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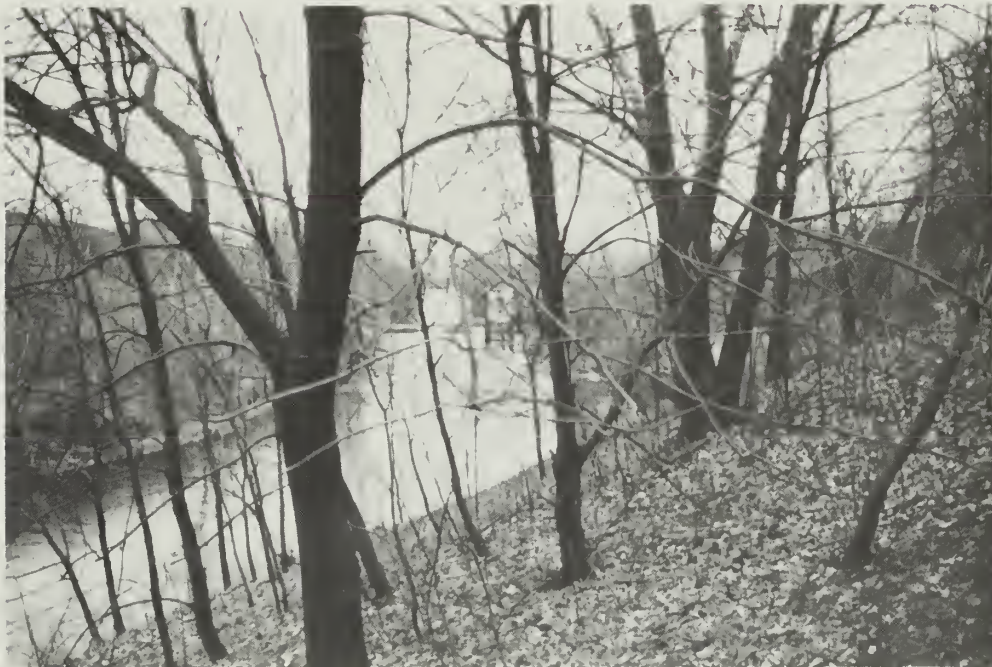


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little calumet river corridor plan and environmental assessment

draft
september 1990



INDIANA DUNES NATIONAL LAKESHORE • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

SUMMARY

This corridor plan presents methods to connect the East and West units of the national lakeshore and to provide better river access, parking, and recreational opportunities by way of the Burns Ditch and the east branch of the Little Calumet River. Other issues addressed are resource protection issues upstream along the Little Calumet River and Salt Creek.

HIKE/BIKE TRAILS

Methods to connect the diverse existing national lakeshore trails into one comprehensive trail system are also provided in this plan. Five new trail components would be established to accomplish this comprehensive trail network:

- the east-west connection routes (routes A, B, and C)

- the east branch Little Calumet River hike/bike path

- the river hiking trail

- the US 12 hike/bike path

- the east end bike route

Three east-west connection routes (routes A, B, and C) would connect the proposed West Unit hike/bike trail at Hillcrest Road in Ogden Dunes (proposed in the *General Management Plan Amendment, West Unit Development Concept Plan, NPS 1990*) with the proposed east branch Little Calumet River hike/bike path at Old Crisman Road (proposed in this corridor plan).

The east branch Little Calumet River hike/bike path would extend east from the Old Crisman Road bridge to Goodfellow

Camp, following the banks of the east branch Little Calumet River. The river hiking trail would be developed from the east branch Little Calumet River hike/bike path at the Samuelson Road bridge eastward to the Indiana Highway 149 river access and parking lot. The US 12 hike/bike path would be developed along the south side of the US 12 right-of-way, extending from the Indiana Highway 249 intersection with US 12 eastward to Indiana Highway 149 and Oak Hill Road. The east end bike route would provide a 13-mile designated bike route that would connect the East Unit of the national lakeshore with the Bailly Unit, using existing streets and rights-of-way.

RIVER ACCESS SITES

This corridor plan also recommends five new river access sites to provide better river access, parking, and recreational opportunities. These access points would have parking, toilet, and trash facilities, as well as connections to trail systems and recreation sites along the Little Calumet River. These five sites would be at Howe Road river access, Bailly Homestead canoe landing, Indiana Highway 149 river access, Shadyside river access, and Burns Ditch river access.

CONNECTIONS TO OTHER RECREATIONAL FACILITIES

Future trail links are identified that may be developed to connect the national lakeshore with local, county, and state parks throughout northwestern Indiana by way of stream corridors and abandoned railroad rights-of-way. These potential trail links would follow along the Burns Ditch, the abandoned rights-of-way of the Norfolk and Southern and the Elgin,

Joliet, and Eastern railroads, and the Salt Creek corridor.

RIVER AND LAND USE MANAGEMENT

The National Park Service has no jurisdiction over lands upstream of the national lakeshore boundary. However, stream corridor protection measures that could be used to help protect vacant lands have been identified.



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PURPOSE OF AND NEED FOR THE PLAN

INTRODUCTION

Indiana Dunes National Lakeshore, designated as a national lakeshore in 1966 (Public Law 89-761), was one of the first areas proposed for national lakeshore status. The national lakeshore is about 35 miles southeast of Chicago, Illinois, in the northwestern counties of Lake, Porter, and LaPorte in Indiana. It contains about 14,000 acres, including some 15 miles of Lake Michigan shoreline, and runs for nearly 25 miles along the southern end of Lake Michigan between Michigan City on the east and Gary, Indiana, on the west. Miles of beaches, sand dunes, wetlands, and woodland forests combine to make it an area of fragile and significant natural resources in an urban/industrial region.

In 1980, Indiana Dunes National Lakeshore was dedicated to the memory of Paul H. Douglas in grateful recognition of his leadership in the effort to protect, preserve, and enhance the natural, scientific, historic, and recreational value of the lakeshore for the use, enjoyment, and edification of present and future generations. The West Unit of the national lakeshore was designated as the Paul H. Douglas Ecological and Recreational Unit. For practical purposes, this unit will continue to be referred to as the West Unit in this document.

PURPOSE OF THE PLAN

This plan presents methods to connect the East and West units of the national lakeshore and to provide better river access, parking, and recreational opportunities by way of the east branch of the Little Calumet River and Burns Ditch. Other issues addressed are resource protection issues upstream along

the Little Calumet River and Salt Creek. An assessment of the environmental consequences of these proposed actions is included.

The national lakeshore currently has a limited trail system along the Little Calumet River in the Bailly Unit. The East and West units of the national lakeshore are separated by the Little Calumet River, the Portage/Burns Waterway, and the Burns Harbor industrial complex. The 1986 amendments to the national lakeshore legislation directed the secretary of interior to "conduct a study regarding the options available for linking the portions of the national lakeshore that are divided by the Little Calumet River and Portage/Burns Waterway so as to coordinate the management and recreational use of the national lakeshore." The need to connect the East and West units of the national lakeshore by a trail system has been one of the long-term goals for the development of the national lakeshore since its establishment in 1966.

Public interest in physically linking the East and West units by a trail or other means and in providing opportunities to increase the recreational potential of the Little Calumet River for fishing and canoeing prompted Congress to expand the national lakeshore boundary. In 1976, 30 acres and in 1986, 200 acres of land along the Little Calumet and adjoining Salt Creek were added to the national lakeshore. As a result, since the national lakeshore was established, the boundary has been extended approximately 3.5 miles west along the Little Calumet River to a point east of Indiana Highway 249 (IN 249).

Indiana Dunes National Lakeshore is made up of nine separate units of

undeveloped beach, dune, and wetland areas that are surrounded by several industrial complexes. The Little Calumet River corridor is the only undeveloped natural area that a trail system could follow to link the disparate national lakeshore units. Although some of the river corridor is outside the national lakeshore boundary, public support and the possibilities for linking with other recreation areas and trails and with existing National Park Service (NPS) trails made this the most cost-effective and viable option for establishing a trail system.

OBJECTIVES

The following objectives were established for this plan:

Design a trail system along the entire length of the Little Calumet River to connect the East and West units of the national lakeshore.

Provide for fishing and canoe access on the east and west branches of the Little Calumet River.

Review stream corridor protection measures for lands upstream of the national lakeshore.

Connect other public lands through regional recreational trail systems.

STUDY AREA

The Little Calumet River is the principal river flowing through Indiana Dunes National Lakeshore (see Region map) and has been identified as a significant resource within the national lakeshore (NPS 1988b). The river consists of the east and west branches and contains 83 miles of tributary streams, including Salt,

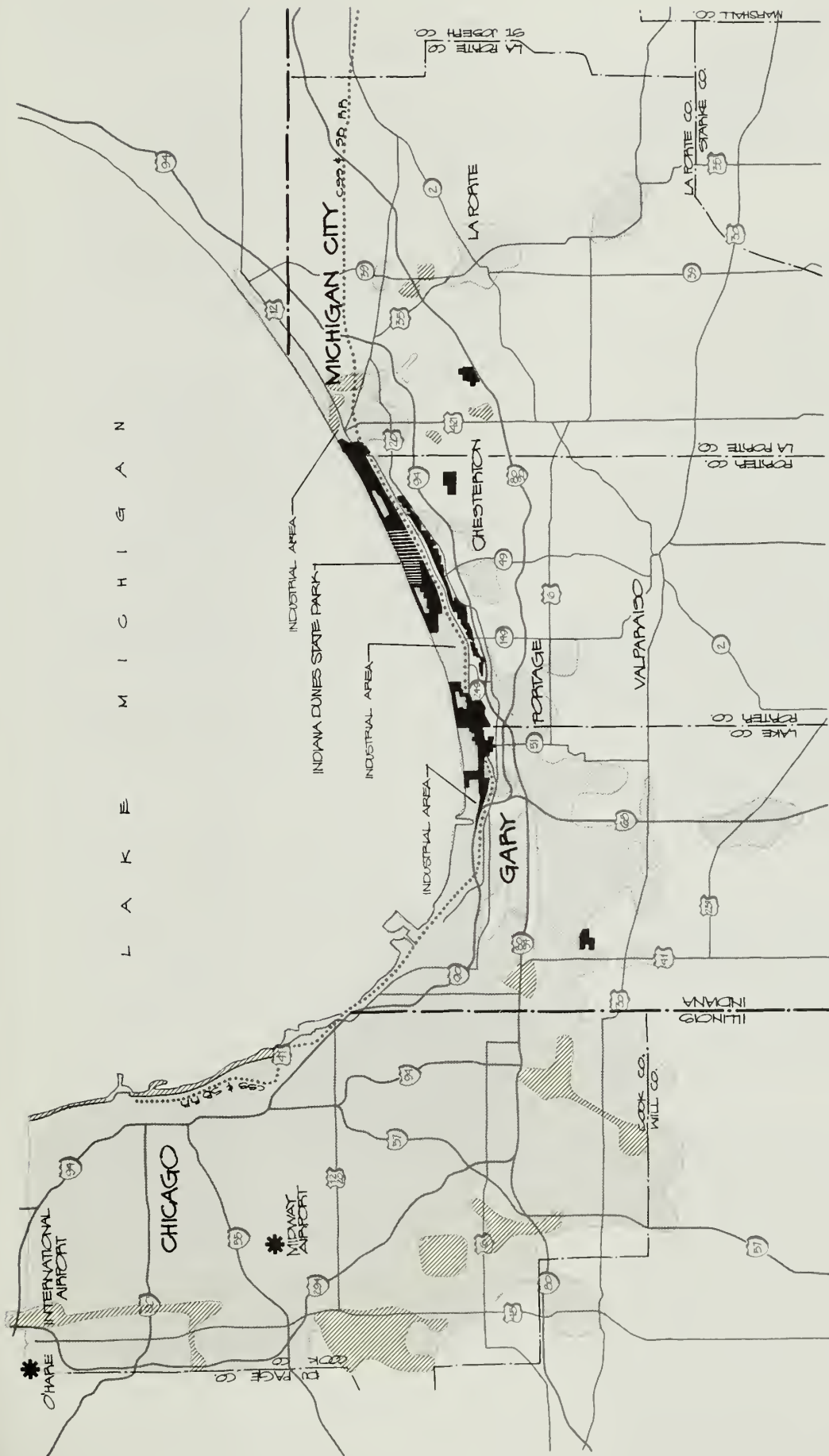
Coffee, Sand, and Reynolds creeks and several drainage ditches (NPS 1986).

The study area includes the Little Calumet River and the Portage/Burns Waterway, extending from Lake Michigan upstream to US 20 along the east branch of the Little Calumet River and along Salt Creek. The study area also includes the Burns Ditch from the confluence with the Portage/Burns Waterway upstream to I-65 (see Location map). Although not specifically within the study area, the regions upstream of US 20 on the east branch of the Little Calumet River and Salt Creek and upstream of I-65 on the west branch of the Little Calumet River are addressed with regard to stream protection measures and as stream corridor linkages to other recreation areas.

The east branch of the Little Calumet River originates in LaPorte County, entering the Heron Rookery Unit of the national lakeshore on the east (at County Road 600 east) and flowing 1.5 miles through the Heron Rookery Unit. Upon leaving the Heron Rookery Unit (at County Road 450 east), the river heads westward through a channelized section (Kemper Ditch). The river then meanders westward through the towns of Chesterton and Porter and reenters the national lakeshore at US 20 and Mineral Springs Road to flow another 5.7 miles through the Bailly Unit. The river exits the national lakeshore about 1/2 mile downstream of the confluence with Salt Creek and the Bethlehem Steel warm-water discharge. From this point the river is channelized to its confluence with the Burns Ditch.

The west branch of the river begins in Illinois and travels east through Lake County. Deep River and the west branch of the Little Calumet River join just east of I-65 to form the channelized Burns Ditch, which continues east to the

L A K E M I C H I G A N



INDIANA DUNES NATIONAL LAKESHORE

URBAN DEVELOPMENT AREAS

MAJOR PUBLIC AND PRIVATE PARK AND OTHER OPEN SPACE

REGION

NORTH

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

676 • 1996 • 2007 • 2015 • 89

Portage/Burns Waterway and Lake Michigan.

RELATED STUDIES AND ONGOING PROJECTS

Studies

An objective of the 1980 *General Management Plan* for the national lakeshore was to study the need for a trail linking the East and West units. (The concept has been supported by many local and regional interest groups and adjacent communities.) The addition of acreage along the Little Calumet River corridor after the *General Management Plan* was written has made it possible to plan more realistically for meeting this objective. The *General Management Plan* proposed extensive trail systems that would tie into Indiana Dunes State Park and other regional recreation facilities and connect all units of the national lakeshore. Because the East and West units of the national lakeshore were separated by a wide gap of privately owned lands, the *General Management Plan* proposed a cooperative trail alignment across the private lands to achieve the trail link.

The Park Service's 1983 *Transportation Study* proposed a number of access and circulation changes for the national lakeshore. This *Little Calumet River Corridor Plan* incorporates the many of the access and circulation changes recommended in the 1983 study.

The NPS 1984 *Trail Plan* provided a general guide for trail development within the national lakeshore. The plan also identified trail development and trail improvements that require cooperative efforts between the National Park Service and several local and state governments. The *Little Calumet River Corridor Plan*

incorporates, revises, and adds trails from the 1984 study.

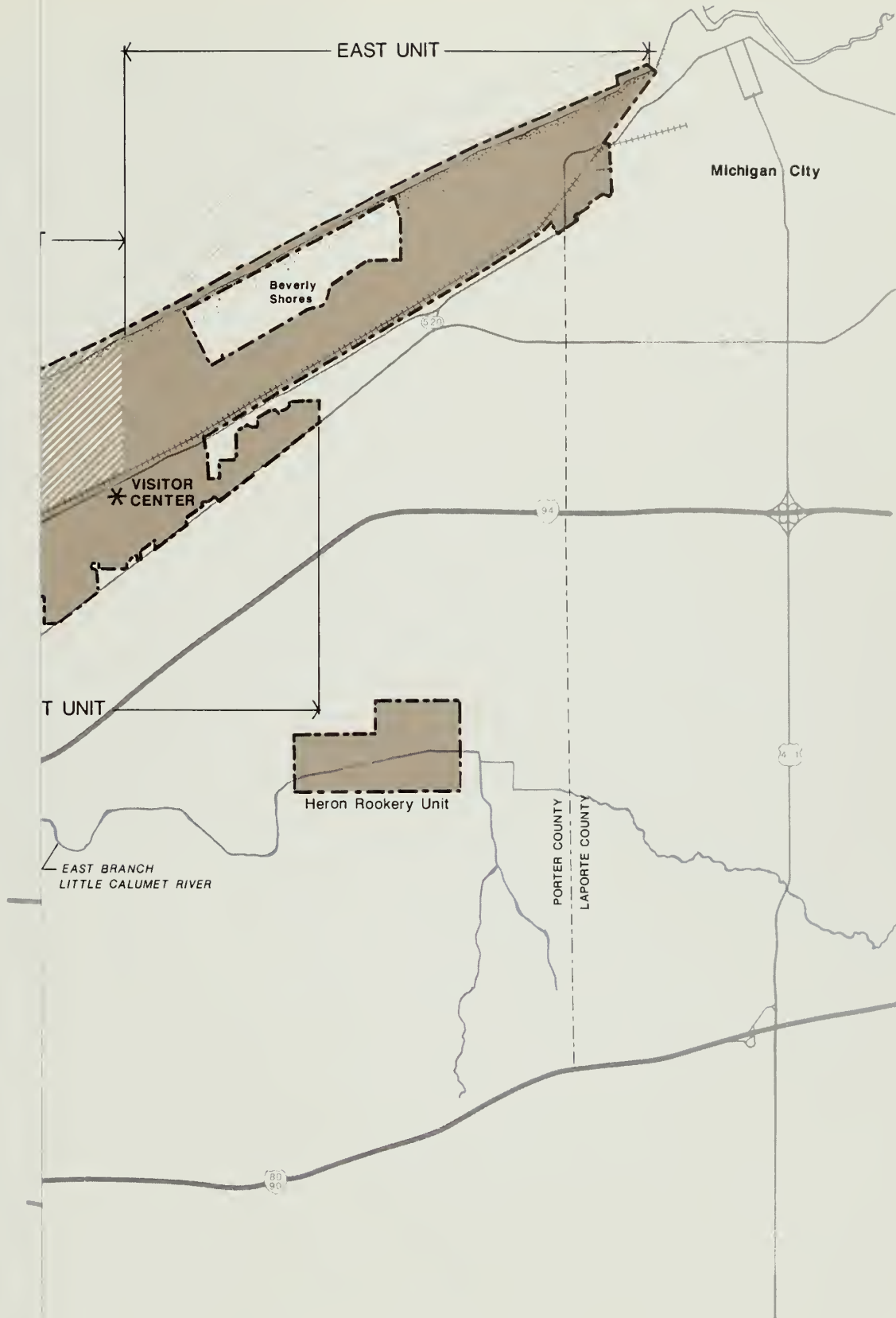
The NPS 1986 *Little Calumet River Management Plan* addressed resource management and visitor use issues along the Little Calumet River within the Bailly Unit of the national lakeshore. The *Little Calumet River Corridor Plan* incorporates river use management recommendations for canoeing, hiking, and fishing from the 1986 river management plan.

