Northwestern Indiana
NRPC
Regional Planning Commission
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RESOLUTION 18-07

A RESOLUTION OF THE NORTHWESTERN INDIANA REGIONAL PLANNING COMMISSION ADOPTING THE NORTHWEST INDIANA GREENWAYS+BLUEWAYS 2020 PLAN

WHEREAS, the citizens of Northwest Indiana desire safe and abundant pedestrian and bicycle facility access, and increased recreational access on water bodies with sensitive natural areas preserved; and

WHEREAS, the Northwest Indiana Regional Planning Commission, hereafter referred to as "The Commission", is a public sector Council of Governments and Metropolitan Planning Organization for Lake, Porter, and LaPorte Counties in Indiana that addresses regional issues relating to transportation, the environment and community and economic development; and

WHEREAS, the Commission recognizes the need to identify current and potential greenways and water trails in the three-county planning area; and

WHEREAS, greenways represent a multitude of land uses, both passive and active in nature, and thus requires a comprehensive approach to planning; and

WHEREAS, sensitive natural resource areas are potentially at risk because of increased development activity in the region; and

WHEREAS, significant improvements for the safe mobility of pedestrians and bicyclists remains a priority as outlined in the Commission's 2040 Comprehensive Regional Plan; and

WHEREAS, the Commission has unified conservation and non-motorized transportation planning in one document called the Greenways+Blueways 2020 Plan; which includes analysis of natural and transportation resources in Northwest Indiana including, but not limited to, wetlands, riparian corridors, floodplain areas, hydric soils, trail corridors (both land and water), and parks; and

WHEREAS, the Greenway+Blueways 2020 Plan identifies opportunities for additional greenway and water trails, including policies municipalities can adopt to enhance these opportunities; and

WHEREAS, this planning process brought together stakeholders, including those already undertaking similar efforts on a sub-regional level and afforded opportunities for the public to participate actively in this project.

THEREFORE, BE IT RESOLVED that the Northwestern Indiana Regional Planning Commission hereby adopts the Northwest Indiana Greenways+Blueways 2020 Plan; and

THEREFORE, BE IT ALSO RESOLVED that the Northwestern Indiana Regional Planning Commission encourages local governments and jurisdictions within Lake, Porter, and LaPorte Counties to include elements of this plan into their own programs and projects; and

THEREFORE, BE IT ALSO RESOLVED that the Northwestern Indiana Regional Planning Commission agrees to take steps to implement the Greenways+Blueways 2020 Plan, including but not limited to, pursuing funding, cooperative agreements, and additional partners.

Duly adopted by the Northwestern Indiana Regional Planning Commission on this fifteenth day of March, Two Thousand and Eighteen.

Geof R. Benson
Chairman

ATTEST:

Karen Freeman-Wilson
Secretary

2020

GREENWAYS + BLUEWAYS

NORTHWEST INDIANA REGIONAL PLAN

DRAFT PLAN

February 2018

"GREENWAYS ARE THE PATHS WHERE THE NATURAL AND HUMAN LANDSCAPES COINCIDE."

- JOHN CLARK, SUPREME COURT JUSTICE

PREPARED BY

Northwestern Indiana Regional Planning Commission

ADOPTED BY

NIRPC Full Commission

TBD, 2018

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2020 GREENWAYS + BLUEWAYS
NORTHWEST INDIANA REGIONAL PLAN

COMMENCEMENT

Nature connects us to each other and with the world. Whether it be a forest, prairie, beach or community park, we long to connect with the world around us and explore those pathways that lead us into connection and discovery.

The *Greenways+Blueways 2020 Plan for Northwest Indiana (G+B 2020)* represents a unique look at a number of factors that influence our participation with nature. This plan combines two major areas the Northwestern Indiana Regional Planning Commission has engaged in for decades on behalf of our member communities and the region: conservation planning and non-motorized transportation. Planning cohesively for both can leverage the synergy of their close relationship.

Over the course of this document, this relationship will be broken down into core elements for the sake of establishing benchmarks, or baseline data. This in turn will help stakeholders in NW Indiana gauge the progress of proposals, and work together for continued success.

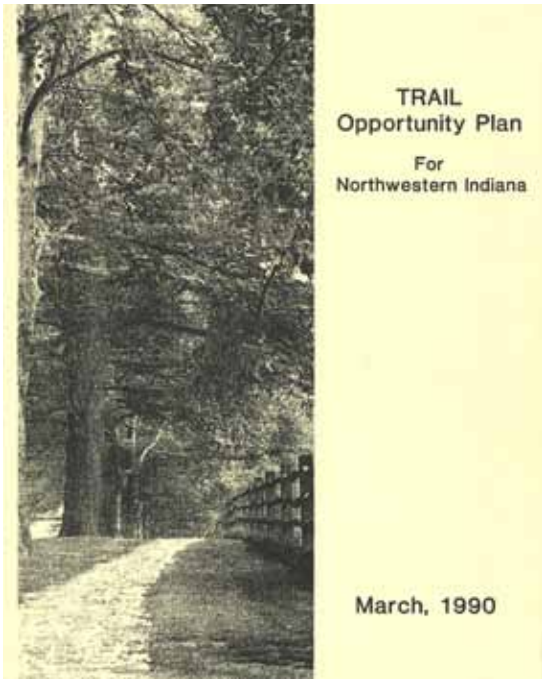
The Northwest Indiana region offers many wonderful opportunities for us to enjoy our natural environment in a variety of ways. NIRPC proudly presents this plan as our hope to enhance access to existing attractions, and to expand their reach to all residents.

HISTORY

The Northwestern Indiana Regional Planning Commission (NIRPC) began as a transportation-focused agency in 1966, covering Lake and Porter Counties. In 1979 LaPorte County joined, and in the 1980s the mission of NIRPC expanded with the establishment of an Environmental Department.

PEDESTRIAN & BICYCLE TRANSPORTATION

NIRPC embarked on its first bikeways map in 1974, which highlighted a number of bike-friendly roads in Lake and Porter County. The first off-road multi-use trails planning effort took place in 1990 with the release of the *Trail Opporutnity Plan*. This document examined a number of abandoned rail corridors in the region,



seeking to take advantage of their potential as rails-to-trails projects.

Further refinement of the vision emerged with the 1994 *Regional Bikeways Plan*, which was produced on the heels of new federal monies dedicated to trail development, scenic preservation, stormwater and wildlife mortality mitigation, and preserving historic transportation assets. The plan features an extensive map of potential bicycle routes, both off-and-on road, and has served as the foundation of our network today.

About this time NIRPC established the Transportation Enhancement Committee (named after the federal TE funds for trails), which was charged with oversight of federal funds for trail development in NW Indiana. The Indiana Department of Transportation (INDOT) was responsible for selecting TE-funded trail projects statewide. Over time, NIRPC's TE Committee established a supplemental funding application to INDOT's, and

also created the Priority Regional Trails Corridors Map, which has served as the primary tool for regional trail development (see page 61).

In 2005 the *Regional Bikeways Plan* was updated to reflect the growing interest in pedestrian-based movement and access. The *2005 Ped & Pedal Plan* presented a comprehensive vision for both bicyclists and pedestrians, and proposed a number of policies supporting these modes. Some of these policies were nationally-based, such as Safe Routes to School and Complete Streets.

Although much focus had been afforded to the development of non-motorized networks on land, there had been no formal planning for water routes utilized by canoes and kayaks. That changed with the release of the *Greenways & Blueways Plan* (*G&B Plan*) in 2007, funded by the Donnelly Foundation. This document provided the first comprehensive review of potential water trail routes in the region, which will be updated within the pages of this document.

To reflect the growing reach of planning responsibility, NIRPC's TE Committee renamed itself the Ped, Pedal and Paddle Committee (3PC) in 2010. This group of public and private stakeholders meets regularly at NIRPC to review and update federal funding priorities, and educate regional & local leaders.

2010 also represented a banner year for non-motorized growth with the adoption of NIRPC's Complete Streets Policy & Guidelines. This landmark policy placed the concept of Complete Streets squarely into the application processes at NIRPC. It established that all NIRPC-attributable funding projects would have to provide, to the greatest extent practicable, Complete Streets design elements in their transportation-based projects. Details about Complete Streets are discussed in Chapter IV.

Along with the Complete Streets policy adoption in 2010 was the update to the *Ped & Pedal Plan*. This document carried forward the goals from the 2005 plan and provided an update to the progress of trail development in the region.

Due to these efforts, the NIRPC region of Lake, Porter and LaPorte Counties currently boasts over 160 miles of regional trail facilities, a staggering increase from only 13 miles that existed in 1990. This represents a vivid statement of the effectiveness of NIRPC's planning and collaboration in region.

CONSERVATION

The Northwest Indiana region presents plentiful examples of natural beauty. There exist many under-valued opportunities to expand on access to these areas, and create a unified network of natural systems for conservation and enjoyment alike.

The location of the Indiana Dunes provides our region one of the most ecologically valuable territories in the world today. For well over a century, scientists and enthusiasts alike have marveled at the beauty and natural diversity present. However, the Dunes serve as only one piece of an intricate puzzle of sensitive environmental lands that deserve further study and respect.

NIRPC has also engaged in open space and conservation planning since its earliest days. In 1970 NIRPC completed an Environmental Resources Inventory for Lake and Porter Counties which included suggested open space standards and

formed the baseline for further plans and studies throughout the decade. In 1972, NIRPC published "Open Space: A Component of the Regional Plan", which detailed a series of recommendations which should be considered with regard to preservation of open space and the development of recreational opportunity. In 1976 NIRPC continued to support park and recreation planning through "Parks and Recreation/ Implementation, Coordination, & Technical Services" and a "Framework for Parks and Recreation Acquisition and Development". NIRPC's continued regional open space and conservation planning with the 1981 "Inventory of Natural Areas in Northwestern Indiana".

In 1986 NIRPC instituted a subcommittee on the Environment. NIRPC's chief avenue for reaching out to regional environmental and conservation stakeholders remains the monthly Environmental Management Policy Committee (EMPC). Issues of local, state, and national significance are routinely discussed at these meetings, with prominent speakers brought in to share their insights.

NIRPC's Environmental Department continued ecological work in the mid-1990s, with a focus on watershed management planning. Efforts included the 1993 *Trail Creek Watershed Management Plan*, an early 1994 version of the *Remedial Action Plan for Grand Calumet & Lake Michigan Areas of Concern*, 1995 Recommendations for Managing the Wolf and George Lakes. More recently in this century, NIRPC completed a three-county regional *Watershed Framework Plan* in 2005, which was updated and expanded in 2011. Watershed management supports clean waterways essential for water trail enjoyment.

Conservation and open space planning efforts continued with the 2007 *Greenways and Blueways Plan,* and through Green Infrastructure components in the *2040 Comprehensive Regional Plan*.

FOUNDATION OF THE PLAN

The core issue which brought about this plan's unique focus is centered upon one word: greenways. As described in the 2007 *Greenways & Blueways Plan*:

- A greenway is a corridor of open space. It can vary greatly in scale, from narrow ribbons that run through urban and suburban development to wide corridors that incorporate diverse natural and cultural features.
- A greenway can be land or water-based. It can incorporate both public and private property, but always provides greater benefits because of its lineal continuity than it would if the continuity was broken.
- Some greenways are recreational and transportation corridors, while others function for environmental protection and are not necessarily intended for heavy human passage. Some greenways run along stream corridors, shorelines or wetlands; others follow old railway tracks or other land-based features.
- Greenways differ in their location and function, but overall a greenway network will protect natural and cultural resources, provide private or public recreational opportunities, improve and sustain hydrological functions, and enhance the natural beauty and quality of life in neighborhoods and communities.

It is clear that greenways can be represented in a variety of ways. In previous plans, NIRPC had divided out greenway uses – either conservation- or water trail-focused (*Greenways & Blueways Plan*), or non-motorized, land-use trails-focused (*Ped, Pedal and Paddle Plans*). Although the division of these greenway-based topics made sense, their interrelated relationships could not be adequately addressed. This division of effort also makes it more challenging to take advantage of opportunities for synergy and resource leveraging.

Combining planning elements does pose challenges. To aid with an understanding of this merger, NIRPC staff has created a spectrum of uses which provide clarity to the interconnectivity of the three main focus areas of the G&B Plan: conservation, recreation and transportation. The spectrum of uses are shown in Figure C-1.

As shown, the spectrum of uses are independent, but also interconnected. Where a conservation focus includes greenways, a recreation focus would involve trails which move people through them. This would be tied together with transportation, primarily walking, biking and paddling, which provides the means for one to experience the outdoors safely and enjoyably.

These interconnected relationships thus expand further into the depths of each focus area to describe and plan for their successful implementation. Examples would include wildlife habitat protections and connecting corridors, acquiring abandoned rail rights-of-way for new trails, and complete streets policies which provide accessible non-motorized transportation options to these areas.

The following chapters of the *G+B 2020 Plan* will delve into details on these core spectrum uses. The final chapter will bring these uses together for a unified vision moving forward to 2020 and beyond.

Figure C-1 Specturm of Integrated Uses

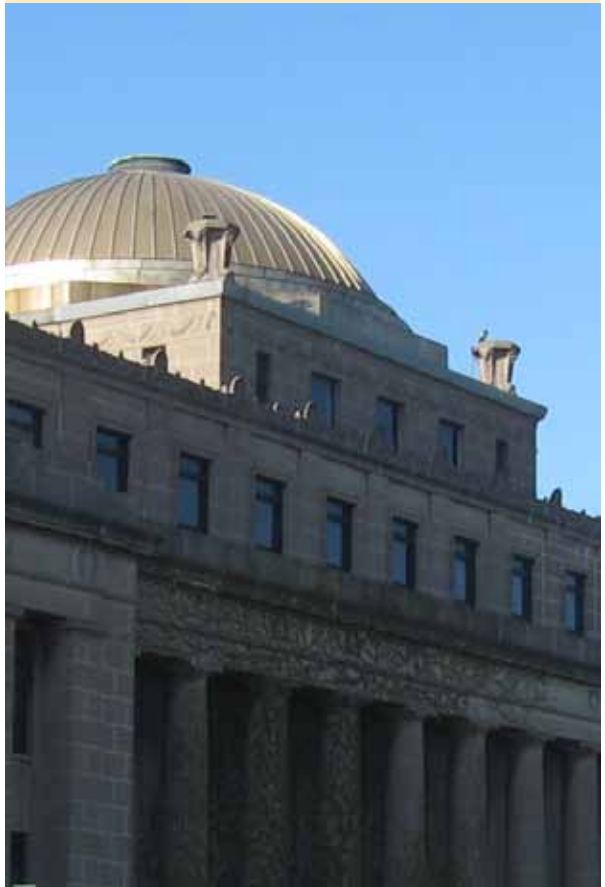
THE "GREENWAYS EIGHT"

The 2007 *Greenways & Blueways Plan* outlined key stakeholder types which were refered to as the "Greenways Eight". Combined, nearly every resident of the Northwest Indiana region falls into either one or several of these descriptions. Taken together, the Greenways Eight are all critical to creating interconnected open space opportunities, either new or restored. The vast majority of land is held in private hands, and thus these stakeholders must be engaged in the process.

The following pages outline the Greenways Eight. Throughout this document, all eight will be mentioned frequently. Their involvement is nothing short of vital for the successful implementation of greenways-related projects in Northwest Indiana.

LOCAL & COUNTY GOVERNMENTS

These are the gatekeepers for all land development decisions, and the frontline entities with which the public engages. These entities craft plans and ordinances, hold regular meetings and elicit public feedback. Also, and quite importantly, they would maintain publically-owned facilities



PRIVATE PROPERTY OWNERS

Being a participant in a greenway proposal does not mean opening up private land for public use. Many acres of conserved land are held privately, and provide valuable wildlife habitat, vegetative and water quality benefits. There are many avenues for a landowner to explore to help their land be part of a high-quality ecosystem.

CORPORATE PROPERTY OWNERS

Large tracks of land, many undisturbed and ecologically valuable, exist as corporate landholdings. Some of these are formerly used properties, or "Brownfields," that have great potential with remediation to become valuable components of a greenway. Stewardship practices by corporations have been important and should be built upon.

LAND TRUSTS/ADVOCACY GROUPS

Many non-profit organizations exist in Northwest Indiana to advance conservation practices, provide stewardship of open spaces and promote transportation choices. These groups are key to building partnerships across both public and private sectors that advance our greenways and blueways networks.

DEVELOPERS

Private land developers hold great potential in championing progressive conservation development practices and transportation designs. Working with this group closely can provide opportunities to expand access to our greenways for all residents to enjoy.

LINEAR CORRIDOR OWNERS

Long stretches of undeveloped land are primed for greenway development. The owners of these corridors offer unmatched possibilities for trails and habitat connectivity. The land use can involve utilities, railroads or water ways, with each offering opportunities to route trail facilities within them. Many corridor owners have already exhibited excellent civic-mindedness in these areas (NIPSCO), and there exists similar partnerships with additional owners.

FEDERAL, STATE & REGIONAL ENTITIES

Providing assistance both educationally and financially, government entities at the national, state and regional level remain valuable partners in greenway development. They also help build partnerships and bring key stakeholders together to discuss issues and plan projects.

INSTITUTIONS OF EDUCATION

Region schools, at every level on the education ladder, have been major contributors towards education and research assistance for a variety of conservation initiatives. They can also be significant public land owners. Bringing students into the mix to establish and maintain greenways will promote an awareness and environmental ethic at an early age.


CONSERVATION

The purpose of expanding the Conservation element of the *Greenways + Blueways 2020 Plan* is to establish an outline for the creation of a regional network of conservation corridors and buffers throughout Northwest Indiana. This chapter will explore the benefits of this network, compile priorities from other plans and partners, and provide strategies for implementation within the regional transportation planning context and through other efforts.

RELATIONSHIP TO PREVIOUS PLANS

In the *2040 Comprehensive Regional Plan*, NIRPC mapped a Green Infrastructure Network, a more refined subset of the 2007 Greenways and Blueways Plan. In the 2040 Comprehensive Regional Plan 2015 Update Companion, NIRPC adopted the Chicago Wilderness Green Infrastructure Vision which served as a visual representation of the Chicago Wilderness *Biodiversity Recovery Plan* (see Figure I-1). The Greenways +Blueways 2020 Plan proposes to embrace conservation as an aspect of greenway planning on par with transportation and recreation. The identification of important places for corridors, which integrate all three purposes, is a practical first step toward implementing the Green Infrastructure Network envisioned in the 2020 CRP.

The Greenways + Blueways 2020 Plan identifies existing habitat within the green infrastructure vision landscape that could connect the scattered and fragmented pockets of our preserved and managed ecological heritage. These bands also reflect locations where transportation infrastructure should minimize further habitat fragmentation or stream blockages and provide for safe wildlife or aquatic passage. NIRPC's hope is to encourage communities, stakeholders and private landholders to preserve and manage corridors for conservation within these bands.

Figure I-1 NIRPC's Green Infrastructure Vision

CURRENT NORTHWEST INDIANA LANDSCAPE

To help evaluate the approximate distribution of natural habitats across the region, NIRPC used the National Oceanic & Atmospheric Administration's (NOAA) regional land cover dataset and Habitat Priority Planner spatial distribution support tool. NOAA considers the Coastal Change Analysis Program (CCAP) land cover classes to be important indicators of ecosystem health that can be accurately and consistently portrayed through remote sensing technology such as satellite imagery. NIRPC simplified this data by reducing the number of classes within the Habitat Priority Planner. Land cover was either grouped simply as human (non-habitat) or natural (habitat), or in a logical higher level scheme. For example, cultivated crops and pasture/ hay were grouped as agricultural land.

BIODIVERSITY

Northwest Indiana is fortunate to have rich natural resources, with an especially abundant and unique diversity of plant species. The varied topology of the active sand dunes along the Indiana Dunes led the region to becoming the birthplace of the study of ecology in the early 1900s. Similar to Indiana's place as the Crossroads of America, Northwest Indiana is at the crossroads of several major ecoregions such as central forest-

grassland transition, tall grass prairie, and eastern temperate broadleaf and mixed forest. Within the region, there are over 315 areas containing over 36,000 acres of lands managed for some natural resource or recreational purpose. These managed lands encompass 3.7% of NIRPC's three county region. Except for the core expanse of the Indiana Dunes State Park and National Lakeshore, these managed lands are scattered across the region. Large tracts of valuable ecological habitat remain in private, and often highly fragmented, ownership.

The following outlines the various types of biodiversity which is prevalent throughout the Northwest Indiana region.

LANDSCAPE ECOLOGY 101

The following terminology and concepts were used by NIRPC throughout this chapter to help describe the spatial relationship of different landscape elements throughout Northwest Indiana. The same terminology is frequently used by landscape ecologist and is portrayed in Figure I-2.

Patch: A relatively simple and similar, non-linear area that differs from its surroundings in structure and function. A patch in the context of this document is used to describe areas of natural habitat since human land uses and cover generally dominate the landscape of our region.

Corridor or Buffer: A linear patch, typically having certain enhanced functions, which link other patches in the matrix. Corridors connect two patches. Buffers protect one patch from the neighboring incompatible activities in the matrix.

Land Cover: the physical material at the surface of the earth such as grass, asphalt, buildings, trees, bare ground, crops, water. This is typically captured with satellite imagery. For this plan we have grouped land cover types into Human(non-habitat) and Natural(habitat).

Matrix: The dissimilar background in which patches exists. For our purposes a matrix is used to describe areas of human related land cover such as housing, businesses, or agriculture.

Mosaic: A collection of patches, none of which are dominant enough to be interconnected through the landscape.

Fragmentation: Occurs when large habitat patches are broken up into smaller, isolated patches. This often results in a decline in variety of species (species richness) and numbers of individual plants and animals (population density). This in turn leads to significant alterations to community composition, species interactions and ecosystem functions.

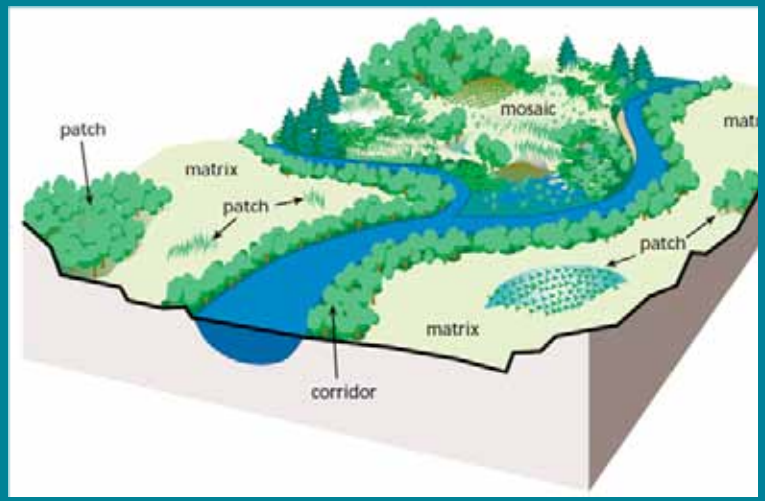


Figure I-2 Basic terminology used to define spatial structure in landscape ecology

Human Land Cover Types (Non-Habitat)

- *Agricultural Land*: Areas that are intensely managed for the production of annual crops, planted for livestock grazing, or production of seed or hay crops.
  - *Cultivated Crops*
  - *Pasture/Hay*

- *Developed Land*: Areas that are covered by concrete, asphalt, and other construction materials. Constructed materials account for 21% to 100% of the total landscape.
  - *Developed, High Intensity multi-family residential, commercial or industrial*
  - *Developed, Medium Intensity- single family or duplex, 8 to 14 units per acre*
  - *Developed, Low Intensity- single family large lot residential, 1 to 7 units per acre*

- *Developed Open Space*: Areas that include a mixture of some constructed materials (<20%) but mostly managed grasses or low-lying vegetation planted in developed areas for recreation, erosion control or aesthetic purposes. These might could include parks, large expanses of lawn, or cemeteries.

Natural Land Cover Types (Habitat)

- *Forest Land*: Areas dominated by trees generally greater than sixteen feet tall and greater than 20% of total vegetation cover.
  - *Deciduous Forest*
  - *Mixed Forest*
  - *Evergreen Forest*

- *Shrub Land*: Areas dominated woody shrubs less than sixteen feet tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.

- *Grassland*: Areas dominated by grasses or non-woody (herbaceous) plants, generally greater than 80% of total vegetation.

- *Wetlands*: Areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including the growing season. Water saturation largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants and promote the development of characteristic wetland soils[1].

1 www.epa.gov/wetlands/what-wetland

Plant cover is greater than 20%.

  - *Forested Wetlands*
  - *Scrub/Shrub Wetland*
  - *Emergent Wetland*

- *Open Water*: Lakes or ponds , open water with generally less than 25% plant cover, which contrasts this habitat from wetlands.

- *Waterways*[2]: Flowing waterbodies that are either natural streams or manmade channels excavated for drainage purposes.

2 Derived from U.S. Geological Survey National Hydrography Dataset (NHD)

Savanna could not be determined for the NOAA land cover dataset. Savannas are areas that include a complex of both trees and grasses or herbaceous plants, with tree canopy cover generally ranging between 20% and 50%. Historically, fires started by lightning strikes, or Native American communities helped maintain tree canopy openings which allowed prairie plant species to thrive. The rareness of savanna habitat, and in particular black oak savanna, makes it a very high regional priority for conservation and restoration.

Figure I-4 shows the distribution and location of the both human and natural land cover across Northwest Indiana. Two relatively connected large habitat mosaics are visible as pink and green areas running parallel to the Lake Michigan shoreline. These areas have related but ecologically distinct plant and animal habitats because of the different physical landforms that underlie the habitat. Closest to the lake, the Lake Michigan Border landform is characterized by the clay and gravel based ridges known as glacial moraines, sandy beach ridges, lake-floor deposits and dunes. The Valparaiso Morainal Complex, as the name implies, is characterized by moraines and tunnel-like valleys that transect these ridges. The relatively steep to moderate relief topography of these areas made them unsuitable for agricultural production and challenging for pre-industrial development. This complicated terrain with high and low ground, sun, and shade, dry sand and wet clays led to extreme diversity of animal and plant species. This created endless fascination for 20th century naturalists and scientists, the birthplace of the science of ecology, and the preservation of the Indiana Dunes State Park and National Lakeshore (see Figure I-3).

Table I-1 provides a summary of cover class patch statistics for the spatial data presented in Figure I-4. The data shows that human related land cover accounts for nearly 73% of the regional landscape. It further shows relatively high patch counts and low maximum and mean patch area for natural land cover classes. This can indicate a degree of habitat complexity (mosaics) that is generally good for plants and animals. However, it can also indicate habitat fragmentation which is usually only beneficial for the most opportunistic or invasive of species.

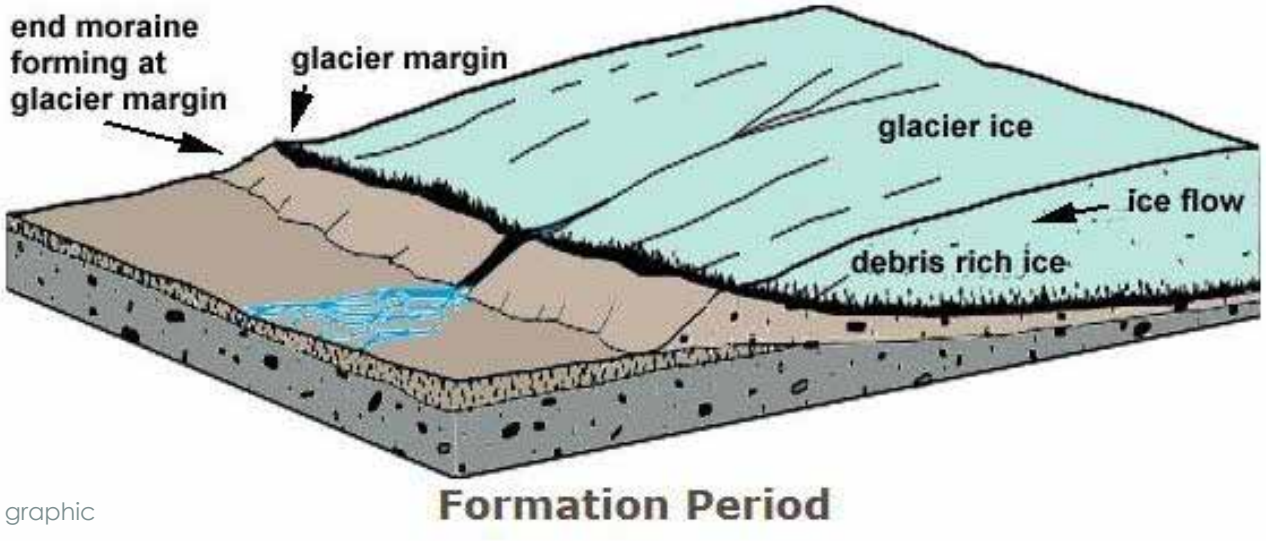


Figure I-3 Moraine graphic

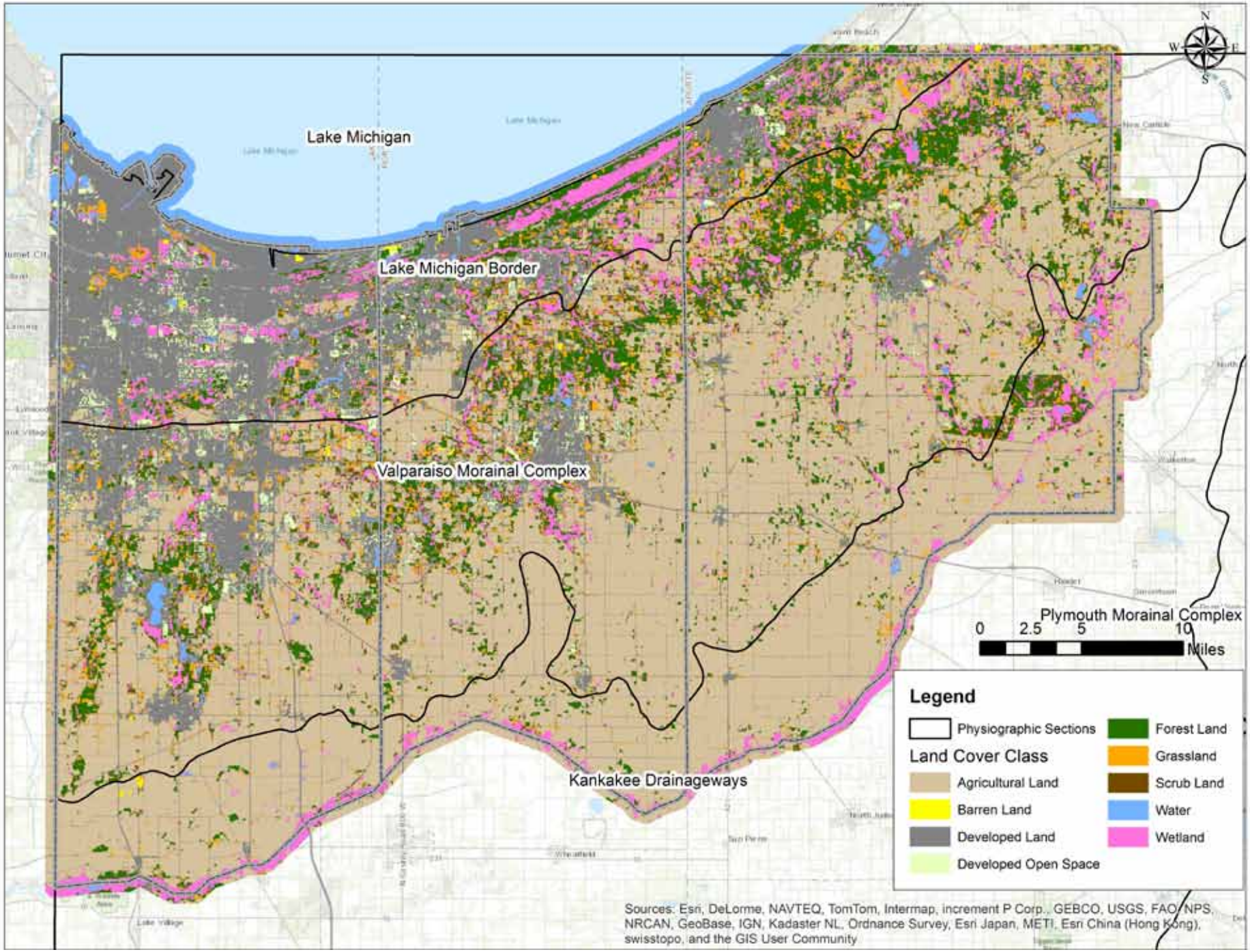


Figure I-4 Regional land cover distribution

Class	Count (Patches)	Minimum (ac.)	Maximum (ac.)	Mean (ac.)	Sum (ac.)	% of Landscape
Human Related Land Cover						
Agricultural	7,366	0.22	186,454	73.61	542,206	52.2
Developed Land	12,979	0.22	154,985	14.02	182,010	17.5
Developed Open Space	17,238	0.22	215	1.68	29,036	2.8
Natural Land Cover						
Barren Land	1,244	0.22	345	2.13	2,655	0.3
Forest Land	17,037	0.22	3,896	6.11	104,185	10.0
Grassland	18,952	0.22	236	2.54	48,125	4.6
Scrub Land	14,295	0.22	115	1.72	24,698	2.4
Water	2,334	0.22	15,276	10.93	25,529	2.5
Wetland	9,650	0.22	3,565	8.41	81,228	7.8

Table I-1 Regional land cover class patch summary statistics (2011)

Class	Count (Patches)	Minimum (ac.)	Maximum (ac.)	Mean (ac.)	Sum (ac.)	% of Landscape
Human (non-habitat)	4,300	0.22	740,421	175.74	755,714	72.7
Natural (habitat)	14,491	0.22	32,175	19.59	283,961	27.3

Table I-2 Simplified regional land cover class patch summary statistics (2011)

Figure I-5 is a simplified representation of human (i.e. non-habitat) and natural land cover (i.e. habitat) within the region. This classification scheme makes it easier to visually discern the distribution and relative size of habitats at the regional scale.

