RULE 13 STORM WATER QUALITY MANAGEMENT PLAN (SWQMP) -
PART B: BASELINE CHARACTERIZATION AND REPORT CERTIFICATION CHECKLIST

State Form 51275 (R2 / 11-03)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

For questions regarding this form, contact:
IDEM – Rule 13 Coordinator
100 North Senate Avenue, Rm 1255
P.O. Box 6015
Indianapolis, IN 46206-6015
Phone: (317) 234-1601 or
(800) 451-6027, ext. 41601 (within Indiana)
Web Access:
http://www.in.gov/idem/water/npdes/permits/wetwthr/storm/rule13.html

NOTE:

- This form must be used for compliance with a general NPDES permit pursuant to 327 IAC 15-13.
- Submit this completed form with a complete "SWQMP – Part B: Baseline Characterization and Report" in accordance with 327 IAC 15-13-7.
- Return this form, and any required addenda by mail to the IDEM Rule 13 Coordinator at the address listed in the box on the upper-right.

PART A: SWQMP CHECKLIST

► **Please check the appropriate box when the requirements for each numbered item have been met, or check "NA" if an item is not applicable. For some of the numbered items, the requirements must be met and "not applicable" is not provided as an option.**

X	NA	ITEM
X		**1.** Plan submitted within one hundred eighty (180) days of the NOI letter submittal or the expiration date of the previous 5-year permit term
		2. Baseline characterization includes:
X		a) An investigation of land usage within the MS4 area
X		b) The identification and assessment of structural and nonstructural storm water BMP locations
X		c) The identification of known sensitive water areas
X		d) A review of known existing and available monitoring data of the MS4 area receiving waters
X		e) The identification of areas having a reasonable potential for, or actually causing, storm water quality problems
☐	☐	f) Other (please specify):
		3. Characterization report includes:
X		a) Conclusions, such as key observations or monitoring points in the MS4 conveyances, derived from the land usage investigation
X		b) Characterization results of BMP locations and, as appropriate, the structural condition of the BMP, related to the BMP's potential or actual effectiveness in improving storm water quality
X	☐	c) The characterization includes recommendations for placement and implementation of additional BMPs
X		d) Identification of areas, such as public beaches or surface drinking water sources, that potentially or actually require added water quality protection considerations
X	☐	e) Any correlative conclusions that can be drawn from a review of existing monitoring data that assists the MS4 Operator in identifying potential or actual storm water quality problem areas
X	☐	f) The identification of areas or sources potentially or actually causing storm water quality problems
☐	☐	g) Other (please specify):
X		**4.** SWQMP - Part B: Baseline Characterization and Report has been signed by a Qualified Professional and the MS4 Operator

PART B: CERTIFICATION AND SIGNATURE

► The Qualified Professional and the MS4 Operator (referenced in Part A, Item #4 of this form) must sign the following certification statement and provide the pertinent NPDES permit number:

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

Name of Qualified Professional: **Mr. Timothy J. Haas, PE** **NPDES Permit #:** **INR040** 115
(typed or printed)

Signature of Qualified Professional: _____ **Date:** 05/03/04
(mm/dd/year)

Name of MS4 Operator: **Jennifer Granat, Porter Town Council President**
(typed or printed)

Signature of MS4 Operator: _____ **Date:** _____
(mm/dd/year)

Town of PORTER, INDIANA

STORM WATER QUALITY MANAGEMENT PLAN

for

RULE 13 STORM WATER QUALITY MANAGEMENT PLAN (WWQMP)

PART B: BASELINE CHARACTERIZATION AND REPORT CERTIFICATION CHECKLIST

May 3, 2004

1. **Plan submitted within 180 days of the NOI letter submittal or the expiration date of the previous 5 year permit term:**

    a. NOI was submitted on November 3, 2004. The Notice of Sufficiency (NOS) form IDEM was dated December 5, 2003.

2. **Baseline characterization includes:**

    a. Land Use:

EXISTING LAND USE

An analysis of existing land use is primary when preparing a recommendation for future land use. The Comprehensive Plan for Land Use should not be absolutely limited by existing land use; however, since a finite twenty (20) year window is used, the rate of change must be realistic, or the plan will be ignored.

Eight (8) different categories were used to classify current land use: single family residential, multi-family residential, recreational or park, institutional including schools, religious, office, commercial, and industrial. The use determination was achieved using a combination of field inspections and aerial photography interpretation. The categories were not necessarily intended to coincide with existing property lines, but rather the boundaries of property uses. In some cases, these boundaries were arbitrarily determined.

Based on the information obtained, the following conclusions can be drawn:

1. Single Family is dominant as the principal land use. Much of the older single family has been developed on extremely narrow lots. Also, in some areas along county arterials and secondaries, excessively deep lots have developed, thereby sealing off a large amount of otherwise developable property by denying further access.

2. There is insufficient property remaining within the town to continue to develop single-family subdivisions throughout the plans study period. The National Lakeshore takings along with physical impediments to existing parcels zoned residentially, result in a serious lack of marketable property.

3. Sufficient moderate housing stock is available; however, upper moderate and upper stock is limited. As a result, upwardly mobile families have a tendency to move out instead of moving up. Also apparent is the lack of adequate buffers and transitional land uses in some of the older portions of the community.

4. For a community the size of Porter, land use information would indicate that the community is significantly under-retailed. That is the practice whereby many retail purchases are made outside the community due to lack of convenient opportunities. Also, some of the retail, especially along Rt. 20, is located in unattractive "strip" developments, which aggravates traffic capacity of the arterials they front.

