NPDES PHASE II MS4 GENERAL PERMIT

WATER QUALITY CHARACTERIZATION REPORT

STORMWATER QUALITY MANAGEMENT PLAN

JANUARY 2023

Prepared for:

City of Noblesville
16 S. 10th St.
Noblesville, IN 46060

Permit #: INR040127

THE CITY OF
NOBLESVILLE
EST. 1823

Prepared by:

Christopher B. Burke Engineering, LLC
115 W. Washington St., Ste. 1368 S.
Indianapolis, IN 46204

Burke Project No. 19.R03.0532

CBB
BURKE

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: 12/16/22

Qualified Professional Printed Name: TIM STOTTLEMYER — Date: 12/16/22

MS4 Operator or Designee Signature (in accordance with 327 IAC 15-4-3(g)) — Date: 12/14/22

MS4 Operator or Designee Printed Name: ALISON KRUPSKI — Date: 12/14/22

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF EXHIBITS

APPENDICES

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.

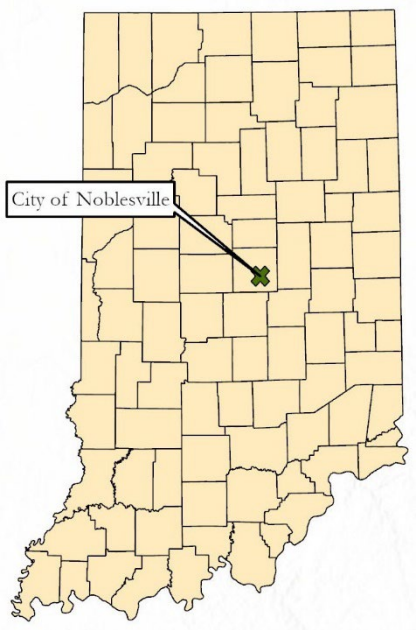


Figure 1: Location of Noblesville, Indiana

The City of Noblesville (**Figure 1**), located in Hamilton 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 NOBLESVILLE MS4 EXISTING CONDITIONS

The City of Noblesville covers approximately 23,050 acres. The MS4 jurisdictional boundary mirrors the city boundaries (as of 2022) as identified on **Figure 2**. While located primarily in Noblesville Township, incorporated areas are also located within the western quadrant of Wayne Township and the northern quadrants of Fall Creek Township and Delaware Township.

The primary responsibilities for implementing requirements included in the MS4GP are held by the City of Noblesville Engineering Department. Compliance, project permitting, and inspections are performed through oversight from this department. Maintenance of the city's infrastructure is handled through the City of Noblesville Street and Utilities Departments.

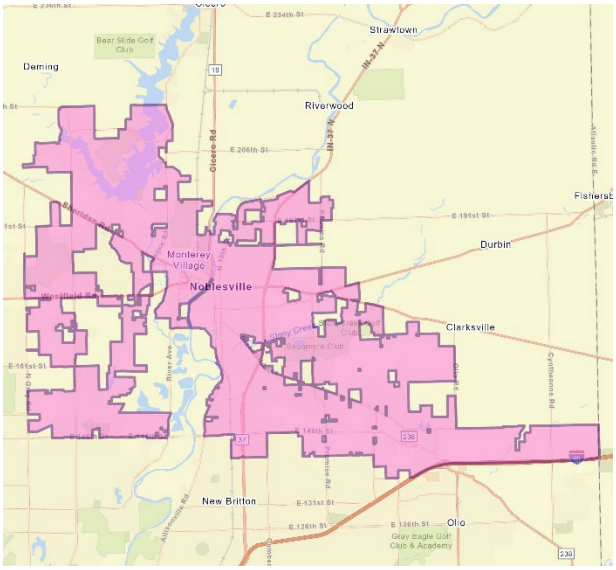


Figure 2: MS4 Boundaries, City of Noblesville

Noblesville is the third largest municipality within Hamilton County and accounts for approximately 20% of the county's population. According to Stats Indiana, the population of Noblesville in 2020 was 69,604, an increase of 33.4% 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.

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 Noblesville Land Cover

Land Cover	Acres
Cultivated Crops	5,611.5
Developed, Low Intensity	4,919.7
Developed, Open Space	3,525.0
Developed, Medium Intensity	4,603.7
Developed, High Intensity	1,281.2
Barren Land (Rock/Sand/Clay)	12.7
Deciduous Forest	867.7
Evergreen Forest	2.5
Mixed Forest	8.6
Grassland/Herbaceous	122.2
Open Water	886.6
Emergent Herbaceous Wetlands	87.7
Woody Wetlands	324.5
Shrub/Scrub	11.0
Pasture/Hay	780.2
TOTAL	**23,044.8**

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. For example, in the northwest area it is anticipated that land cover will move from agricultural/countryside to more mixed density single family homes and neighborhoods. The

area north of I-69 is anticipated to become office/industrial park and residential land use, also transitioning from the current agricultural usage.

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 163 publicly owned and/or operated structural BMPs within the jurisdictional area. These BMPs are inventoried within CityWorks, the city's asset management database, and are scheduled for annual inspections and maintenance through work orders derived from the same database. **Appendix 1** lists those BMPs by type and includes an identification number. The overall structural condition of BMPs is included within completed work orders and is based on the last assessment or inspection of each BMP. As identifying the structural condition of BMPs is a new permit requirement, the city is actively working to improve their data tracking methods and this information is not currently reflected in the attached inventory due to the way the data is structured and retrieved. Specific geographic coordinates of BMP locations are maintained within the inventory and are available upon request.

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 2**. These waterbodies are also identified on **Exhibit 2**.

Table 2: City of Noblesville Receiving Waters

Cicero Creek	Sand Creek
Dry Branch	Stony Creek
East and West Forks Sly Run	UNT - Sly Run
Hinkle Creek	UNT - Stony Creek
Kirkendall Creek	Vestal Ditch
Mallery Granger Ditch	White River
Mud Creek	William Lehr Ditch
Overdorff Branch	Morse Reservoir

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 one eight-digit HUC watershed; the Upper White River Basin (HUC 05120201). The 12-digit HUCs (based on April 2022 MS4 boundaries) along with the acreages in the MS4 are listed in **Table 3**.

Table 3: City of Noblesville Watersheds

12-digit HUC	Watershed Name	Watershed Acres Located in MS4 Boundary
051202010901	Headwaters Mud Creek	575.0
051202010609	Hinkle Creek	54.5
051202010705	Mallery Granger Ditch-White River	4,466.1
051202010610	Morse Reservoir-Cicero Creek	5,407.5
051202010903	Sand Creek-Mud Creek	1,530.2
051202010809	Thorpe Creek-Geist Reservoir	505.1
051202011002	Vestal Ditch-White River	2,703.7
051202010704	William Lehr Ditch-Stony Creek	7,802.8

2.3.2 Integrated Waters Report

Section 303(d) of the Clean Water Act (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 stream's 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 4** identifies known impairments for HUAs within the MS4 area.

Table 4: City of Noblesville 303(d) Impaired Waters

Segment ID	Waterbody Name	Impairment
INW016A_03, INW016A_02	Cicero Creek	*E. coli*, Recreational Use
INW0169_03	Hinkle Creek	*E. coli*, Recreational Use
INW0174_T1001	Lehr Ditch	*E. coli*, Recreational Use
INW01P1036_00	Morse Reservoir	Algae, PCBs in Fish Tissue, Taste/Odor, Fish Consumption, Public Water Supply
INW0175_T1007	Overdorff Branch	Fish Consumption, PCBs in Fish Tissue
INW0193_T1003	Sand Creek	*E. coli*, Recreational Use
INW016A_T1004	Sly Run (East and West Forks)	*E. coli*, Recreational Use
INW0174_04, INW0174_05, INW0174_T1002	Stony Creek	*E. coli*, Recreational Use, PCBs in Fish Tissue, Fish Consumption
INW0175_04 , INW0175_05, INW0175_07	White River	Impaired Biotic Communities, *E. coli*, Recreational Use, PCBs in Fish Tissue, Aquatic Life, Fish Consumption

2.3.3 Total Maximum Daily Loads (TMDLs)

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 5** identifies TMDLs relevant to the City of Noblesville MS4 jurisdictional boundaries and the pollutant for which it was developed. Additional information regarding established TMDLs for Noblesville exists in Section 2.5.2.

