Storm Water Management Plan

Missouri State University 901 S National Avenue Springfield Missouri 65897

Operating Permit No. MOR04C092

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BMPs	Best Management Practices
IDDE	Illicit Discharge Detection and Elimination
MEP	Maximum Extent Practicable
MDNR	Missouri Department of Natural Resources
MCMs	Minimum Control Measures
MSU	Missouri State University
MS4	Municipal Separate Storm Water System
NPS	Nonpoint Source
O&M	Operations and Maintenance
PD&C	Planning, Design, and Construction
SMWP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan

Contact Information

The position primarily responsible for the Stormwater Management Plan (SWMP) at Missouri State University (MSU) is the Director of Environmental Management (Director). Some BMPs are primarily implemented by other MSU divisions or departments. These are noted in the description for those BMPs. The Director coordinates with these other divisions or departments on BMP implementation and reporting. The Director is also responsible for filing the required annual reports. The current Director's contact information is:

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Background

This document provides an outline for Missouri State University (MSU) to use in complying with permit conditions specified in the University's Phase II Municipal Separate Storm Water System (MS4) General Operating Permit for the 2022-2026 permit period.

The regulation of MS4 facilities is conducted by the US Environmental Protection Agency (EPA) under authority of the Clean Water Act. Phase I regulation was begun in 1990 to include urban areas with a population greater than 100,000. In 2003 the regulation was expanded to include communities with a population greater than 10,000 (or smaller communities that were defined as part of an Urbanized Area (UA)).

In Missouri, the MS4 program is administered by the Missouri Department of Natural Resources (MDNR). MDNR determined in 2021 that the University was subject to regulation under this program based on physical location within the Springfield Urban Area (UA) and an onsite population of greater than 1,000 people. Based on notification of this determination by MDNR, the University submitted a permit application, and permit MOR04C092 was issued on August 1, 2022.

The University falls with the Group A category of regulated small MS4s which includes Class 2 counties, non-traditional sites such as universities, and federal facilities. Category designation is used to determine the level of requirements to fulfill compliance with a facility's permit.

Recognizing the importance of clean rivers, streams, and ground water, the University is pleased to develop this Storm Water Management Plan (SWMP) with strategies to preserve the quality of local storm water runoff. This program will be developed within the initial authorization period as specified by the permit.

Facility Information

The University's Springfield campus is an urban campus located in Springfield, Greene County, Missouri (**Figure 1.0** in **Appendix B)**. Located in the southwest portion of the state, the City of Springfield is the

third largest city in Missouri with a population of approximately 169,700 (2020 U.S. Census). Geographically, Springfield is located on the Springfield Plateau. The city is essentially divided by two major watersheds – the James River and the Little Sac River. A majority of the city exists within the James River watershed, causing most drainage to flow south and west flowing tributaries of the James River.

The campus covers approximately 225 acres in a largely residential area just to the southeast of downtown Springfield. To the south across Grand Street is the Phelps Grove neighborhood and to the east across National Avenue is the Roundtree neighborhood. Immediately north of campus is an area of largely Greek fraternity and sorority organizations. In recent years much of the area west of campus has evolved from single-family residential to more high-density multi-residential units. Some commercial activity (generally retail and dining) is interspersed within these areas around the edges of campus.

In general, the campus is bounded on the south by Grand Street, on the west by Holland Street, on the north by Elm Street, and on the east by National Avenue, though there are several exceptions to these boundaries. Campus parking lots are present south of Grand Street, and some University buildings are present west of Holland in the northwest part of campus. Non-university properties exist within these boundaries, largely on the north end, and the campus is dissected by several city-owned streets.

Hydrology

There are two notable open detention basins on MSU property: one at the southwest corner of the Grand and National intersection, and one immediately west of the Greenwood Laboratory School (GLAB). The GLAB basin was modified in 2016 to remove the existing concrete channel and replace it with an infiltration trench filled with large stones to increase the infiltration rate for the basin. The trench is bordered approximately 10 feet on either side with native plants. Underground stormwater detention is also present, as a series of vaults underlying John Q. Hammons Parkway between Bear Boulevard and Harrison Street. Several smaller underground detention vaults are present across campus. A minor topographic ridge aligned northeast to southwest divides stormwater surface flow across campus such that runoff on the east side of the ridge runs to and exits campus at the Grand-National detention basin, and runoff on the west side of the ridge exits campus to the city stormwater system near the intersections of Kimbrough and Harrison streets and Grand and Holland streets. **Figure 2.0** shows the locations of the detention basins, MSU outfalls, and the general direction of surface runoff.

Due to the existence of several city-owned streets cutting across campus, storm water infrastructure is a mixture of university-owned and city-owned. Storm water from municipal sources (roads) blend with storm water from campus within the existing infrastructure. For example, flow from drains on the east side of campus enter city-owned storm drains along National Avenue, along with storm water from National Avenue, which then flows south to enter the University's detention basin at Grand and National. This blended water then exits campus at the outflow on the southeast corner of the basin. Essentially all storm water flow from campus is blended with water from city streets or non-university properties. The "MSU Stormwater Map", provided in **Appendix B**, illustrates various stormwater infrastructure features across the University along with surface flow information and outfalls.

All storm water leaving the University campus flows to Fassnight Creek, located approximately 0.5 miles south of campus. Fassnight Creek flows west to enter Wilson's Creek. Wilson's Creek flows west and south to become a tributary to the James River. **Figure 3.0** shows the locations of nearby hydrologic features to the permit covered area along with approximate distances to Fassnight Creek and James River

Tributaries.

The James River begins upstream of Springfield and flows along the southern edge of the city. Because Springfield is located on a plateau, several tributaries begin within the city limits and flow out into the county. Most of the city drains into tributaries of the James River. A smaller portion of the city drains into tributaries of the Little Sac River which is located north of the city.

Water Quality and Total Maximum Daily Loads (TMDLs) in Greene County

Several area streams do not support Missouri Water Quality Standards for 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, the Missouri Department of Natural Resources must develop a TMDL to set the maximum amount of pollution that can enter the stream and still maintain water quality standards. Table 1 shows the waterbodies in Greene County that are on the 2022 Impaired Waters List (Section 303(d)). There are currently no water bodies within the plan area that qualify for Impaired Streams 303(d) status. Figures depicting area watersheds and waterbodies are available in Appendix B.

Table 1.0 – Impaired Water Bodies

Waterbody Name	Pollutant	Source	Miles/Acres Impaired	Approximate Distance From MS4 (miles)
Fellows Lake	Mercury in Fish Tissue	Atmospheric Deposition - Toxics	800.00	8.38
Galloway Cr.	E. coli	Nonpoint	3.20	2.78
James River	E. coli	Unknown	39.0	6.20
Jordan Creek	Polycyclic Aromatic Hydrocarbons-PAHs	Urban NPS	3.80	1.90
Lake Springfield	Chlorophyll-a	Nonpoint	293.00	6.25
North Branch Wilsons Creek	Zinc	Urban NPS	3.8	3.78
Pearson Creek	Aquatic Macroinvertebrate Bioassessments/ Unknown	Unknown	8.0	4.78
Pearson Creek	E. coli	Rural NPS	8.0	4.78
Wilsons Creek	Aquatic Macroinvertebrate Bioassessments/ Unknown	Nonpoint	14.00	5.01
Wilsons Creek	E. coli	Nonpoint	14.0	5.01

Plan Summary

The permit requires the University, as a Small MS4, to implement best management practices (BMPs) to reduce pollutants in stormwater discharges to the Maximum Extent Practicable (MEP) to waters of the state for the goal of attainment with Missouri's water quality standards. To accomplish this goal the University is required to implement a stormwater management program, consisting of a plan utilizing best management practice (BMPs) from the following minimum control measures (MCMs):

1. Public Education and Outreach of Stormwater Impacts
2. Public Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management in New Development and Redevelopment
6. Pollution Prevention/ Good Housekeeping for Municipal Operations

The following sections of the plan outline the BMPs to be implemented through the 2022-2026 permit cycle, as well as monitoring and reporting procedures and responsibilities.

Stormwater Management Plan

The following sections detail specific plan elements and actions to achieve compliance with MSU's general operating permit MOR04C092 and incorporate the permit document by reference. A copy of the permit is included in Appendix A.