5. Park and recreational land is limited, which leads to facilities that tend to be over-utilized. In addition, some of their locations appear to be dictated more in terms of the undesirability of the property for other uses than accessibility and size demands. Pseudo-public recreational facilities have attempted to fill the void since they are abundant and varied.
6. Multi-family land use is insufficient, however, the amount of vacant property which is zoned for multi-family use is excessive, and should be reduced.

7. Office development has been lacking. It is apparent that the tremendous potential of attracting and sustaining an office "campus" along portions of Rt. 20 has not been fully realized. The attraction of medical, legal, and other professionals reduce the employment exodus and help with the under-retailed problem discussed earlier.

8. For a community the size of Porter, the current industrial property is insufficient, but for the most part the current industrial development is well placed. In some cases, access to and from these parcels is not sufficient without mixing industrial, commercial, and residential traffic on roadways not designed to handle such loads.

9. Some of the development, which has occurred along the county arterials, has virtually sealed off developable property behind. It is apparent that this community like most, during its early and intermediate life has suffered from a lack of pre-development planning.

10. As a result, from the standpoint of amount and placement of property, the hierarchy of land uses as the community has developed has been:

    - Railroads
    - Downtown Retail
    - Industrial
    - Single Family
    - Institutional
    - Office
    - Multi Family
    - Recreational

FINDINGS

Currently, Town of Porter contains a mixture of land activities. The dominant land uses are residential, commercial (trade and service) and light and heavy industry, and recreational. A significant amount of vacant land, particularly residential in nature, is scattered throughout the community. The more recent land use patterns reflect the strong influence of tourism and recreation, and the steel and trucking industries. Regional population shifts, the growth of the national park, and the presence of tourists have converted large areas of agricultural land into residential development. A great variety of terrains exist in residential areas. These areas provide excellent proximity and access to major thoroughfares. They also provided good range of choice in density.

ANALYSIS OF CURRENT USES

RESIDENTIAL

Currently, Porter contains 1,221 acres, which are used residentially. Of this acreage, single-family residential uses are well spread throughout the town. The balance of the land designated for residential use is specified for low density. This is to encourage needed development of this land use. A comparison of residential land use acreage is as follows:

	1970	1980	1990	2000

Single-family Residential	442	442	625	661	
Two-family Residential	5.5	6	18	22	
Multiple-family Residential		.5	6	52	55
Trailers and Trailer Courts	11	11	0	0	
Total	458	465	695	738	

The Dunes Forest Subdivision was platted in 1927 and is about 1/3 developed today. Highway View Acres has experienced 3 acres of single-family development. The Highway View Acres subdivision was cut in half by the interstate system in the early 1970's and in 1981; the area was designated for a use, which allows moderate-density multi-family planned unit development. In 1991 a 9.6 acres multi-family planned unit development was platted. The Stockyard Subdivision was platted in 1893 and is only developed on a spotty basis due to split land ownerships, sand dune formations, and undeveloped streets. During the 1980's 6.75 acres of single-family up-scale lake view development has occurred.

Currently the Town has 553 vacant acres designated for residential use. Of these, 518 acres are large parcels with past agriculture or open space uses. Much of this property has serious constraints to development, such as access difficulties, terrain, or possible soil contamination. The remaining vacant space is old platted lots that appear at various locations in the Town. These lots, however, are generally located near the edges of the developed land area. In some instances, such lots in Porter have a width of 100 to 110 feet and depth of 500-1100 feet. The actual land activity on such lots is usually confined to the frontage area with the remainder of the lot normally un-used.

COMMERCIAL

Commercial uses in Town can be distinguished between neighborhood, community, and general as follows:

Neighborhood - acres occupied by retail and service facilities which accommodate day-to-day convenience shopping and service needs, including food and drug stores, personal services such as barber and beauty shops, and local services such as shoe repair, tailors, dry cleaners, laundromats, etc.

Community - acres occupied by retail uses offering commodities which are normally purchased at infrequent intervals and for which the consumer may "shop around", including apparel stores, furniture and appliance stores, jewelry stores, general merchandise outlets, etc.

General Commercial - acres occupied by retail and service facilities which normally include commercial lodgings, drive-in restaurants, building material sales, marinas, resort lodgings, restaurants, vehicle sales and services, etc.

	1970	1980	1990	2000
Neighborhood	13	29	5	7
Community	7	13	35	39
General Commercial	9	9	137	157

The town currently has 327 acres available for commercial use. Of these parcels, 203 acres are developed and 124 acres are vacant. Railway freight service is provided by Conrail, South Shore and CSX. Passenger rail transportation is provided by the Chicago, South Shore and South Bend Railroad. A new rail station was constructed in 1984 on the northeast side of Porter. The town encourages all types of retailing and service uses, certain wholesale and warehousing uses, and some limited industrial activities normally associated with commercial uses. Commercial uses should conform to the particular pattern of a zoning district are essential under Porter's managed growth philosophy.

Automotive service type uses and automobile associated uses are located in areas that serve through traffic. Trucking and automotive services should only be located along major thoroughfares where adequately sized parcels of land are available for large setbacks, clear vision, and safe ingress and egress. Frontage roads are recommended where possible. Food sales/services occupy 29 acres, automotive and related services 21, and 20 acres of retail in Porter. Several truck lines serve Porter, and commercial activities centering on the trucking industry dominate along many of these routes.

Local (neighborhood) shopping areas for retail or service establishments that supply convenience goods or personal services for the daily needs of the residents living in adjacent neighborhoods are provided. These areas encourage shopping centers with planned off-street parking and loading, and provide for existing individual or small groups of local stores. The greatest concentration of commercial uses appears near or along Lincoln Street in Old Town and comprises 1.5 acres of retail use with an average of 7,000 square feet of space. Porter Bank maintains a branch bank on .9 acres and a 1.4-acre nursery exists in this neighborhood.

