

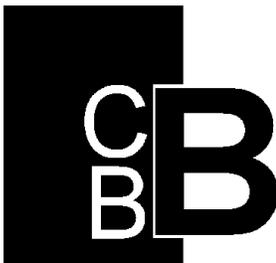
**NPDES PHASE II  
GENERAL PERMIT APPLICATION  
STORM WATER QUALITY MANAGEMENT PLAN  
PART B: BASELINE CHARACTERIZATION REPORT**



**CEDAR LAKE, INDIANA**

**PERMIT # INR040075**

**MAY 5, 2004**



**NPDES PHASE II  
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)  
PART B: BASELINE CHARACTERIZATION REPORT**

Prepared for:

**Town of Cedar Lake, Indiana**

**May 2004**

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1. SWQMP PART B: BASELINE CHARACTERIZATION AND REPORT CERTIFICATION CHECKLIST

**1.0**

**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 sewer 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 Environmental Protection Agency (EPA) to issue further regulations to identify and regulate additional stormwater discharges that were considered to be contributing to national water quality impairments. On December 8, 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. The Town of Cedar Lake met this criterion and was consequently designated as a 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. The IDEM initiated adoption of the Phase II Rules that were ultimately codified as 327 IAC 15-13 (Rule 13). Rule 13 became effective on August 6, 2003 and requires designated MS4 entities to apply for permit coverage by submitting a Notice of Intent (NOI) and developing Storm Water Quality Management Plans (SWQMPs) through a phased submittal process. The IDEM's phased submittal requirements for the SWQMP include the following three components:

- Part A: Initial Application
- Part B: Baseline Characterization Report
- Part C: Program Implementation Plan

All MS4s were required to submit NOI and SWQMP Part A documents to the IDEM by November 5, 2003. SWQMP Part B and Part C documents are required to be submitted by May 5, 2004 and November 5, 2004, respectively.

This report has been prepared to address Rule 13 requirements for completing the SWQMP Part B: Baseline Characterization Report and its corresponding certification form for the Town of Cedar Lake. This report includes the following information:

- An investigation and assessment of the impacts of existing land uses on stormwater runoff within the MS4 area,
- An identification of sensitive areas within the MS4 area,
- A review of known existing and available water quality monitoring data for the MS4 area,
- An identification and assessment of structural and non-structural Best Management Practices (BMPs) within the MS4 area,
- An identification of priority areas for the implementation of BMPs, and

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- Recommendations for implementation of both structural and non-structural BMPs for each of the six minimum control measures required by Rule 13.

In addition, the IDEM's SWQMP Part B: Baseline Characterization and Report Certification Checklist is included in **Appendix 1** of this report.

**2.0 LAND USE WITHIN MS4 AREA**

Rule 13 requires the investigation of land usage and the assessment of structural and non-structural stormwater Best Management Practice (BMP) locations. The following discussion provides an evaluation of land uses within the Town of Cedar Lake’s MS4 area. Structural and non-structural BMPs are identified and assessed in Chapter 5.0 of this report.

**2.1 DESCRIPTION OF MS4 AREA AND RECEIVING WATERS**

The Town of Cedar Lake is located in Lake County, Indiana, 40 miles southeast of Chicago, Illinois, and is comprised of approximately 8.1 square miles that surrounds an 805-acre lake. The Town’s MS4 boundary mirrors its jurisdictional boundary, and is located in Center and Hanover Townships. **Exhibit 1** identifies Cedar Lake’s MS4 area.

Cedar Lake’s stormwater receiving waters were identified by locating the Town’s MS4 area on a USGS 7.5 Minute quadrangle map and identifying solid blue lines (named streams and lakes) within the Town’s MS4 area and by the Town’s recording of outfalls to Cedar Lake. As listed in **Table 2-1** and illustrated in **Exhibit 2**, the Town of Cedar Lake discharges stormwater into two different waterbodies, Cedar Creek and Cedar Lake.

**Table 2-1  
 Receiving Waters**

Receiving Waters	
Receiving Water	Outfall(s)
Cedar Lake	Chamber Outlet
Cedar Lake	Condo Outlet
Cedar Lake	Potowatomie Park
Cedar Lake	Meyer Manor Outlet
Cedar Lake	Pinecrest Outlet
Cedar Creek	139 <sup>th</sup> Ave. Outlet

**2.2 POPULATION DATA**

In 2000, the US Census ranked the Town of Cedar Lake as the 78th largest community in the State with a population of 9,279. Census Bureau statistics also estimate that the Town’s population grew by approximately 4.4% from 1990 to 2000. **Table 2-2** lists Census Bureau population statistics for the Town of Cedar Lake and the State of Indiana.

**Table 2-2  
 US Census Bureau Statistics, 2002**

Year	Cedar Lake Population	State Rank	% of State	Indiana Population
1990	8,885	72nd	.14%	5,544,156
2000	9,279	78th	.17%	6,159,068
% Change 1990 to 2000	4.4%			9.7%

### 2.3 LAND USE DATA

As illustrated in **Exhibit 3**, approximately 30% of Cedar Lake's MS4 area is in agricultural production and 29% is considered to be urbanized. This data comes from the Indiana Land Cover Data Set, which was created as part of the USGS National Land Cover Characterization Project. The goal of the project was to generate seamless and consistent land cover data for the United States. The Indiana data was generated in 1998 and is considered to be the most accurate land use data available for the Town of Cedar Lake. **Table 2-3** summarizes land use data for the Town of Cedar Lake.

**Table 2-3  
 1998 Land Use Data**

Land Use	Land Area (acres)	MS4 Area (%)
<b>Agriculture</b>	<b>1,541</b>	<b>29.7</b>
<b>Urban High Density/ Highly Impervious Area</b>	<b>580.6</b>	<b>11.2</b>
<b>Urban Low Density</b>	<b>907.9</b>	<b>17.5</b>
<b>Forest</b>	<b>1,116.9</b>	<b>21.5</b>
<b>Open Water</b>	<b>791.3</b>	<b>15.2</b>
<b>Wetlands</b>	<b>252.3</b>	<b>4.9</b>
<b>Total</b>	<b>5,190</b>	<b>100</b>

### 2.4 WATERSHEDS WITHIN MS4 AREA

The Town of Cedar Lake is located within two different 8-digit Hydrologic Unit Code (HUC) watersheds, the Kankakee and Little Calumet – Galien River Basins. As illustrated in **Exhibit 4** and listed in **Table 2-4**, there are four 14-digit Hydrologic Unit Code (HUC) subwatersheds that drain land from this MS4 area.

**Table 2-4  
14-Digit Subwatersheds**

<b>Watershed Name</b>	<b>14 Digit HUC</b>	<b>Size (ac)</b>
Main Beaver Dam Ditch-Headwaters	04040001030030	11,668
Lake Dalecarlia-Cedar Lake	07120001130060	12,893
West Creek-Bull Run	07120001140010	13,199
West Creek-Klaasville	07120001140020	9,130

## **2.5 SUMMARY OF LAND USE EVALUATIONS**

The effects of land use and land use change on surface runoff, streamflow, and groundwater recharge are fundamental considerations in the practice of stormwater management. Expansion of urban areas significantly impacts the environment in terms of groundwater recharge, water pollution, and stormwater drainage. Urbanization can lead to an expansion of impervious surfaces, which can in turn lead to increases in surface runoff volume, downstream flooding, and detrimental impacts to local waterways. Since each land use has a different impact on stormwater runoff, strategic land use planning can help minimize these impacts.