Minimum Control Measure 1: Public Education and Outreach on Stormwater Impacts Overview

Permit Requirement:
Implement a public education program to distribute educational materials to the community and/or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.
The public education and outreach program shall, at a minimum include the following:

- *Target specific audiences who are likely to have significant stormwater impacts.*
- *Target specific pollutant(s) in the permittee's education program.*
- *Utilize appropriate educational resources to be used as BMPs (materials, events, activities, etc.) in conjunction with the selected pollutants for the selected target audiences.*
- *A minimum of two education and outreach BMPs shall be implemented over the term of the permit including tracking and adaptive management processes for each selected BMP.*
- *A minimum of one involvement BMP shall be implemented over the term of the permit including tracking and adaptive management processes for each selected BMP.*

MSU has identified the audiences and pollutants that are likely to have significant impacts on local stormwater. These specific targets can be found in the table below.

Table 2.0 – Target Pollutants, Audiences, and Potential Stormwater Impacts

Target Pollutant and Source	Target Audience	Potential Stormwater Impact and Solution
Landscape Management/fertilizers, grass clippings & leaf litter, chemicals, etc.	Faculty, staff, students	These pollutants can adversely affect water quality as well as the aesthetics and enjoyment of the waterways. The MSU Grounds department actively works to monitor and mitigate the exposure of the waterways to these pollutants.
Litter, trash containment, solid waste	Faculty, staff, students, contractors and event participants	Trash is the most visible form of pollution and can create significant negative aesthetic and water quality impacts toward the use and enjoyment of waterways.
Household hazardous wastes/chemical waste	Staff, faculty, students, contractors	These pollutants can adversely affect water quality as well as the aesthetics and enjoyment of the waterways.
Pet waste	Staff, faculty, students, event participants.	Pet waste left on the ground and not properly disposed of can be washed into the stormwater system depositing bacteria, ammonia, and nutrients (nitrogen) into waterways

		and increasing oxygen demand.
Oil, grease, fluids from vehicles	Staff, students, event participants, contractors	Motor vehicle fluids released into the environment can cause contamination of streams and impact aquatic life.
Sediment runoff from construction	Staff, students, contractors, event participants	Land disturbance is dredging, clearing, grading, excavating, transporting or filling from construction activities. Sediment is the primary pollutant from land disturbance activities and may impact the aquatic habitat through sedimentation of streams and cause algae blooms through introduction of increased concentrations of nutrients.
Fats, Oils and Grease	Staff and students	Fats, Oils and Greases (FOG) are found in common foods and food ingredients such as meat, fish, butter, gravy, cooking oil, sauces, mayonnaise, and food scraps. There are also "hidden oils" such as salad dressing, syrup, batter and cheese. When FOG is poured down the drain, it can form blockages that restrict wastewater flow, eventually causing a blockage. Blockages can cause sewer overflows that pollute streams.
Power washing/vehicle washing/wash water	Staff	Power washing of sidewalks and parking garages using detergents or other chemicals can lead to negative impacts on stormwater.
Vegetative Cuttings/Leaf Litter	Staff	Yard waste such as grass clippings, weeds, dry leaves and sticks disposed of near streams and storm drains can impact water quality and contribute to erosion. Streams can be impacted through low dissolved oxygen, more nutrients, algae blooms and high suspended solids.

This section details University processes, procedures, and BMPs to implement an education and outreach program relating the impacts of stormwater discharges on waterbodies and steps that can be taken to reduce pollutants in stormwater runoff, in accordance with permit requirements.

MCM 1: Best Management Practices, Measurable Goals, and Tracking and Adaptive Management

Outreach and Education Best Management Practices

Outreach and Education Best Management Practice 1: *Information on the MS4 Operator's Website*
The University's environmental management website maintains a page providing educational content on stormwater management on campus, as well as a map of campus stormwater features. This page also provides opportunities for public input and reporting.

Measurable Goals for Outreach and Education BMP 1: Maintain a webpage with up-to-date information and working links. All links shall be checked, and the page shall be updated as necessary at a minimum annually. Must be maintained the entire year.

Tracking & Adaptive Management for Outreach and Education BMP 1: The number of hits on the Operator's website will be tracked. MSU will use this information to see which messages get reactions, and if certain messages may need more education.

Outreach and Education Best Management Practice 2: *Paid membership in a regional or watershed group.*
The University provides stormwater/water quality awareness opportunities through local organization

partnerships. The James River Basin Partnership (JRBP) and the Watershed Committee of the Ozarks (WCO) are public organizations that participate in the University's Sustainability Advisory Committee. JRBP's office is housed on university property; they conduct educational events and activities focused on watershed protection. WCO is also focused on public education on watershed protection and coordinates regularly with MSU faculty and staff on educational events and grant opportunities. The University will continue to work with these community partners to promote public involvement and participation in water protection.

The Watershed Center at Valley Water Mill Park not only serves as a destination for water education field trips but as a community park open to the public and designed to encourage connection and learning about water resources and green infrastructure. James River Basin Partnership provides eco-tourism opportunities via float trips on the James River that incorporate educational components.

> Measurable Goals for Outreach and Education BMP 2: The organizations that MSU belongs to must focus on stormwater runoff. The James River Basin Partnership, and the Watershed Committee of the Ozarks are both organizations that focus on stormwater runoff
>
> Tracking & Adaptive Management for Outreach and Education BMP 2: The organizations that MSU belongs to enact BMPs on behalf of all members, and the MSU participates to ensure their MS4 has representation and receives some of the educational BMPs.

Outreach and Education Best Management Practice 3: *Require installation of permanent embossed, or precast inlets with "No Dumping-Drains to Stream" or similar message.*
The University utilizes stamped 'No Dumping- Drains to Streams' covers on stormwater drains/covers that are owned by the University and will continue to utilize this type when replacing covers as appropriate.

> Measurable Goals for Outreach and Education BMP 3: It is a requirement for all new inlets in the MS4 area to be precast or permanently embossed with "No Dumping – Drains to Stream" or similar message.
>
> Tracking & Adaptive Management for Outreach and Education BMP 2: The number and locations of inlets owned by the University shall be tracked. These areas shall be noted on MCM #3 dry weather screenings, and illicit discharge investigations as a method to determine if the markings are effective or if areas could benefit from the markings.

Involvement Best Management Practices

Involvement Best Management Practice 1: *Stream/lake or watershed clean-up events; Litter clean-up events such as Missouri Stream Team, Adopt-A-Spot, Adopt-A-Street, Adopt-A-Stream.*
The University will participate in the City of Springfield's Adopt-A-Street program to provide opportunities for staff, faculty, and student volunteers to adopt a section of street. Volunteers recruited by MSU are committed to completing a minimum of 3 street cleanups per year, as well as acting on opportunities for one-time cleanups with other volunteers and partners. The University will plan, or help plan, each event or activity, contribute supplies and equipment, provide assistance from staff during the events, provide cleanup supplies, and assist with trash pickup and disposal.

> Measurable Goals for Involvement BMP 1: To be considered an event, the land area cleaned must be a minimum of two miles of roadside. Each Adopt-A-Street event will consist of cleaning *at least* two miles of adopted roadside.

Tracking & Adaptive Management for Involvement BMP 1: Missouri State University will track the area of distance cleaned (by acre, yard or lane miles), the amount of waste removed (by tonnage or cubic yard) and the attendance of each event. The waste measurements will be used to determine if there are priority areas for litter entering stormwater, or areas for illegal dumping.

Minimum Control Measure 2: Public Participation Overview

Permit Requirement:

Develop and implement a comprehensive public participation program which provides opportunities for public participation in the development and oversight of MSU's Stormwater Program.

- *A public notice period will be held for a minimum of thirty (30) days to allow the public to review the draft permit, and description of the SWMP prior to submission of the renewal application to the Department.*

- *The required items shall be posted on the MS4's website with a way to submit comments.*

- *MSU will respond to comments received during the comment period.*

- *Record of any information submitted by the public or comments received as a part of the public notice process must be retained and made available to the public or the Department upon request.*

- *A public information meeting will be held that describes the contents of the SWMP. The meeting shall be advertised at least 30 days prior to the meeting.*

- *MSU will post notice of the meeting on their website along with standard public notice methods for the MS4.*

    - *The meeting will be held within the service area of the MS4.*

- *A publicly available method (phone number, website comment form, voicemail box, email address, social media platform, etc.) encompassing all MCMs of this permit, will be made available to accept public inquiries and take information from the public regarding stormwater-related topics.*

- *To help identify pollutants of concern, priority areas, pollutant sources, educational needs, and other information used to evaluate the Stormwater Management Program, all information or inquiries from the public shall be tracked by topic, location, and concern.*

- *In the case that the University decides to utilize a stormwater management panel or committee, MSU shall provide opportunities for citizen representatives to participate, and meeting attendance shall be recorded.*

- *Annual updates shall be given to the Board of Governors by a representative of MSU who is familiar with the Stormwater Program. Updates will include the MS4's compliance with the Stormwater Management Program.*

- *The Public Participation Program shall be reviewed annually and update Implementation Procedures as necessary. This requirement ensures that mechanisms implemented by the Stormwater Management Program are effective in fulfilling the requirements of Section 4.2 of the permit.*

MCM 2: Best Management Practices, Measurable Goals, and Tracking and Adaptive Management

This section details University processes, procedures, and BMPs to develop and implement a comprehensive public participation program that provides opportunities for public participation in the development of the campus stormwater program in accordance with permit requirements.