Primary community shopping areas for Porter and other nearby community residences are provided to meet shopping needs. These areas encourage most all types of business and commercial uses, offices, and service establishments. They are centrally located with respect to the shopping service area and located close to intersections, or along major thoroughfares in Porter.

An example is the largely undeveloped commercial area located along the U.S. 20 corridor. Major land users consist of 36 acres for trucking and related services, a major fruit and vegetable wholesaler on 21 acres, a high technology waste management company occupies 16 acres, and 33 acres previously used for a private recreational enterprise. In the immediate area are 14 acres dedicated to food and lodging services. Commercial areas for community shopping are designated along U.S. 20 with some general business area defined.

Because land uses along U.S. 20 are adjacent to the national park and backed by the Little Calumet River in certain locations, land use decisions and developmental conditions will be stringent to avoid a "strip" appearance, especially in the community shopping area. Several large parcels of vacant land exist, and the town encourages the development of a planned variety. This report recommends that all U.S. 20 commercial property be encouraged to develop aesthetically and physically along a theme compatible with the national park.

Flexible zoning techniques of approving and constructing multiple-business/retail centers will enhance the commercial district. It also limits and coordinates such things as the number of curb cuts, provision of water, sewer and electric and parking facilities. Such development will offer the town of Porter improved local shopping conditions while avoiding much of the unsightliness and congestion evident in such places as Broadway in Merrillville or Calumet Avenue in Valparaiso. The use of internal access roads and group parking facilities will be encouraged, especially along U.S. 20.

Office and transitional uses are encouraged. Currently, professional and business services comprise 5 acres including an Oncology-Hematology Medical Clinic situated on 2/3s acres along State Road 49 and a veterinary clinic along U.S.20. Porter contains areas characterized by large homes suitable for use as offices, and vacant parcels suitable for new office buildings. Planning concerns include limiting uses that generate low volumes of traffic, and discouraging outdoor advertising, so as to protect the abutting and surrounding residential district. Development areas for office and transitional uses should be small in size and is often located as a buffer between residential and commercial areas. Barber shops, beauty shops, health and reducing studios and all similar uses are discouraged in office and transitional use areas, unless consistent with adjoining uses.

INDUSTRIAL

Currently, Porter contains 222 available acres for industrial uses. 59 acres are occupied, with Worthington Steel Company on 48 acres, and Signature Graphics's on 7 acres. 163 industrial acres are vacant and during the next twenty years, the development of other designated industrial zones will occur. While the town will not actively recruit any heavy industry, it can be expected that certain light, non-

polluting industries may wish to locate in the Porter area. Generally, it is not expected that Porter will have to contend with any great industrial growth. More suitable industrial sites are located elsewhere throughout the county. The following indicates the change in industrial acreage over the past forty years.

	1970	1980	1990	2000
Light	16	16	11	11
Heavy	11	12	48	48

Limited industrial areas are set aside for development by industrial firms that have high standards of performance and that are compatible with residential and business uses. Use restrictions should permit the operations of most manufacturing, wholesaling, and warehousing activities with adequate protection to adjacent district uses and sufficient control of external effects to protect one industry from another. Retail uses, which serve industrial uses within the industrial area, and do not depend on direct retail customers, are encouraged. It is recommended that no outdoor storage should be allowed, and all industrial operations be confined to an enclosed building.

In order to protect the larger environment of the Town, certain areas have been set aside for heavy industry. One such area is a pie shaped wedge located across from Bethlehem Steel Company's east gate. Because of the presence of the Indiana Dunes National Lakeshore, any industry locating here would have a minimal negative impact upon Porter residents. In the 1970's, heavy industrial was planned for a strip along U.S. 12 and the Chicago South Bend and South Shore Railroad, in conjunction with the steel mill and power plant complex to the north and northwest. Northern Indiana Public Service Company (NIPSCO) owns 60 acres in a limited industrial zone adjacent to this site. A new rail station was constructed on .57 acres in 1984 on the northeast side of Porter. In the southeast, along the Little Calumet, an 18 acre parcel, zoned industrial, contains the 10 acre Chesterton Sewage Treatment Plant. The remainder of this 18-acre parcel is owned by the Town of Chesterton Utility Company.

Other major industrial areas designated along U.S.20 just east of I-94 include the site of Worthington Steel, along with a prime location for commercial uses. Town officials should encourage industrial or commercial growth in this area. This major industrial area is located on the west edge of Porter. It is from north of I-94 to the south side of the Penn Central Railroad. The area is traversed with I-94 and U.S. 20, and is generally flat, with sewer and municipal water available. This site is well buffered by man-made barriers of highway, railroad, municipal park, and commercial users. Another general industrial area is laid out west of the intersection of I-94 and the Penn Central Railroad. This area has quick access to U.S. 20, and is partially occupied by a light industrial user. In addition, a 35-acre site is located on the eastern edge of the town. This parcel could be subdivided, and incompatible uses avoided.

GUIDELINES FOR FUTURE LAND USE

Generally, living areas in Porter should be located in proximity to work routes and leisure areas, while at the same time; they should be buffered from traffic and noise. Living areas should be somewhat protected from undesirable influences, and in locations where economics and desirability to reside would offer a full range of residential densities so as to provide housing to all segments of the population.

Properly located residential uses are important to all residents. Everyone, in some way, is a consumer in the housing market. This involves purchasing or renting a house. The expense is considerable. For those who choose to own their residences, it generally represents the largest purchase of their lives. For those who rent, the cost is usually the largest item in the household budget.