Table I-2 provides a summary of cover class patch statistics for the spatial data presented in Figure I-5. The data still shows a relatively high patch count and low maximum and mean patch area for the natural cover class indicating habitat fragmentation.

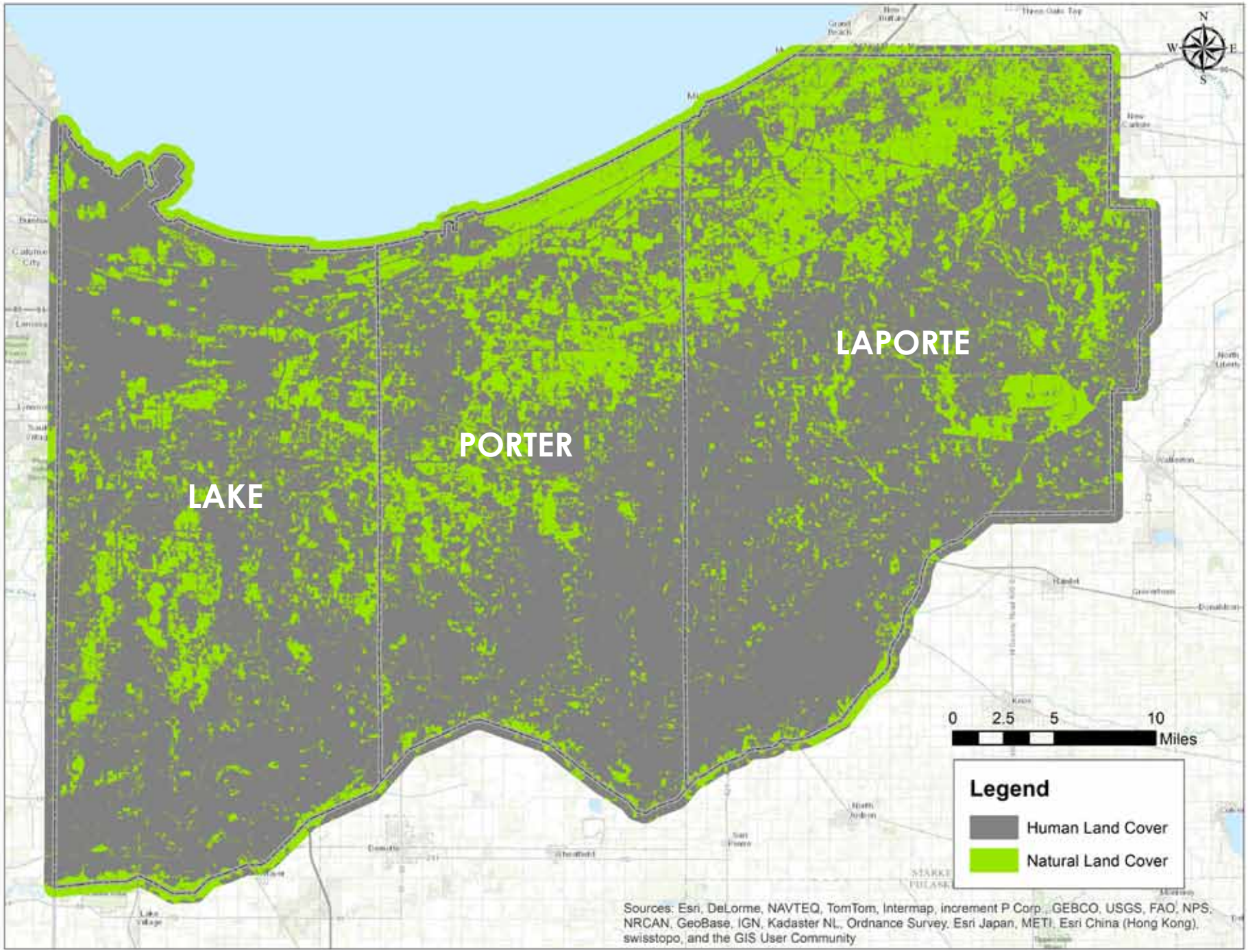


Figure I-5 Simplified regional land cover distribution

CONSERVATION CORRIDOR & BUFFER FUNCTIONS

Conservation corridors can address a variety of resource concerns such as biodiversity, water quality, recreation, soil health, aesthetics, or safety. Most corridors can perform multiple functions if sited and designed properly. Location, structure, and management of nearby patches and matrix influence the types of functions that buffers will perform and their effectiveness. It is also important to note that buffers can be designed to achieve multiple objectives. Some designs or functions are more impactful at different size scales such as regional, local, neighborhood or site[3].

Issue & Objectives	Functions	Scale
Biodiversity		
Enhance terrestrial and aquatic habitats	Restore connectivity, protect sensitive habitats, increase habitat area, shade stream	Regional Site
Water Quality		
Reduce erosion and runoff of sediment, nutrients, and other pollutants	Slow runoff and enhance infiltration	Local Site
Soil Productivity		
Increase soil productivity	Stabilize soil, reduce runoff and wind energy, improve soil quality	Site
Economic Opportunities		
Increase economic value	Increase property values, reduce energy consumption, provide ecosystem services	Local Neighborhood
Protection & Safety		
Protect from wind and snow Protect from flood waters	Reduce wind energy Reduce flood water levels	Local Neighborhood
Aesthetics		
Enhance visual quality Control noise levels Control air pollutants	Enhance visual interest, screen views Screen noise Filter air pollutants	Neighborhood Site
Recreation		
Promote nature-based recreation	Increase or protect natural areas, provide corridor for movement and enhance experience	Regional Local

Table I-3 Corridor/buffer functions related to issues and objects (adapted from Bentrup)

3 Bentrup, G. 2008. Conservation buffers: design guidelines for buffers, corridors, and greenways. Gen. Tech. Rep. SRS-109. Asheville, NC: Department of Agriculture, Forest Service, Southern Research Station. 110 p.

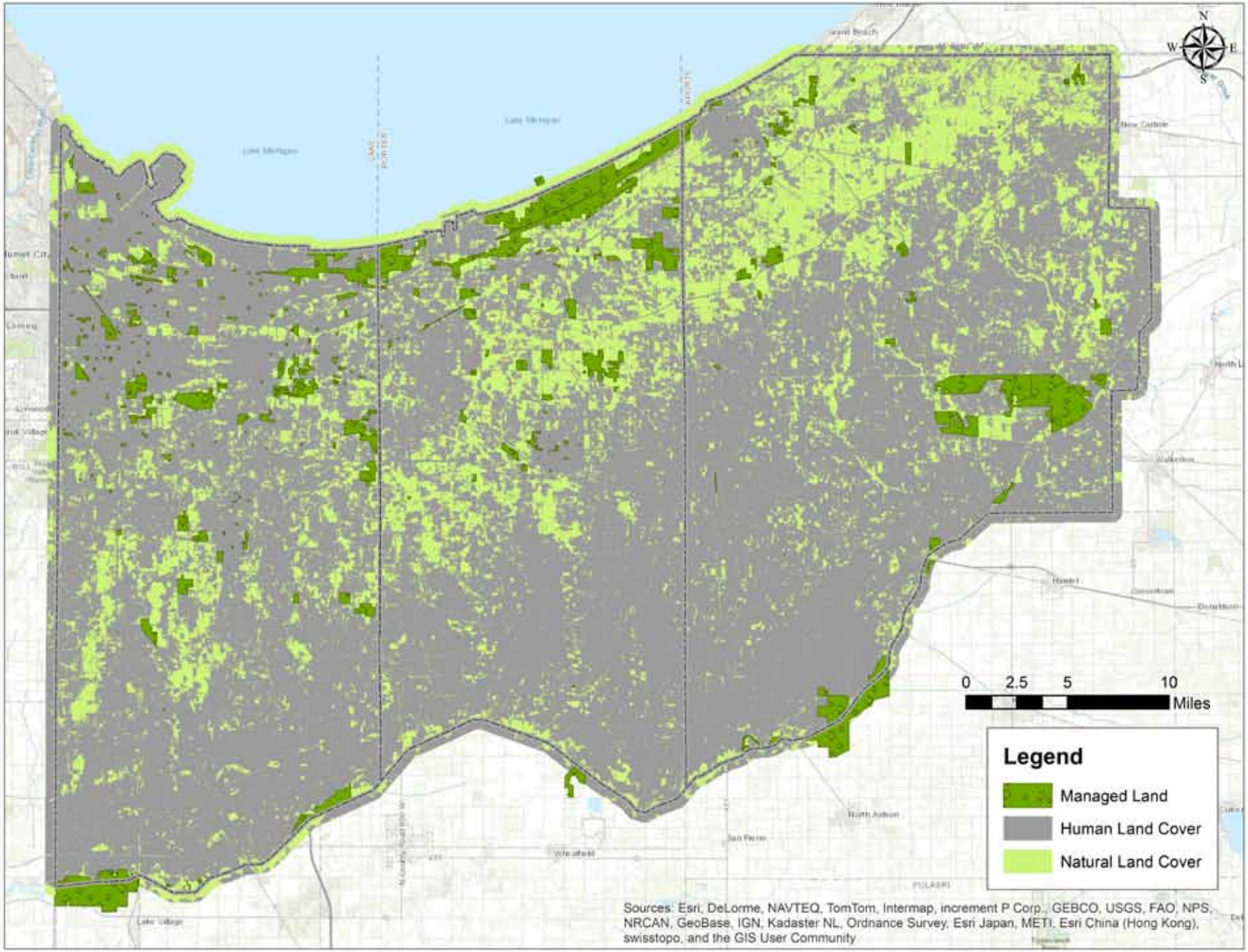


Figure I-6 Human and natural land cover patterns in relation to managed lands

Conservation Corridor & Buffer Benefits

Corridors can reconnect fragmented habitat patches to one another and larger core habitat areas. This would provide wildlife with routes to travel from one area to another to better access food, water, mates and nesting spaces. Many species require different habitats at different points in their lifecycle. For example, many amphibians require wet areas for breeding, but move upland into dryer forests or grasslands as adults. Also, populations that share genetic material have increased resilience to disease and changing conditions in the environment. Because different species have different mobility, habitat and shelter needs, corridors need to be carefully planned to maximize their benefits and cross different habitat types.

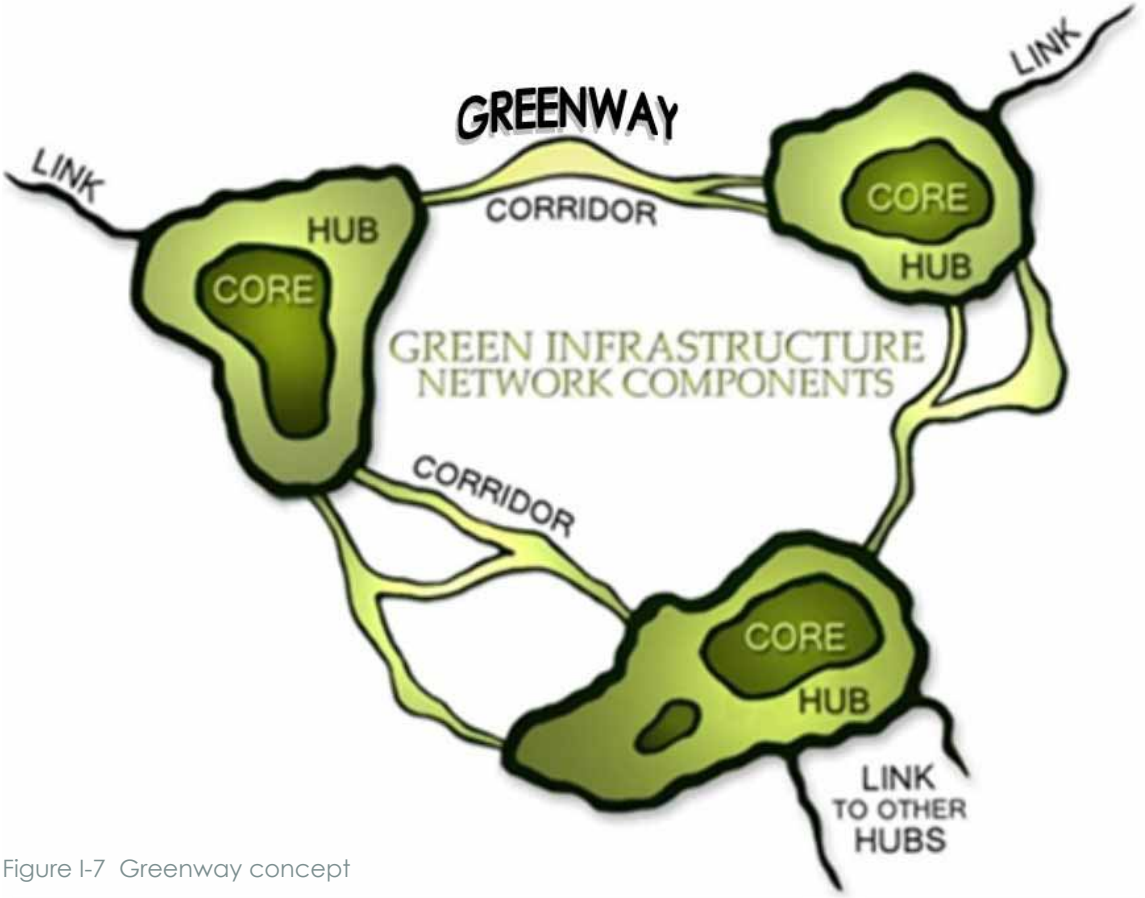


Figure I-7 Greenway concept

LINKAGE IS THE CENTRAL THEME AND GOAL OF THE GREENWAY CONCEPT—TO RECONNECT AND PRESERVE NATURAL LAND AND WATER HABITATS, THUS REVERSING THE BIOLOGICALLY DESTRUCTIVE EFFECTS OF LANDSCAPE FRAGMENTATION THAT INEVITABLY RESULT FROM URBANIZATION.

—KEITH HAY, GREENWAYS AND BIODIVERSITY,
LANDSCAPE LINKAGES

Northwest Indiana Conservation Investment Hotspots

Northwest Indiana is very fortunate to have many dedicated organizations partnering in the region to preserve, restore, and manage high quality natural areas for our benefit and for future generations. Federal, state, and local agencies as well as non-profit organizations, land trusts, and foundations have invested many resources into identifying and planning for the long term viability of several priority conservation areas (see Figure I-8). These areas have been protected due to their biodiversity and ecological significance, such as the globally rare and endangered dune and swale habitat complexes found near the Grand Calumet River. Or they have been saved from development, such as the Indiana Dunes. They also are preserved remnants of much larger ecosystems such as the Grand Kankakee Marsh County Park, or they maybe priorities for natural recreation opportunities.

The following outlines these areas of significant conservation investment over the years.

1. Grand Calumet Area of Concern

The Grand Calumet Area of Concern consists of portions of Gary, Hammond, East Chicago, and Whiting in Northern Lake County. It covers the Grand Calumet River, Marquette Lagoons, Indiana Harbor Ship Canal, Wolf Lake and George Lake and Nearshore Lake Michigan. While this highly industrialized area is the economic heart of Northwest Indiana, it also includes many acres of globally rare and critical species and endangered habitat types. This area has been the focus of national and international contaminated sediment

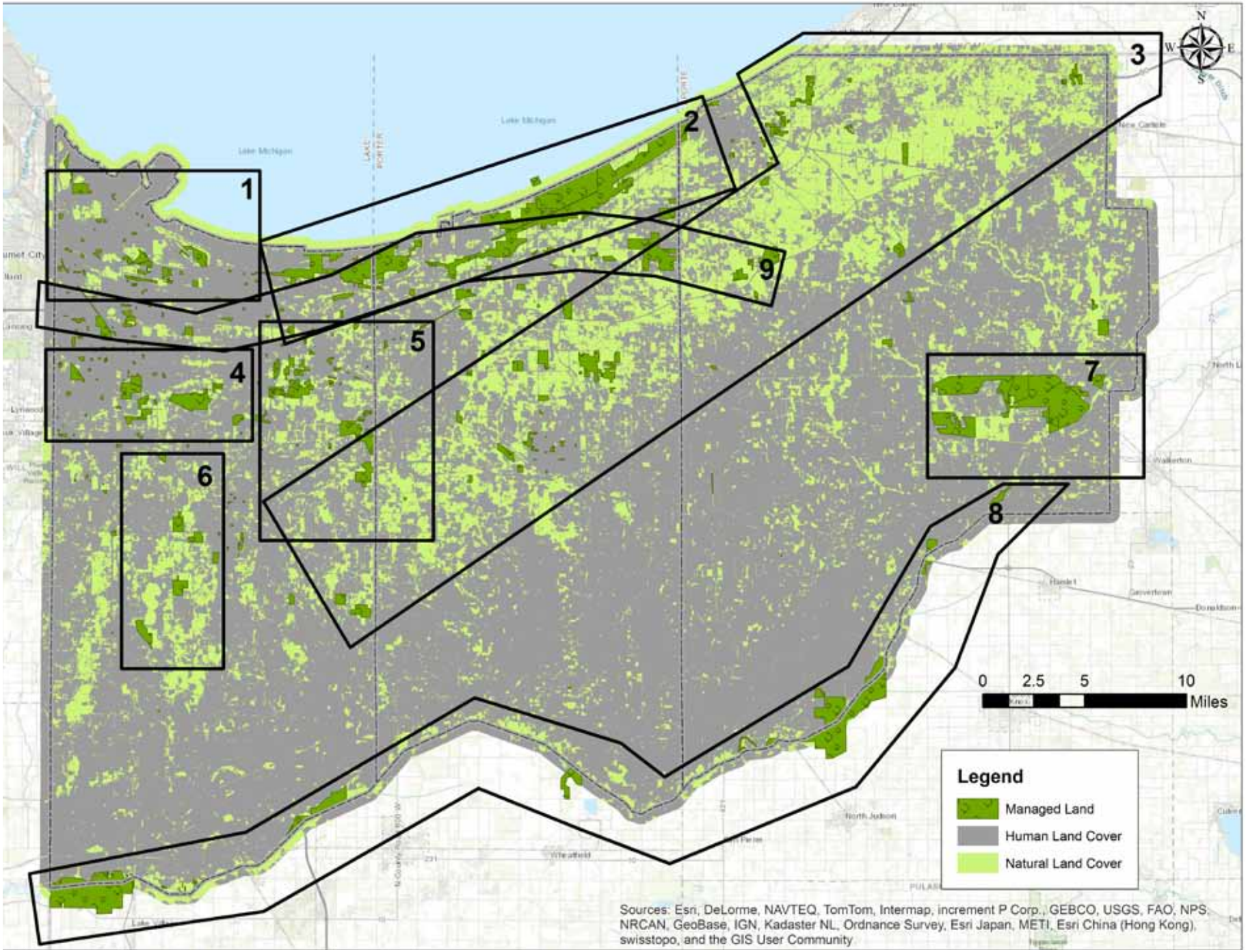


Figure I-8 Existing conservation focus areas

clean-up efforts, river and habitat restoration. At least $68.7 million has been invested through federal and state grants as well as settlements with local industries that contributed to the historic pollution of the area. Over 200 acres of habitat has been preserved and restored in several clustered areas throughout the Area of Concern. Connecting the fragmented natural habitat, around Wolf and George Lake, the Gary Airport, and Marquette Park via the Grand Calumet River system, remains important to their long term resilience.

2. Indiana Dunes

The Indiana Dunes ecosystem stretches from Marquette Park in Gary through Michigan City to the Michigan state line. It includes the Indiana Dunes National Lakeshore, the Indiana Dunes State Park, and many other fragments of high quality natural habitat in private and public ownership. The National Lakeshore is one of the most biodiverse parks in the National Park System and is home to a variety rare, endangered, and threatened species. The Indiana Dunes region is diverse at both a habitat and species level. A range of natural community types can be found within a singular site, and the variety of habitats provides a home to over 1,000 native species of plants.

3. Moraine Forest

The Moraine Region[4] of LaPorte and Porter Counties is one of the more biologically diverse areas of the United States, including northern forests (sometimes referred to as boreal flatwoods), bogs, and fens. The Moraine Forest region extends from southwest of Valparaiso to the Michigan state line, and contains some of the largest remaining tracts of forested habitat. Scattered parks and managed natural areas such as Sunset Hill County Park, Moraine Nature Preserve, and Moraine Wildlife Rehabilitation Center, Red Mill County Park, and Ambler Flatwood Nature Preserve have beautiful footholds within the Moraine Forest Region.

4 www.heinzetrust.org/conservation-planning-projects.html

Maintaining the scenic beauty and rare habitats throughout the majority of this privately owned area will require significant outreach and participation by landowners. Scenic recreational greenways such the proposed Moraine Forest Bike Path could provide one incentive to do so[5].

4. Hoosier Prairie/Oak Ridge Prairie

Hoosier Prairie[6] and Oak Ridge Prairie County Park[7] together protect over 2,200 acres of rare prairie remnants, wetlands, and savannahs. The diverse habitats are home to more than 350 species of native plants.

5. Hobart Marsh and Deep River

The Hobart Marsh and Prairie Grove Area contains nearly 750 acres of permanently protected but still

fragmented land, which includes, wet forest, oak woodland, tall grass prairie, emergent marsh, savanna, and fens. The site provides critical habitat for nine state threatened or rare plant species, Blanding's turtle (state endangered), over 40 state endangered, threatened and rare insect species, four state endangered bird species, and five high quality natural communities. This area also includes Lake George in Hobart.

6. Founder and Cedar Creek Watersheds

The Founder and Cedar Creek Watersheds area includes significant tracks of contiguous woodlands, including publicly owned Lemon Lake County Park. It also includes Cedar Lake, the marsh south of the lake, Lake Dalecarlia, and Cedar Lake

7. Kingsbury

Kingsbury Fish and Wildlife Area in LaPorte County is home to 7,280 acres of

5 www.nature.org/ourinitiatives/regions/northamerica/unitedstates/indiana/plac-esweprotect/moraine-nature-preserve.xml

6 www.nature.org/ourinitiatives/regions/northamerica/unitedstates/indiana/plac-esweprotect/hoosier-prairie.xml

7 www.lakecountyparks.com/parks/oak_ridge_prairie_and_oak_savannah_trail.html

grassland, marsh, shrub/scrub, and farm field. The property has been managed by the Department of Natural Resources for quality hunting and fishing[8].

8. Kankakee Marsh

Grand Kankakee County Park and the Kankakee Fish and Wildlife Refuge are large protected habitat tracts within the once-vast Grand Kankakee Marsh system. These properties are managed for recreation and fish and wildlife habitat along the Kankakee River[9]. The productive farmland surrounding the river is very important to the regional economy and the small town culture in the southern stretches of Northwest Indiana. However, this valuable cropland can act as a barrier for many species of plants and animals that call these spaces home. Connecting habitat fragments in the Kankakee River Floodplain could increase the resilience of the remaining protected places.

8 www.in.gov/dnr/fishwild/3089.htm

9 www.in.gov/dnr/fishwild/3090.htm

9. Little Calumet River

The Indiana Dunes National Lakeshore, Indiana Department of Natural Resources, Shirley Heinze Land Trust, Little Calumet River Basin Development Commission, and several municipalities own and manage land along the Little Calumet River corridor. While significant stretches of the river have been modified to improve drainage or for flood control, many natural reaches still exist. Relatively intact upland forest and floodplain wetland habitats border the river in many areas.

CONSERVATION CORRIDORS & BUFFERS BENEFIT SOCIETY

Benefits to People

NIRPC conducted an online survey of the region to determine what values the residents placed on conservation and natural areas. There were approximately 540 respondents to this survey between February and October of 2015. Figures I-9 and I-10 show 75% of respondents listed enjoying nature and the outdoors as a primary motivational factor for visiting parks, with 32% enjoying nature observation and photography, 20% reporting enjoying bird watching, 19% for solitude, 8% fishing, and 4% hunting.

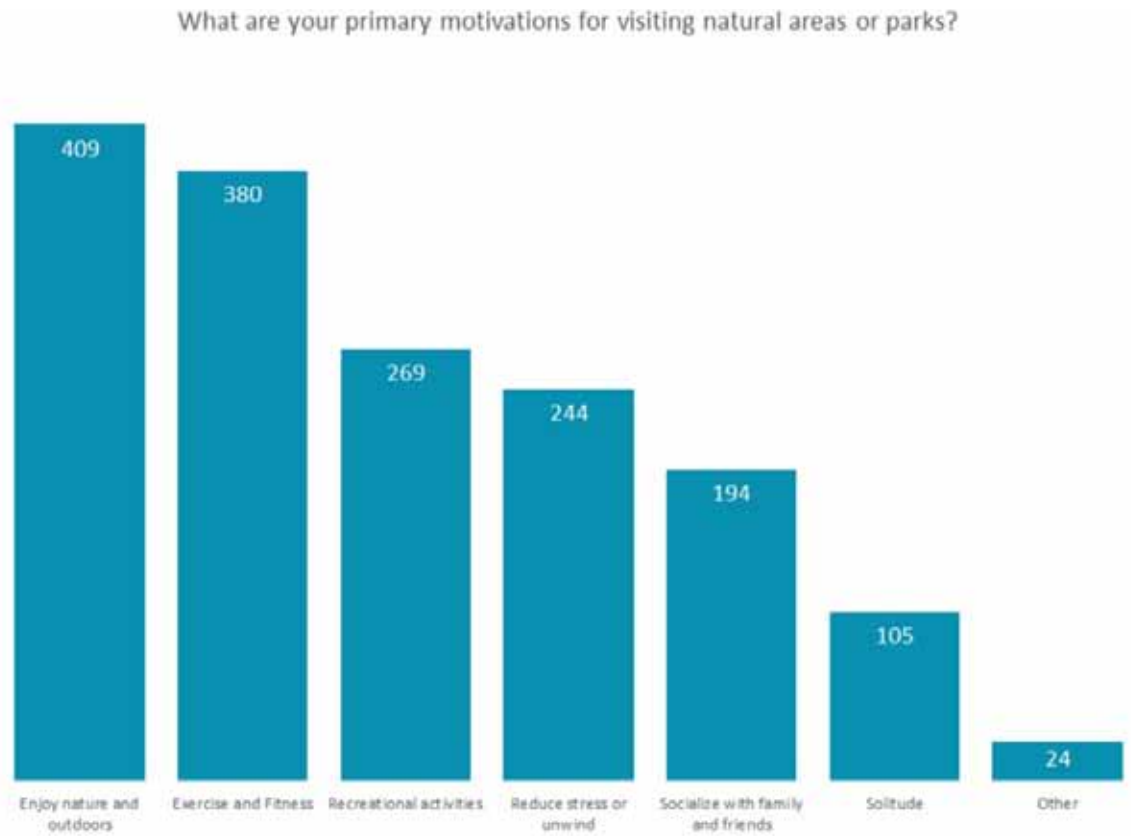


Figure I-9 Survey repsonses for visiting natural areas and parks

These activities in particular require that natural areas, parks and waterways be of sufficient quality and quantity of habitat to support populations of interesting birds, fish, animals, and plants. Greenways designed as conservation corridors can boost the ability of the existing protected natural areas to provide this habitat.

When integrated with recreational corridors such as multi-use trails, water trails and parks, greenways can increase access to the types of activities people enjoy. Recreating in nature has been proven to contribute to human health, wellbeing and community quality of life.

The top three factors influencing the decisions of where to recreate in nature were quality of scenery and views, ease of access, and water quality. All of these factors can be improved through greater access to natural or naturalized conservation corridors, particularly those located to improve water quality. Opportunities to play and learn in nature have even been linked to higher educational outcomes in children. Many studies conducted over the past twenty years, including recent ones that factor out other variables, showed that schools that use outdoor classrooms and other forms of nature-based experiential education were associated with

significant student gains in social studies, science, language arts, and math. One study found that students in outdoor science programs improved their science testing scores by 27 percent. Beyond test scores, other studies have shown that greener environments improve basic concentration skills and reduce overall stress levels in children[10].

Conservation corridors located with access points to public parks, neighborhoods and schools maximize the opportunity of schools and families to take advantage of these benefits.

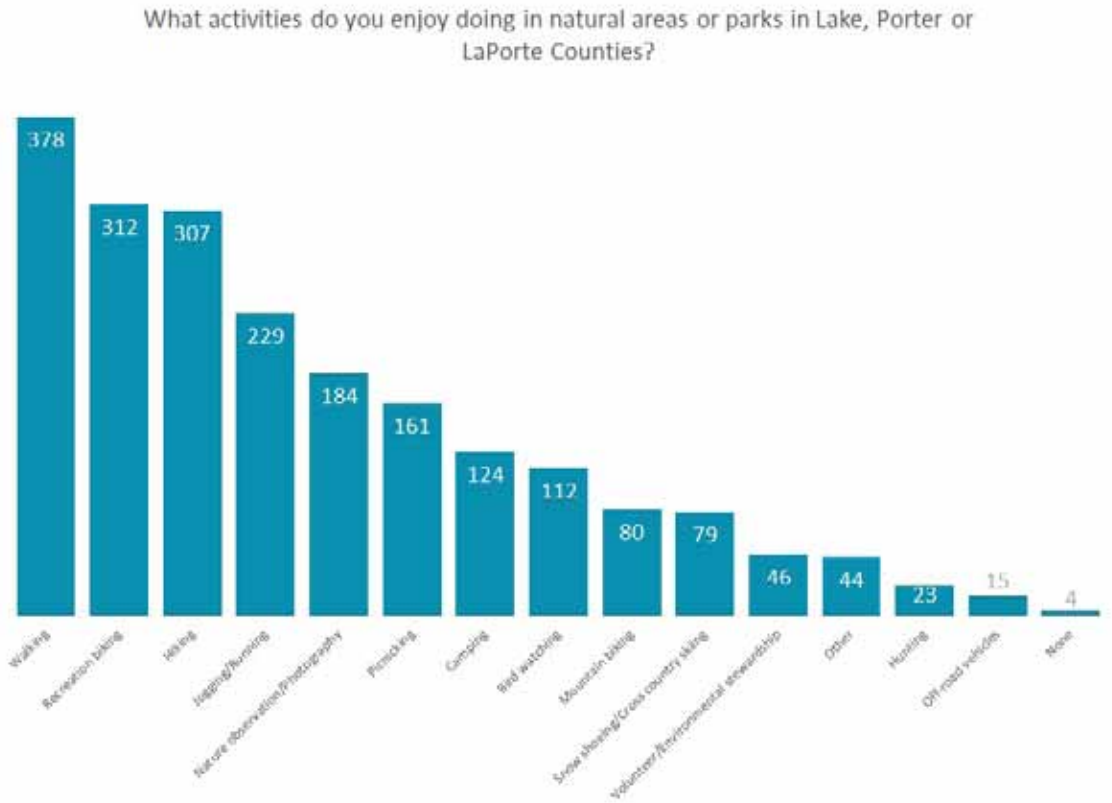


Figure I-10 Survey responses to activities enjoyed in natural areas

Benefits to Communities

Sustainable function of our natural places is important for many reasons. Natural places create and maintain resources we need for our economy and our quality of life such as clean air and water, open space, recreation, health, community resilience and well-being. These are often called "Ecosystem "Services. Ecosystem Services are defined as services provided by the natural environment that benefit people, such as clean water. In many cases

10 American Institute for Research, Effects of Outdoor Education Programs for Children in California. January 27, 2005. www.air.org/sites/default/files/downloads/report/Outdoor-schoolreport_0.pdf

No Child Left Inside

The 2005 publication *Last Child in the Woods: Saving our Children from Nature Deficit Disorder* by Richard Louv lead to the evolution of the No Child Left Inside movement. The book presented data and research suggesting some attention, educational, and behavior problems in children today could be related to lack of quality free time spent out of doors and in nature. Leave No Child Inside programs strive to nourish children's curiosity, growth, and creativity through unstructured play time outside in nature and other outdoor recreation activities. The Dunes Leaning Center has been a Northwest Indiana No Child Left Inside success story.

the actual value of these services can be measured in dollars and cents. The more we have disturbed and impaired the ability of the natural environment to function, the more we have had to intervene and provide expensive engineered alternatives to substitute for or maintain these services.