Table 5: City of Noblesville TMDLs

Waterbody Name	TMDL Pollutant	Link to Report
Cicero Creek Watershed, Hamilton, Tipton, Boone, and Clinton Counties	*E. coli*	https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/cicero-creek/
Duck Creek, Pipe Creek, Killbuck Creek, Stony Creek	*E. coli*	https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/duck-pipe-killbuck-stony-creek/
West Fork White River, Muncie to Hamilton-Marion County Line	*E. coli*	https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/white-river-west-fork-muncie-to-hamilton-marion-county-line/
Fall Creek	*E. coli*	https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/fall-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 1,820.6 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 areas include Morse Reservoir and the White River. These areas provide opportunities for swimming, boating, and canoeing and will be considered as sensitive areas, as well as their corresponding 12-digit HUCs.

- **Forest Park and Trail, White River Access Site:** 150-acre park in Noblesville, IN located on Cicero Road on State Road 19 North. The park includes access to the White River.
- **Morse Park and Beach:** 23-acre park along Morse Reservoir (1500 acres) in Noblesville, Indiana. The park is located at the Southern point of the Reservoir, along 196th street and Hague Road.
- **Potters Bridge Park:** 66-acre park in Hamilton County, including a trail along the White River (along with a canoe launch) and is located along Allisonville Road, just north of 191st street.

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 Waters 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 174 drinking water wells in Hamilton County, 68 of which are active. Within the City of Noblesville, there are six community wells, 17 transient non-community wells, and seven non-transient non-community wells.

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 674 wells within the Noblesville MS4 area.

While Wellhead Protection Areas (applicable to the City of Noblesville) are sensitive in nature, they are not considered to be sensitive areas in the context of the stormwater program as they are managed through other state regulatory requirements. The City of Noblesville does work with other communities within Hamilton County to develop a collaboration for Wellhead Protection and

consistent development standards such as not allowing infiltration BMPs within the 1- and 5-year Times of Travel.

2.4.3 Habitat Associated with Threatened or Endangered Species

The IDNR's Division of Nature Preserves maintains the Natural Heritage Data 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 seven mollusks, one insect, two reptiles, five birds, and five vascular plants listed as endangered, threatened, or rare within Hamilton County. Specific data regarding location will not be provided by IDNR. Additionally, the IDNR identifies Wet-mesic Floodplain Forest, and Flatwoods Central Till Mesic Upland Forest are listed as High Quality Natural Communities within Hamilton 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 partners 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, the West Fork White River, of which a portion travels through Hamilton County, is designated under "consideration for inclusion" on the National Wild and Scenic Rivers listing and has been identified by the state as having ecological importance and as a canoe/boating route. There are no OSRW within the Noblesville MS4.

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 6** documents

the HEL and Potentially HEL (PHEL) soils within Hamilton County and therefore potentially throughout the MS4 area.

Table 6: City of Noblesville Erodible Soils

Map Unit Symbol	Soil Name	HEL Classification
CrA	Crosby	PHEL
FnB2	Fox	PHEL
FxC3	Fox	HEL
HeF	Hennepin	HEL
MmB2, MmC2	Miami	PHEL
MmC3, MmD2, MoC3	Miami	HEL
OcB2	Ockley	PHEL
Pt	Pits	PHEL

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. Current provisions in the City of Noblesville ordinance include limiting 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 City of Noblesville's Stream Reach Characterization and Evaluation Report (SRCER) was completed and submitted to IDEM in June 2001. The study characterized the impacts of the city's ten CSOs upon three water bodies: the West Fork White River, Wilson's Ditch, and Stony Creek. To date, there have not been updates to the characterization.

Grab samples were collected during both dry and wet weather conditions from a total of seven sites on the West Fork White River, Wilson's Ditch, Stony Creek, and Cicero Creek. Samples were collected from Cicero Creek to account for the creek's discharge volume and pollutant loadings within the CSO area. Water quality parameters evaluated by this study included: dissolved oxygen (DO), temperature, pH, total suspended solids (TSS), ammonia, *E. coli* bacteria, and five-day carbonaceous biochemical oxygen demand (CBOD5).

Noblesville's SRCER determined that over 91% of the total CSO discharge volume is discharged to the White River and only 8.5% of the total discharge volume is discharged to Wilson's Ditch/Stony Creek. Although CSO discharges to Wilson's Ditch/Stony Creek were considered to be "minimal", the report suggests that "other significant pollution sources exist along Stony Creek". The SRCER also states that "Cicero Creek also contributed significant amount of pollutants to White River although there is no CSO discharge to the creek. Pollutant loadings must be coming from other point and non-point sources."

In addition to the pollutants contributed by the City of Noblesville's CSOs, the city's SRCER documents "significant pollution" from upstream sources to the White River, Wilson's Ditch/Stony Creek, and Cicero Creek, all of which are receiving streams of the MS4 area. The SRCER attributed these pollutants to other point and non-point sources of pollution, such as stormwater runoff. These watersheds are already prioritized based on 305(b) and 303(d) data.

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:

- Septic system outreach program and funding to help fix/replace failing systems;
- 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.

Due to limited authority, these BMPs may be addressed to varying degrees. The City of Noblesville focuses on educational campaigns. Regarding the inputs of *E. coli* from MS4 communities, the TMDLs anticipate that the issuance and implementations of MS4 permits will improve water quality and address storm water impacts in these watersheds. TMDLs relevant to the City of Noblesville are included below.

Duck, Pipe, Killbuck, Stony Creek *E. coli* TMDL

Finalized in 2008, the TMDL for the Duck, Pipe, Killbuck, and Stony Creek Watershed (spanning Hamilton County, Tipton County, Madison County, Delaware County, Henry County, and Randolph County) indicates that "potential sources of *E. coli* and fecal coliform in the watershed include nonpoint 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." TMDLs in the watershed are established for *E. coli* and address 38 impairments through storm water controls, point source controls, manure management and habitat improvements.

West Fork White River (Muncie to Hamilton-Marion County Line) *E. coli* TMDL

Finalized in 2004, the TMDL for the West Fork White River Watershed (Muncie to Hamilton-Marion County Line) indicates that "potential sources of *E. coli* and fecal coliform in the watershed include nonpoint 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 West Fork White River from Muncie to the Hamilton-Marion County line drains approximately 1,100 square miles in central Indiana. TMDLs for the West Fork White River Watershed are established for *E. coli* and address 12 impairments through storm water controls, point source controls, manure management and habitat improvements.

Fall Creek *E. coli* TMDL

Water quality data has been collected from Fall Creek in Marion County since 1991. In 1998, IDEM determined that segments of Fall Creek do not consistently comply with the state's water quality standards for *E. coli* bacteria. Finalized in 2003, the TMDL for Fall Creek Watershed indicates that "sources of *E. coli* in the watershed include CSOs urban stormwater, failing septic systems, illicit storm drain connections, and pollutants from wildlife and domestic animals." The Fall Creek watershed drains approximately 41.5 square miles in Marion County. TMDLs for the Fall Creek Watershed are established for *E. coli* and will address three impairments through storm water controls, point source controls, manure management and habitat improvements to meet the required reduction of 52% (upstream of combined sewer overflow area) and 99.5% (Fall Creek within the CSO area).

