# Table of Contents

**City of Huntington**
**Stormwater Quality Management Plan**
**Part B - Baseline Characterization Report**

# Chapter 1 – Existing Data and Approaches for Evaluating the Data

## 1.0 Background

The City of Huntington, a Municipal Separate Storm Sewer (MS4) entity, must prepare a Stormwater Quality Management Plan as required by 327 IAC 15-13 (Rule 13).

Work to date includes the City's submittal of their *Notice of Intent* (NOI), the first requirement of Rule 13, as well as, the submittal of their *Part A, Initial Application Checklist Form*; all of which occurred prior to the November 4, 2003, deadline.

As was acknowledged in the NOI, the United States Geological Survey National Hydrogeological Database identified four primary watersheds. The 14-digit hydrogeological unit codes (HUC) of the watersheds are as follows:

1. No. 05120101120050: Little River – Flint Creek
2. No. 05120101130030: Clear Creek Church
3. No. 05120101140010: Wabash River – Silver Creek – Nieman Creek
4. No. 05120101090020: Wabash River – Huntington Waterworks

Huntington's existing Land Uses, Best Management Practices, Sensitive Areas, and Areas Having Reasonable Potential for Causing Water Quality Problems were parameters of investigation for establishing a baseline characterization of the receiving waters of Huntington. The data within the baseline characterization was evaluated to determine which identified areas, or specific discharge point, are in need of additional consideration.

The following sections include brief narratives with respect to the existing data, and the approaches used for evaluating said data, for the City of Huntington.

## 1.1 Land Use Classifications

Land Use maps were unavailable for the City of Huntington, therefore all land use references were based on the zoning classifications provided by Huntington County's Geographical Information Systems (G.I.S.) department.

### 1.1.1 Agriculture

The district designated for agricultural uses is intended to protect and maintain the agricultural lands utilized for farming and

livestock purposes. It is the intent of this designation to preserve agricultural lands and to discourage reclassification of zoning to non-agricultural use without a clear showing of proven need in the public interest and a clear showing of conformity with the Comprehensive Plan.

1.1.2 **Business (B-1, B-2 and BP):** The B-1 and B-2 districts are limited to business, public and certain residential uses. By establishing compact districts for those uses, more efficient traffic movement, parking facilities, fire and police protection may be provided. Industrial uses are excluded in order to reduce the hazards caused by extensive truck and rail movements normally associated with those uses. The purpose of these districts is to provide unified, conveniently located, shopping districts.

The Business Park (BP) District is intended to accommodate a mixture of offices, business, and industries in a planned environment. This district is intended for a large parcel of land that is easily accessible, and in an area conducive to both commercial and industrial development.

1.1.2 **Industrial (I-1, I-2, I-3 and I-4):** The districts designated for industry provide suitable space for existing industries and their expansion as well as for future industrial development. The districts are established based upon intensity of permitted uses and developmental standards. Each district and the applicable standards are designed to insure safe industrial development that is compatible with surrounding uses.

1.1.3 **Residential (R-1, R-1A, R-2 and R-3):** Districts designated for residential uses are limited to dwellings and public or semi-public uses which are normally associated with residential neighborhoods. The only uses permitted in the residential districts are those which do not detract from the residential character of the neighborhood. The purpose of the four districts is to create an attractive, stable and orderly residential environment. However, the families per dwelling and the lot and yard setbacks will vary in order to provide for the various housing needs and desires of the citizens.

1.1.4 **Miscellaneous/Other**

**Conservation District (C-1):** The district designated for conservation is limited to agricultural, recreational, and certain other open land uses. Residential and related uses are permitted if approved by the Board of Zoning Appeals. The purpose of this

district is to prevent intensive development of land that is unsuitable for development because of topography, soil conditions, or periodic flooding.

**Mixed Use District (MXD):** The district designated for mixed-use development is limited to residential, business, and institutional uses. The purpose of the district is to accommodate residential, retail, service specialty shops and institutional uses which are typically located along Primary Arterial streets within the City. The district promotes the continued development of residential units while permitting certain commercial and institutional uses to service the needs of the residents of the neighborhood and community. Off-street parking, landscaping, and signage standards apply.

**Professional Office District (POD):** The district designated for professional offices is intended to accommodate low-intensity uses such as professional offices and business offices within a planned environment. This district is not commercial in character, however, certain limited commercial uses are permissible by special exception in demonstrated support of permitted uses in the specific POD. As the POD is designed to be compatible with residential uses, it is partially intended as a buffer or transitional area between residential and more intense business developments.

**Flood Hazard Area Overlay District (FHA):** The purpose of the Flood Hazard Area Overlay District is to restrict development in the flood hazard areas in order to reduce the potential for loss of life and property, reduce the potential for health and safety hazards, and to reduce the potential for extraordinary public expenditures for flood protection and relief.

**Airport Height Restrictions Overlay District (AHR):** The purpose of the Airport Height Restrictions Overlay District is to regulate the height of a structure erected or constructed which could create an obstruction and endanger the lives and property of users of the Huntington Municipal Airport. This district would allow the erection or construction of a structure permitted in accordance with the underlying zoning district provided the height of the structure does not exceed the maximum established for the district.

Refer to Appendix A, for Huntington's Zoning Map.

## 1.2 Existing Best Management Practices (BMPs)

In order to identify and evaluate the City's existing Best Management Practices, a workbook was prepared. The workbook was first used to introduce the topic of Best Management Practices for stormwater quality to the City's personnel, and second to serve as place for the recording and evaluation of the structural and non-structural BMPs in place prior to the development of this plan.

Bonar Group used the completed BMP Workbook to determine if the BMPs were operating effectively and according to their design, as well as, to determine whether or not they included components to address stormwater quality. The non-structural BMPs were evaluated to determine if the process used for each non-structural BMP is as effective as possible to improve stormwater quality.

A summary of existing structural and non-structural BMPs is included in section 2.2.

## 1.3 Existing Sensitive Areas

The identification of sensitive areas is directly related to the purpose statement of the rule that states that "public health, existing water uses, and aquatic biota are protected." Identifying sensitive areas is a key first step in protection. Once known, stormwater discharges into, or near, sensitive areas can receive higher prioritization for the future implementation of control measures to ensure that the sensitive areas are adequately protected.

These additional water quality corrective/protective measures, when appropriate, can include structural best management practices, or pollutant source identification and reduction/elimination, resulting in the overall improvement of the water quality of impaired or otherwise sensitive areas.

Letters were sent to the Indiana Department of Natural Resources Division of Fish and Wildlife, and the U.S. Department of Interior U.S. Fish and Wildlife Services requesting information pertaining to State and Federally listed species identified as threatened or endangered as well as any known State Natural Resources that may be present within the incorporated limits of the City of Huntington. In addition, the City's Wellhead Protection Plan (WHPP), CSO Long-Term Control Plan (LTCP), and their Stream Reach Characterization and Evaluation Report (SRCER) were also used as resources.

The above mentioned resources were investigated for, but were not limited to, the following parameters:

- State and Federally listed, threatened or endangered, species;
- Public surface water supply intakes;
- Full body contact recreational areas;
- Outstanding State Resource Waters;
- Locally identified sensitive areas; and
- Wetlands

## 1.4 Existing Areas Having Reasonable Potential for Causing Water Quality Problems

The purpose of gathering information pertaining to areas with reasonable potential for causing water quality problems is to identify areas for future implementation of Best Management Practices to further prevent water quality problems, as well as, to educate the public about water quality.

Letters were sent to individual Rule 6 (industrial stormwater) permit holders requesting available information pertaining to water quality. In addition, the City's Wellhead Protection Plan (WHPP), CSO Long-Term Control Plan (LTCP), and Stream Reach Characterization and Evaluation Report (SRCER) were also used as resources.

The WHPP was investigated for its *Potential Sources of Contamination Inventory List*.

Other known areas with reasonable potential for causing water quality problems include:

- Documented complaints from community members;
- Operations of the community's Wastewater Treatment Plant;
- Industrial Facilities discharging to the MS4 conveyance system;
- Salt Storage Facilities; and
- Parking facilities discharging to the MS4 conveyance system.

## 1.5 Identification of MS4 Open Ditch Conveyances and Receiving Streams

Open ditches within the incorporated limits of Huntington were categorized. All open ditches in the City of Huntington fit into one of three categories. The categories are as follows:

- Non-MS4 Open Ditch Conveyances
- MS4 Open Ditch Conveyances
- Receiving Streams

Open ditches with 2 feet or larger bottom width are categorized as "MS4 Open Ditch Conveyances". Open ditches with a bottom width smaller than 2 feet are categorized as "Non-MS4 Open Ditch Conveyances". Open ditches owned by other entities that are not "Receiving Streams" such as county legal drains are also categorized as "Non-MS4 Open Ditch Conveyances."