We all learned about the water cycle in school. Water moves from clouds to rain to river to sea, then evaporates to start all over again. That system works smoothly when the rain falls on forests and prairies which absorb and slow it down. However, extreme river channel erosion can occur from high speed water flows resulting from an increase in impervious areas such as paved surfaces and rooftops. The eroded stream banks may indicate that the nature provided ecosystem service of water regulation is not functioning properly. At times, the first response to degradation of natural resources is to construct a man-made structure to fulfill the same purpose as the natural feature. For example, naturally vegetated riverbanks may be replaced with a concrete wall structure or large rocks to prevent soil erosion. However, man-made structures are costlier to produce and maintain than simply keeping the natural system intact. Conservation corridors placed along river and stream banks can be an excellent solution by maintaining a riverbank in natural vegetation, capturing pollutants in runoff and reducing the high velocity of stormwater running into the system.

In 2014 NIRPC, through support from the Gaylord and Dorothy Donnelly Foundation and the Arcelor-Mittal Foundation, funded a study to better understand the economic value of the natural areas, floodplains and conservation lands identified in the Green Infrastructure Vision. This information is summarized and provided in Table I-4 . The ability of lands to provide these services is heavily influenced by their location in

the landscape. For example, native vegetation in floodplains along rivers and in upland catchments have the most opportunity to provide flood protection and water quality benefits.

Many of the local governments in our region are aware of the public's appreciation for recreation and the community benefits to saving natural areas. In a survey of municipalities for this *Greenways and Blueways 2020 Plan*, nineteen (19), or approximately 58% of respondents, indicated that they identify priorities for acquisition and protection of natural areas in their comprehensive planning, and that they manage at least some parks, trail corridors, or public areas for habitat conservation. Fourteen (14), or42%, have an active land acquisition program in place for parks and trails, several of which focus on wetland and waterway protection or waterway access. Several would do more if suitable land and/or funding were available.

Besides preserving natural areas for parks or preserves, local governments can also protect conservation lands through regulation. To date, 39% have ordinances in place to require setbacks or easements between development, and at least some types of natural resources, and 48% allow for cluster or conservation subdivisions to be permitted.

In addition to providing practical services such as flood mitigation or recreational amenities, a number of communities are realizing that rather than reducing tax revenue by taking land out of development, natural areas often have the opposite effect by enhancing property values. National studies have found that proximity to parks creates a 3% to 30% premium on property values (see box on right). Urban areas and densely populated suburbs have higher premiums. Natural areas tend to create larger premium enhancements than traditional urban parks.

Property Tax Benefits of Open Space and Nature Parks

In 2010 Embrace Open Space/Trust for Public Lands presented analysis of open space real estate premiums in the Twin Cities area of Minnesota.

In 2006 Washington County, east of Saint Paul found that an average 6% home value premium for properties near public parks (not including parks developed for ball fields), greenways, natural areas, and conservation ease-ments. These premiums increase the county's property valuation by $148 Million, which creates additional annual revenue of $1.56 million.

Ecosystem Service	Benefit to NWI	Rationale	Regional Estimated Economic Value Provided:
Flood Protection	Reduces: • flood damage • stream bank erosion • dredging costs	Natural landscapes such as wetlands and forests, retain and mediate stormwater runoff	$4,000,000,000
Clean Water	Enhances: • tourism • recreation opportunities • aesthetics Reduces: • water treatment costs • health care expenses • dredging costs	Clean water is attractive for many fun activities which also attracts tourists. Wetlands and other natural systems remove sediment, toxic substances, excess fertilizer and pathogens from entering our waterways and Lake Michigan. This reduces drinking water treatment costs, beach closures, siltation, algae blooms, and waterborne illnesses.	$393,000,000
Recreation and Ecotourism	Enhances • fishing & hunting • bird and wildlife watching • hiking • tourism	Fish, animals, and birds all require healthy habitats provided by natural areas to thrive.	$1,900,000,000 (Study only considered existing public land)
Ground Water Supply	Reduces: • Cost of obtaining well water • Cost of crop insurance	Groundwater is naturally replenished by soaking into green spaces. This supplies drinking water for rural residents and towns south of the Lake Michigan basin, and irrigates valuable crops.	$1,400,000,000
Clean Air	Reduced health care expenses Enhances quality of life	Plants filter our air and sequester carbon. Breathing polluted air can spur or worsen medical conditions.	$319,000,000

Table I-4 Ecosystem Services Value of Green Infrastructure Vision Lands

RIPARIAN CONSERVATION CORRIDORS

Rivers and streams have several key attributes that are especially valuable for potential conservation corridors. In many cases, land adjacent to waterways, known as riparian land, is regulated wetland, floodplain, designated floodway, or steep and erodible banks. Buildings and infrastructure in these lands are vulnerable to flooding or other damages. This land is often uneconomical to develop for uses beyond low-impact recreation or agricultural production, so it often remains in a somewhat natural condition much longer than upland areas even in built-up communities. Riparian lands often contain many of the ingredients needed for successful wildlife habitat such as food, shelter, and access to water.

Creating conservation corridors in riparian zones can have multiple benefits to the region. Riparian buffers are zones adjacent to waterbodies such as lakes, rivers, and wetlands that protect both water quality and wildlife, including both aquatic and land-based habitat. These zones minimize the impacts of human activities on the landscape and contribute to recreation, aesthetics, and quality of life.

There are many uses of the term "buffer" in other contexts. In the agricultural industry, a buffer is used generally to describe filtering best management practices, often at the water's edge. Other practices which can be interrelated may also be called buffers. For example, a grassed waterway is designed to filter sediment and reduce erosion and may connect to a riparian buffer. These limited-purpose practices may link to multipurpose buffers, but by themselves they are not adequate to provide the multiple functions of a riparian conservation corridor as defined here. In the urban environment, similar practices such as roadside bioswales may similarly be identified as green infrastructure or buffers without being riparian conservation corridors. Planting these areas with the

native plants needed for successful conservation corridors has significant water quality benefits. Typically, riparian buffers can provide varying degrees of benefits, depending on width, slope, and adjacent land uses. These are divided into three zones which we will call the Wet Zone, Habitat and Water Quality Zone, and Transition Zone.

Wet Zone

The Wet Zone is typically from the water's edge to the top of the bank or uplands. It provides critical connection between water, wetland, and upland habitats for wildlife, protects streams from bank erosion, and often provides shading that cools aquatic habitats. Typically, this may range between 10 feet to 150 feet in width, depending on terrain.

Habitat and Water Quality Zone

The Habitat and Water Quality Zone is from the top of the bank to the edge of wooded and native vegetation. This provides wildlife habitat, stormwater runoff infiltration, and pollutant removal. This zone typically ranges from 30 feet to 300 feet in width, depending on terrain, local conditions and need. Vegetated buffers 50 feet wide generally provides effective removal of nutrients pollutant nutrients such as nitrogen and phosphorus, as well as bacteria. Table I-5 summarizes the pollutant removal effectiveness of different types of plant communities used in riparian buffer strips[11].

Buffer Type	Nitrogen	Phosphorus	Sediment
Forested	48-74%	36-70%	70-90%
Vegetated Filter Strips	4-70%	24-85%	53-97%
Forested and Vegetated Filter Strips	75-95%	73-79%	92-96%

Table I-5 Riparian Buffer Strip Pollutant Removal Effectiveness

Transition Zone

The Transition Zone is suitable for passive recreational uses such as parks, trails, and community open space. Certain types of agricultural uses may also be compatible with transition zone areas of conservation buffers.

There are many riparian buffer functions, and the ability to effectively fulfill those functions is largely dependent on width. Figure I-11 shows the effectiveness of different widths of conservation corridors for performing different functions. Determining what buffer widths are needed should be based on what functions are desired, as well as site conditions. For example, in small

11 Hawes, Ellen and Markelle Smith. Riparian Buffer Zones: Functions and Recommended Widths. Yale School of Forestry and Environmental Studies. April 2005.

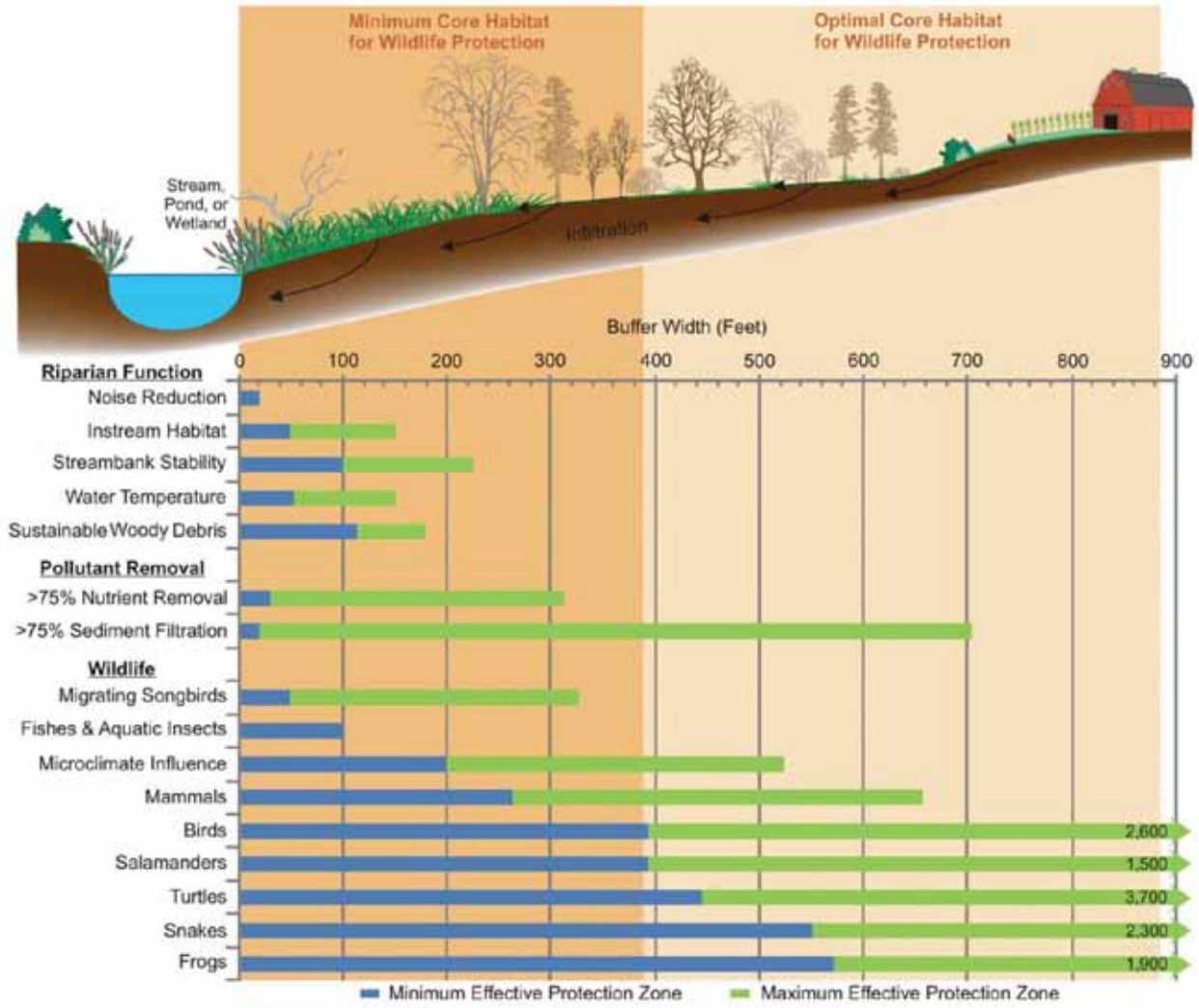


Figure I-11 Conservation Buffer Width Effectiveness

headwater drainage areas, with limited fishery or recreational value, buffers used to preserve stormwater flow regulation and water quality may be adequate for community benefits in most locations.

Based on the needs of wildlife species found in similar Great Lakes states, the minimum core habitat buffer width is about 400 feet, and the optimal width for sustaining the majority of wildlife species is about 900 feet. Because not all riparian corridors are suitable or desirable for this wide of a conservation buffer, the value of greenway linkages to other large conservation areas described above is key. Figure I-11 shows the range of effective buffer width distances based on data reported in the studies summarized by the Southeastern Wisconsin Regional Planning Commission[12].

12 Southeastern Wisconsin Regional Planning Commission (SEWRPC) Managing the Water's Edge. 2010

The desire of residents to use waterways for relaxation and recreation is clear from survey responses received for this plan. Recreational use of waterways is discussed in greater detail in Chapter II. Conservation of riparian land surrounding Northwest Indiana rivers and streams in public ownership has the added benefit of increasing public access. Public Access law in relation to rivers, streams, and lakes in Indiana is complicated. Overall, public ownership of water adjacent land is the most straightforward way to ensure public access to highly valued blueways recreational activities such as paddling and fishing.

In addition, the presence of clean and healthy waters can increase property values for communities and the quality of life.

THE DREAM IS TO SPIDERWEB THIS ENTIRE NATION WITH SO MANY GREEN THREADS, PRINCIPALLY ALONG STREAMS AND RIDGES, THAT EVERY CITIZEN WOULD BE ONLY MINUTES AWAY FROM ONE.

—NOEL GROVE, *LAND & PEOPLE*, 1994

PRIVATE PROPERTY RIGHTS VS. PUBLIC TRUST WATER ACCESS RIGHTS

Water rights laws in Indiana primarily descend from English Common Law principles, with centuries of modification through both the court system, legislative system, and regulatory system. It is useful to understand these legal frameworks when planning for public access, waterway buffers, and water trail development. Sometimes waterbodies and their banks are private property; sometimes they are public property; sometimes they are private with public right to navigate on the water; sometimes the water and the bed is held in public trust. The public right to access and use waterways in the U.S. and in Indiana are legally descended from ancient Roman and English common law. Public Trust doctrine was developed centuries ago when waterways were a major transportation mode for individuals, businesses, and governments. The public good of water use for these "navigation" related

purposes was held to be so essential that from ancient times, common law has determined that governments hold these rights in "Public Trust" and must balance them with private property rights.

Navigability in Indiana

Indiana is a riparian use water rights state, which means that certain rights to access and use surface water belong to property owners who own the adjacent land. The riparian owner's private property rights relating to the stream differ depending on whether it is legally navigable or not. In Indiana, navigability has been largely determined on a case by case basis through the judicial system, unless declared navigable through legislation. In general, if a river or stream that a property touches was not capable of supporting river transportation in 1816 when Indiana became a state, then the waterway is not legally a navigable waterway and the bed is the private property of the adjacent land owner. Even if the waterbody itself might be physically navigable, touching the bottom or banks for recreation or other purposes would be trespassing without express permission of each property owner it flows past.

Public Access

The Northwestern Indiana waters listed to the right are legally navigable, although they might not physically be so. The beds of these waters below the ordinary high water mark are properties of the state, and as such are held in public trust. The Public Trust Doctrine means that the public retains a right to use these waters for boating and paddling, provided they can be accessed without trespassing on the private property of riparian land owners. In Lake Michigan and its Industrial Ports an individual's safe access to navigable waters for recreation must also be balanced with the economic benefit of commerce uses.

Public Freshwater Lakes

In Indiana, any lake that has ever been used by the public with the permission of a riparian owner is considered a "public freshwater lake" regardless of the legal navigability. The 1947 Lakes Preservation

NWI Navigable Waterways

- **Lake Michigan**: Navigable throughout the region.
- **Kankakee River:** Navigable throughout the region.
- **Little Calumet River:** Navigable throughout Lake and Porter counties.
- **Grand Calumet River:** Navigable from the Illinois State Line (near Hammond) to Marquette Park.
- **Indiana Harbor and Ship Canal:** Navigable throughout.
- **Burns Ditch:** See Portage Burns Waterway.
- **Portage Burns Waterway:** Navigable in its entirety (1.3 river miles) as a connection between the Little Calumet River and Lake Michigan.
- **Trail Creek:** Navigable 1.0 river miles from its junction with Lake Michigan.

NWI Public Freshwater Lakes

Lake County

- Cedar Lake
- Fancher Lake
- Golf Lake
- Lake George (Hobart)

LaPorte County

- Clear Lake (Mill Creek)
- Clear Lake(Westville)
- Crane Lake
- Fish Trap Lake
- Hog Lake
- Horseshoe Lake
- Hudson Lake
- Lily Lake
- Pine Lake
- Saugany Lake
- Silver Lake
- Stone Lake,
- Tamarack Lake
- Upper and Lower Fish Lake

Porter County

- Canada Lake
- Carlson Pond (Moraine Nature Preserve)
- Clear Lake(Westville)
- Flint Lake
- Lake Eliza
- Long Lake
- Loomis Lake
- Mink Lake
- Morgan Lake
- Moss Lake
- Wauhob Lake

Act gives the state "full power and control of all the public freshwater lakes" and holds and controls "all public freshwater lakes in trust for the use of all citizens of Indiana for recreational purposes". As with rivers and streams, a lake may be "public" for recreational purposes; however, this right is balanced against the rights of riparian landowners (those whose land is adjacent to the water). Some "public freshwater lakes" may in fact have no direct public access to them without crossing private property. To preserve public access to these lakes for recreation, some portion of the shoreline must be owned by public entities.

Interestingly, in Northwest Indiana two very important recreational lakes — Lake Michigan and Wolf Lake — are not by state definition "public freshwater lakes". Despite not being considered within this category, state law holds that the bed of Lake Michigan below the Ordinary High Watermark (defined in state law as 581.5 feet elevation) is held in trust by the state for the people of Indiana.

By contrast, Wolf Lake, an 804-acre lake that straddles the Indiana and Illinois state line at the Northwest corner of the region, is considered to be wholly owned by the City of Hammond. This has the advantage of offering local control but limited opportunity to access some state resources there. In Illinois, it is managed by the Illinois Department of Natural Resources.

Special Designations

Several other state special designations apply to some region waterbodies. These special purpose designations typically receive extra regulatory attention.

Outstanding State Resource Waters includes Lake Michigan and waters within Indiana Dunes National Lakeshore. Outstanding Rivers and Streams include Deep River, East Branch Little Calumet River, Kankakee River. Salmonid Streams include Trail Creek, East Branch of Little Calumet River, Burns Ditch, Salt Creek, Kintzele Ditch, Galena River, and Lake Michigan.

NORTHWEST INDIANA REGIONAL RIPARIAN CORRIDORS

Regional Riparian Conservation Corridors are identified in this chapter based on: the presence of significant naturalized floodplain; the presence of parks or natural areas already in public or conservation trust ownership; or identification in public plans or documents for future recreational or conservation projects.

Grand Calumet River

The Grand Calumet River is a thirteen (13) mile waterway at the center of the Grand Calumet River/Indiana Harbor Canal Area of Concern, traversing Gary, Hammond, and East Chicago. Thirty Years ago this river was considered a "dead" river[13]. Toxic sediments had accumulated over half a century of unregulated municipal and industrial pollution. As a result of US Steel sediment clean-up, $288 million in Great Lakes Legacy Act funding, and U.S. Army Corps of Engineers dredging projects, hundreds of thousands of cubic yards of highly toxic sediments have been removed from the river or capped in place[14]. By 2020 much of the sediment cleanup work will be completed.

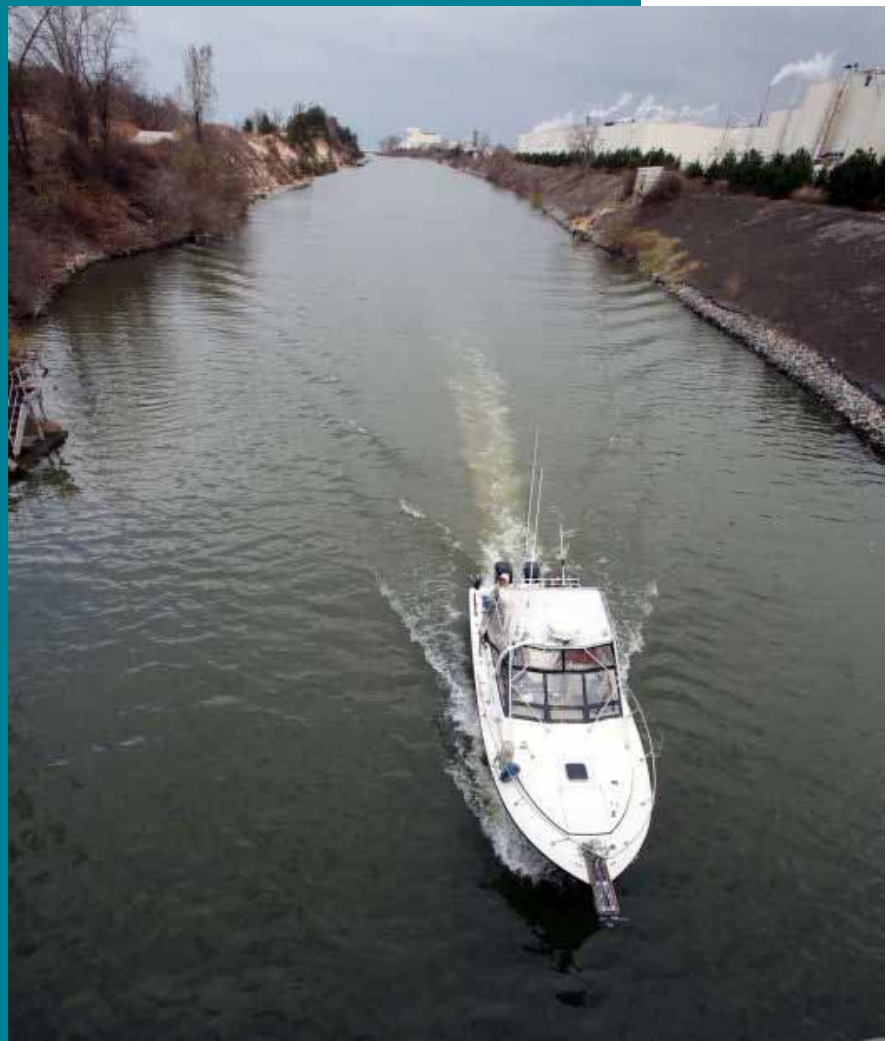
Today the water flows in this river are heavily dominated by Lake Michigan water used as cooling water at steel mills and treated effluent from industry and sewage treatment plants. During dry conditions, the river water typically meets or exceeds water quality standards, although during wet weather it can be contaminated with urban runoff and combined sewer overflows. Many of the combined sewer overflow problems will

13 www.epa.gov/grand-calumet-river-aoc

14 www.epa.gov/grand-calumet-river-aoc/legacy-act-cleanup-grand-calumet-river

GREENWAYS ALLOW US TO TREAT LAND AND WATER AS A SYSTEM, AS INTERLOCKING PIECES IN A PUZZLE, NOT AS ISOLATED ENTITIES.

—ED MCMAHON, DIRECTOR, AMERICAN GREENWAYS PROGRAM



be further reduced as the cities of Gary and Hammond implement long term control plans that will minimize these problems.

The Grand Calumet River forms a potential conservation corridor connecting the valuable conservation lands preserved and restored from the Marquette Park in Gary, through the many nature preserves within the Gary Airport Conservation Zone, through Roxanna Marsh, to the Gibson Woods Nature Preserve in Hammond.

Little Calumet River & Portage Burns Waterway

The Little Calumet River West Branch corridor stretches approximately 20 miles from the Illinois State Line to its junction with the East Branch and Burns Waterway in Portage. This waterway forms the boundary between Hammond and Gary to the north and Munster, Highland, Griffith, to the south. A primary feature of the West Branch is the Little Calumet River, Indiana Flood Control and Recreation Project. The Project includes over 9.7 miles of set-back levees, 12.2 miles of levees and floodwalls, flow diversion structures, and over 16.8 miles of hiking and biking trails. Within the project boundaries over 2,000 acres of wetlands are restored and protected for habitat and recreation, forming an essentially-in-place conservation corridor[15]. The West Branch further flows as a straightened canal through the City of Lake Station and Portage before the confluence with the Little Calumet River East Branch. The primary tributary to this branch is the Hart Ditch/Plum Creek watershed.

The Little Calumet River East Branch is 22 miles long. It rises from its headwater springs in Red Mill County Park and the National Lakeshore's Pinhook Bog

15 www.epa.gov/grand-calumet-river-aoc

Unit in LaPorte County, to flow west through Porter County, and through the communities of Chesterton, Porter, Burns Harbor, and Portage. Much of the river meanders somewhat naturally as it traverses the Indiana Dunes National Lakeshore, an existing conservation corridor, and the high-quality Moraine Forest area. The waterway is designated a salmonid stream, which means it is stocked by the DNR with steelhead trout, chinhook salmon, and coho salmon[16]. It is a recently cleared water trail with a high recreational potential identified as the next priority for blueway development. Extending Riparian Conservation Buffers eastward to the headwaters, is a vision for a Little Calumet East Branch Conservation Corridor embraced by the Shirley Heinze Land Trust in partnership with Save the Dunes Council, Indiana Dunes National Lakeshore, Indiana Department of Natural Resources Bicentennial Nature Trust, the Northwest Indiana Paddling Association and many others.

Burns Waterway, as formed by the confluence of the East and West Branch of the Little Calumet, provides connectivity between this extensive inland greenway, Indiana Dunes National Lakeshore Portage Lakefront Park, and Lake Michigan. Although the eastern bank of this waterbody holds an industrial steel mill, the west bank of the lower reach has been stabilized and planted with native vegetation, and has recreational trails and boardwalks managed by the City of Portage.

Deep River

The Outstanding State River designation applies to Deep River from its confluence with the Little Calumet West Branch north of I-94, meandering south through New Chicago, Lake Station, Hobart, Unincorporated Lake County, and

16 www.in.gov/idem/nps/3958.htm http://www.in.gov/idem/nps/files/wmp_littlecalumet-east_sec_1-2.pdf

Merrillville. Significant portions of the river's corridor are held by Lake County Parks including Deep River County Park, Big Maple Lake Park, and Three Rivers County Park. The City of Hobart also has parks and public access points on both the River and on Lake George. Finally, Deep River connects significant natural areas in Hobart Marsh, Deep River County Park, the Little Calumet River corridor, and Indiana Dunes. This corridor contains quantities of bottomland hardwood forested wetlands, which provide important habitat and flood protection, also protect the highest water quality and aquatic habitat reaches of the river.

Kankakee River

Sixty-five miles of the Kankakee River form the southern boundary of all three counties in our region. In addition to being a National Water Trail, thousands of acres of natural wetland habitat have been preserved or restored in its flood plain through county parks, DNR land, agricultural wetland and wildlife habitat reserve programs both within the levees, and in adjacent oxbow lakes and floodways. The Kankakee is ideally located to provide connections between habitat rich parks and preserves such as the Grand Kankakee Marsh County Park, Kankakee Fish and Wildlife Refuge, Kingsbury Fish and Wildlife Area, and other county parks, including other downstream locations in Illinois. Together, these major river corridors identified previously provide an excellent skeletal framework for a regional conservation corridor network. Preserving land along their length would generate over 120 miles of east-west and north-south connections, creating a Northwest Indiana nature network.

LOCAL RIPARIAN CORRIDORS

Many other smaller streams and creeks in the region have been the beneficiaries of community efforts to preserve and protect conservation areas along their banks. While the Regionally Significant Riparian Corridors identified above form the trunklines of a Northwest Indiana's Green Infrastructure system, the smaller corridors have the greatest potential to connect smaller isolated ecological hotspots with the larger system.

Coffee Creek

The Coffee Creek Watershed Conservancy already protects several miles of riparian conservation buffer along Coffee Creek, with 157 acres of prairie, wetland, and forest. Extending the length of this buffered area could provide a protected corridor connecting other managed lands within the vulnerable Moraine Forest core habitat to the neighboring Little Calumet East Branch Corridor and the Indiana Dunes National Lakeshore.

Salt Creek

Salt Creek is a 24-mile tributary of the Little Calumet River that stretches from the moraine forest areas south west of Valparaiso and continues north mostly through unincorporated Porter County on its way to Portage. The Porter County Unified Development Ordinance declares the Salt Creek corridor as Priority One in the Blueway zoning overlay[17]. This protection could provide vital long term water quality protection for this salmonid stream and maintain regional connections for several rare plant and butterfly species found in its watershed. Figure C-6 map shows a narrow strip of core habitat following the creek. It could also provide public recreational access to the waterway through a segment of the county identified with gaps in the Indiana Lake Michigan Coastal Program Recreational Needs Assessment Study.

17 Porter County Unified Development Ordinance Zoning Map- Overlay Blueways Plan. www.porterco.org/DocumentCenter/View/2306

Trail Creek

Trail Creek in Michigan City and LaPorte County is a popular water trail and fishing destination. Its riparian forests and wetlands provide ecological connection opportunities between the Moraine Forest Core Habitat area, the Indiana Dunes Core Habitat area, and the Galena River Watershed, and other natural areas in South West Michigan. The

City of Michigan City and the Trail Creek Watershed Group have already laid the foundation for this conservation corridor in a variety of plans and projects along the Trail Creek.

Cedar & Founders Creek

Cedar Creek and Founders Creek have their headwaters at the Cedar Creek Golf Course and Lemon Lake County Park, both located in remnant moraine forest surrounding Cedar Lake. Founders Creek merges with Cedar Creek to the east of the lake then flows south through Lake Dalecarlia, and ultimately toward the Kankakee via Singleton Ditch. This watershed contains several managed lands and hotspots of biodiversity. In 2014, NIRPC drafted a plan for the Town of Cedar Lake highlighting a potential conservation and trail corridor that would protect and connect these natural areas through existing rights of way and forested floodplains.

West Creek

West Creek is a tributary to the Kankakee River in the south western corner of Lake

County. The Lake County 2014 Parks and Recreation Master Plan identifies five areas for future park development along the West Creek Corridor, from the headwaters at Bull Run to the confluence with Singleton Ditch. The Figure C-6 habitat map shows that the corridor contains core habitat and rare species. In 2011, Indiana Department of Environmental Management found that water quality and the fish community in the creek had improved dramatically. These improvements were attributed to significant investments in soil and water conservation management practices by the agricultural community. Urban best management practices installed by the Town of St. John also contributed to this rapid change. The Corridor also coincides with a regional West Creek Corridor priority trail route.

URBAN, TRANSPORTATION, AND UTILITY CORRIDORS FOR GREENWAY CONSERVATION

Other linear features cross the landscape of Northwest Indiana in locations that may provide excellent opportunities to provide conservation corridors. Utility easements for electricity and pipelines are often suitable for native habitat types that can survive periodic disturbances for maintenance. Railroad and roadway rights-of-way may also be suitable with appropriate design for safety and provisions for wildlife crossings. Partnerships with the owners and operators of these rights-of-way can provide many benefits in major conservation areas.

In more heavily urbanized communities, the curbs and gutters in the street network form an important puzzle piece of the stormwater system. In some areas around the country, the addition of requirements and design guidelines to incorporate Green Infrastructure, and natural based stormwater management processes into roadway planning, has also created urban habitat corridors within cities. Rain Gardens, bioswales, and properly planted street trees, as well as other stormwater best management practices, can provide important habitat for pollinators such as insects and butterflies, and food for songbirds. Great examples of these can be found in Grand Rapids, Michigan and Milwaukee, Wisconsin. These communities have expanded their definition of "Complete Streets" to include green stormwater management practices and native plantings[18] [19] [20].

18 Grand Rapids Vital Streets Guide: http://downtowndevelopment.com/pdf/vitalstreets.pdf

19 www.werf.org/liveablecommunities/toolbox/gst_create.htm

20 http://city.milwaukee.gov/ImageLibrary/Groups/cityGreenTeam/documents/2013/Green_Streets_Stormwater_Manag.pdf

What is a Bioswale?

Bioswales are linear, shallow, vegetated channels that convey stormwater from one point to another. Oftentimes, they are used to guide runoff from its entry point on the property (downspouts, up-hill properties, etc.) towards a nearby rain garden, dry well or other structure. Bioswales are not just ditches under another name - they must be carefully designed and maintained to function properly. The vegetation in swales helps to trap pollutants, reduce the velocity of stormwater runoff, and encourage infiltration. In some cases, street-side bioswales can replace curb and gutter systems, as well as storm sewers[1].

1 Tip of the Mitt Watershed Council, www.watershedcouncil.org/bioswale.html

Reducing Barriers to Connectivity

While transportation and utility rights-of-way can provide potential greenway conservation corridors, they also often create obstacles for fish and wildlife trying to move between patches of habitat. The most visible result of this is road kill of small mammals, reptiles, and amphibians along region roadways. Even more dangerous remains the number of car crashes involving deer. In 2016, there were 766 car & deer collisions in Lake, Porter, and LaPorte Counties, 743 resulting in property damage and 23 resulting in reported injuries.

