number of markers placed and report annually.

The County will continue to work with community and school groups to mark storm drains annually. The County will track the number of volunteers and storm drains marked and report annually.

MU will continue to utilize EHS personnel and student employees to mark storm drains annually. MU will track the number of storm drains marked and report annually.

Table 4. MCM 1 BMPs:

Permit Section	Responsible Permittee	BMP Description		Purpose of BMP	BMP Goal/ Intended Outcome
1.A.i	All	BMP 1.	Identify target audiences and/or pollutants or sources of pollution the program is designed to address.	Create and maintain a public that is conscientious of the impacts that their behaviors have on local watersheds, in order to reduce pollution from residential and commercial/industrial activities.	Provide the co-permittees with a list of target audiences and/or pollutants or sources of pollution for use in facilitating educational opportunities.
	All	BMP 2.	Maintain an education and outreach program to educate target audiences about topics that are pertinent and timely to local water quality issues.	Provide nonpoint source pollution and water quality awareness in the community.	Increase awareness and positive behavior changes.
	City, County	BMP 3.	Maintain a list of all K-12 public and private schools.	Provide nonpoint source pollution and water quality awareness in the community.	Increase awareness and positive behavior changes.
1.A.ii	All	BMP 4.	Develop and distribute education and outreach materials. <i>(These may include: brochures, newsletters, fact sheets, door hangers, press releases, signage, PSAs)</i>	Provide nonpoint source pollution and water quality awareness in the community.	Increase awareness and positive behavior changes.
	All	BMP 5.	Conduct education and outreach activities.	Increase awareness and promote positive behavior changes in the MS4 communities.	Provide nonpoint source pollution and water quality awareness and positive behavior change in the community.
	County	BMP 6.	Maintain the Hinkson	Provide the public with	Increase awareness of

			Creek Physical Habitat GIS Data Viewer.	information about Hinkson Creek.	the Hinkson Creek Watershed.
	All	BMP 7.	Maintain dedicated stormwater resource websites and social media platforms.	Increase awareness and positive behavior changes in the MS4 communities	Educate the community about the impacts of stormwater runoff, permit and inspection, requirements, and general watershed information.
1.A.iii	All	BMP 8.	Provide the public with proper, publicly announced, disposal opportunities for household hazardous waste to minimize the presence of these chemicals in local waterways.	Prevent disposal of hazardous waste in local waterways and increase awareness and promote positive behavior changes	Provide safe disposal of hazardous waste materials.
	All	BMP 9.	Continue to implement and maintain public involvement/participation activities to engage citizens and continue to form partnerships that reach a diverse audience.	Engage citizens and form partnerships to reach a diverse audience.	Raise awareness and positive behavior changes.

MCM 2 – Public Involvement and Participation

MCM Discussion: The public has a role in the success of a stormwater management program. The public can participate through public hearings and public meetings.

Providing opportunity for citizen input and participation in stormwater matters is the primary goal of MCM 2. The City's, County's, and MU's commitment to public involvement and public participation programs was tailored to provide ample opportunity for public involvement and participation and to increase the understanding of stormwater-related impacts and issues.

The public has the opportunity to be involved in various stormwater quality awareness and improvement activities. Furthermore, an avenue for participation and involvement is interaction through social media.

Permit Requirement: The permittees shall develop and implement a comprehensive public participation program that provides opportunities for public participation in the development, implementation and review of the permittee's Stormwater Management Program. This program must provide opportunities for public participation of the permittee's permit renewal and shall, at a minimum, comply with any state and local public notice requirements in the planning and implementation activities related to developing and implementing the Stormwater Management Program.

At a minimum, the Public Involvement and Participation program shall include:

- 2.B.i The MS4 Operators shall hold a public notice period for a minimum of thirty (30) days to allow the public to review the Stormwater Management Program and Plan prior to submission to DNR.*
- 2.B.ii The draft Management Plan shall be posted to the MS4 Operators public website with a way to submit comments either by mail or email, along with any standard public notice methods for the MS4s.*
- 2.B.iii The MS4 Operators shall respond to comments received during the comment period, and if necessary, revise the BMPs and Management Plan.*
- 2.B.iv The MS4 Operators shall retain copies of any public comments, and records of information submitted by the public received as part of the public notice process.*

The three co-permittees shall hold a thirty (30) day combined public notice period for the draft SWMP and when any significant changes occur. Each co-permittee will advertise the public notice through press releases and on their respective websites. The public will be informed of the notice period of thirty days and allowed to submit comments.

Comments may be submitted to www.ehs.missouri.edu/env/SWMP or mailed to the address shown on the website. Any comments received regarding the draft SWMP will be compiled and be addressed within 30 days of receipt. All comments submitted by the public will be retained for at least three (3) years.

- City of Columbia Public Notice website: www.como.gov/utilities/columbias-stormwater-utility/
- Boone County Public Notice website: www.showmeboone.com/stormwater/

- University of Missouri Public Notice website: www.ehs.missouri.edu/env/SWMP

2.C *The MS4 Operators shall hold a public information meeting to provide information on and describe the contents of the proposed Stormwater Management Program and Plan. This information shall be advertised for at least thirty (30) days prior to the public meeting. If the permittees hold one combined meeting, it shall be advertised to the three service areas, and held in a location near the population center of the three MS4 areas.*

The three co-permittees will hold a public informational meeting regarding the draft SWMP. It will be held at City Hall in Columbia. Prior to the public meeting, the information will be advertised for thirty (30) days on each of the above listed public notice websites.

2.D *The MS4 Operators shall each have a publicly available mechanism to take public inquiries, concerns, or take information about stormwater and stormwater related topics. This shall encompass all MCMs of this permit. This mechanism may be a phone number, voicemail box, an email address or social media platform.*

The three entities use a web-based public comment submission platform located on each entity's stormwater website, listed below. In addition, the City of Columbia's general contact phone number allows citizens to call in with stormwater comments or questions, and it will be directed toward the appropriate staff for response.

- City of Columbia Stormwater website: www.como.gov/utilities/columbias-stormwater-utility/
- Boone County Stormwater website: www.showmeboone.com/stormwater/
- University of Missouri Stormwater website: <https://ehs.missouri.edu/env/stormwater>

2.E *If the MS4 Operator(s) utilizes a stormwater management panel or committee, the MS4 Operator(s) shall provide opportunities for citizen representatives on the panel or committee.*

The MS4 Operators do not use a stormwater management panel or committee.

2.F *A representative of each MS4 Operator shall report to the designated entity of MS4 Operator (Boone County Board of Commissioners, Columbia City Council, or MU Environmental Health & Safety) at a minimum annually. This report shall include the status of, or updates on, the Stormwater Management Program, and compliance with the Stormwater Management Program.*

2.F.i *If the designated entity holds open public meetings, this presentation must be a forum which is open to the public. It is recommended that members of the designated entities and/or other elected officials of the MS4 service area participate in stormwater activities.*

The City of Columbia will submit the draft SWMP to the Columbia City Council after the public comment period, and annually thereafter. If there are any significant changes to the SWMP, the City will submit the SWMP to the Columbia City Council. The public hearings on the SWMP are open to the public.

Boone County will submit the draft SWMP to the Boone County Commission after the public comment period, and annually thereafter. If there are any significant changes to the SWMP, the County will

submit the SWMP to the Boone County Commission. The public hearings on the SWMP are open to the public.

MU will submit the draft SWMP to MU Environmental Health & Safety administration and professionals after the public comment period and annually thereafter. If there are any significant changes to the SWMP, MU EHS will submit the updated SWMP to MU Environmental Health & Safety administration and professionals for approval.

MCM 2 Best Management Practices and Measurable Goals

BMP 1: Develop and implement a comprehensive public participation program that provides opportunities for public participation in the development, implementation, and review of the Stormwater Management Program.

The purpose of this BMP is to provide opportunity for public input concerning the Stormwater Management Program and the stormwater management plan. The intended outcome of this BMP is to provide participation opportunities to interested citizens.

Measurable Goal: Hold public meetings to receive input on the proposed stormwater management program. (All)

A press release will be sent to notify the public of the beginning of the 30-day minimum notice period. The City's policy is to hold an Interested Parties meeting that will run concurrently with the public notice/comment period. The City will hold a public hearing following the public comment period at a City Council Meeting. The public hearing will be set at a City Council Meeting giving a minimum of 14 days' notice until the Public Hearing is held.

The City utilizes a web-based comment form section. Contact information is also given on the website. All comments/concerns/inquiries are monitored by City Staff.

The County's policy is to hold an Interested Parties meeting that runs concurrently with the public notice/comment period. The County Board of Commissioners will hold a public hearing following the public comment period.

MU, not fitting the traditional municipality model, involves the campus "public" through its master planning process. MU's master planning process continues to be an open, transparent process allowing participation of the campus "public". Begun more than 30 years ago, MU's master planning effort addresses current and future needs while remaining mindful of MU's commitment to environmental stewardship. MU annually publicizes and presents the Campus Master Plan, which identifies planning principles and includes current and proposed construction projects.

Measurable Goal: Provide opportunities for the stakeholder committee, action team, and science team to meet and support the collaborative adaptive management process for Hinkson Creek Watershed. (All)

CAM is a science-driven, stakeholder-based process for decision-making while dealing with the scientific unknowns inherent in many physical and biological systems. It uses a continuing process to make changes and

then to determine the effect of those changes. Successful actions from this process will likely be able to be repeated throughout the MS4 area. Three diverse groups have been formed to support the CAM process by synthesizing complex ecological, technical, political, and economic variables to affect significant water quality improvements to Hinkson Creek.

- The 15-member stakeholder committee is made up of elected officials representing the MS4 partners, individuals representing residential landowners, commercial interests, construction industry and environmental groups. They are responsible for suggesting actions to the City, County and MU for implementation and suggesting recommendations for monitoring. This group meets quarterly.
- The action team is responsible for putting together proposals for actions to improve water quality for consideration by the stakeholders. This group is made up of County, City, MU, Boone County Regional Sewer District and MoDOT staff. The action team meets monthly.
- The science team includes science professionals from EPA, MDC, MDNR, USGS, MU and a local engineering firm. This group proposes monitoring and modeling necessary to assess the health of the creek, determine what causes may be contributing to water quality problems and determine the effectiveness of actions taken to improve water quality. The science team meets monthly.

The CAM process for the Hinkson Total Maximum Daily Load (TMDL) adheres to all "Sunshine Law" regulations for notification of public meetings and has increased stormwater-related communication between the involved individuals and the organizations they represent. It addresses the Hinkson watershed, the largest watershed in the MS4 area, which is appropriate to this measure. It provides a near monthly opportunity for the public and local policy makers to engage in stormwater issues within our MS4.

Measurable Goal: Provide opportunities for the City of Columbia Climate Action & Adaptation Plan (CAAP) Climate & Environment Commission to meet. (City)

CAAP was adopted by the City Council in June 2019, with two of the plan's goals identified to improve stormwater management and minimize risks to flood-prone areas. In October 2019, the City Council approved the creation of a Climate & Environment Commission, composed of 15 members appointed by the City Council. The purpose of the Commission is to advise City staff on reporting to City Council the implementation activities of the CAAP, act as a primary liaison for outreach and awareness on the CAAP throughout the community, provide input on evaluating additional opportunities for mitigation and resilience actions in Columbia, and advise City Council on environmental issues, as directs.

This measurable goal does not apply to the County or MU.

Measurable Goal: Provide opportunities for public input and participation during the implementation phase of the *Our Columbia Waters* Integrated Management Plan. (City)

In 2019, the Missouri Department of Natural Resources acknowledged the City of Columbia's Wastewater and Stormwater Integrated Management Plan (IMP). The goal of the IMP is to develop adaptable and affordable long-term recommendations that meet Columbia's wastewater and stormwater management needs and address Clean Water Act obligations to protect and improve our community waterways. As the City begins implementing the IMP, public input and participation will be key as this is a community-driven process.

This measurable goal does not apply to the County or MU.

Measurable Goal: Hold a Stormwater Coordination Committee Meeting involving co-permittees and interested parties to discuss progress of the stormwater management program. (All)

Staff from MU, the City, and County meet at least eight times each year to coordinate and work on stormwater activities. These include joint clean-up events, public service announcements, Hinkson Creek TMDL CAM, social media, volunteer activities, annual reporting to MDNR, and reviewing/revising the Stormwater Management Plan.

BMP 2: Hold a thirty (30) day public notice period for review of the Stormwater Management Program and Plan.

The purpose of this BMP is to provide opportunity for public input concerning the Stormwater Management Program and Plan. The intended outcome of this BMP is to comply with the permit requirement for public notice.

Measurable Goal: Hold a public notice period for Stormwater Management Program and Plan review. (All)

The three co-permittees will hold a thirty (30) day combined public notice period for the draft SWMP and when any significant changes occur, resulting in a revision of the SWMP.

BMP 3: Post the draft Stormwater Management Plan to the designated public website, with a means to submit public comments.

The purpose of this BMP is to provide an opportunity for the public to comment on the SWMP and raise awareness of the SWMP. The intended outcome of this BMP is to comply with the permit requirement for public notice.

Measurable Goal: Post the draft Stormwater Management Plan to the designated website and collect public comments. (All)

Each co-permittee will advertise the public notice through press releases and on their respective websites. A minimum of 30 days' notice shall be given. Comments may be submitted to www.ehs.missouri.edu/env/SWMP or mailed to the address shown on the website. Any comments received regarding the draft SWMP will be compiled and all three co-permittees will respond within 30 days of receipt. All comments submitted by the public will be retained by MU for at least three (3) years.

- City of Columbia Public Notice website: www.como.gov/utilities/columbias-stormwater-utility/
- Boone County Public Notice website: www.showmeboone.com/stormwater/. The County will also advertise the public notice period through its social media outlet on Facebook.
- University of Missouri Public Notice website: www.ehs.missouri.edu/env/SWMP

BMP 4: Hold a public information meeting to provide information on, and describe the contents of, the proposed Stormwater Management Program and Plan.

The purpose of this BMP is to provide opportunities for the public to comment on the SWMP. The intended outcome of this BMP is to comply with the permit requirement for hosting a public meeting.

Measurable Goal: Hold a public information meeting to provide information on the proposed Stormwater Management Program and Plan. (All)

The three co-permittees will hold a public information meeting regarding the draft SWMP. It will be held at City Hall in Columbia. Prior to the public meeting, the information will be advertised for a minimum of thirty (30) days on each of the above listed public notice websites.

BMP 5: Provide dedicated MS4 stormwater websites to provide a mechanism to take public inquiries, concerns, or information about stormwater and stormwater related topics.

The purpose of this BMP is to provide a mechanism to take public inquiries, concerns, or information about stormwater and stormwater related topics. The intended outcome of this BMP is to provide greater ability on the part of the MS4 partners to respond to stormwater inquiries within their respective jurisdictions.

Measurable Goal: Provide and maintain dedicated public MS4 websites and social media outlets at least annually. (All)

The City of Columbia receives public inquiries, concerns, and stormwater-related information and related topics through its web page <https://www.como.gov/utilities/columbias-stormwater-utility/>. These web-based stormwater submissions are responded to within 1 to 3 business days. The City also receives stormwater calls via the Contact Center at 573-874-2489 as well as the City Sewer & Stormwater Facebook page, <https://www.facebook.com/ColumbiaSewerandStormwater>.

The County utilizes a web-based public comment submission platform to report illicit discharges and other stormwater-related issues. This is located on the County's stormwater web page www.showmeboone.com/stormwater. Any calls, letters, or email the County receives reporting stormwater concerns is input into the web-based platform for tracking purposes. The County monitors the submission platform daily and responds to all comments/ concerns within 24 business hours. Depending on the location and nature of the concern, the County will either respond to the issue or coordinate the response effort with the relevant co-permittee or agency having jurisdiction.

The County's stormwater web page, www.helpthehinkson.org, www.cavewatershed.org, Facebook page and YouTube channel also provide citizens with access to information and events regarding the Stormwater Management Program and Plan.

At MU, Environmental Health & Safety maintains the website <http://ehs.missouri.edu/ehs/env/stormwater>, which includes a phone number that the public can use to access information, ask questions and/or voice concerns.

BMP 6: A representative of each MS4 Operator shall report to the designated entity of each MS4 Operator (Boone County Board of Commissioners, Columbia City Council, or MU Environmental Health & Safety) at minimum annually.