The US EPA's 2002 National Water Quality Inventory (NWQI) identified agricultural land uses as the leading source of non-point source (NPS) pollution and water quality impairments to surveyed rivers and lakes, and the third largest source of impairments to surveyed estuaries (EPA, 2002). Cedar Lake officials have identified a particular dairy farm that applies manure to row crop fields. Town officials are concerned that the manure is running off and polluting Cedar Lake. The Town will consider encouraging this particular dairy farmer and other local agricultural producers to implement agricultural BMPs, including, but not limited to, conservation tillage, nutrient management, manure management, pesticide management, buffer strips, and wetland restoration. This can be accomplished by partnering with the Lake County Soil and Water Conservation District (SWCD) to work with local agricultural producers within the MS4 area.

In addition, the NWQI identified runoff from urban areas as the leading source of impairments to surveyed estuaries and the third largest source of water quality impairments to surveyed lakes (EPA, 2002). Currently urban land uses account for 29% of land uses within Cedar Lake; however, growth in and around Cedar Lake's MS4 area is occurring at a very rapid pace. In 2003, 100 homes were built in the Town.

In 1998, the Town of Cedar Lake conducted a study of potential growth occurring both inside and outside of its corporate boundaries. Mr. Timothy Brown, Town Manager, anticipates that future growth in the southern portions of the Town will continue at a rapid pace in 2004 and that 1,100 to 1,200 new homes will be built within the current corporate boundaries over the next 15 years. Another 2,000 homes have the potential to be annexed into the Town boundaries. This trend towards rapid urbanization is anticipated to continue in the near future and it will be important for the Town to manage growth and development in a way that minimizes the potential impacts on water quality. As required by Rule 13, Cedar Lake will need to adopt a comprehensive stormwater ordinance designed to minimize the impacts that

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the Town's urbanized areas have on water quality. Additionally, the BMP considerations discussed in Chapter 7 are anticipated to minimize the water quality impacts of Cedar Lake's urban land uses on receiving waters.

**3.0 SENSITIVE AREAS**

Rule 13 requires the identification of “Sensitive Areas” as locations that should be given the highest priority for the selection of BMPs and the prohibition of new or significantly increased MS4 discharges. The following discussion provides an evaluation of potentially sensitive areas within the Town of Cedar Lake’s MS4 area.

**3.1 ERODIBLE SOILS**

The Natural Resources 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 climatic conditions where it is located. As a result, the basis for identifying highly erodible land (HEL) is the erodibility index of a soil map unit.

The erodibility index 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 3-1** lists the highly erodible and potentially highly erodible soils within Lake County. **Exhibit 5** identifies the highly erodible and potentially highly erodible soils found within the Cedar Lake MS4 area.

**Table 3-1  
 Highly Erodible Soils**

Map Unit Symbol	Soil Name	HEL Classification
MuB	Morley	Potentially Highly Erodible
MuC2	Morley	Highly Erodible
MuD2	Morley	Highly Erodible
MuE	Morley	Highly Erodible
MvB3	Morley	Potentially Highly Erodible
MvC3	Morley	Highly Erodible
MvE3	Morley	Highly Erodible
OaE	Oakville	Potentially Highly Erodible
OsB	Oshtemo	Potentially Highly Erodible
OsC	Oshtemo	Potentially Highly Erodible
PIC	Plainfield	Potentially Highly Erodible
TcB	Tracy	Potentially Highly Erodible
TcC	Tracy	Highly Erodible
TrB	Tracy	Potentially Highly Erodible

Recognizing the potential water quality impacts associated with disturbing highly erodible soils, the Town of Cedar Lake will consider these soils to be “sensitive areas”. The Town will prioritize new/redevelopment sites, which contain the identified highly erodible or potentially highly erodible soils during the plan review, inspection, and enforcement

process.

### 3.2 SOIL SUITABILITY FOR SEPTIC SYSTEMS

According to Purdue University, approximately 96% of the soils within Lake County have severe limitations for septic systems. **Table 3-2** identifies those soils within Lake County that have severe and moderate limitations for septic systems. After a thorough review of the Lake County Soil Survey, it was determined that the majority of the soils within the Cedar Lake MS4 area have either severe or moderate limitations for septic systems.

**Table 3-2  
 Soil Suitability for Septic Systems**

Soil Series	Map Symbols	Moderate or Severe
Alida	Ad, Al	moderate
Blount	BIA	severe
Bono	Bn	severe
Brady	Br	moderate
Carlisle	Ca	severe
Darroch	Da	moderate
Del Rey	De, DI	severe
Elliott	EI	severe
Gilford	Gd, Gf, Gm	severe
Linwood	Lm	severe
Markham	MaB2	severe
Marl Beds	Mb	severe
Maumee	Mm, Mn	severe
Milford	Mo, Mr, Mt, Ms	severe
Morley	MuB, MuC2, MuD2, MuE, MvB3, MvC3, MvE3	severe
Pewamo	Pc, Pe	severe
Rensselaer	Re, Rn, Rr, Rs	severe
Sparta	SrB	severe
Tawas	Ta	severe
Wallkill	Wa	severe
Warners	We	severe
Watseka	Wk	moderate
Watseka	WI	severe
Wauseon	Wo	severe
Whitaker	Wt	moderate

💧 Most locations within Cedar Lake’s MS4 area with severely limiting soils are serviced by

sanitary sewers and will not be considered a priority. However, locations utilizing septic systems for wastewater treatment will be identified via Health Department records or complaint data. When identified, priority will be given to those areas with known septic system failures or inadequacies and Cedar Lake's Stormwater Program will be updated accordingly.

### **3.3 NATURAL HERITAGE DATA**

The IDNR's Division of Nature Preserves maintains the Natural Heritage Data for the State of Indiana. National Heritage Data includes general information on endangered, threatened, and rare species for each Indiana County. According to this data, there are 129 plants, 24 insects, 2 fish, 3 amphibians, 7 reptiles, 25 birds, and 3 species of mammals listed as endangered, threatened or rare within Lake County.

In addition, floodplain and upland forest habitats, dry and wet sand prairies, and savannas are listed as High Quality Natural Communities on the Indiana's endangered, threatened and rare species list for Lake County. A migratory bird site is also listed as a significant resource. However, as mentioned above, Natural Heritage Data is only County specific, therefore, these habitat types may not exist within Cedar Lake's MS4 area.

💧 Cedar Lake officials are unaware of any waters within the Town's MS4 area that currently contain threatened or endangered species and their habitats. If endangered or threatened species and their habitats are identified in the future, Cedar Lake will consider those locations to be sensitive areas and will update their Stormwater Program accordingly. Endangered, threatened, rare species and habitats are not considered to be sensitive areas as part of Cedar Lake's Stormwater Program.

### **3.4 WETLANDS**

The National Wetland Inventory (NWI) Map, as illustrated in **Exhibit 6**, identifies potential wetlands within Cedar Lake's MS4 area. According to NWI data there are approximately 252 acres of wetlands in Cedar Lake's MS4 area. It should be noted that the NWI data was generated from infrared photography and has not been field verified. The NWI map should be used only as a reference, not as a definitive answer of whether wetlands are present on a particular site.