Management and maintenance of vegetation in the rights-of-way can also have an impact on safety, wildlife mortality, as well as the movement and spread of habitat destroying invasive species.

Less obvious is the impact of the berms used to raise roadways, train tracks, and trails out of waterways, wetlands, ravines, or low lying areas. These man-made ridges often fill stretches of floodways, wetlands, or even lakes, providing a few culvert pipes for water to move through. These pipes are often not designed with fish or wildlife passage in mind, or if they were, are not maintained to maximize this function. Poor placement and maintenance can even contribute to localized water quality problems.

Many of the problems transportation infrastructure causes for fish and wildlife mobility and for water quality can be mitigated against in initial project design. Existing infrastructure can also be retrofitted to reduce impacts. In recognition of these concerns, Congress created the Transportation Alternatives Program in MAP-21, and makes the following projects eligible for FHWA funding:

- manage vegetation in transportation rights-of-way to improve roadway safety, prevent against invasive species, and provide erosion control;
- address stormwater management, control, and water pollution prevention or abatement related to highway construction or due to highway runoff;
- reduce vehicle-caused wildlife mortality, or to restore and maintain connectivity among terrestrial or aquatic habitats.

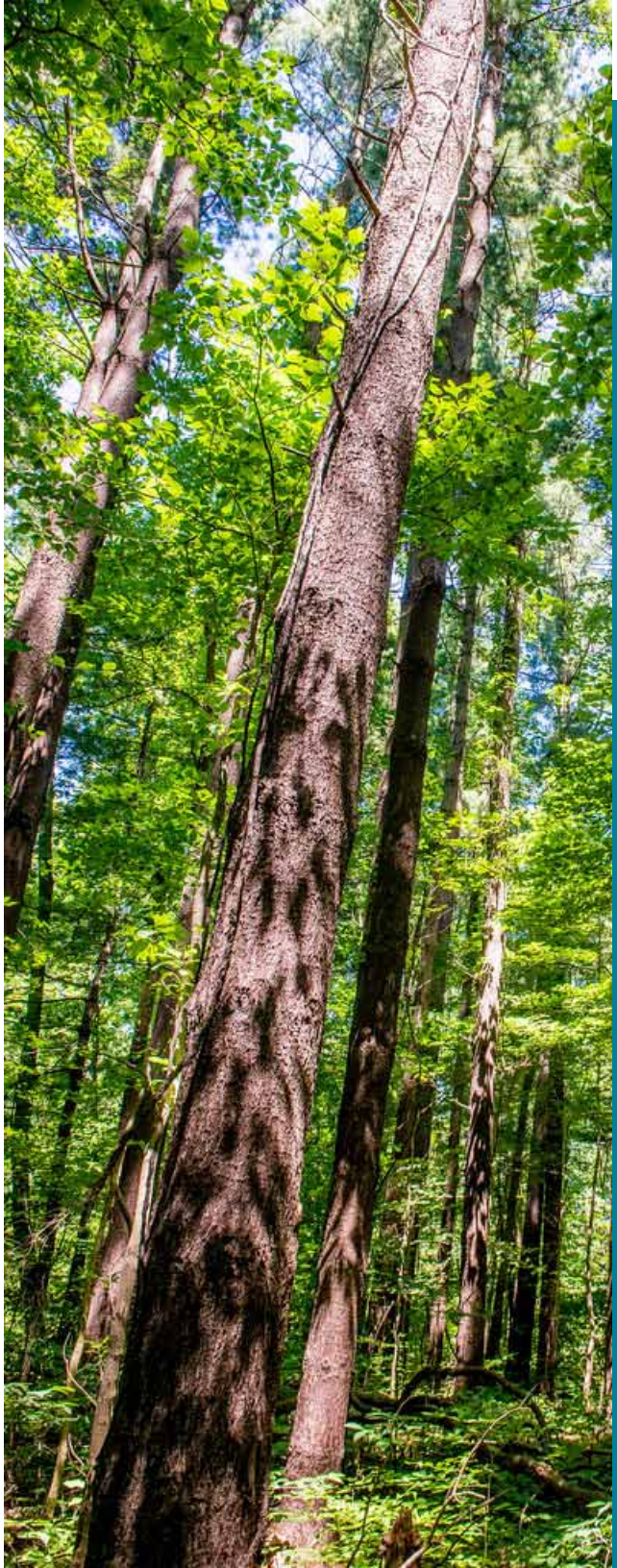
CONSERVATION GOALS AND OBJECTIVES

This document has outlined the ecological, social, and geographical basis to identify conservation focus areas, riparian, and urban corridors that provides the foundation of a functional Greenway Conservation Corridor Network for Northwest Indiana. The following goals and objectives are proposed to make further progress toward building on that foundation. Details of each objective can be found in Chapter V. A series of tables are presented where action steps are provided for each objective, and broken down based on responsibilities of the Greenways Eight stakeholders.

Figure I-12 identifies important core and secondary habitat areas in relation to managed lands. The selection of these habitat areas corresponds with nearly 72% of observed high quality natural areas or endangered, threatened and rare species documented in Northwest Indiana. There is strong potential to link some of the core and secondary habitat areas with greenway and blueway corridors.

GOAL C1: *Encourage and promote the preservation of natural or naturalized conservation corridors protecting and linking Northwest Indiana high quality natural areas across the landscape.*

- **Objective C-1.1:** Identify and Map Natural Ecological Communities currently remaining outside of conservation management
- **Objective C-1.2:** Promote acquisition or protection of conservation buffers surrounding and conservation corridors connecting existing lands managed for conservation
- **Objective C-1.3:** Incorporate protection of conservation buffer areas and conservation corridors into local planning and ordinances
- **Objective C-1.4:** Promote and support habitat restoration and invasive species management on utility right of way managers (Related to Transportation Goal T-6.1)



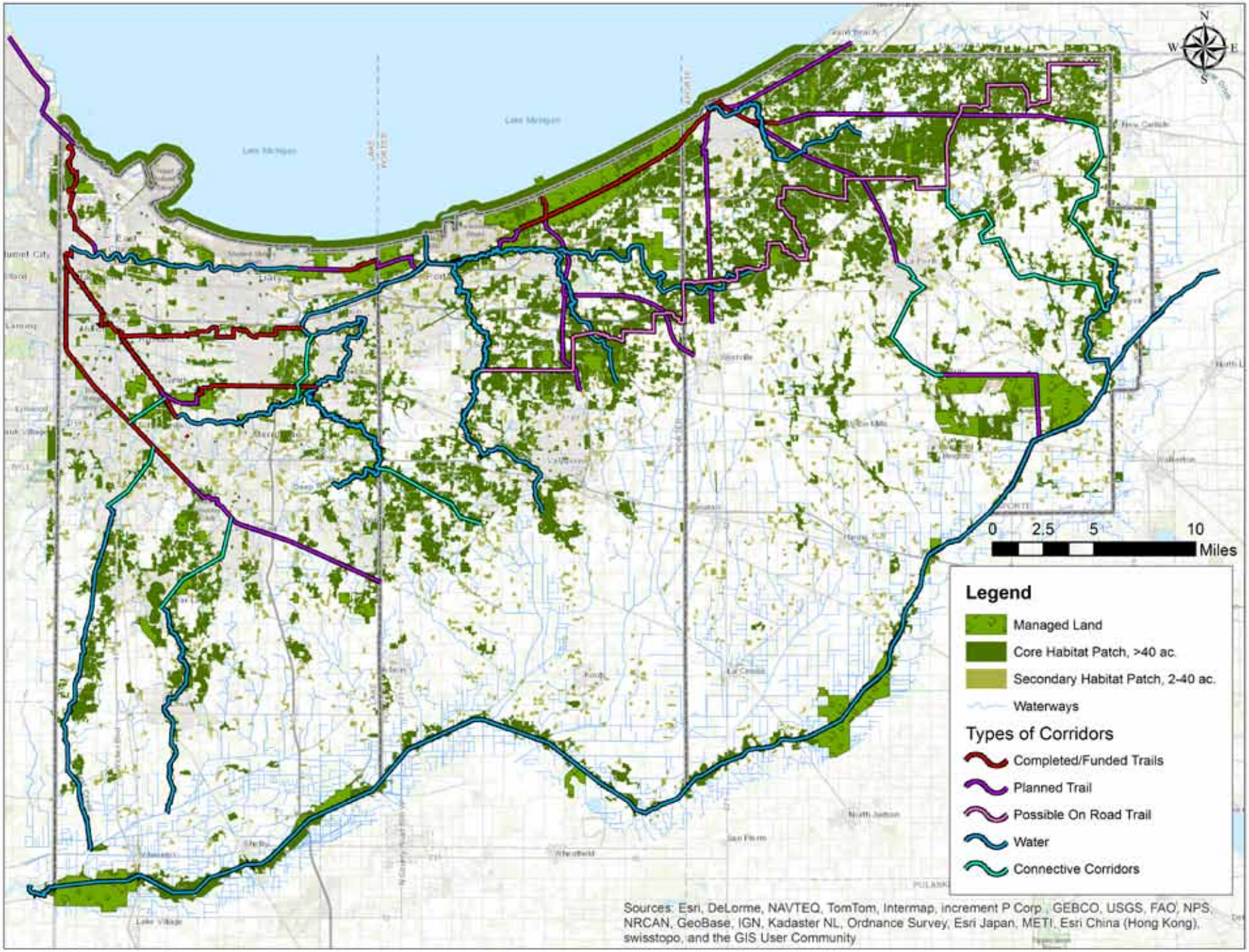


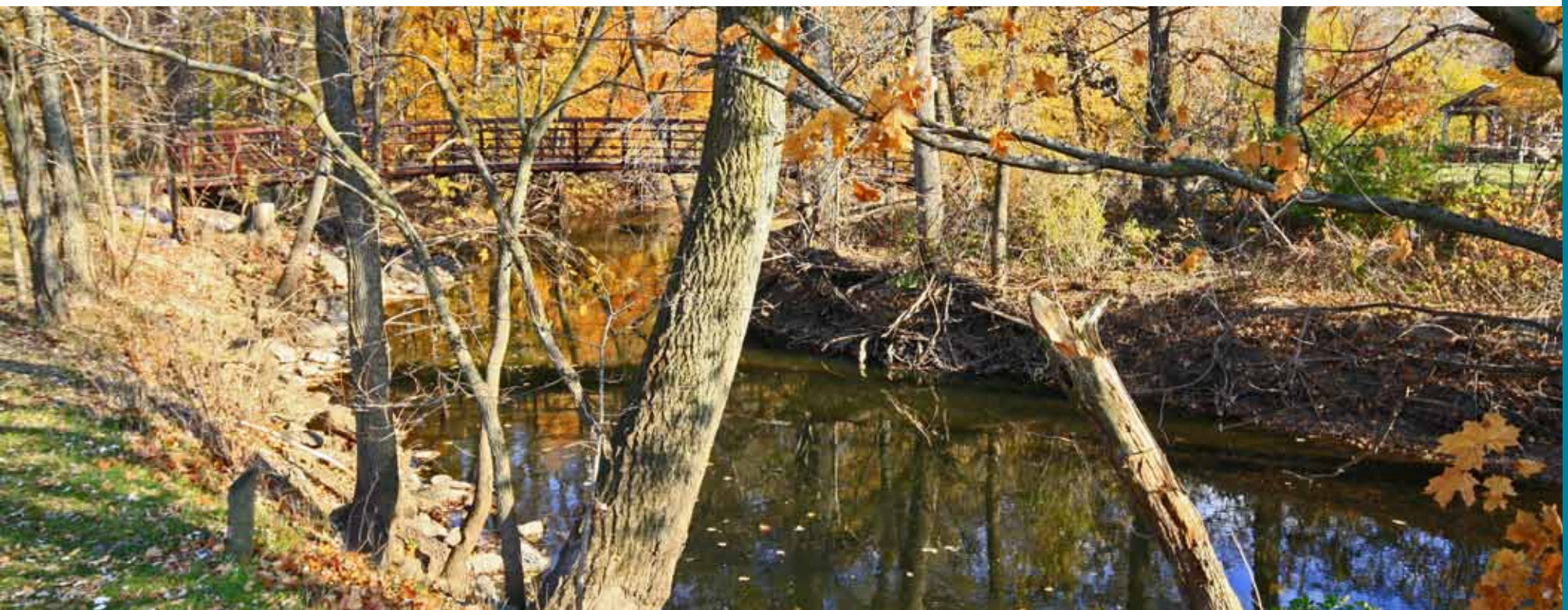
Figure I-12 Priority habitat areas in relation to managed lands and greeenway/blueway corridors

GOAL C2: *Increase public access to natural ecological communities and conservation lands through conservation corridors*

- **Objective C-2.1:** Increase the conservation functions of existing parks, recreational areas, open space, and trails
- **Objective C-2.2:** Promote and establish the formation of Greenway Centers to increase public access to conservation lands and provide eco-tourism magnets

GOAL C-3: *River and stream reaches within Conservation Focus Areas, as well as Regional Riparian, Local Riparian, and priority Blueways will have riparian conservation buffers*

- **Objective C-3.1:** Protect streambank and riparian habitat areas, limit active use of sensitive shoreline and streambank with significant buffers
- **Objective C-3.2:** Reduce development encroachment in floodplains, wetlands, and riparian buffers
- **Objective C-3.3:** Increase riparian lands in public ownership to manage conservation corridors and increase recreational access to waterways



RECREATION

The role of recreational activities within greenways corridors is significant. Indeed, planning for the enjoyment of our natural areas is a major component at nearly every governmental level, as well as at private land-trusts. Either through parks, conservation areas, or linear trail facilities, outlets for recreation represent the foundation of a region's quality of life.

As a disclaimer, the matter of recreational access is vast, and this plan will not attempt to cover all aspects. Thus there will be no focus herein on active recreation (soccer, baseball, etc.) or park programs. Of prime focus are those recreation activities that contribute to and benefit from the expansion of our greenways network: land and water trails.

RAIL-TRAILS ARE A PERFECT MEANS OF TELLING COMMUNITY STORIES....THEIR LONG AND COLORFUL HISTORY MAKE PERFECT GREENWAYS. THEY COMBINE THAT HISTORY WITH A RESPECT FOR THE ENVIRONMENT, AND RECREATION, AND ALLOW US TO LIVE LIFE ON A HUMAN SCALE MAINTAINING CONTACT WITH EACH OTHER AND WITH NATURE.

–DAVID BURWELL, PRESIDENT, *RAILS-TO-TRAILS CONSERVANCY*, 1998

LAND TRAILS

A source of immense regional pride remains our ever-expanding off-road trail network. From meager beginnings in the early 1990's with only 13 miles of known trail, the Northwest Indiana region has exploded with nearly 160 miles of interregional trails connecting many communities. This truly is a planning success story on a significant scale.

A number of factors have contributed to the success of trail-building in NW Indiana, but the seeds were laid many years ago. Due to the proximity of both Chicago and Lake Michigan, railroads literally crisscrossed Lake, Porter and LaPorte Counties in the late 1800s. By the turn of the 20th Century, roughly 1000 miles of track were in operation – a staggering amount relative to the size of the region.

However, the number of railroad miles in active use decreased with our declining manufacturing base. By the early 1990s, about 700 miles of active line were left.

This left about 300 miles for potential trail conversion. Thanks to new federal financing tools created at that time, a golden age of trail development began, and has yet to slow down.

Other factors contributed as well, including utility companies allowing trails within their corridors for no fee, and simply a general appreciation of their quality of life benefits. This latter factor has led many communities to invest in even more new miles of trail without federal assistance.

BENEFITS

Trails offer a tremendous number of benefits – both individually and collectively. These include:

- *Transportation*: Trails provide options for those looking to commute to work, shop, or just visit others. Cost savings by walking and bicycling can add up quickly when compared to automobile use. These options also open up potential economic opportunities for those who might not be able to afford their own car.

- *Improving Health*: Inactive lifestyles remains a problem in the United States. Obesity rates continue to climb, and much of this is due to physical inactivity. Where trails are present, people use them more often. This in turn increases one's physical fitness and pocketbook since better health may well mean fewer ailments and thus less medical bills.

- *Community Connections*: The vast majority of trail miles in NW Indiana were once railroad corridors, and many of our current communities came about due to settlements growing along these corridors. Trails carry forward this legacy by providing connections to our neighbors.

- *Increased Property Values*: A strong indicator of the popularity of trails are home sales. Studies have demonstrated that the presence

of a trail increases property value and ease of sale slightly, or has no effect[1]. Trails remain a solid quality of life indicator, and always score high on community surveys of desired amenities[2].

TRAILS IN 2018

Today there are 11 major trail facilities either fully or partially open in the three-county NIRPC region. Another facility, the Veterans Memorial Trail from Crown Point to Hebron, has received funding and land is being acquired. Table II-2 summaries these facilities on the next page.

Regarding all trail facilities in the NIRPC region, Table II-1 summarizes these by municipality where they are located (not management authority). This includes local systems and loop trails within parks.

Municpality	In Miles		
	Trail	Funded	Future
Burns Harbor	0.0	1.0	1.1
Chesterton	7.3	0.8	3.1
Crown Point	3.3	0.0	3.3
Dyer	1.3	0.0	0.0
East Chicago	2.3	0.7	1.0
Gary	12.2	1.5	8.6
Griffith	3.3	1.9	0.0
Hammond	25.1	4.7	3.2
Hebron	0.0	0.0	2.1
Highland	9.2	0.0	0.0
Hobart	7.6	0.0	0.0
Lake County	0.0	0.0	5.8
Lake Station	3.5	0.0	0.0
LaPorte County	2.9	1.0	30.1
LaPorte, City	0.0	2.8	0.0
Merrillville	10.8	2.0	4.6
Michigan City	0.8	2.9	5.6
Munster	15.9	2.0	0.0
Ogden Dunes	0.0	0.0	3.7
Portage	10.7	6.0	1.1
Porter, Town	6.4	0.0	0.0
Porter County	9.2	4.8	27.1
Schererville	6.8	4.5	0.0
St. John	3.4	0.0	0.0
Valparaiso	14.1	8.5	0.0
Whiting	2.1	0.0	0.0
Totals	158.4	45.0	100.5

Table II-1 Total off-road multi-use trail miles in NIRPC region

Priority Trail Corridors

At the very core of planning the NW Indiana regional trail network remains the Priority Trails Corridor Map. A rudimentary designation of potential trail routes first emerged with the 1994 plan, and has since been expanded upon to involve 30 priority corridors spanning over 500 miles of potential trail development.

1 "Property Value/Desirability Effects of Bike Paths Adjacent to Residential Areas," David P. Racca and Amardeep Dhanju, Center for Applied Demography & Survey Research, University of Delaware, November 2006.

2 More information on these and additional benefits from trails can be found at www.americantrails.org.

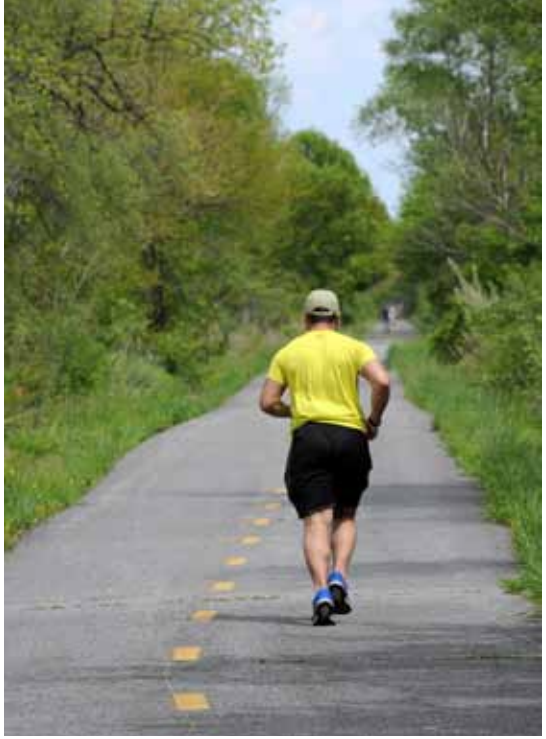
NIRPC Regional Trails	Facility Logo	Location	Alignment	Surface(s)	Miles Open	Miles Remaining	Total
Calumet Trail		Northern Porter County along US 12 and South Shore Line	E-W	Limestone	9.1	Complete	9.0
C&O Greenway		Merrillivlle, from Oak-Ridge Prairie in Griffith to Lake/Porter County Line	NW-SE	Asphalt	2.8	8.7	11.5
Dunes-Kankakee Trail		Indiana Dunes State Park to Kankakee River	N-S	Asphalt	10.1	23.0	33.1
Erie-Lackawanna Trail		Hammond to Crown Point	NNW-SSE	Asphalt	17.0	Complete	17.0
Lincoln Memorial Trail		Michigan City to Kankakee River	N-S	Asphalt	2.9	31.0	33.9
Little Calumet Levee Trail		Munster to Gary along Little Calumet River Levee system	E-W	Asphalt and Limestone	12.5	2.2	14.7
Monon Trail		Hammond to Munster	N-S	Asphalt	4.4	Complete	4.4
Oak-Savannah Trail		Griffith to Hobart	E-W	Asphalt	10.3	1.9	12.2
Pennsy Greenway		Munster at State Line to Crown Point	NW-SE	Asphalt	4.0	7.3	11.3
Prairie-Duneland Trail		Portage to Chesterton	WSW-ENE	Asphalt	8.9	Complete	8.9
Veterans Memorial Trail		Crown Point to Hebron	WNW-ESE	Asphalt and Llmestone	0.0	10.1	10.1
Totals					82.0	84.2	166.1
Multi-State Trails							
Marquette Greenway		Chicago Calumet Park to New Buffalo, Michigan	E-W	Asphalt (with shared roads)	21.4	34.1	55.5
American Discovery Trail		Munster to LaPorter County	NW-SE	Asphalt (with shared roads)	5.8	38.4	44.2
Totals					27.2	72.5	99.7

Table II-2 Regional & multi-state trail details

Figure II-1 details the current Priority Corridor map. A variety of colors are used to indicate the priority rank (high, medium or low), and state of development. The color blue indicates those corridors that have either been built, or are fully funded for imminent development.

A deep red color is added to two corridors which were identified in the 2006 *Indiana State Trails Plan* as "Visionary Corridors." These include the three-state Marquette Greenway, and the national American Discovery Trail route.

Over the years, these corridors have been adjusted, revised and reordered according to local initiative. A case-in-point is the Chessie Corridor in LaPorte, which was added ahead of a funded trail development in the city. A majority of adjustments involve a change in priority of an existing corridor. Each of these corridors are described on the map with approximate locations. The



width of these proposed corridors is roughly two miles, which allows for variation of the route during engineering and design. Final alignments may be impacted by land availability, physical obstacles, environmental impact, or legal obstructions. The idea is to keep the final route in alignment, making certain off-road regional connections are retained in the most direct way possible.

Figure II-1 and Table II-3 provides a detailed account of the 26 trail corridors currently identified for potential development in the NIRPC region.

Interstate Cooperation

A number of priority trail corridors directly access routes in both Illinois and Michigan. NIRPC has maintained a strong relationship with sister Metropolitan Planning Organizations (MPO) such as the Chicago Metropolitan Agency for Planning in Chicago and the Southwest Michigan Commission. Additional collaboration has been fostered with advocate groups which include Chicago's Active Transportation Alliance and Harbor Country Trails in SW Michigan. NIRPC also reaches out to other groups for the promotion of cross-state trail opportunities. These entities include the South Suburban Mayors and Managers Association in East Hazel Crest, IL, and Trails for Illinois. Included in Table II-3 are the many municipalities that share trails systems with their Indiana cohorts. NIRPC will continue to maintain these relationships, and aim for further opportunities to enhance greater regional trail access.

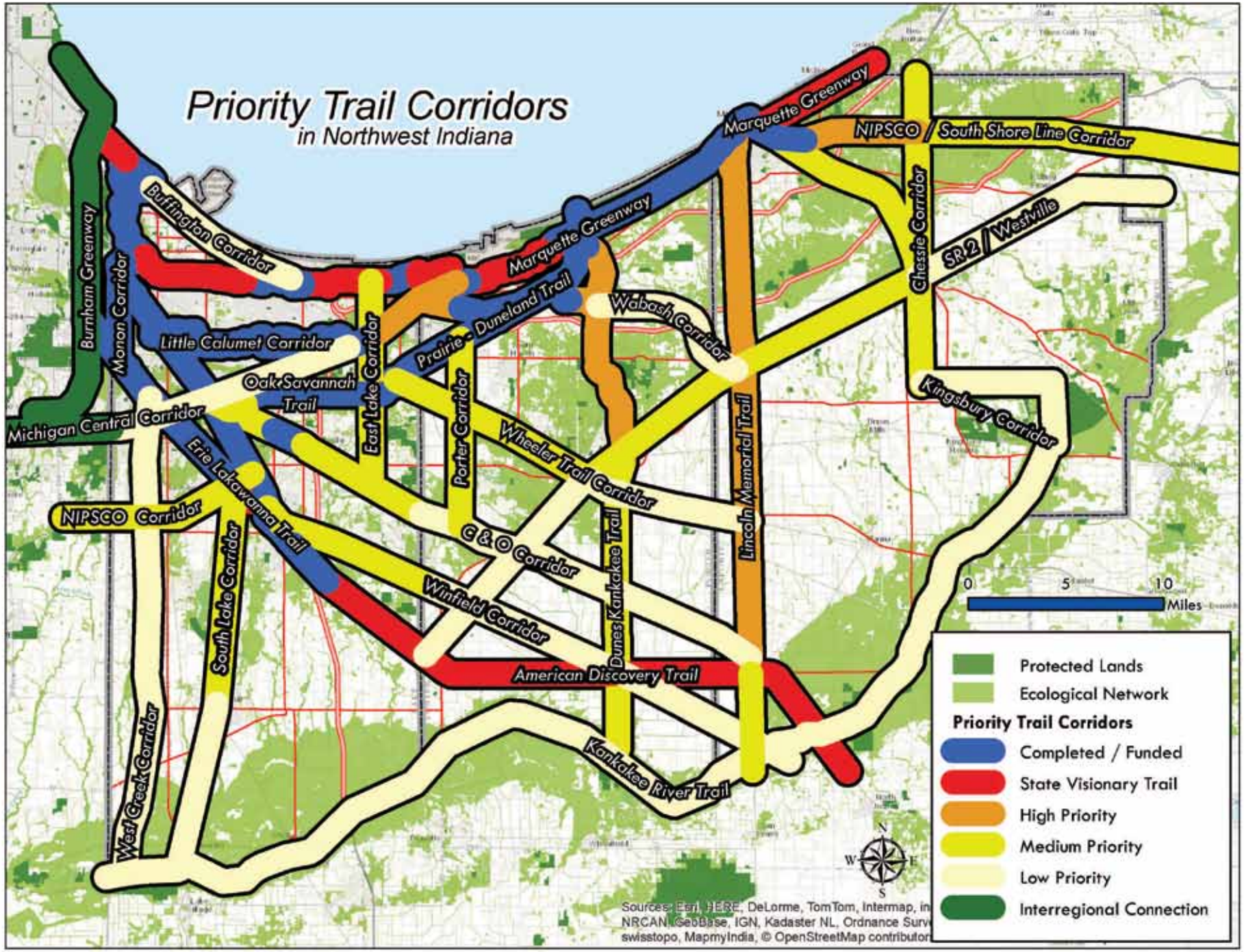


Figure II-1 Priority Regional Trails & Corridors Map

#	Priority Corridor	Municipalities	Corridor Description	Built/Funded	Visionary	High	Medium	Low
1	American Discovery Trail	Munster, Schererville, Crown Point, Lake County, Hebron, Porter County, Kouts, LaCrosse, LaPorte County	Part of national trail system. Region-wide route linking a number of trails inlcuding the Pennsy Greenway and Veterans Memorial Trail in Lake County. Route becomes primarially rural east of Crown Point, through Hebron, Kouts and LaCrosse.	Munster, Schererville (As part of Pennsy Greenway)	All			
2	Buffington Harbor	Gary, East Chicago, Whiting	Primarially located within heavy industrial areas near the lake.					All
3	C&O Greenway	Griffith, Merrillville, Hobart, Winfield	Along abandoned Chesepeke & Ohio Railroad corridor. Most of the the corridor is owned by NIPSCO.	Merrillville (Taft to Mississippi)			Griffith to Merrillville, Merrillville to Winfield	Winfield to Lacrosse
4	Chessie	Michigan, LaPorte County, City of LaPorte	Along abandoned Chessie Railroad in north-central LaPorte County. Possible connections to New Buffalo, MI.	City of LaPorte			City of LaPorte to Michigan State Line	
5	Dunes-Kankakee Trail	Porter, Chesterton, Porter County, Valparaiso, Kouts	North-south trail corridor through central Porter County from the Indiana Dunes to the Kankakee River. Trail will follow along State Route 49, with some diversions.	Porter - Indiana Dunes State Park to US 20, Calumet Trail and former Brickyard Trail, Valparaiso		Porter to Valparaiso	Valparaiso to Kankakee River	
6	East Lake	Hobart, Lake Station, Gary	Along NIPSCO-owned property.				All	
7	Erie-Lackawanna	Hammond, Highland, Griffith, Schererville, Lake County, Merrillville, Crown Point	Completed trail system from downtown Hammond to Crown Point.	All				
8	Iron Horse Heritage	Portage	Partially completed corridor in Portage. Future segments will take route to county line.	Prarlie-Duneland Trail to Crisman Ave		Crisman Ave to Woodland Park		
9	Kankakee River	Lake, Porter and LaPorte Counties	Trail along the river. Long-term project.					All
10	Kingsbury	Kingsbury, LaPorte County	Route connecting the City of LaPorte to the Kankakee River.					All

Table II-3 Priority Regional Trails & Corridors Details

#	Priority Corridor	Municipalities	Corridor Description	Built/Funded	Visionary	High	Medium	Low
11	Lincoln Memorial	Michigan City, LaPorte County, Westville, Wanatah, LaCrosse	North-south trail corridor along the western edge of LaPorte County, following US 421.	New Durham Estates to Westville		Michigan City to LaCrosse	LaCrosse to Kankakee River	
12	Little Calumet River Corridor	Munster, Hammond, Highland, Gary, Lake Station, Portage	Winding path on a river levee – primarially limestone. Two significant gaps exist. Most will be re-paved as asphalt in 2016 .	Munster to Gary		Lake Station to Portage		
13	Marquette Greenway	Hammond, Whiting, East Chicago, Gary, Indiana Dunes National Lakeshore, Ogden Dunes, Portage, Burns Harbor, Porter, Beverly Shores, Porter County, Michigan City, LaPorte County	Three-state trail initiaitve from Chicago to New Buffalo, linking together a number of trail facilities. Route will allow several points of access to Lake Michigan.	Hammond to East Chicago, Gary (Downtown (as Gary Green Link), Miller), Portage, Burns Harbor, Porter (as Dunes-Kankakee Trail), Porter County (as Calumet Trail), Beverly Shores (as Calumet Trail), Michigan City (as Singing Sand Trail), LaPorte County	All			
14	Michigan Central	Dyer, Griffith, Lake County, Gary	Following abandoned Michgian Central Railroad. Most of corridor still intact, with small gaps.					All
15	Monon	Munster, Hammond	Completed trail system from downtown Hammond to Munster.	All				
16	NIPSCO/South Shore Line	Michigan City, LaPorte County	Proposed route from Michigan City to South Bend along the South Shore Line rail corridor.			Michigan City to Chessie Corridor		Chessie Corridor to St. Joseph County Line
17	NIPSCO/St. John Corridor	St. John, Lake County	Route utilizing NIPSCO corridor to connect St. John to Pennsy Greenway.	St. John - partial			All	
18	Oak-Savannah	Griffith, Gary, Hobart	Completed trail system from Griffith to Hobart.	All				

Table II-3 Priority Regional Trails & Corridors Details

#	Priority Corridor	Municipalities	Corridor Description	Built/Funded	Visionary	High	Medium	Low
19	Porter Corridor	Portage, Porter County	Corridor situated along Willowcreek Avenue, primarially in Portage.				All	
20	Prairie-Duneland	Portage, Porter, Chesterton	Completed trail system from Portage to Chesterton.	All				
21	State Route 2/Westville	Hebron, Porter County, Valparaiso, Westville, LaPorte County, City of LaPorte	Route alongside SR 2 from Hebron to the City of LaPorte. Facility to be built within road ROW.				Valparaiso to City of LaPorte	City of LaPorte to St. Joseph County Line
22	South Lake Corridor	Crown Point, Cedar Lake, Lowell, Lake County	Corridor linking south-central Lake County communities. Primarially in-country and some rail-with-trail development.				Crown Point to Lowell	Lowell to the Kankakee River
23	Wabash	Chesterton, Porter County, Westville	Along abandoned Wabash Rail road from Chesterton to Westville.	Chesterton (part of Westchester-Liberty Trail)				
24	West Creek	St. John, Lake County	Route along West Creek from St. John to the Kankakee River. Nearly all rural in nature.					All
25	Wheeler Trail	Hobart, Lake County, Porter County, Valparaiso, LaPorte County	Route to be developed within SR 130 ROW from Hobart to Valpariso. Will connect Valpo Pathways system via Vale Park Road.				Hobart to Valparaiso	Valparaiso to Lincoln Memorial Trail Corridor
26	Winfield	Crown Point, Winfield, Porter County, LaPorte County	Proposed route along abandoned Erie-Lackawanna Rail corridor from Crown Point east. Corridor becomes nearly unbuildable east of Lake/Porter County line.				Crown Point to Winfield	Winfield to Kankakee River

Table II-3 Priority Regional Trails & Corridors Details

POLICY, DESIGN & BEST MANAGEMENT

At the front end of all planning processes regarding trail development are four key factors: policy, funding, design and maintenance. This section provides a cursory overview of the major elements behind policy development, fiscal resources, sound trail design and ongoing management strategies. Many other resources are readily available for further research and are noted.