The purpose of this BMP is to allow representatives of the MS4 Operators to give a report on the status of and compliance with the Stormwater Management Program. The intended outcome of this BMP is to comply with permit requirements for reporting.

Measurable Goal: Annually present the Joint MS4 Stormwater Annual Report to Columbia City Council. (City)

The City will present the year’s Joint MS4 Stormwater Annual Report to Columbia City Council for the purpose of providing the status of, or updates on, the Stormwater Management Program, and compliance with the Stormwater Management Program. The City will provide the draft SWMP, in addition to the Joint MS4 Stormwater Annual Report, in year 5 of the permit cycle, or if there are any significant changes made to the SWMP during the permit cycle. The public hearings on the SWMP are open to the public.

This measurable goal does not apply to the County or MU.

Measurable Goal: Annually present the Joint MS4 Stormwater Annual Report to the Boone County Board of Commissioners. (County)

The County will present the year’s Joint MS4 Stormwater Annual Report to the Boone County Board of Commissioners for the purpose of providing the status of, or updates on, the Stormwater Management Program, and compliance with the Stormwater Management Program. The County will provide the draft SWMP, in addition to the Joint MS4 Stormwater Annual Report, in year 5 of the permit cycle, or if there are any significant changes made to the SWMP during the permit cycle. The public hearings on the SWMP are open to the public.

This measurable goal does not apply to the City or MU.

Measurable Goal: Annually present the Joint MS4 Stormwater Annual Report to MU Environmental Health & Safety. (MU)

MU will present the year’s Joint MS4 Stormwater Annual Report to MU Environmental Health & Safety administration and professionals for the purpose of providing the status of, or updates on, the Stormwater Management Program, and compliance with the Stormwater Management Program. MU will provide the draft SWMP, in addition to the Joint MS4 Stormwater Annual Report, in year 5 of the permit cycle, or if there are any significant changes made to the SWMP during the permit cycle.

This measurable goal does not apply to the City or County.

Table 3. MCM 2 BMPs:

Permit Section	Responsible Permittee	BMP Description	Purpose of BMP	BMP Goal/ Intended Outcome
----------------	-----------------------	-----------------	----------------	----------------------------

2.A	All	BMP 1.	Implement an effective public involvement/ participation program.	Provide opportunity for public input concerning the Stormwater Management Program.	Provide participation opportunities to interested citizens.
2.B	All	BMP 2.	Observe a 30-day public notice period.	Provide opportunity for public input concerning the Stormwater Management Program and Plan.	Comply with permit public notice requirements.
	Each	BMP 3.	Post draft SWMP to each MS4 Operators public website with a way to submit public comments.	Provide citizen access to comment on the SWMP.	Comply with permit public notice requirements.
2.C	All	BMP 4.	Hold a public information meeting to provide information on and describe the contents of the proposed stormwater management program and plan.	Provide opportunity for citizens to comment on the SWMP.	Comply with permit requirements for public meetings.
2.D	Each	BMP 5.	Maintain dedicated MS4 Stormwater websites and social media platforms.	Provide a mechanism to take public inquiries, concerns, or information about stormwater and related topics.	Greater ability on the part of the MS4 partners to respond to stormwater inquiries.
2.E	Not Applicable				
2.F	All	BMP 6.	A representative of each MS4 Operator shall report to the designated entity of each MS4 Operator annually.	Allows representatives of the MS4 Operators to give a report on the status of and compliance with the Stormwater Management Program.	Comply with permit requirements for reporting.

MCM 3 – Illicit Discharge Detection and Elimination

MCM Discussion: Illicit discharges enter the system through either direct or indirect entry. Direct entry is any connection into the stormwater system from another non-stormwater pipe, most commonly sanitary sewer pipe. These connections can be direct pipe connections or direct discharges into an open channel or stream. Indirect entry is any non-stormwater flow that enters the system through storm drain inlets or pipe joints. Examples of indirect entry include groundwater seepage, illegal dumping, spills (typically from vehicular accidents) and other outdoor washing and irrigation activities. A robust program to detect and address indirect wastewater connections is underway. The necessary legal measures are in place to prohibit and enforce illicit discharges. Addressing indirect wastewater connections and educating the public continue to be primary activities for this measure.

Permit Requirement: The permittees shall develop, implement, and enforce a program to detect and eliminate illicit discharges, as defined in 10 CSR 20-6.200 and 40 CFR 122.22(b)(2), into the permittee’s MS4. The program must include a plan to detect and address non-stormwater discharges, including illegal dumping to the MS4 system. The Management Plan shall include procedures for implementing the IDDE Program.

At a minimum, the Illicit Discharge Detection and Elimination (IDDE) program shall include:

- 3.B *The MS4 Operators shall maintain a stormwater sewer map that shall be updated, at minimum annually, to include features which are added, removed or changed. The permittees shall make the map data and its origin available to the Department upon request. The storm sewer map must show at a minimum:*
- i. *The locations of all MS4 outfalls*
 - ii. *The names and locations of all receiving waters of the state the receive discharges from the MS4 outfalls*
 - iii. *The municipal boundaries of each entity in the MS4 area*

The City of Columbia has a completed stormwater system map. It is a GIS-based map, and is maintained and updated as needed. A PDF of the map is available on the City’s website: www.como.gov/wp-content/uploads/2021/05/MS-4-Outfalls-flattened.pdf

Boone County has a completed storm sewer system map. GIS is utilized to maintain and update the map as needed.

MU has a completed storm sewer system map. GIS is utilized to maintain and update the map as necessary.

- 3.C *The MS4 Operators shall effectively prohibit non-stormwater discharges into the permittee’s storm sewer system and implement appropriate enforcement procedures and actions. The prohibition shall be through ordinance or other regulatory mechanism, to the extent allowable under State or local law.*

The City has an Illicit Discharge Ordinance in place. In the City Code of Ordinances, the Detection and Elimination of Illicit Stormwater Discharges is Chapter 12A, Article IX. The ordinance is reviewed annually updated as needed.

https://library.municode.com/mo/columbia/codes/code_of_ordinances

Boone County has a completed Illicit Discharge Ordinance in place. The ordinance is accessible on the County's website at

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=32.

The ordinance is reviewed annually, and updates are made as needed.

The University System and MU both have policies and/or rules in place to prohibit actions such as illicit discharges and other violations of environmental regulations. The policies and rules can be found at the following links.

Policy Number 13101 Safety & Risk Management-General Policy:

https://www.umsystem.edu/ums/policies/general_administration/safety_risk_management

Collected Rules and Regulations, 85.010 Risk Management Policy, 85.020 Hazardous Chemicals and Radioactive Materials Policy:

https://www.umsystem.edu/ums/rules/collected_rules/business/ch85/85.010_risk_management_policy

https://www.umsystem.edu/ums/rules/collected_rules/business/ch85/85.020_hazardous_chemicals_and_radioactive_materials_policy

MU Environmental Health and Safety Policy Section 7:001: <https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/> (currently under revision)

3.D *The MS4 Operators shall inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.*

The City's plan for informing public employees, businesses and the general public of hazards associated with illegal discharges and the improper disposal of waste consists of:

- Audio/visual messaging on social media and County websites
- K-12 education events
- Household hazardous waste events
- Stream cleanup events
- Door hangers and brochures
- Storm drain inlet markers
- Municipal operations staff training
- Illicit discharge investigations

How the City's plan coordinates with MCM #1: The City will provide public education and outreach opportunities listed in MCM 1 to reach our identified target audiences using the above-listed methods.

How the City's plan coordinates with MCM #2: The City utilizes an online stormwater pollution problem reporting application (found at <https://www.como.gov/CMS/WebForms/form.php?formid=194>), allowing citizens to report various stormwater concerns such as fertilizers and pesticides, soaps and detergents, vehicle fluids (motor oil, gasoline, anti-freeze, fuels), paints, solvents, pet waste left on the ground, grease, sewage, trash and debris. The City also takes into consideration public comments made regarding City stormwater policies and the Stormwater Management Plan.

How the City's plan coordinates with MCM #4: The City enforces Chapter 12A of the City of Columbia Code of Ordinances. During the inspection of construction sites, erosion and sediment control is inspected at each requested building inspection. This is a common time to evaluate for illicit discharges as well. The City provides training to internal staff at new employee orientation.

How the City's plan coordinates with MCM #5: The City implements and maintains the City of Columbia Stormwater Management and Water Quality Manual. The City provides plan review processes to inform design professionals, business owners, and the public of Best Management Practices (BMPs) used to minimize stormwater impacts. The City also requires a Stormwater BMP Maintenance Covenant be recorded for all projects requiring permanent stormwater BMPs. The Covenant also includes a maintenance inspection form and schedule. The City also receives BMP inspections from each BMP installed annually to ensure functionality.

How the City's plan coordinates with MCM #6: The City requires MS4 training for all staff to learn how to recognize, address, and prevent illicit discharges.

The County's plan for informing public employees, businesses and the general public of hazards associated with illegal discharges and the improper disposal of waste consists of:

- Audio/visual messaging on social media and County websites
- K-12 education events
- Household hazardous waste events
- Stream cleanup events
- Door hangers and brochures
- Storm drain inlet markers
- Municipal operations staff training
- Illicit discharge investigations

How the County's plan coordinates with MCM #1: The County will provide public education and outreach opportunities listed in MCM 1 to reach our identified target audiences using the above-listed methods.

How the County's plan coordinates with MCM #2: The County utilizes an online storm drainage problem reporting application, allowing citizens to report various stormwater concerns such as flooding and erosion. The County also takes into consideration public comments made regarding County stormwater policies and the Stormwater Management Plan.

How the County's plan coordinates with MCM #4: The County enforces Chapter 24 of the Boone County Zoning Regulations for construction site operators. The County provides education and

outreach to contractors, developers, design engineers, and staff regarding proper land disturbance techniques.

How the County's plan coordinates with MCM #5: The County implements and maintains the Boone County Stormwater Design Manual. The County provides plan review processes to inform design professionals, business owners, and the public of Best Management Practices (BMPs) used to minimize stormwater impacts. The County also requires a Stormwater BMP Maintenance Agreement be recorded for all projects requiring permanent stormwater BMPs.

How the County's plan coordinates with MCM #6: The County works with the Road & Bridge and Facilities Maintenance staff to provide training for recognizing, addressing, and preventing illicit discharges.

MU's Department of Environmental Health and Safety (EHS) creates policies, programs, and guidance to assist the campus in complying with regulations. A number of overlapping mechanisms effectively monitor and control discharges on the MU campus, including the Stormwater Management Plan, Stormwater Pollution Prevention Plans for land disturbance sites, the Spill Prevention, Control, and Countermeasure Plans, and stormwater discharge NPDES permits. Construction and demolition projects receive the daily oversight of a MU Construction Project Manager or Construction Engineer, in addition to receiving MU building permit inspections. MU faculty, staff and students are provided training and have mechanisms to report discharges, including discharges to the stormwater system, to EHS.

MCM 3 Best Management Practices and Measurable Goals

BMP 1: Maintain stormwater drainage system map(s) showing all outfalls, pipes, inlets, associated attributes, and receiving streams.

The purpose of this BMP is to document the location of all new and existing stormwater outfalls, pipes, inlets, and other associated attributes for locational and logistical reference. A geospatial tool helps permittees understand the impacts of illicit discharges to the MS4. The intended outcome is to comply with permit requirements for storm sewer map maintenance.

Measurable Goal: Review and update stormwater drainage system map(s) annually. (Each)

The City of Columbia has a completed stormwater sewer system map. GIS is utilized to maintain and updates to the map are made on an ongoing basis.

Boone County has a completed storm sewer system map. GIS is utilized to maintain and update the map annually.

MU has a completed storm sewer system map. GIS is utilized to maintain and update the map annually.

BMP 2: Effectively prohibit, through IDDE ordinance or other IDDE regulatory mechanisms, non-stormwater discharges into the stormwater drainage system and implement appropriate enforcement procedures and actions.

The co-permittees continue to maintain, implement, and enforce measures to detect and eliminate illicit connections and discharges to the MS4. The co-permittees have the legal authority to carry out all inspections, surveillance, testing, and monitoring necessary to ensure compliance within their respective jurisdictions. MU exercises enforcement through campus policy and administrative actions. The purpose of this BMP is to maintain water quality by restricting certain discharges into the stormwater drainage system, and provides the co-permittees with the legal authority to address illicit discharges. The intended outcome of this BMP is to comply with permit requirements.

Measurable Goal: Document and track IDDE Ordinance/Regulatory Mechanism enforcements. Document any illicit discharges and illegal dumping enforcement actions taken. (All)

The City of Columbia investigates all reported or found illicit discharges and illegal dumping. All enforcement actions are documented.

The County investigates all reported or found illicit discharges and illegal dumping. All enforcement actions are documented.

The University System and MU both have policies and/or rules in place to prohibit actions such as illicit discharges and other violations of environmental regulations. The policies and rules can be found at the following links.

Policy Number 13101 Safety & Risk Management-General Policy:

https://www.umsystem.edu/ums/policies/general_administration/safety_risk_management

Collected Rules and Regulations, 85.010 Risk Management Policy, 85.020 Hazardous Chemicals and Radioactive Materials Policy:

https://www.umsystem.edu/ums/rules/collected_rules/business/ch85/85.010_risk_management_policy,

https://www.umsystem.edu/ums/rules/collected_rules/business/ch85/85.020_hazardous_chemicals_and_radioactive_materials_policy

MU Environmental Health and Safety Policy Section 7:001: <https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/> (currently under revision)

Measurable Goal: Review IDDE Ordinances/Regulatory Mechanisms annually and update as necessary. (All)

The City has an Illicit Discharge Ordinance in place. In the City Code of Ordinances, the Detection and Elimination of Illicit Stormwater Discharges is Chapter 12A, Article IX. This ordinance is reviewed and updated annually.

https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOR_CH12ALAPR_ARTIXDEELILSTDI

The ordinance discusses how each day the illicit connection is found is determined to be a separate nuisance. It later details the Abatement procedure if necessary.

Boone County has a completed Illicit Discharge Ordinance in place. The ordinance is accessible on the County's website at https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=32. The ordinance is reviewed annually, and updates are made as needed.

UM System maintains its Collected Rules and Regulations (CRR). The CRR can be found at <https://umsystem.edu/ums/rules>.

MU EHS maintains its policies and updates as necessary. The MU EHS policies are found at [MU Environmental Health and Safety Policy Section 7:001: https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/](https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/).

BMP 3: Maintain a plan to detect and address incidental non-stormwater discharges.

The purpose of this BMP is to implement a plan to detect and address non-stormwater discharges. The intended outcome of this BMP is timely elimination of incidental non-stormwater discharges and the ability to take enforcement action as necessary.

Measurable Goal: Inspect a minimum of 20% of permitted MS4 outfalls each year on a rotating basis. (Each)

The City will inspect 20% of permitted outfalls annually. The City utilizes an app created by the IT Department. All of the outfalls are mapped and shown within the app that was created. A tablet is used in the field for the inspections, the tablet allows the ability to take photos on the site during the inspection, the photos can be retained within the app. Data entry is done during the inspection, to ensure thoroughness of inspection.

The County will inspect 20% of permitted outfalls annually.

MU will inspect 20% of permitted outfalls annually.

Measurable Goal: Conduct detection activities of the sanitary and storm sewer system such as on-site visual inspections, smoke and dye testing, closed circuit television (CCTV) inspections to detect cross-connections and/or leaks. (All)

The City's detection activities consist of on-site visual inspections, smoke and dye testing, closed television (CCTV) inspections as well as public watch and reporting.

County storm sewer inspections consist of on-site visual inspection, as well as public watch and reporting.

MU Campus Facilities divided their sanitary sewer system into five zones, A-E. One of the five zones is inspected each year, completing an inspection of the entire system every five years. The inspection program includes camera verification and inspections for defects and infiltration.

Measurable Goal: Track non-stormwater discharges reported by the public through provided outlets via web-based reporting and/or hotlines. (All)

The City of Columbia receives public inquiries, concerns, and stormwater-related information and related topics through its web page <https://www.como.gov/utilities/columbias-stormwater-utility/>. These web-based stormwater submissions are responded to within 1 to 3 business days. The City also receives stormwater calls via the Contact Center at 573-874-2489 as well as the City Sewer & Stormwater Facebook page, <https://www.facebook.com/ColumbiaSewerandStormwater>.