Rule 13 requires MS4s to establish a construction program that contains, at a minimum, the requirements of 327 IAC 15-5 (Rule 5). Rule 5 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 (327 IAC 15-5-6.5(a)(3)).

💧 Since Rules 5 and 13 require the identification of wetlands in conjunction with planning for construction site stormwater runoff controls, wetlands will be considered sensitive areas in

the Town of Cedar Lake's Stormwater Program. The Town's pending stormwater ordinance will require developers to meet, at a minimum, the requirements for identifying and protecting wetlands outlined in Rule 5.

### **3.5 OUTSTANDING AND EXCEPTIONAL USE WATERS**

According to IDEM's listing of Indiana Waters Designated for Special Protection, the waters in Lake County that have been designated as "outstanding state resource waters" include the Indiana portion of Lake Michigan and all waters incorporated into the Indiana Dunes National Lakeshore. There are no "exceptional use waters" in Lake County.

In Lake County, the following waters are identified as "designated salmonid waters":

- The East branch of the Little Calumet River and its tributaries downstream to Lake Michigan via Burns Ditch
- Kintzele Ditch (Black Ditch) from Beverly Drive Downstream to Lake Michigan
- Salt Creek above its confluence with the Little Calumet River

💧 There are no "exceptional use waters" within or near the Town of Cedar Lake's MS4 area. Therefore, outstanding and exceptional use waters are not considered to be sensitive areas as part of Cedar Lake's Stormwater Program.

### **3.6 ESTABLISHED TMDL WATERS**

Section 303(d) of the Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with federal technology based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waterbody. 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. These streams are further discussed in Section 4.2.

Within the Town of Cedar Lake's 14-digit HUC subwatersheds, Cedar Lake, Cedar Creek, and the Bull Run Basin are listed on the IDEM's list of impaired waters. Impairments identified for these waters include fish consumption advisories for polychlorinated biphenyls (PCBs) and impaired biotic communities.

💧 At this time, there have been no completed TMDLs in Cedar Lake's MS4 area; however, the IDEM has scheduled TMDL development to occur from 2004 through 2019.

### **3.7 RECREATIONAL WATERS**

The state-listed Recreational Water located within Cedar Lake's MS4 area is Cedar Lake. Cedar Lake is a valued resource in the area and is highly used for recreation, including

boating, fishing, and waterskiing. The Parks Department helps to promote the recreational use of the Lake.

- 💧 Consequently, the Lake Dalecarlia-Cedar Lake (07120001130060) subwatershed will be considered a sensitive area in the Town of Cedar Lake's Stormwater Program and will be prioritized for public education regarding the hazards of recreational contact with water potentially contaminated by stormwater runoff.

### **3.8 PUBLIC DRINKING WATER SOURCES**

According to 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 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.

- 💧 The Town of Cedar Lake derives all of its drinking water from groundwater wells managed by the private companies that are paid members of the "Cedar Lake Water Alliance". According to daily monitoring completed by local drinking water utilities per requirements from the IDEM and the Indiana State Board of Health (ISBH), there are no contaminants present at levels of concern to public health that are believed to be generated by stormwater runoff.

### **3.9 SUMMARY OF SENSITIVE AREA EVALUATIONS**

As discussed in the sections above, several sensitive areas have been identified as having the potential to impact or to be impacted by stormwater runoff from the Town of Cedar Lake's MS4 area. These areas include highly erodible soils, soils unsuitable for septic systems, wetlands, and recreational waters. The Town of Cedar Lake will consider these areas to be priorities when developing their Stormwater Program. The Lake Dalecarlia-Cedar Lake (07120001130060) subwatershed will specifically be considered a priority for the Town Cedar Lake's Stormwater Program.

**4.0 SUMMARY OF EXISTING MONITORING DATA**

Rule 13 requires a review of known existing and available monitoring data for the MS4 area receiving waters, including, as applicable, data that can be correlated from chemical, biological, physical, land use, and complaint data. The following discussion provides an evaluation of known and available data for the Town of Cedar Lake’s MS4 area receiving waters.

**4.1 INDIANA 305(b) REPORT**

The Office of Water Quality’s surface water quality monitoring strategy is designed to describe the overall environmental quality of each major river basin and to identify monitored water bodies that do not fully support designated uses. The IDEM’s surface water monitoring strategy was revised in 2001 to meet the goal of assessing all waters of the state within five years, while enhancing support of other Office of Water Quality programs.

The 305(b) report is compiled by the IDEM at a frequency prescribed by the US EPA, but at least every four years. The report provides a compilation and summary of all of the IDEM’s water quality monitoring and assessment data (compiled from AIMS database and other datasets/reports within the IDEM). All IDEM water quality data is evaluated by the IDEM’s 305(b) Coordinator and interpreted for each 14-digit HUC subwatershed. Each subwatershed is given a water quality rating relative to its streams status in meeting Indiana’s Water Quality Standards (WQS). WQS are set at levels necessary for protecting a waterway’s designated use(s), such as swimmable, fishable, or drinkable. Each subwatershed is given a rating of fully, partially, or not supportive of its designated uses. **Table 4-1** summarizes subwatershed assessments for the Town of Cedar Lake from the IDEM’s 2002 Indiana Integrated Water Quality Monitoring and Assessment (305(b)) Report.

**Table 4-1  
 305(b) Assessment Results**

<b>Watershed Name</b>	<b>14 Digit HUC</b>	<b>Use Support</b>	<b>Cause (stressor) Rating</b>
Main Beaver Dam Ditch – Headwaters	04040001030030	N – Aquatic Life	S - Biotic Community Status
Lake Dalecarlia – Cedar Lake	07120001130060	N – Aquatic Life P – Fish Consumption	M – Biotic Community Status M – PCBs
West Creek – Bull Run	07120001140010	N – Aquatic Life	H – Biotic Community Status
West Creek – Klaasville	07120001140020	F – Aquatic Life	

Use Support: F=full support, P=partial support, N=non support, N/A – not assessed  
 Cause (stressor) Rating: H=high, M=moderate, S=slight, T=need more information

According to the IDEM’s monitoring and assessments data, the following subwatershed is considered to be fully supporting of all designated uses, and therefore is not substantially impacted by stormwater discharges from Cedar Lake’s MS4 area:

- West Creek – Klaasville (07120001140020)

Some stressors, however, such as impaired biotic communities, may be related to stormwater runoff. Based upon the IDEM’s 305(b) assessments and as illustrated in **Exhibit 7**, the following subwatersheds should be considered as priorities for Cedar Lake’s Stormwater Program:

- Main Beaver Dam Ditch – Headwaters (04040001030030)
- Lake Dalecarlia – Cedar Lake (07120001130060)
- West Creek – Bull Run (07120001140010)

**4.2 INDIANA 303(d) LISTED IMPAIRED STREAMS**

Section 303(d) of the Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with technology based standards alone. States are also required to develop a priority ranking for these waters, taking into account the severity of the pollution and the designated uses of the waters. 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.