USGS Quadrangle maps were used as a source in the categorization of the open ditches within Huntington. If a ditch appeared on the USGS Quadrangle map as a solid blue line, it was categorized as "Receiving Stream". If the ditch shown on the USGS Quadrangle map was shown as a dashed blue line, it was categorized as an MS4 Conveyance.

The MS4 Operator was a secondary source in the categorization of the open ditches within Huntington. If the Operator's knowledge contradicted that which was portrayed on the USGS Quadrangle map, such discrepancy was taken into consideration and the appropriate categorization was made.

In general, ditches that have intermittent flow are not categorized as Receiving Streams, but are instead categorized as MS4 Open Ditch Conveyances.

## 1.6 Existing Water Quality Data

The purpose of gathering existing water quality data is to characterize the water quality of all known waters that receive stormwater outfall discharges within the MS4.

### 1.6.1 Sources

The following sources were contacted for information ranging from raw data to published reports describing the quality of the waters of Huntington, Indiana.

- IDEM AIMS Database;
- IDEM Fish Community Assessment;
- IDEM Watershed Studies;
- IDNR Hoosier Riverwatch;
- USGS Water Resources and Fixed Station Ambient Monitoring;
- County Soil and Water Conservation District;
- County Health Department;
- Industrial Stormwater Discharges;
- Army Corp of Engineers;
- US EPA;

- SRCER;
- Drinking Water Utility; and
- Indiana State Department of Health

Refer to Appendix B, Resources, for detailed information about the resources of the water quality data analyzed throughout Chapter 2 of this plan.

### 1.6.2 Methodology

The following methodologies were used to analyze the water quality data that was received.

#### 1.6.2.1 IDEM AIMS Database

The IDEM AIMS Database provided comprehensive upstream and downstream sampling results for various water quality parameters including E. coli, general chemical parameters and metals. The Wabash River has been monitored, monthly, at this downstream location since 1991. Singular organics and pesticide screening studies were performed in 1998 between April and July.

Comprehensive sampling studies are analyzed for trends in the annual averages over the duration of the study period.

An upstream/downstream water quality analysis cannot determine water quality deterioration due to the MS4 entity's influence due to the selection of sampling location. The upstream sampling location reflects water quality under the direct influence of the MS4 area. The downstream sampling location reflects water quality after the MS4 entity's influence.

Screening studies are analyzed for the presence or absence of detectable compound levels.

#### 1.6.2.2 IDEM Fish Community Assessment

IDEM periodically evaluates random receiving stream segments and assigns Qualitative Habitat Evaluation Index (QHEI) and Index of Biotic Integrity (IBI) scores. The QHEI gives an estimate of the suitability of a stream segment meeting Warm-water Habitat

conditions for aquatic organisms. Warm-water Habitat is the "natural" habitat type for this region. The IBI index is a water quality assessment tool using fish communities as a monitoring tool to determine the biological integrity of the stream. These scores were used for the characterization of the waters of Huntington, Indiana.

#### 1.6.2.3 Stream Reach Characterization and Evaluation Report

The Stream Reach Characterization and Evaluation Report (SRCER) provides basic information on ambient wet and dry weather conditions within the City's watershed. A comprehensive SRCER provides basic ambient water parameter data including: pH, bacteriological counts, solids loading, nutrient and metals concentrations. Summary contrast analyses were performed on upstream and downstream parameters during both dry and wet weather conditions.

The number of samples collected and analyzed was small; therefore, no trend analyses could be made.

#### 1.6.2.4 IDEM Macroinvertebrate Community Data

IDEM conducted macroinvertebrate community assessments and concurrent habitat surveys on selected stream segments, resulting in Qualitative Habitat Evaluation (QHEI) and Macroinvertebrate Index of Biotic Integrity (MIBI) indices. Receiving streams are designated as impaired or unimpaired based on a numerical index criteria provided by IDEM. These indices were used to help characterize the waters of Huntington, Indiana.

#### 1.6.2.5 IDNR Hoosier Riverwatch

The Indiana Department of Natural Resources' Hoosier Riverwatch program conducts habitat, biological and chemical water quality surveys. The program uses an independently established index system for the different water quality parameters. The *Citizens Qualitative Habitat Evaluation Index* (CQHEI) is a habitat score (Citizen evaluations correlate to professional stream assessments and therefore are considered reasonably

accurate), the *Water Quality Index* (WQI) and *Green Score* are chemical water quality indices and the *Pollution Tolerance Index* (PTI) is a macroinvertebrate diversity score. These scores were used for the characterization of the waters of Huntington, Indiana.

#### 1.6.2.6 Lake Water Quality Assessment

IDEM's Lake Water Quality Assessment program evaluates water quality based on physical, chemical and biological parameters. These parameters reflect the nutrient and sediment build-up present in a water body. Concentration ranges are assigned a numerical value and the total score for a water body is called the "Indiana Trophic State Index". With approximately 600 public lakes and reservoirs to monitor, at least 5 years is required to complete a sampling cycle for the entire state. Due to the extended survey period, the most readily available data for Huntington County is often dated. Nonetheless, trophic indices were evaluated for conditions and existing trends based on a scale provided by IDEM personnel. These conditions and trends were used for the characterization of the waters of Huntington, Indiana.

#### 1.6.2.7 Industrial Stormwater Discharges (Rule 6 Permit Holders)

Industries with General Stormwater Discharge Permits are issued discharge limits on specific constituents. Discharge Monitoring Reports (DMR) or laboratory results are analyzed for exceedances of established limits.

In the absence of discharge limits, constituent concentrations are compared to ambient surface water quality concentrations established by the AIMS monitoring data or IDEM surface water quality standards. Assessment of runoff water quality is based on whether the constituent level in the stormwater is significantly higher than in the surface water.

### 1.6.2.8 Indiana State Department of Health

According to the U.S. EPA, local, or in this case State, governments protect people from possible risks of eating contaminated fish by monitoring their waters and issuing fish advisories when contaminant levels are unsafe. Most advisories involve five primary contaminants: mercury, PCBs, chlordane, dioxins, and DDT. These chemical contaminants persist for long periods in sediments where bottom-dwelling animals accumulate and pass them up the food chain. Levels of these contaminants are known to increase as they move up the food chain, making the waters' top predators (i.e. the largemouth bass or the walleye) susceptible to levels a million times higher than that in the water. Research was conducted to obtain Huntington County's most recent *Fish Consumption Advisory*.

The annual Indiana Water Quality Report uses the indices of the Fish Consumption Advisory as "criteria for evaluating designated use support."

### 1.6.2.9 Little, if any, relevant data available

The following resources provided little, if any, relevant water quality data, therefore, there are no methodologies associated with what would have been their data.

- IDEM Watershed Studies;
- USGS Water Resources and Fixed Station Ambient Monitoring;
- County Soil and Water Conservation District;
- County Health Department;
- Drinking Water Utility;
- Army Corp of Engineers; and
- US EPA

# Chapter 2 – Data Evaluation Results

## 2.0 General

Data was gathered on Land Zoning, Existing BMPs, Sensitive Areas, Areas Having Reasonable Potential for Causing Stormwater Quality Problems, Open Ditches, and Existing Water Quality Data. The data gathered and discussion pertaining to the data is as follows.

## 2.1 Land Use Investigation

The identification of individual land uses was used to relate the most appropriate visual, chemical, or biological monitoring location; target educational outreach efforts; assist in new development planning; and aid in the tracking of illicit discharges.

Industrial and agricultural uses are the most likely sources of water contaminants via stormwater runoff. Refer to Appendix C, Major Classes of Water Contaminants.

### 2.1.1 Industrial Uses

Industrial uses within the City of Huntington are primarily located in the western, central and eastern regions of the City.

Western Region
There are two sub-regions of industrial use within the western region of the City. The first is in the northwest corner of the City along U.S. 24 down through Commercial Road, ending just south of Flaxmill Road. This area is composed entirely of light industrial uses.

Central Region
The central region of industrial uses within the City of Huntington is roughly bounded by the Wabash River to the north and east, State Road 9 to the west and 200 N to the south. This area is composed entirely of heavy industrial uses.

Eastern Region
The industrial uses of the eastern region of the City of Huntington primarily occur between Briant Street (were it to be extended north) to the west, Condit Street to the west, Old U.S. 24 to the north and the Little River to the south. Additional industrial uses within the eastern region are sporadically located between Condit Street to the west and the City limits to the east. This area is composed of a mixture of light and heavy industrial uses.

Outlying Regions
There are also industrial uses within the southern region of the City of Huntington, as well as an incorporated industrial park east of the City along U.S. 24.

### 2.1.2 Agricultural Uses

There are no agricultural uses within the incorporated limits of the City of Huntington. Agricultural uses surrounding the City are typically buffered by other uses, therefore the impacts of agricultural uses on the City's stormwater quality are minimal, at best.