Cicero Creek Watershed *E. coli* TMDL

Finalized in September 2011, the TMDLs for the Cicero Creek Watershed (Cicero Creek, Little Cicero Creek, Prairie Creek, Dixon Creek, Sloan Ditch, Buck Creek, and other tributaries to Morse Reservoir) were established to address *E. coli* impairments. The TMDL report indicates that "pollution sources in the watershed include nonpoint 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." TMDLs established include storm water controls, point source controls, manure management and habitat improvement to address *E. coli* and 27 impairments within the watershed.

2.5.3 Watershed Group or Health Department Monitoring Data

White River Alliance Monitoring Data

The White River Alliance (WRA) is an organization in central Indiana that works to improve and protect water resources, namely the White River and surrounding watershed. WRA leads the River Assessment Field Team (RAFT) program, which allows volunteer citizens to participate in local water quality sampling and assessments. RAFT operates several sampling sites on waterbodies within the Noblesville MS4. Monitoring data includes parameters such as *E. coli* bacteria and nutrient concentrations, water chemistry, and flow. Noblesville utilizes RAFT data to improve targeted education and outreach.

2.5.4 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 7: LARE Projects Relevant to City of Noblesville MS4

Waterbody	Funding Amount	Year	Project
Morse Reservoir	$100,000	2022	Logjam and Sediment Removal
Duck Creek	$50,000	2018	Watershed Land Treatment, Biological, and Engineering Projects
Hinkle Creek	$75,000	2018	Logjam and Sediment Removal

Additionally, the LARE program provided funding in 2011 for the Upper White River Watershed Regional Watershed Assessment and Planning Report. This project developed a broad, more holistic assessment of current conditions within the Upper White River Watershed. This also provided valuable information to prevent future degradation by taking a regional planning approach. Several strategies and potential solutions were presented for each of the three primary watershed management areas: Agricultural Till Plain Headwaters; Urban and Urbanizing Core Areas; and Southern Forested Hills.

2.5.5 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. Ultimately, 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 Noblesville waters and watersheds can be found in this section. Other WMPs for the county exist but are outdated and not relevant to this document. These are listed at the end of this section.

Hinkle Creek Watershed Master Plan (2013)

The Hinkle Creek Watershed Master Plan was prepared to guide decisions by the Hamilton County Drainage Board as the watershed develops into residential and commercial areas in the future. By considering the watershed quality, the County can help guide development to address the needs and increase the overall health of the watershed in the future.

Water quality concerns identified involved nutrients from plant and fertilizer waste, highly erodible soils resulting in field and stream erosion, and *E. coli* from livestock.

Morse Reservoir/Cicero Creek WMP (2011)

The 2011 Morse Reservoir/Cicero 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 improved watershed management in the Morse Reservoir/Cicero Creek Watershed. The goal statements included in the WMP are:

- Reduce nutrient loads so that there are no exceedances of EPAs suggested targets for nitrate + nitrite of 1.6 mg/L and total phosphorus of 0.076 mg/L.
- Reduce sediment loads to meet the IDEM statewide draft TMDL target of 30 mg/L for total suspended solids (TSS).
- Develop and implement an education and outreach program within the watershed.
- Reduce *E. coli* concentrations to meet the state standard of 235 CFU/100mL.

Geist Reservoir (2011)

The 2011 Geist Reservoir/Upper Fall 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 improved watershed management in the Geist Reservoir/Upper Fall Creek Watershed. The goal statements included in the WMP are:

- Develop and implement an education and outreach program within the watershed.
- Reduce *E. coli* concentrations to meet the state standard of 235 CFU/100 mL.
- Reduce nutrient loads so that there are no exceedances of EPAs suggested targets for nitrate + nitrite of 1.6 mg/L and total phosphorus of 0.076 mg/L.
- Reduce sediment loads to meet the IDEM statewide draft TMDL target of 30 mg/L for total suspended solids (TSS).
- Reduce and control the growth of exotic plants within the reservoir.
- Identify and utilize existing BMP funding sources and encourage the development and enhancement of additional and non-traditional funding sources.

Additional WMPs Relevant to the City of Noblesville MS4

- Lower Fall Creek (2009)
- Sand Creek-Mud Creek (2009)
- Little Cicero Creek WMP (2007)
- William-Lehr Ditch-Stony Creek WMP (2007)
- Cool Creek WMP (2005)

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. These complaints and observations are not currently tracked by location to develop trend data.

2.6.2 Industrial Facilities

The City of Noblesville is aware of 122 facilities within the MS4 boundary which, according to their Standard Identification 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

As areas are annexed to the City of Noblesville, current standards require homeowners to abandon residential septic systems and tie in with the sanitary sewers. New development is required to provide sanitary sewer service to residential areas within the MS4 boundary. If and when existing residential septic fields fail, connection is required within 300'.

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 a robust and ongoing maintenance program for the MS4 infrastructure. Utility Department staff who locate utilities for the 811 Call before you dig program travel the city daily for this purpose. They are trained to identify potential problems through visual observations while conducting their work duties. Potential problems that are observed during visual inspections are tracked and managed via CityWorks. As of the development of this document, this inspection program has not been developed or started.

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 8** describes discharge factors to screen sub-watersheds based on their illicit discharge potential (IDP).

Table 8: 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 subwatershed. Any subwatershed 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 subwatershed, 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 Subwatershed Development	Defined as the average age of the majority of development in a subwatershed. 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	Subwatersheds 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	Subwatersheds that were once served by combined sewer system but were subsequently separated have a high IDP/
Presence of Older Industrial Operations	Subwatersheds 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 subwatershed 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	Subwatersheds 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.

The city currently has an IDDE program and completes program requirements. The existing IDDE plan will be reviewed and revised if any IDDE hotspot areas are observed.

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 that are within or upstream of the City of Noblesville (Cicero Creek, Duck, Pipe, Killbuck, and Stony Creek Watershed, West Fork White River, and Fall 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 a 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. As referenced in the City of Noblesville's 2020 Land Use Plan, the city plans to increase mixed use office/commercial development in the downtown area, along with expanding mixed density single family residential zones. This growth can certainly have impacts on the MS4 program as well as the water quality of receiving waters. The city will utilize water quality sampling data from groups such as WRA, Hoosier Riverwatch and the Hamilton County Health Department to address and/or update TMDLs and WMPs over the permit term. The city will continue working to improve water quality in these four waterbodies through public education and outreach, as well as expanding the IDDE program to meet the requirements of the MS4GP.

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 Department as noted in Section 1.1, other departments, staff members, and partners will be responsible for the implementation of individual minimum control measures (MCMs) and tasks. Responsible parties are included in the BMP tables in the following sections.

MCMs 1 & 2 – Public Education, Outreach & Participation utilizes a regional approach to collaborate with other MS4 communities in the area to this end. Annually, the member MS4 Communities review the longer-term plan and adjust the annual work plan accordingly. The White River Alliance (WRA) has been the umbrella organization for the regional group and signs an MOU each year with member communities to outline the work plan and deliverables. Each MS4 community is 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 have been addressed by BMPs within the MS4 entity. For reference, programmatic indicators are listed in **Appendix 2**.

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 continues to work with the White River Alliance, Hamilton County Soil and Water Conservation District (SWCD), and the Hamilton County Solid Waste Management District (SWMD) to provide public information and outreach services while also playing a major role in the public involvement and participation activities related to the household hazardous waste and recycling efforts.