The NPS *US 12 Scenic Road Feasibility Study*, in progress, is evaluating the feasibility of designating and managing all or portions of US 12 from Michigan City to Gary as a scenic road. Traffic and highway safety, intersection design, possible design modifications along the scenic corridor, and impacts of scenic road designation on local residents, tourists, local businesses, industry, and trucking companies are being addressed in the study. If US 12 were to be developed as a scenic road, it would provide a recreational highway to connect the national lakeshore units and other regional recreation areas.

The NPS *General Management Plan Amendment and West Unit Development Concept Plan*, also in progress, is addressing issues affecting the West Unit, including access to West Beach, facility development, visitor use, boundary adjustments, and use of NPS lands. The West Unit plan is following the overall direction of the 1980 *General Management Plan*. Trails proposed in this *Little Calumet River Corridor Plan* will connect with the trails proposed in the West Unit plan.

Other Related Projects

The Little Calumet River Basin Commission was created in 1971 to plan and coordinate efforts that would relieve



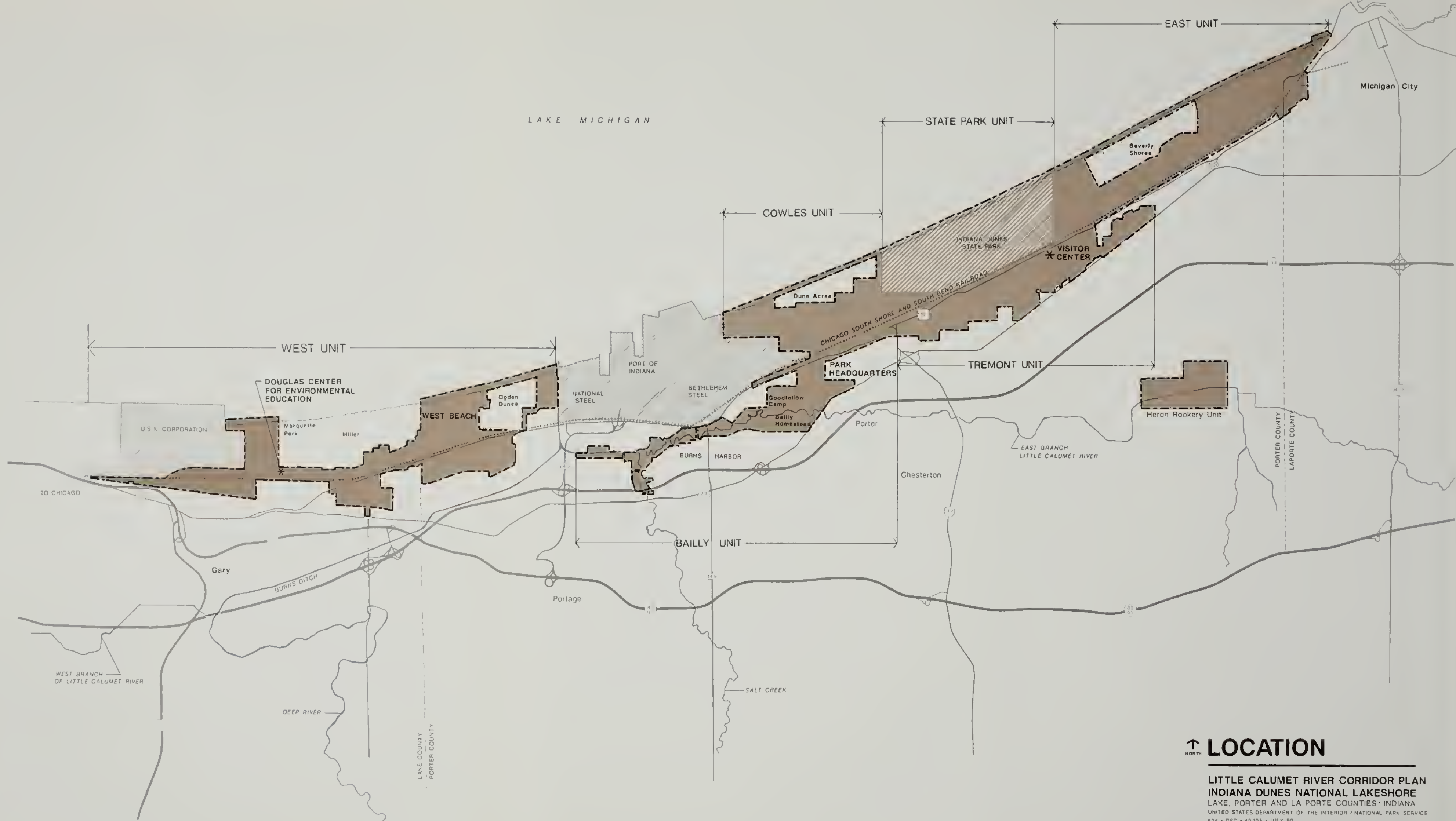
LOCATION

**LITTLE CALUMET RIVER CORRIDOR PLAN
INDIANA DUNES NATIONAL LAKESHORE**

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

626 • DSC • 40,105 • JULY 90



LOCATION

LITTLE CALUMET RIVER CORRIDOR PLAN
INDIANA DUNES NATIONAL LAKESHORE
 LAKE, PORTER AND LA PORTE COUNTIES • INDIANA
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the severe flooding along the Little Calumet River in Lake and Porter counties. The Little Calumet River Basin Development Commission, a different commission, was created by state statute in 1980 to provide nonfederal sponsorship and funding for the federal flood control, recreation, and navigation improvements along the Little Calumet River in Lake and Porter counties. These two commissions are implementing flood control improvements on the west branch of the Little Calumet River west of Broadway in Gary. Responsibilities of the commissions include provision of recreational facilities.

The Little Calumet River Basin Development Commission designed and funded the breakwater improvements at the mouth of the Portage/Burns Waterway on Lake Michigan and included provisions for fishing from the breakwater. As part of the recreation component, the commission has acquired a 300-acre tract (referred to as the proposed Little Calumet River Basin Development Commission recreation area on the Existing Facilities map) on the north bank of the west branch of the Little Calumet River in Gary, adjacent to Lake Station. The commission is also in the process of developing a 100-slip marina between the IN 249 spur and the Portage/Burns Waterway just south of US I2. One long-term goal is a trail system along the Burns Ditch.

Bethlehem Steel has submitted a proposal to the Indiana Department of Natural Resources to construct a 2,000-foot fishway to connect Salt Creek with the Little Calumet River to provide a cool-water route for fish to bypass the Bethlehem Steel warm-water discharge. This fishway would begin on Salt Creek just upstream of the confluence with the Little Calumet River, pass east-northeast across a narrow point between Salt Creek and the Little Calumet, and then join the

Little Calumet River upstream of the Bethlehem Steel warm-water discharge. Construction access and river user access in the future would be by a continuation of Boo Road to the north. This route could provide access for hiking, fishing, and boating.

The Lake County Parks and Recreation Department manages 10 park areas with a total of more than 3,600 acres of open space. Parks that are nearby and related to the national lakeshore are Deep River County Park (upstream from the Deep River/West Branch Little Calumet River confluence) and Lake Etta (east of Burr Street in Gary). The parks department is seeking ways to take advantage of the abandoned railroad corridors in Lake County to connect recreation areas and provide hiking and biking trails. Abandoned railroad corridors include the former Elgin, Joliet and Eastern, and the Norfolk and Southern railroad corridors.



EXISTING FACILITIES

LITTLE CALUMET RIVER CORRIDOR
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AFFECTED ENVIRONMENT

REGIONAL OVERVIEW

Indiana Dunes National Lakeshore lies within the northwestern Indiana industrial-urban complex. Within and adjacent to the national lakeshore's boundary are residential communities, commercial uses, open rural areas, steel mills, light industry, and agricultural lands. Natural wetlands, dune bluffs and ridge complexes, successional vegetation, climax oak forests, and long beaches typify the visual qualities of the national lakeshore. Also within the national lakeshore area is a complex system of county, state, and interstate roads serving local residential and heavy industrial traffic. Numerous railroads carrying manufactured products and commuter and interstate passengers also traverse the national lakeshore.

VISITOR USE/SOCIOECONOMIC ENVIRONMENT

Visitor Use

Indiana Dunes National Lakeshore is a popular destination for recreationists from metropolitan Chicago, northern Indiana, the Midwest, and the nation. Visitation to the national lakeshore has grown steadily since its designation in 1966. In 1988, recreational use of the national lakeshore reached an all-time high of over 1.88 million people. Since 1981, visitation to Indiana Dunes National Lakeshore has increased by an average of 8.9 percent per year. The total increase in annual visitation between 1981 and 1988 has been 47.8 percent. Table 1 illustrates recreational visits to the national lakeshore for the 1980s.

About 50 percent of the annual visitation to the national lakeshore is concentrated

TABLE 1: RECREATIONAL VISITS, 1981-1988

Year	Visitors	Year	Visitors
1981	1,023,400	1985	1,800,300
1982	1,066,600	1986	1,676,600
1983	1,510,600	1987	1,576,200
1984	1,560,400	1988	1,885,300

in June, July, and August. Over 72 percent of the total annual use occurs between May and September. Only 6 percent of the annual use occurs between December and February. July is the peak-use month, with about 16 percent of the annual visitation.

Visitors to Indiana Dunes can participate in a variety of recreation pursuits. Water-based activities such as swimming, fishing, and boating dominate the warmer months, while cross-country skiing and snowshoeing are prevalent in the winter. Hiking, dune exploration, and nature study are popular year-round.

The east branch of the Little Calumet River provides national lakeshore visitors with opportunities for different types of river recreation. Two sections of the east branch, totaling about 7.2 miles, are within national lakeshore boundaries.

The west branch of the Little Calumet River and the Burns Ditch, although outside national lakeshore boundaries, provide additional opportunities for water recreation. The west branch flows eastward from Illinois through Lake County before joining the Deep River to form the Burns Ditch, which continues east to the Portage/Burns Waterway. The Burns Ditch and westernmost segment of the east branch are channelized and lined

by a number of boat slips. Powerboaters docking at these boat slips can enter Lake Michigan via the Portage/Burns Waterway.

There is little existing data on the number of recreationists who use the east branch of the Little Calumet River. However, major uses of the corridor include canoeing, fishing, hiking, cross-country skiing, and bird-watching. Although the river is relatively slow-flowing and has been designated by the U.S. Army Corps of Engineers as a navigable waterway, not all of the east branch is suited for novice canoeists. Numerous snags and logjams require good maneuvering skills and frequent portaging. Low water levels expose logs and make it difficult for canoeists because of frequent portaging. The streambanks along the lower portion of the east branch are quite steep, which makes portaging difficult. Additionally, during high-water periods, the last 7,000 feet of the east branch can develop potentially threatening whitewater conditions that may be difficult for inexperienced canoeists to negotiate. The part of the east branch from Howe Road to IN 149 is generally the safest and most appealing segment for novice canoeists.

There are no "designated and maintained" river access points on the Little Calumet River within national lakeshore boundaries. River recreationists currently access the stream at road right-of-way crossings and other unimproved areas.

The 2.4-mile Little Calumet Trail, adjacent to the Little Calumet River, is maintained by the national lakeshore staff for hiking, skiing, and interpretation. This trail connects with other trails within the Bailly Unit, and it can be accessed by a trailhead at the Bailly/Chellberg visitor center and at informal pulloffs along Howe Road. The trail features a footbridge across the stream and a

boardwalk that crosses the adjoining wetlands.

Socioeconomic Conditions

Lake and Porter counties, like the rest of northwestern Indiana, have experienced substantial demographic and economic changes during the 1980s. A major contributing factor to these changes was an economic recession in the early 1980s that caused sweeping changes in the heavy industries that dominate the local economy. A decline in the automobile industry caused a parallel drop in the demand for steel and related products. This resulted in the loss of many jobs in the region. At the same time, many steel mills and factories began to streamline operations to remain economically viable; the installation of highly efficient automated production systems further reduced the need for manual labor in many plants. Thus, many individuals and families were forced to leave the area to find work.

The loss in population in some parts of the counties has been partially offset by an in-migration of people who are seeking alternatives to the urban lifestyle of metropolitan Chicago. Many individuals who are employed in the Chicago area have moved to northwestern Indiana but still commute to work in the city.

Table 2 illustrates population dynamics of Lake and Porter counties for the years 1970-1987. Population projections for the year 2000 are also included in the table. Referring to the table, it is possible to determine that the population of Lake County has declined by over 65,000 people (11.9 percent) between 1970 and 1987. Most of this loss is due to out-migration. During the same years, however, Porter County has experienced a substantial (41.3 percent) gain in population. This gain is primarily due to

TABLE 2: POPULATION DYNAMICS: LAKE & PORTER COUNTIES, INDIANA – 1970-2000

County	1970	1980	Change 1970- 1980	Estimate 1987	Change 1980- 1987	Projected 2000
Lake	546,253	522,965	-4.3%	481,200	-8.0%	473,863
Porter	87,114	119,816	37.5%	123,100	2.7%	133,710

births-over-deaths, as net migration for the county has been negative since 1970. The recession of the early 1980s did impact the population dynamics of Porter County, as growth slowed from 37.5 percent (1970-1980) to 2.7 percent (1980-1987).

The recent trends in population for northwestern Indiana are expected to continue through the year 2000. Lake County is projected to lose another 1.5 percent of residents between 1987 and 2000. Porter County's population is expected to grow by another 8.6 percent during the same period.

In 1985 the average per capita income (PCI) for Lake County was \$9,737 and for Porter County was \$10,778. The statewide PCI for 1985 was \$9,978. In 1980, 9.2 percent of Lake County families and 3.8 percent of Porter County families were considered to have incomes below the poverty level.

Despite the downturn in heavy industry during the early 1980s, manufacturing remains the mainstay of the local economy. Table 3 summarizes

employment in the Gary-Hammond Primary Metropolitan Statistical Area (PMSA) for the year 1987. The Gary-Hammond PMSA consists of Lake and Porter counties. Over 25 percent of workers in the PMSA were employed in manufacturing jobs during 1987 (although the total number of workers in this sector was down about 48 percent from 1979). Another 21 percent of workers in the PMSA were employed in the service sector, while about 20 percent were employed in retail trade. The service sector has experienced the most growth over the past decade, with a 27 percent increase in the total number of jobs.

The largest employers in the PMSA are Inland Steel and USX Corporation. Inland Steel employs around 14,800 individuals (down from 21,000 in the mid 1970s) and USX Corporation employs about 7,500 (down from 26,000 in the mid 1970s). Other major employers in the PMSA include Bethlehem Steel (6,400 employees), LTV Steel (4,600), National Steel (1,700), and Amoco Oil Company (1,600).

**TABLE 3: NONAGRICULTURAL WAGE & SALARY EMPLOYMENT
GARY-HAMMOND PRIMARY METROPOLITAN STATISTICAL AREA (1987)**

Sector	Employees	% of Labor Force
Manufacturing	53,900	25.1
Nonmanufacturing	161,000	74.9

Unemployment in the Gary-Hammond PMSA has declined substantially since the recession of the early 1980s. Current (July 1989) unemployment is 4.2 percent in Lake County and 2.2 percent in Porter County. Unemployment in these counties in 1983 was 15.8 percent and 14.2 percent, respectively. Current statewide unemployment in Indiana is 3.9 percent.

NATURAL RESOURCES

Climate

The climate of the Indiana Dunes National Lakeshore area is characterized by distinct weather patterns every two to three days. The influence of Lake Michigan tends to modify the extremes of warm and cold. Typical summer days are warm and humid; July is the warmest month, with a mean temperature in the mid 70s. Winters are cold; January is the coldest month, with a mean temperature in the mid 20s.

Mean annual precipitation in the national lakeshore ranges vastly, from about 31 inches in the Hammond area to 48 inches at LaPorte. The mean monthly precipitation is generally the highest from April through July. Heavy rains resulting in bank-full flows generally occur from March through May but are also common in December, February, June, and July.

Sunshine is an important factor to the recreational activity within the national lakeshore. The national lakeshore area averages between 100 and 120 clear days per year, with 10 hours of sunshine daily in the summer.

Winds in the dunes area are generally from the west to south. Localized lake effects result in warm lake breezes as well as localized heavy winter snows. The lake-effect winds blow out of the north, inland. Differential heating of land and water along the Lake Michigan shoreline results in onshore winds during the day and offshore winds at night.

Topography/Soils

Most of the national lakeshore lies within the Calumet lacustrine plain. South of the present shoreline lie the Tolleston, Calumet, and Glenwood stages of

shoreline. The ancient dunes and wetlands associated with the Tolleston and Calumet shorelines account for many of the topographic features along the southern boundary of the national lakeshore. The soils are a direct result of the geologic history of the area. Clay-rich soils occur in the southern portion of the national lakeshore and are underlain by glacial moraine and lake deposits.

The Soil Conservation Service (SCS) has published soil surveys for Lake and Porter counties, which include the Little Calumet River corridor area. Topographic characteristics of the river corridor indicate areas dominated by nearly level slopes. The east branch is a meandering, low-gradient, sand-bedded stream. The east branch and its floodplain have cut 20 to 25 feet into late Pleistocene to Holocene lacustrine sediments, which are composed of silt and intermixed with fine sand and clay and little coarse material (NPS 1986). Soils in the east branch of the Little Calumet River on the terraced areas adjacent to the floodplain include the Whitaker-Milford-Del Rey soil association. These soils are somewhat poorly drained loamy and silty soils on lake plains, terraces, and outwash plains. The floodplain area is comprised of poorly drained soils with slow surface runoff.

Soils in the west branch of the Little Calumet River corridor consist of Oakville-Maumee-Brems and Maumee-Bono-Warners associations. The Oakville-Maumee-Brems soils are nearly level to steep and are well-drained to poorly drained sandy soils that are on outwash plains, lake plains, beach ridges, and sand dunes. A complete soil description of the study area is available in the published SCS Lake and Porter County soil surveys (SCS 1972 and 1981).

Vegetation

The vegetation of Indiana Dunes is one of its most significant features and represents one of the primary reasons for its establishment (NPS 1987). Detailed vegetation surveys and inventories conducted within the national lakeshore since the early 1900s provide baseline data. The lakeshore's vascular plant flora is fairly well known. A 1989 revision of the national lakeshore's vegetation (plant community) classification system and associated Geographic Information System (GIS) mapping has resulted in a new comprehensive vegetation data base. The Land Use/Land Cover map identifies the vegetation types occurring within the Little Calumet River corridor and the general national lakeshore area. Major vegetation communities are dune, moraine, wetlands, and backdune uplands.