Refer to the MS4 conditions map, Appendix D, for industrial and agricultural zoning areas of Huntington.

## 2.2 Existing BMP Identification and Assessment

The following existing BMPs were identified and assessed based on available information provided through the BMP Workbook process described in section 1.2.

### 2.2.1 Non-Structural BMPs

#### 2.2.1.1 Pavement Management

Street/Parking Lot Sweeping: The Huntington Street Department currently operates a street sweeping and parking lot sweeping program for all City street and City parking lots. A record keeping program was developed for street sweeping in the Long Term Control Plan. This BMP is effective in reducing the amount of pollutants reaching the storm sewer system and will be continued. The grit and sand collected is presently dumped and stored in an area along Taylor Street. Appropriate BMP's for this area shall be developed.

Application Rates and Alternative Products: The Huntington Street Department currently stores their salt under roof. They typically use three parts salt to one part sand for their salt mixture. The covered storage BMP is effective in keeping the stored salt from leaching to receiving streams.

Pavement Repair: The Huntington Street Department typically uses cold patch asphalt to repair their streets. The Street Department makes routine checks for

potholes. In addition to these routine checks, the street department responds to customer complaints. Proper pavement repair can be an effective BMP because it reduces the amount of pavement materials that are broken off and end up in the storm conveyance system.

Snow Management: The Huntington Street Department provides snow removal and stores snow along the riverbank of the Little River. This snow storage location will be identified and proper control measures be developed.

#### 2.2.1.2 Administrative Management

Stormwater Management Board: The Huntington Stormwater Management Board was formed in 1996. The Board is controlled by three appointed Board Members. The purposes of the Board is to allow the local government to respond to stormwater problems, establish a plan for collecting and disposing of stormwater, and creating alternatives by which to finance the handling of stormwater.

Litter Control/Recycling/Composting: There are no litter control programs in place at this time. The landfill has a recycling program that collects paper, plastic, metal, glass, etc. Leaves are collected in the fall and are taken to the landfill. There is no composting program for yard waste in place. Huntington has a spring clean up program that is published in the paper each year in April.

Illicit Connections: There is currently no illicit connection program in place for the stormwater system. An illicit connection program will be established as a part of the Part C submittal of this plan.

Ordinances: The City of Huntington has an erosion control ordinance in place. They do not have an illicit discharge ordinance in place. These ordinances are important and will be developed as a part of their stormwater management plan.

Conservation Easements: There are no known conservation easements, there was a push at one time for a "Greenway Green Strip" which was spurred by the

Park Board. During development of the stormwater management plant, this may be a consideration.

#### 2.2.1.3 Facilities Management

BMP Maintenance: Cleaning of catch basins is performed on a non-scheduled basis. As a part of the Long Term Control Plan the City logs the days and the structures that they vacuum out. A BMP maintenance plan will be further developed during Part C of this plan. Developers typically maintain their private BMPs.

Vehicle/Equipment Maintenance: All municipal maintenance facilities drain to the combined sewer system.

Proper Vehicle/Equipment Maintenance is an important BMP it will be continued in practice for these departments as a part of their Long Term Control Plan.

Vehicle and Equipment Washing: All municipal equipment / washing facilities drain to the combined sewer system.

Proper Vehicle and Equipment washing is an important BMP and will be continued in practice for these departments as a part of their Long Term Control Plan.

Storage Tanks: Huntington gets all of their fuel from a County Fueling Area. The WWTP keeps polymer in 55 gallon drums with containment.

Proper storage tank practices are an important BMP and will be included in the Part C development.

Spill Prevention and Response: The Huntington County Emergency Management (HCEM) responds to spills. The WWTP facility keeps spill kits for minor spill in stock. The spill prevention and spill response program is a good BMP because it minimizes the chances of pollutants entering receiving streams. This BMP will be continued and included in Part C of this plan.

### 2.2.1.4 Grounds Management

Herbicides and Pesticides: The street department uses a minimal amount of pesticides and herbicides.

Proper herbicide and pesticide application is important. If alternative methods for weed and pest control can be developed, this is a good way to reduce potential pollutants from entering the stormwater system.

Plant Debris: Huntington adds mulched plant debris to landscaping and floral areas throughout the park system.

Plant debris use is important because it acts as a natural fertilizer. This saves money on buying fertilizer, and also reduces the amount of chemical fertilizer that could potentially enter the stormwater system.

Animal Management: There are no animal control ordinances in Huntington. There are no designated canine parks in Huntington.

Animal management is a good BMP because the waste from animals can accumulate and transmit E-coli and other bacteria to the stormwater system. Elevated levels of E-coli can be injurious to living things in surface water bodies.

### 2.2.1.5 Education

Educational events, pamphlets, flyers, etc: Huntington has several educational items as a part of their CSO plan. Educational items produced for this stormwater management plan may be implemented together.

Educational tools are a good BMP. Some of the public would follow proper stormwater management practices if they knew what they were. These tools will be developed as a part of Part C of this rule.

### 2.2.2 Structural BMPs- Runoff Pollution Prevention

#### 2.2.2.1 Impervious Surface Reduction

Street Design:
There is no street design development standard with stormwater quality a consideration. This will be a consideration when developing stormwater standards.

Parking Lot Design:
There is no current parking lot design development standard with stormwater quality a consideration. This will be a consideration when developing stormwater standards.

Porous Pavement:
There is no current porous pavement design development standard with stormwater quality a consideration. This will be a consideration when developing stormwater standards.

Open Space Design:
There is no program in place for open space design. This will be a consideration when developing stormwater standards.

#### 2.2.2.2 Soil Erosion Control

Temporary Erosion Control Methods: Huntington has a construction site erosion control program in place. No work is allowed to begin on structures until the erosion control plan has been approved by Huntington. Follow-up inspections of construction activity are performed by the Huntington Engineering Department.

Temporary erosion control methods are a requirement of the Part C plan. The current practices will be modified to comply with the rule requirements.

Vegetative Erosion Control Methods: There are no specific guidelines for vegetative erosion control measures.

Vegetative erosion control methods will be a part of the post construction erosion control plan that will have to be developed as a part of Part C.

#### 2.2.2.3 Structural Erosion Control Methods

Inlet/Outlet Protection: Huntington requires riprap to be used on all new construction sites outfalls. Inlet/Outlet protection methods will be a part of Huntington's stormwater development standards.

#### 2.2.2.4 Mitigation Measures

Slope/Stream Bank Stabilization: Huntington has mostly limestone bottom ditches. Most of their stream banks are inherently stable.

Stream Environment Enhancement: There have been no stream environment enhancement projects.

Wetland Restoration: There have been no wetland restoration projects.

Tree Replacement: Huntington has a tree maintenance program. Huntington has been given the Tree City, USA award. This tree replacement program may be included in the post construction Minimum Control Measure as a part of Part C of this plan.

### 2.2.3 Structural BMPs - Stormwater Treatment

#### 2.2.3.1 Infiltration Systems

On-Lot Infiltration: There are no known On-Lot infiltration systems in Huntington. This will be a consideration in Huntington's stormwater development standards.

Infiltration Basin: There are no known Infiltration basins in Huntington. This will be a consideration in Huntington's stormwater development standards.

Infiltration Trenches: There are no known Infiltration Trenches in Huntington. This will be a consideration in Huntington's stormwater development standards.

#### 2.2.3.2 Filtration Systems

Filter Strips: There are no known or planned filter strip areas in Huntington. Filter strip planning and design will be included in the post-construction MCM of Part C.

Dry Well: There are no known dry wells in Huntington. Dry wells can be useful tools to drain small ponding areas of water. Dry wells may be included in Huntington's stormwater development standards.

#### 2.2.3.3 Constructed Wetlands

Stormwater Wetlands: There are no known stormwater wetlands in Huntington. Stormwater wetlands may be included in Huntington's stormwater development standards.

Wet Swales: There are no known wet swales in Huntington. Wet swales may be included in Huntington's stormwater development standards.

#### 2.2.3.4 Retention Systems

Retention Basin: There are 2 existing Retention areas (3 ponds) maintained by the MS4 entity in Huntington. One area is located in Memorial Park, the other is located in the industrial park area near Hauenstein Road. These ponds include rip/rap in the overflow areas and siltation areas.

Extended Storage Ponds: There are no known extended storage ponds in Huntington. Extended storage pond design may be included in Huntington's stormwater development standards.

#### 2.2.3.5 Detention Systems

Detention Ponds: There are no known detention basins in Huntington. Detention basin design may be included in Huntington's stormwater development standards.

Oversized Pipes: There are no known oversized pipes for stormwater detention used in Huntington. Oversized pipes may be included in Huntington's stormwater development standards.

Oil/Grit Separators: There are no known oil/grit separators used on the stormwater conveyance system in Huntington. Oil/grit separators may be included in Huntington's stormwater development standards.