Best Management Practice 1: Public Notice and Meeting

Opportunities for public involvement in SWMP development will be provided when the SWMP is updated for the permit renewal application in Year 5. A 30-day notice to allow review of the draft permit and draft SWMP, both of which will be posted on MSU's website and will be posted in a way that will allow comments from the public as well as a way for MSU to respond to those comments.

The University will advertise the notice of the public information meeting on its website a minimum of 30 days prior to the public meeting. The notice will include the date, time, and location of the meeting. The meeting will be held on campus property. The University's Website address created for this purpose is: https://www.missouristate.edu/Environmental/springfield-campus.htm.

Measurable Goals for BMP 1: In Year 5 prior to renewal, post the proposed SWMP for the permit reapplication on the University website for a public comment period and provide information to key stakeholder groups.

- Hold a public notice 30 days prior to the public meeting
- Advertise the public meeting a minimum of 30 days prior to the meeting.

Tracking and Adaptive Management: All comments will be retained in accordance with the records retention requirements. The comments will be used to evaluate the level of participation in public involvement opportunities and the outcome of public input received. The Information will be used to further develop and maintain the public participation program. Records of the date, time and location of the meeting will be retained.

Best Management Practice 2: Creation of a Public Inquiries Page on the Website

The University website, which is accessible by the public, will also provide a page for accepting public inquiries or concerns which will encompass all MCMs of the permit. A combination of methods will be utilized to accept the inquiries.

Measurable Goals for BMP 2: All reports will include the topic, location, and concern to help identify potential pollutants of concern, areas of priority, sources of pollution, educational needs and any other applicable information for evaluating the Stormwater Management Plan. The Public Participation Program will be reviewed annually.

Tracking and Adaptive Management: All records of public comments and inquiries will be tracked, recorded and made available to the public or the Department upon request. The comments will be used to help identify priority areas, pollutants of concern, sources of pollutants, further educational needs and any additional applicable information. The annual review will be used to further evaluate the effectiveness of the public participation program.

Best Management Practice 3: Provide updates to the Governing Board

A representative of the University will provide an annual update of the MS4 Stormwater Program to the governing board which will include the status of and any updates to the SWMP as well as compliance with the SWMP. A current list of Board of Governors can be found at https://www.missouristate.edu/BOG/govbios.html. This list includes nine current members, eight of which have been appointed by the Governor with the approval of the Missouri Senate. The board includes a maximum of two voting members representing each congressional district within the state of Missouri as well as one non-voting student representative.

Measurable Goals for BMP 3: A status of the updates to the SWMP and compliance with the Stormwater Management Program will be provided annually to the Board of Governors.

Tracking and Adaptive Management: The update to the Board of Governors will be tracked and any comments made by the Board will be used to further evaluate the effectiveness of the program.

Best Management Practice 4: Development of a Stormwater Public Participation Program.

Missouri State University is committed to providing opportunities for public involvement in Stormwater Management Plan (SWMP) development. A public participation program is currently being implemented which encourages public participation in the continuing development and supervision of the University's Stormwater program. This program includes holding a public information meeting which describes the contents and purpose of the SWMP.

Measurable Goals for BMP 4: Conduct annual reviews of the Public Participation Program to review its effectiveness and make any necessary updates.

Tracking and Adaptive Management: A tracking mechanism will be used to track attendance, inquiries or concerns which will be reviewed annually to update procedures as necessary using adaptive management as per the permit requirements.

Minimum Control Measure 3: Illicit Discharge Detection and Elimination Overview

Permit Requirement:

The MS4 Operator shall implement and enforce a program to detect and eliminate illicit discharges (as defined in 10 CSR 20-6.200 at 40 CFR 122.26(b)(2)) in accordance with permit requirements.

- *A current stormwater sewer system map shall be updated as needed to include features which are added, removed or changed.*

- *A record of the sources of information used for the map must be maintained and track all outfalls including naming system, dates the outfall locations were last verified, dates any new outfalls were added.*

- *Non-stormwater discharges into the permittee's storm sewer system shall be prohibited and appropriate enforcement procedures and actions shall be implemented. This may be accomplished through one or more ordinances or mechanisms.*

- *The Operator shall conduct or have conducted on their behalf a dry weather field screening assessments on all outfalls. The screening shall be conducted during dry weather conditions to check for the presence of discharge. The screening shall include a checklist or other tracking device to ensure a complete inspection of each outfall, enhance consistency, and track field screening.*

- *Diagnostic Monitoring procedures shall be maintained to detect and investigate unknown non-stormwater flows as part of the dry weather screening program. This monitoring shall include sampling the unknown discharge from the outfalls that are flowing or ponding more than 72 hours after the last precipitation event and considered to be an illicit discharge.*

- *Procedures for tracing any illicit discharges shall be maintained and if initial screening indicates that a dry weather discharge contains pollutants, or if an illicit discharge is suspected from another reporting method, the source shall be traced.*

- *The operator shall maintain procedures for removing the source of the discharge. Once the source is located, the pollutant and source shall be removed. Any necessary contacts with appropriate entities needed for these procedures shall be maintained and made available to the responsible staff.*

- *Priority areas shall be identified.*

- *Written procedures shall be maintained for implementing the IDDE Program*

- *Investigations may be conducted in response to the field screening discoveries, spills or in response to complaints from the public, municipal staff or adjacent MS4s. Reponses shall meet the investigation timelines.*

- *Procedures shall be in place for appropriate enforcement. A written description of the enforcement procedure will be maintained and include a copy of or link to the ordinance that the MS4 will use to*

enforce the prohibition of illicit discharges into the MS4.

- *A database or centralized system shall be maintained to track dry weather field screenings, spills, incidents and investigations and will be recorded annually.*

- *All public employees, businesses and the general public will be informed of hazards associated with illegal discharges and improper disposal of waste.*

- *The Operator shall review their IDDE program annually and update any implementation procedures as necessary.*

- *An IDDE program shall be developed and described in the SWMP. The program shall be fully implemented within 5 years of permit issuance.*

- *The Operator must develop and implement or maintain a training program for all municipal field staff who may encounter or otherwise observe illicit discharge or illicit connection to the storm sewer system. Training may be conducted using resources online and may focus on topics which are relevant to the position. The training must be taken at a minimum of one year of an employee being hired. All training dates, topics, and attendance shall be recorded, and reviews of the training's effectiveness shall be evaluated after site inspections or after an incident has occurred. If training was not deemed effective due to any issues that may arise or poor performance by a department, the training program shall be reviewed to determine thoroughness or effectiveness.*

MCM 3: Best Management Practices, Measurable Goals, and Tracking and Adaptive Management

This section details BMPs and procedures to implement and enforce an Illicit Discharge Detection and Elimination program (as defined in 10 CSR 20-6.200 at 40 CFR 122.26(b)(2)) in accordance with permit requirements. This includes maintaining an updated stormwater sewer map, actively prohibiting non-stormwater discharges, procedures for Dry Weather Screening Strategy/ Stormwater System Monitoring and Response Procedures, Stormwater System Monitoring and Response Procedures, Identifying Priority Areas and Removing the Sources of the Discharge, Investigations in response to spill, field screen discoveries and complaints and Implementing a Training Program for All Field Staff.

The IDDE will be reviewed annually for its effectiveness.

Best Management Practice 1: Maintain updated Stormwater Sewer Map

A storm sewer map for the MSU campus was developed in 2022 to serve as a tool to support illicit discharge detection and elimination, MS4 cleaning and maintenance, and other permit activities. The MS4 was mapped during the first permit term, and the sources of information used included construction plans, aerial photography, and field verification. The map includes linear features (storm sewer pipes, box culverts, channels) and point features (inlets, junction boxes, and manholes), outfalls, and boundaries. This requirement was completed in the first permit term. Verification of outfall locations is ongoing through field surveys. A copy of the storm sewer map can be found as "MSU Stormwater Map" in **Appendix B**.

Post-construction stormwater control measures are also mapped. The map is regularly updated through

input of new construction plans. This requirement was completed in the first permit term.