The national lakeshore displays diverse vegetation, represented by more than 1,130 different species of native vascular plants. The vegetation includes plant associations of the eastern deciduous forest, boreal forest, Atlantic Coastal Plain, and prairie species. Brief descriptions of the general plant communities/succession that have developed at Indiana Dunes National Lakeshore are given below.

Upland Forest – Upland forests grow on well-drained areas that are rarely, if ever, flooded or covered with standing water. These forests are found on dunes or the uplands of the glacial moraine. The tree, shrub, and herb species found in these forests are often completely different from those found in lowland forests.

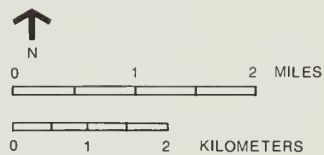
Lowland Forest – Lowland forests grow in areas that are periodically flooded, such as river and stream floodplains and drainage valleys, or in areas where standing water is present

year-round. Lowland forests often border marshes, ponds, and shallow lakes and may cover extensive areas between two series of dune ridges. Low swales between forested dunes are usually wet and contain lowland forest.

Terrestrial Shrub – Terrestrial shrub thickets usually have formed as a result of clearing forests or abandoning farmland (on the moraine) or suppressing fires (in the dunes). Shrub thickets on the moraine could be considered an intermediate stage between an old field and a young forest. On the dunes they are intermediate between open oak savannas and closed oak forests.

Prairie – A prairie is a grass- and herb-dominated community with a much higher diversity of plants than a foredune community. Prairies are found in areas that have never been disturbed by sand mining and that show no evidence of having recently been an active dune or blowout. They are generally older and more well developed than foredune communities. True prairies at Indiana Dunes are found only in the dunes and are composed of native species rather than Eurasian weeds or old field species. Prairie flora make up the herb component of the savannas.

Wetland Shrub – Wetland shrub thickets grow in areas that have standing water or wet soils year-round. They usually contain different shrub species than a terrestrial shrubland. Wetland shrub thickets often occur as clumps or islands of shrubs scattered in the middle of marshes or along their edges. If shrub cover is less than 50 percent, the area is considered marsh. Around the Indiana Dunes, many drained marshes are now becoming



LAND USE/ LAND COVER

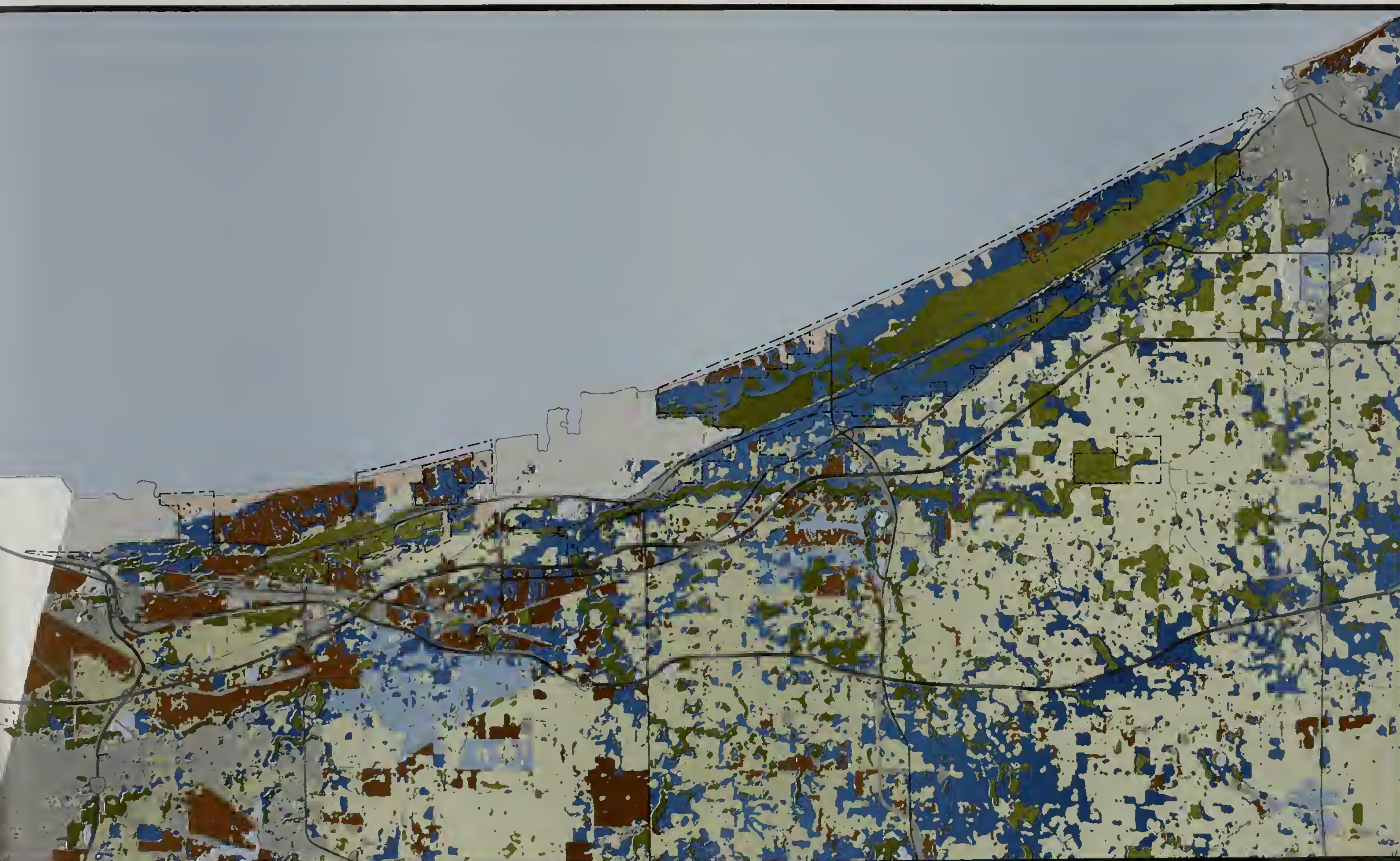
LITTLE CALUMET RIVER CORRIDOR

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wetland shrub thickets as shrubs and young trees invade.

Marsh – Herb-dominated wetlands almost always contain abundant stands of cattails or giant reed grass and sedges. Marshes are most extensive in the low-lying wetlands between two series of dune ridges, although small pockets of marsh may occur in the swales between two dunes, along river floodplains, or around pond edges.

The vegetation along the east branch of the Little Calumet River has been described as bottom forest in the floodplain and mesophytic forest in the uplands (NPS 1986). The bottomland vegetation is characterized by flora adapted to regular, frequent spring flooding interspersed with dry summer conditions. The forest overstory consists primarily of silver maple, ash, red elm, cottonwood, and black willow. Understory ground cover includes bulbous cress, gray sedge, wild chervil, false mermaid, and striped white violet.

The mesophytic forest is confined mostly to the steep slopes of ravines and bluffs and along the edges of agricultural or other artificial clearings. Common overstory trees are sugar maple, red maple, blue beech, American beech, and red oak. Understory species are false rue, anemone, bishops cap, broad-leafed goldenrod, red trillium, jack-in-the-pulpit, panicled aster, nodding fescue, sharp-lobed hepatica, bloodroot, and downy yellow violet.

The only remaining example of a presettlement bottomland forest at the national lakeshore is within the Little Calumet River corridor in the vicinity of Howe Road. It is characterized by box elder, red elm, swamp white oak, and black willow. Vascular aquatic plants are not common in the river.

Wildlife and Fish

Wildlife species within the national lakeshore are diverse due to the variety of habitats. Many terrestrial species of birds, reptiles, amphibians, mammals, and insects can be observed in the Little Calumet River corridor. Birdlife includes song birds, ducks, and great blue heron. Snakes, frogs, and turtles are common along the river. Bottomland mammals include white-tailed deer, beaver, raccoon, opossum, woodchuck, muskrat, weasel, mink, voles, and bats. All terrestrial species appear to be in good condition, with stable populations. Studies of white-tailed deer are being conducted to determine their general health.

Aquatic species found within the river corridor vary from invertebrates to fish. Invertebrate populations include scud, sow bugs, crayfish, damselflies, midges, mayflies, water boatmen, water scorpions, water striders, giant water bugs, and diving beetles. All major game fish within the river are exotics. Important game fish species include steelhead (rainbow trout), brown trout, coho salmon, and chinook salmon. The brown trout are a self-sustaining, naturally reproducing population primarily in the east branch river segment by the Porter/LaPorte county line (NPS 1986). Because the steelhead trout and salmon (coho and chinook) have no successful natural reproduction in the southern Lake Michigan and Indiana Dunes National Lakeshore streams, the Indiana Department of Natural Resources (IDNR) annually stocks yearling salmon and steelhead trout in the spring at the IN 149 bridge. The average annual stocking levels are about 165,000 steelhead, 89,000 coho, and 125,000 chinook (IDNR 1989b). Additional salmonid fisheries spawning and stocking information is available from the IDNR (IDNR 1988). Open fishing season runs from June 15 to March 15. Nongame native fish consist

of buffalo, white sucker, carp, creek chub, johnny darter, blunt nose minnow, and green sunfish.

The Little Calumet River is a designated salmonid stream managed and regulated by the IDNR as a fishery (see "Water Resources" section). A draft memorandum of understanding (MOU) between the IDNR and the Park Service on the Little Calumet within the national lakeshore boundaries is currently being reviewed. The MOU establishes the fishery management of the Little Calumet River by the IDNR.

A creel survey (boat, shore, and stream) of fishing harvest for the Little Calumet River, Salt Creek, and Trail Creek was completed in 1988 by the IDNR Fisheries Division. Results of the creel survey indicate a fish harvest of 76 percent steelhead, 5 percent coho, 11 percent chinook, and 8 percent other (IDNR 1989a). About 53 percent of the fish caught were harvested from the Little Calumet River and Salt Creek tributaries. Overall population trends from the 1985-1988 creel survey of steelhead, coho, and chinook vary. Steelhead stream harvest is primarily stable and steady; coho stream harvest is gradually declining; and chinook stream harvest is stable (IDNR 1989a). Additional salmonid fisheries information is available from the IDNR Fish and Wildlife Division (IDNR 1989a and 1989b).

The Salt Creek tributary to the Little Calumet River also provides a local fishery with major game fish including steelhead, coho, and chinook. Nongame species are bullhead, carp, and white sucker.

Threatened and Endangered Species

State-listed threatened and endangered flora species occur in the Little Calumet

River corridor area and Salt Creek drainages at Indiana Dunes National Lakeshore. (See appendix A for a list of state-protected species known or likely to occur in the river corridor.) All state-listed threatened, endangered, or rare plant species are not legally protected by state statutes. The federally threatened sand thistle varies in local distribution, from frequent, to scattered, and to rare. Several federally listed category 2 (C2) candidate plant species are also present – including the scattered sand fragrant sumac and rare fame flower.

Several state-listed endangered, threatened, and rare plant species may be within the river corridor. Field studies on the status of Indiana endangered, threatened, and special concern species (Bowles 1984 and 1988a) support the arguments that the originally diverse flora of the Indiana Dunes National Lakeshore has, in part, declined because of fire protection measures. The studies show that most species within the national lakeshore are found to be in a state of decline (NPS 1987). It has been estimated that the number of plant species thought to be extirpated from the state has more than tripled in the past century primarily due to natural habitat destruction.

Various animal species protected by the state of Indiana and state-listed as endangered, threatened, or rare are within the Little Calumet River/Salt Creek area. All vertebrate and invertebrate fauna species are protected by state authority (IC14-2-3-3, IC14-3-2-3, and IC14-3-3-7) and under state administrative codes (310IAC3-3-6) and are enforced by the IDNR, Fish and Wildlife Division.

Several federally listed threatened and endangered candidate animals are known to occur or potentially occur in the Little Calumet River corridor. The federally endangered Indiana bat (*Myotis sodalis*),

while not having been observed at Indiana Dunes National Lakeshore, has the potential to exist in habitat along the Little Calumet River. The C2 eastern massasauga snake (*Sistrurus catenatus*) has been recorded recently as occurring in Lake and Porter counties, and therefore may be in the river corridor area.

Water Resources/Quality

Within the study area, major surface water resources are the east and west branches of the Little Calumet River, Salt Creek, and the Portage/Burns Waterway. Much of the hydrological processes in and surrounding the national lakeshore have been significantly altered during agricultural and industrial development of the area, due to channelization, filling of wetlands, ditching, dikes, and dewatering. A water resources baseline inventory and assessment has been completed for the national lakeshore (NPS, Dolak 1985).

The national lakeshore overlies an extensive groundwater reservoir. The general groundwater gradient is towards Lake Michigan. Groundwater gradients can be and are localized in the national lakeshore and surrounding areas. The groundwater table generally varies from 0 to 45 feet below the surface (NPS 1979).

The water quality of Indiana Dunes water resources is important for maintaining the aquatic and wetland communities and providing for the health and safety of recreational visitors. Indiana Dunes National Lakeshore has two water quality programs - beach bacteria monitoring and stream monitoring. Under the stream monitoring program, nine sites on the Little Calumet River (main, east, and west branches, IN 149, Howe Road, Shadyside Mobile Home Court, warm-water discharge site, Salt Creek, and Heron Rookery) are sampled and monitored

monthly for fecal coliform, conductance, temperature, and dissolved oxygen levels.

During 1988, water quality monitoring of the fecal coliform levels in the Little Calumet River exceeded the Indiana Department of Environmental Management (IDEM) standards for whole body contact approximately 53 percent of the time. Also during this time, fecal coliform levels for partial body contact exceeded the IDEM standards less than 9 percent of the time.

Conductance levels for the east branch of the Little Calumet River are within the normal background levels. Salinity (salt) levels are low. There is a slight increase in salinity downstream from the Shadyside Mobile Home Court and a slight decrease in salinity downstream from the Bethlehem Steel warm-water discharge site.

Temperature levels along the east branch generally follow ambient temperature – that is, normal conditions except at the warm-water discharge site. Here they are normally significantly higher than stream temperature immediately upstream.

The east branch of the Little Calumet River upstream of the Wagner Road bridge has been designated by the state of Indiana as a natural spawning, rearing, or imprinting area for salmonid fishes. Also, downstream from the Wagner Road bridge through the lakeshore and into Portage/Burns Waterway and emptying into Lake Michigan, the river is designated a migration route for salmonid fishes. As such, higher water quality standards are established and enforced by the IDEM. The higher water quality standards resulting from this designation are the basis for issuance of wastewater permits by the IDEM Stream Pollution Control Board. Currently, the amount of pollutants contained in a waste discharge must be limited to ensure that

downstream water quality standards are met.

Runoff to the Little Calumet River is quite rapid, with peak flows occurring 18 hours or less after intense rains (NPS 1986). The U.S. Geological Survey (USGS) maintains a water gauging station in the vicinity of Mineral Springs Road and US 20. Discharge rates from 1945-1983 indicate an average and median flow of 74.3 cubic feet per second (cfs) and 46 cfs, respectively. Maximum flows have reached 3,110 cfs, with a minimum flow of 17 cfs.

Bethlehem Steel's warm-water discharge is causing increased temperatures at its confluence with the Little Calumet River. Bethlehem Steel has applied for and received a National Pollutant Discharge Elimination System permit (effective 10-1-88) from the IDEM. Their effluent discharges are being monitored and are in compliance with the permit requirements. Salmonid fish moving upstream or downstream tend to avoid the portion of the river near the confluence of the warm-water discharge.

Dissolved oxygen levels are generally within the range necessary to support salmonid fish, but infrequently; they fall below generally accepted critical oxygen minima (>5 parts per million oxygen). The best general quality salmonid waters appear in and around the Heron Rookery sampling stations.

The waters of the east branch of the Little Calumet River are of the calcium bicarbonate type. Elevated concentrations of sodium, chloride, and various forms of nitrogen and phosphorus are in the river. The fecal coliform levels commonly exceed the IDEM standards for whole body contact, and partial body contact limits are also exceeded at times.

The general water quality of the Salt Creek is moderate to good and capable of sustaining a viable salmonid fishery. Fecal coliform levels for total body contact is usually above the acceptable IDEM standards, and fecal coliform levels are well within the acceptable IDEM standards for partial body contact. Conductance levels are within the range expected for this watershed, and they do not exceed the state IDEM standards relating to total dissolved solids. Temperature levels in Salt Creek are within normal ranges. The oxygen levels are slightly below to full saturation. There is no evidence of excessive organic loading.

Overall, the west branch of the Little Calumet River is generally accepted as a highly degraded stream incapable of supporting a diverse assemblage of aquatic life (Richard Whitman, Chief Scientist, Indiana Dunes National Lakeshore, conversation with author, July 1989). The west branch contains higher salt concentrations caused by nonpoint urban sources. With neighboring industrial, agricultural, and residential activities present, major water pollution concerns include road salt contamination, parking lot and highway runoff, industrial landfill contamination, sewage and industrial effluent outfalls, treatment ponds, and agricultural runoff. All of the pollution sources are outside NPS jurisdiction.

Baseline water quality and water chemistry characteristics have been established for some areas within the national lakeshore. The USGS has in the past, under an annual contract, undertaken a water quality monitoring program for Indiana Dunes National Lakeshore. In fiscal year 1990, the national lakeshore began its own long-term periodic water quality monitoring program.

Past research and studies indicate high levels of some chemicals, such as PCBs and nitrates, in some surface water and groundwater within the national lakeshore. The USGS has found high levels of heavy metals and some increased arsenic and boron levels in the past.

Floodplains/Wetlands

Numerous water channels and dried-up oxbows lie within the floodplain. The floodplain averages 600 to 1,800 feet wide (NPS 1986). The Howe Road bridge and footbridge and Little Calumet River Trail (in the Bailly Unit) are the only structures within the 100-year floodplain in the river corridor and the national lakeshore. The 100-year flood levels for the national lakeshore are based on county flood insurance rate maps and flood insurance studies conducted by the Federal Emergency Management Agency. These levels are identified on the Floodplains and Wetlands map, along with wetland locations within the Little Calumet/Salt Creek corridors.

The flooding period along the Little Calumet River generally occurs from April to June and from mid to late December. Floods occurring in the river corridor are based on an average time lag of six hours between the precipitation event and bank overflow. The maximum projected rise is 3.25 feet per hour. The 100-year flood is projected to crest within 10 hours of the rain event and remain unchannelized for 20 hours. The maximum flood level is expected to have a 16-hour crest period and a 48-hour floodplain duration (NPS 1986).