Policy

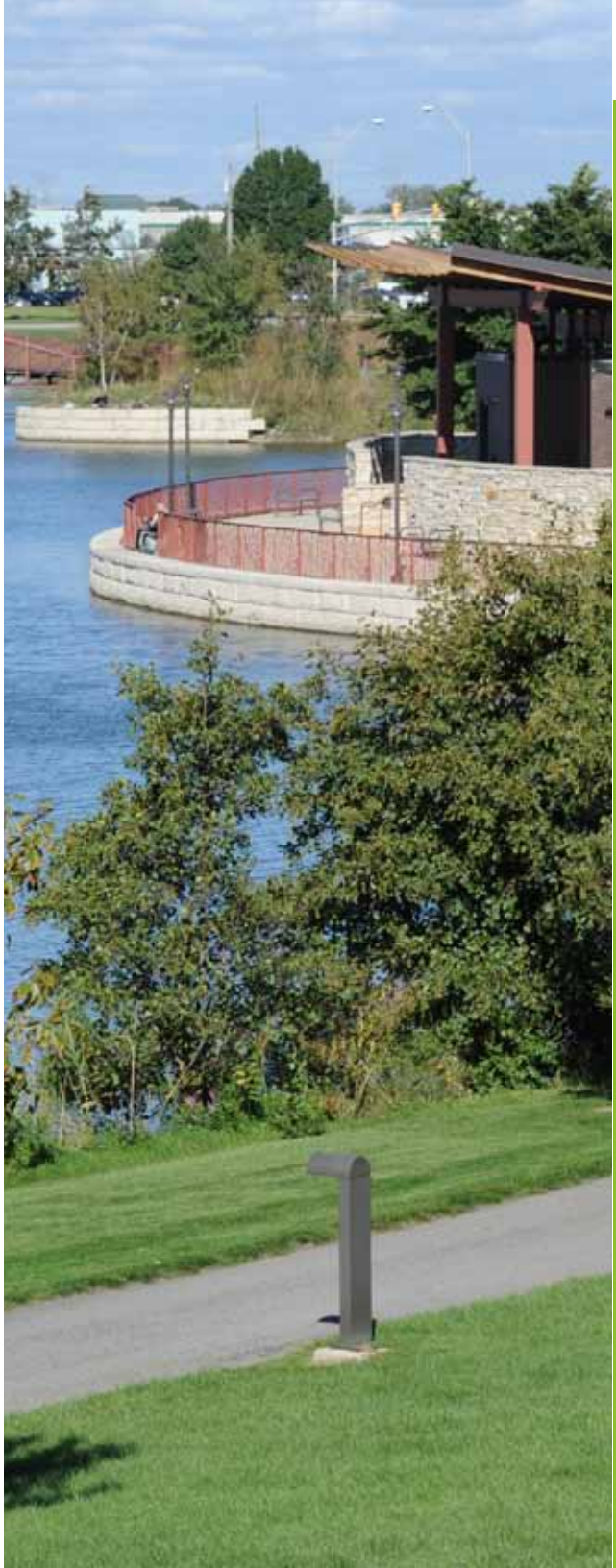
Laying the groundwork for a successful trail network starts at the policy development level. The process can be complicated, but once established, greatly aides with growth of new and additional trail miles in relation to new residential and commercial development projects.

The core document for municipal focus remains the comprehensive or master plan. The goals, objectives and policies outlined in the plan sets the stage for all planning going forward. Selective strategies which should be present in this plan includes:

- A map outlining new trails in jurisdiction
- An overview of design standards
- Policy recommendations for trails in new developments
- A prioritization of trail development over a five-year period

Once these strategies are approved in a new comprehensive or master plan, then the next step is to codify these into the existing subdivision and zoning ordinances. Typical language includes the construction of trail corridors in new developments where identified on the municipal map, the standard width and surface of trail, wayfinding (signage), and the location of shelters, parking, water fountains and restrooms. Here the municipal plan commissions hold enormous influence towards the inclusion of these critical elements.

Another example would be trails of any significant length which traverse through



or along residential subdivisions. Many times no connections are provided, which in turn cut off key links to a large population of potential users. With a detailed map as a guide, decisions on these key connections can be made prior to development, and thus save on costly retrofits after the trail begins its useful life.

Additional focus can be afforded beyond the comprehensive plan with the creation of a separate plan for bicycle and pedestrian transportation. Here municipal-wide projects can be identified in detail, and prioritized in regards to cost and need.

Funding

A subject of great concern for local officials remains identifying funding for projects, including trail projects. Thankfully, a myriad of options are available. Creativity and research is the key, but if the will is strong in a community, the money will certainly follow.

In the public sector, funding sources for trails can either be local (and county), state, or federal in origin. State or federal funding will most likely require a local match, and that amount varies depending on the type of funding requested. NIRPC administers several funding programs for which trails are eligible, and nearly all of them require a minimum of a 20% local match.

As enticing as this may sound, a drawback to using state or federal monies are the many requirements needed to complete the project. In fact, using federal monies raises the overall cost of a trail project 25% to 50% than it would cost with local funds only. Furthermore, due to plan processing and permitting, the time needed to complete a project also increases – sometimes significantly. Even with these drawbacks and delays, building a trail using federal funds has been the clear choice for nearly all NIRPC municipalities. Over 95% of new trail development in NW Indiana has involved federal funding, with well over $40 million allocated since 1991.

Apart from public sector sources, many private sector opportunities are also available. Hospitals, corporations, and private foundations have contributed millions of dollars nationally for new trails. In NW Indiana, this potential remains relatively untapped. To date much success has been achieved working with the Northern Indiana Public Service Corporation (NIPSCO) to use their linear corridors for trails free-of-charge to the communities.

Of course private developers can contribute to trail development as laid out in municipal comprehensive plans, subdivision and zoning ordinances[3].

Design

When planning for a future trail, the following are key considerations:

- ***Physical space***: Upon initial analysis, the very first factor should be the physical room to route a trail. This represents more than half the battle, and currently many solid opportunities exist.

  Throughout the NIRPC region, approximately 300 miles of railroad corridors were abandoned over the last 50 years. Well over 100 miles have been converted to trail use, but plenty remain. These corridors, often wide and heavily wooded, offer unparalleled opportunities for trail conversions.

  Apart from the abandoned corridors are those that are currently active. "Rails With Trails" are becoming a popular option for trail development, and have been proven safe through a report issued by the U.S.

3 A valuable resource on the many avenues to help fund trails can be found at the Rails-to-Trails Conservancy webpage at this link: www.railstotrails.org/build-trails/trail-building-toolbox/acquisition/financing-and-funding/

Reclaiming History

The location and impact of roilraods have played a major role in shaping the communities of NW Indiana. As the rails-to-trails movement sweeps across the region, many communities have taken the opportunity to note the historical signifcance of these corridors. Crown Point's Summit Street Erie-Lackawanna Trailhead features a shelter in the shape of their former depot, including a replica water tower. In Griffith, signage was errected commemorating Dwiggins Junction (below), describing the critical role of the railroad in the development of the town.

Department of Transportation[4]. Since rails with trails are rare in the Midwest (more common on the coasts), proposing routes on these active corridors could be challenging for region railroad companies.

Another linear corridor that also affords opportunities are utility-owned, usually with overhead powerlines or underground pipelines. The Northern Indiana Public Service Corporation, or NIPSCO, is the primary landowner of these utilities, and over the years many miles of trail have been built on their properties for zero land cost to the municipality. NIPSCO has been an excellent partner in the creation of the regional trail network. A final option are riparian corridors, or waterways which meander through the region. Many of these rivers, creeks or ditches are county regulated drains, and in turn must be kept clear of physical impediments within 75 feet of the waterway's center line. This enables county crews to maintain the waterways, but also could afford trail development opportunities. However, building within these drainage zones does require a permit, and most importantly, are often privately owned by the adjacent landowner.

Beyond linear corridors, other options can be mapped out including right-of-way space, platted but un-built roads, and "in-country" routes, or those routes not defined by railroads, utilities or waterways. A clear example of utilizing rights-of-way exist in Valparaiso's Pathways network. This system has been developed by widening existing sidewalks along streets. As of 2016, over 15 miles of these multi-use sidepaths have been created, with many more scheduled for construction.

"In-country" routes are far more challenging due to land ownership

4 "Rails-with-Trails: Lessons Learned," U.S. Department of Transportation, August 2002.

issues and costs. Sometimes few linear opportunities exist to connect areas, so new ones have to be planned carefully with landowner concerns addressed.

Mid-block crossing

- ***Land Ownership:*** By far the most complex and time-consuming part of trail development is assembling the land for the route. Sometimes this process can be as simple as a donation, but more likely will involve title searches, appraisals and compensation to the owner. When dealing with abandoned railroads, the complexity factor can skyrocket due to the age of the corridor and the ownership rights of the adjacent property owners.

- ***Connections & Access:*** Planning a route that creates connections to major community destinations is key. With established linear corridors, the issue centers upon access points to the adjacent neighborhoods or commercial areas. With side paths, a prime consideration is linking up parks, schools and other areas of interest – all while creating safe crossings at street intersections.

- ***Street Interactions***: No matter what type of trail is constructed, it most likely will encounter a roadway. Making sure trail users can safely cross these thoroughfares remains a critical element of successful designs. Where trails meet intersections, clearly-painted zebra crosswalks should be evident, as well as push-button walk signals. Ped-countdown signals are the preferred choice.

As for those crossings that are "mid-block," or too far from a stop sign or traffic light to be utilized, two design options should always be considered. Refuge islands are one option. The term refuge Islands refers to the installation of a curbed island in the middle of the roadway. These provide trail users the ability to cross the road one lane at a time, while at the same time affording drivers the ability to clearly see these users as they approach.

The second option is High-Intensity Activated crossWalk, or HAWK beacons, which stop vehicular traffic with an activated red-light signal at the crossing. A HAWK beacon is a popular option for crossing very congested roadways. Combining

these with refuge islands at mid-block crossings would certainly provide the safest option possible for trail users.

- ***Wayfinding:*** Trail signage, or wayfinding, is a critical element of any successful trail project. Those on the trail appreciate knowing what streets they are crossing, communities they are entering, and nearby attractions such as parks and business districts. Equally important are the identification of nearby water fountains and restrooms.

Even so, the NW Indiana regional trail network is largely devoid of these signs, leaving trail users with no sense of what community they are in, or even what streets they are crossing. As a solution to this problem, NIRPC released the Unified Trail Wayfinding Guide in 2016 which mandates a standardized wayfinding design for all federally-funded trails in the NIRPC three-county region. The family of options are shown in Fig II-2.

- ***Surface Type***: Trails identified in the *G&B 2020 Plan* are specifically intended for multi-use functions for all types of non-motorized activity.

HAWK Signal

This not only includes walkers, joggers and bicyclers, but individuals in wheelchairs, on rollerblades, or with baby strollers. NIRPC encourages these regional system trails to be built with asphalt surfaces for optimum

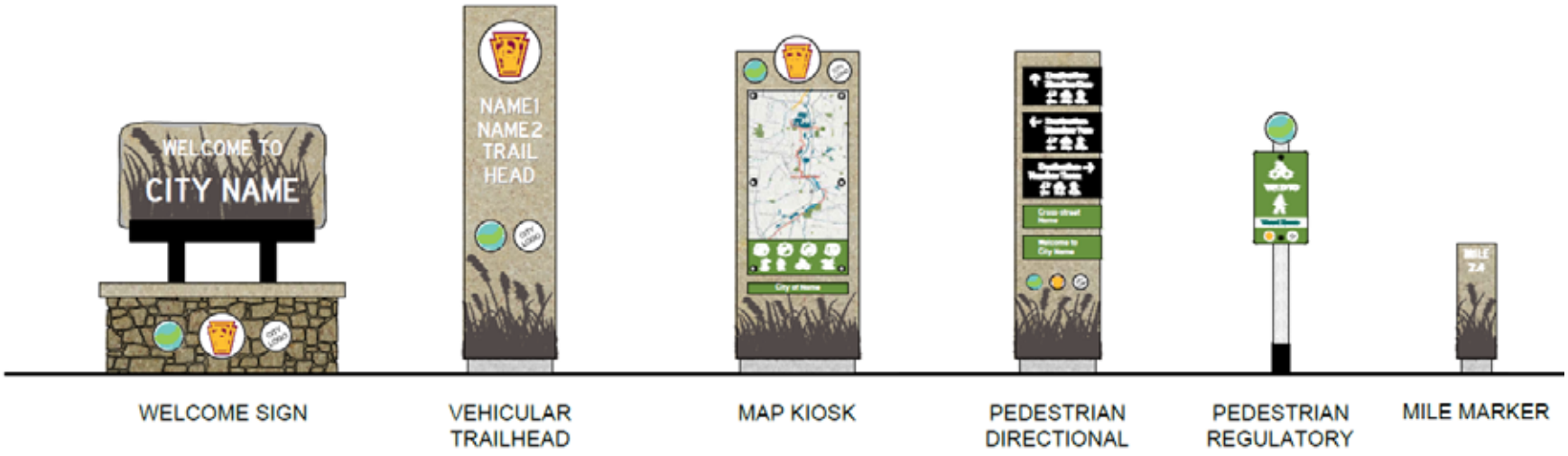


Figure II-2 Wayfinding Signage for NIRPC Region

results. Concrete is another option too, but care must be afforded to make certain the joints are saw cut and not troweled. This ensures a smooth ride for those using wheels.

The width of a trail is also an important element. The minimum amount for a trail should never be less than eight feet wide, with ten feet being preferred. Consideration for the trail's location will determine how wide a trail should be. In some heavily populated areas 12 to 14 foot wide facilities are not uncommon.

- ***Trailheads:*** Providing a place where people can safely access the trail is always important, and usually a major design feature of a facility. Trailheads can provide both identity and functionality for users. At these sites ample vehicle parking should be available, as well as trail map kiosks at the bare minimum. From here, other amenities can be incorporated such as shelters, benches, water fountains and even restrooms.

- ***Landscaping:*** Along most linear corridors, landscaping remains basic with random tree installations and foundation plants at trailheads. However, many trail corridors are opting to become "naturalized" by establishing native prairie plants, and only mowing a few feet beyond the pavement. This not only saves on mowing expenses, but also serves as prime habitat and connects corridors for wildlife as detailed in the Conservation chapter.

- ***Public Art:*** An exciting new opportunity to create civic art along trails has taken hold on many national systems. Opportunities abound for sculpture and painting projects that help enhance a corridor and provide a unique visitors experience. Most effective are projects that are implemented where graffiti has been an issue[5].

5 For more information, and to view examples, please visit www.americantrails.org/resources/art/.

Typical Trail Operations & Maintenance Activities[1]

- Inspection and Citizen Response
- Trail Surface Maintenance
- Repaving and Pavement Overlays
- Sweeping/Street Sweeping (For On-Street Facilities)
- Street Surface Upkeep and Repair (On-Street Facilities)
- Parking Lot Repair at Trailheads
- Maintain Connecting On-Street and Sidewalk Routes
- Vegetation and Pest Management (e.g. Trimming Overhanging Branches)
- Irrigation Systems
- Litter and Trash Removal
- Graffiti and Vandalism Control
- Dust Reduction
- Address Detours/Disruptions (With Workable Alternative Routes)
- Remedy "Social Trails" (Such as Shortcuts)
- Repair Trail Structures and Fixture/ Erosion Control
- Signage (Especially Safety Signage), Striping and Lighting
- Rest Areas, Shelters and Water Stations (Including Equestrian)
- Toilet Facility Service
- Patrol, Security, Enforcement, Safety Hazard Reduction
- Special Event Policies and Permitting
- Education and Enforcement
- Accident and Incident Data Tracking

1 Robert Searns, Operations, Maintenance & Stewardship 101, American Trails, 2005

OPERATIONS & MAINTENANCE

The success of a trail always returns to how well it is maintained. Great effort can be expended in building a trail, only to have it fail due to unsound or unsafe management practices. There are number of factors to consider:

- ***Vegetation:*** A primary consideration for a well-maintained trail centers around how often vegetation is attended to. Basic elements such as mowing are a given, but more attention should be afforded to pruning back tree branches and large shrubs that impede the trail users. Common complaints remain shrubs growing into the trail paths.

- ***Surface Upkeep:*** Differences exist between maintaining certain trail surfaces. An example involves paved versus stone, where the latter, although cheaper to install, does involve more attention. Paved surfaces will crack over time, and care must be afforded to seal these before they become a hazard to wheeled users. Broken glass and graffiti are other issues that need continuous attention. Other considerations are snow plowing and leaf removal.

- ***Corridor Upkeep:*** Apart from the trail surface, issues will arise on the corridor itself involving litter, sign damage, lighting and drainage. Each of these need to be incorporated into a comprehensive maintenance plan that addresses these matters and assigns the proper department to lead this effort.

EQUESTRIAN & MOUNTAIN BIKE TRAILS

Northwest Indiana hosts a small number of facilities for equestrian and mountain bike enjoyment. These systems are designed for a specialized user pool, and are usually not widely available as common trail routes. Even so, equestrian and mountain bike users are very passionate and their accommodation should be considered where feasible. This section examines these uses in the region.

Mountain Bike Trails

Currently there are three mountain bike locations of note in the three-county NIRPC region. These include sites at Imagination Glen in Portage, Bluhm County Park in LaPorte County, and a rudimentary course in the City of LaPorte at Soldiers Park.

Of these three locations, the site at Imagination Glen, called the Outback Trail, is by far the most widely used and highly developed. The trail is accessible either by car or bike via the Iron Horse Heritage trail. It encompasses 10 miles of route broken into two sections. Of note is that the Outback Trail is maintained and operated wholly by an independent 501 (c)3 not-for-profit entity.

Across the state line in south Chicago, the city has recently opened up Phase I of their Big Marsh Bike Park. This site aims to be the premiere location for mountain bike enthusiasts in the Chicago area, offering courses for all age ranges and abilities[6].

Equestrian Trails

Of all trail facilities, the most specialized are those designed for horse riders. Owning a horse is expensive, especially when most of them are kept at private stables. However, for individuals who do own horses, and many do in NW Indiana, the options for riding trails are few, and not very long.

6 Communities that are interested in establishing a mountain bike course are encouraged to get in touch with the International Mountain Bicycling Association (IMBA) at www.imba.com.

Currently Glenwood Dunes at the National Lakeshore, Stoney Run County Park in eastern Lake County, the Grand Kankakee Marsh in southern Lake County, and Bluhm County Park in LaPorte County are sites that offer official horseback riding trails. Plans exist to incorporate a parallel equestrian path along the Veterans Memorial Trail in eastern Lake County.

A common complaint of equestrian users is the lack of long, continuous trails for enjoyment. To this end, county park managers should be aware of these uses when planning trails in rural areas or near stables, incorporating a parallel equestrian path alongside as an amenity to consider. This could be popular in areas with multiple horse stables.

TRAIL ADVOCACY

Citizen participation remains at the heart of effective policy development for increasing trail mileage regionally. In 2004, a group of concerned residents created a non-profit group which today

is called South Shore Trails (SST). The mission of SST involves the creation of more trails, but also comprehensive approaches to help communities become safer places to walk and bike. SST also holds events such as bicycle valet service and regularly attends governmental meetings to help advance sound design and policy.

NIRPC has worked alongside SST since its inception, and continues to provide data and feedback to help their members better work with regional constituents. In turn SST attends NIRPC-led meetings and represents an active voice for non-motorized issues to elected officials and their staffs. Thus, continued partnership with SST remains critical for success at the municipal levels.

Apart from the work of SST, all municipalities should actively engage their residents on the creation of a safe and accessible trail network. The creation of an advisory committee on these matters should be strongly considered.

SOUTH SHORE TRAILS

BLUEWAYS

The 2007 Greenways & Blueways Plan launched a revolution in water trail development and participation in NW Indiana. The plan was the first document of its kind to categorize all existing and potential water trails, or blueway routes in the three-county NIRPC region. In all 15 of these routes were identified, and since then several new launches have opened up on these waters, most notably Lake Michigan and the Kankakee River.

Spearheading blueways interest and development is the Northwest Indiana Paddling Association, or NWIPA. This group of 50 hearty paddling enthusiasts launched in January of 2009, and has since grown to a community of over 150 members. NWIPA, a non-profit organization, is dedicated to promoting regional paddling resources and opportunities, providing environmental stewardship of the region's waterways, education, and providing a voice for the region's paddlers.

Since its founding, NWIPA has been the prime mover on a number of initiatives promoting and expanding paddling opportunities. These include:

- Designation of Lake Michigan Water Trail as a National Recreation Trail
- Opening up a camping site for canoe access only on the Kankakee River in LaPorte County
- Collaboration with the National Park Service on opening up the east branch of the Little Calumet River to paddlers
- Supporting the first ADA-launch ramp in Michigan City on Trail Creek, funded by the City of Michigan City and the Indiana DNR Lake Michigan Coastal Program.
- Supporting subsequent access points in Marquette Park in Gary and Lake George in Hobart
- The designation of the Kankakee River as a National Water Trail
- Dozens of public paddling events on NW Indiana waterways
- Aiding communities in establishing launches and helping to clear waterways for travel

Clearly NWIPA has been chiefly responsible for the success of water trail development in NW Indiana, and they deserve much credit for our region becoming a prime destination for paddlers. NWIPA has demonstrated what a passionate, focused group of advocates can accomplish, and they should be commended for their outstanding contributions to blueways health and enjoyment.

BENEFITS

Blueways provide multiple benefits to communities which embrace them. Chief amongst these are an appreciation of our water ways and providing users with a strong connection to the natural systems adjacent to these routes. When blueways are opened up for public use, they in turn become more visible, and thus attention is afforded to their health. For many years our water ways have been "hidden," with no access available, and thus become polluted with all types of waste and choked with log jams. While paddling down a blueway, the

SWIFT OR SMOOTH, BROAD AS THE HUDSON OR NARROW ENOUGH TO SCRAPE YOUR GUNWALES, EVERY RIVER IS A WORLD OF ITS OWN, UNIQUE IN PATTERN AND PERSONALITY. EACH MILE ON A RIVER WILL TAKE YOU FURTHER FROM HOME THAN A HUNDRED MILES ON A ROAD.

– BOB MARSHALL

breadth of the surrounding nature becomes apparent for appreciation. Since many water ways are "incised," or cut deeply below the existing grade, blueways can act as an escape from the urban environment directly adjacent. In fact, due to tree cover and other bank vegetation, it is likely buildings, fences or built features are not visible.

As one paddles down a blueway, an abundance of vegetation and wildlife exists along the banks. These can include deer, herons, beavers, or butterflies and multi-colored dragonflies. Blooming shrubs and changing foliage during the fall also provide interest along the routes.

Developing blueways remains basic in concept, since the routes are already present; the challenge remains providing safe and legal access to the water. Thus launches with parking, log-jam removal, and signage stand as the principle elements behind a successful blueway.

DESIGN & MANAGEMENT

Opening up a water route for recreation use involves several considerations that include sound design principles that include the following:

- ***Access Spacing:*** At the very core of waterway design is establishing at least two points of access. The water body size is also of consideration. For most paddlers, a leisurely half-day trip could be over six to eight miles. For larger water bodies, a minimal spacing of access points of three

Partnering on Maps & Signage

When the *Greenways & Blueways Plan* was released in 2007, it proposed 15 potential water trail corridors in the region. Shortly afterwards, NIRPC partnered with ArcelorMittal USA Foundation to secure a $250,000 grant to develop materials to promote these waterways to the public. Their funding contributed to the creation of maps of both the Lake Michigan and Kankakee River routes. Also included were interpretive signs at all launch locations detailing the route and the history of water travel (below).

to four miles is advisable. For local neighborhood creeks, one mile or less is preferred since children may be utilizing these routes.

- ***Portages:*** Some waterway obstacles cannot be removed, and thus a paddler will need to remove their boat from the water. This is called a portage, and there should be safe accesses above and below the obstruction to facilitate ease of movement. The portage should be located on public land. Treefalls can occur that make portaging a challenge.

- ***Access Design:*** Sites where paddlers can access the water need to be designed to allow for a relatively short walking distance on a slight to moderate slope to the water's edge[7].

- ***Signage:*** This represents a key component for water trails. Primary uses are identifying access sites, helping to alert paddlers to hazards, distances to the next access site, special seasonal river conditions and emergency contacts. Signage can be incorporated to highlight the history of the waterbody and wildlife present. Bridges should also be signed to help orientate the paddler.

- ***Navigability & Ownership:*** These issues are discussed at length on pages 40-42 of the Conservation chapter. Understanding these matters are critical in dealing with adjacent property interests.

For long-term enjoyment of routes, there are a number of maintenance strategies. These primarily involve the removal of obstructions, which include treefalls, beaver dams, and rocks. Each of these common occurrences should be considered carefully when executing a maintenance plan for a water trail.

7 An excellent resource for proper launch installation can be found here: https://www.nps.gov/ncrc/programs/rtca/helpfultools/launchguide.pdf

BLUEWAY ROUTES

The 2007 *Greenways & Blueways Plan* identified 15 potential water trail routes in the NIRPC three-county region. Since the release of this plan, a number of these routes have been analyzed for potential use by NWIPA. Some have been removed as potential routes due to factors such as low water levels and difficulty of access. There are also some newer routes that have been "discovered" as well. A map detailing the location of these routes is shown in Figure II-3.

In reviewing these routes, NWIPA considered the following:

- River width (Allows side-by-side paddling & room to turn a 17-foot boat around)
- Water levels throughout the year
- Existing (convenient) access and parking
- Potential for paddling

The route descriptions below have been complied by NWIPA, and involve the following recommendations (in order of their original descriptions in the 2007 *Greenways & Blueways Plan*):

Little Calumet River West of Route 249 (Lake County)

- Identified as mid-priority
- Appropriate as a water trail from Kennedy Avenue to Broadway, and from junction with Deep River to junction with East Branch – enough water to paddle most of the year
- Presence of levee and associated rules and regulations may be an obstacle to developing access sites throughout all of the flood control project
- Reasonable access at Kennedy Avenue, Chase Street, Grant Street and Harrison Street
- West of Kennedy Avenue, too shallow to paddle except following rainfall (until in Illinois near junction with Thorn Creek)
- Interstate culverts and sewer pipe just east of Broadway are safety issues

Little Calumet River, East of Route 249 (Porter County)

- Identified as high priority
- National Park Service Environmental Assessment completed
- Access points in Shirley Heinze holdings to be developed
- Town of Porter combined sewer overflow (CSO) has been eliminated through long term control plan

Figure II-3 Poterntail Water Trails Map

- Indiana Bicentennial Nature Trust has made the East Branch a Conservation Corridor by awarding $1 million in funding

Coffee Creek (Chesterton)

- Removed as potential water trail based on paddler feedback

Turkey Creek (Merrilliville & Hobart)

- Removed as potential water trail based on paddler feedback

West Creek (SW Lake County)

- Further exploration needed – may not be wide enough for consideration as water trail

Kankakee River

- Identified as high-priority – designated National Water Trail in 2016
- Need more developed access sites
- LaPorte County camping area has been a success – more camping sites are welcome (Sumava Resorts, Grand Kankakee Marsh, location in Porter County)
- Better development of Baum's Bridge as access point

Beaver Dam Creek (Crown Point)

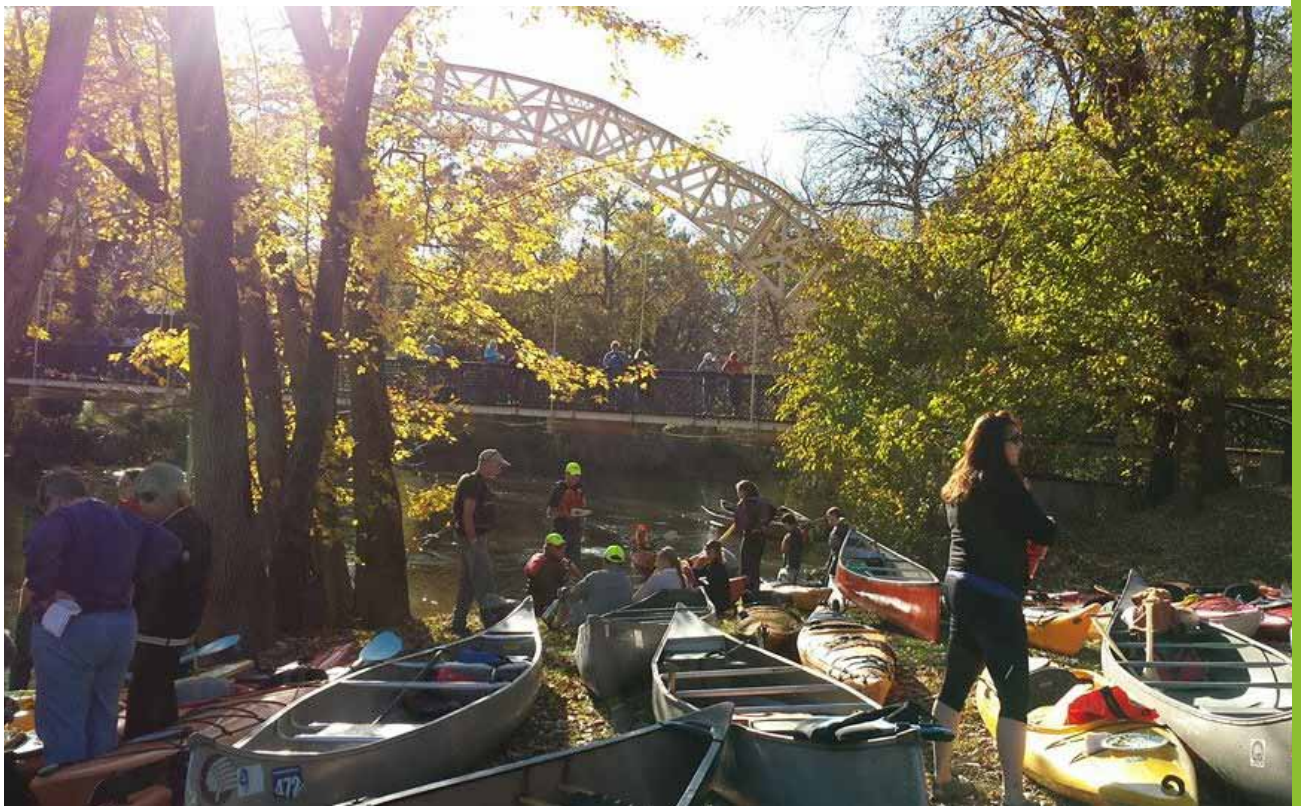
- Further exploration needed – may not be wide enough for consideration as water trail

Cedar Creek (South central Lake County)

- Identified as mid to high-priority
- Local partners interested in developing for water trail in Lowell area
- Too low to paddle in dry periods – some effort needed in clearing log jams

Grand Calumet River (Gary, East Chicago, Hammond)

- Identified as high-priority
- Needs access points and planning
- Bridge Street, Ambridge Mann Park or US Steel Visitors Center possible upstream access sites



- Good river access under Cline Avenue, but low bridge just west of Cline almost entirely blocked with log jams
- Doesn't freeze – always enough water to float
- Roxanna Marsh potential access and outdoor education/wilderness inquiry
- Coordination with Indiana Department of Environmental Management, US EPA, and US Army Corps of Engineers on paddling safety and environmental risk exposure in relation to current, ongoing, and completed contaminated sediment removal and remediation projects.