Measurable Goals for BMP 1: Within the first five years of the permit issuance, the map will be reviewed to ensure it includes all outfalls, names, locations of receiving bodies of water, and the boundaries of the regulated area. Map updates to the stormwater sewer map to reflect changes in the MS4 system will be completed annually. Post-construction stormwater control measures, such as construction plans and as-built control measures, are be filed through MSU's Planning, Design, and Construction (PD&C) Department. Sources used to obtain information for these map updates will be recorded and maintained for subsequent map updates.

Tracking and Adaptive Management for BMP 1: The dates outfalls were verified or field surveyed will be tracked and as well as the dates that any new outfalls were added to the storm sewer system. Field surveying activities will be tracked, recorded, dated, and maintained to verify the locations and conditions of outfalls along with properly documenting any new outfalls that may be added to the storm sewer system.

Best Management Practice 2: Prohibit Non-Stormwater Discharges Using Appropriate Enforcement Procedures.

Discharges from non-stormwater sources shall be prohibited by the University and appropriate enforcement procedures and actions will be implemented with an ordinance or regulatory mechanism to prevent the discharge of the following pollutants:

- Litter;
- Household Hazardous Waste Disposal;
- Leaf Disposal;
- Use of Soaps and Detergents with discharge to stormwater;
- Illegal Dumpling of solid waste;
- Vehicle fluid disposal;
- Grass Clippings;
- Pet waste; and,
- Sewage.

MSU: Missouri State University has 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 link:
Policies, Procedures and Manuals - Environmental Management - Missouri State.

Measurable Goal for BMP 2**:** Document and track any ordinance violations or illicit discharges as well as enforcement actions taken on the university website.

Tracking and Adaptive Management for BMP 2: Evaluate the number of ordinance violations, illicit discharges, and enforcement actions taken annually and assess University rules and/or policies for effectiveness in stopping the discharge of the above pollutants. Update University rules and policies as needed to prevent the discharge of the above pollutants.

Best Management Practice 3: Dry Weather Screening Strategy

The University does not have any outfalls as defined by the permit and state regulations; therefore, dry weather screening of outfalls does not apply to this MS4. Due to this, screenings will be conducted at the areas where stormwater leaves the University's stormwater sewer system and enters the City's stormwater sewer system or private infrastructure when applicable. Key areas will be inspected within the University's stormwater sewer system for evidence of illicit discharges, prior to where the stormwater leaves University property. For the purposes of this plan, these locations will be referred to as ***functional outfalls*** to differentiate them from regulated outfalls. Functional outfalls will be field assessed periodically to check for the presence of a discharge. Screening will include a checklist with the following:

- Date and time;
- Weather conditions and temperature (air and water);
- Color of discharge;
- Estimate of flow rate;
- Odor;
- Surface scum, algal bloom, floatable solids, or oil sheen present;
- Deposits or staining (note color);
- Turbidity (may be estimated);
- Stream impact (including fish, vegetation, wildlife);
- Length of impacted stream; and,
- Notes on obvious sources of flow.

Measurable Goal for BMP 3: Field screen all outfalls within the first five years of permit coverage. Thereafter, Assessments of 60% of outfalls will be conducted annually during dry weather conditions (minimum of 72 hours after the last precipitation event) using the screening checklist. Any priority areas will be screened yearly.

Tracking and Adaptive Management for BMP 3: A checklist will be used to assess and inspect functional outfalls to enhance consistency and to track the field screening. Any detected discharge will be further investigated, and an effort will be made to locate and eliminate the discharge source.

Best Management Practice 4: Stormwater System Monitoring, Tracing, and Response Procedures for Illicit Discharges

Detection of illicit discharges across campus occurs through regular system inspections conducted on campus by Environmental Management personnel, reporting by others on campus, and through dry weather field screening (detailed above).

Initial response to reported discharges on campus may involve University Safety, Environmental Management, and Facilities personnel as appropriate. Identification of the source of the discharge will be accomplished through:

- Visually following the flow;
- Storm sewer system sampling;
- Full storm sewer map;
- Closed circuit television;
- Smoke of dye tracing; and,
- Tunnel entry.

Appropriate response measures will be implemented upon discovery of the discharge. These measures

will be determined based on the circumstances and may include activation of appropriate entities such as the Springfield Fire Department (911), the MDNR Emergency Response Team (573-634-2346), or a private sector environmental response company. Any adjacent MS4 impacted by the discharge will be notified within 24 hours of discovery.

Diagnostic procedures to investigate the source of non-stormwater flows may include sample collection for analysis by a contracted lab or similarly equipped entity. Analytical parameters will be determined on a case-by-case basis, depending on the nature of the discharge and potential source. Potential analytical parameters may include:

- pH;
- Oil and grease;
- E. coli of fecal coliform;
- Surfactants or fluorescence concentration;
- Specific conductivity;
- Ammonia;
- Chlorine;
- Dissolved oxygen; and,
- Fluoride/hardness.

Measurable Goal for BMP 4: Document and trace the source of any unknown illicit discharges found and implement appropriate response measures which could include notification to appropriate entities and adjacent MS4s within 24 hours of discovery. Complete diagnostic procedures which include sample collection and analytical analysis of illicit discharges which continue to flow or pond more than 72 hours after the last precipitation event.

Tracking and Adaptive Management for BMP 4: Maintain documentation of all illicit discharges detected, their sources, date and list of all entities informed, and all documentation associated with the sampled analytes including date, time and entity sampling as well as a complete list of analytes investigated. If samples are collected, analytical results will be available in **Appendix D** of this SWMP along with digital retention.

Best Management Practice 5: Identifying Priority Areas and Removing the Sources of the Discharge

Procedures shall be maintained for tracing the sources of any illicit discharge. If discharge indicates any pollutants are present during screening, the source shall be traced using a variety of methods which includes mechanisms/investigation tools as recommended by the permit (listed in previous section). Priority areas will be identified using the guidelines listed in the permit. These include, but are not limited to, the following;

- Areas with evidence of ongoing illicit discharges;
- Areas with a history of illicit discharges;
- Certain land use influencing storm sewer/proximity of potential pollutant sources;
- Areas of higher population density;
- Neighborhoods with onsite sewage systems;
- Areas with known litter or dumping issues;
- Areas with large or increased number of citizen complaints; and,
- Industrial areas.

Initial response to reported discharges on campus may involve University Safety, Environmental Management, and Facilities personnel as appropriate.

Once identified, the responsible parties will be notified to remove the source of the discharge. Source control will be implemented at a minimum, and the responsible parties will be expected to modify operations to ensure no additional discharge occurs. Failure to take responsive steps will result in escalation and notification of upper campus administration. Responsible parties may be liable for expenses incurred during remediation/restoration.

Measurable Goals for BMP 5: Address or investigate as appropriate campus reports of illicit discharges and track the number of reports received and enforcement actions. Investigate illicit discharges detected through the dry weather field screening program and track the number of investigations and enforcement actions to identify priority areas. Evaluate and map/list the priority areas and update annually. Keep written procedures for implementation of the IDDE which includes: a description of strategy for dry weather screening and implementation schedule, a description of discharge evaluation including parameters tested, and contact information for any outside contracted entities. Written procedures for implementing the IDDE program will be maintained to ensure consistency and continuity of the program.

Tracking and Adaptive Management for BMP 5: All records related to dry weather screenings, source investigations and illicit discharge responses will be tracked and maintained on file by the Environmental Management department. Use the information to identify changes to priority areas and effectiveness of source controls or treatment BMPs in preventing further violations.

Best Management Practice 6: Investigations Responding to Spills, Field Screenings, and Complaints

Investigations will be conducted by Environmental Management personnel in response to field screening discoveries, spills, or in response to complaints from the public, municipal staff, or adjacent MS4s. Records will be kept of all investigations, reports and discoveries in the University's database.

Measurable Goals for BMP 6: An immediate response will be made to illicit discharges or spills that constitute a threat to human health, welfare or the environment. Investigations will be made within 5 business days of any complaints, reports or monitoring information that indicates a potential illicit discharge which does not constitute a threat to human health, welfare or the environment. Any adjacent MS4, which is determined to be the source of or impacted by the discharge, will be notified within 24 hours of discovery or as soon as practicable. The following shall be recorded annually: number of outfalls screened, number of complaints and investigations, number of illicit discharges removed.

Tracking and Adaptive Management for BMP 6: All records of responses will be kept available on the University website database and will be used to continuously evaluate the effectiveness of the IDDE program and priority areas. A record of the annual evaluation of the incidents, investigations and remediation procedures will be made available, and the University Environmental Personnel will inform businesses, employees, and the general public of any hazards associated with the illegal discharges or improper disposal of waste. These records will be used to update implementation procedures in the annual evaluation of the IDDE program and make any necessary changes to the stormwater sewer map.