Housing is the major focus of development in Porter. Residential development usually precedes other forms of development and uses more land than any other land use. The efficiency and quality of major public services, and the protection of environmental quality, depend heavily on the patterns of residential development.

Satisfying the need for housing requires a supply sufficient to meet the requirements of each household according to its income and size and its locational requirements. It means an adequate housing

stock and a healthy housing market to enable a single household to find suitable shelter as it passes through various needs and preferences. It also means sufficient opportunities for those who wish to be homeowners. It involves the availability of facilities, which are not deteriorated, have a decent environment, and is provided with an adequate quality of basic municipal services.

Commercial areas in Porter consist of reasonably level land, in close proximity to heavy traffic flows and provide ease of access to major thoroughfares. Industrial areas also have reasonably level land. A major characteristic of the Town's industrial areas is that many provide direct access to railroads-and/or highways and are within easy regional commuting distance. These areas were designed to insure compatibility with adjoining areas. The availability of utilities to all industrial areas is in progress. Porter has a broad range of choice industrial site locations.

During the 1980's, the Town experienced the economic diversification, which comes with tourism. Over 1.5 million people are attracted to the national and state parks each year. The enhanced local quality of life, coupled with the lake attractions, and relatively lower cost industrial and commercial zones, were major contributing factors in the decisions of several commercial and industrial facilities to move to Porter. Development incentives for investment in the hotel and food service industry has stimulated 30 acres of development, including the Spa Restaurant, Spring House Inn and Banquet Hall complex.

CONCLUSION

The undeveloped land within Porter should be carefully planned over the years in order to prevent unsightly, incompatible, inconsistent, inappropriate and illegal uses. It is also important for Porter to apply logical land use principles to the area along the Route 20 corridor to the east of the current town boundaries, by annexing the property prior to further development. In addition, it is important to carefully manage prime agricultural land within and around the Town of Porter.

Lastly, the Town recognizes that this plan is a flexible tool, which reflects current visions of where the Town should be headed. While this plan looks to the year 2020, it must be continuously reviewed if it is to offer the guidance intended. Periodic reviews of all town planning and related documents should be an important function of the Porter Plan Commission.

b. Identification and assessment of structural and non structural storm water BMP locations:

SURFACE DRAINAGE AND WASTEWATER COLLECTION

In general, the land in Porter forms a trough around the Little Calumet River, which slopes gradually westward. This slope continues as far as Burns Ditch and then goes northward to Lake Michigan. There is some drainage from the southern part of town generally north to the Little Calumet River by way of the Peterson Ditch. There is drainage toward the lake on the north side of the river in Dunes Creek, which eventually flows into the Dunes State Park. These ditches are either man-made or heavily dredged. The Little Calumet River has been dredged in portions also. Water, which falls north of the moraine ridge, which runs east to west along Oak Hill Rd, flows to Dunes Creek. Water falling south of Oak Hill Rd flows to the Little Calumet River.

In April of 1980, before annexation of the northeast section, 90% of the Town of Porter was without sanitary sewers. In light of the facility growth of the national lakeshore and the large tract of annexed property, modern sewer service extension projects were completed during the 1980's and 1990's, replacing or updating the outdated system. Sanitary sewers now service 85% of the developed area of Porter. Where such improvements are lacking, sewage is handled by private septic systems. Storm water is handled by the creeks and ditches mentioned earlier. The environmentally sensitive area of Porter Beach

is not on sanitary sewers. The high dune-like topography makes sanitary sewering very difficult. The excessive percolation in this sandy area may require special filter beds for septic systems. Septic permits are issued for 100' x 100' sites.

The Town of Porter wastewater collection system consists of 4", 6", and 8" gravity sewer lines, clean out, manholes, force main and lift stations. The collection system consists of various types and sizes of sewer pipes, and 2" PVC force main. Where flow by gravity is not possible, the pump stations transport the sewage to a point where it can continue by gravity. All wastewater discharged from the Porter system to the Chesterton Wastewater Treatment Plant passes through metering stations located at Hawthorne Park, and at Morgan Street and 23rd St. Separation of storm water and sewer has been and continues to be a major problem for the town to pursue during the study period.

Storm water management, sanitary sewer and street improvements for future growth should be planned by requiring a percentage of the costs for off-premise improvements be paid by those proposing new development. As a condition of final subdivision or site plan approval, the Plan Commission should require the developer to install or bond for all necessary public improvements. In cases where off-premise improvements are necessitated by the proposed development, and where no other property owner(s) receives(s) a special benefit, the developer should be required at his sole expense and as a condition of approval, to provide and install such improvements. Where it is determined that properties outside the development will also benefit from the off-premise improvement, the appropriate share of the cost of such improvements should be charged to the developer.

c. Identification of known sensitive water areas:

SENSITIVE AREAS-

Natural areas are the term used to describe areas of unusual ecological, geological or scientific significance. These areas are usually characterized by the presence of remnants of past natural habitats or conditions, which have survived despite urban growth. Cowles Bog located west of Mineral Springs Road along the town's western border is such an area. It is well suited for a wetland preserve.

Porter contains a number of habitats, including a beach grass community and a fore dune community which follows the beach grass. This includes a portion of the Indiana Dunes State Park. Shrubby vegetation, primarily black oak and jack pine in the canopy, is predominant. Serviceberry, basswood, and black oak saplings form an under story, with cherry, false solomon's seal, goldenrod and sunflower as ground cover. Other common species are grape vines, bittersweet and little blue stem.