Lake Michigan

- Already established National Recreational Trail with numerous points of access

Cady Marsh Ditch (Highland & Griffith)

- Removed as potential water trail based on paddler feedback

Plum Creek/Hart Ditch (Dyer & Munster)

- Mid-level opportunity
- Not appropriate for novices – fast water under bridges
- Too low to paddle much of the year and fast water danger at high flows
- Wicker Park Dam needs warning sign
- Often blocked with log jams

Salt Creek (Portage, South Haven & Valparaiso)

- Mid-level priority
- Dangerous rapids under I-94 and Route 20 bridge
- Two to three mile trail
- I-94 to north navigate for one mile
- Needs further exploration
- Some log jams still in place past I-94
- Canoe rental nearby

Deep River (Merrillville & Hobart)

- High priority
- Two ADA access sites installed in Hobart – on Lake George and on river adjacent to rugby field
- Good parking at Liverpool Road, developed access at Riverside Park and Veterans Memorial Park
- NIRPC has secured IDNR Lake and River Enhancement and Lake Michigan Coastal Program funding to conduct a feasibility study of options to address the hazardous Deep River dam which needs to be addressed
- Log jams an issue closer to Lake George

- Low potential upstream of Lake George due to numerous log jams
- Lake George a good paddling option
- Rental livery at Hobart scuba shop

Indiana Harbor Canal (East Chicago)

- Low priority until remediation takes place
- Safety issues due to active commercial shipping traffic

Trail Creek (Michigan City)

- Already developed as a water trail
- First ADA launch developed

The Lakes of LaPorte

- Currently a functional paddling destination – signage would help
- South reconnect Lilly Lake to Hennessey Pond which has been cut off by a culvert

In addition to the routes previously mentioned, NWIPA has also analyzed a number of other routes. These include the following:

Cedar Lake

- Interest expressed by local authorities
- Power boat traffic excessive in summer – makes it challenging to paddle

Valparaiso Chain of Lakes

- Needs further exploration
- Several public access points already established
- Should be included as a paddling destination

Little Kankakee River (East LaPorte County)

- Exploration needed
- Potential new water trail

Marquette Park Lagoons (Gary)

- Should be included as paddling destination
- Installation of an ADA canoe and kayak launch complete
- Used by National Park Service for introduction to kayaking events

Mill Creek (East to South LaPorte County)

- Exploration needed near Union Mills

Robinson Lake (Hobart)

- Should be included as paddling destination
- NWIPA uses for training
- Great beginner paddling area

Wolf Lake (Hammond)

- An excellent paddling destination in NW Lake County
- Summertime boat rentals available
- May be issues with Illinois-mandated "Water Use Stamp" requirement

DATA ANALYSIS

NIRPC staff has undertaken the most significant collection of trail data to date for the *Greenways+Blueways 2020 Plan*. These findings represent a critical data set which in turn can be used by local officials and advocates alike to help maintain and plan trail routes.

This section details the major findings from these undertakings which occurred through surveys and trail counts. The first part offers a general overview of the data collected, with findings of how the data fits with national trends to follow.

OVERVIEW

Public Surveys

Throughout 2015, NIRPC conducted two types of surveys gauging public interest on land and water trails. These were conducted online and in the field through intercepts (direct contact with trail users). The online survey included a number of questions regarding conservation interest and park use, which is detailed in the Conservation chapter.

Both NIRPC staff and members of South Shore Trails conducted the intercept surveys, and did so on a majority of existing routes. Obviously the more populated trails yielded results biased towards that route over lower-volume facilities. Even so there are number of consistent factors which emerged from the answers.

In all, approximately 730 individuals responded to the surveys, with 190 of these as intercepts. The online surveys were available to the public from February to October of 2015, and the intercepts were conducted from June to September of 2015. This section will break down key findings from both land and water trail questions.

For both surveys, Figures II-4 through II-8 represent the basic demographics of those who responded.

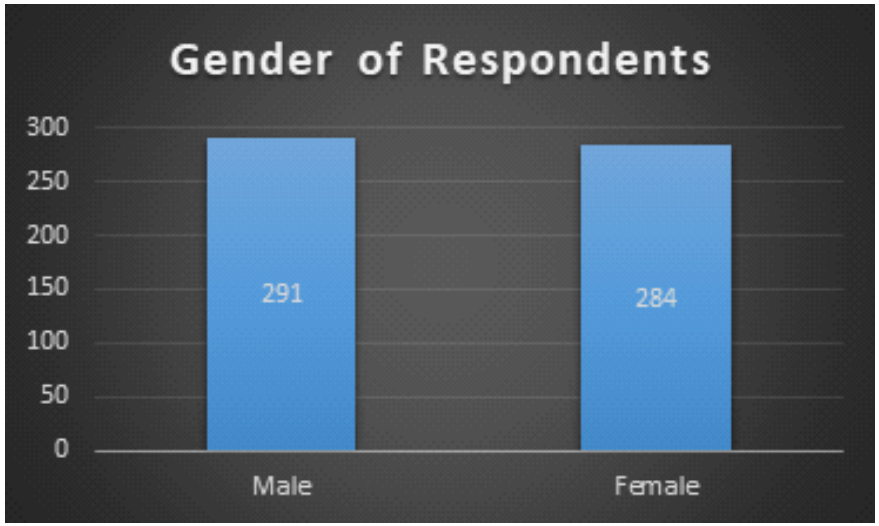


Figure II-4 Gender of Survey Respondents

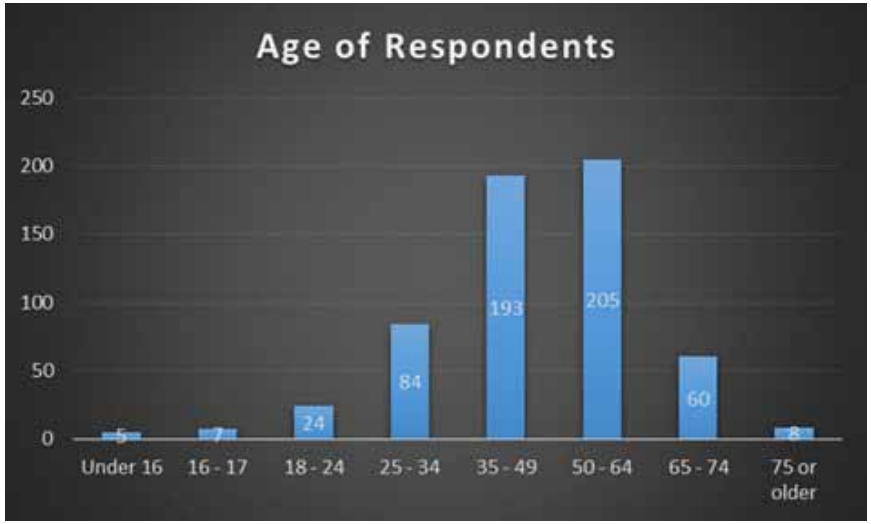


Figure II-5 Age of Survey Repondents

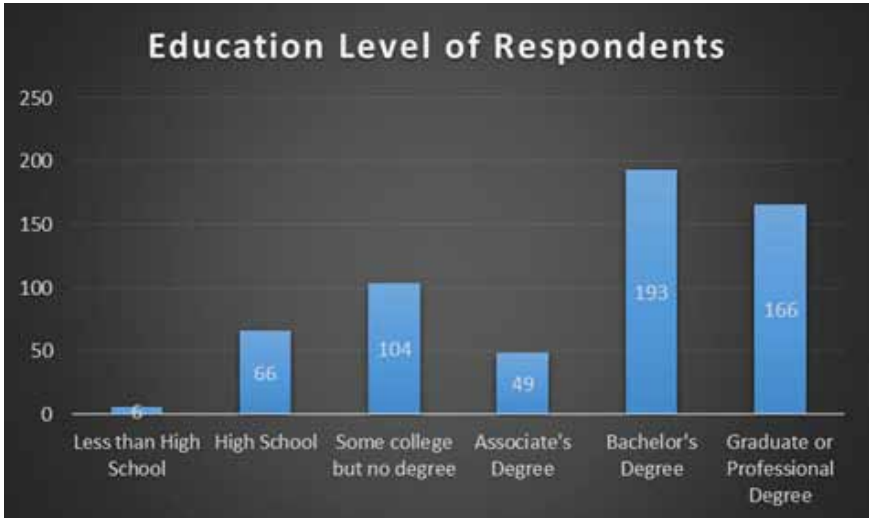


Figure II-7 Education Level of Survey Respondents

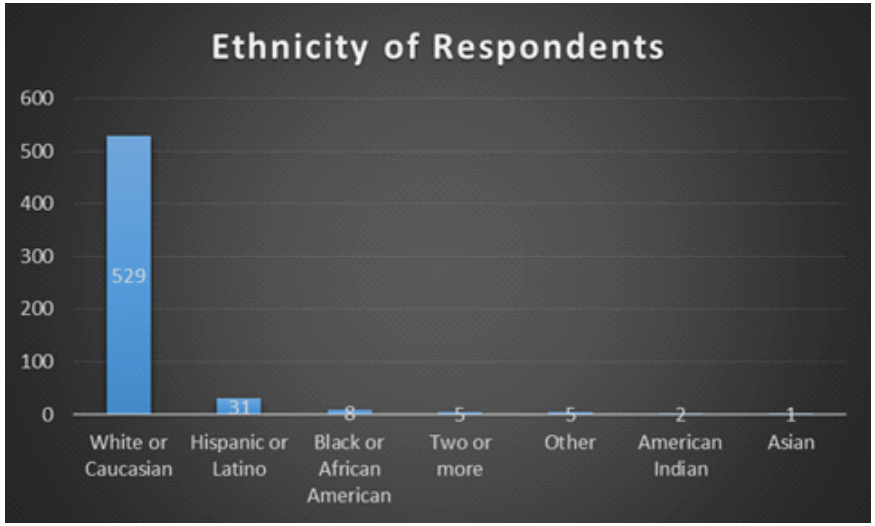


Figure II-6 Ethnicity of Survey Reponsdents

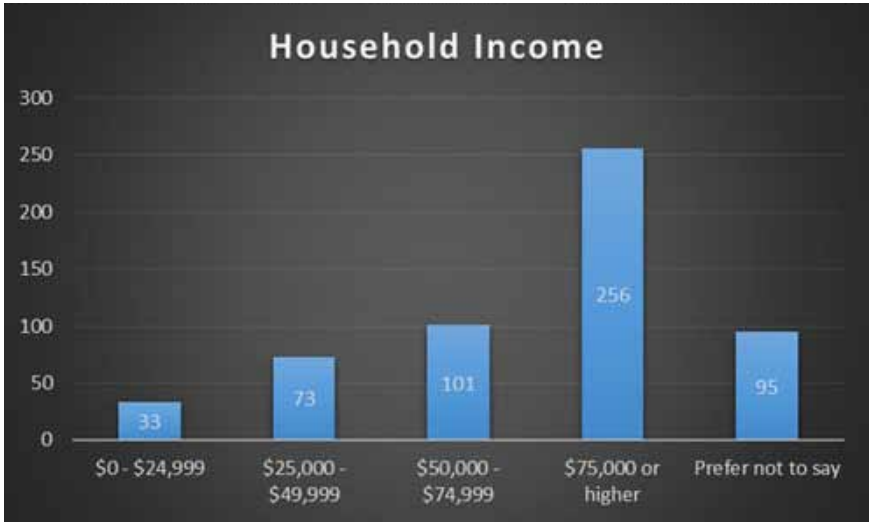


Figure II-8 Household Income of Survey Respondents

From these charts, the majority of respondents were middle aged (35-64), educated, white, and with a household income of $75,000 or more.

Land Trails

Land trails in the NW Indiana region enjoy a wide variety of uses which include either running, walking, biking or rollerblading as shown in Table II-9. When on a trail, a majority of users prefer trips of over five miles in distance as shown in Figure II-11.

Trails also serve as social gathering locations, and are often enjoyed with friends, family or other groups. Figure II-12 details this dynamic where a majority of trail users prefer to use the facility with other people, with a smaller number walking their dogs.

The following three charts relate to trails being economic generators. Figure II-13 points to those who make purchases while on the trail. Figure R-14 details what these purchases are, with a vast majority constituting beverages, with some opting to visit a nearby fast food or sit-down restaurant. Figure II-15 further breaks down how many have actually made significant trail-related purchases during 2015.

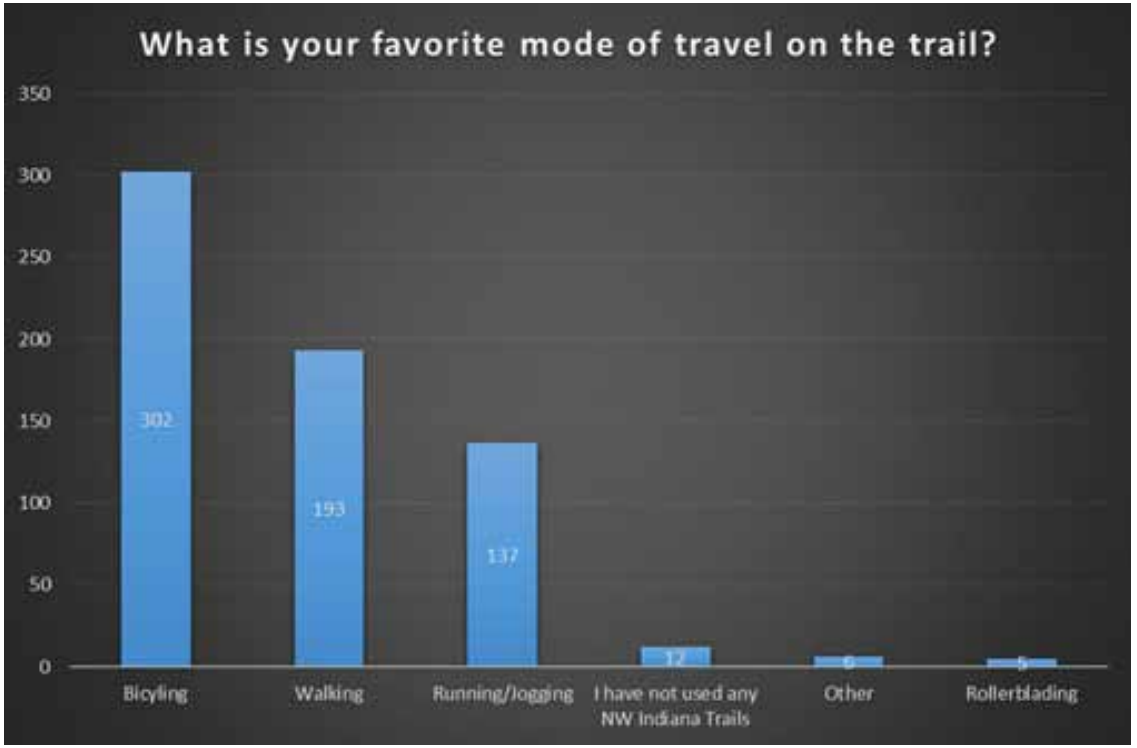


Figure II-9 Favorite Mode of Travel on Trail

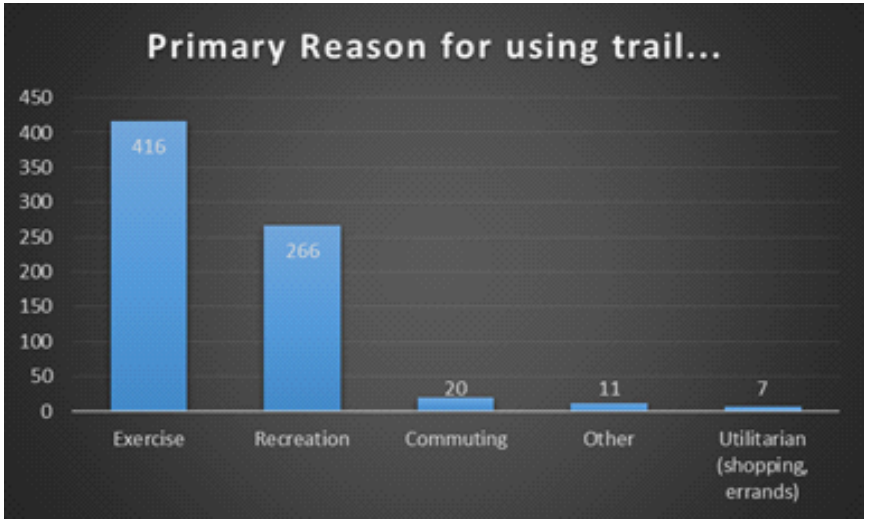


Figure II-10 Primary Reason for Trail Use

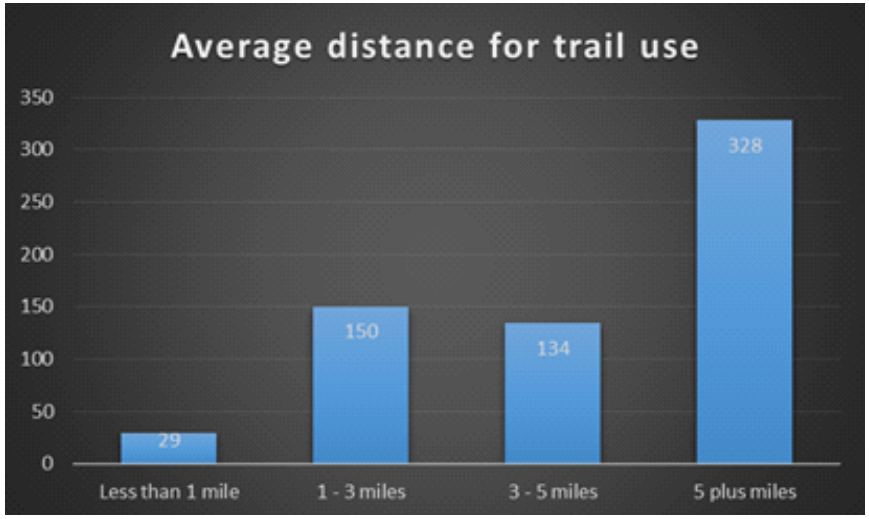


Figure II-11 Average Distance for Trail Use

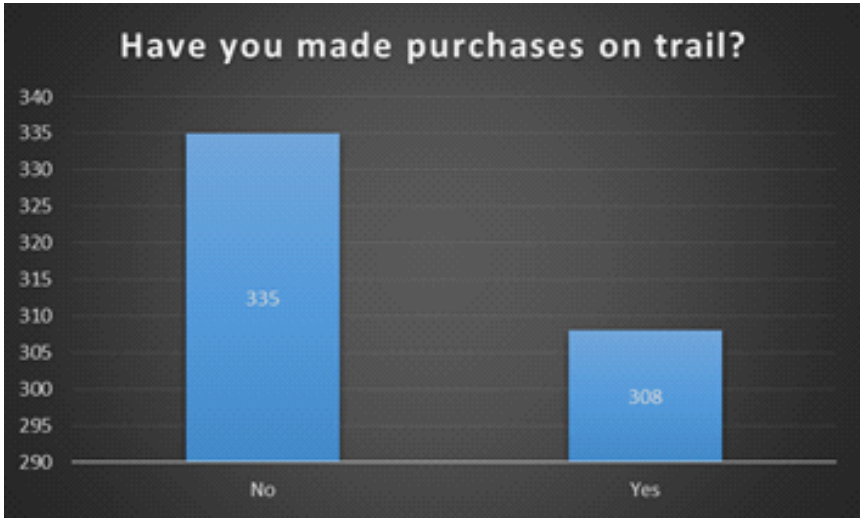


Figure II-13 Purchases While Using Trail

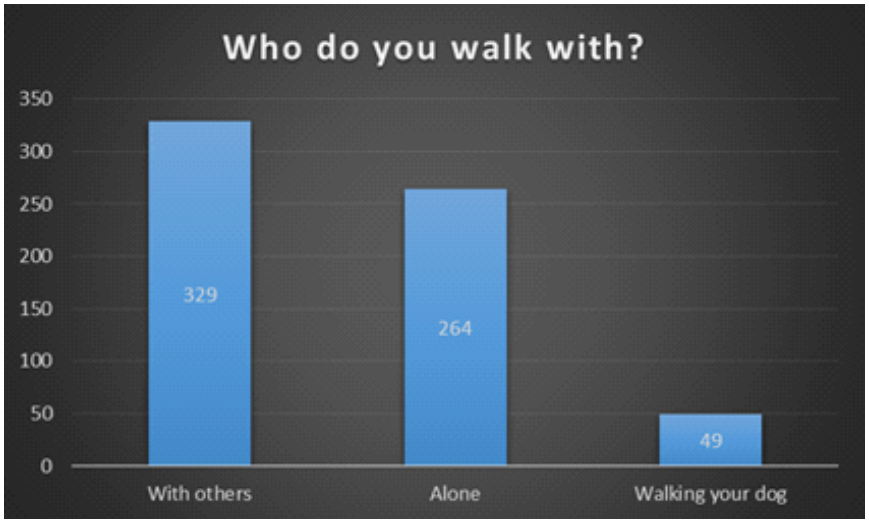


Figure II-12 Trail Partners

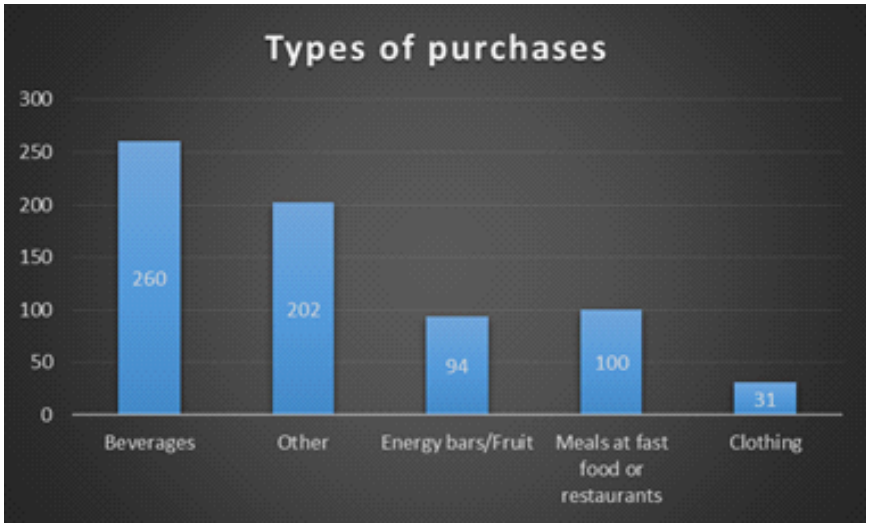


Figure II-14 Types of Purchases on Trail

Figure II-15 Various Items Purchased for Trail Use

Figure II-16 profiles an individual's trail usage the week prior to their survey response. Of those who responded, a vast majority – 546 out of 640 – have used a trail in the NIRPC region at least once.

Figure II-16 Use of Trail Over Seven Day Period

Figure II-17 focuses on the popularity of each regional trail network in NW Indiana. From this graph, the Erie-Lackawanna Trail (EL) from Hammond to Crown Point is the clear favorite, which is not a surprise since it is the longest facility in the three-county NIRPC region (17 miles), and traverses through the largest population base. Beyond the EL Trail, the balance of the other systems remains relatively equal, save for the C&O Greenway in Merrillville due to its isolated nature and length (1.3 miles).

Of note is the usage on the Calumet Trail along the National Lakeshore. This facility has been substandard for years and nearly impassible in parts. Even so, and most likely due to its proximity to the park, the route remains a popular destination.

Another predictor of popularity is the distance of the facility to one's place of residence. Figure II-18 shows a majority of respondents live within walking distance of a trail, and even more if biking is considered.

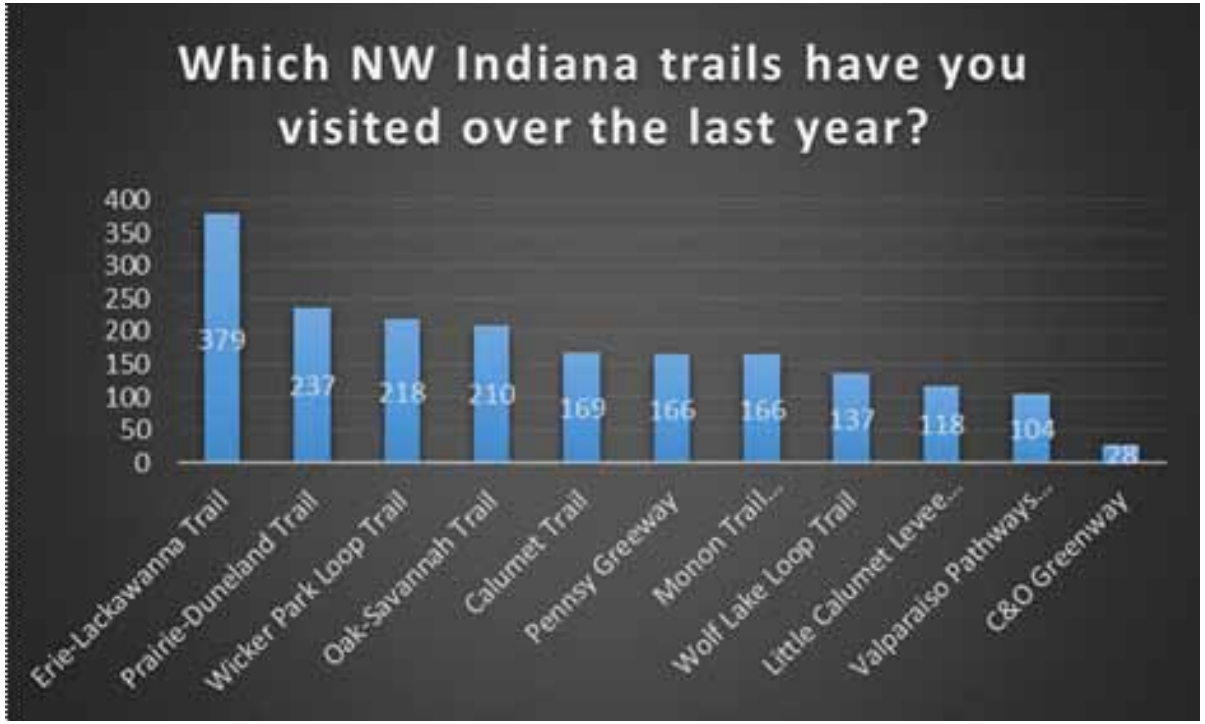


Figure II-17 NW Indiana Trail Visitation

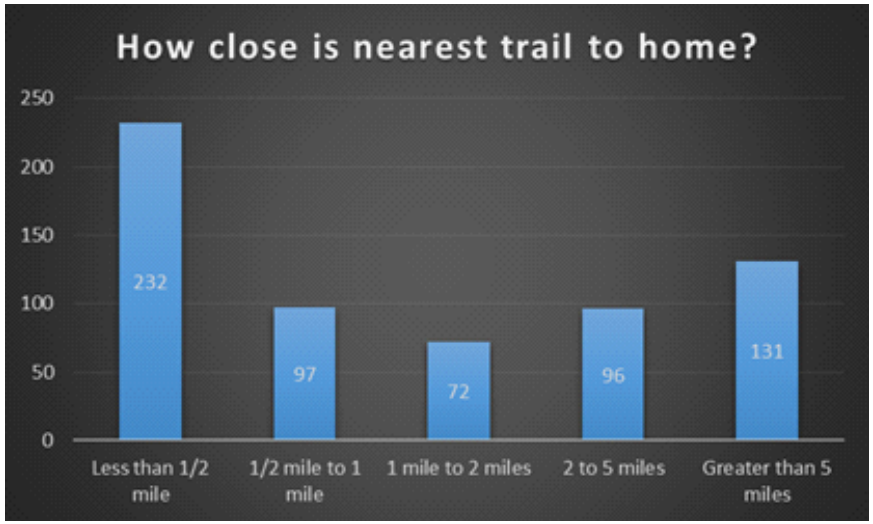


Figure II-18 Proximity of Trail to Home

Water Trails

Data collected on water trail use was obtained through the online survey. A smaller number of respondents from the overall sample filled out the questions relating to water trails, signaling their reduced usage numbers compared to land trails. The following charts outline several data sets.

In Figure II-19, a basic question was posed regarding what boat is preferred when using a water trail. An overwhelming number responded with kayaks, followed by canoes. This makes sense since kayaks can be used by one person far easier than a canoe. A smaller number identified using stand-up paddle boards.

Since the release of the 2007 *Greenways & Blueways Plan*, there has been a growing interest in paddling throughout NW Indiana. This is shown in Figure II-20 where a majority of uses have only been paddling regularly for the last five years. The success of NWIPA and the opening of additional routes have likely led to this new interest in water trail enjoyment.

The reason to paddle in general remains recreational in nature as shown in Figure II-21. There are some who paddle for exercise and fishing as well.

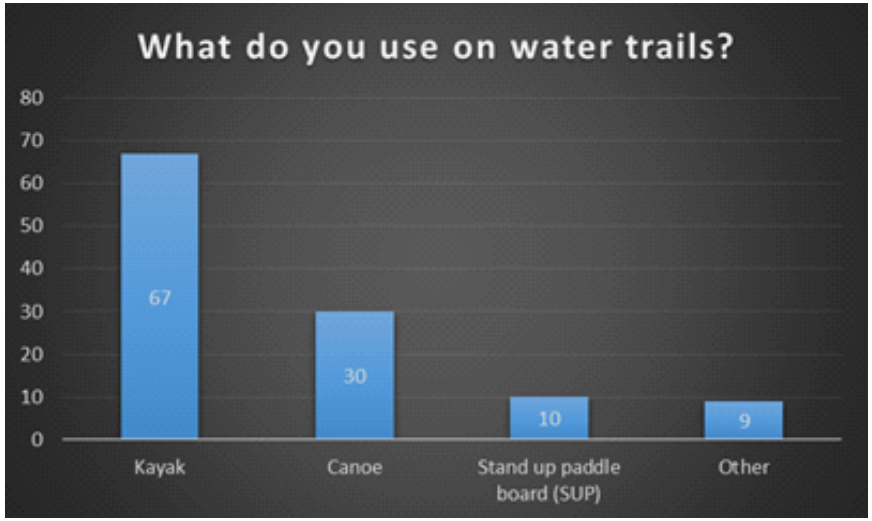


Figure II-19 Use on Water Trails

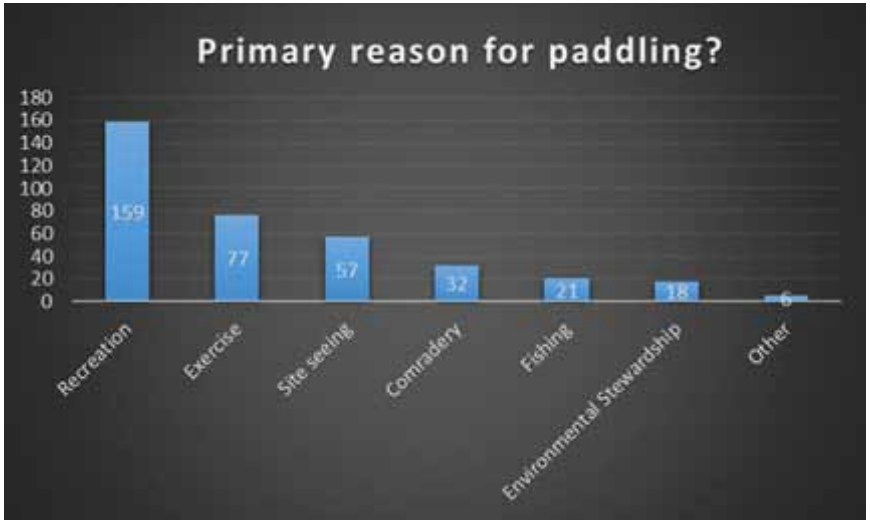


Figure II-21 Primary Reason for Paddling

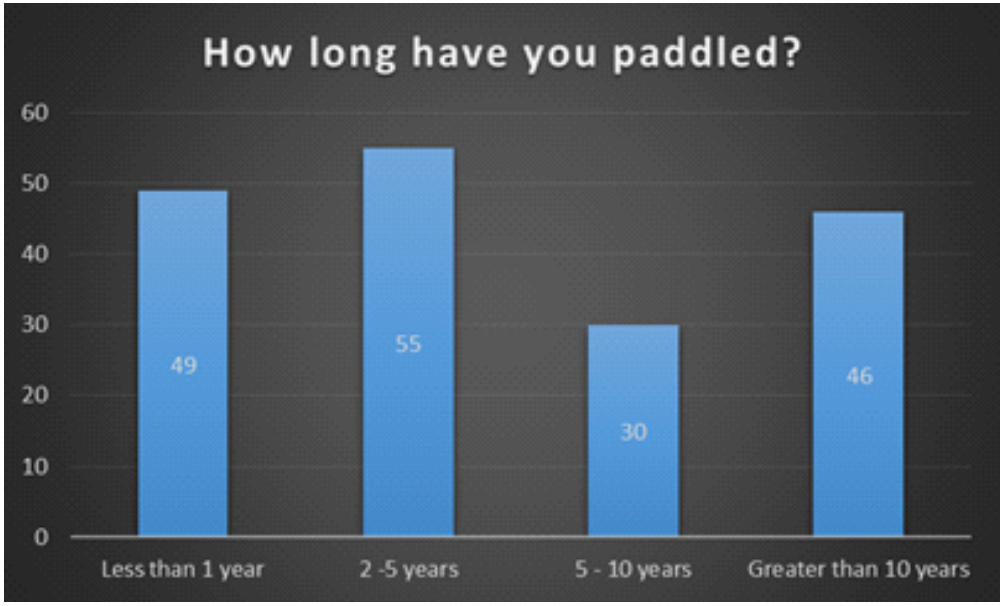


Figure II-20 Length of Paddling

Like land trails, those who use water trails also tend to participate in groups rather than individually. Since a majority of those who paddle do so for recreation, it stands to reason that they also enjoy the activity with others as well, as shown in Figure II-22.