Best Management Practice 7: Implementing a Training Program for All Field Staff

Training programs will be provided within one year of hire for field staff who may encounter or observe an illicit discharge or illicit connection to the storm sewer system including staff who may handle materials which may become an illicit discharge. Staff may include fleet maintenance personnel, staff at facilities with fuel, chemicals, washing or vehicles or equipment; road maintenance staff, road salt/de-icing staff, and swimming pool staff who encounter spills, equipment or vehicle washing/fueling, or chemicals.

Measurable Goals for BMP 7: All field staff will be trained in illicit discharge procedures within one year of their hire date. All training will be recorded and include training dates, topics and attendance. Reviews of the training effectiveness will be reviewed after site inspections or after an incident occurs. The University will determine if training was effective/ineffective and develop ways to test staff to see if training was effective.

Tracking and Adaptive Management for BMP 7: Records of the training will be maintained on-site and continuously evaluated for their effectiveness.

Minimum Control Measure 4: Construction Site Stormwater Runoff Control Overview

This section details BMPs and procedures to implement and enforce a program to reduce pollutants in stormwater runoff to their MS4 from construction activities on land disturbance sites in accordance with permit requirements. A review of the Construction Site Stormwater Runoff Control Program will take place annually which evaluates the ordinances and review all below mentioned procedures to ensure compliance with the permit requirements.

Permit Requirements: The MS4 Operator shall develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to their MS4 from construction activities that result in land disturbance of greater than or equal to once acres. Reduction of stormwater discharges from construction activity disturbing less than once acre shall 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.

- *The MS4 Operator shall have a law, ordinance and/or other regulatory mechanism to require construction site runoff control BMPs at construction/land disturbance site4s greater than or equal to one (1) acre or less than one acres if construction activity is part of a larger common plan or development or sale that would disturb one acre or more. The mechanism shall include sanctions which are designed to ensure compliance, to the extent allowable under State, or local law.*

- *Shall review pre-construction plans based on the minimum parameters laid out in the permit.*

- *Establish authority for site inspections and enforcement of control measures. To the extent allowable by state, federal and local law, procedures shall be implemented for inspecting construction/land disturbance projects.*

- *The Construction site runoff control program shall include an established, escalating enforcement policy that clearly describes the actions to be taken for violations. The program shall have written procedures to ensure compliance with the construction site runoff control regulatory mechanism. This shall include the sanctions and enforcement mechanisms the permittee will use to ensure compliance and procedures for when certain penalties, injunctions or other measures will be used.*

- *The construction site operator shall be required to conduct inspections at a minimum of every 14 days when construction is active and within 72 hours of any storm event, and withing 48 hours after any storm event equal to or greater than a 2-year, 24-hour storm has ceased. All checklists will be submitted to the MS4 Operator.*

- *An inventory of active public and private land disturbance sites shall be maintained. All oversite inspections shall be tracked. This can be done by maintaining copies of records such as inspection checklists and email correspondence. These inventories must be made available to the Department upon request. A list of the tracking requirements can be found in the permit.*

- *The SWMP shall describe the construction site stormwater plan and scheduled implementation. Development of the construction site runoff program shall be completed within the first 3 years of the permit issuance. If the ordinance or regulatory mechanism is already developed, the permittee shall include a copy of the relevant sections within the SWMP. The Inventory must be completed*

with one year of permit issuance and then updated as new projects are permitted.

- *The Stormwater Management Program must include procedures to receive and consider information submitted by the public about land disturbance sites.*

- *Shall provide, or support access to, construction site runoff control training for inspectors and plan reviewers at minimum once during this permit cycle. This education shall be tracked or documented.*

- *Must provide written procedures outlining the local inspection and enforcement procedures to their inspectors to ensure consistency among the inspections.*

- *The Construction Site Stormwater Runoff Control Program shall be reviewed using adaptive management a minimum of annually. The following must be evaluated: ordinances, review procedures, inspection procedures, enforcement procedures, receipt of public information procedures, and effectiveness of training procedures to ensure compliance and determine if changes are required. See permit for list of parameters to use when completing the annual review.*

MCM 4: Best Management Practices, Measurable Goals, and Tracking and Adaptive Management

Best Management Practice 1: Construction/ Land Disturbance Program Site Run-Off Ordinances

For any project that may disturb one acre or more, including smaller sites in a larger common plan of development, the University contracts with a Civil Engineer to review project requirements and develop a Stormwater Pollution Prevention Plan (SWPPP) specific to the scope of the project and the project site location. The SWPPP will be developed in accordance with requirements and guidelines specified within the permit (Section 4.4.B) for storm water discharges from land disturbance activities and incorporates site specific practices to best minimize soil exposure, soil erosion, and the discharge of pollutants. The Civil Engineer is required to develop technical specifications, as well as a Storm Water Plan with storm water details to be utilized for the purpose of bidding. Missouri State University maintains its Rules and Regulations on its website at https://www.missouristate.edu/Environmental/default.html.

Measurable Goals for BMP 1: Continuously evaluate effectiveness of bidding requirements and continue management requirements for construction projects requiring a SWPPP.

Tracking and Adaptive Management for BMP 1: Records of permit/plan violations will be maintained and used to evaluate the effectiveness of the BMPS and make necessary adjustments. If necessary, an education program will be implemented to help reduce violations.

Best Management Practice 2: Review of Pre-Construction Plans

The University Planning Design & Construction (PD&C) team shall review all pre-construction plans and evaluate the potential water quality impacts based on the following potential threats to water quality standards:

a) Soil erosion potential;
b) Site slope;
c) Project size and type;

d) Sensitivity to receiving waterbodies;
e) Discharge Flow type (pipe or sheet flow);
f) Location of discharge point in relation to receiving water;
g) Proximity of the site to receiving waterbodies; and,
h) Other factors relevant to the MS4 service areas.

Requirements for both temporary and permanent BMPs will be implemented by the site operator as required by local codes and ordinances. Requirements for proper disposal of construction site waste by the site operator will be includes:

a) Discarded building materials;
b) Concrete Truck, and mortar mix washout;
c) Chemicals (fertilizers, paint, oils, herbicides, pesticides);
d) Litter; and,
e) Sanitary Waste.

Measurable Goals for BMP 2: Review all pre-construction plans prior to soil disturbance. Incorporate, install and maintain appropriate stormwater control measures which include temporary and permanent BMPs along with BMPs to minimize the disturbance area such as phased construction requirements.

Tracking and Adaptive Management for BMP 2: A checklist will be used to ensure completeness and consistency of the pre-construction plans. All checklist records will be maintained and available for review.

Best Management Practice 3: Site Inspections and Enforcement of Control Measures by the University

The University shall set up set up written inspection procedures for all construction/land disturbance projects based on the criteria set up by the permit in section 4.4.C. This includes:

- Identifying priority sites for inspections based on the site conditions, nature of the construction, the characteristics of the soil present, and the sensitivity of, or proximity to, receiving waters.
- Inspections including an assessment of compliance with the University's SWPPP and other regulations and ordinances.
- Evaluating structures that function to prevent stormwater pollution and using enforcement policies to ensure BMP implementation and effectiveness.
- A final inspection upon the completion of land disturbance activities to ensure all disturbed areas have been stabilized and that all temporary erosion/sediment control measures are removed.

Construction projects on the MSU campus are designed and reviewed through the PD&C department. This process 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 design-review procedure allows MSU to meet or exceed MDNR best management practices for erosion and sedimentation control standards and implement innovative stormwater management. Design Standards are available on the MSU PD&C Consultant Resources website (https://design.missouristate.edu/ConsultantResources/default.htm).

Measurable Goals for BMP 3: Construction site inspections by the Planning Design and Construction (PD &C) project manager will include the inspection date and time, project manager name, Inspection findings and follow-up actions and dates including corrective actions and enforcement

actions. A final inspection will be conducted upon the completion of the land disturbance prior to final approval of the construction project which ensures all disturbed areas have been stabilized and all temporary erosion and sediment control measures have been removed.

Tracking and Adaptive Management for BMP 3: All inspections will be completed using a checklist which includes all structural BMPs and a check of the self-inspection conducted by the site operator. All inspections records are maintained in PD& C files.

Best Management Practice 4: Enforcement Polices for the Site Run-Off Control Program

The purpose of this BMP is to ensure land disturbance programs are implemented to control runoff from land disturbances greater than one acre. Missouri State University has written contractual procedures to ensure compliance with the construction site runoff control regulations. Actions that can be taken include:

1. Stop Work Orders.
2. Written Warnings.
3. Verbal education/education materials given to the construction site manager.