The national lakeshore wetlands include ponds, marshes, lowland forests, and peatlands. Variations in water levels seasonally and annually may result in wetlands changing from one form to another. Identification and classification of

wetlands in the river corridor and surrounding national lakeshore area, based on the U.S. Fish and Wildlife Service National Wetland Inventory maps, are shown on the Floodplains and Wetlands map. Major wetland systems delineated for the national lakeshore are palustrine, riverine, and lacustrine. There are no designated wetlands (as authorized by section 404(c) of the Clean Water Act [33 U.S.C. 1251 et seq.]) within the Little Calumet River corridor study area. There are also no advanced identified wetlands (as per 40 *Code of Federal Regulations* 230.80 – pers. comm., Tom Glatzel, Environmental Protection Agency, Regional Office, Wetlands Protection Section, Chicago, Ill., 5/24/90). Advanced identified wetlands are wetlands that the Environmental Protection Agency (EPA) has determined that they will advise against issuance of a section 404 permit by the Corps of Engineers.

Air Quality

Air quality in the vicinity of the Indiana Dunes National Lakeshore is affected to a major extent by the urban influences of the Chicago metropolitan area, and somewhat more directly by the adjacent urban and industrial development in and around the cities of East Chicago, Hammond, and Gary. Many different industries have located in this area, with a major emphasis on steel mills and electric power generation plants. Both the steel mills and the power plants use large quantities of coal for fuel, causing the emission of significant quantities of sulfur dioxide and particulates. In addition to fuel use, steel mills can also be a source of particulates, organic emissions from coke ovens, and other pollutants.

National ambient air quality standards (NAAQS) were established under the Clean Air Act, as amended in 1977. The

national lakeshore has been designated a class II area, which means that moderate increases in ambient pollution levels will be tolerated, but the pollution levels must remain within the NAAQS. NAAQS consist of two types – primary, for protection of human health, and secondary, for protection of human welfare.

The National Park Service has established a national air quality research and monitoring program that includes a data collection station at park headquarters. Other air quality monitoring stations in the lakeshore area are in Ogden Dunes (operated by IDEM) and on Bethlehem Steel Corporation property.

An additional NPS program, the air quality biological effects research program, found that biological resources have been affected by air pollutants at Indiana Dunes. Research indicates that there has been a decrease in lichens known to be sensitive to sulfur dioxide (NPS 1988a). The most common air pollution effect on biological resources is foliar (leaf) injury due to ozone. Foliar injury to vascular plants from ozone has been documented as occurring on several species, including eastern white pine, jack pine, red oak, sycamore, yellow poplar, white ash, black cherry, quaking aspen, box elder, willow, basswood, elderberry, sunflower, milkweed, Joe-pie weed, evening primrose, frost grape, and poison ivy. Visible pollution injury to the white and jack pines appeared widely throughout the national lakeshore (Armentano et al. 1984).

A criteria pollutant monitoring program has been established at Indiana Dunes by the National Park Service. The program evaluates pollutant sources of ozone and sulphur dioxide. Primary sources of ozone pollution are organic materials and oxides of nitrogen from motor vehicles, while sulphur dioxide

sources are primarily of industrial origin. During 1984-86, ozone levels exceeded the primary NAAQS on four days during 1984 and on no days during 1985 or 1986 at the national lakeshore. Currently, data are insufficient to show a significant trend over time of ozone levels either increasing or decreasing in the lakeshore area. Sulphur dioxide levels monitored during 1980-87 indicated levels about 20 to 40 percent below the primary NAAQS at Indiana Dunes National Lakeshore (NPS 1988a).

The airborne deposition of toxic trace elements has been measured at Cowles Bog. While very high, the soil concentrations of these elements do not exceed EPA standards. These depositional rates may be extrapolated to be similar to most of the national lakeshore (Cole et al. 1989).

Based on EPA air quality evaluations, designations of attainment or nonattainment for air quality classification have been made. An attainment designation means that measurements are within the limits specified by the NAAQS and that no adverse health effects are expected to occur. A nonattainment designation indicates that measurements of a particular pollutant sometimes exceed the national standards and that causes a risk of adverse health effects. For particulates, the EPA has designated portions of Lake and Porter counties, including most of the lakeshore areas between the shoreline and I-94, as nonattainment. For sulphur dioxide, the EPA established a nonattainment designation for a portion of Lake County along the lake and the national lakeshore area. Porter County was listed as "cannot be classified." For ozone, the most difficult and widespread air pollution problem in the region, Lake and Porter counties have been designated as nonattainment. LaPorte County has been designated as nonclassified. No air quality



FLOODPLAINS AND WETLANDS

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designation for carbon monoxide has been made by the EPA for the Lake, Porter, and LaPorte county area. The EPA has approved the Indiana State implementation plan for carbon monoxide, and the standard should be attained in a few years.

Air quality can be expected to improve in the lakeshore area within the next few years. Carbon monoxide, particulates, and sulfur dioxide levels should be reduced as current and future state implementation plans are carried out. Attainment of the ozone standard will require many years of effort since the lakeshore is tied with the entire Chicago metropolitan area, which is among the three or four worst ozone problem areas in the nation (Traffic Engineers 1989).

Prime and Unique Farmlands

No soils in the Little Calumet River and surrounding areas of the national lakeshore within Lake and Porter counties qualify as prime or unique farmland.

LAND USE AND GEOGRAPHIC INFORMATION AND ANALYSIS

A Geographic Information System (GIS) is a variety of computerized techniques that copy, transfer, manipulate, combine, and analyze various types of mapped information. GISs have been used to compile and analyze information in the preparation of this document. Through the assistance of the GIS unit of the National Park Service, a satellite "SPOT" digital image of northwestern Indiana was used along with various other mapped information to provide accurate, up-to-date information about the Little Calumet River corridor and northwestern Indiana. The original SPOT image was taken in August 1988. Other mapped information includes transportation (roads, railroads, and utility

corridors), hydrography (water bodies, ponds, lakes, and streams), and political boundaries.

In addition, the National Park Service incorporated digital wetlands information from the U.S. Fish and Wildlife Service and floodplain delineations from the National Flood Insurance Program with the other basic mapped information. NPS staff also added regional recreation areas and existing zoning from existing sources.

With this information the Land Use/Land Cover, Floodplains and Wetlands, Potentially Developable Lands, and Potentially Developable Lands with Composite Zoning maps were compiled. In addition, the following analyses have been conducted: acres of vacant lands that could be developed, zoning categories of developable lands, acres of wetlands that would be affected, and possible trail corridors that could connect public recreation lands.

The Land Use/Land Cover map illustrates the overall land use and vegetation patterns in the Little Calumet River and Salt Creek corridors throughout the national lakeshore and the surrounding region.

CULTURAL RESOURCES

Archeological Resources

Archeological artifacts recovered from the Porter County area are typical of cultures from the Paleo-Indian period, 12,000 to 9,000 years before the present. Although Paleo-Indian materials may be known from Porter County, none have been documented to date from the national lakeshore. Such remains would be extremely rare in the area. Prehistoric sites have been found within the national lakeshore boundaries, sites that date to the Middle Woodland period, 200 B.C. to

A.D. 500. Further, the prehistoric sites from the lakeshore are not limited to the Middle Woodland period. Late Woodland materials are also commonly found within the national lakeshore.

To date, only limited archeological studies have been conducted at Indiana Dunes National Lakeshore. Included were a field appraisal by Honerkamp (1968), a small excavation at Bailly Homestead by Limp (1974), a study at Bailly by Munson (1976), and an assessment at West Beach by Johnson (1974). The East Unit transit center site was surveyed in 1984 by the Department of Anthropology, Northwestern University. All of the national lakeshore, except Miller Woods and the lands added as part of Public Law 96-612 (1981), has received reconnaissance-level survey coverage during which 13 archeological sites were recorded. The most recent archeological survey in the national lakeshore was conducted in 1989 for the East Unit campground site; this survey revealed an additional 15 archeological sites. The finding of at least 28 sites demonstrates that significant archeological materials are present within the national lakeshore and are currently obscured by sand and/or dense vegetation or exist in other places.

Historic Resources

Historical records from the 1600s to the 1800s place the Potawatomi and Miami Indians as early inhabitants of the region. Evidence of a large 1/4- by 5/8-mile camp or village site near the Bailly Homestead has been identified by a surface survey (Honerkamp 1968); the site is near trail corridors that adjoin the east branch of the Little Calumet River.

The prehistoric record of the native American occupancy of the southern shores of Lake Michigan is not well known. An account written in 1679

reported a village of Miami, Mascouten, and Wea Indians living near the portage of the St. Joseph and Kankakee rivers, less than 50 miles from the national lakeshore. The Jesuit priest Claude Jean Allouez reported Potawatomi groups on the western shores of Lake Michigan in 1667. Evidently the Potawatomi began to migrate southward during the last part of the 17th century. By the late 18th century, they inhabited the entire region surrounding the southern end of Lake Michigan. One of the first permanent white settlers in the area was Joseph Bailly. He had a license to trade with the Potawatomi and in 1822 set up a trading post on the Little Calumet River.

Immediately adjacent to the Little Calumet River corridor is the Joseph Bailly Homestead complex. This national historic landmark is also on the National Register of Historic Places. The homestead/trading post was the first of its kind in northwestern Indiana. Five structures associated with the Bailly family are included in the site. The homestead, settled in 1822 by Joseph Bailly (a French Canadian fur trapper), remained with his heirs until 1919 when the deed was transferred to the School Sisters of Notre Dame, who used the property as a retreat. The property was purchased by the National Park Service in 1971. The exteriors of the buildings have been restored and maintained for interpretive and environmental education purposes, while the interiors are being adaptively used for interpretive purposes. The primary interpretive theme of the Bailly Homestead complex is the fur-trading period.

Adjacent to the Bailly Homestead is the Chellberg Farm that was homesteaded in 1874 by Swedish immigrants. This 80-acre restored farm includes seven historic structures (main house, barn, chicken house, pump house, corn crib, granary, and maple sugar house) listed

on the NPS List of Classified Structures. The Chellberg Farm has been evaluated and determined not to be eligible for the National Register of Historic Places. Nonetheless, interpretive programs conducted at the farm include living history demonstrations of 19th century farm life, with farm animals and farm machinery.

Adjacent to the Bailly Homestead is a 63-acre property known as Goodfellow Camp. The camp was established by philanthropically minded executives of USX Gary Works, Carnegie Illinois Steel Corporation, to provide summer recreational vacations for children who lived in the city. The camp was closed during the mid 1960s; the National Park Service acquired the property during the 1970s.

The nature and course of the Little Calumet River were considerably changed when the Burns Ditch was excavated in 1926. Before that time the various branches of the Little Calumet drained westward into the Grand Calumet River and Lake Michigan. The construction of the Burns Ditch and the Portage/Burns Waterway created man-made riverbanks and channels and permitted the reclamation of more than 20,000 acres of wetlands in Porter County and in Gary.

The early aboriginal trails, such as the Calumet Beach Trail and the Tolleston Beach Trail, roughly paralleled the original Little Calumet (an old sluggish stream), but would be further removed from the present banks. Because of these historic changes to the Little Calumet, it is unlikely that traces of these trails will be discovered immediately adjacent to the present streambanks, except where they crossed the stream west of the Bailly Homestead and at the juncture of Salt Creek and the Little Calumet.

EXISTING DEVELOPMENT

Boating and Marinas

Marina development has created a demand for riverbank space. No marinas are proposed by the Park Service, but at least four have been proposed by others for sites along the Portage/Burns Waterway. Existing marina developments use nearly all the bank frontage on both sides of the Portage/Burns Waterway plus some distance up the east branch of the Little Calumet River and the Burns Ditch.

Existing Trails

Currently there is no single trail network traversing the entire national lakeshore. The only existing trails within the river corridor study area are those found at Inland Marsh on the west end and at the Bailly Unit on the east end.

The Inland Marsh trail network is 5.3 miles long and includes hiking and cross-country skiing trails. These trails extend no farther east than Old Stagecoach Road. A trail heading south from Inland Marsh to the Little Calumet River and then east along the river and north beside the waterway to US 12 was proposed in the 1984 *Trail Plan*. This trail proposal has not been implemented, but the portion that connects Inland Marsh to the river and then to its confluence with the Portage/Burns Waterway has been retained as part of the proposal in this study.

The Bailly Unit trail system is composed of 4.9 miles of existing hiking trails. Another 2.6 miles of trails are proposed in that unit, including 1.4 miles of bike trail. The existing trails extend in loops from Bailly Cemetery to Bailly Homestead and Chellberg Farm along the Little Calumet River and back to the

Goodfellow Camp. The NPS 1984 *Trail Plan* proposed to extend the existing trails 1/2 mile farther west along the east branch of the Little Calumet River.

REGIONAL RECREATIONAL AREAS/FACILITIES

The following is a partial list of recreation areas that can be found in the northwestern Indiana area. Each description indicates whether it is a state, county, city, or private area. (The areas are shown on the General Development map, which is in "The Plan" section of this document).

Indiana Dunes State Park (state).

Indiana Dunes State Park lies between Lake Michigan and US 12 and is bounded by Kemil Road on the east and Dune Acres on the west. The eastern two-thirds of the park is a natural area allowing no development, fires, or organized activities. This area of the park contains Mt. Tom, the highest remaining Indiana dune (192 feet tall) and three of the largest blowouts in the park. The 2,182-acre park provides a self-guiding nature trail and a nature center staffed by two park naturalists. There are 309 campsites, 16 miles of marked hiking trails, cross-country ski trails, and equipment rental. Six picnic shelters are available for rent, and a lifeguard is on duty at designated swimming areas.

Calumet Prairie (state). The Calumet Prairie, a 140-acre state nature preserve, is generally bounded on the north by a pipeline right-of-way just south of I-90 and on the east by a north-south boundary, approximately 300 feet west of IN 51. The Burns Ditch is about 1/4 mile from the southern property boundary. The area contains a high quality example of a

wet sand prairie, a type not currently included in the national lakeshore.

Marquette Park and Lake Street Beach (city of Gary). The Marquette Park Beach area contains one concession stand. The bathhouse is currently closed and undergoing structural evaluation. Paved parking is available for approximately 660 cars; and paved beach parking provides approximately 380 more spaces. The 240-acre park also contains a pavilion with parking for approximately 95 cars. The pavilion was rehabilitated in 1980 and is used for social functions. Lake Street Beach has a boat ramp and parking space for approximately 480 cars. There is a concession stand with additional parking for about 240 cars.

Deep River County Park (Lake County). Deep River meanders through the 906-acre park, which contains a restored grist mill. A sawmill, picnic shelter, and playground are being constructed. The park contains the only canoe livery on the Deep River, and canoeing is offered seasonally.

Portage Imagination Glen (city of Portage, Porter County). This 223-acre area contains some active recreation areas including picnic areas and ballfields.

Hawthorne Park (town and county of Porter). Picnicking, trails, ballfields, fishing, and canoeing are available in this 35-acre park.

Washington Park (LaPorte County). This 99-acre park is owned and maintained by Michigan City and includes parking for approximately 600 cars, 3,000 feet of beach on Lake Michigan, marina access, and a zoo.

THE PLAN

This plan provides a method to connect the diverse existing national lakeshore trails into one comprehensive trail system. Five new trail components would be established to accomplish this comprehensive trail network:

- the east-west connection routes (routes A, B, and C)
- the east branch Little Calumet River hike/bike path
- the river hiking trail
- the US 12 hike/bike path
- the east end bike route

This trail system would provide for pedestrian and bicycle transit and would also provide a potential means of traversing the corridor by canoe. The trails would link the river, natural and cultural resources, and recreational facilities into one continuous network. Visitor activities on the trail system would include hiking, biking, fishing, canoeing, and cross-country skiing. These activities and facilities would be tied closely to the natural, cultural, and recreational resource opportunities already provided in the area and would be compatible with existing land uses. A discussion of the potential regional trail connections is included at the end of the description of the plan.

The plan also provides better river access, parking, and recreational opportunities and addresses resource protection issues upstream along the Little Calumet River and Salt Creek. Five new river access sites would be established:

- the Howe Road river access
- the Bailly Homestead canoe landing

- the IN 149 river access
- the Shadyside river access
- the Burns Ditch river access

The trail system components and the river access sites are shown on the General Development and General Development – Detail maps

The alternative to implementing this plan is not having a trail system that links the East and West units of the national lakeshore and no improvement in river access, parking, and recreational opportunities. This alternative, a "no-action" alternative, would mean a continuation of work with other agencies to develop other solutions. The impacts of implementing this plan and not implementing this plan, a "no-action" alternative, are discussed in the "Environmental Consequences" section.

Some of the proposed actions are totally within current national lakeshore boundaries and on federal land. The proposals in this plan may be implemented shortly after plan approval as funding and other national lakeshore development priorities allow. Other plan recommendations would require boundary adjustments, land acquisition, cooperative agreements, easements, or actions by others. These proposals would be developed as cooperative agreements or boundary adjustments were made and lands or interests in lands (easements) were acquired. Priorities for establishing the trails and river access sites would vary as funds and land acquisitions became available and as visitor use patterns developed.

GENERAL DEVELOPMENT

East-West Connection Routes

The following three east-west connection routes connect the proposed West Unit hike/bike trail at Hillcrest Road in Ogden Dunes with the proposed east branch Little Calumet River hike/bike path (described below) trailhead at the south side of the Old Crisman Road bridge. All three routes (A, B, and C) would begin at a trailhead at the Inland Marsh parking lot near the Hillcrest Road and US 12 intersection in Ogden Dunes.

Route A would be the highest priority trail connection route. This route would be the most direct and would affect the least number of landowners. Trail routes B and C would provide more hiking and biking options to visitors as well as providing for loop routes.

Route A - From the trailhead, this route would head east along the south side of US 12 and across the Portage/Burns Waterway on a pedestrian/bicycle bridge as part of or attached to the south span of existing US 12. The route would continue eastward past the Little Calumet River Basin Development Commission's proposed marina site to Crisman Road, then south over the Old Crisman Road bridge. The length of this segment would be about 1.3 miles.

Route B - This route would extend from the trailhead south on the existing trail, then continue south across Old Stagecoach Road. The trail would pass east of the existing driveway and residence and extend through the agricultural lands. It would then turn east along the north bank of the Burns Ditch, crossing the ditch on a pedestrian/bicycle bridge south of the Portage/Burns Waterway. Once across the ditch, the trail would extend east to

Crisman Road and then north along the road to the Old Crisman Road bridge. This segment would be about 2.0 miles from Ogden Dunes.

Route C - This route would extend from the trailhead across Old Stagecoach Road. From Old Stagecoach Road, the trail would proceed east and south (west of the parcel to be developed by the DDH Corporation) to the Burns Ditch. The trail would then cross the ditch with a pedestrian/bicycle bridge south of the confluence of the river and the Portage/Burns Waterway. The trail would extend to Old Crisman Road bridge. This segment would be about 0.75 mile long.