Dry/Wet Swales: There are no known dry/wet swales in Huntington. Dry/wet swales may be included in Huntington's stormwater development standards.

The location of known structural BMPs is included on the MS4 Conditions Map, Appendix D.

## 2.3 Sensitive Areas

Sensitive areas are shown on the MS4 Conditions Map in Appendix D. The following summary evaluations describe the sensitive areas identified for Huntington, Indiana.

### 2.3.1 Threatened and Endangered Species Habitats

#### 2.3.1.1 State Listed Species

The Indiana Natural Heritage Data Center maintains a comprehensive listing of "elements of occurrence" for state listed threatened and endangered species in the State of Indiana. "Elements of occurrence" are sightings documented during sensitive species surveys. Specific habitat locations are not delineated for the continued safety of the habitat. The State listing does not provide any more detail than the Federal list about the specific locations of these sensitive areas. For this reason, a formal data base search was not performed.

#### 2.3.1.2 Federally Listed Species

The Huntington Long Term Control Plan revealed the possible presence of several federally listed endangered species in Huntington County. The U.S. Fish and Wildlife Service specifically addressed the following three species in Huntington County; mussels, bats and bald eagles.

Mussels

The Clubshell is a species of mussel federally listed as endangered in Huntington County. While there are significant shellfish beds on the Wabash River, the U.S.

Fish and Wildlife Service reports no mussel beds in Huntington County.

Bats

According to the U.S. Fish and Wildlife Service, bats are assumed to be present in Huntington County. The assumption is based on the fact that Indiana falls in the middle of "winter" (hibernation) and "summer" bat habitats, primarily due to the presence of undeveloped (rural), forested areas within close proximity to water.

The presence of a bat species that is either threatened or endangered, has been confirmed along the Salomonie River in Huntington County.

Bald Eagles

Huntington County is within bald eagles winter roosting range. However, this designation is intended to protect eagles winter roosts and carries no specific protection order. Furthermore, the US Fish and Wildlife Service has no recorded bald eagle nests in Huntington county.

### 2.3.2 Public Surface Water Supply Intake

Huntington obtains its drinking water from groundwater, therefore there are no public surface water intakes.

### 2.3.3 Public Access/Full Body Contact Recreation Areas

The River Greenway, Elmwood Park and Forks of the Wabash Park are located along the Little River. However, according to the Huntington Long Term Control Plan (LTCP) there are no permanent public access points promoting recreational use in the stream (i.e. boat ramps, designated swimming areas, etc.).

### 2.3.4 Outstanding State Resource Waters

The waters of Huntington, Indiana are not among those identified in 327 IAC 2-1-11(b) as "waters of the state that are designated for exceptional use," in 327 IAC 2-1-2(3) as "waters of high quality" or in 327 IAC 2-1.5-19(b) as "limited waters and outstanding state resource waters within the Great Lakes System."

The Wabash and Little Rivers are listed by the Natural Resources Commission on the "Outstanding Rivers List for Indiana," the

Wabash as the "State Legislated Wabash River Heritage Corridor" and the Little River as a tributary of said corridor. These water resources are therefore "limited and outstanding state resource waters within the Great Lakes System."

### 2.3.5 Locally Identified Sensitive Areas

There are no locally identified sensitive areas other than those listed within the LTCP.

The U.S. Fish and Wildlife Service did not respond to a sensitive area inquiry before the Stormwater Management Plan deadline. When information becomes available the plan will be updated.

## 2.4 Areas Having Reasonable Potential for Causing Water Quality Problems

The following summaries evaluate sensitive areas identified for Huntington, Indiana.

### 2.4.1 Industrial Stormwater Discharges (Rule 6 Permit Holders)

Isolatek International

Isolatek International provided stormwater quality information from two sampling events required for an NPDES General Permit for stormwater. Sampling includes a grab (first flush) sample and composite sample from two representative outfalls.

The pH readings are acidic but within the recommended 6 s.u. to 9.0 s.u. range standard for surface water. One TSS concentration was above the 750 ppm standard for surface water quality. CBOD and COD levels were consistently low. Ammonia parameters are low with nitrate/nitrite levels consistently below the 10 ppm standard recommended for surface water. Phosphorus levels range from 0.2 to 1.7 ppm exceeding both the 0.1 ppm surface water standard and AIMS data base annual averages.

The following industries were not required to do stormwater quality testing:

- Gladieux Processing, Inc.;
- Great Northern;
- Square D Company;
- Wabash Magnetics.

The following industries did not respond to the stormwater quality inquiry before the Stormwater Management Plan deadline;

- Cambridge Industries;
- Clarks Inc;
- Eagle-Picher Plastics Division
- H & W Sand & Gravel Corp.;
- Hayes Lemmetz International;
- Huntington Ready Mix inc.;
- Ken-Koat Inc.;
- Majco Building Special Ties L.P.;
- Meridian Automotive;
- Orton-McCollough Crane Co.;
- Shuttleworth Inc; and
- Vermont Castings Majestic Prod.

When information becomes available the plan will be updated.

### 2.4.2 Potential Sources of Contamination Inventory

The Huntington Well Field is located outside the City of Huntington Corporate Limits. The majority of the "Potential Sources of Contamination" (PSC) identified in the Huntington Wellhead Protection Plan are outside of the MS4 area. The following municipal properties have been identified as PSCs within the MS4 area.

**Table 2.4.2: WHPP PSC Summary**

| Name | Location | Contaminants |
|---|---|---|
| Huntington Street Barn | 384 N Briant Street | Fuels, Solvents, lubricants |
| Huntington Wastewater Treatment Plant | 20 Hitzfield St | Wastewater Treatment |

### 2.4.3 Complaint Data

There are no known instances of stormwater quality complaints recorded within the City of Huntington.

### 2.4.4 Wastewater Treatment Plant

The wastewater treatment facility is a Class IV, 7.5 MGD activated sludge plant. The plant has two mechanically cleaned coarse bar screens, two detritus-type grit tanks, four primary clarifiers, six step-feed aeration basins, five secondary clarifiers,

effluent chlorination/de-chlorination and effluent metering. Sludge treatment includes a primary anaerobic digester, a dissolved oxygen air flotation sludge thickener, a secondary anaerobic digester, and two biosolids storage tanks. Biosolids are land applied on permitted agricultural land.

If the wet weather related flows are in excess of the wastewater treatment plant's capacity, influent flow can be diverted immediately after the two mechanical bar screens via internal Combined Sewer Overflow Structure No. 002. This internal combined sewer overflow is mixed with treated effluent before being discharged via Outfall 001.

The City of Huntington Water Pollution Control wastewater treatment plant site has three stormwater inlets that are routed via stormwater piping to the Little River for ultimate disposal. One other storm inlet is tied into the grit channel at the head of the plant. Area along the south side of the plant drains directly to the Little River.

### 2.4.5 Salt Storage Facilities

Huntington has one salt storage facility, which is located at the northwest corner of Briant and Webster Streets.

### 2.4.6 Parking Facilities Discharging to the MS4 Conveyance System

#### 2.4.6.1 Municipally Operated Parking Facilities

Municipally operated parking facilities of Huntington, Indiana include the following:

**Table 2.4.6.1: Municipally Operated Parking Facilities**

| No. | Name | Location |
|---|---|---|
| 1 | Street Barn | Located at Briant & Jefferson Street |
| 2 | City/Library Lot | Located between Cherry & Poplar, North of Market St |
| 3 | County Jail | State & Byron Street |

### 2.4.6.2 Privately Operated Parking Facilities

Privately operated parking facilities within Huntington, Indiana include the following:

**Table 2.4.6.2: Privately Operated Parking Facilities**

| No. | Name | Location |
|---|---|---|
| 1 | Huntington North High School | Located North of McGahen & west of Jefferson Street. |
| 2 | Kreigbaum Athletic Field | East of Jefferson Street & north of Northcrest |
| 3 | Huntington College | Between Guilford & Stultz Rd, south of US 24 |

Areas with reasonable potential for causing water quality problems are shown on the MS4 Conditions Map Locations within Appendix D.

## 2.5 Identification of MS4 Open Ditch Conveyances and Receiving Streams

The MS4 Open Ditch Conveyances will be mapped according to the schedule listed in Part C of this stormwater management plan.

The receiving streams characterized for the City of Huntington include:

- Little River
- Wabash River
- Flint Creek on the North side of the City

## 2.6 Updated Data from the Notice of Intent (NOI)

### 2.6.1 Watersheds

There are no additional watersheds that have been added to the list previously provided with the NOI. For reference, the list previously provided in the NOI is as follows:

1. No. 05120101120050: Little River – Flint Creek
2. No. 05120101130030: Clear Creek Church
3. No. 05120101140010: Wabash River – Silver Creek – Nieman Creek
4. No. 05120101090020: Wabash River – Huntington Waterworks

### 2.6.2 Outfalls

There are no known stormwater outfalls identified.