Measurable Goals for BMP 4: Enforcement actions will be timely to ensure effectiveness. The procedures and actions will be written and available for all staff for consistency and training purposes.

Tracking and Adaptive Management for BMP 4: All enforcement actions will be documented with the date, violation and enforcement action applied and maintained in the University database for review.

Best Management Practice 5: Inspections by the Construction Site Operator

The General Contractor (GC) is responsible for installing the erosion control measures per the approved plans, keeping them current during all phases of construction, and maintaining them during the life of the project. Failure to maintain erosion control measures will result in enforcement actions that may include Stop Work orders, provision of educational materials, written warnings, bonding or escrow requirements, or denials for previous (or current) non-compliance at other sites.

To ensure construction site stormwater controls are managed properly, the GC conducts plan reviews and periodic site inspections on all sites requiring SWPPPs. Inspections will be conducted at least every 14 days, and within 72 hours of any storm event (or 48 hours within any storm event equal to or greater than a 2-year, 24-hour storm has ceased). Inspection records are provided to the University, and include, at minimum:

- Inspection date/time;
- Inspector name;
- Inspection findings; and,
- Any follow up actions and date (including corrective and enforcement actions).

Measurable Goals for BMP 5: Construction site operator will complete an inspection at a minimum of every 14 days, within 72 hours of any storm event, and within 48 hours after a storm event greater than a 2-year, 24-hour storm has ceased.

Tracking and Adaptive Management for BMP 5: A checklist will be used by the construction site operator and submitted to or verified by PD&C.

Best Management Practice 6: Inventory of Active and Public Land Disturbance Sites.

The PD&C Department maintains an inventory of active campus construction projects and keeps records of completed projects in accordance with State of Missouri records retention requirements. These records will include any information received from the public regarding land disturbance sites. At MSU, Environmental Management maintains the Environmental website, which includes a phone number that the public can use to report issues and/or voice concerns. The Inventory will include:

1. Relevant contact information for each project;
2. Size of the project/area of disturbance; and,
3. If the site is a priority site/how high of a priority.

This website is located here: https://www.missouristate.edu/Environmental/springfield- campus.html.

Measurable Goals for BMP 6: Maintain an inventory of all active construction sites/land disturbance projects greater than 1 acre.

Tracking and Adaptive Management for BMP 6: Retain all inventory documents and utilize them to update the Stormwater Management Program during the annual review.

Best Management Practice 7: Review of Stormwater Management Program

The purpose of this BMP is to evaluate the effectiveness of the Stormwater Management Program to ensure compliance with the requirements of the permit. The active site inventory will be updated as new projects and reviewed and completed.

Measurable Goals for BMP 7: Complete an annual review of the Stormwater Management Program including actions such as:

- Evaluating the most common violations, how they are handled, and how many are escalated.
- Evaluating if the education and training programs can assist in reducing violations.
- Determining if the site plans match the sites when violations arise or if additional items need to be evaluated at plan review.
- Assessing if public complaints are being addressed in a timely manner.
- Evaluating if the inspections are thorough and consistent across different sites.

Tracking and Adaptive Management for BMP 7: Maintain all records, ordinances, procedures, inspections, enforcement actions, public complaints, and analytical data to utilize during annual reviews.

Best Management Practice 8: Procedures for Receiving Information Submitted by the Public About Land Disturbance sites

The purpose of this BMP is to allow the public a method for submitting comments and/or complaints regarding land disturbance issues. The intended outcome is to provide a timely response to these comments and complaints and act as necessary. Procedures will be included on the University website that allow the University to receive and consider information submitted by the public about land disturbance sites. This will include an email address and phone number that the public can use to report issues and/or voice concerns.

Measurable Goals for BMP 8: Record the number of complaints, findings and actions taken.

Tracking and Adaptive Management for BMP 8: Document all complaints and use them to re-evaluate the effectiveness of the Stormwater Management Program.

Best Management Practice 9: Construction Site Run-Off Control Training

The purpose of this BMP is to ensure all inspectors and plan reviewers have adequate construction site run-off control training. PD&C project managers attend regular professional development training/conferences/seminars on various topics including land disturbance and site runoff control topics.

Measurable Goals for BMP 9: Promote professional development training on land disturbance and site runoff control-related topics for PD&C project managers and maintain records of training. Provide training for inspectors and plan reviewers at least once during the five-year permit period.

Tracking and Adaptive Management for BMP 8: The training will be tracked on the University's website and annually reviewed to ensure the inspections are thorough and consistent across the construction sites. Any additional BMPs will be included in the training as deemed necessary.

Minimum Control Measure 5: Post-Construction Stormwater Management in New Development and Redevelopment Overview

This section details BMPs and procedures to implement a program to address the quality of long-term stormwater runoff from new development and redevelopment projects that disturb equal to or greater than one acre (or disturb less than one acre when part of a larger common plan of development or sale that will disturb one acre or more over the life of the project) in accordance with permit requirements. Any changes that are deemed necessary to maintain compliance with the permit will be completed within the first 2 years of permit issuance and updated as new projects are permitted and/or completed. The inventory of water quality facilities will be updated as new facilities are added and projects are completed.

Permit Requirements:
The MS4 Operator shall continue or develop, implement, and enforce a program to address the quality of long-term stormwater runoff from new development and redevelopment projects that disturb equal to and greater than one acre, including projects less than once acre that are part of a larger common plan of development or sale that would disturb once acres or more and that discharge into the regulated MW4. The MS4's program shall ensure that controls are in place that have been designed and implemented to prevent or minimize water quality impacts.

- *Operator shall maintain and utilize an ordinance(s) or other regulatory mechanism(s) to address post-construction runoff from new development and redevelopment project to the extent allowable under state or local law for sites equal to or greater than one acres including projects less than one acre that are part of a larger common plan of development or sale.*

- *A strategy shall be developed to minimize water quality impacts which shall include a combination of structural and/or non-structural controls (BMPs) appropriate for the permittee's community.*

- *The MS4 Operator shall conduct a pre-construction plan review to assess the characteristics of the site at the beginning of the construction site design phase to ensure adequate planning for stormwater program compliance A checklist will be used to review the plan.*

- *Ordinances or similar enforcement mechanisms shall be in place to ensure effective long-term operation and maintenance (O&M) of the selected BMPS, including, as appropriate, agreements between the MS4 Operator and other parties.*

- *The MS4 Operator shall inspect, or require inspection of, each water quality structural and non-structural water post construction BMP according to the schedules required by the permit as listed in section 4.5.E.*

- *A plan must be maintained by the MS4 Operator which is designed to ensure compliance with the MS4's post-construction water quality regulatory mechanism. This plan shall include escalating enforcement mechanisms the MS4 Operator will use to ensure compliance. The MS4 Operator must have the authority to initiate a range of enforcement actions to address the variability and severity of noncompliance. A minimum of list of enforcement responses are available in section 4.5.E of the permit*

- *Enforcement actions shall begin within thirty (30) days of discovering the violation in order to be*

timely to ensure the effectiveness of the actions.

- *The MS4 Operator shall maintain an inventory tracking the water quality post-construction BMPs.*
- *The MS4 Operator shall track the post-construction BMP inspections.*
- *An ordinance or regulatory mechanism must be developed within the first five (5) years of the permit issuance. The inventories of public and private post-construction water quality BMPs must be completed within two (2) years of permit issuance and then updated as new projects are permitted and projects are completed.*
- *The MS4 Operator shall provide appropriate training for MS4 inspectors at minimum once every permit cycle. The MS4 shall provide overall training to explain the function of both structural and non-structural post construction water quality BMPs.*
- *The Post-Construction Site Stormwater Management in New Development and Redevelopment Program shall be reviewed at least annually using adaptive management to evaluate the effectiveness of the overall program and determine if changes are needed*

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

Best Management Practice 1: Ordinances for Post Construction Runoff

The goal of this BMP is to have ordinances in place to that address post construction runoff from new development and redevelopment to protect sensitive areas, minimize pollution, use best management practices that eliminate stormwater pollution, and attempt to maintain conditions prior to development.

Monitoring of post-construction management measures (vegetation, drains, conduits, swales, etc.) are completed by campus project managers (PD&C) as well as grounds personnel. Any issues are reported to the general contractor for remediation/repair during the project warranty period. After that, all maintenance is managed though the Grounds department. Additionally, ordinances will be in place to ensure adequate long-term operation and maintenance (O&M) of the BMPs.