Table 9 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 9: 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 • Provide annual training to construction site run-off and post-construction target groups	• 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	• January 2023 (developed) • January 2024 • January 2025 • January 2026	• Noblesville MS4 Coordinator • Annual MOU with the WRA for a regional plan and deliverables
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, including restaurants, lawn maintenance, and commercial fueling stations • Include information related to proper disposal of wastes • Assist with larger efforts such as those similar to MS4 video production, workshops, etc. • Provide education stormwater videos to interested parties • Partner with water utilities on educational efforts for wellhead protection • Continue to require precast storm drain inlets that include a stormwater protection message for all new/reconstruction projects within the MS4	• 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 • Waterway signage with Report-a-polluter message at major cross roads	• January 2023 (plan) • January 2024 • January 2025 • January 2026	• Noblesville MS4 Coordinator

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Web Page (4.3(c))	• Maintain the Clean Stormwater Program web page regarding stormwater issues, a location to report stormwater quality issues, and links to other sites • Include articles developed, 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 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	• January 2023 • December 2023 • December 2024 • December 2025	• Noblesville MS4 Coordinator
Elected Official Update (4.3(e))	• Report stormwater program updates to elected officials or an advisory board	• Updates will be provided to city officials in March • Maintain a list of attendees and materials distributed	• March 2023 • March 2024 • March 2025	• Noblesville MS4 Coordinator and/or Operator
Household Hazardous Waste (HHW) and Recycling Activities (4.4(b)(4))	• Encourage citizens to use existing county HHW drop off for proper disposal • Educate residents about illicit discharges, proper disposal of waste, and the 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	• Noblesville MS4 Coordinator • Hamilton County SWMD

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking and Programmatic Indicators	Timeline	Responsible Party
Public Reporting Program (4.4(b)(6))	• Utilize Report-A-Polluter program to field complaints from the public on illegal dumping, illicit discharges, poor erosion control practices, and other activities that negatively impact stormwater quality	• Implement the pollution hotline program • Promote, advertise, and follow-up on complaints and calls received through the Report-A-Polluter program • Include educational material developed • Respond to complaints • Document the number of complaints received and all follow up actions taken on reports	• On-going	• Noblesville MS4 Coordinator
Partnership Activities	• Support SWCD activities to help implement the county-wide "Backyard Conservation" program • Participate actively in planning, coordinating, and participating in the annual White River Clean-up Event • Work with other regional groups and organizations that share common goals	• 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	• Noblesville MS4 Coordinator • Hamilton County SWCD • White River Alliance
Public Meetings	• Conduct public meetings and give public notice to educate citizens on stormwater quality and to solicit participation in stormwater programs	• Document the date, time, attendance, and outcome of each meeting • Record meeting minutes • Present stormwater-related information as needed to the Planning Department, City Council, Stormwater Board, and Citizen Advisory Group	• On-going	• Noblesville MS4 Operator and or Coordinator

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 activity conduction, 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
			• February 2023
			• February 2024
			• February 2025
			• February 2026
				• Noblesville MS4 Coordinator

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 10** 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 10: 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 "City of Noblesville Stormwater Management Ordinance" for needed updates and to ensure compliance with the MS4GP	• Enforce ordinance • Review policies at least once per permit term	• January 2023 (review/update) • Implementation throughout permit term	• Noblesville MS4 Coordinator
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 • Update the IDDE plan to include follow-up screening protocols, checklist, and current industrial facilities information • 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	• January 2023 (review/update) • Implementation throughout permit term	• Noblesville MS4 Coordinator
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 • Plan #GIS-100	• January 2023 (identify priority areas) • Review/update annually	• Noblesville MS4 Coordinator • Noblesville GIS Coordinator

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Responsible Party
IDDE Staff Training (4.4(g))	• Train appropriate staff members on investigation of illicit discharges or illicit connections to the stormwater conveyance system	• Conduct annual refresher training to appropriate departments and staff • Document number of staff, number of events held, and the topics covered in each session	• July 2023 • Annually	• Noblesville MS4 Coordinator
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	• February 2023 • February 2024 • February 2025 • February 2026	• Noblesville MS4 Coordinator

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 MS4 owned/operated 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 11 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 Noblesville. 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 Inspection and Maintenance Plan must be developed and implemented for all existing stormwater structural BMPs, which are under the authority of the MS4 entity. As new post-construction BMPs are added to areas under the authority of the MS4 entity, the Inspection & Maintenance 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 11 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 11: Construction and Post-Construction BMPs

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Responsible Party
Stormwater Management Ordinance (4.5(b)) (4.6(b)) (4.5(f)) (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	• January 2023 (review/update) • Implementation throughout permit term	• Noblesville MS4 Operator and or Coordinator
Plan Review and Permitting Procedures (4.5(c))	• Establish or review plan review and permitting procedures, internal processes, and timetables	• 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 • Reference Plan #ENG-101	• January 2023 (review/update) • Implementation throughout permit term	• Noblesville MS4 Development Team
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 • Require and hold performance and/or maintenance bonds until post-construction BMPs have been inspected to ensure they are properly functioning	• Establish or review written procedures for inspections • Develop or review forms, checklists • Identify priority sites for inspections • Conduct inspections in accordance with procedures (reference Plan #ENG-103) • Complete forms for active construction sites and post-construction BMPs inspected • Require bonds for 100% of all privately owned BMPs installed	• January 2023 (review/update) • Implementation throughout permit term	• Noblesville MS4 Development Team
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 • Reference Plan#ENG-103	• January 2023 (review/update) • Implementation throughout permit term	• Noblesville MS4 Development Team

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Responsible Party
Public Reporting Program for Construction Sites (4.5(g))	• Utilize program to field complaints from the public on illicit discharges, poor erosion control practices, and other activities that negatively impact stormwater quality from local construction projects	• Respond to complaints and inquiries • Document the number of complaints received and all follow up actions taken on reports	• On-going	• Noblesville MS4 Development Team
Staff Training (4.5(j)) (4.6(i))	• Train appropriate staff members on plan review, inspection, compliance, and enforcement • Utilize pre-construction meetings as a forum for training and discussions regarding relevant stormwater issues • Develop an interested professional email distribution list or database	• 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	• Noblesville MS4 Coordinator
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 related to construction sites	• Establish or revise tracking procedures • Establish or update digitized structural BMP maps	• January 2023 (review/update) • On-going	• Noblesville MS4 Development Team
Operation & Maintenance (O&M) Manuals (4.6(d))	• Require O&M manuals for all city owned post-construction BMPs • Require O&M manuals to be submitted for all privately owned post-construction BMPs identified as part of a project submittal package, review, accept and ensure document is recorded • Continue to maintain post-construction O&M manuals for all BMPs • Develop education material for post-construction BMP owners focusing on O&M manual content and issues associated with O&M	• Enforce ordinance requirements for O&M plan submittal and plan contents for new BMPs	• As plans are submitted	• Noblesville MS4 Development Team • MS4 Coordinator
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	• Noblesville MS4 Capital Projects Team

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
			• February 2023
			• February 2024
			• February 2025
			• February 2026
				• Noblesville MS4 Coordinator

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 12 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 12: 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:
	  ○ Secondary containment
	  ○ Salt/sand management
	  ○ Snow disposal areas
	  ○ Spill prevention and clean up
	  ○ Fertilizer and pesticide management
	  ○ Waste disposal
	  ○ Wash water management
		• Utilize SWPPP and sheets to track inspections, training, etc. for each facility	• Annually (review and revise)	• Noblesville MS4 Coordinator
				• Street Department
				• Utilities Department
				• Parks Department
				• Police/Fire Departments

Facility Inspections 4.7(c) 4.7(f)	• Assess existing operations at each MS4 owned and/or operated facility annually • 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	• Noblesville MS4 Coordinator • Street Department • Utilities Department • Parks Department • Police/Fire Departments
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	• 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	• July 2023 (review/update) • Implementation throughout permit term	• Utilities Department • Street Department

