NPDES PHASE II MS4 GENERAL PERMIT

WATER QUALITY CHARACTERIZATION REPORT

STORMWATER QUALITY MANAGEMENT PLAN

JANUARY 2023

Prepared for:

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Permit #: INR040057

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WQCR and SWQMP Certification in accordance with 327 IAC 15-4-3(i) and MS4GP 3.3 and 4.9

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

Qualified Professional Signature Date

Qualified Professional Printed Name Date

MS4 Operator or Designee Signature (in accordance with 327 IAC 15-4-3(g)) Date

MS4 Operator or Designee Printed Name Date

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CHAPTER 1: INTRODUCTION

As part of the 1987 amendments to the federal Clean Water Act (CWA), the United States Congress added Chapter 402(p) to the CWA to address the water quality impacts of stormwater discharges from industrial facilities and large to medium municipal separate storm sewers systems (MS4s). Large to medium MS4s were defined as communities serving populations of 100,000 or more and are regulated by the Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System's (NPDES) Storm Water Phase I Program.

In addition to these amendments, Congress directed the EPA to issue further regulations to identify and regulate additional stormwater discharges that were considered to be contributing to national water quality impairments. In 1999, the EPA issued regulations that expanded the existing NPDES Storm Water Program to include discharges from small MS4s in "urbanized areas" serving populations of less than 100,000 and stormwater discharges from construction activities that disturb more than one acre of land. These regulations are referred to as the NPDES Phase II Storm Water Program.

Figure 1: City of Evansville Location

The City of Evansville **(Figure 1)**, located in Vanderburgh County, has met these criteria and consequently has been designated as an MS4 entity.

In the State of Indiana, the Indiana Department of Environmental Management (IDEM) is responsible for the development and oversight of the NPDES Phase II Program. IDEM initiated adoption of the Phase II Rules that were ultimately codified as 327 IAC 15-13 (Rule 13) and became effective on August 6, 2003.

In December 2021, IDEM formally replaced Rule 13 with a new MS4 General Permit (MS4GP). Since the permits have not been updated since 2003, several new or revised provisions have been incorporated that would impact how regulated Indiana MS4 entities such as counties, cities, and towns incorporate these new changes into their existing programs. The MS4GP provides permit coverage for Phase II entities, and the requirements and conditions of the MS4GP apply to all Phase II MS4s upon submittal of a Notice of Intent (NOI).

Under Rule 13, IDEM issued approximately 185 Phase II MS4 permits in Indiana. On April 13, 2022, IDEM notified another 45 entities that they would be subject to the MS4GP regulations starting on April 13, 2023.

This report has been prepared to meet the requirements of the MS4GP for the development of a Water Quality Characterization Report (WQCR) and a Stormwater Quality Management Plan (SWQMP) for previously regulated and newly designated MS4s. It is also intended to replace older versions of the obsolete, Rule 13 required WQCR and SWQMP, also known as Parts A, B, and C.

1.1 CITY OF EVANSVILLE MS4 EXISTING CONDITIONS

The City of Evansville covers approximately 16,528 acres. The MS4 jurisdictional boundary mirrors the city boundaries (as of 2022) as identified on **Figure 2**. The City of Evansville contains incorporated areas in Center Township, Pigeon Township, Knight Township and Perry Township. The City of Evansville MS4 Boundaries are also displayed in **Exhibit 1.**

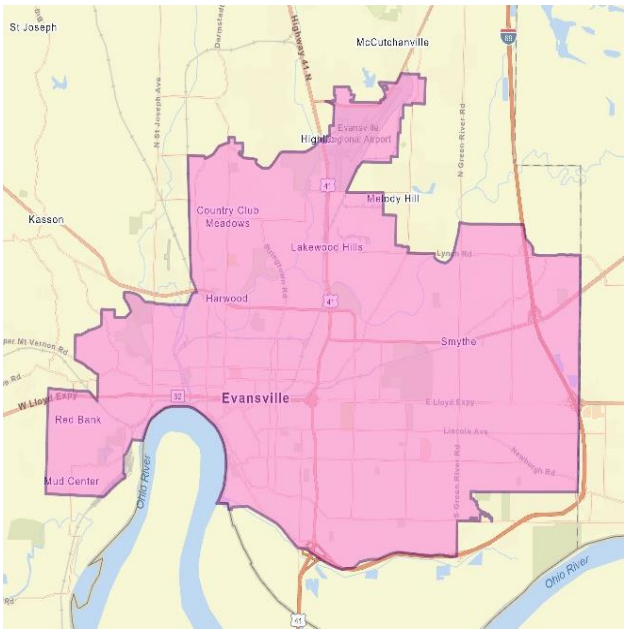

Figure 2: MS4 Boundary, City of Evansville

The primary responsibilities for implementing the city's Storm Water Quality Management Plan and requirements included in the MS4GP are held by the City of Evansville Engineering Department. The program has been developed and managed by Karan Barnhill, Storm Water Coordinator. The Stormwater Operator is Mayor Lloyd Winnecke.

Evansville is the third largest municipality within Indiana and accounts for approximately 65% of the county's population. According to StatsIndiana, the population of Evansville in 2020 was 117,298, a decrease of 0.1% since 2010.

1.2 MS4 CONVEYANCE SYSTEM

The MS4GP authorizes stormwater discharges from designated MS4 entities throughout the State of Indiana. The permit applies to all areas under the ownership, control, or jurisdiction of a designated MS4 entity. "MS4" refers to the permit holder, such as the city, as well as the separate storm sewer system that the city owns and operates or maintains.

MS4s are defined by the State of Indiana as a conveyance or system of conveyances owned by a state, city, county, town, district, or other public entity having jurisdiction over stormwater, including special districts under state law such as a sewer district, that discharges to waters of the United States and is designed or used for collecting or conveying stormwater. Regulated conveyance systems include roads with public drains, municipal streets, catch basins, curbs, gutters, storm drains, piping, channels, ditches, tunnels, and conduits. It does not include combined sewer overflows (CSOs) or publicly owned treatment works.

The authorized MS4 entity or city is responsible for the MS4 conveyances that it owns, operates, or maintains within the MS4 boundaries. The city has mapped all known City of Evansville stormwater conveyances including 12" pipes or larger, paved ditches, outfalls, grassy swales, stormwater quality structural and non-structural stormwater management measures that are owned by the City of Evansville, as well as private structural stormwater management measures. The city is creating an inspection program that will inspect these measures annually and assure that maintenance is done when required.

CHAPTER 2: WATER QUALITY CHARACTERIZATION REPORT

REQUIREMENT MS4GP 3.1(a):
The water quality characterization report (WCQR) shall use the most current data available but may also consider additional data that describes the chemical, biological, and/or physical condition of the receiving waters of the MS4 jurisdictional area.

2.1 LAND USE/LAND COVER

REQUIREMENT MS4GP 3.1(c):
The WCQR must include: (1) An assessment of land use.

Land use and land cover can be an important tool in developing a basic overall assessment of the watershed, MS4 area, and the anticipated water quality within the receiving waters. Derived from the 2019 National Land Cover Dataset (NLCD), **Table 1** indicates the land cover (in acreage) within the jurisdictional area. Additionally, the land cover is graphically represented in **Exhibit 3**.

Table 1: City of Evansville Land Cover

Land Cover	Acres
Cultivated Crops	1,621.5
Developed, Low Intensity	7,941.9
Developed, Open Space	4,497.8
Developed, Medium Intensity	7,893.1
Developed, High Intensity	3,700.6
Barren Land (Rock/Sand/Clay)	19.4
Deciduous Forest	1,620.9
Evergreen Forest	40.7
Mixed Forest	1,089.0
Grassland/Herbaceous	31.1
Open Water	222.3
Emergent Herbaceous Wetlands	42.0
Woody Wetlands	839.1
Shrub/Scrub	67.1
Pasture/Hay	963.2
TOTAL	**30,589.7**

The effects of land use/land cover changes on surface runoff, stream flow, and groundwater recharge are fundamental considerations in stormwater management. Planned expansion of urban areas provides the opportunity to implement policies and best management practices (BMPs) that may significantly reduce or prevent impacts to the environment in terms of groundwater recharge, water pollution and stormwater drainage. Urbanization typically includes additional impervious surfaces and increased runoff which can result in downstream flooding, and detrimental impacts to local waterways. Since each land use/land cover may have a different impact on stormwater runoff, strategic land use planning can help minimize these impacts.