The County utilizes a web-based public comment submission platform to report illicit discharges and other stormwater-related issues. This is located on the County's stormwater web page www.showmeboone.com/stormwater. Any calls, letters, or email the County receives reporting stormwater concerns is input into the web-based platform for tracking purposes. The County monitors the submission platform daily and responds to all comments/ concerns within 24-business hours. Depending on the location and nature of the concern, the County will either respond to the issue or coordinate the response effort with the relevant co-permittee or agency having jurisdiction.

At MU, Environmental Health & Safety maintains the website <http://ehs.missouri.edu/ehs/env/stormwater>, which includes a phone number that the public can use to report issues and/or voice concerns.

BMP 4: Inform public employees, businesses, and the general public of the hazards associated with illegal discharges and improper disposal of waste.

The purpose of this BMP is to educate the public about the hazards associated with illicit discharges. The intended outcome of this BMP is to increase public understanding about the hazards of illicit discharges.

Measurable Goal: Distribute communication materials to target audiences regarding the hazards associated with illicit discharges. (All)

The City of Columbia will distribute materials to target audiences and record the number of IDDE investigations performed. The City trains all new employees on IDDE issues during new employee orientation.

The County tracks the number of materials distributed to target audiences. The County records the number of IDDE investigations performed. Targeted County employees are trained in illicit discharge detection and spill prevention.

MU faculty, staff and students are provided numerous training opportunities which inform them of the hazards associated with illegal discharges and improper disposal of waste. The training provides information on how to report discharges, including discharges to the stormwater system. The EHS website is maintained and updated regularly by EHS and includes a specific page for stormwater information at <https://ehs.missouri.edu/env/stormwater>.

Table 4. MCM 3 BMPs:

Permit Section	Responsible Permittee	BMP Description		Purpose of BMP	BMP Goal/ Intended Outcome
3.B	Each	BMP 1.	Maintain storm sewer system map showing MS4 outfalls and receiving streams	View outfalls and watersheds within the MS4 plan area.	Comply with permit requirements.

3.C	Each	BMP 2.	Effectively prohibit non-stormwater discharges into each storm sewer system and implement appropriate enforcement procedures and actions.	Provides the City, County, and MU with legal authority to address illicit discharges.	Comply with permit requirements.
	All	BMP 3.	Maintain a plan to detect and address non-stormwater discharges <i>(This may include on-site inspections, smoke or dye testing, or CCTV inspections)</i> .	Implement a plan to detect and address non-stormwater discharges.	Timely elimination of incidental non-stormwater discharges and take enforcement action as necessary.
3.D	All	BMP 4.	Inform public employees, businesses and the public of the hazards associated with illegal discharges and improper disposal of waste.	Educate the public about the hazards associated with illicit discharges.	Increase public understanding about the hazards of illicit discharges.

MCM 4 – Construction Site Stormwater Runoff Controls

MCM Discussion: Construction site runoff is a publicly visible element of the stormwater management program. Regulatory mechanisms are in place to control construction site runoff. Site plan review and inspections for construction site runoff control are ongoing. Each permittee continues to refine internal procedures for inspection and enforcement. Public concerns that are received are inspected in a timely manner.

The purpose of the construction site stormwater runoff control MCM is to prevent soil, construction material, and other materials from leaving the construction site and entering the stormwater drainage system. Sediment is the primary pollutant of concern.

Permit Requirement: The permittees shall continue to enforce a program to reduce pollutants in any stormwater runoff to their small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activities disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.

At a minimum, the Construction Site Stormwater Runoff Controls program shall include:

- 4.B.i *An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State or local law.*

The City of Columbia has a Land Preservation Ordinance and the ordinance may be found at: https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOOR_CH12ALAPR_ARTIVERCORE

The City also has a completed Erosion Control and Land Disturbance Violation Enforcement Policy. The policy is available on the City's website at: https://www.como.gov/wp-content/uploads/2020/09/20160411_Erosion-Control-Policy_CMD.pdf

The City Community Development Department performs inspection of active private sites at least weekly, and notices of violation are issued as necessary. The Storm water Utility responds to storm drainage complaints. Public improvement projects are inspected by their respective departments regularly and weekly at a minimum.

City regulations require soil erosion control plans for all land disturbance activities greater than an acre. City regulation requires erosion and sediment control for all disturbed sites, including those less than one acre. The Community Development Department tracks plan reviews and site inspections for private construction and development sites.

For City public improvement projects, there is a rigorous public involvement process. As part of the Citywide SWPPP, for larger improvement projects, an individual SWPP is prepared and included in the construction documents for improvements that disturb more than an acre. All City improvement projects are inspected by City personnel. For maintenance and operations work, employees are being educated on proper erosion and sediment control to meet the City's general SWPPP permit.

The County has a completed Construction Site Runoff Control Ordinance in place. The ordinance is available on the County's website at https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=27. The ordinance is reviewed annually and updated as needed.

UM System maintains its Collected Rules and Regulations (CRR). The CRR can be found at <https://umsystem.edu/ums/rules>.

MU EHS maintains its policies and updates as necessary. The MU EHS policies are found at [MU Environmental Health and Safety Policy Section 7:001: https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/](https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/).

Also at MU, all construction projects are designed and reviewed by the MU Campus Facilities' Planning, Design and Construction department (PD&C) using the MU "Sustainable Design Policy." This policy incorporates sustainability principles and concepts in the design of all facilities and infrastructure projects to the extent possible, while being consistent with budget constraints, appropriate life cycle cost analysis, and customer priorities. The policy directs MU to meet or exceed MDNR best management practices for erosion and sedimentation control standards and implement innovative stormwater management. The Consultant Procedures and Design Guidelines is available on the University of Missouri Facility Planning and Development Website and contains a collection of information that is updated quarterly as necessary.

4.B.ii Requirements for construction site operators to implement appropriate erosion and sediment control best management practices.

A SWPPP is required for all projects which disturb an area of 1 acre or greater. The SWPPP for the site includes details on appropriate installation, implementation, and maintenance of all BMP's used on the site for the life of the project, as well as details on controlling construction site waste.

This requirement can be seen on the site plan checklist found at the link below:

https://www.como.gov/wp-content/uploads/2020/09/20200902_Site-Plan-Checklist_CMD.pdf

To ensure construction sites are managed properly within the City of Columbia, the City implements plan review, permitting and site inspection. Owners/Developers/Contractors follow general requirements of chapter 12A of the City of Columbia Code of Ordinances. For development projects that disturb 1 acre or more, permit applicants are required to submit site grading and drainage plans which spell out the temporary erosion and sediment control measures that will be taken during construction. An erosion control narrative report is also required, which describes the nature and scope of the work. Building & Site Development engineers review the plan for general compliance with all requirements. Once the plan is approved, and the permit is issued, the construction site operator is responsible for installing the erosion control measures per the approved plans; for keeping them current during all phases on construction (e.g., demolition, grading, paving, building construction, final stabilization, etc.); and for maintaining them during the life of the project. Erosion control is checked regularly by city site inspection staff during the project, especially after rain events. Before city land disturbance permit issuance, the applicant must also demonstrate that they have obtained a Missouri Department of Natural Resources Land Disturbance permit as well.

To ensure construction sites are managed properly within the County, the County implements plan review, permitting, inspection, and complaint response. Owners/Developers/Contractors follow general requirements laid out in Section 28.5 of the Boone County Zoning Regulations. Private entities are required to submit a Boone County Land Disturbance Permit, Stormwater Pollution Prevention Plan (SWPPP), erosion and sediment control plans, erosion and sediment control cost analysis for security deposit determination, and a Missouri Department of Natural Resources State Operating Permit for review and approval by County staff before construction may begin. Once the project is approved, a preconstruction meeting is held at the construction site with the owner, design professional, contractor, and site inspectors to discuss any special site features such as environmentally sensitive areas, steep slopes, stream buffer, etc., erosion and sediment control requirements, good housekeeping, and inspection procedures. The same guideline is followed for public land disturbance activities conducted by the County.

MU has a number of overlapping mechanisms to effectively monitor and control discharges on the MU campus, including the Stormwater Management Plan, Stormwater Pollution Prevention Plans for land disturbance sites, the Spill Prevention Countermeasures and Control Plans, and stormwater discharge NPDES permits. Construction and demolition projects receive the daily oversight of a MU Construction Project Manager or Construction Engineer, in addition to receiving MU building permit inspections. MU Employees are provided training and have mechanisms to report discharges, including discharges to the stormwater system, to EHS.

At MU, all construction projects are designed and reviewed by the MU's CF-PDC department using the PDC "Sustainable Design Policy." This policy incorporates sustainability principles and concepts in the design of all facilities and infrastructure projects to the fullest extent possible, while being consistent with budget constraints, appropriate life cycle cost analysis, and customer priorities. The policy directs MU to meet or exceed MDNR best management practices for erosion and sedimentation control standards and implement innovative stormwater management. The Consultant Procedures and Design Guidelines is available on the University of Missouri Facility Planning and Development Website and contains a collection of information that is updated quarterly as necessary.

- 4.B.iii *Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality.*

A SWPPP is required for each development project that disturbs 1 acre or more, and provides details on controlling construction site waste, including, but not limited to discarded building materials, concrete truck washout, chemicals, trash/litter, and sanitary waste. Where appropriate, a concrete washout area or provision is required on erosion control plans. This falls under Chapter 12A 66-12A-71 of the City of Columbia Code of Ordinances.

https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOR_CH12ALAPR_ARTIVERCORE_SS12A-72--12A-84RE

Section 28.5.7 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=27

provide requirements for construction site operators to control waste. Additionally, the required SWPPP for each project provides details on controlling construction site waste, including, but not

limited to discarded building materials, concrete truck washout, chemicals, trash/litter, and sanitary waste.

MU has a number of overlapping mechanisms to effectively monitor and control discharges on the MU campus, including the Stormwater Management Plan, Stormwater Pollution Prevention Plans for land disturbance sites, and stormwater discharge NPDES permits. Construction and demolition projects receive the daily oversight of a MU Construction Project Manager or Construction Engineer, in addition to receiving MU building permit inspections. MU Employees are provided training and have mechanisms to report discharges, including discharges to the stormwater system, to EHS.

4.B.iv Procedures for site plan review which incorporate consideration of potential water quality impacts.

As described previously, for development projects that disturb 1 acre or more, permit applicants are required to submit site grading and drainage plans, and an erosion control project narrative. City engineers review the plans, ensuring that appropriate, effective erosion controls will be implemented. Additionally, the plans are required to provide a project narrative for water quality impacts including but not limited to factors affecting runoff pre & Post development, Total disturbed area, and project description, explanation of existing significant problems. During the plan review process a plan review checklist is used which can be found at the link below:

https://www.como.gov/wp-content/uploads/2020/09/20200902_Site-Plan-Checklist_CMD.pdf

The City maintains the Stormwater Management and Water Quality Manual as well, which discusses the requirements of using BMP's to improve the water quality leaving the site. The Stormwater Management and Water Quality Manual can be found at the link below:

<https://www.como.gov/utilities/columbias-stormwater-utility/>

Section 28.3 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=13 discusses the County's requirements for plan submission and review requirements for all pre-construction site plans for consideration of potential water quality impacts. The regulations are reviewed annually and updated as needed.

MU EHS works closely with Campus Facilities' Planning, Design and Construction (PD&C) department, providing guidance on stormwater management to architects and engineers. Any specific requirements are included in the bid and contract documents.

Also at MU, all construction projects are designed and reviewed by the MU's CF-PDC department using the PDC "Sustainable Design Policy." This policy incorporates sustainability principles and concepts in the design of all facilities and infrastructure projects to the extent possible, while being consistent with budget constraints, appropriate life cycle cost analysis, and customer priorities. The policy directs MU to meet or exceed MDNR best management practices for erosion and sedimentation control standards and implement innovative stormwater management. The Consultant Procedures and Design Guidelines is available on the University of Missouri Facility Planning and Development Website and contains a collection of information that is updated quarterly as necessary.

4.B.v *Procedures for receipt and considerations of information submitted by the public.*

The City utilizes an electronic submission system for the public to submit concerns, complaints, or comments to any construction project. The electronic submission system is located at the link below. The City reviews all stormwater pollution problems by the public within 1 working day of receipt, and investigates response to submission, if deemed necessary, within 3 working days. The City's electronic system won't let the concern be closed out until the person reporting the problem was contacted. The public may also call the City 573-874-2489. If the concern is called in then, the concern is logged into the same electronic system as previously described.

<https://www.como.gov/CMS/WebForms/form.php?formid=194>

The County utilizes an electronic submission system for the public to submit concerns, complaints, or comments on any construction projects. The electronic submission system is located on the County's stormwater webpage in the sidebar of the home page with a link stating "Report Storm Drainage Problems." The County reviews all environmental concerns, complaints, or comments received by the public within 24 business hours of receipt, and investigative response to submission, if deemed necessary, within 48 hours of submission (72 hours if submission occurred over a weekend or holiday). The County supplies a follow up response to the submitter to let them know their complaint/concern was received, and the action taken within 24 hours, and if requested, a follow up once the review/investigation has been completed. The public may also contact the Resource Management Department by phone to report a stormwater complaint/concern. If complaints are phoned in, all information is entered into the online reporting system by staff for tracking purposes.

MU employees are provided training and have mechanisms in place to report discharges, including discharges to the stormwater systems, to MU Environmental Health & Safety.

4.B.vi *Procedures for site-inspection and enforcement of control measures.*

An erosion control inspection is provided for each and every inspection requested by the contractor or subcontractor. Chapter 24-9 of the City of Columbia Code of Ordinances discusses depositing dirt, debris, etc. on city thoroughfares.

https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOOR_CH24STSIP_UPL_ARTIINGE_S24-9DEDIDEETTH

The electronic inspection ensures all inspections are accompanied by an erosion control inspection. This can be seen in the policy found in the link below. https://www.como.gov/wp-content/uploads/2020/09/20160411_Erosion-Control-Policy_CMD.pdf

Sections 28.8 and 28.9 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=35 discuss permit requirements, site inspections, and violations, enforcement, and penalties. The County also uses an inspection report and has guidelines for performing site inspections and enforcement control measures. A copy of the County's inspection report and inspection tips are attached to the SWMP in Appendix B. the regulations are reviewed annually and updates are made as needed.

A number of overlapping mechanisms effectively monitor and control discharges on the MU campus, including the Stormwater Management Plan, Stormwater Pollution Prevention Plans for land disturbance sites, the Spill Prevention Countermeasures and Control Plans, and stormwater discharge NPDES permits. Construction and demolition projects receive the daily oversight of a MU Construction Project Manager or Construction Engineer, in addition to receiving MU building permit inspections.

Waterways and stormwater inlets are aggressively protected from the release of sediment, debris or petroleum products. During each construction project, the MU Project Manager and/or Construction Inspector inspects the site both weekly and after precipitation events to make sure stormwater controls are in place and working as designed. In addition, EHS and Campus Facilities conduct a comprehensive joint audit of all permitted construction sites once a year.

MCM 4 Best Management Practices and Measurable Goals

BMP 1: Enforce a program to reduce pollutants from construction activities that result in a land disturbance of greater than or equal to one acre.

The purpose of this BMP is to ensure co-permittee land disturbance programs are implemented so that proper mechanisms are utilized to control runoff from construction sites disturbing greater than one acre. The intended outcome of this BMP is to reduce pollution caused by construction site activities.

Measurable Goal: Track construction site inspections and enforcement actions. (All)

The City's Building and Site Development Department tracks construction site inspections through the Energov online system. At the end of the year this information is communicated with the Stormwater Utility and that information used within the annual report.

Boone County stormwater, building inspection, and construction inspection staff inspect construction sites for compliance with Chapter 28.5 of the Boone County Zoning Regulations. All inspection and enforcement actions are recorded and reported annually.

The MU Project Manager and/or Construction Inspector inspects the qualifying construction site(s) both weekly and after precipitation events to make sure stormwater controls are in place and working as designed. All construction site inspections are tracked through MU Campus Facilities' Projex online system.

BMP 2: Maintain regulatory mechanisms for active land disturbance programs.