## 2.7 Existing Water Quality Data

The following are summaries of the water quality data received from the sources identified in section 1.6. Some of the following receiving streams are located outside of the MS4 entity, however they provide relevant information pertaining to the evaluation of the quality of the waters of Huntington, Indiana.

### 2.7.1 AIMS Data

Comprehensive testing of general chemical parameters and metals has been performed along the Wabash River in Huntington since 1991. The general chemistry parameters include E. coli, pH, hardness and alkalinity, solids, organic nutrient and inorganic chemical contaminants.

The upstream sampling site is downstream from the Huntington Waterworks Plant, within Huntington corporate limits were the road meets the River's edge. The downstream sampling site is located at the bridge on S.R. 105 north of Andrews.

#### 2.7.1.1 Bacteriology

Trend Analysis
E. coli colony counts have demonstrated an overall decrease during the study period except for a downstream spike in 1997. It should be noted that, after 1999 the sampling events decreased from monthly to single annual sampling screens.

Upstream/Downstream Analysis
E. coli colony counts downstream of Huntington are consistently higher that the upstream levels.

#### 2.7.1.2 General Chemistry

Trend Analysis
- pH readings have remained consistent.
- Alkalinity and hardness values have shown a slight increase.

- Total Solids (TS), the sum of Total Suspended Solids (TSS) and Total Dissolved Solids (TDS) have gradually increased. TSS concentrations have remained consistent, while TDS concentrations have shown a net increase. The increase in the TDS is explained by the increase in the TS concentrations.
- $BOD_5$ tests measure organic matter in water. $BOD_5$ concentrations have remained consistent.
- COD tests also measure organic matter in water. Like the BOD concentrations, they too have remained consistent.
- TOC is a direct expression of organic carbon content. The TOC concentration levels are consistent since sampling began in 1998.
- The ammonia-nitrogen has remained at a consistent concentration.
- The Total Kjeldahl Nitrogen (TKN), the combination of ammonia and organic nitrogen, has remained at consistent concentrations.
- Nitrates and nitrites, which are oxidized states of ammonia, have increased.
- Cyanide levels are consistently low and concentrations have not been detected above the MDL at the downstream sampling location since 1999.
- Phosphorus levels have increased.
- Chloride and sulfate concentrations have increased since sampling began in 1998 with little appreciable increase since 1999.

<u>Upstream/ Downstream Analysis</u>

- Downstream pH levels have been consistently, yet insignificantly, higher than the upstream pH readings.
- Downstream alkalinity and hardness concentrations have been approximately 5 percent higher than upstream concentrations.
- Total Solids show an increase of 5 percent from upstream to downstream.
- All organic nutrient parameters, $BOD_5$, COD and TOC, decreased from the upstream to the downstream sampling locations.
- Ammonia, nitrates-nitrites and TKN concentrations show a decrease from upstream to downstream.

- An upstream/downstream cyanide sampling cycle began in 1998 with the detection of a significant concentration upstream. Cyanide is occasionally detectable at the upstream location but has not been detected above the MDL downstream since 1999.
- Downstream levels of phosphorus, chloride and sulfates have been consistently higher than the upstream concentrations.

#### 2.7.1.3 Metals

The 1996-2002 monitoring window was selected for analysis because the IDEM AIMS data was the most comprehensive during this part of the survey.

Trend Analysis
Annual chromium, lead and nickel concentrations decreased.

Copper concentrations have begun to decrease, gradually, since a spike (15 ppm annual average) downstream in 1997. This increase was attributable to a sample taken in October of 1997 (100 ppm).

Cadmium and arsenic levels have remained consistent.

Zinc and iron concentrations have fluctuated greatly resulting in a net decrease. Concentrations of each have begun to reflect increases since 2000.

At first glance there appears to be an increase in mercury, however, this is attributed to the increase in the method detection limit for laboratory analyses, which began in 1999.

Upstream/Downstream Analysis
Arsenic, chromium, lead and nickel upstream and downstream concentrations correlate closely. However, upstream concentrations have been higher than downstream concentrations.

Cadmium concentrations have remained consistent.

Copper and zinc concentrations have fluctuated greatly. The overall concentrations have decreased and the

upstream and downstream concentrations have begun to correlate more closely during more recent sampling events.
Iron concentrations have fluctuated greatly with both upstream and downstream experiencing a net increase. The upstream concentration has been greater than the downstream reading since 2000.

Mercury has never surpassed the method detection limit of the laboratory analysis at the downstream location.

#### 2.7.1.4 Organics

The Wabash River was screened for a total of 39 organic compounds at the downstream sampling location between April and July of 1998.

Concentrations of Di(2-ethylhexyl) phthalate and Di-n-Butyl Phthalate spiked during the same sampling events on two occasions. Diethylphthalate was detectable once.

#### 2.7.1.5 Pesticides

Pesticide in the Wabash River were studied between April and July of 1998 at the downstream location.

Acetochlor, Atrazine and Metolachlor concentrations were usually detectable throughout the duration of the study, and they have significantly increased during the mid-June to late-June sampling timeframe.

Alachlor, Clomazone and Cyanazine concentrations, while once below the method detection limit, have increased to detectable levels.

Simazine concentrations were detectable twice.

### 2.7.2 Fish Community Assessment

#### 2.7.2.1 Qualitative Habitat Evaluation Index (QHEI)

The Qualitative Habitat Evaluation Index (QHEI) gives an estimate of the suitability of a stream segment meeting Warmwater Habitat conditions for aquatic

organisms. Warmwater Habitat is the "natural" habitat type for this region. Three waterways were classified as receiving streams.
IDEM has not evaluated the suitability of the habitat along any of the receiving streams.

### 2.7.2.2 Index of Biotic Integrity (IBI)

The Index of Biotic Integrity (IBI) is a water quality assessment tool using fish communities as measure to determine the biological integrity of the stream. The Wabash River received an unimpaired rating. The results are as summarized below.

**Table 2.7.2.2: QHEI and IBI Summary Table**

| Receiving Stream | Site Location | QHEI* (max 100) | IBI** (max 60) |
|---|---|---|---|
| Little River | No data | No data | No data |
| Wabash River | S.R. 105 Bridge N. of Andrews | N/A | 38 |
| Flint Creek | No data | No data | No data |

* QHEI - the higher the score the more diverse (better quality) the habitat of the receiving stream. A Total score <61 is considered "impaired."
** IBI - the higher the score the higher the integrity of the receiving stream. A Total score <35 is considered "poor" to "very poor."

## 2.7.3 Stream Reach Characterization and Evaluation

The Stream Reach Characterization and Evaluation monitoring period occurred between January 1, 1997 and June 30, 2000. Daily rainfall data and CSO activity were recorded for the duration of the monitoring period.

Water quality data collected included the following parameters:

- pH;
- Dissolved Oxygen;
- Total Suspended Solids (TSS);
- Chemical Oxygen Demand;
- 5-Day Carbonaceous Biochemical Oxygen Demand ($CBOD_5$);
- Ammonia Nitrogen ($NH_3 - N$); and
- Escherichia coli (E.coli)

The five monitoring points along Flint Creek, Little River and Wabash River included the following:

- Little River, LaFontaine Street Bridge, 0.1 mile downstream of Flint Creek, downstream of CSOs 003 through 016
- Flint Creek, 1.9 miles upstream from Little River, Flint Creek discharge
- Confluence of the Little River and the Wabash River, Rangeline Road Bridge
- Little River, Broadway Street Bridge
- Wabash River, Etna Avenue Bridge

With the exception of E.coli, the in-stream sampling data showed minimal impact from CSOs for the majority of the parameters tested. E.coli levels in all of the streams monitored were above the 235 counts/100 mL water quality standard multiple times during both dry and wet weather conditions, and at locations upstream and downstream of the community's CSOs.

E.coli values within Flint Creek increased significantly from upstream to downstream monitoring points in both dry and wet weather conditions.

### 2.7.4 Macroinvertebrate Data

IDEM has conducted several macroinvertebrate community assessments with correlating habitat surveys in the Upper Wabash watershed. The studies were conducted on the Wabash River and the Little River. The findings are summarized below in Table 2.7.4.

**Table 2.7.4: QHEI and MIBI Summary Table**

| Sample No. | Receiving Stream | Site Location | QHEI* (max 100) | MIBI** |
|---|---|---|---|---|
| 07/91 | Little River | North Broadway. | 83 | 4.8 |
| 07/91 | Little River | North Broadway. | No data | 5.7 |
| 07/91 | Wabash River | Downstream of the Huntington Reservoir | 70 | 1.6 |
| 07/91 | Wabash River | Upstream of Rangeline Road | 77 | 4.2 |
| No data | Flint Creek | No data | No data | No data |

* QHEI - the higher the score the more diverse (better quality) the habitat of the receiving stream. A Total score <61 is considered "impaired."
** MIBI (Macroinvertebrate Index of Biotic Integrity)- the higher the score the higher the integrity of the receiving stream. A Total score < 2.2 is considered "impaired."