Best Management Practice (BMP)	BMP Description	Measurable Goals, Tracking, and Programmatic Indicators	Timeline	Responsible Party
		• Document all improvements made to roadside shoulders and ditches • Document all improvements made to stormwater outfalls • Document all issues noted during visual inspection		
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	• Each Department managing projects
Flood Management Projects (4.7(k)) (4.7(l))	• As they are proposed, assess flood management projects for incorporation of water quality devices or practices	• Document that flood control projects are assessed for incorporation of additional water quality devices or practices	• As projects proposed	• 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	Noblesville MS4 Coordinator

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
			• February 2023
			• February 2024
			• February 2025
			• February 2026
				• Noblesville MS4 Coordinator

REFERENCES

American Legal Publishing Corporation. (2022). Noblesville, Indiana Code of Ordinances. Retrieved from https://codelibrary.amlegal.com/codes/noblesville/latest/noblesville_in/0-0-0-1

EPA. (1972). *Clean Water Act.*

IDEM. (1998). Fall Creek E. coli TMDL. Retrieved from https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/fall-creek/

IDEM. (2004). West Fork White River. Retrieved from https://www/in.gov/idem/nps/resources/total-maximum-daily-load-reports/white-river-west-fork-muncie-to-hamilton-marion-county-line/

IDEM. (2005). Cool Creek WMP. Retrieved from https://www.in.gov/idem/nps/resources/watershed-management-plans/cool-creek-wmp-4-139/

IDEM. (2007). Little Cicero Creek WMP. Retrieved from https://www.in.gov/idem/nps/resources/watershed-management-plans/little-cicero-wmp-4-140/

IDEM. (2007). William Lehr Ditch-Stony Creek. Retrieved from https://www.in.gov/idem/nps/resources/watershed-management-plans/stony-creek-wmp-5-161/

IDEM. (2008). Duck, Pipe, Killbuck, Stony Creek E. coli TMDL. Retrieved from https://www.in.gov/idem/nps/resources/total-maximum-daily-load-reports/duck-pipe-killbuck-stony-creek/

IDEM. (2009). Lower Fall Creek. Retrieved from https://www.in.gov/idem/nps/resources/watershed-management-plans/fall-creek-lower-wmp-5-09/

IDEM. (2009). Sand Creek-Mud Creek. Retrieved from IDEM: Nonpoint Source: Sand Creek WMP 00-222

IDEM. (2011). Cicero Creek Watershed. Retrieved from http://www.in.gov/idem/nps/3852.htm

IDEM. (2011). Geist Reservoir. Retrieved from https://www.in.gov/idem/nps/resources/watershed-management-plans/geist-reservoir-upper-fall-creek-wmp-lare/

IDEM. (2011). Morse Reservoir/Cicero Creek WMP. Retrieved from http://www.in.gov/dnr/fishwild/files/fw_Morse_Res_Cicero_Creek_Wtrshd_Mgmt_Plan_Boone Clinton_Ham_Tip_Counties_Feb_2011.pdf

IDEM. (2013). Hinkle Creek Watershed Plan. Retrieved from https://www.hamiltoncounty.in.gov/egov.documents/1386698975_011_07.pdf

IDEM. (2022). MS4GP. Retrieved from https://www.in.gov/idem/stormwater/municipal-separate-storm-sewer-systems-ms4/

IDNR. (2020). Lake and River Enhancement Projects. Retrieved from https://www.in.gov/dnr/fishwild/3304.htm

Indiana Department of Environmental Management. (2003, July 7). Rule 13. Storm Water Run-Off Associated with Municipal Separate Storm Sewer System Conveyances. *Indiana Administrative Code*.

Indiana Department of Environmental Management. (2021). Municipal Stormwater General Permit (INR04000).

Indiana Department of Environmental Management. (n.d.). Rule 6. Storm Water Discharges Exposed to Industrial Activity. *Indiana Administrative Code*.

Indiana Department of Natural Resources. (2022). Aquifer Systems Mapping. Retrieved from https://www.in.gov/dnr/water/ground-water-wells/assessment-maps-and-publications/aquifer-systems-mapping-148000/

Indiana Department of Natural Resources. (2022). Heritage Data Center. Retrieved from https://www.in.gov/dnr/nature-preserves/heritage-data-center/

Indiana Department of Transportation. (2020). Listing of Outstanding Rivers and Streams. Retrieved from https://www.in.gov/indot/div/pubs/waterway/AppendixP-IDNRListingofOutstandingRiversorStreams.pdf

Indiana Water Monitoring Council. (2022). Retrieved from http://inwater.agriculture.purdue.edu/monitoring/

Natural Resources Conservation Service. (2020). Conservation Compliance for Highly Erodible Lands. Retrieved from https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/farmbill/?cid=nrcseprd1542214#:~:text=NRCS%20utilizes%20the%20soil%20survey%20to%20develop%20a,a%20field%20review%20before%20the%20determination%20becomes%20final.

Soil Survey. (2019). National Resource Conservation Service. USDA. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/

StatsIndiana. (2021). Indiana Cities Population 1900 - 2020. Retrieved from https://www.stats.indiana.edu/population/PopTotals/historic_counts_cities.asp

U.S. Fish and Wildlife Service. (2022). National Wetlands Inventory. Retrieved from https://www.fws.gov/program/national-wetlands-inventory

USGS. (2022). Watersheds and Drainage Basins. Retrieved from https://www.usgs.gov/special-topics/water-science-school/science/watersheds-and-drainage-basins

White River Alliance. (2022). Sampling Data. *River Assessment Field Team (RAFT)*. Retrieved from https://thewhiteriveralliance.org/programs/river-assessment-field-team-raft/

APPENDIX 1: MS4 Owned and/or Operated Structural BMPs

Structural BMP Type	Category of Infrastructure	BMP ID	Structural Condition
Aqua Swirl	Gray	2	*TBD*
Aqua Swirl	Gray	3	*TBD*
Aqua Swirl	Gray	4	*TBD*
Aqua Swirl	Gray	5	*TBD*
Aqua Swirl	Gray	6	*TBD*
Aqua Swirl	Gray	7	*TBD*
Aqua Swirl	Gray	8	*TBD*
Stormceptor	Gray	13	*TBD*
Vortech	Gray	27	*TBD*
Stormceptor	Gray	28	*TBD*
Stormceptor	Gray	29	*TBD*
Vortech	Gray	35	*TBD*
Vortech	Gray	36	*TBD*
Vortech	Gray	37	*TBD*
Vortech	Gray	38	*TBD*
Vortech	Gray	39	*TBD*
Stormceptor	Gray	43	*TBD*
Vortech	Gray	44	*TBD*
Vortech	Gray	45	*TBD*
Downstream Defender	Gray	47	*TBD*
Downstream Defender	Gray	48	*TBD*
Downstream Defender	Gray	49	*TBD*
Downstream Defender	Gray	50	*TBD*
Downstream Defender	Gray	52	*TBD*
Aqua Swirl	Gray	54	*TBD*
Aqua Swirl	Gray	55	*TBD*
Aqua Swirl	Gray	56	*TBD*
Aqua Swirl	Gray	57	*TBD*
Aqua Swirl	Gray	58	*TBD*
Aqua Swirl	Gray	61	*TBD*
Aqua Swirl	Gray	62	*TBD*
Aqua Swirl	Gray	65	*TBD*
Vortech	Gray	68	*TBD*
Vortech	Gray	69	*TBD*
Aqua Swirl	Gray	70	*TBD*
Aqua Swirl	Gray	72	*TBD*
Aqua Swirl	Gray	73	*TBD*
Vortech	Gray	74	*TBD*
Aqua Swirl	Gray	75	*TBD*
Aqua Swirl	Gray	76	*TBD*
Aqua Swirl	Gray	86	*TBD*
Vortech	Gray	87	*TBD*
Aqua Swirl	Gray	88	*TBD*
Downstream Defender	Gray	95	*TBD*
Aqua Swirl	Gray	96	*TBD*
Aqua Swirl	Gray	97	*TBD*
Downstream Defender	Gray	102	*TBD*
Aqua Swirl	Gray	103	*TBD*