The Bog and other areas around Porter support a wide variety of trees and vegetation, much of which has been purchased by the Indiana Dunes National Lakeshore. The oak forest is primarily black oak with an occasional basswood, white oak and white pine, in the canopy. Wild cherry, blueberries, sassafras, red maple and black oak saplings are the predominant under story species. Sedges, little blue stem, wild rose and bracken fern are characteristic of the herbaceous layer. Wildlife includes deer, raccoon, possum and fox, plus a wide variety of smaller animals. The location of Lake Michigan and Grand Marsh has made the bird, reptiles and amphibian species living in the Porter area to be more diverse than the mammals. The food sources available for mammals are more limited, particularly during years of excessive deer populations. Along the Little Calumet River, a narrow bank of flood plain vegetation may be found. The vegetation is typical of second growth flood plains with silver maple, cork elm and green ash as dominants. Basswood, black ash, black willow, red elm, butternut, walnut and pin oak are also represented in the canopy. Shrubs include spicebush, elderberry, grape, poison ivy, raspberry and green briar.

The principle aquatic habitat in Porter is the East Arm of the Little Calumet River. Its stream bed is predominantly sand with very little organic deposition. Fish are also present in most of the larger watersheds and lakes. It is important that these areas be protected from development or developed in such

a manner as to preserve their natural beauty. Development in these wooded areas should be kept to a minimum and at very low densities. Much of the river has been dredged and straightened, however portions of the Little Calumet contain abundant deadfalls and high banks lined with large trees. Algal populations have been discovered in the Little Calumet.

d. A review of known existing and available monitoring data of the MS4 area receiving waters:

1. Federation of European Microbiology Societies (FEMS) Growth and survival of Escherichia coli and enterococci populations in the macro-alga Cladophora (Chlorophyda).
2. POINT SOURCE COMMITTEE INTERAGENCY TASK FORCE ON E. COLI: Summary report 1998, 1999, and 2000 E. coli sampling – **DRAFT REPORT NOT FINALIZED**
3. Concentrations of Escherichia Coli in surface water in the Great Lakes Watersheds of Indiana June-October 2000 by Indiana Department of Environmental Management
4. Indiana Dunes National Lakeshore 2002 E. coli data; information compiled by Save the Dunes Council

e. Identification of areas having a reasonable potential for, or actually causing, storm water quality problems:

1. Porter Beach
2. Worthington Steel
3. Signature Graphics
4. Chesterton Wastewater Treatment Plant
5. Fueling Stations on Rt. 20

f. Other:

3. Characterization report includes:

a. Conclusions, such as key observations of monitoring points in the MS4 conveyances, derived from the land usage investigation

b. Characterization results of BMP locations and as appropriate, the structural condition of the BMP, related to the BMP's potential or actual effectiveness in improving storm water quality

c. The characterization includes recommendations for placement and implementation of additional BMPs

d. Identification of areas, such as public beaches or surface drinking water sources, that potentially of actually require added water quality protection considerations

e. Any correlative conclusions that can be drawn from a review of existing monitoring data that assists the MS4 Operator in identifying potential or actual storm water quality problem area

f. The identification of areas or sources potentially or actually causing storm water quality problems

g. Other

Town of PORTER, INDIANA

Storm Water Quality Management Plan
Part B
Baseline Characterization Report
327 IAC 15-13-7

May 3, 2004

Part B Baseline Characterization Report
Table of Contents

Section One
Summary of Data Collection and Evaluation

A. Summary of General Data on MS4 Entity and System

The following describes the MS4 entity in general, providing a context for the evaluation of the water quality data and other data sources in the preparation of this report.

Introduction

Porter, Indiana, located in north central Porter County, was incorporated in 1908. Today Porter comprises 6.3 square miles, and has a 2000 Census population of 4,972.

Origin

Porter was first settled in 1822, with permission of a local Pottawattomie Chief, and a permit from the United States Government, by Joseph Bailly, fur trader and entrepreneur. He saw its great natural beauty and the importance of its position on the southern shore of Lake Michigan. A trading post was established as the first permanent settlement in Northwestern Indiana. This site is approximately at the center of Porter. In 1833, an influx of settlers led Bailly to plat the first subdivision, on the north bank of the Little Calumet River, which he called Baillytown. However, few lots were sold as settlers preferred the better farming land to the south, and the town died with Bailly's death in 1835. The homestead remained in family control until 1919, when it was purchased as a retreat for the School Sisters of Notre Dame from Milwaukee. The sisters abandoned it in 1932 and it eventually passed into private hands. It is now owned by the National Park Service and is a National Historic Landmark. In the years that followed, more than 40 subdivisions were platted by others. As recent as 1991, a new Baillytown subdivision was being developed with amenities that captures that great natural beauty. Railroads arrived in 1851, and in 1872, Henry Hageman laid out a new town at the current location of downtown Porter. The Town was settled by English, Dutch, German, and Irish as an agricultural settlement in the mid-1800s. Later Polish, Italian, Slovaks, and Hungarians moved to Porter about the time of

incorporation, to fill the demand for steel plant employees. At the close of the century, Porter had hopes of becoming a major industrial center. Unusually rich deposits of clay were discovered. Brickyards were established in 1872, and by 1883, three yards were in production. Many other industries located in Porter; but growth was severely crippled by the panic of 1893.

Topography

In general, the land in Porter forms a trough around the Little Calumet River, which slopes gradually westward. This slope continues as far as Burns Ditch and then goes northward to Lake Michigan. There is some drainage from the southern part of town generally north to the Little Calumet River by way of the Peterson Ditch. There is drainage toward the lake on the north side of the river in Dunes Creek, which eventually flows into the Dunes State Park. These ditches are either man-made or heavily dredged. The Little Calumet River has been dredged in portions also. Water, which falls north of the moraine ridge, which runs east to west along Oak Hill Rd, flows to Dunes Creek. Water falling south of Oak Hill Rd flows to the Little Calumet River.