**Table 4-2** identifies two 303(d) listed waterbodies within the Town of Cedar Lake’s 14-digit HUC subwatersheds. In addition, the table identifies the 14-digit hydrologic unit code, water quality parameters of concern, priority ranking, and TMDL development schedule for each impaired stream. **Exhibit 8** identifies the impaired streams within Cedar Lake’s MS4 area.

**Table 4-2  
303(d) Listed Streams**

Waterbody	14-digit HUC	Parameter(s) of Concern	Priority Ranking	TMDL Development Schedule
Cedar Creek	07120001130060	Impaired Biotic Communities	51	2004-2011
Cedar Lake; Cedar Creek	07120001130060	FCA for PCB	52	2014-2019
Bull Run Basin	07120001140010	Impaired Biotic Communities	239	2007-2014

FCA=Fish Consumption Advisory

One 303(d) listed waterbody is located within the Town’s 14-digit HUC subwatersheds, but

is not located within the MS4 area. The two remaining 303(d) waterbodies are located within the Town's MS4 area in the Lake Dalecarlia – Cedar Lake (07120001130060) subwatershed. This subwatershed is considered a sensitive area and will be considered a priority for the Town of Cedar Lake's Stormwater Program. The West Creek – Bull Run (07120001140010) subwatershed will not be considered as a priority for the Town of Cedar Lake.

### **4.3 UNITED STATES GEOLOGIC SURVEY (USGS) STUDIES**

In 1991, the U.S. Geological Survey began implementation of the National Water-Quality Assessment (NAWQA) Program. The NAWQA program integrates monitoring of surface and ground water quality with the study of aquatic ecosystems. The goals of the NAWQA program are to (1) describe current water quality conditions for a large part of the Nations' freshwater streams and aquifers, (2) describe how water quality is changing over time, and (3) improve our understanding of the primary natural and human factors affecting water quality. NAWQA program studies are conducted within areas called study units. The Upper Illinois River Basin (UIRB) is one such study unit.

The UIRB drains a 10,949 square mile area, including portions of the Town of Cedar Lake, Indiana. One of the major subbasins, the Kankakee, includes some communities in Lake County and is classified as Southern Michigan/Northern Indiana Till Plains ecoregion. The primary factor affecting water quality in the UIRB is land use. Distinct chemical signatures are found in streams that drain urban land compared with streams that drain agricultural land. Surface water issues related to urbanization include point and nonpoint sources of sediment, nutrients, trace elements, and organic compounds; streamflow alterations; and the health and community structure of aquatic biota. Surface water issues related to agriculture include nonpoint sources of sediment, nutrients, trace elements, and pesticides; drainage modifications; and the health and community structure of aquatic biota. Five major changes in the UIRB have altered the quality of surface waters. These changes are construction of navigable waterways, diversion of Lake Michigan water, construction of wastewater treatment plants, drainage of wetlands, and agricultural activities.

The UIRB study unit began on October 1, 1996. The study activities are planning and study design, high-intensity monitoring, reports, and low-intensity monitoring. During the high-intensity monitoring phase, chemical, physical, and biological data are collected at local and regional scales to describe the water quality throughout the study unit. Measurements are made to determine water chemistry in streams and aquifers, the quantity suspended sediment and the quality of bottom sediments in streams, the variety and number of fish, benthic invertebrates, algae in streams, and the presence of any contaminants in fish tissues.

💧 This USGS study concluded that nutrients and siltation are major causes of water quality problems in Illinois. However, this study contains no surface water data that is specific to Indiana; therefore, no correlations to specific Indiana MS4 areas were identified.

## **4.4 STREAM REACH CHARACTERIZATION EVALUATION REPORT**

### **Stream Reach Characterization Evaluation Report (SRCER) - Crown Point, Indiana**

The City of Crown Point operates and maintains five (5) combined sewer overflows (CSO) that discharge to Main Beaver Dam Ditch. Main Beaver Dam Ditch is a tributary to the Deep River/Lake George subwatersheds. A Stream Reach Characterization Evaluation Report (SRCER) was developed in compliance with the City's NPDES permit (IN0025763). The SRCER contains information on how the five (5) CSO discharge points may affect the water quality of Main Beaver Dam Ditch.

### **Rapid Bioassessments**

Rapid bioassessment sampling was completed on July 30, 1993 to assess the biological condition of Main Beaver Dam ditch and determine the impact of Crown Point's CSO discharges on aquatic life within the Main Beaver Dam Ditch. The bioassessment was conducted at three locations along Main Beaver Dam Ditch for habitat and macroinvertebrates.

There was little difference in the macroinvertebrate community scores at the three monitoring sites. Overall the aquatic community was of relatively low diversity and dominated by fairly tolerant organisms. The blackfly and midge larvae, relatively tolerant organisms, dominated each site. Using Site 1 (upstream of discharges) as a reference, the biotic scores downstream at Site 2 and 3 were within 80% of Site 1, suggesting that neither the POTW discharges nor the storm sewer discharges were causing significant impacts on the biotic community of Beaver Dam Ditch. The SRCER suggests that the poor habitat conditions were to blame for the poor macroinvertebrate population.

Two sites were also evaluated for fish communities. Site 1 and Site 3 were sampled for fish populations. Only five to seven fish were observed at these sites and were "tolerant" species. The IBI score for Site 1 was 27 and Site 3 was 25 out of a possible 60 points. The SRCER suggests, that poor habitat was again to blame for the low "biotic integrity" of the stream.

### **Habitat Evaluations**

Habitat evaluation results were identical for all three sites. The stream's habitat score was 43 out of a possible 135 points. It was determined that, due to such a low score, Main Beaver Dam Ditch couldn't support a diverse population of aquatic organisms.

Poor habitat was cited for the following reasons:

- Main Beaver Dam Ditch is essentially a straight, channelized stream with generally flat water or shallow riffle areas;
- The banks are moderately unstable with a high erosion potential during extreme high flow;
- The stream has less than 10% rubble, gravel or other stable habitat;
- The limited gravel, cobble and boulder substrate is moderately embedded with 50%-75% surrounded by fine sediment.

### **Bacterial Assessments**

In 2000, an assessment of bacterial pathogens in Main Beaver Dam Ditch was conducted to

determine if the City's CSOs were causing a public health risk. The study was conducted from July 10, 2000 through August 21, 2000 using a sterile sediment bag technique. The study was conducted using twelve samplers suspended upstream and downstream from all CSO overflow points. Aliquots of sand were analyzed for total coliform and E. coli bacteria.

Coliform bacteria were present in all samples and did not vary by more than an order of magnitude between sites. Because coliform bacteria are present everywhere in water, and although their presence indicates the possibility of fecal contamination, they are not valuable at predicting health risks. Therefore, the bacteria study focused upon E. coli bacteria.

E. coli was present in all samples collected. Because there are no water quality standards for E. coli in sand, the U.S. EPA criteria for water (listed in Federal Register Vol. 51, No. 45, March 7, 1986) was applied. Using these criteria, it was determined that Main Beaver Dam Ditch had a low to moderate human health risk from E. coli. The SRCER suggests that bacteria was present upstream of all CSOs; however, the SRCER does not provide a discussion on potential upstream sources.

Although only a small portion of Cedar Lake's MS4 area discharges to Main Beaver Dam Ditch, this study is considered important for characterizing the status of water quality in this waterbody. Based upon the findings of Crown Point's SRCER, the low quality of biotic communities within Main Beaver Dam Ditch, upstream of Crown Point, was considered to be due to poor instream habitat conditions, rather than sources of "pollution".