Aqua Swirl	Gray	104	*TBD*
Aqua Swirl	Gray	105	*TBD*
Aqua Swirl	Gray	106	*TBD*
Vortech	Gray	107	*TBD*
Stormceptor	Gray	112	*TBD*
Downstream Defender	Gray	118	*TBD*
Vortech	Gray	121	*TBD*
Downstream Defender	Gray	123	*TBD*
Aqua Swirl	Gray	128	*TBD*
Vortech	Gray	129	*TBD*
Aqua Swirl	Gray	132	*TBD*
Aqua Swirl	Gray	133	*TBD*
Aqua Swirl	Gray	134	*TBD*
Aqua Swirl	Gray	135	*TBD*
Aqua Swirl	Gray	136	*TBD*
Stormceptor	Gray	146	*TBD*
Stormceptor	Gray	147	*TBD*
Stormceptor	Gray	148	*TBD*
Vortech	Gray	150	*TBD*
Vortech	Gray	151	*TBD*
Vortech	Gray	153	*TBD*
Contech CDS	Gray	160	*TBD*
Contech CDS	Gray	161	*TBD*
Special	Gray	162	*TBD*
Contech CDS	Gray	163	*TBD*
Vortech	Gray	164	*TBD*
Contech CDS	Gray	166	*TBD*
Vortech	Gray	168	*TBD*
Vortech	Gray	169	*TBD*
Vortech	Gray	170	*TBD*
Special	Gray	172	*TBD*
Contech CDS	Gray	173	*TBD*
Contech CDS	Gray	175	*TBD*
Contech CDS	Gray	176	*TBD*
Contech CDS	Gray	177	*TBD*
Contech CDS	Gray	178	*TBD*
Contech CDS	Gray	179	*TBD*
Contech CDS	Gray	180	*TBD*
Contech CDS	Gray	181	*TBD*
Contech CDS	Gray	182	*TBD*
Contech CDS	Gray	183	*TBD*
Contech CDS	Gray	184	*TBD*
Contech CDS	Gray	185	*TBD*
Contech CDS	Gray	187	*TBD*
Contech CDS	Gray	188	*TBD*
Contech CDS	Gray	189	*TBD*
Contech CDS	Gray	190	*TBD*
Downstream Defender	Gray	193	*TBD*
Contech CDS	Gray	197	*TBD*
Contech CDS	Gray	199	*TBD*

Contech CDS	Gray	200	*TBD*
Contech CDS	Gray	201	*TBD*
Vortech	Gray	601	*TBD*
Contech CDS	Gray	1002	*TBD*
Contech CDS	Gray	1003	*TBD*
Contech CDS	Gray	1004	*TBD*
Contech CDS	Gray	1005	*TBD*
Vortech	Gray	1008	*TBD*
Contech CDS	Gray	1009	*TBD*
Contech CDS	Gray	1016	*TBD*
Contech CDS	Gray	1017	*TBD*
Aqua Swirl	Gray	1416	*TBD*
Aqua Swirl	Gray	1417	*TBD*
Aqua Swirl	Gray	1418	*TBD*
Aqua Swirl	Gray	1419	*TBD*
Stormwater Separator	Gray	1816	*TBD*
Contech CDS	Gray	2216	*TBD*
Contech CDS	Gray	4217	*TBD*
Contech CDS	Gray	4218	*TBD*
Contech CDS	Gray	4219	*TBD*
Contech CDS	Gray	4618	*TBD*
Contech CDS	Gray	5418	*TBD*
Contech CDS	Gray	5822	*TBD*
Contech CDS	Gray	5824	*TBD*
Contech CDS	Gray	5825	*TBD*
Contech CDS	Gray	5826	*TBD*
Contech CDS	Gray	5827	*TBD*
Contech CDS	Gray	5828	*TBD*
Contech CDS	Gray	5829	*TBD*
Contech CDS	Gray	5830	*TBD*
Contech CDS	Gray	5831	*TBD*
Contech CDS	Gray	5841	*TBD*
Contech CDS	Gray	6225	*TBD*
Contech CDS	Gray	6226	*TBD*
Contech CDS	Gray	7426	*TBD*
Contech CDS	Gray	7427	*TBD*
Aqua Swirl	Gray	7829	*TBD*
Aqua Swirl	Gray	7830	*TBD*
Contech CDS	Gray	7831	*TBD*
Contech CDS	Gray	7832	*TBD*
Contech CDS	Gray	7833	*TBD*
Contech CDS	Gray	7834	*TBD*
Aqua Swirl	Gray	7837	*TBD*
Aqua Swirl	Gray	7838	*TBD*
Contech CDS	Gray	8237	*TBD*
Contech CDS	Gray	8637	*TBD*
Contech CDS	Gray	8638	*TBD*
Contech CDS	Gray	8639	*TBD*
Aqua-Swirl Xcelerator	Gray	9443	*TBD*
Aqua-Swirl Xcelerator	Gray	9444	*TBD*

Aqua-Swirl Xcelerator	Gray	9445	*TBD*
Pervious pavers	Green	2	*TBD*
Infiltration basin	Green	3	*TBD*
Rain garden	Green	4	*TBD*
Rain garden	Green	5	*TBD*
Pervious pavers	Green	6	*TBD*
Rain garden	Green	14	*TBD*
Rain garden	Green	15	*TBD*
Rain garden	Green	16	*TBD*
Rain garden	Green	17	*TBD*
Bioswale	Green	19	*TBD*
Rain garden	Green	54	*TBD*
Rain garden	Green	62	*TBD*

APPENDIX 2: Programmatic Indicators

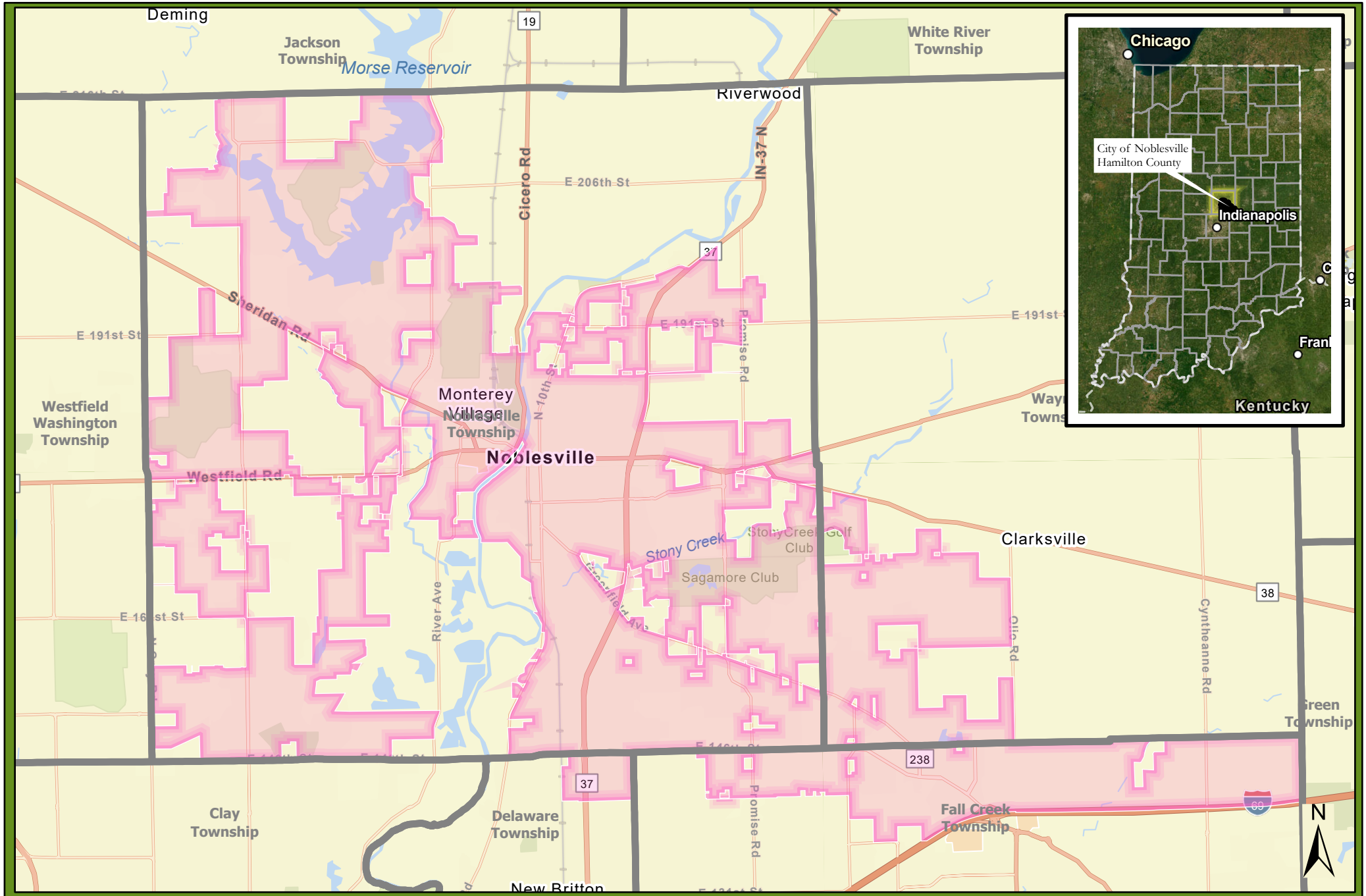
MCM	Programmatic Indicator Permit Citation	Description
Public Education, Outreach, Participation & Involvement	4.3(h)(2)	A list of each public participation and outreach events and activities conducted, a description of the activity, an estimate of the number of attendees, and an assessment if the goals 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: 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 4: Exhibits