East Branch Little Calumet River Hike/Bike Path

The east branch Little Calumet River hike/bike path would extend east from the Old Crisman Road bridge to the Goodfellow Camp following the banks of the east branch of the Little Calumet River.

From the south side of the Old Crisman Road bridge, this trail would pass under the Old Crisman Road bridge and the double-span of IN 249, south of the existing marina and through the residential area on existing streets. The hike/bike path would continue east on an abandoned road paralleling the river to the Samuelson Road bridge.

At Samuelson Road the hike/bike path would cross to the north side of the river. Between the Samuelson Road bridge crossing and the Shadyside parking and access area, the hike/bike path would be within the national lakeshore boundary and adjacent to Bethlehem Steel property. The Park Service would ensure that a suitable vegetative buffer is maintained to

CENTRAL AVENUE BEACH

ACH

TER

MT. BALDY

20

421

94

TRAIL CONNECTION
TO BAILLY UNIT

Chellberg Farm

Bailly Homestead

RIVER

HERON
ROOKERY UNIT

WATER QUALITY, FLOODPLAIN,
AND WETLAND PROTECTION AREA

421

80
90

WEST
LIT






DING



GENERAL DEVELOPMENT





LITTLE CALUMET RIVER CORRIDOR
INDIANA DUNES NATIONAL LAKESHORE

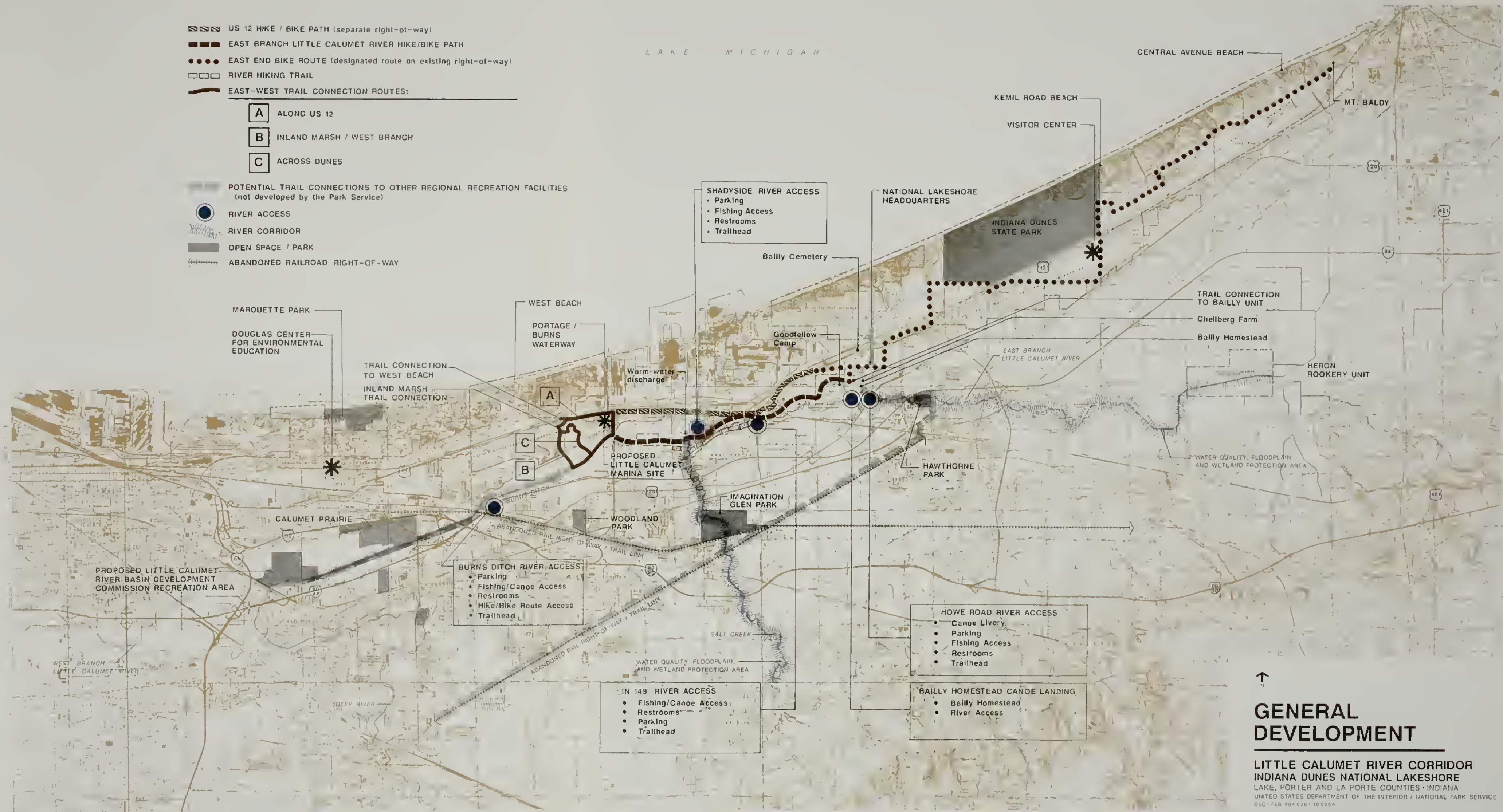
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-  US 12 HIKE / BIKE PATH (separate right-of-way)
-  EAST BRANCH LITTLE CALUMET RIVER HIKE/BIKE PATH
-  EAST END BIKE ROUTE (designated route on existing right-of-way)
-  RIVER HIKING TRAIL
-  EAST-WEST TRAIL CONNECTION ROUTES:

- A** ALONG US 12
- B** INLAND MARSH / WEST BRANCH
- C** ACROSS DUNES

 POTENTIAL TRAIL CONNECTIONS TO OTHER REGIONAL RECREATION FACILITIES (not developed by the Park Service)

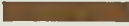
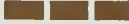





-  RIVER ACCESS
-  RIVER CORRIDOR
-  OPEN SPACE / PARK
-  ABANDONED RAILROAD RIGHT-OF-WAY



GENERAL DEVELOPMENT

LITTLE CALUMET RIVER CORRIDOR
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-  EAST-WEST CONNECTION ROUTES
-  EAST BRANCH LITTLE CALUMET RIVER HIKE / BIKE PATH
-  RIVER HIKING TRAIL
-  US 12 HIKE / BIKE PATH
-  EAST END BIKE ROUTE
-  HIKE / BIKE PATH (Proposed by others)
-  EXISTING TRAIL SYSTEM



(DETAIL) GENERAL DEVELOPMENT

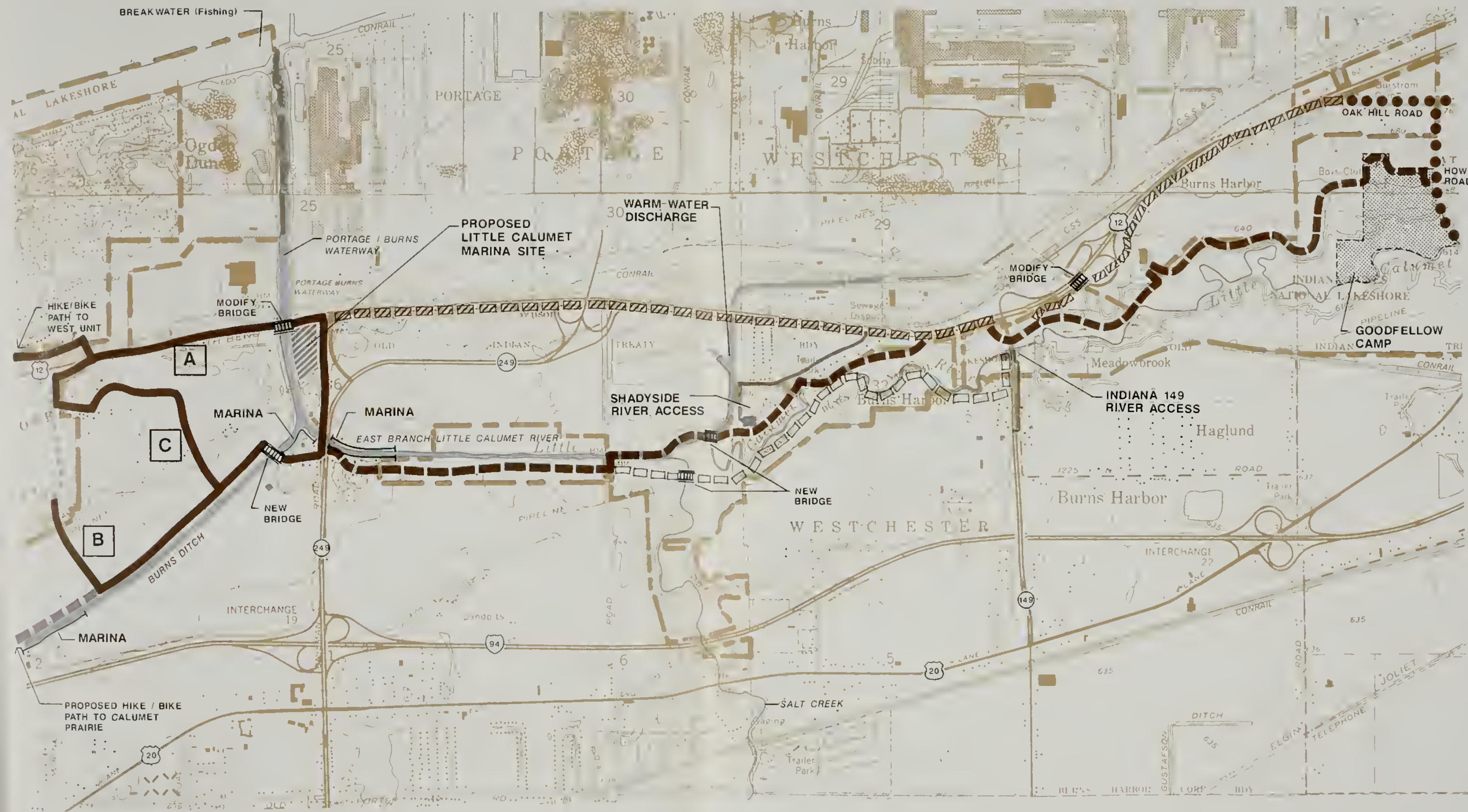
LITTLE CALUMET RIVER CORRIDOR

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES INDIANA

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- EAST-WEST CONNECTION ROUTES
- EAST BRANCH LITTLE CALUMET RIVER HIKE / BIKE PATH
- RIVER HIKING TRAIL
- US 12 HIKE / BIKE PATH
- EAST END BIKE ROUTE
- HIKE / BIKE PATH (Proposed by others)
- EXISTING TRAIL SYSTEM



(DETAIL)
**GENERAL
 DEVELOPMENT**

LITTLE CALUMET RIVER CORRIDOR

INDIANA DUNES NATIONAL LAKE SHORE
 LAKE, PORTER AND LA PORTE COUNTIES INDIANA
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discourage visual access to the Bethlehem Steel property. Fences would be maintained to prevent trespass. Maintaining security and preventing trespass to the Bethlehem Steel property is critical because of the possibly hazardous activities and materials used for wastewater treatment on the Bethlehem Steel site. (A boundary adjustment or easement would be needed; see "Boundary Adjustment/Cooperative Agreement" section.)

The trail would continue east along the north bank across the warm-water discharge channel of Bethlehem Steel and continue northeasterly along the north river bank and the NPS boundary. As the path approached US 12, it would parallel that route to near IN 149, swing south parallel to IN 149, and pass under the IN 149 bridge over the Little Calumet River. The trail would continue along the north side of the river and pass beneath the Conrail Railroad bridge over the Little Calumet River. From there the trail would begin a gradual climb away from the river, following the northern NPS boundary, crossing the existing Bailly Unit hiking trail to Goodfellow Camp, where it would link to that facility's existing road and continue on it until intersecting Howe Road at the camp entrance.

At this point the hiking and biking uses would separate. Bikes would continue north on Howe Road to Oak Hill Road to the proposed east end bike route (described below), and hikers would continue east on existing trail networks within the Bailly Unit. The trail distance from the Old Crisman Road bridge to Howe Road is about 4.5 miles.

River Hiking Trail

A river hiking trail would be developed from the east branch Little Calumet River hike/bike path at the Samuelson Road

bridge eastward to the IN 149 river access and parking lot on the south side of the Little Calumet River. This trail would avoid wetlands by staying on higher ground on the wetland perimeters. Where it is not possible to go around wetlands, elevated boardwalks would be constructed to minimize the impacts on wetland areas. Likewise, in areas that may contain federal and/or state-listed species, elevated boardwalks would be constructed to minimize the loss of additional plant and animal species by habitat destruction. A new 150-foot-long footbridge would be constructed across Salt Creek. This 1.8-mile trail would provide river access for fishing as well as a separate hiking path.

US 12 Hike/Bike Path

A bicycle path would be developed along the south side of the US 12 right-of-way, extending from the IN 249 intersection with US 12 eastward to IN 149 and Oak Hill Road. Most of the intersection crossings along this bicycle path would be at grade, including those at Bethlehem Steel main gate access road and all of the lower traffic volume service roads and driveways. The US 12 hike/bike path would leave the US 12 right-of-way just west of IN 149 and turn south into the national lakeshore, connecting with the proposed east branch Little Calumet River hike/bike path. The two paths would continue together under IN 149, and then the US 12 hike/bike path would separate and return to the US 12 right-of-way. The hike/bike path would continue east as a designated hike/bike lane on the existing US 12 bridge over the Conrail railroad tracks and the Bethlehem Steel main gate access road or as a separate hike/bike bridge span attached to the US 12 highway bridge. The path would proceed east to Oak Hill Road and then connect to a bike route that would continue on Oak Hill and Howe roads and eastward

on US 12 on the proposed east end bike route.

The US 12 hike/bike path would require an easement along the south side of the US 12 right-of-way (see "Boundary Adjustment/Cooperative Agreements" section), adequate to provide space for two directions of bicycle traffic and safe separation distance from the highway. A minimum width of 30 feet would be needed for the path right-of-way; however, a 70-foot easement would provide a 30-foot proper separation from both the highway and adjacent private property to allow for a visual and noise buffer as well as flexibility in path alignment.

East End Bike Route

The east end bike route would provide a 13-mile designated bicycle route that would connect the East Unit of the national lakeshore with the Bailly Unit, using existing streets and rights-of-way. The route would be designated by roadside signs and on bicycle maps.

From Oak Hill Road and US 12, the route would go east on Oak Hill Road, then north on Wagner Road to US 12. A 1/4-mile spur bike route on Howe Road would connect the east end bike route with the Little Calumet River hike/bike path terminus at the Goodfellow Camp entrance at Howe Road. The east end bike route would continue east on US 12 (1/2 mile) to Waverly Road, then north to South State Park Road, east to Tremont Road, and south to US 12. The bike route would follow US 12 again (1/2 mile) east to Furnessville Road where it would continue east to Kemil Road and then north across US 12. From Kemil Road the bike route would proceed east on Beverly Drive for approximately 1/4 mile, then turn south on an abandoned road to Service Avenue, and continue east on

Service Avenue to Broadway Avenue. From Broadway, the bike route would head north to Beverly Drive and then east along Beverly Drive to US 12 and the Porter/LaPorte county line.

RIVER ACCESS AND PARKING

To provide facilities for fishing, hiking, and canoeing, and to preserve the resources along the streams, the Park Service would construct access points along the river (see General Development map). These access points would have parking, toilet, and trash facilities, as well as connections to trail systems and recreation sites along the Little Calumet River. The access points would be where conditions already favor their construction. Site criteria include safe road access, close proximity to utility service, ease of maintenance access, compatible surrounding land uses, and adequate available land area. Five such sites, spaced from 1/2-mile to 2 miles apart, have been identified along the Little Calumet River.

Of the five river access areas identified, the Howe Road and IN 149 river access areas would be the highest priorities. These areas are currently used for river access, and this is one of the more scenic segments. In addition, this segment has no rapids so it is well suited for novice canoeists. The Howe Road access area is on land currently owned by the Park Service, and the IN 149 access area is owned by the Indiana Department of Transportation. The IN 149 access area would provide access to the proposed east branch Little Calumet River hike/bike path and the river hiking trail. Of the remaining river access areas, the Shadyside access area would be developed next because it would provide access to both the river and to the east branch Little Calumet River hike/bike path. The Burns Ditch access area would

provide both river access and a connection to the proposed hike/bike path by the Little Calumet River Basin Development Commission.

Howe Road River Access

This access would provide hiking, trail, and fishing access, a canoe launch area, parking for 15 to 20 cars, toilets, and trash facilities. A canoe livery could be operated by a concessioner in this area. The river access site would extend from Howe Road, at a point about 100 feet from US 20, northeast to the Little Calumet River floodplain where a stabilized canoe launch area would be constructed. Vehicle parking would be provided above the floodplain to serve canoe launching and trailhead uses. Trails would connect the parking lot to the canoe launch site and also extend through the wooded floodplain to the Little Calumet River bridge at Howe Road. Here the trail would connect to the Bailly Unit trail system.

Bailly Homestead Canoe Landing

A canoe dock would be constructed at the Bailly Homestead to provide river access. The dock would not link to trails but would re-create the sense of arrival that early travelers had when reaching the Bailly Homestead.

IN 149 River Access

This bridge over the Little Calumet River was designed to span the river's floodplain and allow unimpeded flood flow; the design would also provide an opportunity to construct parking directly beneath the span of the bridge. Access to the site would be from IN 149 by way of the frontage road paralleling it on the east side. Facilities would include parking for

10 to 20 cars, toilets, trash facilities, and a canoe put-in and take-out point. The facilities would be designed and located to minimize interference with flood flows. The proposed river hiking trail would extend west along the south bank of the river to connect to the east branch Little Calumet River hike/bike path. The east branch Little Calumet hike/bike path would be along the north bank of the river, passing under IN 149 near but not connected to the river access site on the south side of the bridge.

Shadyside River Access

A trail and fishing access area would be developed near the Shadyside mobile home court along the north bank of the Little Calumet River. Parking would be provided for 20 cars, along with toilets, trash facilities, and a trailhead entry to the east branch Little Calumet River hike/bike path. No canoe access would be provided here because of the steep riverbanks. Vehicular access to the river would be on Shadyside or McCool roads from US 12 along the south and west sides of the Shadyside mobile home court.

Burns Ditch River Access

This river and trail access point would be developed on the west bank of the Burns Ditch at US 20 and County Line Road. Development would include parking for 10 to 15 cars, a canoe launch and take-out point, toilets, and trash and trailhead facilities. The site would be accessed from County Line Road north of US 20. This site would also provide access for the Burns Ditch hike/bike path that has been proposed by the Little Calumet River Basin Development Commission.