💧 Since responsibility for maintaining Main Beaver Dam Ditch and its habitat belongs to the Lake County Surveyor's Office, this subwatershed will not be a priority for the Town of Cedar Lake's Stormwater Program.

#### **4.5 LAKE AND RIVER ENHANCEMENT (LARE) PROGRAM**

##### **Cedar Lake Engineering Feasibility Study, Cedar Lake Enhancement Association, Inc.**

In 2000, the Cedar Lake Enhancement Association, Inc. (CLEA) received a grant from the Indiana Department of Natural Resources (IDEM) Lake and River Enhancement (LARE) program to conduct a lake enhancement engineering feasibility study. The Town of Cedar Lake is an active participant in this association.

##### **Study Design**

The water quality component of this study was originally designed to collect three wet and dry weather samples from five stormwater inlets to Cedar Lake. However, since the stormwater inlets discharge only during wet weather, only wet weather samples were collected for the project. Samples were collected in February, March, and May of 2000 at the following locations: the North Inlet, the Old Bank Building inlet, the Golf Course inlet, North Point Marina inlet and the Condos inlet. In addition, the following water quality parameters were analyzed: biological oxygen demand (BOD), nitrate, ammonia-nitrogen, total Kjeldahl nitrogen, total suspended solids (TSS), orth-phosphorus and total phosphorus. Laboratory analyses were conducted by Test America, Inc. of Bartlett, Illinois. Field measurements were taken for:

water temperature, pH, dissolved oxygen, specific conductivity and turbidity.

**Study Results**

E. coli, phosphorus and TSS concentrations were determined to be the key indicators of water quality. TSS concentrations were identified as being high at all sites, except for at the Condos inlet. Total phosphorus concentrations were high at all inlets with the North Inlet having the highest values. E. coli values exceeded Indiana water quality standards at the Golf Course, North Point Marina and the Condo inlets.

Phosphorus, TSS and E. coli are described in the study as the result of nonpoint source pollution as there are no point source discharges in the Cedar Lake watershed. The study identifies agricultural lands, the golf course, and urban runoff as the principal nonpoint sources within the study area. Nonpoint source modeling was utilized to determine which inlets or watersheds were contributing the most nonpoint source pollution to Cedar Lake. Modeling for E. coli was not conducted. The modeling predicted that the Condos, North Point Marina, and the Old Bank Building inlets to be contributing the most sediment and phosphorus loads.

**Study Recommendations**

💧 This study provided recommendations to address the pollutants impacting Cedar Lake. **Table 4-3** summarizes these recommendations as they pertain to Cedar Lake’s Stormwater Program. The Town of Cedar Lake will continue to support CLEA projects, when feasible.

**Table 4-3  
Cedar Lake Engineering Feasibility Study Recommendations**

Recommended BMPs	BMP Purpose	Status	Maintenance Responsibility
Construction of a Wetlands Treatment System on Sleepy Hollow Ditch	Wetlands provide for sediment adsorption, nutrient adsorption, and wildlife habitat.  Based upon Cedar Lake’s water chemistry, it is estimated that the constructed wetland removes approximately 42% of phosphorus loadings to Cedar Lake at this site.	Complete	CLEA is responsible for maintenance. The sedimentation basin needs to be cleaned every 2.5 years on average.
Stabilization of Sleepy Hollow Ditch Banks	Bank stabilization is predicted to prevent tons of sediment from entering Cedar Lake annually.  Bank stabilization is critical to the development of the wetland basin. Combined,	Complete	Individual homeowners and CLEA.

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	bank stabilization and the wetland will reduce phosphorus loadings to Cedar Lake by at least 270 kg/yr.		
Removal of Contaminated Sediments from Cedar Lake	Removal of 1,100,000 cubic yards of sediment would reduce internal phosphorus loading by 4,270 kg/yr and reduce Chlorophyll A by 34%.	Pending	Individual homeowners and CLEA.
Development of Additional Watershed Control Measures <ul style="list-style-type: none"> <li>• constructed wetlands</li> <li>• sediment basins</li> <li>• bank erosion protection</li> </ul>	Implementation of these projects on the north and east sides of Cedar Lake is estimated to reduce phosphorus loadings to Cedar Lake by 550kg annually.	Pending	Individual homeowners and CLEA will work to keep problems from reoccurring.

**4.6 CLEAN WATER ACT CHAPTER 319 GRANT STUDIES**

After consulting Ms. Kathleen Hagan, of the IDEM’s Watershed Management Section, no 319 water quality studies were identified that were relevant to the Town of Cedar Lake’s MS4 area.

**4.7 HEALTH DEPARTMENT STUDIES**

**Cedar Lake Bacteria Sampling - Lake County Health Department**

Every year during the recreational season (April through October), the Lake County Health Department collects bacteria samples from twelve locations on Cedar Lake. The Health Department collects grab samples from the shoreline at these locations, including John’s Pharmacy, Conference North, Coffins, Pine Crest Marina, Pine Crest Boat Slip, Holiday Liquors, Toomey’s Resort, Midway Ballroom, South Shore Country Club, Fish and Game Club and La Tulip Harbor.

During 2001, the Health Department collected weekly bacteria samples beginning on May 17<sup>th</sup> and ending on September 13<sup>th</sup>. 2% of the samples collected (9/216) exceeded Indiana’s water quality standard for E.coli bacteria (235 CFU/100ml). E.coli violations ranged from 430-510 CFU/100ml. However, these violations were only observed during periods of wet weather. No violations were detected during dry weather conditions.

In addition, in 2003, the Health Department collected weekly bacteria samples beginning on May 15<sup>th</sup> and ending September 4<sup>th</sup>. During this sampling period, 4% of the samples (9/204)

exceeded Indiana's water quality for E.coli bacteria (235 CFU/100ml). All sites exceeded the water quality standard during July of 2003, with E.coli results ranging from 250-410 CFU/100ml. Again, violations were only observed during periods of wet weather. No violations were detected during dry weather conditions.

💧 The Lake County Health Department's monitoring data for Cedar Lake is considered important for characterizing the status of water quality impacting the lake. Stormwater outfalls discharging to Cedar Lake will be considered priorities for the Town's Stormwater Program. In fact, as discussed in Section 4.5, these outfalls are already being addressed via the Town and CLEA's ongoing efforts to improve water quality in the lake.

#### **4.8 SUMMARY OF EXISTING WATER QUALITY DATA EVALUATIONS**

As discussed in the sections above, existing water quality data and studies related to the Town of Cedar Lake's MS4 area receiving streams have identified multiple instances of stormwater related pollutants in the Town's MS4 area receiving streams. Based upon the data evaluated for this report, the following subwatersheds are considered priorities for the Town of Cedar Lake's Stormwater Program:

- Lake Dalecarlia – Cedar Lake (07120001130060)
- West Creek – Bull Run (07120001140010)

## **5.0 IDENTIFICATION AND ASSESSMENT OF EXISTING BMPs**

Rule 13 requires the assessment of structural and nonstructural stormwater Best Management Practices (BMPs) and locations. The following discussion provides an inventory of BMPs identified for the Town of Cedar Lake. BMPs are identified and discussed according to each of the six required Minimum Control Measures (MCMs). Structural BMPs are also evaluated in this chapter.