A number of prime locations exist in NW Indiana to paddle today, and as indicated by survey respondents, many have been taken advantage of. In Figure R-23, the most popular

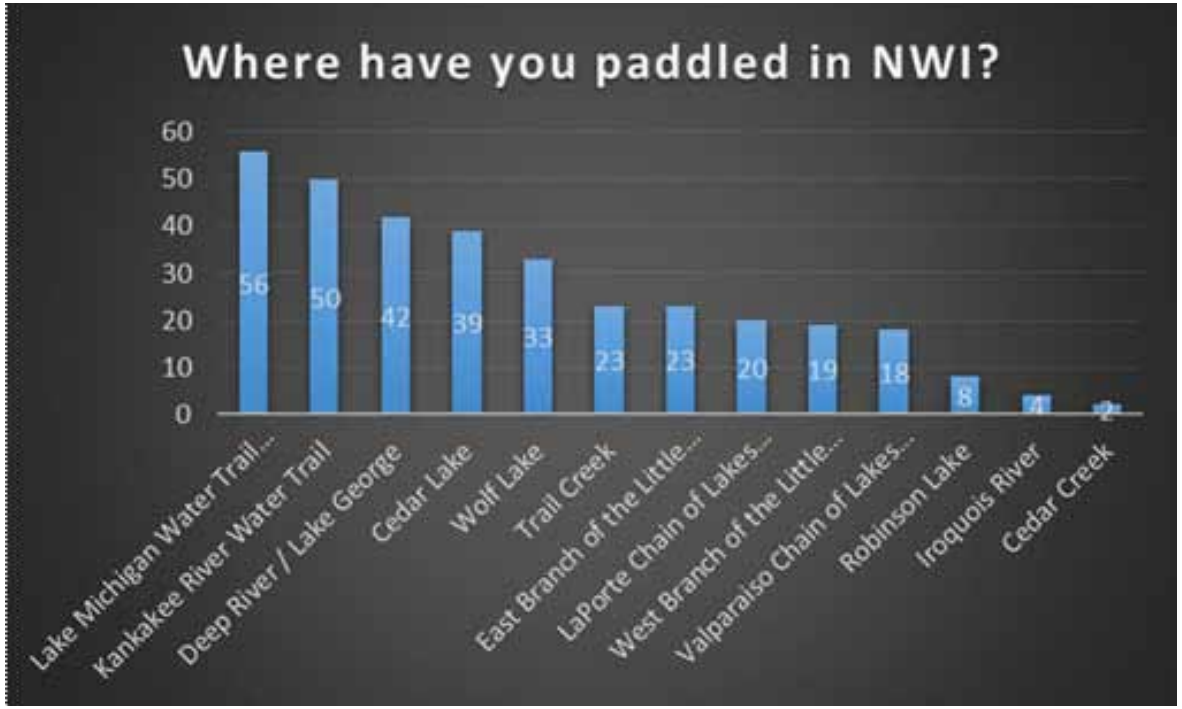


Figure II-22 Paddling Destination in NW Indiana

route is Lake Michigan, followed by the Kankakee River – the two main water bodies in the NIRPC region, and most developed for access. Following these are a number of other routes, which are close to popularity with the top two destinations.

Municpal Surveys

In 2015, NIRPC released a specific survey to all local and county municipalities. One of the questions dealt with their maintenance strategy for trails. The results in Table II-4 summarize their responses.

Trail Maintenance Survey	
Number of total respondents	31 (out of 44 local & county governments)
Mow weekly	23
Snow Plow	13
No Trails to Maintain	6

Table II-4 Municipal Trail Survey Results

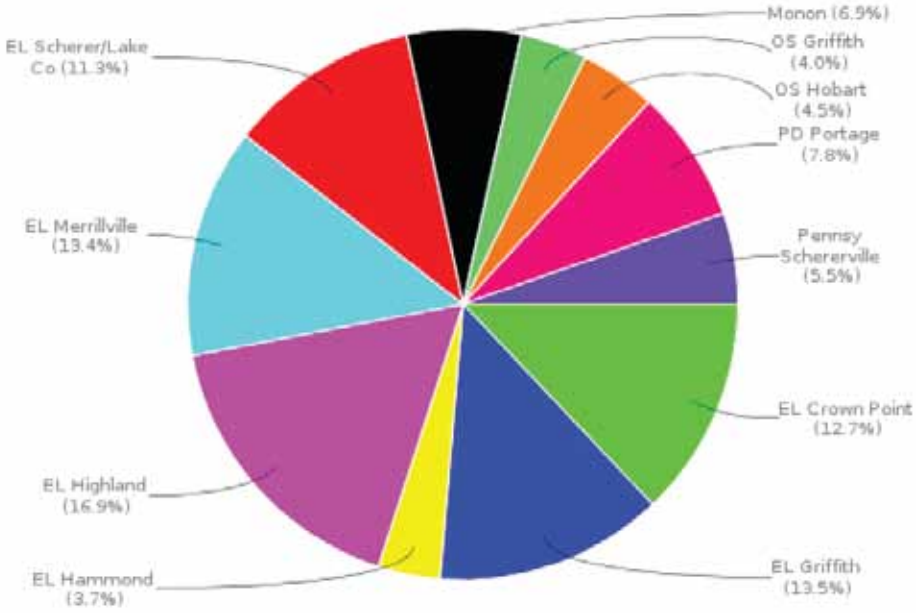
The results are minimal, with the vast majority mowing their trails on a weekly basis. Just over half of those who mow also take the time to plow in the winter. More municipalities should take the time to schedule regular plowing of their trails since walking and bicycling can take place in winter, and routes should be ice and snow free for access and safety.

TRAIL COUNTS

In NW Indiana, our trails are growing in mileage and popularity. Just how popular has remained an unknown until earlier this year when NIRPC purchased 12 electronic counters with the help of the South Shore Convention & Visitors Authority and Indiana Dunes Tourism.

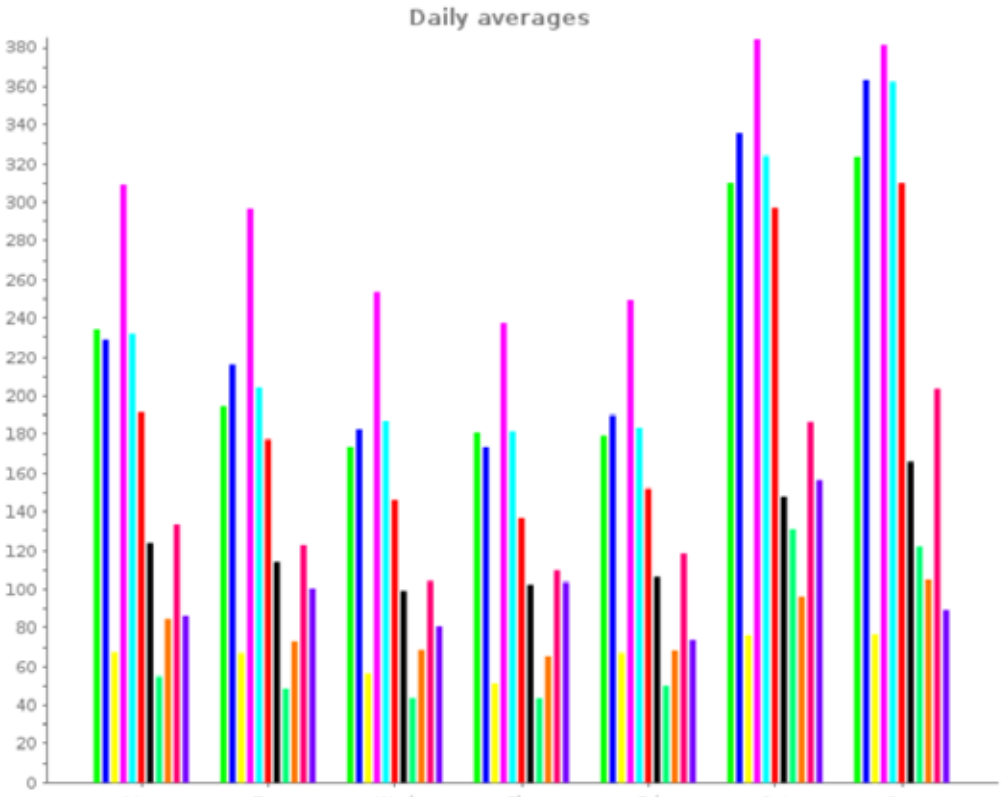
These 12 counters were installed at discrete locations on six major trail facilities: six on the Erie-Lackawanna Trail from Hammond to Crown Point; two on the Oak-Savannah Trail (Griffith and Hobart); two on the Prairie-Duneland Trail (Portage and Chesterton); one on the Monon Trail in Munster; and one on the Pennsy Greenway segment in Schererville.

Each counter has an infra-red beam that counts any movement in front of the box, with a two-second delay between (this prevents overcounting). Although some groups will be counted once if lined up in a row, several will be counted twice as they double back to their origin.



Site Name	Daily Average
EL Crown Point	228.1 (12.7%)
EL Griffith	241.7 (13.5%)
EL Hammond	66.1 (3.7%)
EL Highland	301.9 (16.9%)
EL Merrillville	239.2 (13.4%)
EL Scherer/Lake Co	201.7 (11.3%)
Monon	122.9 (6.9%)
OS Griffith	70.9 (4.0%)
OS Hobart	80.2 (4.5%)
PD Portage	140.0 (7.8%)
Pennsy Schererville	98.6 (5.5%)

Figure II-23 Trail Counts from May 2016 to December 2017



Site Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
EL Crown Point	234.4	194.6	173.6	180.9	179.3	310.2	323.7
EL Griffith	228.8	216.0	182.7	173.5	190.0	336.0	363.1
EL Hammond	67.3	67.0	56.3	51.4	67.0	76.3	76.8
EL Highland	309.3	296.9	253.5	237.9	249.7	384.5	381.5
EL Merrillville	232.1	204.2	187.1	181.5	183.4	324.1	362.3
EL Scherer/Lake Co	191.5	177.4	146.2	136.9	152.0	297.3	310.2
Monon	124.0	114.3	99.1	102.5	106.4	147.9	165.8
OS Griffith	55.0	48.6	43.6	43.5	50.2	130.9	122.2
OS Hobart	84.7	73.0	68.5	65.5	68.2	96.1	104.8
PD Portage	133.5	122.8	104.2	109.8	118.4	186.6	203.5
Pennsy Schererville	86.3	100.4	80.6	103.7	73.8	156.3	89.4
Daily Averages	159	147	127	126	131	222	228

Figure II-24 Trails Counts for Days of the Week

NIRPC staff attends to each of these boxes on a regular basis and extracts the resulting data. This data in turn gets downloaded online and then mapped over a specific time frame. The data can be presented as raw numbers, or as line or pie charts either separately, or compared with other counter locations.

Figure II-23 presents preliminary data from the counter locations, excluding the one on the Prairie-Duneland Trail in Chesterton due to an equipment malfunction. These counts were compiled between May 22, 2016 and December 6, 2017, or the height of usage on trails. From these numbers it is clear the Erie-Lackawanna Trail is the most utilized in NW Indiana of those counted, with a daily average use of 213 persons.

The balance of daily counts from the other trails hold relatively equal with an average of approximately 200 users per day.

As for what day of the week is more popular for trail use in NW Indiana, Figure II-24 highlights this data. It should be no

surprise that both Saturday and Sunday rank as the most popular days for trail use, with Sunday topping all days. The work week remains steady, with Monday being the preferred day for use.

COMPARISONS WITH NATIONAL TRENDS

The survey data collected demonstrate a number of correlations with national trends regarding trail use. These key parallels include the following:

- ***Mode of travel:*** When land trails are discussed, the most common term for these is "bike trails." Figure II-9 shows this is not a true description since a majority of people using trails do so for either walking, running or rollerblading combined. These varied uses clearly demonstrate how trails cater to a wide variety of non-motorized uses.

  To emphasize this point, Figure II-9 can be compared to Figure II-25, taken from the Indiana Trails Study, conducted in 2001.

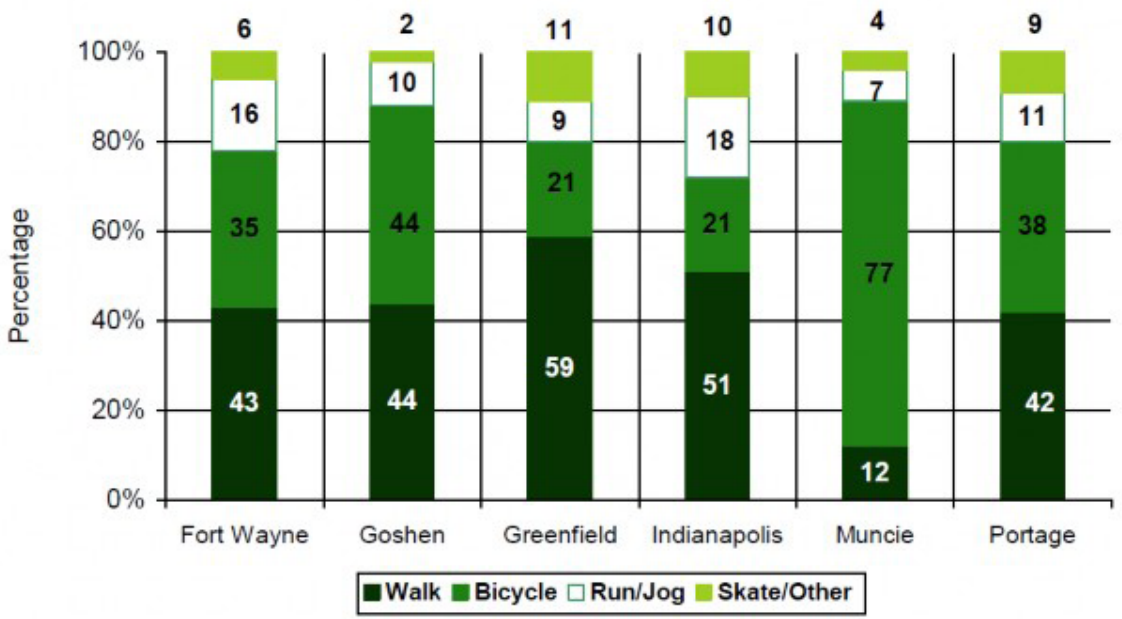


Figure II-25 Distribution of Trail User Activity (Indiana Trails Study, Eppley Institute, 2001

- ***Reason for using trail:*** In Figure II-10, a majority of respondents cite exercise as their primary reason for trail use. The *Indiana Trails Study* backs this finding in Figure II-26. Further support are a number of user surveys taken nationwide, including one for the Pinellas Trail in Florida which found 57% of respondents using a trail for exercise purposes[8]. Clearly trails are critical elements in advancing the health and welfare of a community.

- ***Distance while using trail:*** Figure II-11 shows that a vast majority of users travel longer than five miles per visit. This is a significant finding since it has been reported that half of all trips are under three miles in distance[9]. This distance is comfortably made

8 Pinellas Trail Users Survey, Metropolitan Planning Organization of Pinellas County, Florida, 2014

9 National Household Travel Survey, U.S. Department of Transportation, Federal Highway Administration, 2009

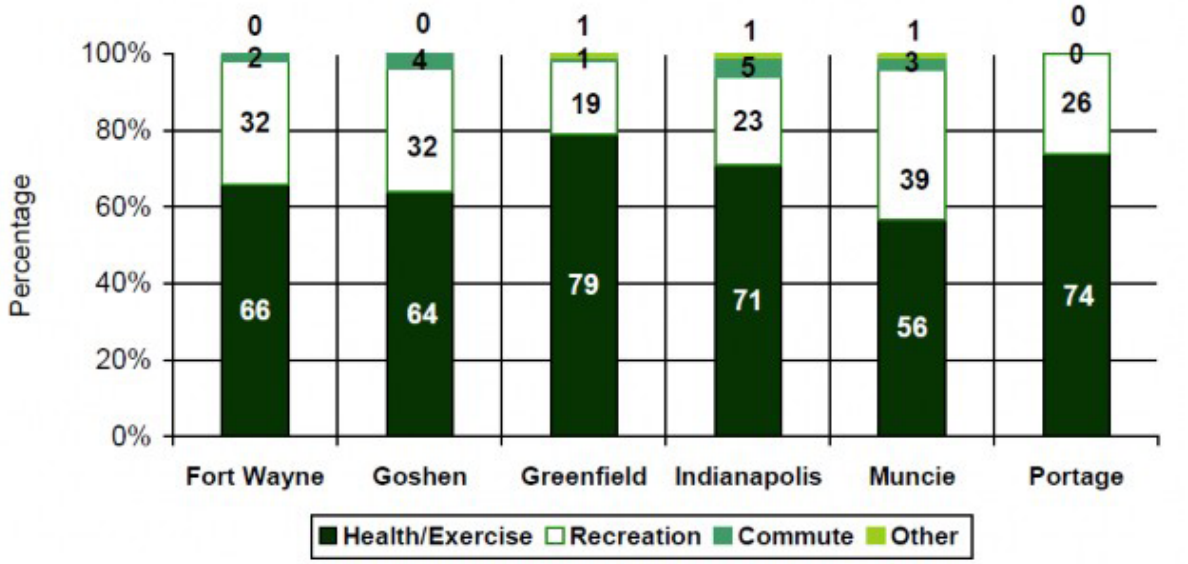


Figure II-26 Trail User Primary Reason for Visiting (Indiana Trails Study, Eppley Institute, 2001

by bicycle, and quite accessible for many walkers. In short, trails can be used for trips in lieu of the automobile – saving money on fuel and improving one's wellness.

- ***Economic Impact:*** Figures II-13 to II-15 demonstrate how trail users contribute to the local economy through purchases either while on the trail, or buying new equipment related to their trail use. While NIRPC's surveys didn't detail the dollars spent on purchases, there are a number of studies that have undertaken such exhaustive research. One such study comes from the State of Minnesota which calculated over $3.2 million in trail-related purchases during 2008 alone[10].

- ***Proximity to trail:*** A logical connection involves how frequently one uses a trail they live in close proximity to. Figure II-18 demonstrates that a vast majority of trail users live within a half- mile of a facility. The saying, "build it and they will come" has never been more profound. One study in Massachusetts found that among 363 adults the likelihood of using a suburban rail-trail decreased by 42 percent for every quarter-mile increase in distance from home to the trail. A Minneapolis study also found sharp declines in trail use among bicyclists who had to travel 1.5 miles or further to access the trail[11].

10 Economic Impact of Recreational Trail Use, Ernesto C. Venegas, Ph.D., Minnesota Department of Employment, November 2009

11 The Power of Trails for Promoting Physical Activity in Communities, Active Living Research, January 2011

RECREATION GOALS & OBJECTIVES

Based on the information described in the Recreation chapter, the following goals and objectives are proposed. Further detail to each objective can be found in Chapter V – Implementation. A series of tables are presented where action steps are provided for each objective, and broken down based on responsibilities of the Greenways Eight stakeholders.

GOAL R1: *Encourage and promote regional coordination and planning in trail development*

- **Objective R1.1:** Inventory and evaluate existing and potential trail corridors in NW Indiana
- **Objective R1.2:** Encourage consideration of trails into local and regional development review procedures
- **Objective R1.3**: Cooperation with interstate entities

GOAL R2: *Promote the benefits of trails*

- **Objective R2-1:** Produce products that guide and educate region residents on trails
- **Objective R2.2:** Promote the development of amenities and wayfinding to accommodate trail users
- **Objective R2.3:** Involve "non-traditional" partners to the trail development process
- **Objective R2.4:** Promote best practices in operations and maintenance (O&M) of trails

GOAL R3: *Maintain funding priorities to allow for implementation of trails*

- **Objective R3.1:** Facilitate a collaborative regional-level decision-making environment
- **Objective R3.2:** Encourage eligible entities to fund regionally significant routes

TRANSPORTATION

At this point of the *Greenway & Blueways 2020 Plan*, two major elements – Conservation and Recreation – have been analyzed. This next chapter on Transportation focuses on how to tie these together to create a cohesive, pedestrian & bicycle network in Northwest Indiana.

For the purposes of this plan, the discussion will center upon the safe movement of pedestrians and bicyclists, primarily on our regional roadways. The Ped & Pedal Plans went to great lengths to outline best practices and strategies towards these ends. The *G&B 2020 Plan* will also touch on these practices as well, but more so as a guide than a detailed overview. To this end there will be references to documents for additional study and application.

AN ABUNDANCE OF REASON$

Making the case for improving non-motorized connections in our region falls into three major categories: motorized vehicles, health, and economic benefits.

OUR RELIANCE ON ROADS

Few arguments are better for improving our quality of life than reducing our dependence on motorized vehicle trips (cars, trucks, vans, etc.). In 2009, over 83% of all person trips were taken by an automobile, compared to 10% by walking, and only 4% by bike[1]. This represents a signifcant imbalance of transportation choices, and with these comes consequences we should consider within our region.

Accounting for all costs, from fuel to insurance to depreciation, the average car owner in the U.S. pays $12,544 a year for a car. If you drive an SUV, then add on another $1,908.14[2]. Now factor in the safety risks where the traffic death toll

1 National Household Travel Survey, U.S. Department of Transportation, Federal Highway Administration, 2009

2 The Absurd Primacy of the Automobile in American Life, The Atlantic, Edward Humes, April, 2016

in 2015 exceeded 3,000 a month, and where car crashes are the leading cause of death for Americans between the ages of 1 and 39[3].

Worse yet are the air pollution risks where it has been estimated that 53,000 Americans die prematurely every year, losing 10 years of life on average compared to their lifespans in the absence of tailpipe emissions[4]. Combine this with traffic deaths, and health care costs relating to our automobile dependency are truly significant.

Beyond our own personal costs are the enormous expenses on the public at large. The American Society for Civil Engineers has estimated that an annual expenditure of $191 billion will be needed to keep up our roads and bridges, well over the $91 billion that is

3 Ibid

4 Study: Air pollution causes 200,000 early deaths each year in the U.S., Massachusetts Institute of Technology, Jennifer Chu, August, 2013

BICYCING IS A BIG PART OF THE FUTURE. IT HAS TO BE. THERE'S SOMETHING WRONG WITH A SOCIETY THAT DRIVES A CAR TO WORKOUT IN A GYM.

—BILL NYE, SCIENTIST

being spent currently[5]. Taken together, our society have a strong focus on the accommodation of automobiles.

OBESITY & US

NIRPC's 2005 Ped & Pedal Plan mentioned over a decade ago that "America is growing…fat." Unfortunately obesity rates have only increased - and

5 2013 Report Card for America's Infrastructure, American Society of Civil Engineers, (online), 2013

continue to threaten our collective quality of life. Between 2011 and 2014 it has been estimated that 36% of the U.S. adult population is now considered obese[6], which is up from 31% as first reported in the 2005 plan.

Along with our growing waistlines are our shrinking pocketbooks. The estimated annual medical cost of obesity in the U.S. was $147 billion in 2008 U.S. dollars; the medical costs for people who are obese were $1,429 higher than those of normal weight[7]. This is also up from a reported cost of $117 billion in 2000.

A major culprit remains physical inactivity (along with poor nutrition as well). The typical adult requires at least 150 minutes of moderate aerobic activity or 75 minutes of vigorous aerobic activity a

6 CDC National Center for Health Statistics, Prevalence of Obesity Among Adults and Youth: United States, 2011–2014, November 2015

7 Eric A. Finkelstein, Justin G. Trogdon, Joel W. Cohen and William Dietz, Estimates Annual Medical Spending Attributable To Obesity: Payer-And Service-Specific, Health Affairs, (online) July 2009

week, or a combination of moderate and vigorous activity[8]. However, it is estimated that only 21% of the adult population meets these standards[9].

One potential solution to increasing physical activity within our region is providing a safe and accessible environment for one to walk and bike around in. The benefits of regular activity are enormous - from a healthier heart, to weight control, to reducing cancer risk and even improving one's mood[10].

IT'S THE ECONOMY...

Advancing a non-motorized network can provide a community with a windfall of economic benefits. There is an abundance of resources that strongly support people desire to live and work where they can readily ride and walk.

As an example, a 2011 report found that bicycling and walking projects create 11-14 jobs per $1 million spent, compared to just 7 jobs created per $1 million spent on highway projects[11].

In addition, the location of pedestrian and bicycle infrastructure can improve neighboring property values. A number of communities that constructed "Complete Streets" projects (see page **111**) showed marked increases in values, from 80% in Orlando, FL to 111% in Dubuque, IA[12]. Locations near multi-use trails have also demonstrated a solid relationship to increased home values[13].

On a larger scale, the concept of "bicycle tourism" is rapidly becoming a popular option. Spurred on by the

8 Mayo Clinic, Health & Lifestyle Fitness, (online) August 2016

9 Centers for Disease Control and Prevention, Facts about Physical Activity, (online) May 2014

10 For a detailed list of these benefits, please visit www.cdc.gov/physicalactivity/data facts.htm.

11 Political Economy Research Institute, Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts, Heidi Garrett-Peltier, June 2011

12 Smart Growth America, Safer Streets, Stronger Economies – Complete Streets project outcomes from across the country, March 2015

13 Headwaters Economics, Measuring Trail Benefits: Property Values, Spring 2016

development of the United States Bicycle Route (USBR) system, cross-country bicycling has become far more accessible with many sites catering to these two-wheeled tourists. In NW Indiana there are two USBR's: Route 35 running north and south through central LaPorte County, and Route 36 running from Michigan into downtown Chicago. Both routes offer tremendous economic benefits for the communities they pass through.

In addtion, the last major federal transportation law, the 2015 Fixing America's Surface Transportation Act, or "FAST Act," bicycle tourism is recognized as one of the national planning factors[14].

THINKING "NETWORK"

Providing the proper infrastructure for the safe and accessible movement of pedestrians and bicyclists is paramount for any sound network to thrive. A local municipality should plan comprehensively for the broad solutions available to make their community walk- and bike-friendly. Thus, the concept of a network must take hold at all levels of government for a culture of non-motorized activity to emerge.

Starting with the rails-to-trails movement in the 1980's, and now blossoming nationwide, an abundance of resources and design solutions exists to help any community, at any size, achieve a measure of success in their planning and development efforts.

Where off-road trails represent the "non-motorized superhighways" of our region, developing a network from these systems must be equal in importance to the hierarchy of our road network. Whereas interstates cannot connect to every destination, trails cannot serve as the only piece in a complete non-motorized network.

14 For more information on taking advantage of bicycle tourists, please visit www.adventurecycling.org/bicycle-tourism.

Bicycle Toursim Basics

The NIRPC region offers many opportunities to attract in bicycle tourists. National bike routes plus prime desitinations make NW Indiana an attractive area. Tourism can either be local with events and day rides, or be a major travel excursion across many states. An estimated $83 billion in trip-related spending is attibuted every year to bike tourism[1]. Of those who tour, 82% have a college education, with an average age of 52, and 58% make over $75K per year. Of these, 8% are international visitors[2]. Making a community "bike friendly" is a major factor in attracting tourists.

1 The Outdoor Recreation Economy, Outdoor Industry Association, 2017

2 Bike Toursim 101, Adventure Cycle Association website

Providing safe routes from residential areas to places of employment, recreation, education and shopping serve to enhance transportation choice. Since about half of all trips are within three miles of our homes[15], creating an accessible pedestrian and bicycle transportation network is critical for community-wide success.

This section will take the time to unpack and touch upon the myriad of non-motorized policies and practices that can be employed rapidly here in NW Indiana. First, however, is an overview of the safety hazards at play today in the NIRPC three-county region.

PERILS FOR PEDESTRIANS

Exploring NW Indiana by foot or by bicycle can be a harrowing experience. Apart from the robust regional trail network, only a fraction of streets have been improved to aid in the safe movement of non-motorized traffic. Due

to this fact, most people who do access our trails end up driving to a nearby trailhead; justifiably fearful of walking or biking due to a lack of infrastructure. However, trails are not the only issue at hand. Many destinations exist where safe routes need to be in place to give people additional access options other than the automobile. For decades our infrastructure has been focused virtually on the movement of automobiles, which limits additional transportation choices and connections to destinations people may want to connect with by bike or on foot.

The dangers of negotiating our region roadways simply curtail individuals from walking or biking – no matter how close the destination. Narrow and/or damaged roads, congested intersections, and incomplete, broken or non-existent sidewalks are commonplace.

To gain an appreciation of the dangers of today's roadway network, Figure III-1 outlines the number of bicycle and pedestrian crashes that have occurred in NW Indiana between 2010 and 2016.

15 National Household Travel Survey, U.S. Department of Transportation, Federal Highway Administration, 2009

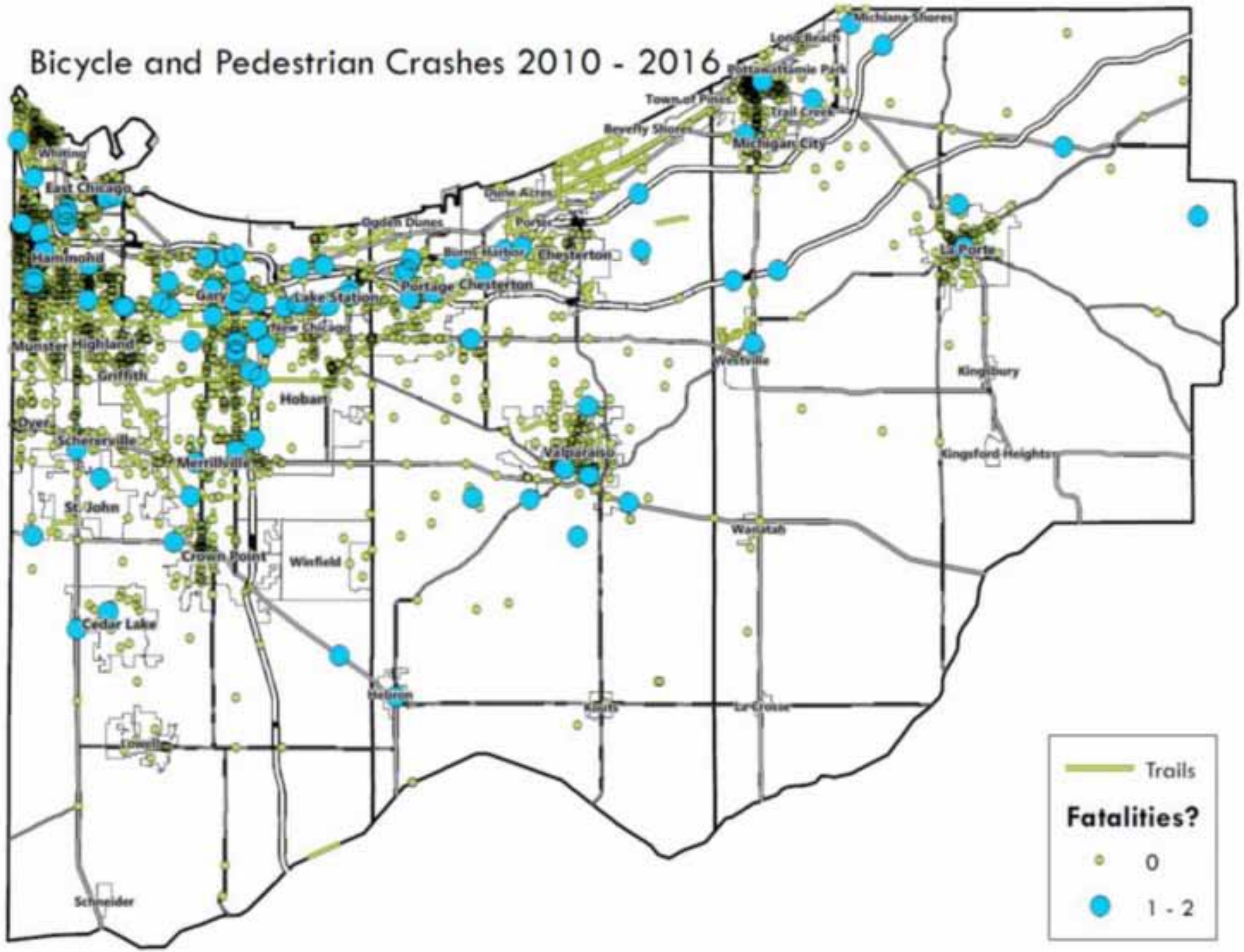


Figure III-1 Bicycle & Pedestrian Crashes 2010-2016

CREATING THE NETWORK

In Northwest Indiana, as well as many other parts of the United States, incremental work is needed to make our communities walk- and bicycle-friendly. Addressing connectivity issues within our existing networks will take time, and it will take a concerted effort going forward to focus on network-wide solutions to counter our lack of non-motorized transportation options.