The Little River and the Wabash River contain well-established habitats and are otherwise unimpaired. The macroinvertebrate populations are numerous and diverse, with one exception, the section of the Wabash River downstream from the Huntington Reservoir, was categorized as impaired.

IDEM has not recently reassessed these locations.

### 2.7.5 IDNR Hoosier Riverwatch

The Indiana Department of Natural Resource's Hoosier Riverwatch Program conducted habitat, biological and chemical water quality surveys on the Upper Wabash Watershed in 2003. The studies were conducted on the Little River and Clear Creek. Clear Creek is a tributary of the Wabash River downstream of Huntington and outside of MS4 area influence. There is no data from this program on Flint Creek. The results of the 2003 Upper Wabash Watershed survey in Huntington County are summarized below in Table 2.7.5.1 and Table 2.7.5.2.

The program uses an independently established index system for each water quality parameter. Citizens Qualitative Habitat Evaluation Index (CQHEI) is a habitat score, Water Quality Index (WQI) and Green Score are chemical water quality indices and Pollution Tolerance Index (PTI) is a macroinvertebrate diversity score.

**Table 2.7.5.1: 2003 Clear Creek (Tributary of Wabash) Riverwatch Data**

| Receiving Stream | Site Location | Date | CQHEI* (Habitat) (max 114) | Green Score** (Chemical) (max 4) | PTI**** (Biological) (max >23) |
|---|---|---|---|---|---|
| Clear Creek (Tributary to Wabash) | 8245 N 400 W | 5/30/03 | N/A | 3.38 | N/A |
| | 8245 N 400 W | 7/31/03 | N/A | 3.29 | N/A |
| | 8245 N 400 W | 12/29/03 | N/A | 3.29 | 14 |

Clear Creek (tributary to Wabash) reported water chemistry conducive to aquatic health and a diverse and numerous aquatic organisms and was therefore determined to be unimpaired.

Multiple biological and chemical samples were collected at the Wabash River survey locations. The averages from these analyses are summarized below in Table 2.7.5.2. The habitat was evaluated only once for each survey location.

**Table 2.7.5.2: 2003 Little River Riverwatch Data**

| Receiving Stream | Site Location | CQHEI* (Habitat) (max 114) | AVG. WQI*** (Chemical) (max 100) | AVG. PTI*** (Biological) (max >23) |
|---|---|---|---|---|
| Little River | Bridge at Aboit Road | 28 | 70.9 | 6.7 |
| | Bridge at Homestead Road | 16.5 | 75.9 | 5.0 |
| | Culvert on Branstrator Rd | N/A | 76.1 | 9.5 |
| | At Smith Road | 52 | 85.3 | <1.0 |
| | Bridge at CR 1100 N | 13 | 75.5 | N/A |

* CQHEI –(Citizens Qualitative Habitat Evaluation Index) the higher the score the more diverse (better quality) the habitat of the receiving stream. A Total score <61 is considered "impaired."
** WQI (Water Quality Index) - the higher the score the higher the integrity of the receiving stream. A Total score < 50 is considered "bad".
*** Green Score - the higher the score the higher the integrity of the receiving stream. A Total score < 1 is considered "bad".
**** PTI (Pollution Tolerance Index) - the higher the score the higher the integrity of the receiving stream. A Total score < 10s considered "poor."

The habitat and biological organisms along the Wabash River are impaired at each sampling location. Water chemistry scores are considered "good" or conducive to aquatic health and, therefore, were/are unimpaired.

### 2.7.6 IDEM Lake Water Quality Assessment

Eutrophication is the natural process of nutrient and sediment accumulation in lakes and reservoirs. Physical, chemical and biological parameter deterioration reflects the negative effects of excessive nutrients. The Indiana Trophic State Index (ITSI) assigns numerical values to these parameters for comparative evaluation. The majority of Indiana lakes, 72%, fall within the

moderate nutrient range. The results for Huntington County are summarized in Table 2.7.6.

**Table 2.7.6: Lake Water Quality Assessment**

| Lake | Trophic Index | | | | | |
|---|---|---|---|---|---|---|
| | 1972-79 | 1980-88 | 1989-90 | 1991 | 1994-96 | 1998 |
| Clair | | | 12 | | 5 | 26 |
| J. Edward Roush | 25 | 50 | | 22 | 35 | 24 |

The Clair Lake trophic scores indicate low, to moderate, nutrient concentrations. The J. Edward Roush Lake trophic scores indicate a moderate to excessively high nutrient concentrations. The most recent tropic index rating indicates a moderate nutrient concentration. Radical changes in the tropic index can be attributed to a plankton bloom, which is not a permanent water quality impairment.

### 2.7.7 Industrial Stormwater Discharges (Rule 6 Permit Holders)

Industrial Stormwater Discharges by Rule 6 Permit Holders was previously discussed in section 2.4.1. The industries in question are both Areas Having Reasonable Potential for Causing Water Quality Problems and resources for existing water quality data, therefore, the Data Evaluation Results discussed in 2.4.1 satisfy this section (2.7.7) as well.

### 2.7.8 Indiana State Department of Health

The Indiana State Department of Health's 2003 Fish Consumption Advisory addresses the J Edward Roush Lake (formerly Huntington Lake), and the Wabash River within Huntington County. Contaminants include PCBs and Mercury.

According to the 1998 Indiana Water Quality Report, which uses the Fish Consumption Advisories as "criteria for evaluating designated use support," the J Edward Roush Lake is partially supporting, and the Wabash River is not supporting of aquatic life.

### 2.7.9 Little, to any, relevant data available

As was mentioned in Chapter 1, requests for water quality data to the resources listed below returned little, to any, relevant data therefore there are no summary evaluations for data which would have been received from the following:

- IDEM Watershed Studies;
- USGS Water Resources and Fixed Station Ambient Monitoring;
- Huntington County Soil and Water Conservation District;
- Huntington County Health Department;
- Drinking Water Utility;
- Army Corp of Engineers; and
- US EPA

### 2.7.10 Water Quality Data by Receiving Stream

#### 2.7.10.1 Little River

Comprehensive sampling and chemical analyses of water quality parameters have not been performed on the Little River either during the SRCER or by IDEM for the AIMS Database.

Recent biological and habitat assessments identify the Little River as an impaired water body. Concurrent water quality tests produce good result and the water is considered conductive to aquatic health. However, due to the limited chemical data and the non-specific nature of the Fish Community Assessment and Indiana River Watch and indices, a conclusive assessment of the water quality in the Little River cannot be determined at this time.

#### 2.7.10.2 Wabash River

The pH values have remained constant with hardness and alkalinity concentrations increasing.

The total solids have increased. Organic nutrient parameters have remained stable or decreased.

Nitrates and nitrites have increased with the remainder of the ammonia parameters remaining constant.

Inorganic parameters, phosphorus, chloride and sulfates have increased.

All detectable metals have remained consistent or shown an appreciable decrease during the water quality testing.

A variety of organic compounds and pesticides are detectable even demonstrating significant spike during the sampling study. However, without specific constituent concentration limits, conclusions on water quality cannot be determined.

Habitat assessments identify the Wabash River as an unimpaired water body. Macroinvertebrate and fish community assessment varies between impair and unimpaired depending on the location.

The annual Fish Consumption Advisory indicates the Wabash River is non-supportive of aquatic life and the J. Edward Roush Lake is partially supporting of aquatic life.

The most recent J. Edward Roush Lake Water Quality Assessment indicates moderate nutrient water quality conditions.

Due to conflicting results, a conclusive assessment of the existing water quality in the Wabash River cannot be determined.

#### 2.7.10.3 Flint Creek

Comprehensive sampling and chemical analyses of water quality parameters have not been performed on Flint Creek. Additionally, biological and habitat assessments have not been conducted. A conclusive assessment of the water quality in Flint Creek cannot be determined.

# Chapter 3 – Conclusions and Recommendations

## 3.0 General

This section is written to comply with the Characterization Report Requirements listed on the Part B: Baseline Characterization and Report Certification Checklist.

## 3.1 Conclusions

### 3.1.1 Key Observations

Industrial Areas
The industrial areas identified are shown on the MS4 Conditions Map within Appendix D. A description of the industrial areas was provided in section 2.1.1. These areas will be visually monitored for potential pollutants during the ongoing characterization of this program. Additional data gathering from monitoring points along the receiving streams, may generate additional key observations.

Agricultural Areas
The agricultural areas investigated are shown on the MS4 Conditions Map within Appendix D. A description of the agricultural areas can be found in section 2.1.2. These areas will be visually monitored for potential pollutants during the ongoing characterization of this program. As data is gathered from monitoring points along the receiving streams, additional key observations may be generated.