### **5.1 ASSESSMENT OF EXISTING PUBLIC EDUCATION AND OUTREACH BMPs**

Compliance with this MCM requires MS4s to demonstrate that residents, visitors, public service employees, commercial and industrial facilities, and construction site personnel within the MS4 are educated about the impacts of polluted stormwater runoff on MS4 area receiving streams.

Existing public education and outreach program and activities in the Town of Cedar Lake include:

- Town departments (including Parks and Public Works Departments) support local groups with annual Town, ravine, and Lake clean-up events.
- The Town distributes the Town of Cedar Lake’s “Lake News” newsletter twice a year to local citizens. This newsletter is intended to educate local citizens about services that the Town provides and often includes information regarding clean up activities, recycling, and the County’s Household Hazardous Waste Program.
- The Cedar Lake Enhancement Association (CLEA) coordinates various volunteer activities and distributes a newsletter including water quality information to approximately 400 homes.
- The Town and CLEA work with the Hanover Central High School Environmental Club to perform environmental education projects, such as, the installation and maintenance of a sediment trap BMP.
- 💧 The Town of Cedar Lake’s existing Public Education and Outreach activities will help ensure the Town’s compliance with requirements of Rule 13. However, these activities are currently not sufficient to address the requirements of Rule 13.

### **5.2 ASSESSMENT OF EXISTING PUBLIC PARTICIPATION AND INVOLVEMENT BMPs**

Compliance with this MCM requires MS4s to demonstrate that opportunities were provided for stakeholders to participate in the development and implementation of the MS4’s SWQMP.

Existing Public Participation and Involvement activities in the Town of Cedar Lake include:

- Stormwater Board meetings and work sessions are open to the public. Every Thursday afternoon Town officials work with the public to investigate complaints.
- The Cedar Lake Enhancement Association (CLEA) has existed since 1994 and has been involved in various LARE grant projects. They are currently working with the Army Corps to slow down sediment and phosphorous loadings to the lake and ultimately obtain permitting necessary for dredging Cedar Lake. The CLEA provides a “Lake Monitor” to obtain samples twice during the summer from Cedar Lake for analysis of water clarity and phosphorous by Indiana University – Bloomington.
- The Cedar Lake Enhancement Association (CLEA) coordinates various volunteer activities and distributes a newsletter including water quality information to approximately 400 homes.
- Numerous Town Departments participate in and support local Town cleanup events.
- Cedar Lake officials recently approved the construction of a privately owned and operated dog park. The Town will promote the use of the park and proper disposal of pet waste.
- 💧 The Town of Cedar Lake’s existing Public Participation and Involvement activities will help ensure the Town’s compliance with requirements of Rule 13. However, these activities are currently not sufficient to address the requirements of Rule 13.

### **5.3 ASSESSMENT OF EXISTING ILLICIT DISCHARGE DETECTION AND ELIMINATION BMPs**

Compliance with this MCM requires MS4s to develop and implement a strategy to detect and eliminate illicit discharges to the MS4 conveyance system. To this end, the Town will need to develop a storm sewer system map that identifies specified conveyances and outfalls. In addition, to maximize effectiveness, it will be important for all field staff to receive training and education regarding illicit discharges to ensure that staff identify and respond to illicit discharges appropriately.

Existing Illicit Discharge Detection and Elimination activities in the Town of Cedar Lake include:

- The Town of Cedar Lake has identified and documented some stormwater inlets to the lake on hard copy maps.
- The Building Department inspects new stormwater conveyance systems for compliance with Town construction standards.
- The Public Works Department is currently responsible for inspection and repair of Town stormwater inlets.

- The Public Works Department works to eliminate flooding and sewage contamination of the lake by utilizing a video camera for screening and performing maintenance activities.
- 💧 The Town of Cedar Lake's existing Illicit Discharge Detection and Elimination activities will help ensure the Town's compliance with requirements of Rule 13. However, these activities are currently not sufficient to address the requirements of Rule 13.

#### **5.4 ASSESSMENT OF EXISTING CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs**

Compliance with this MCM requires MS4s to develop, implement, manage, and enforce an erosion and sediment control program for construction activities that disturb one or more acres of land within the MS4 area. Currently, the Town of Cedar Lake relies on the Lake County SWCD and the IDNR Division of Soil Conservation for implementation of Indiana's Rule 5 program for minimizing stormwater runoff from construction activities.

Currently, there are no existing Construction Site Stormwater Runoff Control activities in the Town of Cedar Lake related specifically to stormwater quality. However the Town is very active in water quantity control, including:

- The Zoning Administrator reviews all building permits and inspects construction sites in accordance with local ordinance requirements. Inspections are conducted before, during, and after the construction process.
- Chapter 155 and 156 of the Town's ordinances address floodplain and stormwater quantity controls with some mention of sediment and erosion control when constructing certain BMPs.
- 💧 The Town of Cedar Lake's existing Construction Site Runoff Control activities will help ensure the Town's compliance with requirements of Rule 13. However, these activities are currently not sufficient to address the requirements of Rule 13.

#### **5.5 ASSESSMENT OF EXISTING POST-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs**

Compliance with this MCM requires MS4s to develop a program for managing post-construction Best Management Practices (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.

Existing Post-Construction Stormwater Runoff Control activities in the Town of Cedar Lake include:

- The Town of Cedar Lake currently operates and maintains numerous retention and detention ponds originally constructed for flood control purposes. Despite the original intent of these structures, they do provide water quality benefits such as sediment removal.
- Chapter 155 and 156 of the Town's ordinances address floodplain and stormwater control issues and specifications for some BMPs, such as, swales, detention, and retention ponds.
- 💧 The Town of Cedar Lake's existing Post-Construction Runoff Control activities will help ensure the Town's compliance with requirements of Rule 13. However, these activities are currently not sufficient to address the requirements of Rule 13.

### **5.6 ASSESSMENT OF EXISTING POLLUTION PREVENTION AND GOOD HOUSEKEEPING BMPs**

Compliance with this MCM requires MS4s to develop and implement a program to prevent or reduce pollutant runoff from municipal operations within the MS4 Area. The Town of Cedar Lake is currently implementing a number of recommended Stormwater Pollution Prevention BMPs.

Existing Pollution Prevention and Good Housekeeping activities in the Town of Cedar Lake include:

- The Public Works Department's vehicle maintenance facility has an arrangement with the Lake County Solid Waste department for collection and disposal of used tires and other solid wastes.
- The Public Works Department's vehicle maintenance facility has storage for used oil/fluids from vehicle maintenance activities. They have a contract with a waste hauling company to dispose of stored fluids.
- The Town maintains a salt and sand storage facility with containment walls; however, these materials are not covered.
- 💧 The Town of Cedar Lake's existing Good Housekeeping Activities will help ensure the Town's compliance with requirements of Rule 13. However, these activities are currently not sufficient to address the requirements of Rule 13.