As the city plans for future growth and development, land use changes are anticipated within areas of the MS4. Within the long-term plan for the city, there are several large areas that will change the land use and land cover of the current MS4 area. With steady population growth over the past three years, the city has

annexed property north of the city and several areas on the south side, previously known as the Marina Pointe and LST Docking Area. In addition, a third area was also annexed and is described as bounded on the south by Lloyd Expressway, on the west by the city limits line, on the east by the Vanderburgh County Line and on the north by Lynch Road. All three areas account for an area that is 2,406.9 acres. In addition, several solar farms have been added in various areas of the city.

2.2 MS4 OWNED AND OPERATED STRUCTURAL STORMWATER MANAGEMENT MEASURES

REQUIREMENT MS4GP 3.1(c):
The WCQR must include: (2) An inventory of MS4 owned/operated structural stormwater management measures…including an identification number, geographic coordinate, and structure condition.

According to MS4 staff, there are approximately 21 publicly owned and/or operated structural BMPs within the jurisdictional area. These BMPs are inventoried within the city's asset management database. Structures and pipes are made, and maintenance is done by the Parks Department. BMPs are included below in **Table 2.** The City of Evansville has 1,917 area drains, 189 catch basins, 4,416 curb inlets, 31 end of pipe, 272 end sections, 11 headwalls, 2,273 manholes, 1 detention structure, and 959,064 feet of pipe. The information was provided by the City of Evansville and their GIS database identifies and classifies the asset as excellent, good, fair, and poor.

Table 2: City of Evansville MS4 Owned and/or Operated Structural BMPs

Structural BMP	Identification Number	Structural Condition	Geographic Coordinate
Vegetative Area	1001		Wesselman's Park Par 3
Vegetated Filter Strip	1002		Stockwell at Parkridge Dr.
Wet Detention Pond	1003		Indian Woods Lake
Dry Detention Pond	1004		Plaza Meadows Detention Basin
Wet Detention Pond	1005		Fulton Parkway Detention
Wetland	1006		Howell Wetlands
Wet Detention Pond	1007		Oak Hill Cemetary
Wetland	1008		Parkland Ave. Constructed Wetland
Vegetated Swale	1009		Sheridan Park
Sod Roof on Building	1010		Oaklyn Library
Wet Detention Pond	1011		Mesker Zoo Lakes
Vegetated Area	1013		Soccer Fields State Hospital

2.3 RECEIVING WATERS

REQUIREMENT MS4GP 3.1(c):
The WCQR must include: (3) Identification of all receiving waters that receive discharges from outfalls within the MS4, including wetlands and lakes. (4) Any 303d listed impaired waters or TMDLs for receiving waters need to be identified.

The city discharges stormwater into the receiving waters listed in **Table 3**. These waterbodies are also identified on **Exhibit 2**.

Table 3: City of Evansville Receiving Waters

Boesche Ditch	Locust Creek
Carpentier Creek	Nurenbern Ditch
Eagle Creek	Pigeon Creek
Firlick Creek	Raccoon Ditch
Little Pigeon Creek	Stockfleith Ditch
Lockwood Ditch	

2.3.1 Watersheds

According to the U.S. Geological Survey (USGS), watersheds are delineated using a nationwide system based on surface hydrologic features. According to the USGS, this system divides the country into 21 regions (two-digit), 222 subregions (four-digit), 370 basins (six-digit), 2,270 subbasins (eight-digit), approximately 20,000 watersheds (ten-digit), and 100,000 sub-watersheds (12-digit). A hierarchical hydrologic unit code (HUC) consisting of two additional digits for each level in the hydrologic unit system is used to identify any hydrologic area.

The MS4 area overlays portions of two eight-digit HUC watershed; the Highland-Pigeon Creek Watershed (HUC 05140202), and the Lower Ohio-Little Pigeon Creek Watershed (05140201). The 12-digit HUCs (based on April 2022 MS4 boundaries) along with the acreages in the MS4 are listed in **Table 4**.

Table 4: City of Evansville Watersheds

12-digit HUC	Watershed Name	Watershed Acres Located in MS4 Boundary
051402020204	Barnes Ditch-Pigeon Creek	243.9
051402020601	Bayou Creek	380.3
051402020302	Bluegrass Creek	293.0
051402020401	Eagle Creek-Ohio River	9,231.1
051402020304	Headwaters Locust Creek	0.7
051402011204	Kolb Ditch-Ohio River	1,432.2
051402020306	Licking Creek-Pigeon Creek	15,205.0
051402020303	Little Pigeon Creek	3,357.5
051402020305	Locust Creek	446.0

2.3.2 Integrated Waters Report

Section 303(d) of the CWA requires states to identify waters that do not or are not expected to meet applicable water quality standards with technology-based standards alone. States must also prioritize these waters based on the designated uses of the water and the severity of the pollution. Once this listing and ranking of waters is completed, states are required to develop Total Maximum Daily Loads (TMDLs) for these waters in order to achieve compliance with water quality standards.

Section 305(b) of the CWA requires the state to assess and report on how well the waters of Indiana support the beneficial uses designated in the Water Quality Standards (WQS). Indiana's Integrated Water Monitoring and Assessment Report (IR) is developed every two years to fulfill this requirement and describes the condition of Indiana's lakes and streams, the Lake Michigan shoreline, and ground water. All IDEM water quality data is evaluated and interpreted for each hydrologic unit area (HUA); typically, a 12-digit HUC. Each HUA is given a water quality rating relative to its streams' status in meeting WQS. WQS are set at levels necessary for protecting a waterway's designated use(s), such as

swimmable, fishable, or drinkable. **Table 5** identifies known impairments for HUAs within the MS4 area.

Table 5: City of Evansville 303(d) Impaired Waters

Segment ID	Waterbody Name	Impairment
INE0241_02	Carpentier Creek	*E. coli*, Recreational Use
INE0233_03, INE0233_T1008	Little Pigeon Creek	*E. coli*, Recreational Use
INE0235_03	Locust Creek	*E. coli*, Recreational Use
IN20236_08, INE0236_04, INE0236_07, INE0236_09, INE0236_06, INE0236_05	Pigeon Creek	*E. coli,* Recreational Use, Nutrients, PCBs in Fish Tissue, Aquatic Life, Fish Consumption, Dissolved Oxygen
INH8_01, INH8_2, INH8_03, INH8_04, INH8_05	Ohio River	Mercury, Warm Water Aquatic Life

2.3.3 Total Maximum Daily Loads

The prioritized 303(d) list of impaired waters is then used to develop a list of waters for which TMDLs must be developed. These TMDL reports identify the causes of the impairments, the amount of pollutant reduction needed, and potential actions to be taken to improve water quality within the watershed. **Table 6** identifies TMDLs relevant to the City of Evansville MS4 jurisdictional boundaries and the pollutant for which it was developed. Additional information regarding established TMDLs for Evansville exists in Section 2.5.2.

Table 6: City of Evansville TMDLs

Waterbody Name	TMDL Pollutant	Link to Report
Highland-Pigeon Creek Watershed	*E. coli*	https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/highland-pigeon-creek/

2.3.4 Wetlands

The 2020 National Wetlands Inventory (NWI) identifies potential wetland areas by utilizing infrared photography which has not been field verified. Information provided through the NWI should be utilized only as a reference, not as a definitive answer of whether wetlands are present on a particular site. According to the 2020 NWI, there are approximately 1,050.2 acres of potential wetlands within the MS4 area.

The MS4GP requires MS4s to establish a construction program that contains, at a minimum, the requirements of the Indiana Construction Stormwater General Permit (CSGP). The CSGP requires all project site owners to develop construction plans that include an existing project site layout describing the location and name of all wetlands, lakes, and water courses on or adjacent to the project site (CSGP 4.1(a)(3)(J)).

2.4 SENSITIVE AREAS

REQUIREMENT MS4GP 3.1(c):
The WQCR must include: (5) Identification of known sensitive areas including, but not limited to public swimming areas, drinking water intakes, habitats associated with threatened or endangered species, and outstanding state and national resource waters.