Existing Monitoring Points and Monitoring Data
Existing monitoring points and monitoring data were evaluated. This evaluation is included in section 2.7 of this document. It was found that the existing monitoring points and their corresponding data do not allow for conclusions to be made about land usage and their effect on stormwater quality. Additional monitoring points and additional water testing associated with these monitoring points is proposed.

### 3.1.2 Existing Structural BMP Effectiveness

Existing Structural BMPs
Huntington has two municipally owned retention basins. The retention basins are located at Memorial Park and the Industrial area near Hauenstein Road. Each of the retention areas have rip rap areas to control erosion during overflow, and siltation areas to

The retention basins are effective in slowing down the discharge rate from its watershed area. Slowing down the discharge rate can prevent erosion from high water velocities down stream. This BMP can improve water quality because it tends to remove pollutants before they leave the retention basin area. Also this BMP can improve water quality because it does not create additional pollutants by causing downstream erosion.

Catch basins are located throughout the Huntington storm sewer system. These catch basins are designed to allow sediment and other heavy materials to drop out of the stormwater before they are conveyed along the storm sewer. This BMP can improve water quality because it does not allow some pollutants to be transported through the conveyance system and into a receiving stream.

### 3.1.3 Sensitive Areas

Sensitive areas that may need added water quality protection considerations are discussed in section 2.3. For reference the following sensitive area has been identified.

- The Wabash and Little Rivers are listed by the Natural Resources Commission on the "Outstanding Rivers List for Indiana," the Wabash as the "State Legislated Wabash River Heritage Corridor" and the Little River as a tributary of said corridor. These water resources are therefore "limited and outstanding state resource waters within the Great Lakes System."

These sensitive areas are shown on a map included as Appendix D, the MS4 Conditions Map.

### 3.1.4 Areas Having Reasonable Potential for Causing Water Quality Problems

Correlative conclusions between existing stream data and potential problem areas could not be made from the existing data that was gathered and analyzed. Monitoring point locations have been recommended in an effort to gather more useful data. With the new data, identifying water quality problem areas should be possible.

### 3.1.5 Identification of Areas Causing Stormwater Pollution from Existing Water Quality Data

No areas were identified that were proven to be actually causing stormwater pollution.

## 3.2 Recommendations

### 3.2.1 Recommendations for Placement and Implementation of Additional BMPs

Huntington does not have enough information at this time to recommend placement and implementation of additional BMPs. Programs will be developed for the Non-Structural BMPs that are required as a part of the Part C submittal. During the development of Part C, Huntington will continue to gather available data that will potentially lead to recommendations for placement and implementation of additional BMPs.

### 3.2.2 Proposed Monitoring Points

Locations of Monitoring Points

Locations of monitoring points were developed based on land use information in relation to the receiving stream locations. Monitoring points were developed in a manner so that the data will cover significant stretches of the receiving streams. The purpose of the layout of the monitoring points is to first collect data over a large area. Then, collected data will be analyzed to further associate particular land uses with stormwater pollution. Monitoring points may be changed in the future to gain a better understanding of more specific areas.

There is at least one monitoring point for each receiving stream. If a receiving stream begins within Huntington's corporate limits, the receiving stream only has one monitoring point. If a receiving stream begins outside of Huntington's corporate limits, a monitoring point was established nearest a point that the receiving stream enters Huntington's corporate limits. A second monitoring point was established for the same receiving stream at a point where the receiving stream leaves the corporate limits.

The following monitoring points are proposed and are shown on the map included as Appendix D, MS4 Conditions Map.

**Table 3.2.2.1: Proposed Monitoring Point Locations**

| Monitoring Point Number | Receiving Stream | Location on Receiving Stream |
|---|---|---|
| 1 | Little River (Upper) | At Meridian Street Bridge Between the Corporate Limits and Unincorporated Industrial Park |
| 2 | Little River (Lower) | Inside Corporate Limits at SR 9 Bridge Before Confluence with Wabash River |
| 3 | Wabash River (Upper) | Just Inside Corporate Limits at Etna St. Bridge |
| 4 | Wabash River (Lower) | Outside Corporate Limits at Rangeline Bridge after Confluence with Little River |
| 5 | Flint Creek (Upper) | At U.S. 24 Crossing Just Outside Corporate Limits |
| 6 | Flint Creek (Lower) | Just Before Flint Creek Confluence with Little River |

Monitoring Parameters: The following table represents the monitoring parameters that are proposed for the each monitoring point.

**Table 3.2.2.2: Proposed Monitoring Parameters**

| **Parameter** | **unit** | **sample** |
|---|---|---|
| Oil and grease | mg/l | grab |
| CBOD5 (Carbonaceous biochemical oxygen demand) | mg/l | grab |
| COD (Chemical oxygen demand) | mg/l | grab |
| TSS (Total suspended solids) | mg/l | grab |
| TKN (Total Kjeldahl nitrogen) | mg/l | grab |
| Total phosphorous | mg/l | grab |
| PH | s.u. | grab |
| Nitrate plus nitrite nitrogen | mg/l | grab |
| E-Coli | count | grab |
| DO (Dissolved Oxygen) | mg/l | grab |

Monitoring Frequency

Monitoring will be conducted starting in May 2005 and continuing annually in May for the duration of the Permit. Monitoring will include one dry weather sample and one wet weather sample for each of the six sampling locations.

Monitoring Protocol

All six dry weather samples will be taken on the same day. A dry weather sample will be taken after a minimum of four days after a rain event.

All six wet weather samples will be taken on the same day. The wet weather samples will be taken the same day as the rain event or the following morning.

# Appendix B: Resources

## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

| Department | Area of Study | Contact | Email | Phone |
|---|---|---|---|---|
| Biological Studies | Fish Community Assessment | Stacy Sobat | ssobat@dem.state.in.us | (317) 308-3191 |
| Biological Studies | Fish Tissue Contaminant | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Biological Studies | Sediment Contaminant | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Biological Studies | Macrovertebrate Community | Todd Davis | tdavis@dem.state.in.us | (317) 308-3188 |
| Biological Studies | Habitat Analysis | Stacy Sobat | ssobat@dem.state.in.us | (317) 308-3191 |
| Biological Studies | Lake Water Quality Assessment | Carol Newhouse | | (317) 308-3217 |
| Surveys | Pesticides Monitoring | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Surveys | Fixed Station Ambient Monitoring | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Surveys | Watershed Surveys | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Surveys | Source Identification | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Surveys | E. Coli Monitoring | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Surveys | Special Studies | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Toxicology & Chemistry | Quality Assurance Project Plan | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Toxicology & Chemistry | TMDL Sampling | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Toxicology & Chemistry | Biomonitoring Toxicity Review | Chuck Bell | cbell@dem.state.in.us | (317) 308-3203 |
| Watershed Section | Watershed Studies | Linda Schmidt | lschmidt@dem.state.in.us | (317) 233-1432 |

## INDIANA DEPARTMENT OF NATURAL RESOURCES

| Department | Area of Study | Contact | Email | Phone |
|---|---|---|---|---|
| IDNR | Hoosier Riverwatch | Lyn Hartman | | (317) 541-0671 |
| IDNR | Fisheries – District Biologist | Ed Braun | ebraun@dnr.state.in.us | (260) 691-3181 |
| IDNR | Lake & River Enhancement | Jim Ray | jray@dnr.state.in.us | (317) 233-3870 |
| IDNR | Division of Water – Environmental Unit | Alysson Slott | ASlott@dnr.state.in.us | (317) 232-4160 |

## UNITED STATES GEOLOGICAL SURVEY

| Department | Area of Study | Contact | Email | Phone |
|---|---|---|---|---|
| USGS (Data Admin.) | Water Resources | Cheryl Silcox | casilcox@usgs.gov | (317) 290-3333 ext. 136 |
| USGS (Data Admin.) | Fixed Station Ambient Monitoring | Cheryl Silcox | casilcox@usgs.gov | (317) 290-3333 ext. 136 |
| USGS (Data Admin.) | Project Sites (White River) | Cheryl Silcox | casilcox@usgs.gov | (317) 290-3333 ext. 136 |

## ARMY CORP OF ENGINEERS

| Department | Contact | Email | Phone |
|---|---|---|---|
| Sediment & Water Quality Data, Louisville District | Lisa Barnese-Walz | lisa.e.barnese-walz@usace.army.mil | (502) 315-6464 |

## US ENVIRONMENTAL PROTECTION AGENCY

| Department | Contact | Email | Phone |
|---|---|---|---|
| Region V Storm Water | Brian Bell | bell.brianc@epamail.gov | (312) 886-0981 |

## US DEPARTMENT OF INTERIOR, U.S. FISH & WILDLIFE SERVICES

| Department | Contact | Address | Phone |
|---|---|---|---|
| U.S Fish & Wildlife Services | Elizabeth McCloskey | P.O. Box 2616 Chesterton, IN (46304) | |