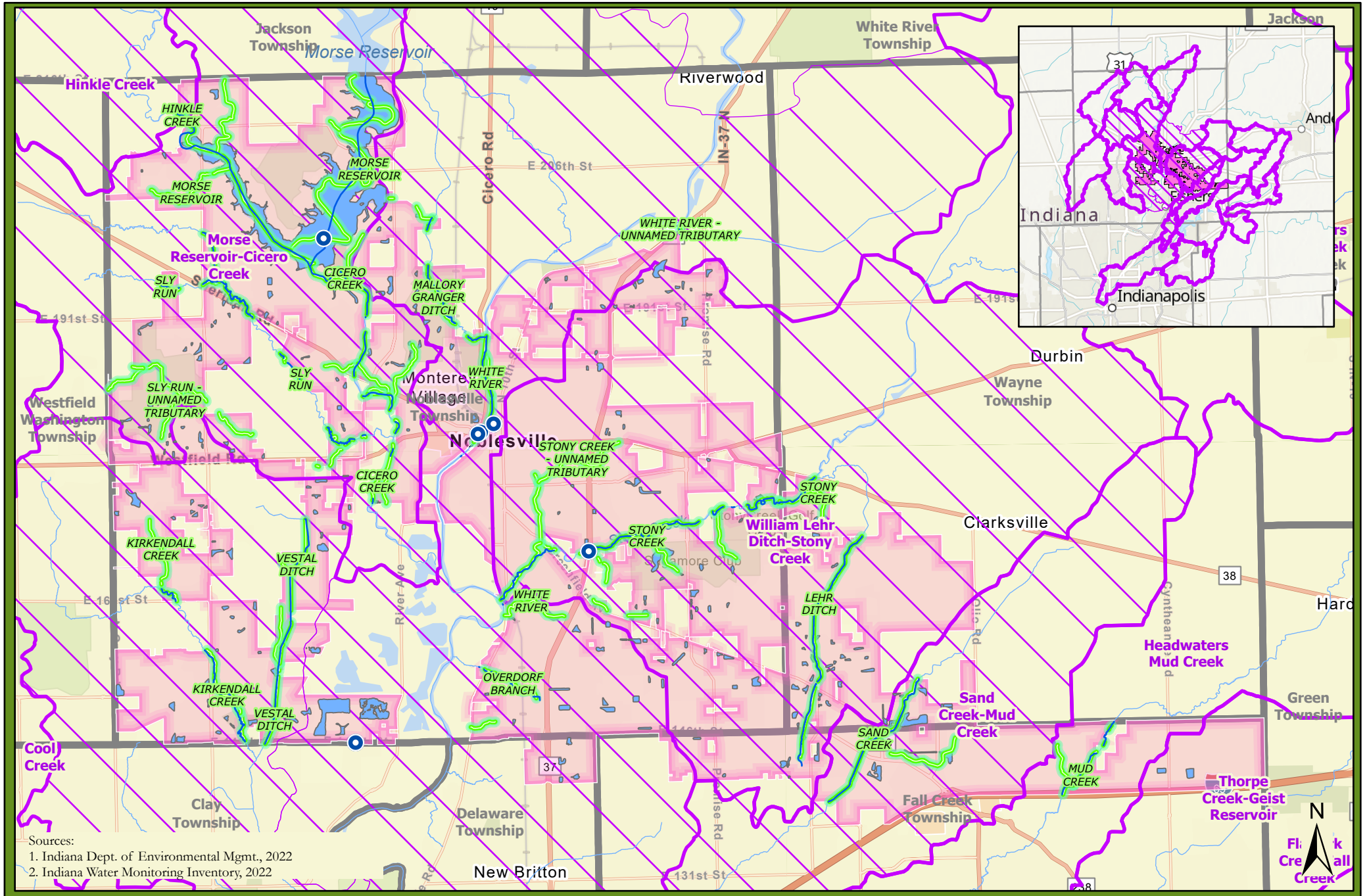


MS4 Boundary

Township Boundary

Christopher B. Burke Engineering LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 www.cbbel-in.com

PROJECT: **MS4 Stormwater Quality Management Plan City of Noblesville, Indiana**		PROJECT NO. **03-0532**	APPROX SCALE: **1" = 7,000'**
TITLE: **MS4 Boundary**			DATE: **12/2022**
			EXHIBIT: **1**