These areas are designated as sensitive due to their importance to the surrounding environment or economic conditions. Special considerations or restrictions may be imposed to provide an added layer of protection for those areas or land uses designated as sensitive by the MS4 or IDEM.

2.4.1 Public Swimming Areas

The primary recreational waters located within the MS4 area provide opportunities for boating and canoeing and will be considered as sensitive areas, as well as their corresponding 12-digit HUCs. Public boating and canoeing areas include:

- **Mesker Park Zoo:** A 45-acre facility located on Evansville's Northwest side. This facility includes boat facilities.
- **Inland Marina:** Boat launch along the Ohio River in South central area of Evansville, this area has access to the Ohio River.
- **Greenway Trailhead Canoe Park:** Trail system along Pigeon Creek and the Ohio River that spans 6.75 miles.
- **Dress Plaza, Bicentennial Monument:** Boat Ramp along the Ohio River & Inland Marina
- **Jet skiing & water-skiing opportunities on Ohio River**

2.4.2 Drinking Water Intakes

According to the Indiana Administrative Code, a public water supply system is a public water supply for the provision to the public of piped water for human consumption, if such a system has at least fifteen (15) service connections, or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days of the year.

IDEM's Drinking Water Branch carries out the requirements of the federal Safe Drinking Water Act (SDWA) which is designed to ensure that Public Water Supplies (PWS) deliver water to Hoosier homes and businesses that is adequate in quantity and is safe to drink. According to the Branch, there are 26 drinking water wells in Vanderburgh County, seven of which are active. Within the City of Evansville, there is one active community well, and one inactive non-community well. The City of Evansville drinking water intake live well is located in the Ohio River immediately downstream from Marina Point.

The Indiana Department of Natural Resources' (IDNR) Division of Water conducts resource assessments of groundwater aquifers and maintains the records of over 400,000 water wells drilled in Indiana. A 2019 GIS Layer provided by the Indiana Department of Natural Resources showed privately owned 419 wells within the Evansville MS4 area.

2.4.3 Habitat Associated with Threatened or Endangered Species

The IDNR's Division of Nature Preserves maintains the Natural Heritage Date for the State of Indiana. Natural Heritage Data includes general information on endangered, threatened, and rare

species for each Indiana County. As of February 2022, there are three birds, one crustacean, one mollusk, two insects, one amphibian, two reptiles, two mammals and 14 vascular plants listed as endangered, threatened, or rare within Vanderburgh County. Additionally, the IDNR identifies Wet-mesic Floodplain Forests, Wet Floodplain Forests, Southwestern Lowlands, Dry-mesic Upland Forests, Southern Bottomlands Mesic, Upland Forests, Southwestern Lowlands Mesic, as High-Quality Natural Communities on the listing noted above. Freshwater Mussel Concentration Area is listed as an additional significant feature within the county. However, Natural Heritage Data is only County specific, and therefore, these habitat types may not exist within the MS4 area

City officials are unaware of any waters within the MS4 area that currently contain threatened, endangered, or rare species or their habitats. If any species listed are identified in the future, the city will consider those locations to be sensitive areas and will update their stormwater program accordingly.

2.4.4 Limited Use and Outstanding State Resource Waters

The federal CWA requires all states to develop, review, revise, and adopt WQS, which consist of:

- **Designated Uses:** identification of how people, aquatic communities and wildlife use our waters (e.g., public water supply, protection and propagation of fish, shellfish, and wildlife, and recreation).
- **Water Quality Criteria:** numeric or narrative in form and protect the designated uses. Numeric criteria are allowable concentrations of specific pollutants in a water body while narrative criteria are statements of unacceptable conditions in and on the water.
- **Antidegradation Policies:** protection of existing uses and extra protection for high-quality or unique waters.

General antidegradation policies will allow the city to protect existing uses of waterbodies and aid in ensuring these waterbodies will continue to meet WQS. Waters that may be considered for designation as outstanding state resource waters (OSRW) include waterbodies that have unique or special ecological, recreational, or aesthetic significance. According to IDNR's Division of Outdoor Recreation's listing of Indiana Waters, there are no listed Outstanding Waters within Vanderburgh County.

2.4.5 Other Sensitive Areas

Erodible Soils: The Natural Resource Conservation Service (NRCS) uses the soil erodibility index (EI) to provide a numerical expression of the potential for a soil to erode considering the physical and chemical properties of the soil and the climactic conditions where it is located. As a result, the basis for identifying highly erodible land (HEL) is the EI of the soil map unit.

The EI of a soil is determined by dividing the potential erodibility for each soil by the soil loss tolerance (T) value established for the soil. The T value represents the maximum "tolerable" annual rate of soil erosion that could take place without causing a decline in long-term productivity. **Table 7** documents the HEL and Potentially HEL (PHEL) soils within Vanderburgh County and therefore potentially throughout the MS4 area, which is also shown in **Exhibit 4.**

Table 7: City of Evansville Erodible Soils

Map Unit Symbol	Soil Name	HEL Classification
AlB2	Alford	PHEL
AlC2, AlC3, AlD3	Alford	HEL
Br	Borrow Pits	PHEL
Gu	Gullied Land	HEL
HoB2, HoB3	Hosmer	PHEL
HoC2, HoC3, HoD3	Hosmer	HEL
IoB2	Iowa	PHEL
Ma, MKB2	Markland	PHEL
MkC2, MlC3	Markland	HEL
Mr	McGary	PHEL
MuB2	Muren	PHEL
PrB	Princeton	PHEL
ScB2	Sciotoville	PHEL
UnB2	Uniontown	PHEL
WeD2, WeD3, WeE2, WeF	Wellston	HEL
WhB2	Wheeling	PHEL
ZaC2, ZaC3, ZaD2, ZaD3	Zanesville	HEL

Recognizing the potential water quality impacts associated with soil erosion, the city will consider these soils to be sensitive areas and will prioritize new construction or redevelopment occurring on these sites during the plan review, inspection, and enforcement process. The current City of Evansville ordinance is being updated to include provisions to limit soil erosion into waterways and stormwater infrastructure.

2.5 REVIEW OF EXISTING WATER QUALITY DATA

REQUIREMENT MS4GP 3.1(c):
The WQCR must include: (6) A review and summary of existing and available monitoring data of the MS4 receiving waters, including, as applicable, data that can be correlated from stream reach characterization and evaluation reports (SRCER).

2.5.1 Stream Reach Characterization Report

The stream reach characterization and evaluation report (SRCER) characterize and evaluates the pollutant sources on receiving waters from a combined sewer system discharge. The SRCER can be utilized to identify ways to beneficially change the storm sewer system within the MS4 and to improve water quality around combined sewer system outfalls. Due to the age of the last SRCER submitted to IDEM by the City of Evansville, it may no longer be relevant to the Evansville MS4. The city's stormwater staff will continue working to lessen any negative impacts to receiving waters.

2.5.2 Established TMDLS

States are required to develop a priority ranking for waters that do not or are not expected to meet applicable water quality standards taking into account the severity of pollution and the designated uses of the waters. Once this listing and ranking of waters is completed, the states are required to develop TMDLs for these waters in order to achieve compliance with water quality standards. The relevant TMDLs developed to date are described in the following sections. Many of the TMDLs propose similar BMPs to reduce pollutants, especially *E. coli*. These BMPs may include:

- Identification of failing septic systems by local health departments. Requirements for periodic pumping and inspection of septic systems;
- Livestock exclusion from riparian areas;
- Installation of structural urban BMPs; and
- Education campaigns designed to address relevant nonpoint source pollutants from the actions of watershed residents.

Contributing sources such as urban, residential, industrial, commercial and CSO runoff may contribute to *E. coli* concentrations in local water bodies. In addition, *E. coli* can also come from failing septic systems, confined feeding operations, agricultural runoff, and livestock access to streams and wildlife. Wastewater treatment facilities may contribute to phosphorus loads to surface waters through facility discharges of treated wastewater. Runoff from urban areas also contribute phosphorus to local water bodies via stormwater runoff. Stormwater from impervious surfaces, may contribute phosphorus from decaying vegetation (leaves, grass clippings, etc. domestic and wild animal wastes, soil particles, phosphorus containing fertilizers and other anthropogenic derived nutrients.