## COUNTY AGENCIES

| Department | Contact | Email | Phone |
|---|---|---|---|
| Soil & Water Conservation District | Cheryl Jarrett | cheryl-jarrett@iaswcd.org | (260) 356-6816 ext. 3 |
| Health Department | Mike Mettler | mike.mettler@huntington.in.us | (260) 358-4834 |
| Planning & Zoning (County GIS) | Mike Snelling | | (260) 358-4859 |

## MUNICIPAL AGENCIES

| Department | Contact | Email | Phone |
|---|---|---|---|
| **Engineering** | **Arthur Ehinger** | **art.ehinger@huntington.in.us** | (260) **356 1400 x 265** |
| **Wastewater** | **Colin Bullock** | | **(260) 358-2313** |
| **Water** | **John Moore** | | (260) **358-2309** |

## INDUSTRIAL STORMWATER DISCHARGES

| Industry | Contact | Address | Phone |
|---|---|---|---|
| Cambridge Industries | Greg Scheffel | 1890 Riverfork Drive West (46750) | (260) 358-1942 |
| Eagle-Picher Plastics Division | Barry Fordanish | 1890 Riverfork Drive West (46750) | (260) 356-4461 |
| Meridian Automotive | Wayne Desai | 1890 Riverfork Drive (46750) | (260) 355-2474 |
| Clarks Inc. | William Clark | 100 Hitzfield St (46750) | (260) 356-8314 |
| Gladieux Processing, LLC. | Steve Uebelhoer | 4761 North U.S. 24 East (46750) | (260) 356-1700 |
| Great Northern (Gladieux) | Daniel Staat | 4761 North U.S. 24 East (46750) | (260) 356-1700 |
| Hayes Wheels International | Rick Grunsey | 1870 Riverfork Drive (46750) | (260) 356-7001 |
| Ecolab | Chris Peterson | 970 East Tipton Street (46750) | (260) 356-7804 |
| Huntington Municipal Airport | Steve Klein | 1365 Warren Road | (260) 356-8515 |
| Huntington Ready Mix Inc. | Steven Turner | 1217 West Park Drive (46750) | (260) 356-5600 |
| H & W Sand & Gravel Corp | Steven Turner | 1217 W Park Drive (46750) | (260) 356-5600 |
| Isolatek International | Charles Santomeno | 701 North Broadway (46750) | (260) 356-2040 |
| Ken-Koat, Inc | Linda Snyder | 1605 Riverfork Drive (46750) | (260) 356-4192 |
| Orton/McCullough Crane Co. | Martin McCullough | 1244 E Market St (46750) | (260) 356-7900 |
| Shuttleworth Inc. | Steven Hart | 10 Commercial Road (46750) | (260) 356-8500 |
| Square D Company | Terry Day | 6 Commercial Road (46750) | (260) 356-2060 |
| Vermont Castings Majestic Prod | Dudley Berthold | 1000 E. Market St (46750) | (260) 356-8000 |
| Majco Building Special Ties L.P. | Dudley Berthold | 1000 E. Market St. (46750) | (260) 356-8000 |
| Wabash Technologies | James Helm | 1375 Swan Street (46750) | (260) 356-8300 |

## Appendix C: Major Classes of Water Contaminants

| Water Pollutant | Sources | Effects | Measurement | Controls |
|---|---|---|---|---|
| Oxygen Demanding Wastes | Sewage, **Industry**, Runoff | Depletes DO; Alters Lifeforms; Fishkills | Biochemical Oxygen Demand (BOD) | Biological Treatment |
| Plant Nutrients | Sewage, **Agricultural Runoff, Industry** | Stimulates Growth of Algae, Waterweeds | Nitrogen, Phosphorous | Advanced Treatment |
| Thermal Effluent | Power Plants, **Industry** | Accelerates Decomposition, Biological Activity and Reduces DO Solubility | Temperature | Cooling Towers, Ponds |
| Sediement, Suspended Particles | Runoff | Reduces Clarity and Smothers Bottom Life | Turbidity | Settling |
| Minerals, Salts | **Agricultural Runoff** | Tasts, Inhibits Freshwater Plants | Total Dissolved Solids (TDS) | Desalination; Chemical Treatment |
| Synthetic, Volatile Organic Chemicals (i.e. oil and pesticides) | **Industry**, Spills, **Agricultural Runoff**, Air Pollution | May be toxic to Aquatice Life and Humans, May be subject to biomagnification | Chemical Analysis | Activated Carbon Filtration |
| Inorganic Chemicals (i.e. acids and heavy metals) | **Industry**, Mining Runoff, Air Pollution | May be toxic to Aquatice Life and Humans, May be subject to biomagnification | Chemical Analysis | Chemical Treatment |
| Radioactive Substances | Nuclear Fuel Cycle, Medical Wastes, **Industry** | Toxic to Aquatic Life and Humans | Chemical Analysis and Beta Count | Isolation and Chemical Treatment |
| Pathogenic organisms | Sewage | Disease Transmission | Fecal Coliform Count | Disinfection |

# MS4 Conditions Map Legend

**Structural BMPs**

EBMP.1 municipally maintained detention/retention pond

EBMP.2 municipally maintained detention/retention pond

EBMP.3 municipally maintained detention/retention pond

**Sensitive Areas**

S.1 State and Federally listed, threatened or endangered species habitats – The presence of bats has been confirmed along the Salomonie River in Huntington Co.

S.2 Public Surface Water Intakes – Huntington obtains its drinking water from groundwater, therefore there are no public surface water intakes.

S.3 Public Access/Full Body Contact Recreation Areas – No public access sites, however the River Greenway, Elmwood and Forks of the Wabash Park are located along the Little River

S.4 Outstanding State Resource Waters – The Wabash and Little Rivers are tributaries of the "State Legislated Wabash River Heritage Corridor."

S.5 Locally Identified Sensitive Areas - None

**Areas Having Reasonable Potential for Causing Water Quality Problems**

**Industrial Stormwater Discharges (Rule 6 Permit Holders)**

R.1 Cambridge Industries

R.2 Eagle-Picher Plastics Division

R.3 Meridian Automotive

R.4 Clarks Inc.

R.5 Gladieux Processing, LLC. – *located outside of the corporate limits and therefore not on the MS4 Conditions Map*

R.6 Great Northern (Gladieux) – *located outside of the corporate limits and therefore not on the MS4 Conditions Map*

R.7 Hayes Wheels International

R.8 Ecolab

R.9 Huntington Municipal Airport – *located outside of the corporate limits and therefore not on the MS4 Conditions Map*

R.10 Huntington Ready Mix Inc.

R.11 H & W Sand & Gravel Corp

R.12 Isolatek International

R.13 Ken-Koat, Inc.

R.14 Orton/McCullough Crane Co.

R.15 Shuttleworth Inc.

R.16 Square D Company

R.17 Vermont Castings Majestic Prod

R.18 Majco Building Special Ties L.P.

R.19 Wabash Technologies

**Potential Sources of Contamination Inventory List**

PS.1 Huntington Water Treatment Plant

PS.2 Huntington Wastewater Treatment Plant

**Complaint Data**

None

**Wastewater Treatment Plant**

WWTP Wastewater Treatment Plant

**Salt Storage**

SS Salt is stored at a location in the northwest corner of the intersections of Briant and Webster

**Municipal Parking Facilities that discharge to the MS4 conveyance system**

MP.1 the Street Department barn at the corner of Briant and Jefferson

MP.2 the City/Library Parking lot between Cherry and Poplar Streets just north of Market St

MP.3 the County Jail at the corner of State and Byron

**Privately Operated Parking Facilities that discharge to the MS4 conveyance system**

PP.1 Huntington North High School north of McGahen and west of Jefferson

PP.2 the Kreighaum Athletic Field East of Jefferson and north of Northcrest

PP.3 Huntington College between Guilford and Stultz south of U.S. 24

**Outfalls**

No known outfalls

**Proposed Monitoring Locations**

PM.1 Little River, upper: Meridian St. bridge between the corporate limits and the unincorporated industrial park

PM.2 Little River, lower: inside the corporate limits at the S.R. 9 bridge before the confluence with the Wabash River

PM.3 Wabash River, upper: just inside the corporate limits at Etna St. bridge

PM.4 Wabash River, lower: outside the corporate limits at Rangeline bridge after the confluence with the Little River

PM.5 Flint Creek, upper: U.S. 24 crossing just outside the corporate limits

PM.6 Flint Creek, lower: just before Flint Creek outfalls to the Little River

**Combined Sewer Overflows (CSOs)**

CSO #002
CSO #003
CSO #004
CSO #005
CSO #006
CSO #007
CSO #008
CSO #009
CSO #010
CSO #011
CSO #012
CSO #013
CSO #014
CSO #015
CSO #016