The purpose of this BMP is to ensure co-permittee land disturbance programs are implemented so that proper mechanisms are utilized to control runoff from construction sites disturbing greater than one acre. The intended outcome of this BMP is to comply with permit requirements for regulatory mechanisms.

Measurable Goal: Conduct an annual review of regulatory mechanisms. (All)

All information regarding ordinances, regulations, enforcement, site plan review, inspection, policies and procedures with regard to construction site runoff control for private development in the City can be found on the City's website. City regulations require soil erosion control plans for all land disturbance activities greater than an acre. City regulation requires erosion and sediment control for all disturbed sites, including those less than one acre. The Community Development Department tracks plan reviews and site inspections for private construction and development sites.

For City public improvement projects, there is a rigorous public involvement process. As part of the Citywide SWPPP, for larger improvement projects, an individual SWPPP is prepared and included in the construction documents for improvements that disturb more than an acre. All City improvement projects are inspected by City personnel. For maintenance and operations work, employees are being educated on proper erosion and sediment control to meet the City's general SWPPP permit.

The City tracks the number of violations annually, and continuously evaluates the effectiveness of erosion control plans received. Comparison between erosion control plan design and in field installation and effectiveness is constantly evaluated to find the most effective erosion controls methods.

Boone County Section 28.4.6

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=23 and 28.5 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=27 are reviewed annually and updated as necessary.

At MU, all construction projects are designed and reviewed by the MU's CF-PDC department using the PDC "Sustainable Design Policy." This policy incorporates sustainability principles and concepts in the design of all facilities and infrastructure projects to the extent possible, while being consistent with budget constraints, appropriate life cycle cost analysis, and customer priorities. The policy directs MU to meet or exceed MDNR best management practices for erosion and sedimentation control standards and implement innovative stormwater management. The Consultant Procedures and Design Guidelines is available on the University of Missouri Facility Planning and Development Website and contains a collection of information that is updated quarterly as necessary.

Measurable Goal: Track the number of land disturbance permits issued each year. (All)

The City of Columbia will track the number of land disturbance permits issued each year for both private and public projects. The City of Columbia also requires initial and final erosion control plans that indicate BMP responsibility throughout the development of the project.

Evaluate all construction projects within the Columbia city limit MS4 area for criteria requiring a land disturbance permit. Before city land disturbance permit issuance, the applicant must also demonstrate that they have obtained a Missouri Department of Natural Resources Land Disturbance permit. Owners/Developers/Contractors follow general requirements of chapter 12A of the City of Columbia Code of Ordinances. For development projects that disturb 1 acre or more, permit applicants are required to submit site grading and drainage plans which spell out the temporary erosion and sediment control measures that will be taken during construction. An erosion control narrative report is also required, which describes the nature and scope of the work. All private development construction projects are reviewed in the electronic plan

review system Energov, all land disturbance permits are trackable within this system. The plan review checklist requires a note on all plans which disturb over one acre which states the following:

“Land disturbance sites shall be inspected on a regular schedule and within a reasonable time period (not to exceed 48 hours) following heavy rains. Regularly scheduled inspections shall be at a minimum of once per week. Any deficiencies shall be noted in a weekly report of the inspection and corrected within seven calendar days of the report. Contractors are required to submit to City inspection staff copies of their inspection reports required by the Stormwater Pollution Prevention Plan (SWPPP) on a monthly basis if requested.”

The County will track the number of land disturbance permits issued each year for both private and public projects. The County also requires Missouri State Operating Permits be obtained for projects that are part of a common plan of development or sale. The County provides a quarterly report to MDNR on County projects requiring a land disturbance permit.

MU will track the number of qualifying land disturbance projects that are included on its general land disturbance permit and any land disturbance permits issued independent of its general land disturbance permit.

BMP 3: Maintain written procedures for construction site operators to implement appropriate erosion and sediment control best management practices.

The purpose of this BMP is to minimize soil erosion and sedimentation caused by construction site activities. The intended outcome of this BMP is to reduce sediment loss from construction site activities.

Measurable Goal: Conduct, at a minimum, an annual review of ordinances/regulatory mechanisms and stormwater design manuals.

The City also has a completed Erosion Control and Land Disturbance Violation Enforcement Policy. The City also has a stormwater design manual in place that is reviewed annually and updated as necessary. The policy states that all erosion control must be maintained or a notice of violation will be sent to the permit holder. This is valid for Chapters 12A and 24 of the City Code of Ordinances.

The City has a checklist used for Erosion Control Inspections found only in the Energov system. The checklist is as follows:

- SWPPP inspection reports
- Erosion control compliance with 12A-70, proper install and maintenance
- Erosion control compliance with 24-9, dirt debris on city streets
- Construction entrance
- Ditch checks
- Inlet barriers maintained properly
- Concrete washout area
- Erosion control as needed
- Sediment basin
- Stockpile area

- Verify complete ground cover

The above checklist is used for every site inspection. An erosion control inspection is completed with every building inspection requested.

Section 28.5 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=27 gives the County authority to enforce federal and state requirements pertaining to construction site runoff control, such as grading, erosion and sediment controls, construction site access, stream crossings, and control of other pollutants.

Chapter 8 of the Boone County Stormwater Design Manual

<https://www.showmeboone.com/stormwater/manual.asp> lists acceptable erosion and sediment control practices in Boone County. The manual is reviewed every two years for effectiveness and updates are made as needed.

Appendix A of the Boone County Road Regulations https://www.showmeboone.com/resource-management/regulations/road-traffic/Road_Regulations_for_web.pdf requires all land disturbance related to road building to follow practices necessary to prevent erosion and sediment loss from leaving the site.

At MU, all construction projects are designed and reviewed by the MU's CF-PDC department using the PDC "Sustainable Design Policy." This policy incorporates sustainability principles and concepts in the design of all facilities and infrastructure projects to the extent possible, while being consistent with budget constraints, appropriate life cycle cost analysis, and customer priorities. The policy directs MU to meet or exceed MDNR best management practices for erosion and sedimentation control standards and implement innovative stormwater management. The Consultant Procedures and Design Guidelines is available on the University of Missouri Facility Planning and Development Website and contains a collection of information that is updated quarterly as necessary.

BMP 4: Require construction site operators to control waste and erosion on construction sites by requiring a Stormwater Pollution Prevention Plan (SWPPP) and soil erosion control plans.

The purpose of this BMP is to prevent construction-related waste from leaving the site. The intended outcome of this BMP is to contain waste on-site through BMPs

Measurable Goal: Review project SWPPP and site plan submittals for conformance with regulatory requirements and required design policies, practices, and procedures, and record any comments provided. (All)

The City requires a SWPPP for each development project that disturbs 1 acre or more and is reviewed by the Building and Site Development staff for compliance with City and State Regulations. Comments are submitted to the engineer of record and the landowner. The SWPPP needs to be in accordance with the erosion and sediment control plan submitted in conjunction with it. Sites are inspected routinely, and the inspectors ensure the SWPPP is kept up to date post rainfall events.

Boone County reviews all SWPPP, erosion control and stormwater plans for compliance with Chapter 28 of the Boone County Zoning Regulations. Once the review is completed, comments are sent to the engineer of record and the landowner and filed in the project folder. All projects are required to have a Pre-Construction meeting before beginning land disturbance. This meeting discusses erosion and sediment control and good housekeeping needs for the project.

The County requires a fully refundable stormwater security deposit be obtained from the landowner for 150 percent of the erosion and sediment control costs of the project for costs over \$20,000.00. A refund is issued once the project is finalized, provided the County did not need to use the funds to stabilize the site.

MU requires a SWPPP for each project that disturbs 1 acre or more. Each SWPPP is reviewed by Environmental Health & Safety for compliance with permit requirements and state regulations. Comments are submitted to MU Planning Design and Development and consulting engineers for incorporation in the SWPPP. The SWPPP is developed in accordance with MU's general land disturbance permit. Sites are inspected routinely, and the inspectors ensure the SWPPP is kept up to date.

BMP 5: Implement procedures for site plan review.

The purpose of this BMP is to require pre-construction planning. The intended outcome of this BMP is to prevent adverse impacts to water quality by ensuring BMPs are properly installed and maintained throughout construction

Measurable Goal: Track site plan reviews. (All)

As described previously, for development projects that disturb 1 acre or more, permit applicants are required to submit site grading and drainage plans, and an erosion control project narrative. City engineers review the plans, ensuring that appropriate, effective erosion controls will be implemented. Additionally, the plans are required to provide a project narrative for water quality impacts including but not limited to factors affecting runoff pre & Post development, Total disturbed area, and project description, explanation of existing significant problems.

https://www.como.gov/wp-content/uploads/2020/09/20200902_Site-Plan-Checklist_CMD.pdf

The City has required all plans be submitted electronically through the Energov system. All permits and projects are tracked within this system. Each department marks if the project needs to be reviewed through their lens. All comments and submittals are tracked within the Energov system.

The County keeps track of each project's review progress. Projects are required to have Stormwater Pre-Application Meetings, which are recorded and reported annually. A log of plan review submittals is kept for each project. Plan review comments and approval letters are sent to both the engineer of record and landowner. All reviewed documents are filed in the project's folder and kept for three (3) years, before being archived.

MU EHS works closely with Campus Facilities - Planning Design and Construction (CF-PDC) department, providing guidance on stormwater management to architects and engineers. Any specific requirements are

included in the bid and contract documents. Waterways and stormwater inlets are aggressively protected from the release of sediment, debris, or petroleum products. MU-Campus Facilities continue to require all aspects of design and construction, including interaction with non-MU contractors to work through Bluebeam and Project 4 (MU developed Project management and Collaboration software, which includes environmental policies and guidance.

BMP 6: Maintain procedures for receipt and consideration of information submitted by the public. Maintain websites and hotline phone numbers.

The purpose of this BMP is to allow the general public a method for submitting comments/complaints. The intended outcome of this BMP is to provide timely response to comments/complaints.

Measurable Goal: Record the number of complaints, findings, and actions taken. (All)

The City's Storm Water Utility responds to storm drainage complaints. The City's website provides citizens the opportunity to report a stormwater concern located at: <https://www.como.gov/CMS/WebForms/form.php?formid=195>. The City Hall Contact Center can be reached via phone at 573-874-2489. Depending on the concern received, responses are provided from the City's Community Development Department, City Storm Water Utility or one of the other co-permittees, depending on the issue and appropriate jurisdiction. City concerns are responded to within 1-3 business days. The City's electronic system won't let the concern be closed out until the person reporting the problem was contacted. The IT Department maintains the website and phone number.

The County utilizes an electronic submission system for the public to submit concerns, complaints, or comments on any construction projects. The electronic submission system is located on the County's stormwater webpage in the sidebar of the home page with a link stating "Report Storm Drainage Problems." The County reviews all environmental concerns, complaints, or comments received by the public within 24 business hours of receipt, and investigative response to submission, if deemed necessary, within 48 hours of submission (72 hours if submission occurred over a weekend or holiday). The County supplies a follow up response to the submitter to let them know their complaint/concern was received, and the action taken within 24 hours, and if requested, a follow up once the review/investigation has been completed. The public may also contact the Resource Management Department by phone to report a stormwater complaint/concern. If complaints are phoned in, all information is entered into the online reporting system by staff for tracking purposes.

At MU, Environmental Health & Safety maintains the website <http://ehs.missouri.edu/ehs/env/stormwater>, which includes a phone number that the public can use to report issues and/or voice concerns.

BMP 7: Implement inspection procedures for land disturbance sites.

The purpose of this BMP is to ensure appropriate erosion and sediment control and good housekeeping BMPs are being used on construction sites. The intended outcome of this BMP is to ensure proper use of construction site BMPs.

Measurable Goal: Track number of site inspections. (All)

The City Community Development Department performs inspections of active private sites at least weekly, and notices of violation are issued as necessary, as well as ensures required erosion and sediment control are implemented and functioning properly on a routine and post-rainfall basis. Public improvement projects are inspected by their respective departments regularly and weekly at a minimum. An erosion control inspection is conducted at each building site when an inspection requested by the contractor. All inspections are logged in the Energov system. The inspectors utilize the approved erosion and sediment control plans to ensure proper installation and effectiveness of the BMPs in place. The inspectors also utilize the approved SWPPP to ensure the BMPs are maintained correctly. Sites that are near major waterways, and have steep slopes are generally prioritized inspections. The site inspectors also take into consideration, contractor and developer working history. If there have been problems with a contractor or developer in the past maintaining their BMP's those sites could also get prioritized.

County stormwater and inspection staff conduct site inspections during construction and upon completion of construction activity. Construction site operators are required to follow MDNR's inspection guidelines. Site inspections performed by operators are reviewed by County staff during County inspections for completeness. Number of staff-performed inspections are reported annually. Boone County projects follow inspection guidelines set forth by MDNR and provide a project status report to MDNR quarterly.

During each construction project, the MU Project Manager and/or Construction Inspector inspects the site(s) both weekly and after precipitation events to make sure stormwater controls are in place and working as designed. In addition, EHS and Campus Facilities conduct a comprehensive joint audit of all permitted construction sites once a year.

Measurable Goals: Maintain and implement inspection checklists for construction sites requiring a land disturbance. (All)

The City has a checklist used for Erosion Control Inspections found only in the Energov system. The checklist is as follows:

- SWPPP inspection reports
- Erosion control compliance with 12A-70, proper install and maintenance
- Erosion control compliance with 24-9, dirt debris on city streets
- Construction entrance
- Ditch checks
- Inlet barriers maintained properly
- Concrete washout area
- Erosion control as needed
- Sediment basin
- Stockpile area
- Verify complete ground cover

The above checklist is used for every site inspection. An erosion control inspection is completed with every building inspection requested.

County inspection staff receive annual training for conducting site inspections and are issued inspection checklist booklets as needed. These booklets provide a detailed inspection form in triplicate. One form is filed in the project folder, one copy is left with the site operator, and one copy is for the inspector’s record. Photos are printed and stored with the file copy. All inspections performed by County staff are uploaded to the project file and reported on annually. Refer to Appendix C for inspection procedures and checklist.

At MU, the Construction Inspector utilizes inspection forms provided in the SWPPP for each project. This includes a Site Inspection Form for erosion and sedimentation controls and a Corrective Actions Log. Completed forms are kept in the project file.

BMP 8: Implement procedures for enforcement actions.

The purpose of this BMP is to provide authority to enforce the rules, laws, regulations, and policies put in place to ensure proper use of construction BMP’s. The intended outcome of this BMP is for co-permittees to follow enforcement procedures as needed.

Measurable Goals: Track number of violations. (All)

The City has a completed Erosion Control and Land Disturbance Violation Enforcement Policy. The policy is available on the City’s website at:

https://www.como.gov/wp-content/uploads/2020/09/20160411_Erosion-Control-Policy_CMD.pdf

The City’s Land Disturbance and Sediment Control policy includes an enforcement process, which includes Notice of Violations and progressive enforcement to ensure compliance. The Erosion Control Policy is linked above. The enforcement process is reviewed annually and updated as needed.

Boone County inspects sites during construction for compliance with Chapters 26 and 28 of the Boone County Zoning Regulations. All violations issued are recorded and reported on annually.

At MU, deficiencies are noted in the inspection report and tagged as such in the inspection file. A follow-up inspection is conducted on any inspection with a noted deficiency to make sure the issue has been resolved.

Table 5. MCM 4 BMPs:

Permit Section	Responsible Permittee	BMP Description		Purpose of BMP	BMP Goal/ Intended Outcome
4.A	All	BMP 1.	Enforce a program to reduce pollutants from construction activities that result in a land disturbance of greater than or equal to one	Ensure co-permittee land disturbance programs are implemented.	Reduce pollution caused by construction site activities.

			acre.		
4.B.i	All	BMP 2.	Maintain regulatory mechanisms and active land disturbance programs.	Ensure co-permittee land disturbance programs are implemented.	Comply with permit requirements.
4.B.ii	All	BMP 3.	Maintain written procedures for construction site operators to implement appropriate erosion and sediment control BMPs.	Minimize soil erosion and sedimentation due to construction site activities.	Reduction in sediment loss from construction site activities.
4.B.iii	All	BMP 4.	Require construction site operators to control waste at the construction site by requiring a SWPPP & soil erosion control plan.	Prevent construction-related waste from leaving the site.	Contain waste on-site through BMPs.
4.B.iv	All	BMP 5.	Implement procedures for site plan review.	Require pre-construction planning.	Prevent adverse impacts to water quality by ensuring BMPs are properly installed and maintained throughout construction.
4.B. v	All	BMP 6.	Maintain procedures for receipt (i.e., phone hotlines and online reporting) and considerations of information submitted by the public.	Allow the general public a method for submitting comments/complaints.	Provide timely response to comments/complaints.
4.B.vi	All	BMP 7.	Implement inspection procedures for land disturbance sites.	Ensure appropriate erosion and sediment control and good housekeeping BMPs are being used.	Ensure proper use of construction site BMPs.
	All	BMP 8.	Implement procedures for enforcement actions.	Provide authority to enforce the rules, laws, regulations, and policies put in place.	Co-permittees will follow enforcement procedures as needed.