Highland-Pigeon Creek Watershed (2011)

Finalized in 2011, the TMDL report for the Highland-Pigeon Creek Watershed identifies the primary cause of impairment is *E. coli* and Impaired Biotic Communities. The report indicates that primary sources of impairment are "non-point sources from agriculture and pastures, land application of manure and urban and rural run-off, as well as point sources from straight pipe discharges, home sewage treatment system disposal and combined sewer overflow outlets." The Highland-Pigeon Creek watershed is located in southwestern Indiana and drains approximately 526 square miles in Gibson,

Vanderburgh, Posey, Warrick and Pike counties. TMDLs in the watershed are established for *E. coli* and IBC and will address 56 impairments through recommended solutions such as storm water controls, point source controls, manure management and habitat improvements.

2.5.3 Lake and River Enhancement Projects

IDNR's Division of Fish and Wildlife aims to enhance aquatic habitat for fish and wildlife and insure the continued viability of Indiana's publicly accessible lakes and streams through their Lake and River Enhancement Program (LARE). The program aims to accomplish this through measures that reduce non-point sediment and nutrient pollution of surface waters to a level that meets or surpasses state water quality standards. The LARE Program provides technical and financial assistance for qualifying projects and are divided into three categories of funding:

- Watershed Land Treatment Biological and Engineering Projects Funding
- Aquatic Vegetation Management
- Logjam and Sediment Removal

Table 8: LARE Projects Relevant to City of Evansville MS4

Waterbody	Funding Amount	Year	Project
Pigeon Creek	$35,000	2021	Logjam and Sediment Removal

2.5.4 Watershed Management Plans

A watershed management plan (WMP) is a strategy for achieving water quality goals by characterizing the watershed, setting goals and actions steps, and developing an implementation plan to address documented problems. The purpose of the WMP is to guide resource managers, watershed coordinators, policy makers, community organizations, and other relevant stakeholders in restoring and protecting the waterbodies within a given watershed. Information about three of the most recent WMPs relevant to the City of Evansville waters and watersheds can be found in this section. Other WMPs for the city exist but are outdated and not relevant to this document. These are listed at the end of this section.

WMP for Highland-Pigeon Watershed (2003):

The 2003 Highland-Pigeon Creek WMP outlines several goal statements that were developed based on concerns and pollutant sources identified during the development of the WMP. It is anticipated that the implementation of policies and programs to meet these goal statements will improve watershed management in the Highland-Pigeon Creek Watershed:

- Reduce sediment loading in sub-watersheds by 50% within 5-10 years.
- Restore riparian habitat to improve Aquatic Life Use Support/aesthetic value in sub-watersheds.
- Reduce levels of phosphorus by at least 50% in sub-watersheds within 5-10 years.
- Eliminate discharges of raw or inadequately treated sewage within 5-10 years. Support continued work on combined sewer overflow elimination in Evansville. Also encourage upgrade at Ft. Branch WWTP (5-25 years).
- Reduce runoff from livestock operations in sub-watersheds within 5 years.
- Reduce illegal dumping of solid waste and cleanup existing sites in sub-watersheds.

- Encourage on-going adoption of urban erosion control practices and enforce current rules and ordinances.
- Provide on-going education opportunities such as field days, public meetings, school visits, etc. regarding water, watersheds, and land use to all stakeholders.

2.6 POTENTIAL AREAS OF POLLUTION

REQUIREMENT MS4GP 3.1(c):
The WQCR must include: (7) Identification of areas that have a reasonable potential for or are actually contributing to stormwater quality problems based on available land use and complaint information and relevant chemical, biological, and physical data.

2.6.1 Complaint Data

When concerns are observed by the city staff, they are equipped to mitigate the issues quickly. Observations of a potential illicit discharge or other stormwater concerns, either received by city staff or through Report-A-Polluter, are investigated and tracked through photographs and reports. Determined by the nature and severity of the issue, violation notices or fines may be issued. Inspections will be added to CityWorks to be tracked in the future.

The City Engineer's Office is utilizing GIS to track monitor complaints and Illicit Discharges, in order to identify sensitive areas or areas of concern. This data will be tracked to determine if the degrading streams have contributing factors that could be eliminated to improve water quality.

2.6.2 Industrial Facilities

The City of Evansville is aware of 549 facilities within the MS4 boundary which, according to their Standard Industrial Classification (SIC) code, should be assessed for their potential to discharge to an MS4 conveyance. While they may also have IDEM Rule 6 permits, it is important for the city to understand the potential impacts to the conveyances and receiving waters. It is also important to note that IDEM is currently working on a replacement, master general permit for Rule 6.

2.6.3 Residential Septic Systems

Existing city policies dictate all new developments occurring within Evansville are required to connect to the sanitary sewer system if service is readily available. However, when sanitary sewer service is not available, on-site wastewater treatment permits are issued by the Vanderburgh County Health Department, if site conditions meet all applicable Indiana State Department of Health Standards.

2.6.4 Surface Visual Conveyance Inspection Findings

MS4 entities are tasked with completing a visual inspection of catch basins, outfalls, and conveyance systems over the five-year permit term with a minimum of 15% must be completed each year. Areas anticipated to contribute to pollution or decrease system function must be noted and corrected. The City has been conducting these inspections for several years and will continue to do so.

2.6.5 IDDE Findings

A community should understand the extent of water quality problems caused by illicit discharges. The desktop assessment should draw on existing background and anecdotal information to initially characterize illicit discharge potential at the sub-watershed level. Sub-watersheds are then screened based on their composite score, and are designated as having a low, medium, or high risk. **Table 9** describes discharge factors to screen sub-watersheds based on their illicit discharge potential (IDP).

Table 9: Discharge Screening Factors for IDDE Desktop Assessment

Discharge Screening Factors	Defining and Deriving the Factor
Past Discharge Complaints and Reports	Frequency of past discharge complaints, hotline reports, and spill responses per sub-watershed. Any sub-watershed with a history of discharge complaints should automatically be designated as having high Illicit Discharge Potential (IDP).
Poor Dry Weather Water Quality	Frequency that individual samples of dry weather water quality exceed benchmark values for bacteria, nutrients, conductivity, or other predetermined indicators. High risk if two or more exceedances are found in any given year.
Density of Generating Sites or Industrial NPDES Storm Water Permits	Density of more than 10 generating sites of five industrial NPDES stormwater sites per square mile indicates high IDP. Density determined by screening business or permit databases.
Stormwater Outfall Density	Density of mapped stormwater outfalls in the sub-watershed, expressed as the average number per stream or channel mile. A density of more than 20 outfalls per stream mile indicates high IDP.
Age of Sub-watershed Development	Defined as the average age of the majority of development in a sub-watershed. High IDP is often indicated for developments older than 50 years. Determined from tax maps and parcel data, or from other known information about neighborhoods.
Sewer Conversion	Sub-watersheds that had septic systems but have been connected to the sanitary sewer system in the last 30 years have high IDP.
Historic Combined Sewer Systems	Sub-watersheds that were once served by combined sewer system but were subsequently separated have a high IDP/
Presence of Older Industrial Operations	Sub-watersheds with more than 5% of its area in industrial sites that are more than 40 years old are considered to have high IDP. Determined from historic zoning, tax maps, and "old-timers."
Aging of Failing Sewer Infrastructure	Defined as the age and condition of the sub-watershed sewer network. High IDP is indicated when the sewer age exceeds design life of its construction materials (e.g., 50 years) or when clusters of pipe breaks, spills, overflows or are reported by sewer authorities
Density of Aging Septic Systems	Sub-watersheds with a density of more than 100 older drain fields per square mile are considered to have high IDP. Determined from analysis of lot size outside sewer service boundaries.

2.7 DATA SUMMARY

REQUIREMENT MS4GP 3.1(c):
The WQCR must include: (8) An evaluation of data collected to determine which areas or specific discharge points that may need to be considered for future planning and implementation of new stormwater measures or modification of existing measures. The highest priority should be given to sensitive areas and the prohibition of new or significantly increased MS4 discharges.