Climate

Porter's climate is heavily influenced by Lake Michigan. The mean annual precipitation is in excess of 33 inches, of which more than 60% takes place from April to September.

Sensitive Areas

Natural areas are the term used to describe areas of unusual ecological, geological or scientific significance. These areas are usually characterized by the presence of remnants of past natural habitats or conditions, which have survived despite urban growth. Cowles Bog located west of Mineral Springs Road along the town’s western border is such an area. It is well suited for a wetland preserve.

Porter contains a number of habitats, including a beach grass community and a fore dune community which follows the beach

grass. This includes a portion of the Indiana Dunes State Park. Shrubby vegetation, primarily black oak and jack pine in the canopy, is predominant. Serviceberry, basswood, and black oak saplings form an under story, with cherry, false solomon's seal, goldenrod and sunflower as ground cover. Other common species are grape vines, bittersweet and little blue stem.

The Bog and other areas around Porter support a wide variety of trees and vegetation, much of which has been purchased by the Indiana Dunes National Lakeshore. The oak forest is primarily black oak with an occasional basswood, white oak and white pine, in the canopy. Wild cherry, blueberries, sassafras, red maple and black oak saplings are the predominant under story species. Sedges, little blue stem, wild rose and bracken fern are characteristic of the herbaceous layer. Wildlife includes deer, raccoon, possum and fox, plus a wide variety of smaller animals. The location of Lake Michigan and Grand Marsh has made the bird, reptiles and amphibian species living in the Porter area to be more diverse than the mammals. The food sources available for mammals are more limited, particularly during years of excessive deer populations. Along the Little Calumet River, a narrow bank of flood plain vegetation may be found. The vegetation is typical of second growth flood plains with silver maple, cork elm and green ash as dominants. Basswood, black ash, black willow, red elm, butternut, walnut and pin oak are also represented in the canopy. Shrubs include spicebush, elderberry, grape, poison ivy, raspberry and green briar.

The principle aquatic habitat in Porter is the East Arm of the Little Calumet River. Its stream bed is predominantly sand with very little organic deposition. Fish are also present in most of the larger watersheds and lakes. It is important that these areas be protected from development or developed in such a manner as to preserve their natural beauty. Development in these wooded areas should be kept to a minimum and at very low densities. Much of the river has been dredged and straightened, however portions of the Little Calumet contain abundant deadfalls and high banks lined with large trees. Algal populations have been discovered in the Little Calumet.

Potential Stormwater Problems

1. Porter Beach
2. Worthington Steel
3. Signature Graphics
4. Chesterton Wastewater Treatment Plant
5. Fueling Stations on Rt. 20

Major Industry

Currently, Porter contains 222 available acres for industrial uses. 59 acres are occupied, with Worthington Steel Company on 48 acres, and Signature Graphics's on 7 acres. 163 industrial acres are vacant and during the next twenty years, the development of other designated industrial zones will occur. While the town will not actively recruit any heavy industry, it can be expected that certain light, non-polluting industries may wish to locate in the Porter area. Generally, it is not expected that Porter will have to contend with any great industrial growth. More suitable industrial sites are located elsewhere throughout the county. The following indicates the change in industrial acreage over the past forty years.

	1970	1980	1990	2000
Light	16	16	11	11
Heavy	11	12	48	48

Limited industrial areas are set aside for development by industrial firms that have high standards of performance and that are compatible with residential and business uses. Use restrictions should permit the operations of most manufacturing, wholesaling, and warehousing activities with adequate protection to adjacent district uses and sufficient control of external effects to protect one industry from another. Retail uses, which serve industrial uses within the industrial area, and do not depend on direct retail customers, are encouraged. It is recommended that no outdoor storage should be allowed, and all industrial operations be confined to an enclosed building.In order to protect the larger environment of the Town, certain areas have been set aside for heavy industry. One such area is a pie shaped wedge located across from Bethlehem Steel Company's east gate. Because of the presence of the Indiana Dunes National Lakeshore, any industry locating here would have a minimal negative impact upon Porter residents. In the 1970’s, heavy

industrial was planned for a strip along U.S. 12 and the Chicago South Bend and South Shore Railroad, in conjunction with the steel mill and power plant complex to the north and northwest. Northern Indiana Public Service Company (NIPSCO) owns 60 acres in a limited industrial zone adjacent to this site. A new rail station was constructed on .57 acres in 1984 on the northeast side of Porter. In the southeast, along the Little Calumet, an 18 acre parcel, zoned industrial, contains the 10 acre Chesterton Sewage Treatment Plant. The remainder of this 18-acre parcel is owned by the Town of Chesterton Utility Company.

Other major industrial areas designated along U.S.20 just east of I-94 include the site of Worthington Steel, along with a prime location for commercial uses. Town officials should encourage industrial or commercial growth in this area. This major industrial area is located on the west edge of Porter. It is from north of I-94 to the south side of the Penn Central Railroad. The area is traversed with I-94 and U.S. 20, and is generally flat, with sewer and municipal water available. This site is well buffered by man-made barriers of highway, railroad, municipal park, and commercial users. Another general industrial area is laid out west of the intersection of I-94 and the Penn Central Railroad. This area has quick access to U.S. 20, and is partially occupied by a light industrial user. In addition, a 35-acre site is located on the eastern edge of the town. This parcel could be subdivided, and incompatible uses avoided.

B. Summary of Baseline Data Collection and Evaluation

The following describes the process utilized to identify, gather, and evaluate data for this Baseline Characterization Report.