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

MCM Discussion: The necessary regulatory mechanisms are in place to require post construction runoff control for all new development. Opportunities to retrofit post construction runoff controls are identified and implemented when possible. Maintenance of structural BMPs is a critical component to the success of post construction runoff controls. Inventory and inspection of BMPs encourages proper maintenance which supports pollutant and runoff reductions.

Permit Requirement: The permittees shall develop, implement, and enforce a program to address the quality of 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 or sale that discharge into the regulated MS4.

At a minimum, the post-construction stormwater management program shall include:

5.A.i *Strategies which include a combination of structural and/or non-structural best management practices appropriate for the MS4 community.*

Chapter 12A-67 of the City of Columbia Code of Ordinances which requires a site grading and drainage plan, as well as a project narrative.

https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOOR_CH12ALAPR_ARTIVERCORE_S12A-66ERCORE

The City's Stormwater Management & Water Quality Manual requires that the post development peak stormwater release rate be limited to the pre-development rates for the 1, 2, 10 and 100-year return period design storms (the 100%, 50%, 10% and 1%, respectively.) storm. This is how the City attempts to maintain pre-development runoff conditions. The City's stormwater and water quality manual can be found at the link below:

<https://www.como.gov/utilities/columbias-stormwater-utility/>

The City's Community Development Department enforces the City's Stream Buffer Ordinance 12A-31 Article X and stormwater quality management for new developments. The Community Development Department also has covenants and maintenance agreements for post-construction BMPs recorded. The City's Stormwater Utility receives and tracks annual inspection information for the post-construction BMPs.

https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOOR_CH12ALAPR_ARTXSTBURE

Section 28.6 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=29 in place to protect sensitive areas, minimize the creation of stormwater pollution, utilize BMPs that effectively remove stormwater pollution, and attempt to maintain pre-development runoff conditions. The regulations are reviewed every two years for effectiveness and updates are made as needed.

Section 26 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Stream_Buffer_Regulations.pdf provides regulations for developing near streams to protect sensitive waterways from stormwater runoff. The regulations are reviewed every two years for effectiveness and updates are made as needed.

The County implements and enforces a stormwater design manual

<https://www.showmeboone.com/stormwater/manual.asp> to address post-construction stormwater runoff and water quality management procedures. The manual is reviewed every two years for effectiveness and updates are made as needed.

MU maintains a Campus Master Plan, which includes a Stormwater Master Plan, which guides development on campus. EHS actively participates in the design process, providing recommendations on post-construction stormwater management to architects and engineers. The post-construction stormwater management design usually relies upon a combination of structural and non-structural BMPs appropriate to the MU community.

MU's Sustainability Policy dictates that master planning principles be established for development phasing, campus densities, land use, and conservation patterns that will provide a rigorous framework for determining where, when and how to locate new facilities. The preservation of green and open spaces is a high priority achieved through the use of BMPs.

- 5.A.ii *An ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law.*

Sec 12A-67 Site Grading and Drainage Plan - City Code of Ordinances

https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOOR_CH12ALAPR_ARTIVERCORE

Chapter 12A of the City Code of Ordinances requires projects to comply with the City of Columbia Stormwater Management and Water Quality Manual.

<https://www.como.gov/utilities/columbias-stormwater-utility/>

The Stormwater Management and Water Quality Manual requires post development flows to be near or below predevelopment conditions. In addition, stormwater quality is required in accordance with the MARC Manual level of service calculations. The Building and Site Development Department reviews all construction plans for compliance with the Stormwater Management and Water Quality Manual when applicable.

Section 28.6 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=29 in place to protect sensitive areas, minimize the creation of stormwater pollution, utilize BMPs that effectively remove stormwater pollution, and attempt to maintain pre-development runoff conditions. The regulations are reviewed every two years for effectiveness and updates are made as needed.

Section 26 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Stream_Buffer_Regulations.pdf provides

regulations for developing near streams to protect sensitive waterways from stormwater runoff. The regulations are reviewed every two years for effectiveness and updates are made as needed.

The County implements and enforces a stormwater design manual <https://www.showmeboone.com/stormwater/manual.asp> to address post-construction stormwater runoff and water quality management procedures. The manual is reviewed every two years for effectiveness and updates are made as needed.

MU's Sustainability Policy dictates that master planning principles be established for development phasing, campus densities, land use, and conservation patterns that will provide a rigorous framework for determining where, when, and how to locate new facilities. The preservation of green and open spaces is a high priority achieved through the use of BMPs.

5.A.iii *Ensure adequate long-term operating and maintenance of BMPs owned or operated by the MS4 Operators and, to the extent possible, privately owned BMPs.*

City: Sec. 12A-95 - Maintenance and repair of stormwater management facilities. https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOOR_CH12ALAP_R_ARTVSTMA_S12A-95MARESTMAFA The City maintains a BMP Editor app that tracks City owned as well as private owned post construction stormwater BMP's. The City requires privately owned BMP's to be inspected by their owners annually and the inspection report, maintenance log, and photographs to be submitted to the City by November 15 each year. Private owners shall retain these records for 5 years. Any maintenance items are typically prompted by these annual inspections and must be addressed in a timely manner. City owned BMPs are inspected annually by staff.

When a developer is required to install a privately maintained post-construction stormwater BMP, they also must submit a facilities covenant that spells out the owner's maintenance and inspection responsibilities for their BMPs, as just described. This covenant is between the landowner and the City of Columbia and is recorded with the property with the County Recorder of Deeds. Thus, responsibility for the BMP's will be transferred to any successive owners, should the property be sold in the future. The covenant also grants the city permission to inspect the BMPs, and to repair the BMP at the owner's cost, should the owner fail to maintain the BMP in good working condition. The facilities covenant, maintenance schedule and inspection schedule can be found at the link below:

<https://www.como.gov/utilities/columbias-stormwater-utility/stormwater-best-management-practices-bmp-inspection/>

Boone County requires a Stormwater Maintenance Agreement (and stormwater easement for off-site facilities) be recorded with all projects requiring a Stormwater Management Plan. The maintenance agreement describes the property owner's maintenance and inspection procedures for all permanent stormwater BMPs and follows the project in perpetuity. Boone County Stormwater Maintenance Agreements are recorded with the Boone County Recorder of Deeds. Owner/operators are required to conduct yearly self-inspections and file their report with Boone County Resource Management. The maintenance agreement also grants the County permission to inspect the BMPs, and to repair BMPs at

the owner's expense, should the owner fail to maintain the BMP. These stormwater easements and maintenance agreements are required to be in place prior to the recording of the final plat.

The County requires privately owned BMP's to be inspected by the responsible party named in the recorded stormwater maintenance agreement annually. The inspection report and photographs are to be submitted to the County by June 1 each year. Private owners shall retain these records for at least five (5) years. Any maintenance items are typically prompted by these annual inspections and must be addressed within thirty (30) days or other time frame mutually agreed to between the Director of Resource Management and the responsible party.

County-owned BMPs are inspected annually by staff and maintenance is performed as necessary.

MU continues to establish and maintain an inventory of all permanent structural and non-structural BMPs for post-construction stormwater management. This includes an inspection schedule for all post-construction BMPs as identified in the BMP inventory.

MCM 5 Best Management Practice and Measurable Goals

BMP 1: Identify and develop strategies including structural and/or non-structural BMPs to improve the quality of stormwater runoff.

The co-permittees continue to identify structural and non-structural strategies to improve the quality of stormwater runoff from new development and redevelopment. This is an ongoing process for all permittees. The purpose of this BMP is to develop strategies that are practical and effective. The intended outcome of this BMP is to reduce post-construction stormwater runoff.

Measurable Goal: Continue to implement and track water quality improvement projects, BMP monitoring projects, LEED building standards, etc. (All)

The City's Stormwater Management & Water Quality manual requires that developed sites meet a certain level of service based on the intensity of the development. It encourages soil preservation and native plantings as well as natural systems preservation. It also allows for channel protection detention. The City's Stormwater Management & Water Quality Manual requires that the post development peak stormwater release rate be limited to the pre-development rates for the 1, 2, 10 and 100-year return period design storms (the 100%, 50%, 10% and 1%, respectively.) storm, which helps to maintain pre-development runoff conditions. The City's Community Development Department enforces the City's Stream Buffer Ordinance and stormwater quality management for new developments. The Community Development Department also has covenants and maintenance agreements for post-construction BMPs recorded. The City's Stormwater Utility receives and tracks annual inspection information for the post-construction BMPs. Each BMP is required to have a Maintenance Covenant as well as an access easement to the BMP. The maintenance covenant requires annual inspections of the BMPs, which are then sent into the City offices, where they are tracked, and evaluated.

The County tracks all installed public and private stormwater quality BMPs for new and redevelopment projects since the stormwater ordinance went into effect in 2010 in a GIS database. Data tracked for each BMP includes runoff reduction volume, contributing drainage area and contributing impervious area.

At MU, all construction projects are designed and reviewed by the MU's CF-PDC department using the PDC "Sustainable Design Policy." This policy incorporates sustainability principles and concepts in the design of all facilities and infrastructure projects to the fullest extent possible, while being consistent with budget constraints, appropriate life cycle cost analysis, and customer priorities. The policy directs MU to meet or exceed MDNR best management practices for erosion and sedimentation control standards and implement innovative stormwater management. The Consultant Procedures and Design Guidelines is available on the University of Missouri Facility Planning and Development Website and contains a collection of information that is updated quarterly as necessary.

As part of the University of Missouri's officially adopted Sustainability Policy Statement (<https://sustainability.missouri.edu/about/mu-sustainability-policy>), the campus observes sustainable best practices in campus construction and procurement. The University of Missouri pursues a LEED certified-level for New Construction and Major Renovations (LEED-NC) on projects that are eligible for this version of certification. For those projects that are ineligible for certification under LEED-NC, the University of Missouri's Sustainable Design Guidelines (SDG) are applied. Based on LEED-NC, the MU SDG sets goals for design and construction, providing a consistent approach to developing sustainable buildings on campus.

The University of Missouri (MU) pursues LEED certification on all new construction or major renovation eligible projects by incorporating sustainable building practices into the projects.

Measurable Goal: Track permits for installation of private BMPs for development and redevelopment projects. (City, County)

City Community Development Department has covenants and maintenance agreements for post-construction BMPs recorded. Each BMP is required to have a Stormwater Management/BMP Facility Covenant as well as an access easement to the BMP. The maintenance covenant requires annual post construction inspections of the BMPs, which are sent to the City's Stormwater Utility where they are received, tracked and evaluated to ensure proper function and maintenance performed of BMPs. Building and Site Development tracks and inspects the installation of private BMPs for development and redevelopment projects.

Boone County requires Stormwater Discharge Permits to be issued for projects containing private BMPs on new and redevelopment projects. Stormwater Maintenance Agreements (and easements for off-site facilities) are recorded with each property and remain in effect in perpetuity. Annual inspections are required to ensure proper function and maintenance of BMPs.

This measurable goal does not currently apply to MU.

BMP 2: Maintain Stormwater Management/Water Quality Manual or equivalent.

The purpose of this BMP is to develop a set of practices that are practical and effective. The intended outcome of this BMP is to reduce post-construction stormwater runoff.

Measurable Goal: Conduct annual reviews of the Stormwater Management/Water Quality Manuals or equivalent and/or update as necessary. (All)

The City of Columbia Stormwater Management and Water Quality Manual that was adopted in March 2007 provides sufficient flexibility to allow stormwater management plans to be tailored to specific conditions in various Columbia watersheds for both development and redevelopment projects. The manual will continue to be reviewed annually and updated as needed. The City's Community Development Department enforces the City's Stream Buffer Ordinance and stormwater quality management for new developments. The Community Development Department also has covenants and maintenance agreements for post-construction BMPs recorded. The City's Stormwater Utility receives and tracks annual inspection information for the post-construction BMPs.

The County reviews the [Boone County Stormwater Design Manual](https://www.showmeboone.com/stormwater/manual.asp) <https://www.showmeboone.com/stormwater/manual.asp> every two years for effectiveness and updates are made as needed.

MU maintains a Campus Master Plan, which includes a Stormwater Master Plan, which guides development on campus. EHS actively participates in the design process, providing recommendations on post-construction stormwater management to architects and engineers. MU's Sustainability Policy dictates that master planning principles be established for development phasing, campus densities, land use, and conservation patterns that will provide a rigorous framework for determining where, when, and how to locate new facilities. The preservation of green and open spaces is a high priority achieved through the use of BMPs.

BMP 3: Maintain stormwater ordinance(s) or other regulatory mechanism(s) to address post-construction runoff from new development and redevelopment projects.

The purpose of this BMP is to protect stormwater from construction site runoff by restricting/limiting construction activities within stream corridors. The intended outcome of this BMP is to reduce post-construction stormwater site runoff by reducing the potential for erosion and sedimentation.

Measurable Goal: Review stormwater ordinance(s) or other regulatory mechanism(s) annually and update as necessary.

Sec. 12A-95 - Maintenance and repair of stormwater management facilities.

https://library.municode.com/mo/columbia/codes/code_of_ordinances?nodeId=PTIICOOR_CH12ALAPR_ARTV_STMA_S12A-95MARESTMAFA The City maintains a BMP Editor app that tracks City owned as well as private owned post construction stormwater BMP's. The City requires privately owned BMP's to be inspected by their owners annually and the inspection report, maintenance log, and photographs to be submitted to the City by November 15 each year. Private owners shall retain these records for 5 years. Any maintenance items are typically prompted by these annual inspections and must be addressed in a timely manner. City owned BMPs are inspected annually by staff.

Section 28.6 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Approved_SW_Ordinance.pdf#page=29 in place to protect sensitive areas, minimize the creation of stormwater pollution, utilize BMPs that effectively remove stormwater pollution, and attempt to maintain pre-development runoff conditions. The regulations are reviewed every two years for effectiveness and updates are made as needed.

Section 26 of the Boone County Zoning Regulations

https://www.showmeboone.com/stormwater/documents/Stream_Buffer_Regulations.pdf provides regulations for developing near streams to protect sensitive waterways from stormwater runoff. The regulations are reviewed every two years for effectiveness and updates are made as needed.

The County implements and enforces a stormwater design manual

<https://www.showmeboone.com/stormwater/manual.asp> to address post-construction stormwater runoff and water quality management procedures. The manual is reviewed every two years for effectiveness and updates are made as needed.

UM System maintains its Collected Rules and Regulations (CRR). The CRR can be found at

<https://umsystem.edu/ums/rules>.

MU EHS maintains its policies and updates as necessary. The MU EHS policies are found at [MU Environmental Health and Safety Policy Section 7:001](https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/): <https://bppm.missouri.edu/policy/mu-environmental-health-and-safety-policy/>.

BMP 4: Ensure adequate long-term operation and maintenance of BMPs by maintaining an operation and maintenance schedule of post-construction BMPs.

The purpose of this BMP is to maintain inventory, maintenance, and inspection schedules of BMPs. The intended outcome of this BMP is to reduce post-construction stormwater site runoff by prolonging the usefulness of installed BMPs and to ensure BMPs are constructed and maintained to function as designed.

Measurable Goal: Maintain an inventory, a maintenance schedule, and an inspection schedule of post-construction BMPs. (All)

The City continues to update inventory of all public and private post-construction BMPs in a GIS database. The City has developed BMP specific inspection and maintenance schedules for BMPs. The Community Development Department implements the Stormwater Management/BMP Facilities Covenant maintenance agreement when they are constructed, which is tied to the property and recorded with the Boone County Recorder of Deeds. Post construction private BMPs are sent an inspection letter to prompt annual inspections late summer with directions for self-inspecting. Inspection Forms, Maintenance Logs, and photographs are to be submitted to the City by November 15 annually and are kept on file for 5 years.