Several sensitive areas have been identified for special considerations related to stormwater quality runoff and land cover/land use changes. These areas include drinking water sources, wetlands (once field-verified), habitats of endangered, threatened, or rare species, and recreational waters. These areas, and any identified discharge points near these areas, should be considered for additional structural or non-structural BMPs to maximize the possible protection for the area as well as the receiving waters. Types of BMPs for consideration may include targeted education and awareness programs highlighting the importance of sensitive areas, additional requirements for structural controls on new construction, and/or enhanced post-construction structural BMPs. The structural condition of MS4 owned and operated BMPs will guide prioritization of BMP maintenance and repairs over the current MS4GP permit cycle.

Four waterbodies within the City of Evansville (Carpentier Creek, Little Pigeon Creek, Locust Creek, Pigeon Creek) are known to have impairments and are 303(d) listed. Through the implementation of the MS4GP within the city, goals to improve the water quality of impaired waterbodies will be tracked and revised during annual reviews of the program. Outfall mapping and field investigations during dry weather screening will yield any priority areas to be addressed during additional public education and outreach, as well as identify existing BMPs that require repair and/or maintenance. Active construction sites that are greater than five acres and that are near water resource will have an elevated inspection priority, and post-construction inspections will identify areas needing maintenance or repair which will have a direct positive impact on water quality.

As the city plans for future growth and development, land use changes are anticipated within areas of the MS4. These areas include annexed areas on the north and south side of the city. This growth can certainly have impacts on the MS4 program as well as the water quality of receiving waters. The city will continue working to improve water quality in impaired waterbodies and sensitive areas to meet state WQS through implementation of the MS4GP requirements.

CHAPTER 3: STORMWATER QUALITY MANAGEMENT PLAN

REQUIREMENT MS4GP 4.2:
The SWQMP must be developed, implemented, and maintained to include provisions that will reduce the discharge of pollutants from the MS4 to protect water quality, human health, and the biotic community.

3.1 MS4 ADMINISTRATION

While the MS4 program oversight will be provided by the Engineering and Stormwater Departments as noted in Section 1.1, other departments, staff members, and partners may be responsible for the implementation of individual minimum control measures (MCMs) and tasks. Responsible parties are included in the MCM tables in the following sections.

The City of Evansville participates in a regional approach to collaborate with other MS4 communities regarding the Public Education, Outreach, Participation and Involvement MCM. Annually, the member MS4 communities review the long-term plan and adjust the annual work plan accordingly. Each MS4 community is then responsible for their own local implementation of the resources developed.

3.2 MCM PROGRAM DESCRIPTIONS

REQUIREMENT MS4GP 4.2(a):
The SWQMP must at a minimum include:
(3) Program goals that are established and required by this permit and others identified by the MS4 entity to address local stormwater resource issues within their jurisdiction.
(4) A detailed program description for each minimum control measure (MCM):
- (A) A timetable for SWQMP implementation for ach MCM and the WQCR
- (B) A summary of measurable goals for ach MCM and a discussion of environmental impact
- (C) Individuals that are responsible for implementing each MCM including their contact information

3.2.1 Programmatic Indicators

Programmatic indicators are categories of data collected throughout the annual period by the MS4 entity which are used to measure implementation of each of the MCMs. These indicators pertain to specific environmental gauges that focus on the impacts of stormwater runoff. IDEM utilizes the indicators to determine the degree of success achieved by the stormwater management programs. IDEM requires an annual update for each indicator and if an indicator is not applicable to the MS4 operator, then the operator shall provide rationale for the non-applicability.

Each of the programmatic indicators has been addressed by BMPs within the MS4 entity. For reference, programmatic indicators are listed in Appendix 2.

All indicators have been addressed in the tables within following sections detailing BMPs for each MCM. Programmatic indicators are listed in Appendix 2 for reference.

3.2.2 Public Education, Outreach, Participation and Involvement

An MS4 must develop strategies to inform constituents and target groups of the impacts that polluted stormwater runoff can have on water quality and ways they can minimize their impact on stormwater quality.

The city is continuing to develop and implement partnerships with the Vanderburgh County Soil and Water Conservation District (SWCD), the Vanderburgh County Solid Waste Management District (SWMD), and the Evansville Water and Sewer Utility to provide public information and outreach services while also playing a significant role in the public involvement and participation activities related to the household hazardous waste and recycling efforts.

Table 10 provides a summary of the Public Education, Outreach, Participation and Involvement BMPs to be implemented and identifies the associated measurable goals, timeline, priority areas, and responsible parties.

Table 10: Public Education, Outreach, Participation and Involvement BMPs

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Public Education and Involvement Plan (4.3(a))	• Identify target constituents • Develop a stormwater public education and involvement plan • Develop list of three community wide stormwater issues to assist with education and involvement efforts for construction, residential and commercial/industrial groups • Develop or collaborate with existing efforts to conduct two public events annually • Develop educational materials • Coordinate with local partners to provide annual training to construction site run-off and post-construction target groups (annual contractors' training)	• Plan developed with partner agency and department input by January 2023 • Reviewed annually and revised as needed • Events and activities will be decided in conjunction with development and annual review of the education and involvement plan • Maintain a list of topics covered and constituents reached for each event	• 2023 • 2024 • 2025 • 2026	• Evansville MS4 staff
Elected Official Update (4.3(e))	• Report stormwater program updates to elected officials or an advisory board	• Updates will be provided at public meetings • Maintain a list of attendees and materials distributed	• 2023 • 2024 • 2025 • 2026	• Evansville MS4 Staff and Partnering Organizations: County SWCD, County Storm Water Management Department, Posey County SWCD, EWSU, and Keep Evansville Beautiful

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Household Hazardous Waste (HHW) and Recycling Activities (4.4(b)(4))	• Encourage residents and staff to use existing HHW drop off for proper disposal • Educate Evansville residents about illicit discharges and proper disposal of waste • Encourage Evansville residents to participate in curb-side recycling program • Utilize existing SWMD activities to educate community members on the importance of pollution prevention and recycling programs	• Promote the HHW facilities operated by the SWMD • Document the amount of material collected at the HHW Facility • Document dates, times, and attendance at all presentations to citizen and school groups that incorporate stormwater quality discussions • Document the number of stormwater materials distributed on an annual basis	• On-going	• Evansville MS4 Staff, County Storm Water Management Department and EWSU, Vanderburgh County Solid Waste Management

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Stormwater Educational Materials (4.3(a)(4)) (4.3(b)) (4.3(d))	• Collaborate to develop, produce, or distribute printed materials related to stormwater issues • Include information related to proper disposal of wastes • Assist with larger efforts such as those similar to MS4 video production, workshops, etc. • Work with other local MS4 entities to develop, produce, or distribute printed materials • Localize printed materials as necessary to ensure messages are relevant to the City of Evansville • Provide materials in key city buildings • Include relevant information (conservation tips, recycling days, etc.) in resident utility department newsletter • Utilize *EnviroScape* to provide watershed activities and learning experiences to programs provided to citizens, 4H groups, Boy Scouts, Girl Scouts, etc. • Art contests for the Evansville schools to create calendars, door hangers, or other material to be distributed to the public.	• Materials and opportunities will be discussed during the development and annual review of the education and involvement plan • Work in cooperation with partners to broaden exposure and present a unified message • Maintain a list of materials developed, distributed, and utilized	• 2023 • 2024 • 2025 • 2026	• Evansville MS4 Staff and EWSU

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Web Page (4.3(c))	• Maintain the City of Evansville web page regarding stormwater quality issues, a location to report stormwater quality issues and links to other sites • Include articles developed, educational videos, brochures, and calendar updates • Include ordinances, applicable fees, and MS4 program information • Provide relevant stormwater updates and postings on web page and/or other partner's social media outlets • Utilize Evansville's Oscar the Otter Stormwater Mascot to promote clean water habits and utilize in public service announcements • Include information on the City of Evansville's Rain Barrel Programs	• Utilize education and involvement plan to identify messages, issues, and partners • Review web page and update with new information annually • Track total number of hits site receives each year • Document all questions and comments received via the web page as well as the responses to them • Document posts relevant to stormwater issues	• 2023 • 2024 • 2025 • 2026	• Evansville MS4 Staff and City CIO
Public Reporting Program (4.4(b)(6))	• Utilize "Report an Illicit Discharge" on the city's webpage to field complaints from the public on illegal dumping, illicit discharges, poor erosion control practices, and other activities that negatively impact stormwater quality • A Stormwater Hot Line has been created on the webpage that provides a number to call, a fillable form that is linked to the e-mail of the Stormwater Coordinator in order to promptly receive and address reports	• Implement the pollution reporting program • Promote, advertise, and follow-up on complaints and calls received through the program • Include educational material developed • Respond to complaints • Document the number of complaints received and all follow up actions taken on reports	• On-going	• Evansville MS4 Staff and City CIO