Discussions at the meetings of the Porter Stormwater Management Board resulted in the assignments of tasks to the Town Engineer, Town Planner and members of the board to gather and evaluate a variety of source data from the town comprehensive plan, maintenance information provided by public works, building department data, land use data produced by the Town Planner, storm sewer mapping produced by the Town Engineer and Public Works, to current water quality data available from resources listed on IDEM web page and other environmentally concerned organizations.

C. ***Summary of Evaluation Approach***

1. Land-use evaluation

An existing land use map was created by the Town Planner, and reviewed by the Town Engineer. In questionable areas field verification was conducted. Based on information gathered from the Chesterton Utilities, sensitive industries were identified. The Porter Building Department was consulted concerning areas of on-going construction activities.

2. Evaluation of Structural and Nonstructural BMPs

The Comprehencive Plan has been examined and revised by the Plan Commission and sent on to the Town Council for adoption. The Comprehensive Plan includes verbage that identifies potential future land use with consideration of soil types and natural resources.

Current storm water ordinances were examined by the town planner to identify deficiencies.

The Town's Public Works Department sweeps the local streets 6 times a year, removing approximately 50 cubic yards of material each time (300 cubic yards per year). They also clean catch basins 2 times per year and clean sewers one time per year. All of the material removed from the catch basins and streets helps to reduce siltation in the receiving streams.

In 2003 the Town installed a standby electrical generator on the primary sanitary sewer pump station to reduce the likelihood of sewer overflows during electrical outages.

The Porter County Solid Waste District conducts several free household hazardous waste dropoff days each year, thus helping to collect waste oil and other pollutants that may otherwise be deposited into the receiving streams.

3. Identification of Sensitive Waters

The identification of sensitive waters was determined using the criteria identified in the regulations.

4. Review of Existing/Available Water Quality Data:

a. Federation of European Microbiology Societies (FEMS) Growth and survival of Escherichia coli and enterococci populations in the macro-alga Cladophora (Chlorophyda).

b. POINT SOURCE COMMITTEE INTERAGENCY TASK FORCE ON E. COLI: Summary report 1998, 1999, and 2000 E. coli sampling – DRAFT REPORT NOT FINALIZED

c. Concentrations of Escherichia Coli in surface water in the Great Lakes Watersheds of Indiana June-October 2000 by Indiana Department of Environmental Management

d. Indiana Dunes National Lakeshore 2002 E. coli data; information compiled by Save the Dunes Council

e. IDEM 2002 303(d) list

5. Identification of Potential Areas of Concern

a. Porter Beach
b. Worthington Steel
c. Signature Graphics
d. Chesterton Wastewater Treatment Plant
e Fueling Stations on Rt. 20

D. Definition of MS4 System and Waters of the State

1. Provide the definition you applied to the MS4 regarding open ditches. Give your rationale for the definition.

The definition for open ditches stipulates that if a swale or minor ditch eventually enters a storm sewer or a receiving waters directly then it is a part of the MS4.

2. Update the list of receiving waters identified in the NOI submittal, based on the definition applied to the open ditches in your entity.

Number Added	New Receiving Water for Discharges from MS4
1	none
2	
3	
4	
5	
6	
7	
8	
9	
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E. Report on New Data

The following new data sources were created in order to provide additional information on water quality conditions within this community.

Storm Sewer Atlas is being developed. 40% of said mapping has been completed. The determination for the need for additional water quality testing, locations, potential cost sharing, and the nature and frequency of testing is being investigated. The results of this investigation will be reflected in the Part C - SWQMP.

Section Two
Results of Data Evaluation

A. Characterization of MS4 Conditions

1. Sensitive Areas for Priority Attention:

Based on the evaluation of the MS4 land use and other data sources, the following areas have been identified as “sensitive” for priority attention during permit implementation:

1	Cowles Bog
2	Grand Marsh
3	Lake Michigan
4	Indiana Dunes National Lakeshore
5	Indiana Dunes State Park
6	
7	
8	
9	
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2. Areas with Potential for Storm Water Quality Problems

The following list represents areas with potential for storm water quality problems based on land use data evaluation as well as other information gathered during this process.

1	Developing property under construction
2	Porter Beach
3	Worthington Steel
4	Signature Graphics
5	Chesterton Wastewater Treatment Plant
6	Fueling Stations on Rt. 20
7	Pavement runoff
8	
9	
10	

3. BMP Evaluation Results

The following results were obtained during the evaluation of existing structural and non-structural BMPs located or utilized in the MS4 area.

a. The Town completed several storm sewer separation projects in the 1980's and continues to make efforts to eliminate excessive I & I. These include on-going smoke testing, sewer cleaning and televising.

b. A ditch erosion control project is in progress to solve a long-standing erosion problem along a minor ditch where it crosses Bailley Drive near Waverly Road.

c. Many existing subdivisions have constructed detention facilities as per requirements of the Town Subdivision Control Ordinance to control the rate of release of storm water downstream to help prevent erosion and flooding

d. Review of Existing Ordinances - A review of current ordinances pertaining to Rule 5 and Illegal discharges was conducted. These ordinances will require amendments to comply with Rule 13.

e. The Town's street sweeping program, catch basin cleaning and sewer cleaning programs are beneficial to the water quality of the receiving streams. These programs will be monitored and continued.

4. Potential Sites for Additional BMPs

The town plans to sustain or improve the maintenance schedule. A new area which will require planning and investment will be the several storm water detention ponds, and their proper care and maintenance. Several are now off of the maintenance period identified in the subdivision ordinance, and are now the town's responsibility.