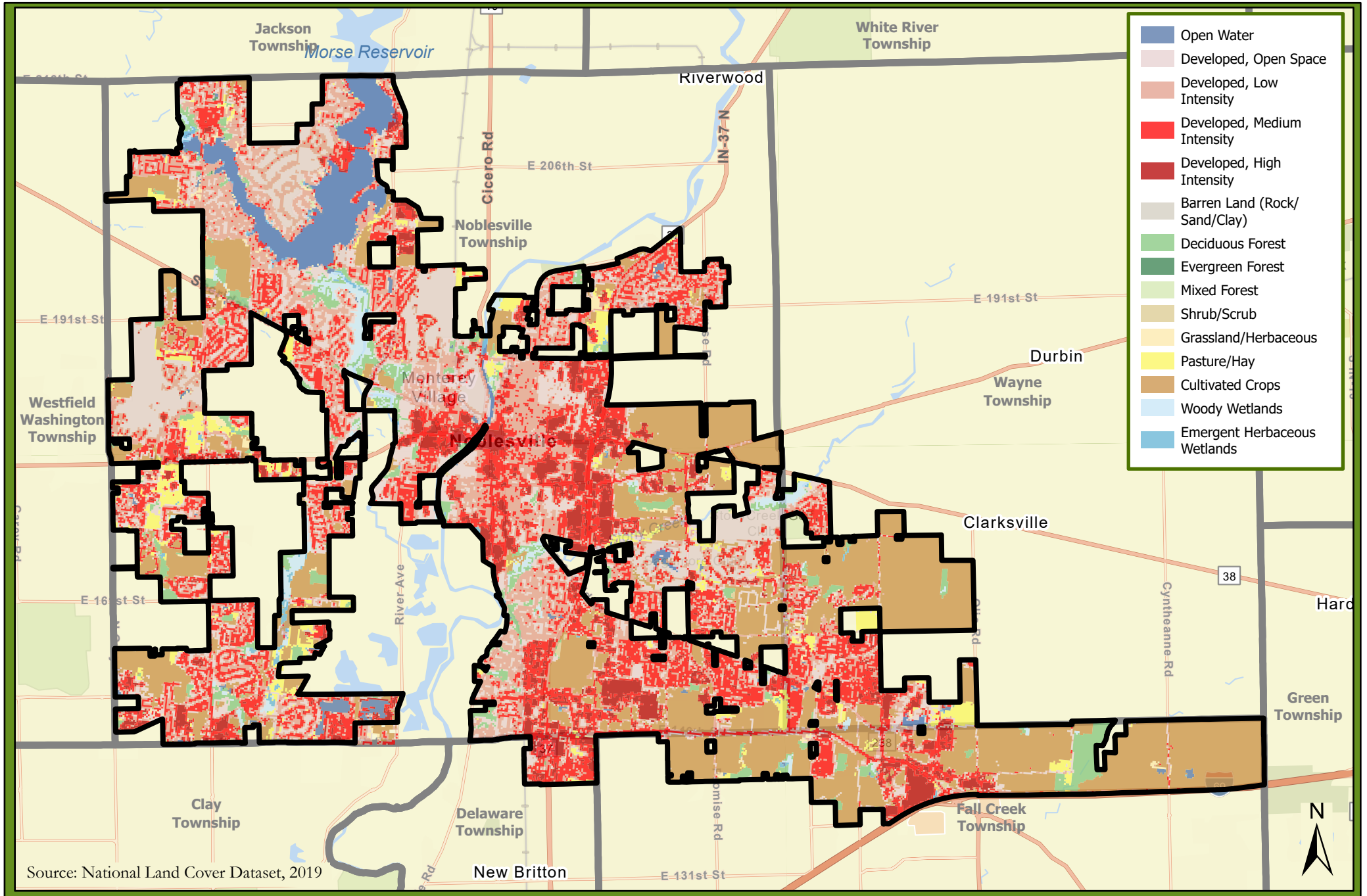


Sources:
1. Indiana Dept. of Environmental Mgmt., 2022
2. Indiana Water Monitoring Inventory, 2022

- Monitoring Sites (IWMI)
- MS4 Receiving Waters
- 303(d) Impaired Waterways
- Total Maximum Daily Load Reports
- Watershed Management Plans
- MS4 Boundary

Christopher B. Burke Engineering LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 www.cbbel-in.com

PROJECT: MS4 Stormwater Quality Management Plan City of Noblesville, Indiana	PROJECT NO. 03-0532	APPROX SCALE: 1" = 7,000'
TITLE: Water Quality		DATE: 12/2022
		EXHIBIT: 2



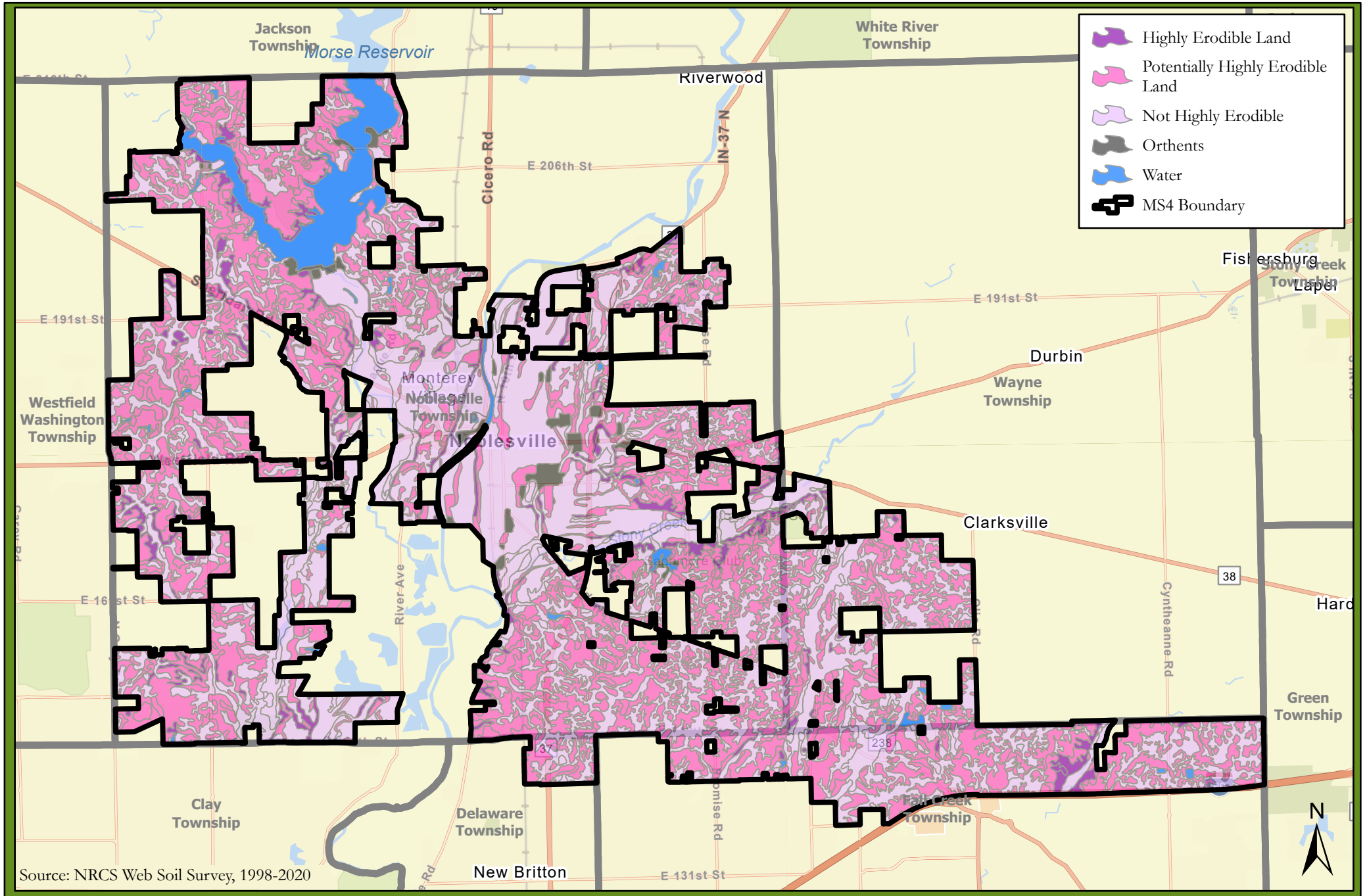
Source: National Land Cover Dataset, 2019

MS4 Boundary

Township Boundary

Christopher B. Burke Engineering LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 www.cbbel-in.com

PROJECT: MS4 Stormwater Quality Management Plan City of Noblesville, Indiana		PROJECT NO. 03-0532	APPROX SCALE: 1" = 7,000'
TITLE: Land Cover			DATE: 12/2022
			EXHIBIT: 3



MS4 Boundary

Christopher B. Burke Engineering LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 www.cbbel-in.com

PROJECT: MS4 Stormwater Quality Management Plan City of Noblesville, Indiana		PROJECT NO. 03-0532	APPROX SCALE: 1" = 7,000'
TITLE: Highly Erodible Land			DATE: 12/2022
			EXHIBIT: 4