Measurable Goals for BMP 1: Utilize post-construction inspections to adopt an ordinance or regulatory mechanism that addresses post construction run-off to prevent or minimize the impact on water quality as well as long-term operation and management of the BMPs.

Tracking and Adaptive Management for BMP 1 Maintain copies of O&M manuals and ordinances on the University's Environmental page. Utilize records obtained from construction activities and post construction reviews to assess the effectiveness of O&M manuals and ordinances in place. University design contracts require the incorporation of post-construction stormwater management features into construction design plans before they can be approved.

Best Management Practice 2: Structural and Non-Structural BMPs

The University has several structural and non-structural BMPs in place to minimize impacts to water quality. Structural BMPs include: two retention ponds located on University grounds, a series of vaults underlying John Q. Hammons Parkway between Bear Boulevard and Harrison Street to serve as

underground stormwater detention, and small underground detention vaults located throughout the campus. Nonstructural BMPs include things such as tree preservation ordinances, programs which incentivize the use of green infrastructure, low disturbance of soils and vegetation, erosion/sediment run-off minimization requirements built into construction plans, ordinances/University policies that prohibit stormwater contamination, regular inspections, and active stormwater management. The University will continue to implement existing O&M procedures with the purpose of ensuring adequate long-term operation and maintenance of post-construction storm features. A pre-construction plan review will be conducted to assess site characteristics during the construction site design phase to ensure adequate BMPs are included to fulfill stormwater program compliance requirements. MSU shall maintain an inventory tracking water quality post-construction BMPs.

Measurable Goals for BMP 2: MSU will maintain an inventory of all post-construction BMPs. This inventory will include the contact information for the responsible person(s) or entity, type of post-construction BMP, applicable operations and maintenance documents, approval date, and any maintenance such as sediment clean-out or replanting. Training shall be provided once every five years or as part of onboarding training to all applicable staff that explains the function and relevance of both structural and non-structural post-construction water quality BMPs. MSU will use a checklist which evaluates the non-structural BMPs first to help mitigate stormwater run-off from the site. Only after non-structural BMPs have been established, will the options for structural BMPs be considered to help mitigate stormwater related impacts.

Continue to manage post-construction stormwater features through a combination of contractor warranty and Grounds department maintenance for long-term operation

Tracking and Adaptive Management for BMP 2: Maintain the inventory of all post-construction BMPs as well as the plan review checklists. Continue to manage post-construction stormwater features through a combination of contractor warranties and Grounds Department maintenance for long-term operation. Plan review checklists can be found on the University Environmental webpage.

Best Management Practice 3: Inspection and Maintenance Program

The University will continue to implement existing operation and maintenance procedures with the purpose of ensuring adequate long-term operation and maintenance of post-construction storm features. Inspections will be conducted to verify all the water quality facilities are built as they were designed and any non-structural BMPs are being observed.

Measurable Goals for BMP 3: University staff will complete the following inspections of structural and non-structural BMPs:

- Minimum of one inspection during construction.
- One inspection post-construction prior to the site being finalized.
- One inspection within the first three years post installation.
- Annual inspection of the post construction BMPs by the University.
- Inspections of at least 60% of all post-construction BMPs that affect water quality within the permit cycle. This includes installations with ongoing or open enforcement issues.

Tracking and Adaptive Management for BMP 3: The post construction BMP inspections will track: Inspection dates/times, Inspector name(s), Inspection findings, and follow up actions including enforcement actions. MSU will provide appropriate training to all MS4 inspectors at least once

every permit cycle.

During the annual review, the Post-Construction Site Stormwater Management in New Development and Redevelopment Program will be evaluated for overall effectiveness and to determine if changes are needed. Topics evaluated include, but are not limited to, the number and types of developments that will be noted as well as the number of watersheds being treated and how many BMPs were installed/inspected. All inspection checklists and email correspondence copies will be retained and available to the department upon request.

Best Management Practice 5: Post Construction Water Quality Plan and Enforcement Actions

The purpose of this BMP is to create a plan that clearly defines enforcement actions to be used to enforce water quality standards. The University will develop and maintain a plan designed to ensure compliance with MS4's post-construction water quality regulatory mechanism through ordinances and enforcement mechanisms. The plan shall include escalating enforcement mechanisms MSU will utilize to ensure compliance. All enforcement actions will take place within 30 days of discovering a violation and will consider a minimum the following:

- Degree and duration of the violation;
- Effect the violation has on receiving water;
- Compliance History of the post-construction BMPs owner or operator; and,
- Cooperation of the owner or operator with compliance efforts.

The following sanctions shall be enforced upon the discovery of a violation:

- Education regarding the BMP along with a verbal warning and,
- A written warning or notice of violation.

Measurable Goals for BMP 5: MSU will develop an ordinance/regulatory mechanism within the first five years of permit coverage. MSU will maintain a record of violations related to BMPs and any enforcement actions taken to resolve a violation.

Tracking and Adaptive Management for BMP 5: During the annual review of the Post-Construction Site Stormwater Management in New Development Program, the types of violations found, and their frequency will be reviewed to adapt current enforcement mechanisms as necessary. This information will also be used to show how education could be used to further improve the effectiveness of the program. Long term O&M shall also be addressed during this annual review and O&M manuals will be retained by the parties responsible for the post-construction BMP, including MSU.

Minimum Control Measure 6: Pollution Prevention and Good Housekeeping for Municipal Operations Overview

This section details BMPs and procedures for the campus operation and maintenance program to reduce pollutants in stormwater runoff associated with general campus operation in accordance with permit requirements.

Permit Requirements:
The permittee shall develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations.

- *An employee training program for MS4 municipal operations staff shall be maintained and utilized.*

- *The training shall be used to prevent and reduce stormwater pollution.*

- *The MS4 Operator shall:*
    1. *Maintain material to use in the training program*
    2. *Maintain written procedures for the training program*
    3. *Maintain a written schedule to offer topic specific training when it is appropriate.*

    - *The MS4 Operator shall maintain a list of all municipal operations/facilities that are impacted by this operation and maintenance program.*

    - *THE MS4 Operator shall maintain a list of industrial facilities the MS4 Operator owns or operates which are subject to NPDES permits for discharges of stormwater associated with industrial activity.*

    - *Controls for reducing or eliminating the discharge of floatables and pollutants from municipal facilities shall be developed and/or maintained by the MS4 Operator.*

    - *Procedures for proper disposal of waste removed from the MS4 structures and areas of jurisdiction shall be developed.*

    - *The MS4 Operator shall maintain an utilize the following procedures, at minimum, for the washing of all municipal vehicles and equipment (if applicable:*
        1. *Use of any soap or detergent shall only be where there is connection to sanitary sewer or equivalent treatment and*
        2. *Any wash or rinse water that contains pollutants such as salt, oils, grease, sediment, grass clippings, lawn chemicals,*

        or pesticides shall not be discharged to waters of the state or the MS4 system without appropriate treatment.
        3. *Any washing or rinsing activities shall be conducted in an appropriate area so the water is treated. This area(s) shall be marked on the map of the facility.*

    - *A written explanation of the controls, procedures, inspections schedules, and explanation of tracking of these controls shall be maintained by the MS4 Operator.*

    - *If applicable, the MS4 Operator shall maintain procedures to determine if there are impacts to water quality for new flood management projects. Any flood management projects shall require the protection of water quality in the standards that are used to plan, design, build and maintain stormwater infrastructure. Flood management projects are projects developed*

or designed to reduce flooding.

- *A Stormwater Management Program shall be developed by the MS4 which describes the pollution prevention/good housekeeping plan and scheduled implementation.*

- *The Municipal Operations Program shall be reviewed annually using adaptive management. Implementation procedures shall be updated as necessary within the permit requirement. Any additional BMPs shall be acknowledged in the SWMP.*

MCM 6: Pollution Prevention and Good Housekeeping for Municipal Operations

Best Management Practice 1: Employee Training Program

The purpose of this BMP is to establish a training program for all operations and maintenance staff. This program is designed to prevent and reduce pollutant runoff from municipal operations that occur on campus property thus preventing and reducing stormwater pollution. The training will cover all applicable topics as listed in the permit. At a minimum, this includes the following topics/activities (as applicable to MSU):

- Vehicle equipment and washing;
- Fluid disposal and spills;
- Fleet, equipment, and building maintenance;
- Park and open space maintenance procedures (including fertilizer, herbicide, and pesticide application);
- New construction, road maintenance, and land disturbances;
- Stormwater system maintenance;
- MSU operated salt and de-icing operations;
- Fueling;
- Solid waste disposal;
- Street sweeper operations; and,
- Illicit discharges.