VISITOR USE

Visitor Impact Management/Carrying Capacity

Visitor impact management (commonly known as carrying capacity), as applied to recreation lands, is a concept that is intended to help estimate the level of visitor use that an area can support. The goal of the concept is to identify a level of use that will prevent resources from suffering degradation because of overuse and that will preserve the quality of visitor experiences. Current visitor use levels are not damaging lakeshore resources. The National Park Service will take appropriate measures to ensure that national lakeshore resources remain in an unimpaired condition.

It is currently not practical to attempt to determine the carrying capacity of the Little Calumet River corridor trail system. Too little information is available on the resources, present use, and potential future use of the area to allow for an accurate estimation of the corridor's capacity. A visitor management program would be established, which would help avoid undesirable changes in the resource base and ensure the highest possible quality in visitor experiences.

This would permit park managers to identify potentially undesirable changes in use patterns before resources or visitor experiences were negatively impacted. If potentially undesirable changes occur, management strategies would be implemented to keep impacts within acceptable levels. The program would also evaluate the effectiveness of management actions within the corridor. The program would not attempt to set numeric capacities to limit visitor use; it would define specific desired conditions to be maintained and allow for phased implementation of corrective management actions only after impact standards had

been exceeded and problems had been verified. To implement the program, NPS staff would establish a systematic monitoring network within the unit to establish baseline resource conditions. Once baseline conditions were established, the network would measure the effects of visitor use on the ecosystem, social conditions, recreational activity patterns, and national lakeshore facilities.

In addition to resource monitoring, national lakeshore staff could also conduct a visitor survey to determine use patterns (including turnover rates, average length of stay, and intralakeshore travel patterns) and to provide additional baseline data to support management actions. Because the current level of use in the corridor is assumed to be quite low, the survey might have to be extended over a number of use seasons to achieve a sample large enough to allow for accurate statistical analysis.

When baseline data is established, the national lakeshore staff would determine the desired conditions that should be maintained within the river corridor. These desired conditions, which would be expressed in terms of "impact indicators," would be the standards against which impacts are assessed. Examples of potential impact indicators include the prevalence of streambank erosion, the average number of groups encountered by canoeists, or the amount of litter found along the river.

If subsequent monitoring indicated that any impact indicator standard is being exceeded, management would then initiate steps to determine if conditions had become unacceptable. The initial management response to a possible violation of standard would be a reassessment of the standard to determine if it was reasonable and appropriate. If the standard was affirmed,

management would then investigate the conditions associated with the indicator to verify that an unacceptable situation actually exists. If an unacceptable situation was found, management would analyze the cause of the violation. Following such an analysis, managers would determine the most appropriate action to take to correct the situation.

The potential management alternatives that could alleviate an undesirable condition would vary widely from situation to situation. Further, a broad range of alternatives could also be implemented to mitigate any one situation. If monitoring and subsequent analysis determines that a management action is needed to correct an undesirable condition, managers would select the corrective technique that is least intrusive to the visitor experience. If that technique was ineffective, management would then progress to the next-least intrusive technique. This progression would continue until the undesirable condition had been corrected.

Information, Orientation, and Interpretation

The main visitor experiences to be offered would be hiking, bicycling, canoeing, and fishing. To facilitate these experiences, information and a map of trail and canoe routes, access points, and their relationship to the entire national lakeshore would be provided at all trail and canoe access points. Information on safety, fishing, and low impact use of the resources would be presented in an interesting and creative manner. Rather than a listing of rules and regulations, information would be presented to give visitors a sense of the kind of environment they are in, how they can safely enjoy that environment, and how they can use the environment and leave it as good as or better than they found it.

The canoe dock at the Bailly Homestead would allow river users to visit the Bailly Homestead the way that Joseph Bailly may have in the 19th century. Interpretive programs would be developed to show the connection between the Bailly Homestead and the Little Calumet River.

Informative/interpretive messages would be designed to accommodate people with disabilities.

Accessibility

All biking and hiking trails and paths would be designed for access by special needs populations such as the elderly and handicapped. The bicycle paths would be surfaced to facilitate wheelchair access. Hiking trails through the dunes might not be accessible to wheelchairs, but these trails would be made accessible to visually impaired visitors. All development at the national lakeshore would comply with all appropriate laws and regulations, including the Architectural Barriers Act of 1968 (42 U.S.C. 4151 et seq.) and the Rehabilitation Act of 1973 (29 U.S.C. 792 et seq.).

CONNECTIONS TO OTHER RECREATIONAL FACILITIES

The General Development map identifies local and regional recreational facilities in northwestern Indiana that are publicly owned. These facilities include local, county, and state parks as well as potential trail linkages such as stream corridors and abandoned railroad rights-of-way. These facilities have been identified to show how the proposed trails and river access sites in this plan relate to other regional recreation area proposed trails and facilities and so that future trail links can be made through cooperative planning by local, county, regional, state, and federal agencies and governments.

Several proposed and potential trail links and corridors are identified on the General Development map.

The Little Calumet River Basin Development Commission has proposed a trail along the Burns Ditch from 1 mile west of its confluence with the east branch of the Little Calumet River and the Portage/Burns Waterway west to the proposed regional open space lands in Gary that are adjacent to the Burns Ditch and Lake Station. This trail route would connect the national lakeshore east-west connection routes (specifically route B), the proposed Burns Ditch river access, the Little Calumet Prairie, and the proposed Little Calumet regional recreation area.

The abandoned Norfolk and Southern Railroad right-of-way segment from the Burns Ditch east to Salt Creek is a second potential trail link. This trail would connect the Burns Ditch, Woodland and Imagination Glen parks in Portage, and Salt Creek.

A trail link along Salt Creek from the Little Calumet River south would connect Imagination Glen Park, the Norfolk and Southern right-of-way, and the abandoned Elgin, Joliet, and Eastern (EJ&E) Railroad right-of-way to the national lakeshore trail system.

The abandoned EJ&E right-of-way provides a potential link from Salt Creek westward to Deep River, Deep River County Park, and other parks in the Lake County park system.

A fifth potential trail corridor would be along the east branch of the Little Calumet River from US 20 upstream to Hawthorne Park. From Hawthorne Park this trail would continue south on existing streets approximately 1/2 mile (by way of Waverly, Lincoln, and Frances roads, across three major railroads, then south

on 15th Street to Broadway) to the abandoned EJ&E right-of-way.

RIVER AND LAND USE MANAGEMENT

River Access

Improved river access would lead to increased river use for hiking, fishing, and canoeing. Increased use could lead to conflicts among the user groups as well as require additional NPS management of activities and protection of resources. River use would be managed according to the approved *Little Calumet River Management Plan and Environmental Assessment* (NPS 1986).

Land Use and Stream Corridor Protection

The Park Service has no direct jurisdiction regarding land use upstream of the national lakeshore boundary. However, stream corridor protection beyond and upstream of the current national lakeshore boundaries is essential for maintaining water quality and flow levels critical to the fish, animal, and vegetation communities of the national lakeshore. Upstream land uses also have an effect on national lakeshore resources and recreational opportunities. To protect the vegetation and water resources (water quality and water flow levels (both low-level flows and flood reduction) within the national lakeshore, the Park Service has inventoried and analyzed the land uses and resources upstream of the national lakeshore boundary. This analysis could be used by local, county, and regional officials to determine which lands are the most critical to preserving the resources of the national lakeshore, which lands could be developed without adverse effects on the national lakeshore, and how the stream corridors should develop in the future.

The analysis was done by using satellite imagery (similar to photographs, except that specific wavelengths of light are used) and computerized GISs to delineate land use and land cover for northwestern Indiana (see Land Use/Land Cover map). Next, a corridor of 1/2 mile on both sides of the Little Calumet River (including Burns Ditch and Salt Creek was adopted as a reasonable distance to inventory for analyzing adjacent lands that have the most affect on stream water quality and flow levels. Lands that could not be developed (wetlands, floodplains, and existing development) were eliminated to highlight vacant lands that could be developed (i.e., the terrestrial shrub, agriculture/grass, upland forest, and sand land use categories) – see Potentially Developable Lands map. The final step in the analysis was to combine existing zoning with the vacant lands that could be developed to determine possible future development patterns (see Potentially Developable Lands with Composite Zoning map). Appendix B summarizes the character of the land within the Little Calumet and Salt Creek corridors.

These vacant lands within the 1/2-mile corridor have special values. They have recreation potential as open space and trail corridors to link other regional recreational lands; future use of these vacant lands may also contribute directly to downstream water quality, flood flows, and low flows during dry periods. To protect downstream water quality and water flows, land development should be managed with careful consideration and specific knowledge about how different development will impact the area's water and recreational resources. Future development may be compatible with the preservation of the stream corridors as long as it does not destroy water resource or recreational values. Appendix C provides a discussion of stream corridor protection methods.

BOUNDARY ADJUSTMENTS/COOPERATIVE AGREEMENTS

Boundary adjustments and land acquisition (fee simple and easements) are the preferred method for trail and hike/bike path development and management. Where boundary adjustments and land acquisition are not possible, cooperative agreements would be developed to determine detailed trail alignment, development, and maintenance.

The required width of the east-west connection route rights-of-way could vary, depending on management, facility development, reclamation needs, and landscaping space requirements. The overall goal would be to develop the route rights-of-way compatibly with the needs of private developers, adjacent landowners, and the Park Service by providing a noise and visual buffer between the various local land uses. These trail rights-of-way would allow for limited dune reconstruction, stabilization, and planting, as well as flexibility in trail layout.

Route A would require a 100-foot-wide right-of-way extending east from Inland Marsh along the south side of the US 12 right-of-way to the east side of Crisman Road. At Crisman Road the easement would turn south between IN 249 and Crisman Road and extend over the Old Crisman Road truss bridge to the south bank of the river. The 100-foot-wide easement would be 7,000 feet long, requiring 16 acres of land to complete a continuous national lakeshore boundary for improved visitor safety, better management of the national lakeshore, and resource preservation.

Route B would require a 100-foot-wide right-of-way from the present Inland Marsh national lakeshore boundary south to the Burns Ditch. This easement would

be 10,500 feet long with a total of 24 acres.

Route C would require a 100-foot-wide right-of-way from the national lakeshore boundary at Inland Marsh east and then south to the Burns Ditch. This easement would be 4,000 feet long, with a total of 9 acres.

Most of the east branch Little Calumet River hike/bike path alignment is within the current national lakeshore boundary. Approximately 1,500 feet, from the Old Crisman Road bridge east to the existing national lakeshore boundary (along the east branch Little Calumet River), is not within the boundary and would require a boundary adjustment or cooperative agreement to enable NPS development and/or management of the route. This portion of the east branch Little Calumet River hike/bike path would be adjacent to the existing road surface. A short, narrow trail corridor (300 feet long and 50 feet wide) on the north bank of the Little Calumet River (west of and across from the Bethlehem Steel warm-water discharge) would be required to complete the east branch Little Calumet River hike/bike path.

The river hiking trail is entirely on federally owned lands within the boundary; no boundary adjustments or cooperative agreements would be necessary.

The US 12 hike/bike path would require a 70-foot-wide right-of-way on the south side of the US 12 right-of-way from IN 249 to Oak Hill Road (approximately 30 acres).







The proposed east end bike route would be on existing road surfaces; no boundary adjustment or cooperative agreements would be necessary.

Of the five river access points proposed along the Little Calumet River corridor, Shadyside, IN 149, and Howe Road river accesses are already within the authorized boundaries of the national lakeshore. The Burns Ditch river access would require the acquisition of 1-1/2 acres of land northeast of the intersection of US 20 and County Line Road, on the west bank of the river. The Bailly Homestead canoe landing is within the boundary on federally owned lands.

PLANT MATERIALS/REVEGETATION PROGRAM

To minimize impacts of road, trail, and parking area construction on soils, vegetation, and water resources, a plant materials program would be developed. The goal of the plant materials program would be to develop indigenous, low-maintenance plant materials that are adaptive to disturbed sites.



-  WATER / STREAM
-  TERRESTRIAL SHRUB / UPLAND FOREST
-  AGRICULTURE / GRASS
-  SAND
-  STATE AND NATIONAL PARK LANDS
-  DEVELOPED / LAND NOT SUITABLE FOR DEVELOPMENT



POTENTIALLY DEVELOPABLE LANDS

LITTLE CALUMET RIVER CORRIDOR

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • JULY 90 • 626 • 40107



- WATER / STREAM
- TERRESTRIAL SHRUB / UPLAND FOREST
- AGRICULTURE / GRASS
- SAND
- STATE AND NATIONAL PARK LANDS
- DEVELOPED / LAND NOT SUITABLE FOR DEVELOPMENT

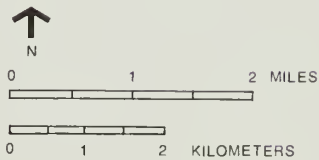


POTENTIALLY DEVELOPABLE LANDS

LITTLE CALUMET RIVER CORRIDOR
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LA PORTE COUNTIES • INDIANA
UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • JULY 90 • 626 • 40107



- WATER / STREAM
- SINGLE FAMILY RESIDENTIAL
- MULTIFAMILY RESIDENTIAL
- COMMERCIAL / BUSINESS
- LIGHT INDUSTRY
- HEAVY INDUSTRY
- ZONING NOT AVAILABLE
- DEVELOPED / LAND NOT SUITABLE FOR DEVELOPMENT



POTENTIALLY DEVELOPABLE LANDS WITH ZONING COMPOSITE

**LITTLE CALUMET RIVER CORRIDOR
INDIANA DUNES NATIONAL LAKESHORE**

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • JULY 90 • 626 • 40108



- WATER / STREAM
- SINGLE FAMILY RESIDENTIAL
- MULTIFAMILY RESIDENTIAL
- COMMERCIAL / BUSINESS
- LIGHT INDUSTRY
- HEAVY INDUSTRY
- ZONING NOT AVAILABLE
- DEVELOPED / LAND NOT SUITABLE FOR DEVELOPMENT



POTENTIALLY DEVELOPABLE LANDS WITH ZONING COMPOSITE

LITTLE CALUMET RIVER CORRIDOR
INDIANA DUNES NATIONAL LAKESHORE
 LAKE, PORTER AND LA PORTE COUNTIES • INDIANA
 UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
 DSC • JULY 90 • 626 • 40108

NO-ACTION ALTERNATIVE

Conditions along the Little Calumet River corridor would continue as they are today. The hike/bike trails and paths, parking lots, and other river access facilities would not be developed. No trail system would be developed to span the entire national lakeshore, and therefore no connection between the East and West units of the national lakeshore. There would be no boundary adjustments. There would be no interconnection of NPS trails to the park lands or trails of other jurisdictions. Interpretive displays and signs in the corridor would not be developed. Land use and management zoning protection measures would not be developed and implemented for any of the areas outside the current NPS boundaries, and any cooperative agreements for trail development, management, and maintenance would be unnecessary. Currently identified issues and problems along the river corridor, such as river access and the need for trail linkages, would remain unaddressed.

SUMMARY OF DEVELOPMENT ACTIONS AND COSTS

TRAILS		GROSS COST
East-West Connection Routes: 10' wide, asphalt paved surface		
Route A		
trail (7,000' x 10'), asphalt	7,800 sq yds	189,000
footbridge (hung onto US 12)	10'x 300' span	314,000
Route B		
trail (10,500' x 10'), asphalt	11,700 sq yds	283,000
footbridge (clear span of west branch of Little Calumet River)	10' x 300' span	314,000
Route C		
trail (4,000' x 10'), asphalt	4,500 sq yds	109,000
East Branch Little Calumet River Hike/Bike Path		
trails (24,000' x 10')	26,700 sq yds	645,000
footbridge (warm-water discharge)	10' x 200' span	209,000
boardwalk with handrails	6' x 3,300'	32,000
River Hiking Trail: 4' wide; crushed stone, sand surface		
trail (9,600' x 4')	4,300 sq yds	\$ 55,000
benches (2 per 0.5 mile)	8 each	10,000
footbridge (over Salt Creek)	8' x 150' span	126,000
US 12 Hike/Bike Path: 10' wide, asphalt paved surface		
bike paths (18,400' x 10'), asphalt	20,450 sq yds	494,000
footbridge (Bethlehem Steel main gate)	10' x 300' span	<u>314,000</u>
	Subtotal of Trails	\$ 3,094,000
RIVER ACCESS SITES		
Howe Road River Access		
road construction* (2,200' x 18'), asphalt	4,400 sq yds	177,000
parking lot (20 cars)		
pavement, asphalt	750 sq yds	31,000
concrete curb and gutter	325 lin ft	13,000
footpath/trail (2,800' x 8'; crushed stone, sand)	2,500 sq yds	32,000
portable toilet	1 each	2,000
trash receptacles	2 each	2,000
benches	2 each	3,000
Bailly Homestead Canoe Landing		
dock, floating 4' x 20'	80 sq ft	10,000
stairs, 50' x 4'	200 sq ft	8,000

IN 149 River Access		
road construction* (300' x 18'), asphalt	600 sq yds	24,000
parking lot (20 cars)		
pavement, asphalt	750 sq yds	31,000
concrete curb and gutter	325 lin ft	13,000
portable toilet	1 each	2,000
trash receptacles	2 each	2,000
benches	2 each	3,000
Shadyside River Access		
road construction* (3,600' x 18'), asphalt	7,200 sq yds	\$ 290,000
parking lot (20 cars)		
pavement, asphalt	750 sq yds	31,000
concrete curb and gutter	325 lin ft	13,000
portable toilet	1 each	2,000
trash receptacles	2 each	2,000
benches	2 each	3,000
bicycle rack (4-8 bikes)	1 each	2,000
Burns Ditch River Access		
road construction* (200' x 18'), asphalt	400 sq yds	16,000
parking lot (20 cars)		
pavement, asphalt	750 sq yds	31,000
concrete curb and gutter	325 lin ft	13,000
portable toilet	1 each	2,000
trash receptacles	2 each	2,000
benches	2 each	<u>3,000</u>
Subtotal of River Access Sites		\$ 763,000
PLANT MATERIALS/REVEGETATION PROGRAM		\$ 50,000
GRAND TOTAL - Trails and Sites		\$3,907,000

* Two traffic lanes @ 8' wide each, two shoulders @ 1' each, asphalt pavement, ditch cross-section; public use roads, class III

Note: Costs presented are gross figures, which include advance planning, project planning, construction supervision, and facilitating administrative services. Estimates are class "C," meaning they are derived from average costs for similar facilities in other NPS areas.