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Partnership Activities	• Continue meetings with Vanderburgh County Storm Water Department, Vanderburgh County Soil and Water Conservation District, and Posey County Soil and Water Conservation District, and neighboring MS4s and agencies to develop and implement programs and activities throughout the region that are consistent and complimentary in nature • Support SWCD activities to help implement the county-wide "Backyard Conservation" program • Participate actively in Hoosier Rive Watch • Participate with the DNR/IDEM's Project Wet for K-12 Curriculum • Maintain involvement with Keep Evansville Beautiful, Parks Department, and City Engineer's Office, Vanderburgh SWCD, Vanderburgh SWMD, Surveyor's Office, Engineers Office, Howell Wetlands, Wesselman's Woods Nature Preserve, West Side Improvement Association, Mesker Park Zoo, Canoe Evansville, ORSANCO, Neighborhood Associations, and EWSU	• Provide education and outreach programs for target constituents • Track number of stormwater related articles or materials published • Document dates, times, and attendance at all workshops & trainings focused on stormwater quality related issues • Annually partner with at least one other MS4, watershed group, or volunteer organization	• On-going and annual activities	• Evansville MS4 Staff

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Evansville Water Sewer Utility Employee Outreach Crew	• Continue using the group as a tool for education and outreach within the City of Evansville. • The EWSU Employee Outreach Crew conducts an annual Artwork Contest that incorporates stormwater themes into public art contests. This event is in partnership with the Mesker Park Zoo, the EWSU, and the City Engineer's Office • The group meets monthly to discuss engagement opportunities throughout the city, such as Aurora Adopt-A-Client and the Tri-State Food Bank Food Drive	• Document dates, times, and attendance at all meetings and events that the EWSU Outreach Crew conducts • Track number of events and partners that the Crew works with annually	• Conduct monthly meetings	• Evansville Water Sewer Utility

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party

Annual Report
 	
(4.3(g))
(4.3(h))
	• Assess the program annually
	• Report progress in an annual report to IDEM
		• Assess program in conjunction with gathering data and compilation of the annual report
		• Include:
		  •List of each public participation and outreach event and activities conducted, a description of the activity, an estimate of the number of attendees, and an assessment if the goals and objectives were met
		  •The number and types of construction and/or post-construction stormwater training opportunities what were provided to contractors, developers and builders, property owners (commercial, industrial, residential, homeowner associations, and other targeted entities during the reporting period
		  •Documentation that presentations were made to elected officials or boards
		  •Describe each targeted audience selected and how they were reached during the reporting period and describe behavioral changes observed
		  •A list of all public education materials used during the reporting period
		• Submit annual report
			• 2023
			• 2024
			• 2025
			• 2026
				• Evansville MS4 Staff

3.2.3 Illicit Discharge Detection and Elimination

An MS4 must develop a program which uses education and both structural and non-structural BMPs to detect, address, and eliminate illicit discharges into the MS4 conveyance system. Problem areas must be located via dry weather screening or other means, the source must be determined, illicit connections must be removed or otherwise corrected, and the actions taken must be documented. Through an ordinance or other regulatory mechanism, illicit discharges must be prohibited from entering the MS4 conveyances and appropriate enforcement procedures and actions are required.

The Illicit Discharge Detection and Elimination (IDDE) BMPs outlined in **Table 11** will be implemented by the MS4 staff in order to comply with the minimum requirements of the MCM. The programs are designed to gain a thorough awareness of their separate storm conveyance system and thereby allowing the identification and elimination of illicit discharges entering the system. The program also establishes the legal, technical, and educational means needed to eliminate illicit discharges.

Table 11: IDDE BMPs

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
IDDE Ordinance (4.4(a))	• Review IDDE language contained in the Evansville ordinance documents for needed updates and to ensure compliance with the MS4GP	• Enforce ordinance • Review policies at least once per permit term	• 2023 (review/update) • Implementation throughout permit term	• Evansville MS4 Staff
IDDE Plan (4.4(b)) (4.4(h))	• Review the IDDE Plan and update as necessary to reflect the proposed actions for illicit discharge detection and elimination in the current permit term • Implement the IDDE plan to detect, address, and eliminate illicit discharges into the MS4 conveyance system • Include SOPs to locate problem areas and to ensure consistent investigations for all illicit discharges • Investigate transient illicit discharges that have been reported to the MS4 Coordinator for additional follow-up • Utilize the Desktop Assessment of Illicit Discharge Potential (Table 9 in WQCR) to better prioritize areas for IDDE screening activities	• Review and revise IDDE plan in first year of permit term • Conduct dry weather screening until 100% screened by end of permit term • Conduct screening of all non-stormwater discharges until discharge is eliminated or determined to be uncontaminated	• 2023 (review/update) • Implementation throughout permit term	• Evansville MS4 Staff
Stormwater System Mapping (4.4(d)) (4.4(e)) (4.4(f))	• Identify priority areas based on land use, prior history, and frequency of discharges • Enhance existing maps with information collected during dry-weather screening events, maintenance activities, etc. • Add new outfalls and conveyance systems to the map for the appropriate jurisdiction per ordinance as-built requirements or new developments	• Review and update map annually • Identify priority areas within first year of permit term	• 2023 (identify priority areas) • Review/update annually	• Evansville MS4 staff
IDDE Staff Training (4.4(g))	• Train appropriate staff members on investigation of illicit discharges or illicit connections to the stormwater conveyance system • Provide an internal IDDE manual and field binder to engineering and inspection staff	• Conduct annual refresher training to appropriate departments and staff • Document number of staff, number of events held, and the topics covered in each session • Review and revise manual/field binder	• 2023 • Annually	• Evansville MS4 staff • Relevant city employees

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party

Annual Report
 	
(4.4(i))
(4.4(k))
	• Assess the program annually
	• Report progress in an annual report to IDEM
		• Assess program in conjunction with gathering data and compilation of the annual report
		• Include:
		  •IDDE program updates
		  •A summary of any storm sewer system mapping changes to the stormwater outfall and conveyance maps
		  •Number of new MS4 outfalls mapped
		  •Number and location of dry weather outfalls screened for illicit discharges
		  •Number and location of illicit discharges detected
		  •Number and location of illicit discharges eliminated
		  •Number of illicit discharges and/or spills reported to the MS4 entity
		  •Number of enforcement actions taken by the MS4 entity
		• Submit annual report
			• 2023
			• 2024
			• 2025
			• 2026
				• Evansville MS4 Staff

3.2.4 Construction Site Stormwater Run-Off

The MS4GP requires the MS4 Operator to develop and administer an erosion and sediment control program which includes strategies to manage the overall program components, monitor compliance of program requirements, and if necessary, enforce any violations. Requirements also include the development of an ordinance or other regulatory mechanism and establishment of a construction program that controls polluted runoff from construction activities that disturb one or more acres of land in the MS4 area. This construction program must include a permitting process, erosion control plan review process, site inspections, and enforcement. The permitting process must include a requirement for the construction project site owner to submit a copy of the permit application directly to IDEM. MS4 entities must provide an opportunity for local SWCD to provide comments and recommendations to the MS4 operator on individual projects.

The construction program must include requirements for the implementation of appropriate BMPs on construction sites to control sediment, erosion, and other waste. MS4 entities must review and approve construction plans submitted by the construction site operator before construction activity commences. Procedures must be developed for site inspection and enforcement to ensure BMPs are properly installed. The procedures must include a means to identify priority sites for inspection and enforcement, as well as a means to receive and consider public inquiries, concerns, and information submitted regarding local construction activities. A tracking process must be implemented in which submitted public information is documented and then given to the appropriate staff for follow-up. Further MS4 personnel responsible for plan review, inspection, and enforcement of construction activities shall receive annual training.