The County maintains a GIS map of all public and private BMPs installed. All water quality BMPs have stormwater maintenance agreements tied to the property and recorded with the Boone County Recorder of Deeds. All County maintenance agreements include a BMP-specific maintenance schedule. Private BMPs are sent an inspection letter and inspection report for individual BMPs in the spring with directions for self-inspection. Inspection reports are to be submitted to the County by June 1 annually. Reports and maintenance activities are recorded in the project's file.

MU continues to establish and maintain an inventory of all permanent structural and non-structural BMPs for post-construction stormwater management. This includes an inspection schedule for all post-construction BMPs as identified in the BMP inventory.

Measurable Goal: Inspect BMPs according to the operation and maintenance schedule. (All)

The City requires privately owned BMP's to be owner inspected annually in an inspection window between August 1 and November 15. A letter to prompt annual inspections are sent to the parcel owner late July each year. The Inspection Form, Maintenance Log, and photographs are to be submitted to the City by November 15th each year. Any maintenance needs are typically prompted by these annual inspections and must be addressed in a timely manner. Inspection Forms, Maintenance Logs, and instructions can be found at como.gov/bmp.

City owned BMPs are inspected annually by City staff at the end of the calendar year and maintenance is performed as necessary.

The County requires privately owned BMPs to be inspected by the responsible party named in the recorded stormwater maintenance agreement annually. Inspection letters and inspection reports are sent to the responsible party named in the recorded maintenance agreement each year. The inspection report and photographs are to be submitted to the County by June 1 each year. Any maintenance items are typically prompted by these annual inspections and must be addressed within thirty (30) days or other time frame mutually agreed to between the Director of Resource Management and the responsible party.

County-owned BMPs are inspected annually by staff and maintenance is performed as necessary.

All BMPs at MU are inspected annually by staff and maintenance is performed as necessary.

Measurable Goal: Track maintenance of all structural and non-structural BMPs. (All)

The Stormwater Management/BMP Facilities Covenant provides a maintenance and inspection schedule for each specific structural and non-structural BMP. The annual self-inspection report, consisting of an Inspection Form, Maintenance Log, and photographs, is required to be submitted to the City by November 15 each year. Maintenance of the BMP is recorded on the Maintenance Log and any maintenance items needed must be addressed in a timely manner. The BMP Inspection reports are retained for a minimum of 5 years.

A GIS based application to track public and private BMP annual inspections has been developed to ensure long-term operation and maintenance of post-construction BMP's. The City's Stormwater Utility receives and tracks annual inspection reports for the post-construction structural and non-structural BMPs.

The City provides BMP Maintenance Schedules, Inspection Schedules, Annual Inspection Forms and the Maintenance Log on the website found here: como.gov/bmp. The Maintenance schedule, Inspection Schedule, and Inspection Form typically go with the covenant which is signed by the owner and recorded at the Boone County Recorder's office.

The County's Stormwater Maintenance Agreement provides a maintenance schedule for all associated water quality BMPs. An annual self-inspection report is required to be submitted to the County by June 1. Maintenance activities must be completed within thirty (30) days of notification. Maintenance activities are recorded and placed in the project's file.

All BMPs at MU are inspected annually by staff and maintenance is performed as necessary.

Table 6. MCM 5 BMPs:

Permit Section	Responsible Permittee	BMP Description		Purpose of BMP	BMP Goal/ Intended Outcome
5.A.i	All	BMP 1.	Identify and develop strategies including structural and/or non-structural BMPs to improve the quality of stormwater runoff.	Develop strategies that are practical and effective.	Reduce post-construction stormwater runoff.
	All	BMP 2.	Maintain Stormwater Management/Water Quality Manual or equivalent.	Develop a set of practices that are practical and effective.	Reduce post-construction stormwater runoff.
5.A.ii	All	BMP 3.	Maintain an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment.	Protect stormwater from construction site runoff.	Reduce post-construction stormwater site runoff.
				Restrict/limit construction activities within stream corridors.	Reduce potential for erosion and sedimentation.
5.A.iii	All	BMP 4.	Ensure adequate long-term operation and maintenance of BMPs by maintaining an operation and maintenance schedule of post-construction BMPs.	Maintain inventory, maintenance, and inspection schedules of BMPs.	Reduce post-construction stormwater site runoff by prolonging the usefulness of installed BMPs and to ensure BMPs are constructed and maintained to function as designed.

MCM 6 – Pollution Prevention and Good Housekeeping for Municipal Operations

MCM Discussion: All permittees' employees receive regular training on maintaining facilities and properly using and storing potential pollutants. In addition to training, operations personnel continue to improve road salt application methods, street sweeping procedures, and site maintenance to reduce pollutants to our waterways. Pollution prevention opportunities are extended to the greater community through household hazardous waste drop offs, recycling programs, and education and outreach efforts.

Permit Requirement:

6.A *The MS4 Operators shall develop or maintain controls for reducing or eliminating the discharge of floatables and pollutants from areas owned or operated by the MS4 Operator.*

The co-permittees maintain the following Missouri State Operating Permits to reduce and/or eliminate pollutants from areas that the permittees operate:

City of Columbia:

General Operating Permit #MOR100032 – Land Disturbance Permit
Missouri State Operating Permit #MOR80F011 – Columbia Regional Airport
Missouri State Operating Permit #MO0112640 – Columbia Landfill and Yard Waste Compost
Missouri State Operating Permit #MO0004979 – Columbia Municipal Power Plant
Missouri State Operating Permit #MO0092924 – Columbia Regional Airport WWTF
Missouri State Operating Permit #MO0097837 – Columbia WWTP
Missouri State Operating Permit #MO0136034 – Columbia Water Treatment Plant

The City of Columbia performs Facility Safety Audits with the Risk Management division monthly, and all City owned facilities are inspected once per year. The MS4 Technician attends these inspections and notes any corrective actions needed regarding discharge of floatables and pollutants from areas owned or operated by the City of Columbia owned facilities.

Boone County:

General Operating Permit #MOR100049 – Land Disturbance Permit

General Operating Permit #MOG750030 – No Discharge

Additionally, Boone County follows procedures listed in their Spill Prevention Control and Countermeasures (SPCC) plans for their South Facility and Hallsville Facility. Boone County also requires all new municipal development disturbing one acre or more, or redevelopment creating 3,000 square feet or more of impervious surface to provide water quality treatment BMPs.

MU:

General Operating Permit #MOR100039 - Land Disturbance Permit
General Operating Permit #MOG823021 – No Discharge
General Permit #MO-G350238 - Discharge Permit

- 6.B *The MS4 Operators shall maintain an employee training program for MS4 staff to prevent or 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.*

The City of Columbia has a training program for all municipal operations staff. Additionally, all new hires receive stormwater management training during their new hire orientation. (videos, description of training materials) The training program is reviewed annually.

The City's training program coordinates with all other MCMs as follows:

MCM 1 - By providing education/training to City staff; this in itself satisfies how the training program coordinates with MCM #1; as City employees are more knowledgeable of stormwater pollution prevention and good housekeeping methods. City employees can apply this knowledge to not only City facilities but other facilities as well;

MCM 2 - By municipal staff participating in the training, this satisfies MCM#2; The City utilizes an online stormwater pollution problem reporting application (found at <https://www.como.gov/CMS/WebForms/form.php?formid=194>), allowing citizens and/or employees to report various stormwater concerns such as fertilizers and pesticides, soaps and detergents, vehicle fluids (motor oil, gasoline, anti-freeze, fuels), paints, solvents, pet waste left on the ground, grease, sewage, trash and debris. The City also takes into consideration public comments made regarding City stormwater policies and the Stormwater Management Plan;

MCM 3 - Teaching staff how to recognize, address, and prevent illicit discharges;

MCM 4 - By educating inspection staff from each department on proper land disturbance site management; The inspection staff can apply the knowledge they've learned about City facilities and stormwater pollution prevention management and apply it to private development construction sites as well;

MCM 5 - Educating inspection staff on the importance of post-construction BMPs and long-term maintenance of the BMPs; and by following the operation and maintenance schedule of the post construction BMPs can help identify a situation where stormwater pollution has occurred and entered the post-construction BMP;

MCM 6 – Education and training to staff on good housekeeping practices at municipal facilities.

The County has a training program for all municipal operations staff. The County provides training on proper management of municipal vehicle and equipment maintenance areas and storage yards; proper land disturbance site management; and proper material handling at storage facilities. Annual refresher training is provided for each applicable department.

The County's training program coordinates with all other MCMs as follows:

MCM 1: Provides education/training to staff;

MCM 2: Staff participation in annual trainings;

MCM 3: Education to staff on how to recognize, address, and prevent illicit discharges;

MCM 4: Education to staff on proper land disturbance site management;

MCM 5: Education to staff on importance of and maintenance of post-construction BMPs;

MCM 6: Education/training to staff on good housekeeping practices at facilities.

All MU Campus oil-handling personnel are trained annually in the operation and maintenance of equipment to prevent discharges to the stormwater system; discharge procedure protocols; applicable pollution control laws, rules and regulations; general facility operations; and the contents of the SPCC Plan. Also, all laboratory personnel receive required training in at least one of several laboratory and chemical safety training modules which include the safe and proper way to dispose of chemicals.

Monitoring, integrated planning, and TMDL implementations are not applicable at this time; however, if monitoring, integrated planning, or TMDL implementations become applicable, descriptions of how the co-permittees' training program will coordinate with them will be incorporated into the SWMP and noted in the co-permittees' annual report. The co-permittees' training programs are reviewed annually and modified as new, updated material becomes available or as needs change.

MCM 6 Best Management Practices and Measurable Goals

BMP 1: Maintain operation and maintenance schedule for operation and maintenance program.

The co-permittees have developed an operation and maintenance program with the ultimate goal of preventing pollutant runoff from municipal operations to the maximum extent practicable. The purpose of this BMP is to prevent, reduce and/or eliminate floatables and pollution from municipal operation activities. The intended outcome of this BMP is to have a written operation and maintenance schedule or controls in place.

Measurable Goal: Review annually hazardous materials management and SPCC operation and maintenance schedules. Update schedules as necessary. (All)

The City's Public Works Department enacted a Spill, Prevention, Control & Countermeasure (SPCC) policy in 2003 and updates it as needed. The SPCC describes that spill kits shall be kept at all work sites and facilities. Spill prevention, containment, and response at construction sites is addressed through the Stormwater Pollution Prevention Plan (SWPPP) requirements of the land disturbance program under MCM 4.

The County maintains Spill Prevention, Control and Countermeasures (SPCC) plans that cover the Road and Bridge South Facility and Hallsville Facility. Complete copies of the SPCC plans are maintained at the Boone County Road and Bridge South Facility. Inspections are conducted monthly.

The University of Missouri maintains a Spill Prevention, Control and Countermeasures (SPCC) plan that covers the MU Campus and Power Plant. A complete copy of the SPCC plan is maintained at the MU Environmental Health & Safety office and at the Campus Facilities Energy Management office (MU Power Plant).

Measurable Goal: Participate in facility safety inspection audits to identify any deficiencies related to stormwater management and water quality protection items at various City facilities. Review the SPCC policy and update as needed. Provide and track recommendations and/or corrective measures. (City)

The MS4 technician participates in a monthly City facility safety audit. All City facilities are inspected once per year. A report is compiled, tracking all deficiencies that are noted. Corrective actions are given 30 days to become compliant. The following City owned facilities are inspected annually for pollution control issues:

Activity & Recreation Center (1701 W. Ash St), Columbia Sports Fieldhouse (4251 Philips Farm Rd), COLT Trans-Load Facility (6501 N. Brown Station Rd), Columbia Regional Airport (11300 S. Airport Dr), Waste Water Treatment Plant (4900 W. Gillespie Bridge Rd), Columbia Municipal Power Plant (1501 Bus. Loop 70 E), Parks Management Center (1507 Bus. Loop 70 W), Fleet Operations West (1403 Bus. Loop 70 W), Grissum Building (1313 Lakeview Dr), Water Treatment Plant (6851 W. Route K), Lake of the Woods Golf Course (6700 St. Charles Rd), LA Nickell Golf Course (1800 Parkside Dr), Water Distribution - Admin, Crane, & Storage (1510 Bus. Loop 70 E), Columbia Energy Center (4902 Peabody Rd), Biogas Energy Plant (5700 Peabody Rd), Administration/Landfill Operations Center (5700 Peabody Rd), West Ash Pump Station (1831 W. Ash St), Hillsdale Pump Station (1907 Hillcrest Dr), Northeast Booster Station (Oakland Gravel/Vandiver), South Pump Station (Nifong & Bethel), City Hall (701 E. Broadway), Howard Building (600 E. Broadway), Armory Sports & Recreation (701 E. Ash St), Huechan Building (1514 Bus. Loop 70 E), Casteel Building (1524 Bus. Loop 70 E), Bowling St. Storage Building (1204 Bowling St), and Water Storeroom Building (1106 Bowling St).

This measurable goal does not apply to the County or MU.

BMP 2: Identify all employee groups who have the potential to impact stormwater quality.

The purpose of this BMP is to prevent and reduce stormwater pollution from municipal operations through employee training. The intended outcome of this BMP is to obtain improved employee understanding of pollution prevention and housekeeping practices.

Measurable Goal: Maintain and update a list of impacted employee groups annually. (All)

At the City, all new employees are required to receive MS4 training as part of the onboarding process. That list is tracked, and all existing employees receive MS4 training annually.

The County will maintain a list of employee groups trained annually. Attendance sheets will be kept tracking the number of employees trained, along with copies of all training materials. All new employees will receive MS4 training as part of the onboarding process. The new hire training will be tracked and reported.

At MU, all employees who handle hazardous materials and/or petroleum products are identified and required to receive training on how to handle and properly dispose of those materials.

BMP 3: Train all impacted employee groups.

The purpose of this BMP is to maintain a timely, applicable training program and prevent/reduce stormwater pollution from municipal activities. The intended outcome of this BMP is to create an improved understanding of pollution prevention practices on the part of employees.

Each co-permittee will maintain a list of impacted employees who were trained each calendar year.

The co-permittees continue to schedule and conduct pollution prevention training for municipal staff. Education will include steps that can be taken to prevent or reduce pollutant runoff from municipal operations. Used oil and antifreeze collection and recycling procedures are included in each of the co-permittees training programs.

Measurable Goal: Train all impacted employees (municipal staff) annually. The training will be provided in person or via electronic methods. Maintain an attendance roster and training date for each training session. Maintain a list of those who were trained each calendar year. (City, County)

At the City, it is recognized that training is essential for City workers and ongoing discussions of stormwater issues take place in employee safety meetings. New employee training for every City employee includes stormwater and good housekeeping training. The City has included pollution prevention education into the employee handbook. Stormwater Utility Educator trains personnel in each City Department about pollution prevention and good housekeeping.

The training is in line with the City of Columbia Integrated Management Program under the stormwater runoff portion of the plan. The all-employee training program will help reduce pollutants entering the waterways by City employees.

Boone County will hold at least two training events relating to pollution prevention/good housekeeping for municipal operations (i.e., hazardous materials handling, pesticide handling, spill response). Attendance sheets will be kept tracking the number of employees trained, along with copies of all training materials.

The County will provide stormwater newsletters to all County employees. Awareness will be gauged by voluntary submittal of a short quiz related to newsletter content.

This measurable goal does not apply to MU.

Measurable Goal: Train all impacted staff, faculty, and students annually. The training will be provided in person or via electronic methods. Maintain an attendance roster and training date for each training session. Maintain a list of those who were trained each calendar year. (MU)

At MU, all campus oil-handling personnel are trained annually in the operation and maintenance of equipment to prevent discharges to the stormwater system; discharge procedure protocols; applicable pollution control laws, rules and regulations; general facility operations; and the contents of the SPCC Plan. Also, all laboratory personnel receive required training in at least one of several laboratory and chemical safety training modules which include the safe and proper way to dispose of chemicals.

This measurable goal does not apply to the City or County.