MSU 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 staff and includes a specific page for stormwater information at https://www.missouristate.edu/Environmental/springfield-campus.htm.

The University has developed an internal stormwater awareness/pollution prevention training program for university staff. This training includes awareness and best practices for protection of storm water and storm water infrastructure. Training will be provided for employees involved in campus maintenance as well as those involved specifically in stormwater system maintenance. The purpose of employee training is to educate employees about stormwater pollution and the MS4 permit and train them to use BMPs related to their facilities and activities. An example of the stormwater training program is available in **Appendix E**. They are also educated about illicit discharges, including what to look for and how to report it (MCM 1, BMP 1). Employees involved in project management for construction projects that involve land disturbance permits are provided training opportunities under BMP 1 of MCM 4.

Written procedures will be maintained for the training program and will include a description of how the training will coordinate with all other MCMs. A written schedule which offers topic specific training will

be maintained when appropriate. Training materials for employees who work at facilities addressed in the SWMP are primarily developed by the Environmental Management & Facilities Management in conjunction to tailor material to campus-specific activities, materials, and BMPs.

Measurable Goals for BMP 1: Provide employee training annually to all staff who work with material handling in all maintenance areas, storage yards, material storage facilities, municipal parking lots, and other locations expected to contribute floatables and/or pollutants. The other areas expected to contribute floatables and/or pollutants vary based on campus and environmental conditions.

Tracking and Adaptive Management for BMP 1: Track all training and evaluate annually if the training frequency and training materials need to be modified to address issues observed during inspections.

Best Management Practice 2: Municipal Operations/Facilities and Industrial Facilities

The University has two swimming pools that are connected to the sanitary sewer system so would not be overseen by the operations and maintenance program. The University also operates a maintenance building located at 945 E Grand Street. Departments housed within the building include Facilities Maintenance, Receiving, Grounds, Custodial, and Environmental Management. A parking lot on the west side of the building is used to park vehicles and some motorized equipment. There are no industrial facilities operating in the area of this MS4 that are subject to the requirements of a NPDES permit.

Measurable Goals for BMP 2: Maintain a list of all operations facilities within the MS4 service area.

Tracking and Adaptive Management for BMP 2: Utilize the list of operations facilities within the MS4 service area to review and update the Stormwater Management Program as part of the annual review.

Best Management Practice 3: Controls for Reducing Floatables and Pollutants from Municipal Facilities

The University has a dedicated team of personnel including the Facilities and Grounds teams who manage and maintain controls for the reduction and/or elimination of floatables and pollutants that may discharge into the stormwater system.

Both onsite swimming pools are connected to the sanitary sewer system. Hammons fountain is in the process of being connected to the sanitary sewer system but is currently managed by the Facilities crew. All organic matter disposal such as leaves are managed by the Grounds team and sent offsite for recycling through Hansen's. Salt is stored off site and only mobilized to campus in needed quantities using a truck and spread by hand. Streets are not salted.

Two 500-gallon aboveground storage tanks (ASTs) operated by the grounds department are present in the parking lot west of the maintenance building. These ASTs store gasoline and diesel fuel for Grounds vehicles and equipment and are equipped with secondary containment. A flammable storage cabinet adjacent to the ASTs stores smaller (5-gals or less) fuel containers. Sufficient spill prevention, control, and/or management is also available to prevent potential spills from entering the waters of the state.

The Grounds Department stores pesticide/herbicide materials in a secure storage facility located in the enclosed Kemper Hall storage yard. This facility is always locked when not in use. The Grounds Department maintains these materials actively to keep them in appropriate containment and not exposed to precipitation. The storage facility is also located on an elevated concrete pad to prevent potential contamination of stormwater.

The Grounds Department performs deicing of campus sidewalks and parking lots in winter weather. Deicing materials are stored in a remote indoor warehouse facility and are not exposed to precipitation during storage. Deicing practices include application rates and procedures for determining application timing to provide safe driving conditions while also reducing the discharge of deicing materials into the MS4.

Maintenance for most of the roadways bordering and crossing campus is the responsibility of the City of Springfield's Department of Public Works. Public Works sweeps all curbed streets in the city on a rotating schedule, with inspection and cleaning of all curbed streets approximately 3 times per year, with the purpose of reducing the discharge of pollutants and keeping city streets clean and safe. Public Works manages storage and disposal of street sweepings per their internal SWPPP.

If circumstances indicate that street sweeping would be the most effective way to address an existing issue on a street within campus boundaries, University personnel can request targeted street sweeping by the city. Any requests for street sweeping must notify MSU environmental management, and records of requests will be maintained by MSU environmental management.

No vehicle washing is conducted on campus: University vehicles are washed off-site at commercial car washing facilities. Fleet vehicle maintenance is also performed off-campus at commercial auto repair facilities. Ground equipment is serviced in an indoor shop, and all spent fluids are managed properly for recycling or disposal.

> Measurable Goals for BMP 3: Maintain a list of all potential pollutants sources at each facility including materials used and stored on site along with a map of structural controls/BMPs used to reduce or prevent pollutants from entering waters of the state. Complete annual inspections of all facilities for stormwater issues. Evaluate structural BMPS and their effectiveness.
>
> Tracking and Adaptive Management for BMP 3: All records of inspections and lists of potential pollutants will be retained in the University database. All structural BMPs will be described on the Stormwater Map.

Best Management Practice 4: Proper Disposal of Waste

Per US EPA regulation under 40 CFR, the University is a small quantity generator. The Environmental Management department is tasked with providing chemical waste disposal services to the campus in compliance with state/federal requirements. All hazardous/chemical waste is stored indoors until transported off-site for disposal by contracted waste disposal vendors. Custodial staff provide domestic waste collection services ensuring proper removal from campus. Solid waste is collected in multiple dumpsters across campus and collected three times a week by the contracted solid waste vendor.

> Measurable Goals for BMP 4: Disposal of solid waste three times every week. Regular monitoring of grounds for buildup of trash, litter, leaves, accumulated sediment and other waste materials.
>
> Tracking and Adaptive Management for BMP 4: The pickup schedule for all solid waste is made available for staff and the frequency of disposal will be evaluated as needed during monitoring of the grounds.

Best Management Practice 5: Evaluation of Stormwater Management Program

The purpose of this BMP is to ensure the current required procedures of the SWMP are continuously in

compliance with the requirements of the permit. The University will conduct inspections and maintenance of structural controls with the purpose of reducing floatables and other pollutants in discharges from the MS4. Inspection and maintenance activities are a joint effort by the Departments of Environmental Management and Facilities Management. Inspection of visually accessible stormwater infrastructures and other potential areas of stormwater impact (i.e. fuel ASTs, emergency generators) are conducted at least bi-weekly by Environmental Management personnel to identify any potential IDDE. The identification of any IDDE will be reported and managed in accordance with the procedures outlined under MCM 3.

A written explanation of all controls, procedures, inspection schedules and explanation of any tracking of controls will be maintained within the Operations and Maintenance Manual. All inspection reports and/or checklists will be retained.

Measurable Goals for BMP 5: Any necessary changes to the SWMP will be implemented within one year of the permit issuance. The Municipal Operations Program will **be** reviewed and updated as necessary on an annual basis. An**y** additional BMPs will be added to the Stormwater Management Program Report**,** which is due on or before February 28th and will cover the previous year from January 1st to December 31st and submitted on the approved form with the minimum requirements as listed in the permit. Copies of all documents will be present at each applicable site or available electronically. An annual evaluation of the results, controls, and inspection procedures will be conducted to ensure compliance with the requirements of the permit and determine if changes are needed.

MSU will maintain procedures to determine if there are impacts to water quality for new flood management projects, when applicable. These projects will require the protection of water quality in the standards that are used to plan, design, build, and maintain stormwater infrastructure.

Tracking and Adaptive Management for BMP 4: All records required by the permit will be maintained electronically and all records of all activities, a copy of the NPDES permit, copy of all ordinances, policies and formal procedures for all 6 MCMs and all data used to complete the application for the permit will be maintained for a minimum of at least 3 years from the date of the report application.

Appendix A

Missouri State University
Operating Permit MOR04C092

Appendix B

Figures and Maps

Appendix C

Inspection Forms and Checklists

Appendix D

Completed Inspection Forms (Can be Retained Digitally)

Appendix E

Analytical Data (As Needed)

Appendix F

Training and Training Documentation

Appendix G

Record of Enforcement Actions (Can be Retained Digitally)

Appendix H

Record of SWMP Reviews

Appendix I

Annual Review Guidelines and Topics to Consider