The need for additional standby electical generators at the sanitary pump stations will be evaluated.

Sensitive areas defined above in item 2 will be further investigated and these investigations may result in the need for additional BMPs.

B. Characterization of Water Quality Data

1. Key Observations on Water Quality

The following key observations were developed during the data review and evaluation process regarding the existing water quality conditions in the MS4 area.

High levels of e coli were found in the cited studies. The cause of these high e coli levels is uncertain. Potential sources include failing septic tanks, sewer overflows and animal waste.

The Little Calumet River (Porter county) has, in addition to high levels of e.coli, a fish consumption advisory for PCB and Hg (TMDL being completed now).
The Dunes Creek has, in addition to high levels of e.coli, impaired biotic communities (watershed planning is progress now)
Lake Michigan has, in addition to high levels of e.coli, fish consumption advisories for PCB and Hg (TMDL being completed now)
Tributaries coming into Porter and flowing into the Little Calumet River include: Coffee Creek , which has high levels of e.coli (watershed plan approved), and Salt Creek which has impaired biotic communities and high levels of e.coli (TMDL completed).

2. Conclusions from Data Analysis

The following conclusions have been drawn from the analysis of the existing/available data.

Additional data is needed to determine the source of the high levels of e. coli and other pollutants. Porter will monitor the findings of the various ongoing testing.

C. Strategy for Continued Characterization Efforts

The following strategy is being considered for inclusion in the SWQMP for on-going water quality characterization efforts during the life of the permit.

An inspection of the Porter Beach area could reveal failing septic field sites that contribute to the high e. coli counts being recorded in the area. The remainder of the community is served by a sanitary sewer system. The Town will continue to monitor the sanitary sewer system for any possible overflows or leakage.

Continuing testing on discharging streams to determine the source of pollutants or the effectiveness of the BMP's put into practice is required.

D. Follow-up Work Prior to Submittal of Storm Water Quality Management Plan – Part C

The following approach will be taken during the first year of the permit to continue efforts to characterize general and specific water quality conditions in the MS4 area and will help guide the development of the SWQMP.

The Town Engineer will continue to obtain data from other agencies. In addition, the town of Porter will contact Chesterton discuss a joint program of water quality monitoring. The conclusions of this effort will be included in the Part C submittal.

Appendices

Appendix A: Data Sources Utilized
Appendix B: Updated List of "Waters of the State"
Appendix C: Inventory of BMPs Evaluated and Potential New Sites for Structural BMP Implementation
Appendix D: Land Use Characterization by Residential, Commercial, Industrial, Open Space

Appendix A
Data Sources Utilized

	List of Data Sources Utilized in this Report
1	Town of Porter Comprehensive Plan
2	Porter Building Department records
3	Porter Public Works records and interview
4	Porter Municipal Code
5	Porter maps
6	Town Planner's reports
7	Indiana Department of Environmental Management
8	Indiana Department of Natural Resources
9	United States Geological Survey
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Appendix B
Updated List of Waters of the State

The following is a complete list of Waters of the State (receiving waters of discharges from MS4), including the original list submitted in the NOI and updated based on the data evaluation completed for the Characterization Report.

	Waters of the State (Receiving Discharges from MS4)
1	Peterson Ditch
2	Munson Ditch
3	East Arm of the Little Calumet River
4	
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Appendix C
List of BMPs Evaluated and Potential New Sites for Structural and Non-structural BMPs

E= Existing P= Proposed S= Structural N=Non-structural

	BMP Location	E	P	S	N	Condition
1	East Arm of the Little Calumet	☐	☒	☒	☐	erosion control
2	Peterson Ditch	☐	☒	☒	☐	erosion control
3	Munson Ditch	☐	☒	☒	☐	erosion control
4	Town-wide	☒	☐	☒	☐	street sweeping
5	Town-wide	☒	☐	☒	☐	sewer and catch basin cleaning
6	Town-wide	☒	☒	☐	☒	sewer survey
7	Town-wide	☐	☒	☐	☒	review existing ordinances
8	Town-wide	☒	☐	☐	☒	GIS mapping
9	Town-wide	☒	☐	☐	☒	existing ordinance enforcement
10	Town-wide	☒	☐	☒	☐	downspout inspection/disconnection
11	Town-wide	☒	☐	☐	☒	fire inspection
12	Town-wide	☒	☐	☐	☒	county hhw collection programs
13		☐	☐	☐	☐	
14		☐	☐	☐	☐	
15		☐	☐	☐	☐	
16		☐	☐	☐	☐	
17		☐	☐	☐	☐	
18		☐	☐	☐	☐	
19		☐	☐	☐	☐	
20		☐	☐	☐	☐	
21		☐	☐	☐	☐	
22		☐	☐	☐	☐	
23		☐	☐	☐	☐	
24		☐	☐	☐	☐	
25		☐	☐	☐	☐	
26		☐	☐	☐	☐	
28		☐	☐	☐	☐	
29		☐	☐	☐	☐	
30		☐	☐	☐	☐	
31		☐	☐	☐	☐	
32		☐	☐	☐	☐	
33		☐	☐	☐	☐	
34		☐	☐	☐	☐	
35		☐	☐	☐	☐	
36		☐	☐	☐	☐	
38		☐	☐	☐	☐	
39		☐	☐	☐	☐	
40		☐	☐	☐	☐	

Appendix D
Land Use Characterization by Residential, Commercial, Industrial, Open Space

The following data represents the land use by the categories of residential, commercial, industrial and open space by percent of total community.

Land Use Category	Percent
Residential (including multifamily)	20
Commercial (light and heavy)	07
Industrial (light and heavy)	13
Open Space	60