### **5.7 ASSESSMENT OF EXISTING STRUCTURAL BMPs**

In 1997, the Town of Cedar Lake installed a small constructed wetland to filter stormwater runoff from parking areas at the Town Hall. The wetland is approximately 20 feet wide by 60 feet long and is located behind the municipal building on the Town Hall Grounds. This wetland treats stormwater runoff prior to discharging to Cedar Lake by providing grit and trash removal. Periodic maintenance is required and is performed by the Town with occasional volunteer

assistance from CLEA. This BMP is considered to be in good operational condition and is anticipated to be appropriately maintained as part of the Town of Cedar Lake's Stormwater Program.

At Pottawatomie Park, there is a constructed wetland that is approximately 40 feet wide by 100 feet long that was built in conjunction with CLEA. This BMP is considered to be in good operational condition and is anticipated to be appropriately maintained as part of the Town of Cedar Lake's Stormwater Program.

## **5.8 SUMMARY OF EXISTING BMP ASSESSMENTS**

Although the Town of Cedar Lake has already implemented numerous BMPs that address the mandates of the NPDES Phase II Program, as a whole, the Town of Cedar Lake's existing BMPs do not fully address the requirements of Rule 13. The existing BMPs discussed in this Chapter provide the foundation from which the Town will begin to develop its program for complying with Rule 13.

<b>6.0</b>	<b>POTENTIAL PROBLEM AREAS</b>
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Rule 13 requires the identification of areas having reasonable potential for or actually causing stormwater quality problems based upon relevant land use data and identified sensitive areas, as well as existing and available water quality data. These areas are required to be given the highest priority for the selection of BMPs and the prohibition of new or significantly increased MS4 discharges. The following discussion summarizes potential problem areas identified within the Town of Cedar Lake. BMPs being considered are discussed in Chapter 7 of this report.

### **6.1 LAND USES**

Urban land uses account for 29% of land uses within Cedar Lake. Subdivisions within the MS4 area are actively being developed, which are located primarily in the southern portions of the MS4 area. This trend towards urbanization is anticipated to continue in the near future and it will be important for the Town to manage growth and development in a way that minimizes the potential impacts on water quality. As required by Rule 13, Cedar Lake will need to adopt a comprehensive stormwater ordinance designed to minimize the impacts of the Town's urbanized areas on water quality. Additionally, potential BMPs listed in Chapter 7 should minimize the water quality impacts of Cedar Lake's urban land uses on receiving streams.

Agricultural land uses account for approximately 30% of land uses within the Town of Cedar Lake. The Town will need to consider encouraging local agricultural producers to implement agricultural BMPs, including, but not limited to, conservation tillage, nutrient and pesticide management, buffer strips, and wetland restoration. This can be accomplished by working with the Lake County SWCD to target local agricultural producers within the MS4 area.

Cedar Lake officials have identified a particular dairy farm located within the Town's jurisdiction that applies manure to row crop acres, which are located in and outside of the Town's jurisdiction. Cedar Lake officials are concerned that the manure is polluting Cedar Lake.

### **6.2 SENSITIVE AREAS**

#### **Highly Erodible Soils**

As discussed in Chapter 3, some soils in Lake County are classified as highly erodible or potentially highly erodible. Recognizing the potential water quality impacts associated with disturbing these soils, the Town will consider these soils to be "sensitive areas" and will prioritize new/redevelopment occurring on these sites during the plan review, inspection, and enforcement process.

#### **Soil Suitability for Septic Systems**

The soil suitability data illustrated in Exhibit 6 suggests a high probability for septic system failures within the Town of Cedar Lake's MS4 area. Since existing controls are in place to address wastewater treatment in new/redeveloping areas, priority will be given to those areas

with existing septic systems within the Town's MS4 area, especially those with known septic system failures or inadequacies.

### **Recreational Waters**

The state listed Recreational Water located within Cedar Lake's MS4 area is Cedar Lake. Cedar Lake is a valued resource in the area and is highly used for recreation, including boating, fishing, and waterskiing. Consequently, the Lake Dalecarlia-Cedar Lake (07120001130060) subwatershed will be considered a sensitive area in the Town of Cedar Lake's Stormwater Program and this area will be prioritized for public education regarding the hazards of recreational contact with water potentially contaminated by stormwater runoff.

## **6.3 EXISTING WATER QUALITY DATA**

Existing water quality data and studies related to the Town of Cedar Lake's MS4 area receiving streams have identified multiple instances of stormwater related pollutants in the Town's MS4 area receiving streams. Based upon the data evaluated for this report, the following subwatersheds should be considered as priorities for the Town of Cedar Lake's Stormwater Program: Lake Dalecarlia – Cedar Lake and West Creek – Bull Run subwatersheds.

## **6.4 SPECIFIC LOCATIONS REQUIRING STRUCTURAL BMPs**

Rule 13 requires MS4s to identify areas having reasonable potential for causing stormwater quality problems. In order to minimize potential problems associated with the Town of Cedar Lake's various maintenance facilities, the CBBEL staff performed pollution prevention evaluations of all facilities determined to have a potential for impacting the quality of stormwater runoff. The facilities listed below will be targeted for BMP implementation as part of the Town's Stormwater Program.

### **Public Works Department Sand and Salt Storage Facility**

The Town of Cedar Lake's Public Works Department is responsible for sand and salt application. Currently these materials are not covered. A list of potential BMPs to be implemented at this facility can be found in Section 7.6.

### **Public Works Department Maintenance Facility**

The Cedar Lake Public Works Department owns and operates a maintenance facility. Minor vehicle maintenance and mechanical work is performed there, but major mechanical work is usually outsourced to private companies. A list of potential BMPs to be implemented at this facility can be found in Section 7.6.

### **Primary Inlets to Cedar Lake**

There are five primary inlets to Cedar Lake that the Town is aware of which are in need of additional structural BMPs: the Bank Building inlet, the Chamber of Commerce inlet, the Condos inlet, the North Point inlet, the Pickerel Creek inlet, the Golf Course inlet, and the

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Sleepy Hollow Ditch inlet. However, the Town only has control over the Chamber of Commerce inlet and merely has a sanitary sewer easement to the Condos inlet. The other inlets are privately held with no Town easements. CLEA plans to install BMPs on the Golf Course inlet in 2004.

<b>7.0</b>	<b>POTENTIAL BMPs BEING CONSIDERED</b>
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The Town of Cedar Lake is still in the process of determining which structural and nonstructural BMPs will provide for the most efficient and effective implementation of their SWQMP. The following discussion summarizes BMPs currently being considered by the Town. Potential BMPs are summarized for each of the six minimum control measures. These considerations include new BMPs and potential enhancements to existing BMPs, and are in addition to the existing BMPs discussed in Chapter 5. It is anticipated that many, if not all of the BMPs identified below will be included in the Town’s final SWQMP Part C.

The following sections are based upon the following considerations:

- Requirements of Rule 13
- Assessments of existing BMPs
- Identification of potential problem areas

**7.1 PUBLIC EDUCATION AND OUTREACH BMPs**

The following BMPs are being considered by the Town of Cedar Lake in order to comply with the minimum requirements of this MCM.