BMP 4: Review and update pollution prevention/good housekeeping training presentation(s).

The purpose of this BMP is to ensure that training is up to date and relevant to current issues. The intended outcome of this BMP is to train staff adequately on pollution/prevention and good housekeeping practices.

Measurable Goal: Annually review and update as necessary training presentation(s) with current regulatory information, procedures, and projects associated with pollution prevention/good housekeeping. (Each)

The City’s training involves a test that must be passed to ensure participation within the course and increase knowledge and awareness of stormwater pollution prevention. Utilizing the test scores is how the training will be evaluated to determine its effectiveness. Training materials will be reviewed annually and updated as needed.

The County maintains a training program that is reviewed annually and updated as necessary. At the end of Year 5, the County will evaluate training materials for all MCMs and employee material availability. Attendance trends will be evaluated at the end of the permit term.

At MU, MU Environmental Health & Safety has moved the majority of their training courses to MIZZOU Canvas. The training courses are reviewed annually and are updated or replaced as necessary.

Table 7. MCM 6 BMPs:

Permit Section	Responsible Permittee	BMP Description		Purpose of BMP	BMP Goal/ Intended Outcome
6.A	All	BMP 1.	Maintain controls for reducing or eliminating the discharge of floatables and pollutants from areas owned or operated by the MS4 Operator.	Prevent, reduce and/or eliminate floatables and pollution from municipal operation activities.	Written operation and maintenance program or controls in place.
6.B	All	BMP 2.	Identify all employee groups who have the potential to impact stormwater quality.	Prevent and reduce stormwater pollution from municipal operations through employee training. .	Improved employee understanding of pollution prevention and good housekeeping practices.
6.B	All	BMP 3	Train all impacted employee groups.	Maintain timely, applicable training program;	Improved understanding of pollution prevention practices on the part of

				prevent/reduce stormwater pollution from municipal activities.	employees.
6.B	All	BMP 4	Review and update pollution prevention/good housekeeping training presentation(s).	Ensure that training is up to date and relevant to current issues.	Train staff adequately on pollution/prevention and good housekeeping practices.

Appendix A

BMPs and Measureable Goals

MCM 1: Public Education and Outreach

Permit Section	Permit Requirement	BMP Purpose	Goal/Expected Result of BMP	Specific BMP Activities (Actions)	Responsible Permittee	Measureable Goals & Milestones by Permit Year					BMP Evaluation
						Permit Year 1 2021	Permit Year 2 2022	Permit Year 3 2023	Permit Year 4 2024	Permit Year 5 2025	
1.A.i	Identify target audiences.	Create and maintain a public that is conscientious of the impacts that their behaviors have on local watersheds in order to reduce pollution from residential and industrial activities.	Provide permittees with lists of target audiences. Can be used to facilitate education opportunities.	List of target audiences shown in written portion of SWMP	All	None	None	None	None	Review target audience list for upcoming SWMP	Maintain list in written portion of SWMP.
	Identify pollutants and/or sources of pollutants.	Identify pollutants in order to reduce their impact on the water quality.	Create list of pollutants. Can be used to facilitate/target education opportunities.	List of sources of pollution shown in written portion of SWMP	All	None	None	None	None	Review sources of pollution list for upcoming SWMP	Maintain list in written portion of SWMP.
1.A.ii	Distribute appropriate educational materials and/or media to the target audience(s) using methods and procedures determined by the MS4 Operators.	Educate the community about the impacts of stormwater runoff, permit and inspection requirements, and general watershed information.	Increased awareness and understanding of various stormwater topics. Potential to bring about positive behavior change.	Create and distribute stormwater education materials <i>(This may include: brochures, stormwater newsletter, fact sheets, door hangers, press releases, stormwater signage)</i>	All	Distribute stormwater education materials at a minimum of two public events	Distribute stormwater education materials at a minimum of two public events	Distribute stormwater education materials at a minimum of two public events	Distribute stormwater education materials at a minimum of two public events	Distribute stormwater education materials at a minimum of two public events	Track type and amount of material distributed at each event.
		Provide the public with information about Hinkson Creek.	Tool for public to increase understanding about stormwater.	Maintain Hinkson Creek GIS Habitat viewer	County	Maintain GIS viewer; Review and update as needed					GIS map created and maintained for public to view.
1.A.iii	Create opportunities for residents to participate in the implementation of stormwater controls.	Increase citizen engagement regarding stormwater issues.	Increased awareness and understanding of various stormwater topics. Potential to bring about positive behavior change.	Host educational stormwater events and volunteer opportunities for residents <i>(This may include: Lunch & Learns, webinars, trainings, workshops, conferences, school presentations, tours, stream cleanups)</i>	All	Hold a minimum of ten public stormwater education events	Hold a minimum of ten public stormwater education events	Hold a minimum of ten public stormwater education events	Hold a minimum of ten public stormwater education events	Hold a minimum of ten public stormwater education events	Track the number of volunteers and participants.

MCM 2: Public Involvement and Participation

Permit Section	Permit Requirement	BMP Purpose	Goal/Expected Result of BMP	Specific BMP Activities (Actions)	Responsible Permittee	Measureable Goals & Milestones by Permit Year					BMP Evaluation
						Permit Year 1 2021	Permit Year 2 2022	Permit Year 3 2023	Permit Year 4 2024	Permit Year 5 2025	
2.A	Develop and implement a public participation program of the SWMP	Allow citizens and civic groups to provide input concerning stormwater policies	Participation opportunities to interested citizens about the SWMP	Hold public hearings/stakeholder meetings for changes in zoning, platting and annexations	City, County	Meetings held as needed					Record all public comments.
				Annually publicize and present the Campus Master Plan	MU	Present Campus Master Plan	Present Campus Master Plan	Present Campus Master Plan	Present Campus Master Plan	Present Campus Master Plan	
				City of Columbia Climate Action & Adaptation Plan (CAAP)	City						
				Collaborative Adaptive Management (CAM)	All						
				Our Columbia Waters Integrated Management Plan (IMP)	City						
2.B	Observe all public notice requirements for the SWMP	Allow citizen input concerning stormwater policies	Greater involvement of the general public regarding the SWMP.	Public Notice process	All	None	Hold public notice period for SWMP review.	None	None	None	Record all public comments.
	2.B.i The draft Management Plan shall be posted to each MS4 Operators public website with a way to submit comments.	Provide citizen access to comment on the SWMP	Greater understanding on the part of the public about stormwater	Provide dedicated MS4 partner Stormwater Websites for SWMP comments.	Each	None	Record and review public comments.	None	None	None	Record public comments
2.C	The MS4 Operators shall hold a public information meeting to provide information on and describe the contents of the proposed Stormwater Management Program and Plan.	Allow citizen input concerning stormwater policies	Greater involvement of the general public on the SWMP.	SWMP Public Information Meeting	All	None	Advertise and hold SWMP public information meeting.	None	None	None	Record all public comments. Revise SWMP as necessary
2.D	The MS4 Operators shall each have publicly available mechanism to take public inquiries, concerns, or take information about stormwater and stormwater related topics.	Allow a means for the general public to communicate stormwater inquiries with the MS4 permittees.	Greater ability on the part of the MS4 partners to respond to stormwater inquiries	Provide dedicated MS4 partner Stormwater Websites: www.cmo.gov/utilities/stormwater www.showmeboone.com/stormwater http://ehs.missouri.edu/ehs/env/stormwater	Each	Maintain stormwater websites					Track comments and responses/actions
				City of Columbia Facebook pages, Boone County Stormwater Facebook page	City, County	Maintain facebook pages					
2.E	not applicable										
2.F	A representative of each MS4 Operator shall report to the designated entity of each MS4 Operator at a minimum annually.	Allow designated entity to provide input concerning the SWMP.	Entity input of SWMP.	Boone County Board of Commissioners	County	Submit SWMP annual report	Submit SWMP annual report	Submit SWMP annual report	Submit SWMP annual report	Submit SWMP annual report	Record all public comments
				Columbia City Council	City						
				MU Environmental Health & Safety	MU						

MCM 3: Illicit Discharge Detection & Elimination (IDDE)

Permit Section	Permit Requirement	BMP Purpose	Goal/Expected Result of BMP	Specific BMP Activities (Actions)	Responsible Permittee	Measureable Goals & Milestones by Permit Year					BMP Evaluation
						Permit Year 1 2021	Permit Year 2 2022	Permit Year 3 2023	Permit Year 4 2024	Permit Year 5 2025	
3.A	Develop, implement, and enforce a program to detect and eliminate illicit discharges	Detect and eliminate illicit discharges	Reduce illicit discharges	Review and evaluate occasional non-stormwater discharges	All						
3.B	Maintain storm sewer system map	View outfalls and watersheds within MS4 plan area	Permit compliance	Maintain Boone County Storm Sewer Map	County	Review map annually	Review map annually	Review map annually	Review map annually	Review map annually	
				Maintain City of Columbia Storm Sewer Map	City	Review map annually	Review map annually	Review map annually	Review map annually	Review map annually	
				Maintain MU Storm Sewer Map	MU	Review map annually	Review map annually	Review map annually	Review map annually	Review map annually	
3.C	The MS4 Operators shall effectively prohibit non-stormwater discharges in to the permittee's storm sewer system and implement appropriate enforcement procedures and actions. The prohibition shall be through ordinance or other regulatory mechanism, to the extent allowable under State or local law.	Ordinance/policy provides the permittees with legal authority to address illicit discharges	Permit compliance	Boone County Zoning Regulations, Section 28.7	County	Enforce IDDE ordinance					Ordinance/policy enforced. Track number of enforcement actions.
				City of Columbia Code of Ordinances, Chapter 12A, Article IX	City	Enforce IDDE ordinance					
				MU Stormwater Master Plan	MU	Enforce policy					
	Implement plan to detect and address non-stormwater discharges.	Provide the tools and procedures necessary to identify illicit discharges and take action as necessary.	Each entity to inspect all MS4 outfalls within permit cycle	All	Inspect 20% of MS4 outfalls annually	Inspect 20% of MS4 outfalls annually	Inspect 20% of MS4 outfalls annually	Inspect 20% of MS4 outfalls annually	Inspect 20% of MS4 outfalls annually	Track number of illicit discharges and their resolutions.	
Address occasional incidental non-stormwater discharges Maintain plan to detect non-stormwater discharges (This may include on-site inspections, smoke or dye testing, or CCTV inspections)			All	Correct problems as needed							
3.D	The MS4 Operators shall inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. Hold area-wide Household Hazardous Waste (HHW) Disposal Opportunities	Educate the general public and about the hazards associated with illicit discharges Provide the public with the safe and proper disposal opportunities to minimize the presence of contaminants in local waterways	Increase public understanding about the hazards of illicit discharges Prevent the disposal of waste in waterways.	Distribute communication to target audiences regarding the hazards associated with illicit discharges.	All	Review and update materials annually	Review and update materials annually	Review and update materials annually	Review and update materials annually	Review and update materials annually	Track number of trainings, meetings, mailings, etc. related to IDDE
				Hold a City-wide HHW Collection	City	Hold twice-monthly HHW collection (Apr-Nov)	Hold twice-monthly HHW collection (Apr-Nov)	Hold twice-monthly HHW collection (Apr-Nov)	Hold twice-monthly HHW collection (Apr-Nov)	Hold twice-monthly HHW collection (Apr-Nov)	Track the amount and type of waste collected and number of volunteers.
				Hold an County-wide HHW Collection	All		Hold annual HHW collection	Hold annual HHW collection	Hold annual HHW collection	Hold annual HHW collection	

MCM 4: Construction Site Stormwater Runoff Control

Permit Section	Permit Requirement	BMP Purpose	Goal/Expected Result of BMP	Specific BMP Activities (Actions)	Responsible Permittee	Measureable Goals & Milestones by Permit Year					BMP Evaluation
						Permit Year 1 2021	Permit Year 2 2022	Permit Year 3 2023	Permit Year 4 2024	Permit Year 5 2025	
4.A	Enforce a program to reduce pollutants in any stormwater runoff to their small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activities disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.	Ensure permittees' land disturbance programs are implemented and proper disposal mechanisms are utilized.	Pollutant reduction caused by construction activities.	Boone County Zoning and Regulations, Section 28.5	County	Enforce Land Disturbance ordinance					Track the number of land disturbance permits issued each year.
				City of Columbia Code of Ordinances, Chapter 12A, Article II	City	Enforce Land Disturbance ordinance					
				MU Stormwater Master Plan	MU	Enforce policy					
4.B.i	An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State or local law.	Ensure permittees' land disturbance programs are implemented and enforced.	Prevent land disturbance waste from leaving the disturbed area	Boone County Zoning Regulations, Section 28	County	Enforce Erosion Control ordinance					Track inspection records and enforcement actions
				City of Columbia Code of Ordinances, Chapter 12A, Article IV	City	Enforce Erosion Control ordinance					
				MU Business Policy and Procedure Manual Chapter 7	MU	Enforce policy					
4.B.ii	Requirements for construction site operators to implement appropriate erosion and sediment control best management practices.	Minimize soil erosion and sedimentation due to construction activities	Reduction in sediment loss from construction site activities	Boone County Stormwater Design Manual	County	Review manual once per permit cycle					Ensure appropriate ESC measures are being utilized
				City of Columbia Erosion and Sediment Control Manual	City	Review manual once per permit cycle					
				MU Erosion and Sediment Control Design Requirements; MU Sustainable Design Policy	MU	Review manual once per permit cycle					
4.B.iii	Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, an sanitary waste at the construction site that may cause adverse impacts to water quality.	Prevent adverse impacts to water quality through a Stormwater Pollution Prevention Plan (SWPPP)	Contain waste on-site through BMPs	Boone County Zoning Regulations, Section 28	County	Enforce ordinance					Confirm SWPPP is being followed
				City of Columbia Code of Ordinances, Chapter 12A, Article V	City	Enforce ordinance					
				MU Stormwater Master Plan	MU	Enforce policy					
4.B.iv	Procedures for site plan review which incorporate consideration of potential water quality impacts.	Ensure BMPs are properly installed and maintained throughout construction	Reduction in adverse water quality impacts	Boone County Zoning Regulations, Section 28.3	County	Enforce ordinance					Review site plans to ensure they meet requirements
				City of Columbia Code of Ordinances, Section 12A, Article IV	City	Enforce ordinance					
				MU Stormwater Master Plan	MU	Enforce policy					
4.B.v	Procedures for receipt and considerations of information submitted by the public.	Allow the general public a method for submitting comments/complaints.	Provide timely response to comments/complaints	Maintain stormwater websites	All	Respond to comments as needed					Track land disturbance comments/complaints
				Maintain hotline phone numbers to report stormwater issues	All	Respond to comments as needed					
4.B.vi	Procedures for site-inspection and enforcement of control measures.	Ensure appropriate erosion and sediment control BMPs are being used	Ensure proper use of construction site BMPs	Conduct site inspections of erosion & sediment control BMPs	All	Inspect 100% of locally permitted sites					Track site inspection violations

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

Permit Section	Permit Requirement	BMP Purpose	Goal/Expected Result of BMP	Specific BMP Activities (Actions)	Responsible Permittee	Measureable Goals & Milestones by Permit Year					BMP Evaluation
						Permit Year 1 2021	Permit Year 2 2022	Permit Year 3 2023	Permit Year 4 2024	Permit Year 5 2025	
5.A.i	Strategies which include a combination of structural and/or non-structural best management practices appropriate for the MS4 community.	Develop a set of practices that are practical and effective	Reduce post-construction stormwater site runoff	Track permits for installation of private BMPs in development and redevelopment projects	All	Ongoing as needed					Track number of projects.
				Maintain Stormwater Design Manuals and/or Water Quality Manual	Each	Review manuals once per permit cycle					
				Maintain LEED building standards	MU	MU pursues LEED certification on all New Construction or Major Renovation eligible projects					
5.A.ii	An ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law.	Protect stormwater from construction site runoff	Reduce post-construction stormwater site runoff	City of Columbia Code of Ordinances, Chapter 12A	City	Enforce ordinance					Record ordinance/policy violations.
				Boone County Zoning and Regulations, Section 28	County	Enforce ordinance					
				MU Stormwater Master Plan	MU	Enforce policy					
		Restrict/limit construction activities within stream corridor	Reduce potential for erosion and sedimentation	City of Columbia Code of Ordinances, Chapter 12A, Article X	City	Enforce stream buffer ordinance					
				Boone County Zoning and Regulations, Section 26	County	Enforce stream buffer ordinance					
				MU Stormwater Master Plan	MU	Enforce policy					
5.A.iii	Ensure adequate long-term operating and maintenance of BMPs owned or operated by the MS4 Operators and, to the extent possible, privately owned BMPs.	Maintain inventory, maintenance and inspection schedules of BMPs	Prolong the usefulness of installed BMPs; ensure BMPs constructed and maintained to function as designed	City BMP inspections	City	Inspect all City BMPs annually	Inspect all City BMPs annually	Inspect all City BMPs annually	Inspect all City BMPs annually	Inspect all City BMPs annually	Keep inspection records and/or record survey results.
				Require private BMP owner self-inspection and report submission	City	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	
				MU BMP inspections	MU	Landscape Services and Campus Facilities Departments perform routine maintenance on all stormwater and sewer utilities					
				County BMP inspections	County	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	Private BMPs inspected annually by owner	