ALTERNATIVES CONSIDERED AND REJECTED

An east branch Little Calumet River hike/bike path from the Old Crisman Road bridge on the north side of the river and continuing on the south side of the river east of the Samuelson Road bridge was considered and rejected. This alignment was rejected because of the industrial land use and marina development on the north side of the river. The abandoned road on the south side of the river provides an opportunity for trail development with a minimum of site preparation. Also, east of the Samuelson Road bridge, the rejected southerly route would require a 150-foot-long bridge to cross Salt Creek. Also, the terrain on the south side has more wetlands than the north side and would require a more circuitous hike/bike route. The south side is well suited for a hiking trail and can better accommodate changes in terrain than a hike/bike path. The south side also has a more natural character. East of the IN 149 bridge, the south side of the river is not suitable because of steep banks and residential development.

A hike/bike route on the north side of US 12 between IN 249 and Oak Hill road was rejected because the northerly route would be closer to the industrial area, there would be safety hazards from several industrial access roads and the railroad corridor, and it would necessitate two additional crossings of US 12.

ENVIRONMENTAL CONSEQUENCES

IMPACTS OF THE PROPOSED PLAN

Natural Resources

Topography. Development actions would not result in any significant impacts to the general topography along the Little Calumet River corridor.

Soils. Development actions along the Little Calumet River corridor would result in impacts to the soils. Linking the West and East units by either routes A, B, or C, would affect approximately 1.5 - 2.6 acres of sandy dune soils. All sandy dune soils impacted by trail development through grading and leveling would result in permanent disturbance, some displacement, compaction, and temporary soil erosion. Infiltration of water would be permanently eliminated from the soils underneath the hard surface hike/bike paths and diverted to adjacent soil/vegetation.

Soil impacts from the hike/bike and hiking path construction would include both permanent and temporary soil disturbance, displacement, and compaction. A hard-surfaced hike/bike path and bike path development within the Little Calumet River corridor from Ogden Dunes in the west to Howe Road in the east may temporarily and permanently disturb and compact a sandy dune soil area of about 10 acres. Development of a soft permeable hiking trail along the river corridor would total about 9,600 linear feet, and this trail construction would impact about 0.1 acre. Minor temporary soil erosion impacts would result along all trail developments.

The US 12 hike/bike path would have no impacts on soils because it would be constructed within or adjacent to the US

12 right-of-way on previously disturbed soils.

Boat/canoe/fishing river access and gravel parking at the proposed sites along the Little Calumet River would have minor impacts on soils. Surface disturbance to riparian soils at the five access sites would result in grading and leveling impacts causing some displacement and compaction to approximately 3.7 acres. Proper design for runoff water would reduce some water infiltration loss to the soils. Accelerated streambank erosion and soil compaction could be expected at river access sites because of increased use by fishermen and canoeists. This adverse effect could be controlled by hardening these sites using accepted landscaping methods.

The plant materials/revegetation program would minimize soil erosion impacts.

Vegetation. General development actions along the Little Calumet River corridor would also have impacts on the vegetation – totaling the same acreage as for soils (about 10 acres). Riparian bottomlands of deciduous broad-leaved trees and mixed grass ground cover would be temporarily and permanently disturbed and removed by trail construction actions. Additional hike/bike path development and alignment under routes A, B, and C would affect about 2.5 acres of rolling upland sand dune forest vegetation and result in impacts similar to impacts on soils.

Access development actions at the five river sites would result in minor impacts to existing disturbed vegetation. Minimal vegetative disturbance or removal of previously undisturbed vegetation would result in no significant impacts.

Some trees and ground cover would be permanently removed and displaced. When the trails are completed, the construction activity areas would be revegetated or left for natural regeneration.

The plant materials/revegetation program would minimize impacts from construction and restore disturbed areas. Native, low-maintenance species would be compatible with adjacent habitat.

Wildlife. Actions related to hike/bike paths, a river hiking trail, and river access and parking areas would cause a temporary displacement of small mammals, birds, and waterfowl. Some small ground-dwelling mammals might be permanently displaced, but this condition would result in minimal impacts. Trail use would disperse wildlife. Other minor visitor impacts to wildlife could include harassment and territorial infringement (NPS 1986). Overall wildlife populations would not be impacted by trail construction and use.

Aquatic wildlife and fish species would not be affected by development actions.

Threatened and Endangered Species.

General development actions throughout the river corridor could result in some disturbance, displacement, or removal of known federal and state-listed endangered and threatened plant and animal species. There are several known federally listed endangered and threatened plant and animal species in areas described under the plan. Several state-listed plant species do occur near the trail alignment described under routes A and C (see appendix A). The hike/bike path development under route B could affect two state-listed threatened plant species and result in permanent disturbance or removal. Under route C, hike/bike development actions could affect two state-listed threatened plants. Although these species are not state

protected, special concern and sensitivity should be used during any construction activities. Extreme care and sensitivity would be required at all development action sites during trail and river access and parking area construction. Prior detailed plant and animal surveys would be conducted, and areas with endangered species would be avoided.

Prior to any construction actions, consultation would be necessary with the U.S. Fish and Wildlife Service and the NPS Office of Natural Resources (Science and Research Division, Midwest Region); species mapping would also need to be provided. This would ensure protection and lack of disturbance to any federal and state-listed species. In addition to federally listed species, all state-listed species would receive special consideration for protection and lack of disturbance during planning and construction activities.

The hike/bike paths and river hiking trail along the east branch Little Calumet River and along US 12 would have no effects on state or federally listed threatened or endangered species.

Except for the Bailly Homestead canoe landing, federal and state endangered and threatened species are not known to occur in the river access site areas. However, at the Bailly canoe landing site area, a state-designated rare plant species does exist. Located along the existing access road to this site, this species should not be impacted by any development actions. In all cases, special concern and sensitivity would be taken to avoid disturbance to all state-listed and/or protected species.

Water Resources. There would be no impacts on the water resources of the Little Calumet River/Salt Creek tributaries under development actions.

Floodplains. All general development actions related to the hike/bike paths and river hiking trail, added road segments, and river access sites lying within the 100-year floodplain zone would not impact the floodplains. The Floodplains and Wetlands map indicates the floodplain level within the Little Calumet River/Salt Creek drainages. All proposed trail, path, road, and parking lot developments would be "excepted actions" (i.e., they would be permissible) according to Executive Order 11988, "Floodplain Management."

Wetlands. Some of the development actions for hike/bike paths, hiking trails, and river access sites are within wetlands identified by the U.S. Fish and Wildlife Service (see the Floodplains and Wetlands map). Proposed development actions of surfaced hike/bike paths, the river hiking trail, access roads, and small parking lots are not "excepted actions" under Executive Order 11990, "Protection of Wetlands," and a section 404 permit would be required. Where trails and paths could impact wetlands, special design techniques and construction methods would be used to mitigate adverse impacts. Design techniques would include boardwalks, bridges, and culverts to minimize water flow obstructions in the wetland areas affected. As such, approximately 0.2 acres of wetlands may be permanently disturbed and affected by boardwalk construction. Federal compliance regulations require a Corps of Engineers section 404 permit for any disturbance requiring fill within a wetland. Special consideration would be given to all wetlands where development actions are being considered. Several primary

wetland types could be impacted by development.¹

Route A would cause no impacts to wetlands. One designated wetland (palustrine- emergent-temporarily flooded) does exist within the general trail alignment connection area, but careful trail siting should prevent any impacts. Routes B and C avoid several small wetland sites in the area and therefore would not impact the wetlands. In all cases, special consideration would be given to avoiding development actions within wetlands in aligning and constructing all trails.

Water/Air Quality. General development actions within the Little Calumet River corridor would not significantly impact the water and air quality in the study area. Minor water turbidity and water clouding may result from river access site development actions, but this impact would be very minimal and temporary in duration.

Actual direct impacts of canoes on the aquatic environment are not well documented. Temporary disturbance of the river substrate can be expected, especially in the shallow gravel-covered areas. This impact should not be significant.

The plant materials/revegetation program would minimize water quality impacts.

Hiking/biking paths would cause no identifiable direct or increased impacts to the water and air quality in the river corridor area.

1 These wetland types are palustrine-forested (broad-leaved) deciduous seasonal, palustrine-forested (broad-leaved) deciduous temporarily flooded, palustrine-forested/scrub-shrub (broad-leaved) deciduous temporarily flooded, riverine-lower-perennial-unconsolidated bottom-permanently flooded-excavated-upland/unclassified wetlands, palustrine-emergent-seasonally flooded- upland/unclassified, and palustrine-emergent-temporarily flooded wetlands.

Prime and Unique Farmlands. There are no soils that qualify as prime and unique farmlands within the Little Calumet River corridor and study area; therefore, there would be no impacts.

Cultural Resources

Because previous archeological studies around the Indiana Dunes National Lakeshore have uncovered artifacts at 28 different sites, it is just as likely that new discoveries would be made in conjunction with development projects along the Little Calumet River. This is true despite the fact that the present banks and course of the stream have only been well defined for six decades, since the excavation of the Burns Ditch. Nonetheless, in every case where new ground would be disturbed, an archeological survey would be required before construction. This includes all types of disturbance, including the establishment of hiking or biking paths, the construction of parking lots, and the development of river access sites. Similarly, during construction the work would be monitored by a professional archeologist. If archeological materials are found during construction, work would cease until the proper authorities have been consulted and a decision made on how to proceed.

The landscape and grounds adjacent to the Bailly Homestead are an area requiring particular vigilance for the archeologist. Archeological resources near this site include both prehistoric and historic components. Archeological surveys have identified the remains of a large Indian camp or village site near the homestead. A small excavation was conducted at the Bailly Homestead by Limp in 1974 as part of building restoration. More detailed instructions for protecting and preserving cultural resources at the Bailly Homestead are contained in the national lakeshore's

Resource Management Plan (NPS 1987), which delineates the procedures for safeguarding all cultural resources in the national lakeshore, including those along the Little Calumet River corridor.

Visitor Use/Socioeconomic Environment

The actions proposed within the Little Calumet River corridor could have several impacts on the types, level, distribution, and quality of visitor use that occur on and near the river. Currently, access to the river corridor is limited and unstructured. The development of river access sites and parking lots would make the river and adjoining areas more readily accessible to recreationists, which could increase fishing and canoeing use.

An increase in fishing and/or canoeing activities could create use conflicts between participants in those activities. The most likely conflicts between anglers and canoeists would relate to general congestion at certain points along the stream. The distribution and size of access sites should help prevent these potential conflicts. Some of the recreationists who are accustomed to the current low level of use might not be able to adapt to increased use. There is a possibility that these individuals would chose to use other areas. Other users might continue to use the Little Calumet River but perceive a decrease in the quality of their recreational experience.

An increase in canoeing use might create a demand to clear more snags and log jams to accommodate use and provide for visitor safety. As these obstructions are important to fish for both food and protection, such action could have some adverse impacts on the river's fishery resource.

The construction of trails and paths would help satisfy a demand for additional

hiking and/or bicycling opportunities. Trails connecting the East and West units of the national lakeshore by way of the Little Calumet River corridor and US 12 would allow visitors to walk or bike the entire length of the national lakeshore.

Depending on the exact location of the trails that are developed by other groups or agencies, it could be possible to link trails within the national lakeshore to other trail systems in the tricounty region, providing for longer hiking and biking experiences. An interconnected trail system could also facilitate increased visitation to the region by bicycle touring groups.

The development of river access sites, parking lots, trails, paths, and other facilities could have short-term impacts on national lakeshore visitors. Construction activities could cause temporary increases in the levels of dust, ambient noise, and traffic in certain areas of the national lakeshore. The quality of the experience for some visitors could then be diminished during periods of construction.

The trail, path, and river access and parking improvements could have several impacts on surrounding communities and the local economy. However, none of the possible actions are likely to have a noticeable effect on the overall quality of life in the local communities, nor are any of the possible actions likely to create significant inputs or encumbrances on the local economy.

The development of parking lots, river access sites, trails, paths, and other facilities could create short-term economic impacts to the local economy. Local contractors and laborers could be selected to construct these facilities. Similarly, local businesses could provide materials that are needed for construction projects. Thus, the local economy could accrue temporary income from payments for salaries, services, and supplies.

An increase in national lakeshore visitation would be generated by the improvement and expansion of facilities, which would increase visitor expenditures. The businesses that would be most likely to benefit from an increase in visitation are those that are in or near the new facilities or those that provide goods and services that are needed by river recreationists.

The actual construction of new facilities could create short-term negative impacts on the area immediately surrounding the development sites. These short-term impacts would include possible increases in the levels of dust, ambient noise, and traffic.

Boundary adjustments would authorize the acquisition of private properties, creating capital gains for private landowners. The sale of private property would necessitate the abandonment of any traditional uses that have occurred on that land. No residences would be displaced by any of the possible actions. Lands that might be sold to the government would lose their potential for commercial, industrial, or residential development.

The sale of scenic or access easements on private properties could create monetary gains for some landowners. Some landowners could have difficulty in adjusting to restrictions of use that the easements might entail. Easements could require additional NPS operating funds for monitoring and enforcement. Easements could also limit the development potential of private lands.

IMPACTS OF THE NO-ACTION ALTERNATIVE

Natural Resources

Soils. Continued use of nondesignated river access sites along the Little Calumet River would result in some minor impacts on soils. Besides soil compaction, river access use would gradually increase soil and streambank erosion at these sites. While the impacts on soils would be minor, the continued unprotected and unmonitored use could result in long-term soil erosion.

Vegetation. Impacts on vegetation would be similar in magnitude (minor) to those described under soils. Increased or uncontrolled use at river access sites would result in gradual and permanent vegetation dieback from soil compaction. This could result in adverse long-term vegetation effects. All vegetation would be removed from small areas near river access points.

Wildlife. Wildlife would not be displaced by the development of hiking and biking trails, river access, and parking areas, or by people who would use these facilities.

Threatened and Endangered Species. There would be no increased impacts on federal and state-listed species under the no-action alternative.

Water Resources. There would be no impacts on the water resources of the Little Calumet River or Salt Creek drainage.

Floodplains/Wetlands. Under the continued no-action alternative, there would be no new impacts to floodplains and wetlands resulting from NPS development.

Water/Air Quality. Under the no-action alternative, natural resource monitoring

programs would continue according to the national lakeshore's *Resource Management Plan*. Implementation of these actions would help protect the national lakeshore's present and future resource values.

Prime and Unique Farmlands. There would be no new impacts on prime and unique farmlands.

Cultural Resources

Current developments in the national lakeshore are being undertaken with the requisite archeological surveys prior to construction. There would be no further requirements for additional surveys unless these projects deviate from the original plans and disturb new ground. The provisions of the national lakeshore's *Resource Management Plan* apply in any case.

The Bailly Homestead complex comprises an important National Register of Historic Places property that is immediately adjacent to the Little Calumet River corridor. The integrity of these structures would continue to be protected in accordance with NPS-2, NPS-28, the national lakeshore's *Resource Management Plan*, the Historic Preservation Act of 1966 as amended (1981), and other pertinent directives.

Visitor Use/Socioeconomic Environment

The no-action alternative would have no new impacts on the surrounding communities or local economy resulting from NPS development. No boundary adjustments or easements would be necessary.

COMPLIANCE

Informal consultation regarding development actions that may affect threatened or endangered species has been conducted with the U.S. Fish and Wildlife Service (USFWS) in accord with section 7 of the Endangered Species Act (16 U.S.C. 1531 et seq.). A formal request for an opinion regarding impacts on threatened and endangered species has been requested from the USFWS, and they have 90 days from April 15, 1990, to respond to this request (see appendix D). If it is determined that proposed actions in this draft plan would affect threatened or endangered species, the proposed actions will be modified to mitigate any adverse impacts on threatened and endangered species.

The National Park Service has consulted and coordinated with the State Historic Preservation Office and the Advisory Council on Historic Preservation in the preparation of this draft document. Consultation and coordination will continue through the review and revision of the draft document.

CONSULTATION/COORDINATION

The following agencies have been consulted and provided assistance and information in the preparation of this document:

Advisory Council on Historic Preservation

Audubon Society

Bethlehem Steel Corporation

City of Gary

Chambers of Commerce

Counties of Porter and Lake

Department of Defense

U.S. Army Corps of Engineers

Indiana Department of Natural Resources

Division of Fish and Wildlife

Division of Nature Preserves

Division of Water

Izaak Walton League of America

Lake Michigan Marina Development Commission

Little Calumet River Basin Development Commission

National Steel Corporation, Midwest Division

Northern Indiana Public Service Company

Northwestern Indiana Steelheaders Association

Northwestern Indiana Regional Planning Commission

Save the Dunes Council

Sierra Club

State Historic Preservation Officer

Towns of Ogden Dunes, Porter, Portage, Chesterton, and Lake Station

U.S. Department of Agriculture

Soil Conservation Service

U.S. Department of the Interior

Fish and Wildlife Service

Geological Survey

U.S. Environmental Protection Agency

SCOPING ISSUES MEETINGS

The planning team has met with local organizations, interest groups, industry, government agencies and officials (local, county, city, state, and federal) to identify issues and inform affected parties about the Little Calumet River corridor plan process and status. The planning team has used the national lakeshore's Friends newsletter (*Singing Sands*), the superintendent's advisory group, special interest groups, industries, and local news media (radio and newspapers) to inform the public of the planning efforts and seek input on the issues to be addressed. Public scoping meetings for the *Little Calumet River Corridor Study* were held at the Douglas Center and the NPS visitor center in June 1989. In addition, meetings were held with local, state, and federal agency representatives to identify issues and discuss preliminary alternatives.

On July 24, 1989, the planning team met with representatives from the Northwestern Indiana Steelheaders Association to discuss their concerns about river access for fishing, possible new river trails, fishing regulations, and possible river use conflicts. A presentation and discussion was held with the superintendent's advisory group on July 28, 1989.

Public meetings will be held on the draft *Little Calumet River Corridor Plan*.