Table 12 in the next section provides a detailed description of the Construction and Post-Construction Site Stormwater Runoff Control BMPs to be implemented and identifies the measurable goals, progress indicators, timelines, priority areas, and responsible parties. Information such as which structural BMPs are allowed within new or redevelopment, BMP selection criteria, and the associated performance standards may be found in the Stormwater Ordinance and Technical Standards for the City of Evansville. These BMPs have been combined with the Post-Construction Site Stormwater Runoff Control BMPs (MCM #5) for ease of presentation and discussion.

3.2.5 Post-Construction Site Stormwater Run-Off

The MS4GP requires the development of an ordinance or other regulatory mechanism and establishment of a post-construction program that addresses runoff from new development and redevelopment areas that disturb one or more acres of land in the MS4 area. This program must include a permitting process, plan review process, site inspections, and enforcement. MS4 area personnel responsible for plan review, inspection, and enforcement of post-construction BMPs shall receive annual training.

Where appropriate, MS4 entities must use a combination of storage, infiltration, filtering, or vegetative practices to reduce the impact of pollutants in stormwater runoff on receiving waters in areas that are the responsibility of the MS4 entity. A written Operational and Maintenance (O&M) Plan must be developed and implemented for all existing stormwater structural BMPs, which are under the control of the MS4 entity. As new post-construction BMPs are added to areas under the control of the MS4 entity, the O&M Plan must be updated accordingly.

Compliance with this MCM requires MS4s to develop a program for managing Post-Construction Stormwater Runoff Control BMPs that will ensure adequate, long-term stormwater quality benefits in new development and redevelopment activities. Once construction is complete, post-construction practices specified by the MS4 must be implemented to ensure adequate stormwater quality is maintained from the developed site. Table 12 provides a summary of the Construction and Post-Construction Site Stormwater

Runoff Control BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, timeline, priority areas and responsible parties. These BMPs have been combined with the Construction Site Stormwater Runoff Control BMPs (MCM #4) for ease of presentation and discussion.

Table 12: Construction and Post-Construction BMPs

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Stormwater Management Ordinance & Technical Standards (4.5(b)) (4.5(f)) (4.6(b)) (4.6(c))	• Review and revise the active construction and post-construction site ordinance language and stormwater technical standards to ensure compliance with the MS4GP and the CSGP	• Continue to update and enforce the Stormwater Management Ordinance • Review and approve proposed new and redevelopment projects for compliance with the Stormwater Technical Standards • Incorporate post-construction performance standards into the ordinance and/or technical standards • Review at least once per permit term	• 2023 (review/update) • Implementation throughout permit term	• Evansville MS4 Staff
Plan Review and Permitting Procedures (4.5(c))	• Establish or review plan review and permitting procedures, internal processes, and timetables • Hold pre-construction meetings on selected new and re-development projects	• Establish or review written procedures for plan review • Develop or review forms, checklists • Review and approve proposed new and redevelopment projects • Review 100% of construction plans and inspect prioritized sites for compliance	• 2023 (review/update) • Implementation throughout permit term	• Evansville MS4 Staff
Inspection Procedures (4.5(d)) (4.6(e)) (4.6(f))	• Establish or review procedures and processes to inspect sites to ensure measures are installed and maintained • Inspect 100% of all permitted construction sites with greater than one acre of disturbance • Re-inspect and follow-up on prioritized sites having identified problem areas and/or concerns • Complete active construction site and post-construction BMP inspection forms	• Establish or review written procedures for inspections • Develop or review forms, checklists • Identify priority sites for inspections • Conduct inspections in accordance with procedures • Complete forms for active construction sites and post-construction BMPs inspected	• 2023 (review/update) • Implementation throughout permit term	• Evansville MS4 Staff
Enforcement Procedures (4.5(e))	• Establish or review procedures and policies to enforce local ordinance	• Establish or review written procedures to address violations, including compliance and escalating enforcement	• 2023 (review/update) • Implementation throughout permit term	• Evansville MS4 Staff

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Public Reporting Program (4.5(g))	• Utilize Report-a-Polluter to field complaints from the public on illegal dumping, illicit discharges, poor erosion control practices, and other activities that negatively impact stormwater quality	• Respond to complaints and inquiries • Document the number of complaints received and all follow up actions taken on reports	• On-going	• Evansville MS4 Staff
Staff Training (4.5(j)) (4.6(i))	• Train appropriate staff members on plan review, inspection, compliance, and enforcement	• Conduct annual refresher training to appropriate departments and staff • Provide relevant training to all staff involved in plan review, site inspection, and enforcement requirements for construction and post-construction MCMs • Document number of staff, number of events held, and the topics covered in each session	• Annually	• Evansville MS4 staff • Relevant city employees
Active Site Inventory (4.5(l))	• Maintain an inventory of all projects subject to the CSGP, the MS4GP, and owned or operated by the MS4 • Track the status of construction projects, erosion and sediment control activities, and post-construction BMPs • Track violations, complaints, and public information requests • Digitize publicly owned structural BMPs • Require BMP owners to submit annual report of BMP maintenance	• Establish or revise tracking procedures • Track active construction and post-construction project sites • Develop and distribute mailer requesting annual maintenance report	• 2023 (review/update) • On-going	• Evansville MS4 Staff
Operation & Maintenance (O&M) Manuals (4.6(d))	• Require O&M manuals to be submitted for all post-construction BMPs identified as part of a project submittal package	• Enforce ordinance requirements for O&M plan submittal and plan contents for new BMPs	• As plans are submitted	• Evansville MS4 Staff
CSGP Compliance (4.5(k))	• Ensure MS4 owned/operated projects are compliant with the CSGP	• Submit plans to SWCD • Comply with MS4 Stormwater Ordinance • Develop SOP which includes self-monitoring of projects	• On-going	• Evansville MS4 Staff

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party

Annual Report
 	
(4.5(i))
(4.5(m))
(4.6(h))
(4.6(j))
	• Assess the program annually
	• Report progress in an annual report to IDEM
		• Assess program in conjunction with gathering data and compilation of the annual report
		• Include:
		  •The number of construction projects owned and/or operated by the MS4 entity that are active at the time of submittal
		  •The number of construction sites obtaining a MS4 entity-issued stormwater run-off permit or authorization to discharge
		  •The number of construction sites inspection
		  •The number and type of enforcement actions taken
		  •The number of public information requests and/or complaints received
		  •Updates to the post-construction ordinance or regulatory mechanism
		  •Number of sites requiring post-construction controls
		  •Number, type, and location of structural measures installed
		  •Number, type, and location of structural measures modified to function properly to improve water quality benefits
		  •Number, type, and location of structural measures inspection to ensure each meets design requirements and/or are being maintained
		• Submit annual report
			• 2023
			• 2024
			• 2025
			• 2026
				• Evansville MS4 Staff

3.2.6 Municipal Operations Pollution Prevention and Good Housekeeping

The MS4GP requires the development and implementation of a program to prevent or reduce polluted runoff from municipal operations within the MS4 area. The program must include written documentation of maintenance activities, maintenance schedules, and long-term inspection procedures for BMPs to reduce floatables and other pollutants discharged from the separate storm sewers.

Controls must be implemented for reducing or eliminating the discharge of pollutants from operational areas, including roads, parking lots, maintenance and storage yards, and waste transfer stations. Written procedures must be developed and implemented for the proper disposal of waste or materials removed from separate storm sewer systems and operational areas. New flood management projects must be assessed via written documentation for their impacts on water quality and existing flood management projects must be examined for incorporation of additional water quality protection devices or practices. MS4 entity employees must be properly trained on various topics such as herbicide and insecticide application and the function of BMPs. Such training must be documented in writing.

Table 13 provides a summary of the Pollution Prevention and Good Housekeeping BMPs to be implemented and identifies the associated measurable goals, programmatic indicators, environmental benefits, timeline, priority areas and responsible parties associated with each BMP. A detailed description of each BMP is provided below.