MCM 6: Pollution Prevention/Good Housekeeping

Permit Section	Permit Requirement	BMP Purpose	Goal/Expected Result of BMP	Specific BMP Activities (Actions)	Responsible Permittee	Measureable Goals & Milestones by Permit Year					BMP Evaluation
						Permit Year 1 2021	Permit Year 2 2022	Permit Year 3 2023	Permit Year 4 2024	Permit Year 5 2025	
6.A	The MS4 Operators shall develop or maintain controls for reducing or eliminating the discharge of floatables and pollutants from areas owned or operated by the MS4 Operator.	Prevent, reduce and/or eliminate floatables and pollution from municipal operation activities	Written O&M program in place	Maintain training program for Hazardous Material Management	County, MU	Annual review of Hazardous Material Management program	Annual review of Hazardous Material Management program	Annual review of Hazardous Material Management program	Annual review of Hazardous Material Management program	Annual review of Hazardous Material Management program	Review O&M program on an annual basis.
				Complete City facility safety inspection audits	City	Inspect each facility annually	Inspect each facility annually	Inspect each facility annually	Inspect each facility annually	Inspect each facility annually	
				Maintain Spill Control and Countermeasures Policy & Procedures (SPCC)	All	Annual review of SPCC program	Annual review of SPCC program	Annual review of SPCC program	Annual review of SPCC program	Annual review of SPCC program	
6.B	The MS4 Operators shall maintain an employee training program for MS4 staff.	Maintain timely, applicable training program; prevent/reduce stormwater pollution from municipal activities	Improved understanding of pollution prevention practices on the part of employees	Identify employee groups to train	All	Maintain list of employees to train and updated as needed					Maintain list
				Review & update training presentations	All	Annual review of training presentations	Annual review of training presentations	Annual review of training presentations	Annual review of training presentations	Annual review of training presentations	Review training presentations on an annual basis
				Train impacted employees on SWPPP	All	Annual training of employees	Annual training of employees	Annual training of employees	Annual training of employees	Annual training of employees	Track number of employees trained

Appendix B

County Inspection Reports

Appendix C

County Inspection Procedures and Checklist

LAND DISTURBANCE INSPECTION CHECKLIST

Boone County, Resource Management

801 E Walnut, Room 315, Columbia, MO 65201 Tel: 573-886-4330 Fax: 573-886-4340

This form is to be used for stormwater inspections by Boone County inspection staff. A copy of this form is to be left with the developments responsible party, on-site if feasible.

Date of Inspection: _____ **LD Permit #:** _____ **Bldg Permit #:** _____

Project Name/Location: _____ **Contractor/Owner:** _____

Inspection Type: Regular Rain Event (Amt. _____) Complaint Drive-By Final

Inspected by: _____

SWPPP Review	Adequate	Needs Maintenance	Comply By:	Comments
1. SWPPP is on site and updated with records attached?	<input type="checkbox"/>	<input type="checkbox"/>		
2. Training on stormwater issues for on-site staff?	<input type="checkbox"/>	<input type="checkbox"/>		
3. Permit sign/notice is posted at construction site?	<input type="checkbox"/>	<input type="checkbox"/>		
4. Inspections performed weekly and after rain events?	<input type="checkbox"/>	<input type="checkbox"/>		

Best Management Practices (BMPs)	Adequate	Needs Maintenance	Comply By:	Comments
5. Streets and other property free of sediment?	<input type="checkbox"/>	<input type="checkbox"/>		
6. Construction debris and trash properly disposed?	<input type="checkbox"/>	<input type="checkbox"/>		
7. Perimeter controls properly installed/constructed?	<input type="checkbox"/>	<input type="checkbox"/>		
8. Perimeter controls properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>		
9. Disturbed areas stabilized after activity has ceased for 14 days?	<input type="checkbox"/>	<input type="checkbox"/>		
10. Erosion and sediment controls properly installed/constructed according to SWPPP?	<input type="checkbox"/>	<input type="checkbox"/>		
11. Erosion and sediment controls properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>		
12. Stockpiles stabilized or contained by a BMP?	<input type="checkbox"/>	<input type="checkbox"/>		
13. Are permanent stormwater controls being implemented?	<input type="checkbox"/>	<input type="checkbox"/>		
14. Temporary BMPs no longer needed are removed?	<input type="checkbox"/>	<input type="checkbox"/>		

Other Management Practices	Adequate	Needs Maintenance	Comply By:	Comments
15. Fuel storage areas have secondary containment?	<input type="checkbox"/>	<input type="checkbox"/>		
16. Solvents, paints, fertilizers, etc. stored in a manner prohibiting exposure to rain or runoff?	<input type="checkbox"/>	<input type="checkbox"/>		
17. Streams/sinkholes protected from sediment?	<input type="checkbox"/>	<input type="checkbox"/>		
18. Dewatering operations filtering sediment/pollutants?	<input type="checkbox"/>	<input type="checkbox"/>		
19. Dust control practices utilized?	<input type="checkbox"/>	<input type="checkbox"/>		
20. Stream buffer free of waste products/no products stored within buffer?	<input type="checkbox"/>	<input type="checkbox"/>		
21. Inlet protection properly installed/maintained?	<input type="checkbox"/>	<input type="checkbox"/>		

Action Taken: Verbal Warning Written Warning Stop Work Notice

Additional Comments:

See Photos

Certification Statement:

“I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.”

Inspector's Signature: _____ **Date:** _____

Boone County Resource Management

Stormwater Construction Inspection Tips



Inspection Procedures

An on-site construction site inspection will usually consist of the following components, followed by the development of an inspection report:

- Pre-Inspection Preparation
- Entry
- Records Review
- Site Inspection
- Exit Interview

Pre-Inspection Preparation

Prioritize your sites

- With stream buffers or environmentally sensitive areas
- Contractors with a history of non-compliance or frequent violations
- Projects on steep slopes or with major grading plans
- Commercial/Industrial or high density subdivisions

Review available files

- Permits
- Stormwater Pollution Prevention Plan (SWPPP) or Erosion and Sediment Control (ESC) plans
- Past inspection reports
- Monitoring/assessment reports
- Maintenance records

Identify significant pollutant sources and Best Management Practices (BMPs) you want to inspect

- Silt fence, sediment basins/silt traps, slope stabilization, etc.

Entry

Before entering the site

- Observe surroundings and various stages of construction
- Look at the construction exit locations and perimeter controls
- Enter date/time and weather conditions on the inspection form

When entering the site

- Review all postings
 - Public Notification Sign in place and visible from construction entrance?
- Announce yourself to the person in charge

Records Review

Ask to see a copy of the SWPPP, permit, and inspection reports

- Specific items to review:
 - SWPPP
 - Date and preparer
 - Primary ESC BMPs used on-site
 - Are all BMPs required by the SWPPP in place?
 - Have BMPs been installed correctly and maintained?
 - Training
 - Amendments to design, construction, or maintenance
 - * If a SWPPP is not available for review, note the lack of an on-site SWPPP on the inspection form.

- Inspection and maintenance records
 - Operator is required to inspect the site once every seven days and within 24 hours of a rain event $\frac{1}{2}$ " or more in 24 hours.
 - Permanent stormwater management practices
 - Pollution prevention practices
 - Discharge points
 - Amendments to design, construction, maintenance, weather or seasonal conditions
- Site Map
 - Should be up to date with construction activities
 - Should be red-lined and dated

Site Inspection

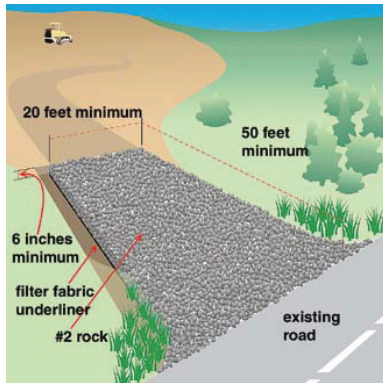
Inspect discharge points and downstream, off-site areas for signs of impact

- If sediment is leaving the site, walk downstream and document the extent of travel and impact on receiving waters or storm drains.
- Inspect down-slope inlets

Inspect Perimeter Controls

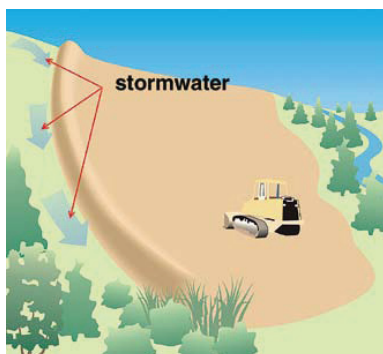
- Note what controls are being used and if they're installed correctly and being maintained
- Inspect the construction entrance to determine if there is excessive tracking
- Check sediment controls and make sure inlets are protected.

Stabilized Construction Exit



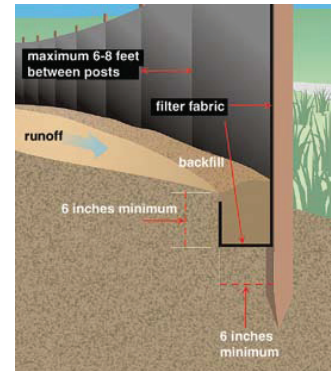
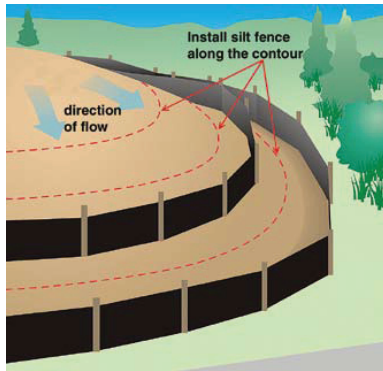
- If there is track-off from the entrance, the operator has 12 hours to clean it up
- Are vehicles leaving the site from other locations and not using the designated entrance/exit?
- Does the rock need to be replaced, replenished, or raked?
- Is the entrance/exit long enough to remove mud from tires?
- Is the site graded away from the entrance/exit to prevent runoff from leaving the site?

Diversion Berms



- Make sure the diversion discharges to a stable outlet or channel
- Make sure diversion ditches and berms have been seeded
- Is the diversion eroding? (channel grades should be relatively flat)
- Check dams may be necessary if high velocity flows are present

Silt Fence



- Is the silt fence installed along the contour (on a level horizontal plane)?
- Are the ends turned up to help pond the water behind the filter? – J-hooks
- Is the filter trenched in with the stakes on the downhill side (6" deep by 6" wide)?
- Has the sediment been removed when it reached 1/3 the height of the barrier?
- Filters should not be installed where concentrated flow is expected
 - Inadequate installation
 - Soil should be compacted after trenching
 - Stakes should be on the downhill side
 - Improper placement
 - Should not be used for steep, long slopes
 - Drainage area should be no greater than 1/4 acre per 100 ft. of fence
 - Should be spaced 60-110 ft. apart on long slopes
 - Maintenance
 - Torn or degraded silt fence fabric should be replaced immediately
 - Sediment should be removed after reaching 1/3 the height of the fence

Temporary Silt Traps

- Check the location of the silt trap to make sure if it fails that it doesn't pose a risk to life or property
- Silt should be removed after it reaches 1/3 the design volume
- The trap should not be installed in a mainstream or near culvert outlets
- Check the outlet for needed maintenance

Vegetative Stabilization

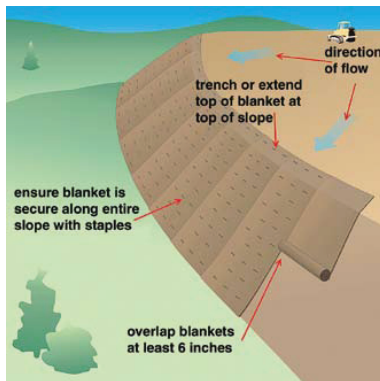


- Are all exposed soil areas stabilized?
- Check for signs of erosion in vegetated areas
- Concentrated flows should not be allowed across newly seeded slopes
- If late in the year, the slope may need to be mulched versus seeded

Compare BMPs in the SWPPP with construction site conditions

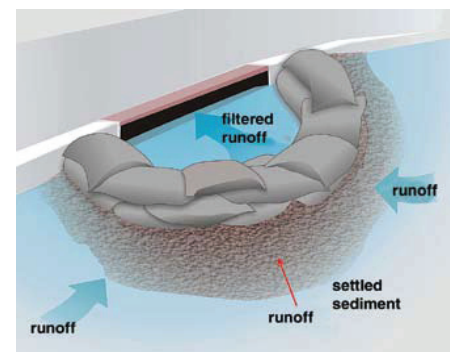
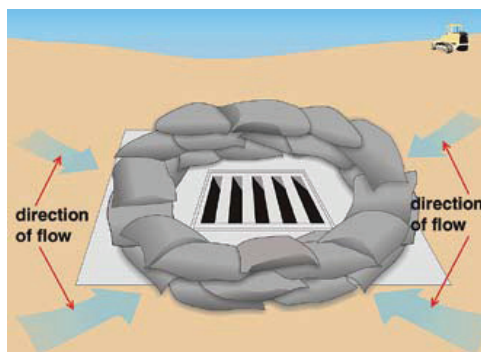
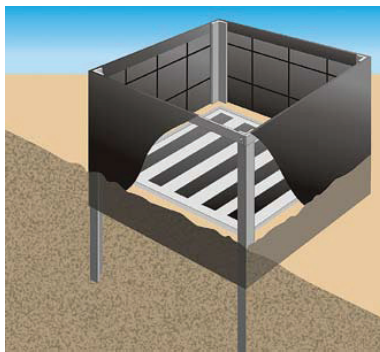
- Are additional BMPs needed? Look for areas where BMPs are needed, but are missing
- Describe potential violations and their locations.

Mats, mulches, and blankets



- Should come into complete contact with the soil
- The top of the blanket should be trenched in – water shouldn't flow underneath it
- Mulch should not be placed in concentrated flow areas
- If erosion is occurring in mulched areas, more mulch may need to be applied
- Check blankets and mats to see if sections are overlapped 4-6 inches and staples are 12 inches apart on tops and 24 inches apart down the sides and in the middle.

Storm drain inlet protection



- Inlet protection is a secondary BMP. Additional controls are also needed.
- Should not block the storm drain or cause flooding
- Should be in place immediately following storm drain installation, or prior to any land disturbance for existing inlets
- Sediment should be removed after each storm event
- Make sure unfiltered stormwater cannot enter the inlet
- If there's a specific safety concern, the BMP can be removed temporarily.

Inspect disturbed areas not currently being worked

- All exposed soil areas must be stabilized no later than 14 days after the construction activity in that area has temporarily or permanently ceased.
- Temporary seed or straw, permanent seed or straw.

Inspect areas with final stabilization

- Inspect stabilized areas to ensure that excessive erosion isn't occurring.
- If area has uniform perennial vegetative cover (100%) with 70% density of the entire area, temporary BMPs need to be removed.

Taking Photographs

Take photos of

- Public notification sign
- All potential violations
- General views of the site
- Impacts to receiving waters

Exit Interview

- Ask to speak to the responsible party for the ESC. If they're not on site, ask to speak to whomever is in charge
- Let them know what findings you have (deficiencies, areas of concern, SWPPP not updated, inspections not being done, etc.)
- Don't tell them what BMPs to use! You can tell them what typically works/doesn't work.