APPENDIXES

APPENDIX A: LITTLE CALUMET RIVER THREATENED AND ENDANGERED SPECIES

Scientific Name	Common Name	Status		Hike/Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
		Fed.	State						
Plants									
<i>Aralia hispida</i>	Bristly sarsaparilla		SE	X					
<i>Aralia racemosa</i>	Spikenard		SR						
<i>Arctostaphylos uva-ursi</i>	Bearberry		SR				X		
<i>Arenaria stricta</i>	Stiff sandwort		ST	X					
<i>Aristida intermedia</i>	Slim-spike three-awn		ST	X	X			X	
<i>Aristida tuberculosa</i>	Seabeach needlegrass		ST	X					
<i>Aristolochia serpentaria</i>	Virginia snakeroot		SR						
<i>Aster furcatus</i>	Forking (forked) aster	C2	SE	X					
<i>Aster junciformis</i>	Rush aster		SR						
<i>Aster ptarmicoides</i>	Prairie goldenrod		ST						
<i>Aster sericeus</i>	Eastern silvery aster		SR						
<i>Baptisia leucophaea</i>	Cream wild-indigo		SR						
<i>Betula papyrifera</i>	Paper birch		SR	X					
<i>Botrychium dissectum</i>	Cut-leafed grape fern		SR						
<i>Botrychium multifidum</i>	Leathery grape fern		SE						
<i>intermedium</i>									
<i>Cakile edentula</i> var. <i>lacustris</i>	American searocket		ST						
<i>Carex alata</i>	Broadwing (winged) sedge		SR	X					
<i>Carex atherodes</i>	Awned sedge		SE	X					
<i>Carex conoidea</i>	Field sedge		SE	X					
<i>Carex debilis</i> var. <i>rudgei</i>	White-edge sedge		ST	X					
<i>Carex flava</i>	Sweet fern		SR	X					
<i>Carex folliculata</i>	Long sedge		SE	X					
<i>Carex garberi</i>	Elk sedge		ST						
<i>Carex leptoneuria</i>	Finely-nerved sedge		SE	X					
<i>Carex pedunculata</i>	Longstalk sedge		ST	X					
<i>Carex seorsa</i>	Weak stellate sedge		ST	X					
<i>Chrysosplenium americanum</i>	American golden-saxifrage		SE	X					
<i>Circaea alpina</i>	Small enchanter's nightshade		ST						
<i>Cirsium pitcheri</i>	Dune (sand) thistle	T	ST	X					
<i>Clintonia borealis</i>	Clinton lily		SE	X					
<i>Coptis trifolia</i>	Goldthread		WL	X					
var. <i>groenlandica</i>									
<i>Cornus amomum</i>	Silky dogwood		SE						
<i>Cornus rugosa</i>	Roundleaf dogwood		ST						
<i>Cypripedium candidum</i>	Small white lady's-slipper		SR	X					
<i>Diervilla lonicera</i>	Bush honeysuckle		SR						
<i>Drosera intermedia</i>	Spoon-leaned sundew		SR	X					
<i>Drosera rotundifolia</i>	Roundleaf sundew		WL						
<i>Eleocharis melanocarpa</i>	Black-fruited spike-rush		SE						
<i>Eleocharis microcarpa</i>	Small-fruited spike-rush		SE						
<i>Eleocharis pauiflora</i>	Few flower spike-rush		SR						
<i>Eleocharis robbinsii</i>	Robbins spikerush		ST						
<i>Epigaea repens</i>	Trailing arbutus		SR	X					
<i>Eriophorum angustifolium</i>	Narrow-leaved cotton-grass		ST						

Common Name	Scientific Name	Status		Hike/Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
		Fed.	State						
<i>Euphorbia polygonifolia</i>	Seaside spurge		ST	X					
<i>Fimbristylis caroliniana</i>	Carolina fimbry		SE						
<i>Galium lanceolatum</i>	Lance-leaved wild licorice		SR						
<i>Habenaria flava herbiola</i>	Tubercled orchid	C2	SR						
<i>Habenaria hookeri</i>	Hookers orchid		SE						
<i>Habenaria psycodes</i>	Purple fringed orchid		SR						
<i>Habenaria viridis bracteata</i>	Bracted orchid		SR						
<i>Hudsonia tomentosa</i>	Sand-heather		ST				X		
<i>Hypericum adpressum</i>	Creeping St. John's-wort		SE						
<i>Hypericum kalmianum</i>	Kalm hypericum		SR						
<i>Juglans cinerea</i>	Butternut		WL						
<i>Juncus pelocarpus</i>	Brown-fruited rush		ST	X					
<i>Juncus scirpoides</i>	Scirpus-like rush		SE	X					
<i>Juniperus communis</i>	Ground juniper		SR						
<i>Lathyrus ochroleucus</i>	Pale vetchling peavine		ST	X					
<i>Lathyrus venosus</i>	Smooth veiny pea		SR						
<i>Linum striatum</i>	Ridged yellow flax		SR	X					
<i>Ludwigia sphaerocarpa</i>	Globe-fruited false-loosestrife		SE						
<i>Lugwigia sphaerocarpa deamii</i>	Round-fruited loosestrife		ST						
<i>Lycopodium appressum</i>	Club moss		SE						
<i>Lycopodium clavatum</i>	Running pine		SR	X					
<i>Lycopodium inundatum</i>	Northern bog clubmoss		SE	X					
<i>Lycopodium obscurum</i>	Ground pine		SE						
<i>Lycopodium tristachyum</i>	Deep-root clubmoss		SE	X					
<i>Menyanthes trifoliata</i>	Buckbean		WL	X					
<i>Milium effusum</i>	Wood (tall) millet-grass		ST	X					
<i>Myosotis laxa</i>	Small forget-me-not		SE	X					
<i>Nemopanthus mucronatus</i>	Mountain holly		SR						
<i>Oryzopsis racemosa</i>	Black-fruit mountain-ricegrass		SE						
<i>Oryzopsis asperifolia</i>	White-grained mountain-ricegrass		SE						
<i>Pana trifolius</i>	Dwarf ginseng		SR	X					
<i>Panicum boreale</i>	Northern panic grass		SR						
<i>Panicum verrucosum</i>	Warty panic grass		SE						
<i>Pinus banksiana</i>	Jack pine		SR	X	X	X		X	
<i>Pinus strobus</i>	Eastern white pine		WL						
<i>Plantago cordata</i>	Heart-leaved plantain	C2	SE						
<i>(Platanthera)</i>	(Pale green orchis)								
<i>Platanthera ciliaris</i>	Yellow-fringe orchis		SE	X					
<i>Platanthera clavellata</i>	Small green woodland orchis		SR	X					
<i>Platanthera flava var. herbiola</i>	Northern rein-orchid		SR						
<i>Platanthera lacera</i>	Green-fringe orchis		WL						
<i>Platanthera psycodes</i>	Small purple-fringe orchis		SR						
<i>Poa alsodes</i>	Grove blue (meadow) grass		ST						
<i>Pogonia ophioglossoides</i>	Rose pogonia		SR						
<i>Polygala paucifolia</i>	Gay-wing milkwort		SE	X					
<i>Polygonella articulata</i>	Eastern jointweed		ST	X					
<i>Polygonum careyi</i>	Carey smartweed		SE						
<i>Polygonum opelousanum</i>	Smartweed		ST						
<i>var. adenocalynx</i>									
<i>Potamogeton pusillus</i>	Small pondweed		SR						
<i>Prunus pensylvanica</i>	Fire (pin) cherry		SR	X					
<i>Psilocarya scirpoides</i>	Long-beaked baldrush		ST						
<i>Pyrola elliptica</i>	Elliptical-leaf wintergreen		SR	X					

Common Name	Scientific Name	Status		Hike/Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
		Fed.	State						
<i>Pyrola rotundifolia</i> var. <i>americana</i>	American wintergreen		SR	X					
<i>Rhynchospora macrostachya</i>	Tall beaked-rush		SR						
<i>Salix cordata</i>	Heartleaf willow		ST						
<i>Scirpus hallii</i>	Hall's bulrush		SE						
<i>Scirpus subterminalis</i>	Water bullrush		ST	X					
<i>Scirpus torreyi</i>	Torrey bullrush		SE						
<i>Scleria pauciflora</i>	Fewflower nutrush		SE	X					
<i>Scleria reticularis</i>	Netted nutrush		SE						
<i>Selaginella rupestris</i>	Ledge spike-moss		ST				X		
<i>Solidago spathulata</i> var. <i>gillmanii</i>	Sticky goldenrod		ST	X					
<i>Talinum rugospermum</i>	Prairie fame-flower	C2	SE						
<i>Thalictrum polygamum</i>	Meadowrue		ST	X					
<i>Trichostema dichotomum</i>	Bluecurls		SR						
<i>Utricularia intermedia</i>	Flatleaf bladderwort		WL						
<i>Utricularia purpurea</i>	Purple bladderwort		SR						
<i>Utricularia subulata</i>	Bladderwort		SE						
<i>Veronica glandifera</i>	Speedwell		SR	X					
<i>Viola blanda</i>	Redstem wild violet		ST						
Amphibians/Reptiles									
<i>Ambystoma laterale</i>	Blue-spotted salamander		SSC	X					
<i>Ambystoma platineum</i>	Silvery salamander		WL						
<i>Ambystoma tremblayi</i>	Tremblay's salamander		WL						
<i>Clemmys guttata</i>	Spotted turtle		ST	X					
<i>Clonophis kirtlandii</i>	Kirkland's snake	C2	ST						
<i>Emydoidea blandingi</i>	Blanding's turtle		SSC						
<i>Hemidactylium scutatum</i>	Four-toed salamander		ST	X					
<i>Opheodrys vernalis</i>	Smooth green snake		ST						
<i>Ophisaurus attenuatus</i>	Western slender grass lizard		SSC						
<i>Pseudacris trisgriata</i>	Striped (western) chorus frog		SSC	X					
<i>Rana pipiens</i>	Northern leopard frog		SSC	X					
<i>Sistrurus catenatus</i>	Eastern massasauga	C2	ST	X					
<i>Thamnophis butleri</i>	Butler's garter snake		ST						
<i>Thamnophis proximus</i>	Western ribbon snake		SSC	X					
Mammals									
<i>Myotis sodalis</i>	Indiana bat	E	SE						
<i>Nycticeius humeralis</i>	Evening bat		ST						
<i>Spermophilus franklinii</i>	Franklin's ground squirrel		SSC						
<i>Taxidea taxus</i>	Badger		ST						
Arthropods									
<i>Lycaiedes melissa samuelis</i>	Karner blue butterfly	C2	SE						

Common Name	Scientific Name	Status	
		Fed.	State

Birds

<i>Accipiter cooperi</i>	Cooper's Hawk	SSC
<i>Ardea herodias</i>	Great blue heron	WL
<i>Botaurus lentiginosus</i>	American bittern	SE
<i>Buteo lineatus</i>	Red-shouldered hawk	SSC
<i>Buteo platypterus</i>	Broad-winged hawk	ST
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow	WL
<i>Certhia americana</i>	Brown creeper	SSC
<i>Chlidonias niger</i>	Black tern	SE
<i>Circus cyaneus</i>	Northern harrier	ST
<i>Cistothorus palustris</i>	Marsh wren	SSC
<i>Empidonax alnorum</i>	Alder flycatcher	WL
<i>Ixobrychus exilis</i>	Least bittern	SSC
<i>Lanius ludovicianus</i>	Loggerhead shrike	SE
<i>Mniotilta varia</i>	Black and white warbler	SSC
<i>Nycticorax nycticorax</i>	Black-crowned night heron	SE
<i>Rallus elegans</i>	King rail	SE
<i>Sturnella neglecta</i>	Western meadowlark	SSC
<i>Vermivora chrysoptera</i>	Golden-winged warbler	SE
<i>Wilsonia canadensis</i>	Canada warbler	SSC
<i>Wilsonia citrina</i>	Hooded warbler	SSC

Sources: IDNR; USFWS; NPS 1986; Resetar 1988, 1989

ST = state threatened
 SE = state endangered
 SR = state rare
 WL = watch list
 SSC = state special concern
 T = threatened (federal)
 C2 = proposed for listing (category 2-federal)

Hike/Bike Path	River Access Sites	Route A	Route B	Route C	River Hiking Trail
X					
X					
X					
X					
X					
X					
X					
X					
X					
X					
X					
X					
X					

**APPENDIX B: CHARACTER OF LANDS
WITHIN THE LITTLE CALUMET RIVER
AND SALT CREEK CORRIDORS**

Table B-1. Land Cover/Land Use*

Existing Development or Unsuitable Lands	Acres
water	281
shrub/marsh/forested wetlands	3,839
residential	1,941
mixed commercial/residential	85
commercial	2,338
industrial	483
state and national parklands	<u>1,907</u>
Subtotal	10,874
 Potentially Developable Lands	
terrestrial shrubs/upland forest	6,422
agriculture/grass	13,075
sand	<u>153</u>
Subtotal	19,650
Total	30,524

Table B-2. Potentially Developable Lands with Composite Zoning

Composite Zoning Category	Acres of Potentially Developable Lands
single-family residential	1,756
multifamily residential	126
commercial/business	218
light industry	1,052
heavy industry	930
zoning not available	<u>15,568</u>
Total	19,650

*Land use/land cover categories within the 1/2-mile east branch Little Calumet River, Salt Creek, and Burns Ditch.

APPENDIX C: STREAM CORRIDOR PROTECTION MEASURES

The following discussion on stream corridor protection measures identifies some of the methods that are available for the protection of stream corridors. For a more complete discussion, see *Saving America's Countryside* by Samuel Stokes (1989) and *A Citizen's Guide to River Conservation* by Diamant, Eugster, and Duerksen (1984).

Cooperative Agreements. Cooperative agreements become necessary when jurisdictions meet or overlap. The development and use of the Little Calumet River corridor could require several cooperative agreements among the state, county, and local governments and their agencies, the Park Service, the Little Calumet River Basin Development Commission, and private industry. The cooperative efforts would address recreational facilities and uses such as parking lots, fishing, boating, trails for biking, hiking, and cross-country skiing, and trail maintenance.

Local Regulatory Programs. State and local governments have the authority to establish districts or zones for regulating the use of land so that incompatible land uses do not occur. Zoning may also be used to protect environmental or agricultural resources in a community. Sensitive resources, such as wetlands and floodplains, may be identified and protected through local zoning that restricts development and filling.

Flexible zoning techniques may be used to protect sensitive areas throughout a community without having specific zones. One type of flexible zoning method is an overlay zone that can be used for critical resources or hazard areas such as hillsides and steep slopes, wetlands, floodplains, and stream corridors. Overlay zoning creates an additional set of requirements to be met when special resources protected by the overlay zone would be affected by a proposed change. Overlay zoning does not affect the density or use regulations present under existing zoning.

Another local regulatory program that affects stream corridors is the County Drainage Board, which is responsible for the

construction and maintenance of public drains. The board determines the need for and benefits of new drain proposals. The county surveyor supervises county ditch construction and maintenance. County drainage programs can have a significant effect on wetlands and stream character and flow.

Land Acquisition. Lands may be protected through donation, acquisition of conservation easements (a partial interest in the land), or fee-simple (outright) acquisition. Conservation easements may be used to provide public access or provide for a public (local, state, or federal) agency to manage or assist in the resource management of the private lands by preventing selected uses such as cutting trees, constructing houses, or paving portions of the area. Fee-simple acquisition is generally used where cultural and natural resources require full protection and management, where lands are needed to provide for public use, and where existing or potential land uses intrude upon or adversely affect significant natural or cultural resources. Lands may be acquired by federal, state, county, or local governments. In addition, private organizations such as private trusts may also acquire lands or interests in lands.

Local Private Trusts. A local private trust, established to protect some of the lands and resources, can be locally initiated and managed. Assistance with organization can be sought from some of the large national trusts (such as the Trust for Public Lands and the Nature Conservancy) that have programs to assist in the formation of local land trusts. The local trust's board of trustees would be local residents, and funds would be raised from donations of money or land from local landowners or corporations. The funds would be used to purchase lands with high resource values that might be developed in the near future.

State Regulatory Programs. The Indiana Department of Natural Resources (IDNR) has a wide range of responsibilities that include flood control and water resources management. All flood control projects, construction in the floodways of rivers and

streams, plans for reconstruction or construction of drainage ditches, and proposals for removal of minerals and withdrawal of water from navigable waters must be reviewed and approved by the IDNR. The IDNR is authorized to provide assistance for the management and regulation of lands that are subject to periodic flooding. The department maintains a natural, scenic, and recreational rivers system. The Water Division is responsible for the planning and regulation of state waters, and the Fish and Wildlife Division protects and manages fish and wildlife habitat improvement and protection programs as well as managing both nongame and sport or game fish and wildlife species.

The Water Pollution Control Board of the Indiana Department of Environmental Management is responsible for implementing state water quality programs to prevent the pollution of Indiana waters.

Federal Regulatory Programs. The section 404 program (section 404 of the Clean Water Act, formerly known as the Federal Water Pollution Control Act, 33 U.S.C. 1344) is the principal federal regulatory program governing activities in wetlands. The program is administered jointly by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. The U.S. Fish and Wildlife Service has an advisory and commenting role in the 404 process. Section 404 expressly prohibits the discharge of dredged or fill material into "waters of the United States" and their adjacent wetlands without a permit from the secretary of the army.

Federal or Regional Agency Technical Assistance Programs. A variety of federal, state, and regional technical assistance programs are available to assist in resource protection and planning for future development while protecting natural resources and potential recreation resources. These programs could assist in the identification and mapping of wetlands and floodplains, drafting model ordinances, and improving recreation services and facilities.

APPENDIX D: REQUEST FOR USFWS OPINION

N1621(IWR-MN)

APR 5 1990

Memorandum

To: Field Supervisor, Fish and Wildlife Enhancement Office, U.S. Fish and Wildlife Service, 718 North Walnut Street, Bloomington, Indiana 47401

From: Regional Director, Midwest Region

Subject: Compliance with the Endangered Species Act, Little Calumet River Corridor Plan and Environmental Assessment, Indiana Dunes National Lakeshore

We request formal consultation with the U.S. Fish and Wildlife Service to comply with the Endangered Species Act of 1973, as amended.

The National Park Service has completed a draft environmental assessment (EA) addressing potential impacts of a trail system connecting the East and West units of the national lakeshore; better river access, parking, and recreational opportunities; and resource protection measures upstream along the Little Calumet River and Salt Creek. These actions have been evaluated for their potential to affect federally listed species.

The EA states on page 44 "General development actions throughout the river corridor could result in some disturbance, displacement, or removal of known Federal and State listed endangered and threatened plants and animal species. . There are several known federally listed endangered and threatened plant and animal species in areas described under the plan." The following species have been identified as occurring in the Hike/Bike Trail area (see appendix A): dune thistle (Cirsium pitcheri), a federally listed threatened species; forked aster (Aster furcatus); and eastern massasauga (Sistrurus catenatus) (both category 2 species). Recent conversations with park Biologists indicate the dune thistle is not in the immediate project area and, therefore, will not be adversely affected. Forked aster and the eastern massasauga have the potential to occur in the area but to date have not been found.

Therefore, we have determined that the proposed action is not likely to jeopardize the continued existence of any federally listed endangered, threatened, or proposed species, nor will it result in the destruction or adverse modification of critical habitat. We solicit your concurrence on this determination. Please have the appropriate authority sign on the signature line provided below and return this copy to our Office. If you have any questions, please contact Ecologist Gary Willson or Biological Technician Gary Sullivan at 402-221-3438 or FTS 864-3438.

/s/ Don H. Castleberry

Enclosure 1:
Environmental Assessment

Signature: _____ Date: _____

GSullivan:bc 4/4/90
a: s72-indu

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