Best Management Practice (BMP)	Location/ Application	Purpose/ Objective
Develop a survey designed to assess initial constituent knowledge and practices as they relate to stormwater quality.	Distribute via newsletter, the Lake County HHW mobile collection program, public meetings, and other local events.	Assess initial constituent knowledge and practices as they relate to stormwater quality.
Create a series of stormwater educational brochures and articles targeting citizens, visitors, the construction and development community, and businesses and commercial facilities.	Distribute via utility bills, newsletter (Lake News and CLEA), the Lake County HHW facility, public meetings, and other local events, such as “Cedar Lake Summer Fest”.	Educate community members on the need for a stormwater management program and the impacts that stormwater runoff can have on water quality.
Partner with Park Board to develop additional materials and venues for distribution.	Distribute information via Park events.	Educate community members on the need for a stormwater management program and the impacts that stormwater runoff can have on water quality.

## 7.2 PUBLIC PARTICIPATION AND INVOLVEMENT BMPs

The following BMPs are being considered by the Town of Cedar Lake in order to comply with the minimum requirements of this MCM.

Best Management Practice (BMP)	Location/ Application	Purpose/ Objective
Develop a "Stormwater Management Citizen Advisory Committee (CAC)" consisting of key MS4 staff and appropriate citizen representatives, including CLEA members.	Town of Cedar Lake	Ensure adequate citizen involvement in the development and implementation of Cedar Lake's SWQMP.
Implement a Storm Drain Inlet Marking Program.	Town storm sewer inlets in priority watersheds.	Increase citizen awareness of the Town's Stormwater Program through public participation.
Formalize and advertise consistent community cleanup programs.	Town Parks and other common areas.	Increase citizen awareness of the Town's Stormwater Program through public participation.
Develop an education training program focusing on the local construction and development community.	Town of Cedar Lake	Increase the construction and development community's awareness of changing erosion and sediment control standards.

### 7.3 ILLICIT DISCHARGE DETECTION AND ELIMINATION BMPs

The following BMPs are being considered by the Town of Cedar Lake in order to comply with the minimum requirements of this MCM.

<b>Best Management Practice (BMP)</b>	<b>Location/ Application</b>	<b>Purpose/ Objective</b>
Develop an illicit discharge detection and elimination ordinance.	Town of Cedar Lake, Indiana	Establish enforceable restrictions on non-stormwater discharges to the Town's storm sewer system.
Develop a plan for identifying and eliminating illicit storm sewer connections.	Town of Cedar Lake, Indiana	Ensure effective detection and elimination of illicit discharges to Cedar Lake's storm sewer system.
Develop a stormwater system map.	Town of Cedar Lake, Indiana	Increase effectiveness of Town responses to illicit discharges entering the storm sewer system.
Conduct dry weather screening of all storm sewer outfalls.	Town of Cedar Lake, Indiana	Ensure efficient and effective identification of illicit discharges.

### 7.4 CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs

The following BMPs are being considered by the Town of Cedar Lake in order to comply with the minimum requirements of this MCM.

Best Management Practice (BMP)	Location/ Application	Purpose/ Objective
Develop a comprehensive Erosion and Sediment Control (ESC) Program fulfilling requirements of Rule 13.	Town of Cedar Lake, Indiana	Minimize water quality impacts of development occurring within the Town of Cedar Lake. Ensure that new/redevelopment within the Town's MS4 area is managed as efficiently as possible.
Hire new and/or train staff to conduct ESC plan reviews and site inspections within the Town of Cedar Lake.	Town of Cedar Lake, Indiana	Ensure adequate staff to address increased workloads associated with performing ESC plan review, inspection, and enforcement as mandated by Rule 13.
Develop and implement a system to track the status of development projects and ESC complaints.	Town of Cedar Lake, Indiana	Ensure efficient management and accurate reporting on the status of development within the Town of Cedar Lake.
Develop an educational training program focusing on the local construction and development community.	Town of Cedar Lake, Indiana	Increase the construction and development community's awareness of changing erosion and sediment control standards.
Develop written procedures for prioritizing construction sites for inspection and enforcement, including authority for issuing stop work orders.	Town of Cedar Lake, Indiana	Ensure that construction and development site inspections are as effective as possible.
Conduct review of ESC Program to determine overall effectiveness and adequacy.	Town of Cedar Lake, Indiana	To correct deficiencies or make updates based on new information or technology.

## 7.5 POST-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs

The following BMPs are being considered by the Town of Cedar Lake in order to comply with the minimum requirements of this MCM.

<b>Best Management Practice (BMP)</b>	<b>Location/ Application</b>	<b>Purpose/ Objective</b>
Develop an Erosion and Sediment Control (ESC) Program addressing post-construction stormwater runoff from new/redevelopment areas and fulfilling requirements of Rule 13.	Town of Cedar Lake, Indiana	Minimize the water quality impacts of new development within the Town of Cedar Lake, and ensure that new/redevelopment within the Town's MS4 area is managed as efficiently as possible.
Train staff to conduct ESC plan reviews and inspections for post-construction BMP control measures.	Town of Cedar Lake, Indiana	Ensure adequate staff to address increased workloads associated with performing plan review, inspection, and enforcement as mandated by Rule 13.
Develop and implement operational and maintenance plans for Town owned Post-Construction BMPs.	Town of Cedar Lake, Indiana	Ensure long-term effectiveness and adequacy of newly installed BMPs.
Develop and implement a system to track the number and types of post-construction BMPs installed in new/redevelopment projects.	Town of Cedar Lake, Indiana	Ensure consistent inspections and record keeping regarding the number and condition of newly installed BMPs.
Develop a Floodplain Management Plan.	Town of Cedar Lake, Indiana	Ensure protection of floodplain storage and prevention of flood damages.

## 7.6 POLLUTION PREVENTION AND GOOD HOUSEKEEPING BMPs

The following BMPs are being considered by the Town of Cedar Lake in order to comply with the minimum requirements of this MCM.

<b>Best Management Practice (BMP)</b>	<b>Location/ Application</b>	<b>Purpose/ Objective</b>
Implement secondary containment for areas of chemical storage.	Public Works Department - Maintenance Facility	Reduce the impact of accidental spills that could contaminate stormwater runoff from the maintenance facility.
Install hydrocarbon and sediment removing BMPs at the street department facility.	Public Works Department	Prevent contaminants associated with daily operations from contaminating stormwater runoff from street department facility.
Implement additional salt and sand BMPs.	Public Works Department - Salt and Sand Storage areas.	Prevent stockpiles of salt and sand from contaminating stormwater runoff.
Develop and post a spill response plan at all Town facilities where hazardous material and chemicals are used or stored.	Vehicle Maintenance Facilities	Ensure efficient and effective response to accidental chemical spills.
Contract with a waste disposal company to dispose of all materials collected via the Town's street sweeping program.	Town of Cedar Lake, Indiana	Ensure that wastes collected via the Town's street sweeping program are disposed of in a manner that prevents them from contaminating stormwater runoff.
Develop a system for tracking street sweeping and other litter pickup efforts.	Town of Cedar Lake, Indiana	Ensure accurate reporting and documentation of the Town's pollution prevention programs.
Develop and implement a mechanism to prevent vehicle wash waters from leaving Town facilities without being treated by appropriate BMPs.	Vehicle Maintenance Facilities	Prevent vehicle wash waters from contaminating stormwater runoff or discharging directly into receiving waters.
Implement secondary containment for areas of chemical storage.	Public Works Department - Maintenance Facility	Reduce the impact of accidental spills that could contaminate stormwater runoff from the maintenance facility.

**8.0**

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