Table 13: Pollution Prevention and Good Housekeeping BMPs

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Stormwater Pollution Prevention Plans (SWPPPs) (4.7(b-f))	• Evaluate listing of properties, lots, storage facilities, etc. owned or operated by the city • Develop additional SWPPPs or SOPs if necessary • Include facility inspection sheets, employee training form, spill documentation • This general BMP covers specific BMPs such as: o Secondary containment o Salt/sand management o Snow disposal areas o Spill prevention and clean up o Fertilizer and pesticide management o Waste disposal o Wash water management	• Utilize SWPPP and sheets to track inspections, training, etc. for each facility • Conduct and document quarterly facility inspections and assessments	• Annually (review and revise) • Quarterly (inspections)	• Evansville MS4 staff • Street Department • Utilities Department • Parks Department • Police/Fire Departments • Additional relevant city departments
Facility Inspections 4.7(c) 4.7(f)	• Assess existing operations at each MS4 owned and/or operated facility • Conduct quarterly inspections at each facility and update records in SWPPP	• Conduct and document quarterly facility inspections and assessments, at least one of which is conducted by the MS4 coordinator or a designated individual	• Quarterly	• Evansville MS4 staff • Street Department • Utilities Department • Parks Department • Police/Fire Departments • Additional relevant city departments

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Stormwater Infrastructure Maintenance (4.7(g))	• Develop a written O&M plan for MS4 owned and/or operated stormwater infrastructure • Perform a surface visual inspection of all catch basins, outfalls, and conveyance systems • Maintain the MS4 conveyance and associated structures included outfalls, open channels, and ditches • Perform improvements to drainage ditches and outfalls to stabilize ditch banks and improve overall water quality and drainage in the city.	• Implement a storm sewer system maintenance schedule and track activities to document the amount of pollution that has been kept out of local receiving waters as a result of the stormwater program • Complete surface visual inspections of the entire system within the permit cycle with a minimum of 15% completed annually • Document the amount of litter picked up as a result of periodic litter pickup events • Document the amount of materials removed from the storm sewer system and disposal methods • Document all improvements made to roadside shoulders and ditches • Document all improvements made to stormwater outfalls • Document all issues noted during visual inspection	• 2023 (review/update) • Implementation throughout permit term	• Evansville MS4 staff • Street Department
Third Party Compliance (4.7(j))	• Establish or review procedures to ensure contractors or third-party entities hired by the MS4 entity are required to comply with stormwater good housekeeping	• Establish or review written procedures for compliance and enforcement • Document actions taken	• As needed	• Evansville MS4 staff
Flood Management Projects (4.7(k)) (4.7(l))	• Assess flood management projects for incorporation of water quality devices or practices • Maintain two regional detention facilities	• Document that flood control projects are assessed for incorporation of additional water quality devices or practices	• As projects proposed	• Evansville MS4 staff • Engineering Department
Staff Training (4.7(m))	• Train appropriate staff members on new technology, operations, fueling spill prevention and clean-up, other responsibilities that arise during the year, site specific stormwater run-off issues, and permit requirements	• Conduct annual refresher training to appropriate departments and staff • Train all new full-time employees within 60 days of date of employment • Train all new seasonal employees within 30 days of date of employment • Document number of staff, number of events held, and the topics covered in each session	• Annually and as needed with new hires	• Evansville MS4 staff • Street Department • Utilities Department • Parks Department

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party

Annual Report
 	
(4.7(i))
(4.7(n))
	• Assess the program annually
	• Report progress in an annual report to IDEM
		• Assess program in conjunction with gathering data and compilation of the annual report
		• Include:
		  •Number and location of stormwater outfalls and conveyance systems that have been repaired
		  •Estimated amount of material collected from stormwater drainage system cleaning including the disposal methods utilized
		  •Estimated amount of materials collected from street sweeping, if applicable, including the disposal method utilized
		  •Number and location of de-icing salt and sand storage areas and methods used to minimize stormwater exposure
		• Submit annual report
			• 2023
			• 2024
			• 2025
			• 2026
				• Evansville MS4 staff

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APPENDIX 1: Acronyms

BMP	Best Management Practice
CBBEL	Christopher B. Burke Engineering, LLC
CSGP	Construction Stormwater General Permit
CSO	Combined Sewer Overflow
CWA	Clean Water Act
EI	Erodibility Index
EPA	Environmental Protection Agency
GIS	Geographical Information System
HEL	Highly Erodible Land
HHW	Household Hazardous Waste
HUA	Hydrologic Unit Area
HUC	Hydrologic Unit Code
IAC	Indiana Administrative Code
IBC	Impaired Biotic Communities
IDDE	Illicit Discharge Detection and Elimination
IDEM	Indiana Department of Environmental Management
IDNR	Indiana Department of Natural Resources
IDP	Illicit Discharge Potential
IR	Integrated Water Monitoring and Assessment Report
LARE	Lake and River Enhancement Program
LTCP	Long Term Control Plan
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
MS4GP	Municipal Separate Storm Sewer System General Permit
NLCD	National Land Cover Dataset
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
O&M	Operation & Maintenance Manual/Plan
OSRW	Outstanding State Resource Waters
PCB	Polychlorinated biphenyls
PHEL	Potentially Highly Erodible Land
PI	Programmatic Indicators
PWS	Public Water Supplies
SDWA	Safe Drinking Water Act
SIC	Standard Identification Classification
SOP	Standard Operating Procedure
SRCER	Stream Reach Characterization and Evaluation Report
SWCD	Soil and Water Conservation District
SWMD	Solid Waste Management District
SWPPP	Stormwater Pollution Prevention Plan
SWQMP	Stormwater Quality Management Plan
TMDL	Total Maximum Daily Load
USGS	United States Geological Survey
WHPA	Wellhead Protection Area
WMP	Watershed Management Plan
WQCR	Water Quality Characterization Report
WQS	Water Quality Standards
WWTP	Wastewater Treatment Plant

APPENDIX 2: Programmatic Indicators

MCM	Programmatic Indicator Permit Citation	Description
Public Education, Outreach, Participation & Involvement	4.3(h)(2)	A list of each public participation and outreach events and activities conducted, a description of the activity, an estimate of the number of attendees, and an assessment if the goals and objectives were met.
	4.3(h)(3)	The number and types of construction and/or post-construction stormwater training opportunities that were provided to contractors, developers and builders, property owners (commercial, industrial, residential, homeowner associations, and other targeted entities during the reporting period.
	4.3(h)(4)	Documentation that presentations were made to elected officials or boards.
	4.3(h)(5)	Describe each targeted audience selected and how they were reached during the reporting period and describe behavioral changes observed.
	4.3(h)(6)	A list of all public education materials used during the reporting period.
Illicit Discharge Detection & Elimination	4.4(k)(2)	IDDE program updates.
	4.4(k)(3)	A summary of any storm sewer system mapping changes to the stormwater outfall and conveyance maps.
	4.4(k)(4)	Number of new MS4 outfalls mapped.
	4.4(k)(5)	Number and location of dry weather outfalls screened for illicit discharges.
	4.4(k)(6)	Number and location of illicit discharges detected.
	4.4(k)(7)	Number and location of illicit discharges eliminated.
	4.4(k)(8)	Number of illicit discharges and/or spills reported to the MS4 entity.
	4.4(k)(9)	Number of enforcement actions taken by the MS4 entity.
Construction Site Stormwater Run-off	4.5(m)(2)	The number of construction projects owned and/or operated by the MS4 entity that are active at the time of submittal.
	4.5(m)(3)	The number of construction sites obtaining a MS4 entity-issued stormwater run-off permit or authorization to discharge.
	4.5(m)(4)	The number of construction sites inspected.
	4.5(m)(5)	The number and type of enforcement actions taken.
	4.5(m)(6)	The number of public information requests and/or complaints received.
Post-Construction Stormwater Run-off	4.6(j)(2)	Updates to the post-construction ordinance or regulatory mechanism.
	4.6(j)(3)	Number of sites requiring post-construction controls.
	4.6(j)(4)	Number, type, and location of structural measures installed.
	4.6(j(5)	Number, type, and location of structural measures modified to function properly or improve water quality benefits.
	4.6(j)(6)	Number, type, and location of structural measures inspected to ensure each meets design requirements and/or are being maintained.

Municipal Operations Pollution Prevention & Good Housekeeping	4.7(n)(2)	Number and location of stormwater outfalls and conveyance systems that have been repaired.
	4.7(n)(3)	Estimated amount of material collected from stormwater drainage system cleaning including the disposal methods utilized.
	4.7(n)(4)	Estimated amount of material collected from street sweeping, if applicable, including the disposal methods utilized.
	4.7(n)(5)	Number and location of de-icing salt and sand storage areas and methods used to minimize stormwater exposure.

APPENDIX 3: Exhibits