Infrastructure solutions are available, and have been employed in several communities in the three-county NIRPC region. The following highlights the steps necessary to create communities with transportation choices.

NETWORK PLANNING

At the core of every walk- and bike-friendly community is a plan that supports its development and progress. Every municipality at the local and county level, should undertake a planning effort to inventory and suggest non-motorized network options. This involves piecing together all major infrastructure elements such as trails, bike lanes, sidewalks, shared routes, and intersection treatments.

NETWORK ELEMENTS

When creating a pedestrian & bicycle plan, a number of critical non-motorized infrastructure elements need to be addressed and mapped accordingly. These include the following:

- **Bicycle Routes:** These can be broken down into three classes of use:
  - *Class I: Trails & Cycle Tracks*

    Provides a completely separated option for the exclusive use of bicycles and pedestrians with cross-flow traffic minimized. The trails are marked and landscaped. Fencing encourages use of designated access points.

    Special caution must be afforded to the use of wide (8' plus) sidepaths along roadways. These can be counter-productive due

to numerous driveways crossing along the route, creating a hazard for path users due to the lack of visibility from the driver. Only consider these options for bicyclists if long distances occur between driveways.

A cycle track is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A cycle track is physically separated from motor traffic and distinct from the sidewalk. This is a helpful design treatment on busier roadways.

- *Class II:* Bike Lanes
  Provides a striped lane for one-way bike travel on a street or highway. Bike lanes are marked with signs and pavement striping, and sometimes even filled in with green or blue paint to further identify them from vehicular traffic. A one-to-two foot buffer strip can also be employed along the lane to increase the safety of users.

- *Class III:* Shared Routes
  Provides for shared use with pedestrian or motor vehicle traffic. Bike routes are marked with signs, with optional sharrows. Sharrows are painted arrow symbols on the roadway signaling where bicyclists should ride. Wide shoulders (about four feet with no rumble strips) are another design option which should be explored. Currently over 600 miles of these routes exist in Porter and LaPorte Counties, mainly on rural roadways.

- **Pedestrian Routes:** The most important infrastructure element for pedestrians is the venerable sidewalk. No other facility is as critical to the safe passage of foot traffic. Thus, their sound planning and maintenance are vital.

Unfortunately, sidewalks can be an opportunity or challenge for a community: An opportunity where they adequately connect residents to nearby destinations, or a challenge where they are incomplete, broken, or just plain missing.

Every proper non-motorized plan must take stock of the existing sidewalk inventory, cataloguing its completeness and condition, and include a comprehensive plan for maintenance and for constructing critical gaps. This is especially important around schools.

- **Intersections:** All non-motorized traffic will encounter conflicts with motorized vehicles at some point. These areas of conflict are primarily at intersections where sidewalks and bike lanes require designs for safe crossing. The typical solutions are clearly marked "zebra" crosswalks, with pedestrian countdown signals at traffic lights. At all intersections, curb ramps should be installed, with truncated domes (raised bumps on ramps) for those in wheelchairs or the visually impaired. Other enhancements include audible signals and bike boxes.

- **Mid-Block Crossings:** Apart for the obvious conflicts at intersections, increased attention to crossings "mid-block," or a distance away from a stop sign or traffic lights, must be considered. In fact, it has been reported that mid-block locations account for 70% of pedestrian fatalities[16]. The prime reason for these accidents is distance to safe crossings at established intersections. Without a nearby crossing (150 feet or so), a pedestrian is more likely to jaywalk into the roadway.

Care must therefore be afforded in providing safe mid-block crossing treatments between intersections. A number of proven designs can be considered which include crosswalks, refuge islands, warning signs and even lighting. For heavily traveled roadways, a HAWK signal should be seriously considered.

- **Traffic Calming:** Beyond the design measures discussed, a wide range of other treatments exist to aid with controlling traffic movements and reducing vehicle speeds on streets. The primary goal to calming design is slowing traffic down. This can be achieved with narrower road lanes, removal of lanes (road diets),

speed tables, chicanes (curvy streets), traffic circles and related measures[17].

- **Bicycle Parking:** Provisions for secure and routine parking for bicycles remains an important feature in a comprehensive non-motorized network. Parking can come either through the installation of racks or bike lockers which house the entire bike. Design and placement of the parking is critical for success since many racks are either substandard or not conveniently placed near a destination. For transit stations, lockers are highly recommended for added security[18].

- **Wayfinding:** Getting around a community safely via streets aided significantly by well-placed signage, or wayfinding. These signs can be as simple as identifying a bike route, or can have more elaborate designs which incorporate directions to nearby destinations. Wayfinding can also be painted onto the roadways for the identification of bike lanes, with more enhanced treatments such as green paint to help highlight these features[19].

Speed Table at Mid-Block Crossing

- **Bicycle Sharing:** An increasingly popular option for those who do not own bicycles is to "share," or rent one for a short period of time, usually for utilitarian or commuting purposes. These bike share programs have popped up in just about every major metropolitan area in the world today. In 2017, two new programs launched in Valparaiso and the Miller neighborhood of Gary. These programs used Zagster, which is an affordable option compared to those contacted by large metropolitan areas.

17 An exhaustive resource on calming design can be found at the Institute of Traffic Engineers' website at www.ite.org/traffic.

18 A free publication on the essentials to bike parking can be downloaded from http://www.apbp.org/?page=publications.

19 An overview of signage available for local road use can be found at www.trafficsign.us/bikesign.html.

Outdoor Adaptive Escapade

In the summer of 2017, the Miller Neighborhood Spotlight organization in Gary, Causes for Change, plus many others, came together to for an event to highlight new resouces and equiptment which allowed people of different abilities to enjoy outdoor activities. These included the introduction of acessible shared bicycles and a canoe launch. The goal of the event was to demonstrate that applying Universal Design priniciples for disabled individuals, benefits everyone. Please visit Causes for Change at www.causesforchange.org for more information on this, and other events & policies promoting disabled access.

- **Universal Design:** Accomodating people with disabilities remains a challenge. The passage of the 1990 Americans with Disabilities Act (ADA) mandated public accomodations through designs which facilitate access and mobility for disabled indivduals. Here the principle of Universal Deisgn needs takes consideration of all ages and abililties into account on the front end of the design process. If an environment is accessible, useable, convenient and a pleasure to use, everyone benefits.

NETWORK MAINTENANCE

Built into a long-range public works maintenance plan should be those elements critical to safe non-motorized transportation. On page 72 in the Recreation Chapter, trail maintenance is highlighted in detail.

There exist a number of strategies that should be incorporated in any schedule for municipal street corridor maintenance. These include sweeping, re-striping, upkeep of crosswalks and bike lane markers, regular repairs of cracked, heaving or otherwise substandard sidewalks, and the replacement of wayfinding elements.

ACCESS MILLER BEACH

Active Transportation & Accessibility Alliance

Of these strategies, maintenance of sidewalks remains most sensitive. Responsibility either rests with the private landowner or the municipality. Usually repair programs involve shared costs, which balances the safety need, as well as keeping the jurisdiction's inventory up-to-date. Most communities require the property owner to shovel their sidewalks of snow and keep them free of debris.

POLICY DEVELOPMENT

A pedestrian and bicycle network plan should consider a number of policies. This section focuses on several that can provide an immediate impact to for any community.

Complete Streets

Policies advocating for the creation of Complete Streets, which emerged over a decade ago, have now grown rapidly throughout the United States. To date, over 1,140 agencies at the local, regional, and state levels have adopted Complete Streets policies, totaling over

THE ONE ARGUMENT FOR ACCESSIBILITY THAT DOESN'T GET MADE NEARLY OFTEN ENOUGH IS HOW EXTRAORIDINALILY BETTER IT MAKES SOME PEOPLE'S LIVES. HOW MANY OPPORTUNTIIES DO WE HAVE TO DRAMATICALLY IMPROVE PEOPLE'S LIVES JUST BY DOING OUR JOB A LITTLE BETTER.

—STEVE KRUG

1,200 policies nationwide[20]. NIRPC was part of this wave with the adoption of its own policy and guidelines in 2010.

Smart Growth America describes Complete Streets as follows: *Complete Streets are streets for everyone. They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.*

The comprehensive nature of Complete Streets remains critical for success in creating road corridors that are comfortable for all users. How this looks is as varied as our roadways and the communities they cross through. Some may need all modes accommodated (such as transit), while some not nearly as complex (such as policies in rural areas).

20 Smart Growth America website

For optimum success of a Complete Streets program, a policy should be adopted by the town or city council, either through resolution or ordinance, which establishes the incorporation of designs at the front-end of planning to provide maximum comfort for non-motorized users.

As of September 2016, three communities in the NIRPC region have adopted Complete Streets Policies: Lowell, LaPorte and LaCrosse. A number of others have draft policies in the works or are moving forward with them. NIRPC also has adopted design guidelines from the Active Transportation Alliance in Chicago[21].

Safe Routes to School

Poor land use planning often results in an overreliance on the automobile for accessing any destination, no matter how close. Nowhere is this more evident than the amount of elementary and middle school children being dropped off and picked up every day. In 2009, only 13 percent of children 5 to 14 years of age usually walked or biked to school - down from 48 percent in 1969[22] During the morning commute, driving to school represents up to 10-14 percent of traffic on the road[23].

One major factor behind the small numbers of children walking and biking to school are safety concerns regarding the built environment. Parents are naturally hesitant sending their children to school on roads with no sidewalks and

21 These guidelines, as well as a host of other resources on creating policies at any level of community development, can be found at http://atpolicy.org/resources.

22 The National Center for Safe Routes to School, 2011

23 Healthy Communities 101, Safe Routes to School Partnership website.

along busy, and fast, vehicular corridors. This has contributed to the obesity crisis in the United States where physical inactivity remains a main cause.

Aiding with safe routes for children to access their schools helps instill healthy lifelong habits. In addition, safer routes would help decrease the number of vehicular accidents, which is a leading cause of death for children between the ages of 5 to 14[24].

Safe Routes to School programs represent a comprehensive approach to getting children to walk and bike more frequently. These programs include education, enforcement and infrastructure improvements around the school facility. A wide range of events and activities can be incorporated to promote programs such as walking school buses and bicycle rodeos[25]. For a Safe Routes to School program to take root and flourish, strong support from the school principal is a must. Further assistance can be sought from PTA's and other parent-based organizations. Contacting your local police department also represents a good start in beginning a dialogue[26].

Walk & Bike Friendly Designations

A benchmark for municpalities improving non-motorized connections would be to attain national designations. Two popular programs involve the League of American Bicyclist's "Bicycle Friendly America" and "Walk Friendly Communities." Each of these programs are aimed at encouraging governments at all levels to commit to policies and development strategies to improve non-motorized conditions.

24 Centers for Disease Control, Web-based Injury Statistics Query and Reporting System (online). National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, August 2016.

25 More information on these programs can be found at www.saferoutespartnership.org.

26 nformation on establishing a Safe Routes to School program within a school district, please visit either www.saferoutesinfo.org or www.saferoutespartnership.org.

The Walking School Bus

A simple and impactful event to help encourage children to walk more often is organzing walking school buses. Many districts have embraced this event, with some even going so far as to retire buses due to lack of kids to pick up. Setting-up requires buy-in from the school principal, and assistance from parents, usually through the Parent-Teacher Associations (PTA's). Planning involves breaking a school district into walkable zones, and recruiting parents and/or adults to act as the "drivers" and lead the children. A walking school bus is fun for all involved, and builds both social skills and lifelong healthy habits. Bikes can also be invovled. Please visit www.walkingschoolbus.org for information on creating an event.

- *Bike Friendly America:* Sponsored by the League of American Bicyclists, the Bike Friendly America program provides municipalities, states, business and universities an opportunity to improve conditions for cyclists. Applicants complete a scorecard which gauges their "friendliness," with League staff ready to assist to help improve scores. Applicants are awarded either bronze, silver, gold or platinum level status based on their progress.

  The most popular of these remains the Bicycle Friendly Community program with approximately 250 communities awarded a designation, out of over 600 applied. These applicants are judged on five major areas of accomplishment in engineering, education, encouragement, enforcement and evaluation[27].

27 For more information on this program, please visit www.bikeleague.org/bfa.

- *Walk Friendly Communities:* There are also those communities who have created safe walking environments. The Walk Friendly Communities program has designated to date 77 communities at a variety of levels (including Honorable Mention) that have demonstrated a continuing commitment to walking conditions[28].

28 Details of this program can be found at www.walkfriendly.org.

Development Siting

If communities are to advance better pedestrian and bicycle access, new developments can complement these principles. Siting residential or commercial land uses closer together in a multi-use or small lot fashion greatly enhances the potential for non-motorized travel in that district.

In larger cities, WalkUPs, or "walkable urban places," have taken off as the latest attraction for new residents and business owners alike. A recent report identifying WalkUPs in 30 major metro areas found rental premiums to be higher that their suburban counterparts in both office and residential sectors[29]. The market share for these properties has shifted back to the urban core.

Ensuring development that caters to bike and foot traffic remains the responsibility of local plan commissions, redevelopment committees and boards of zoning appeals. Between these groups and municipal staff, new ordinances must be crafted and duly approved by council members so as to be properly enforced. As a starting point, these policies should be adopted in a community comprehensive or master plan, and then adopted as code in municipal zoning and subdivision ordinances.

29 Foot Traffic Ahead, The George Washington University School of Business, June 2016.

Transit Connections

A myriad of public transit options regularly operate in the NIRPC three-county region. Currently there are eight providers of local bus and on-demand transit, and one local commuter train operator (South Shore Line). There are also Amtrak national train connections into the region.

About all of the fixed bus services in East Chicago, Gary, and Valparaiso are fitted with bicycle racks. Michigan City remains the only fixed transit agency that does not provide racks. In 2016, the South Shore Line began allowing bicycles for weekend services at high-platform stops. The service was expanded daily in 2017.

A critical consideration for accessing transit by foot or bike remains the infrastructure leading to and at the stations. Of importance are connected sidewalks in good repair, lighting, shelters and wayfinding signage. At South Shore Line stations, bicycle lockers are necessary to facilitate long-term parking for commuters.

From a planning perspective, new transit routes, and non-motorized facilities, should aim to take advantage of their locations in relation to each other. Examples include new stations near intersecting trail facilities, and the installation of bike lanes leading to transit stops.

Bike-to-Work

Throughout the country, more employers are providing inentives for their employees to ride their bikes to work. Sheltered bicycle parking, as well as shower and changing rooms, encourage employees to bike in regularly. These small investments can lead to improved productivity, a reduction of health costs, and major savings on transportation spending. Taken together, these factors lead to an engaged and positive workforce.

REGIONAL OVERSIGHT

NIRPC has championed non-motorized transportation choices since the early 1970s. During this time, NIRPC has been able to work closely with region entities on a unified vision for expanded pedestrian and bicycle access. The Recreational chapter focuses on the success involving trail development through the creation of the Priority Trails Corridor Map.

For the balance of the non-motorized network, progress can be seen, but has been slow. NIRPC convenes the Ped, Pedal and Paddle Committee every month to gauge and discuss regional progress and promote best practices. NIRPC expands the message by reaching out to non-traditional partners.

These partners have proven successful on non-motorized network development throughout the country. Primary amongst these are the health care providers and their attention to wellness outreach. Other avenues include organizations that

Bikes & Businesses

Many companies have created employee incentive programs to bicycle more often to work. They recognize the many benefits of bicycling, and seek to encourage more riders. Examples of employee benefits include[1]:

- Cliff Bar provides up to $500 to either repair or buy a bicycle
- New Belgium Brewing provides a cruiser bike to those after a year on the job
- Honest Tea adds an addtional $27.50 to their paychecks
- Patagonia pays $2 per bike or transit trip to work
- Jamba Juice offers loaner bikes for errands or lunch, and health insurance discounts

1 Top 5 Corporate Bike-To-Work Incentives in US, TriplePundit, May, 2014

advocate for the elderly and disabled, since our population is aging.

As with recreation options, communicating with both public and private entities outside of the NIRPC region and in adjacent states, remains a vital goal. This in turn can spur further dialogue with tourism agencies looking to promote their destinations.

On the funding front, NIRPC continues to provide a significant allocation of federal funds to both bicycle and pedestrian facility improvements. NIRPC further assists local entities with state funding opportunities, either through dedicated programs, or working on incorporating non-motorized elements in state-led projects. This has proven to be very successful with state road projects involving a separate bike and pedestrian lane on bridges, and sidepaths along roadways where feasible.

All federal funding programs come with eligibility standards, so applicants are strongly encouraged to attend NIRPC meetings for the latest information on project solicitation schedules.

Ped Pedal & Paddle

DATA ANALYSIS

Advancement of the regional non-motorized network can take place with the right plans and policies enacted at the municipal level. It is critical to gauge current progress in these areas and to establish a baseline for regional improvement.

In the latter part of 2015, NIRPC released a survey exclusive to all local and county entities asking them to provide feedback on a number of topics relating to bicycle and pedestrian transportation. The results of their feedback are presented in this section.

- *Does your community have a Complete Streets Policy?* There were 31 responses, with 11 stating to have a policy, with 20 not having one. However, to date there are only three Complete Streets policies adopted in the three county NIRPC region that adhere to nationally accepted standards.

- *What is your current program for repairing and/or installing sidewalks?* There were 30 responses, and 19 of these stated complete municipal responsibility to repair and replace sidewalks. Six entities have programs where they share costs with property owner where the sidewalk is located, such as 50/50 programs for cost sharing. Five entities do not have sidewalks, nor have no public funds to improve them.

- *Does your community have a bicycle and pedestrian facilities plan?* There were 32 responses with 21 not having a specific plan, and 11 stating to have adopted one. Of those 11 who have plans, the oldest dates from 2006, with the newest to be adopted in December of 2016. The average age of these plans is roughly five years. One respondent claimed their bicycle and pedestrian plan is addressed in their Park Master Plan and City Comprehensive Plan.

- *Does your law enforcement have a program for bicycle safety?* There were 30 responses to this question, 11 stating to have a program, and 19 having no program in place. Of those stating to have a program, 10 of these involved direct educational programs with schools and children, usually held once or twice a year.

- *Does your community work with a citizens bicycle and pedestrian advocacy group?* There were 32 respondents, with a majority of 24 stating no collaboration. Eight entities do state to work with a local group, and more outreach is needed to connect with other communities to mobilize citizen support.

- *Does your community have a bicycle parking ordinance?* There were 30 responses, with a vast majority of 25 having no ordinance in place. Five entities do state such an ordinance, which are critical to helping encourage more ridership to various destinations[30].

- *Does your community host any major bicycling events or rides?* There were 30 responses with 11 of these stating to host such events. These include three night rides (Valparaiso, Hammond/Munster, and LaPorte), and a number of special rides that are family orientated. One ride involves an extensive bicycle route up to 55 miles, with smaller routes included.

30 For a guide on developing an ordinance, please visit http://www.changelabsolutions.org/publications/bike-parking.

ADVANCED PERFORMANCE MEASURES

In 2016, the U.S. Federal Highway Administration (FHWA) released an excellent document outlining best practices for advanced non-motorized data collection. Their *Guidebook for Developing Pedestrian and Bicycle Performance Measures* represents an exhaustive collection of data collection practices that help gauge progress in non-motorized transportation facility development. These practices include the following considerations:

- *Access to Community Destinations:* The proximity of pedestrian, bicycle, and transit infrastructure and services to origins and destinations (e.g. shopping, recreation, entertainment)
- *Adherence to Traffic Laws:* A measurement of how well pedestrians, bicyclists, and motorists obey current traffic laws
- *Average Trip Length:* The average distance or time traveled between an origin and a destination in a given geographical area
- *Connectivity Index:* Connectivity is a representation of the number and directness of travel routes and options available to a user, while a connectivity index represents a number of specific measures user to assess walking and biking connectivity in specific area
- *Facility Maintenance:* A measurement of the physical condition and state of repair for pedestrian and bicycle facilities
- *Mode Split:* The proportion of total commute trips by transportation mode
- *Person Throughput:* A mode-neutral estimate of the person through-capacity of a given corridor. The fundamental unit of measure is a person. In other words, it measures the number of people using a corridor, regardless of the mode of transportation
- *Route Directness:* A measurement of the most direct routes for walking and biking between two designated locations. Ideally, walking and biking routes should be short and direct as possible without sacrificing user comfort
- *Volume:* The measured (i.e., counted) number of pedestrians and bicyclists in a specified area for a designated period of time

A number of these performance measures have been assimilated into the Implementation chapter.

TRANSPORTATION GOALS & OBJECTIVES

Based on the information described in the Transportation chapter, the following goals and objectives are presented. Further detail to each objective can be found in Chapter V – Implementation. A series of tables are presented where action steps are provided for each objective, and broken down based on responsibilities of the Greenways Eight stakeholders.

GOAL T1: *Encourage and promote regional coordination and planning in pedestrian and bicycle network development*

- **Objective T1.1:** Promote Complete Streets (CS) policies and practices in all regional and local transportation development decisions
- **Objective T1.2:** Incorporate consideration of bicycle and pedestrian accommodations into local and regional development review procedures
- **Objective T1.3:** Reach out and involve "non-traditional" partners
- **Objective T1.4:** Coordinate bicycle and pedestrian planning at all levels of government, particularly in the same geographic area

GOAL T2: Improve connections between sub-regional and interstate networks & destinations

- **Objective T2.1:** Provide connections to all major regional trail corridors
- **Objective T2.2:** Complete links to major trip generators and enhance access to jobs
- **Objective T2.3:** Promote development of amenities to accommodate non-motorized users of all abilities

GOAL T3: *Encourage and increase bicycle and pedestrian access to and from all transit and multi-modal facilities*

- **Objective T3.1:** Promote safe and convenient bike and pedestrian access

Build-A-Bike

The Miller Spotlight group launched their Build-A-Bike program in 2017, which promotes bicycle use in the neighborhood, and develops leadership skills. Area residents can participate or volunteer every Saturday from April to October. Bikes are put together, and once finished, crew members pledge four hours of community service to receive the bike.

- **Objective T3.2:** Collaborate with transit operators to promote and provide multi-modal capabilities on all routes and vehicles

GOAL T4: *Promote the benefits of bicycle and pedestrian networks*

- **Objective T4.1:** Update the *Greenways + Blueways 2020 Plan* and map
- **Objective T4.2:** Create and/or expand public awareness and education programs with a particular focus on health and safety
- **Objective T4.3:** Establish NIRPC as a resource for technical assistance to the local planning agencies as the local network connects to the regional bikeway system
- **Objective T4.4:** Promote the provision of public access to bicycles

GOAL T5: Maintain a set of funding priorities to allow for the implementation of a regional non-motorized transportation network

- **Objective T5.1:** Maintain a collaborative regional-level decision-making environment
- **Objective T5.2:** Identify funding sources to implement and develop non-motorized transportation networks

GOAL T6: Reduce ecological impacts of transportation networks through promotion and deployment of green infrastructure.

- **Objective T6.1:** Promote ecologically sensitive management of transportation rights-of-way
- **Objective T6.2:** Expand use of functional green infrastructure practices for stormwater management in transportation rights-of-way

IMPLEMENTATION

GOALS, OBJECTIVES & POLICIES

The following represents a summary of the goals, objectives, policies and activities that have been carried forward from previous plans (*2005* and *2010 Ped & Pedal Plans*), and feedback from numerous regional stakeholders during listening sessions and NIRPC meetings. The theme of these goals relate to the topics as covered in the Conservation, Recreation and Transportation chapters of the *G&B 2020 Plan*.

The goals are broken down into elements which help facilitate implementation and track their progress. These elements include:

- **Goal**: Pursuit of this statement underpins all of the section's objectives and projects.
- **Objectives**: Strategies for achieving the goals of the section.
- **Policies/Activities**: A guide for regional stakeholders on how to achieve each objective.
- **Performance Measures**: How regional stakeholders will track the progress of goals and objectives. These measures should be tracked and reported on annually in order to evaluate the progress towards achieving the goals and objectives.

CONSERVATION

GOAL C1: Encourage and promote the preservation of natural or naturalized conservation buffers and conservation corridors protecting and linking Northwest Indiana high quality priority conservation areas across the landscape

Objective C-1.1: Identify and Map Natural Ecological Communities currently remaining outside of conservation management									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Field check and inventory natural communities identified through GIS Analysis**	Seek funding for ecological inventories	Seek funding for ecological inventories & allow ecological inventory on private lands	Seek funding for ecological inventories	Allow ecological inventory and share habitat management information	Allow ecological inventory on private lands	Seek funding for ecological inventories	Seek funding for ecological inventories and develop data sharing mechanisms	Seek funding for ecological inventories & allow ecological inventory on private lands
B	**Educate Public and Decision Makers about the public and economic value of undeveloped natural areas**	Receive presentations on ecosystem services values. Incorporate Ecosystem Services into land use planning.		Develop brochures and educational programs on locally specific ecosystem services values.				Develop brochures and educational programs on locally specific ecosystem services values.	Develop brochures and educational programs on locally specific ecosystem services values.
C	**Update Mitigation Priority maps and planning documents.**	Update Mitigation opportunities and priorities maps		Update Mitigation opportunities and priorities maps				Update Mitigation opportunities and priorities maps	

Performance Measures

- Regional consensus map of existing natural communities integrated into Planning & Environmental Linkages Mitigation maps
- # of presentations given to local decision makers about ecosystem services valuations in their jurisdictions

Objective C-1.2: Promote acquisition or protection of conservation buffers surrounding and conservation corridors connecting existing lands managed for conservation									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Encourage cooperative planning and partnerships between local park departments and conservation land owners**	Reach out to other land owners when engaging in park planning or aquisition		Reach out to local park de-partments when plan-ning aquisi-tions					
B	**Pursue strategic open space acquisition that provides opportunities to expand existing open spaces and improve network connectivity for the benefit of wildlife and biodiversity.**	Plan for additional right of way acquisition in project funds.		Work with partners on mapping and coordi-nation				Plan for additional right of way acquisition in project budgets. Work with partners on mapping and coordi-nation	

Performance Measures

- # Acres of land in conservation management
- # Acres of transitional zone lands in recreational, low impact, or conservation development buffers surrounding conservation lands
- # Miles of greenway corridors in native landscaping

Objective C-1.3: Incorporate protection of conservation buffer areas and conservation corridors into local planning and ordinances									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Encourage concentration of new growth around and away from infrastructure**	Adopt conservation ordinances or zoning				Integrate preserved open spaces into new neighborhoods			
B	**Adopt incentives for private property owners and developers to preserve areas adjacent to or connecting to conservation lands in native plantings**	Adopt stormwater fee rebates, tax incentives, or density bonuses to encourage private conservation development.	Maintain native habitat areas adjacent to conservation lands.		Maintain native habitat areas adjacent to conservation lands.	Maintain native habitat areas adjacent to conservation lands through conservation development and cluster development	Maintain native habitat areas adjacent to conservation lands.	Educate local governments on the value of incentivizing conservation on private lands. Provide technical support.	

Performance Measures

- # of municipalities with conservation development ordinances or zoning
- # of municipalities with habitat conservation incentives in place

Objective C-1.4: Promote and support habitat restoration and invasive species management on utility right of way managers. (Related to T-6.1)									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Promote and encourage invasive management on utility rights of way**			Participate in conservation friendly RoW management working group	Participate in conservation friendly RoW management working group		Participate in conservation friendly RoW management working group	Participate in conservation friendly RoW management working group	
B	**Promote native plantings on utility rights of way**			Participate in conservation friendly RoW management working group	Participate in conservation friendly RoW management working group		Participate in conservation friendly RoW management working group	Participate in conservation friendly RoW management working group	

Performance Measures

- # of partnerships with utility right of way managers and conservation partners

GOAL C2: Increase public access to natural ecological communities and conservation lands through conservation corridors.

Objective C-2.1: Increase the conservation functions of existing parks, recreational areas, open space, and trails									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Increase naturalized and native landscaping along existing trails and in parks and open spaces**	Include habitat goals in local park plans	Include habitat goals in landscape manage-ment plans	Provide technical support for develop-ment of manage-ment plans.	Include habitat goals in landscape manage-ment plans	Include habitat goals and conserva-tion set asides in new devel-opments	Include habitat goals in landscape manage-ment plans	Provide technical support and/or funding for develop-ment and implemen-tation of manage-ment plans	Include habitat goals in landscape manage-ment plans
B	**Develop and Implement invasive plant management plans in trail corridors, parks, and open spaces**	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work	Provide technical support for develop-ment of manage-ment plans.	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work		Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work	Provide technical support and/or funding for manage-ment plans	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work
C	**Partner with conservation organizations to fund and implement long term maintenance and invasive species management**	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work	Provide Technical Support to other land owners	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work		Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work	Provide technical support and fund-ing for local invasive week man-agement	Work with Northwest Indiana Coopera-tive Weed Manage-ment Net-work

Performance Measures

- Miles of Recreational Trails with managed native landscaping
- Acres of public parks and private open space in native landscaping adjacent to or connecting managed conservation lands
- # of Cooperative Conservation Management Agreements in place in conservation hubs with fragmented land ownership

Objective C-2.2: Promote and establish the formation of Greenway Centers to increase public access to conservation lands.									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Identify key locations,existing and proposed for "Greenway Centers," ideally at the intersections of trails, water trails, conservation lands, and public parks**	Participate in mapping to Identify suitable Greenway Center locations						Mapping, facilitation to Identify suitable Greenway Center locations	
B	**Plan for and Invest in additional amenities at Greenway Centers, especially those called for in IDNR 2013 Lake Michigan Coastal Program Public Open Space Needs Assessment**	Enhance amenities and wayfinding to create Greenway Centers at existing public parks		Enhance amenities and wayfinding to create Greenway Centers at existing conservation areas		Enhance amenities and wayfinding to create Greenway Centers at existing public parks			Enhance amenities and wayfinding to create Greenway Centers at existing public parks
C	**Plan for new Greenway Centers with amenities at gaps in the regional open space access networkw**	Explore new public parks at regional gaps in access to the Greenway network		Explore new public amenities for public access in preserves where appropriate		Explore inclusion of public amenities for access to adjacent greenways	Explore new public amenities for public access on campuses adjacent to greenways	Explore new public amenities for public access in preserves where appropriate	Explore new public amenities for public access on campuses adjacent to greenways
	Develop public or private eco-tourism infrastructure at Greenway Centers	Invest in wayfinding and other ecotourism supportive infrastructure	Explore entrepreneurial approaches to ecotourism			Explore entrepreneurial approaches to ecotourism	Invest in wayfinding and other ecotourism supportive infrastructure	Invest in wayfinding and other ecotourism supportive infrastructure	Explore entrepreneurial approaches to ecotourism

Performance Measures

- # of Greenway Centers that are mutually and conveniently accessible to trails, water trails, conservation lands and have infrastructure to promote public enjoyment of same
- # of amenity enhancement projects at existing parks and greenway access points
- # of ecotourism businesses adjacent to Greenway Centers

GOAL C3: River and stream reaches within Regionally Significant Conservation Areas, Locally Significant Conservation Corridors or priority blueways will have riparian conservation buffers.

Objective C-3.1: Protect streambank and riparian habitat areas, limit active use of sensitive shoreline & streambank with significant buffers.									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Provide local protection of riparian corridors through planning, zoning and land management practices**	Adopt riparian buffer setbacks and protection ordinances	Maintain native plantings in buffer areas adjacent to streams	Maintain native plantings in buffer areas adjacent to streams	Maintain native plantings in buffer areas adjacent to streams	Maintain native plantings in buffer areas adjacent to streams	Maintain native plantings in buffer areas adjacent to streams	Educate on the value of riparian setback ordinances and provide model ordinances. Mapping, technical support	Maintain native plantings in buffer areas adjacent to streams
B	**Adopt incentives for private property owners and developers to preserve riparian buffers in native plantings**	Adopt stormwater fee rebates, tax incentives, or density bonuses to encourage private riparian buffers	Maintain native plantings in buffer areas adjacent to streams			Maintain native plantings in buffer areas adjacent to streams		Educate on the value of incentivizing riparian buffer conservation on private lands. Provide technical support	
C	**Plan and design channel modification activities to mitigate negative physical, chemical and habitat impacts, restore natural hydrology patterns**	Plan and design channel modification activities to mitigate negative impacts, restore natural hydrology patterns	Plan and design channel modification activities to mitigate negative impacts, restore natural hydrology patterns		Plan and design channel modification activities to mitigate negative impacts, restore natural hydrology patterns	Plan and design channel modification activities to mitigate negative impacts, restore natural hydrology patterns	Plan and design channel modification activities to mitigate negative impacts, restore natural hydrology patterns	Mapping, facilitation collaboration for mitigation, technical support	

Performance Measures

- # of communities with floodplain protection ordinances
- # of communities with riparian setback ordinances or riparian zoning overlays
- # of communities with riparian conservation incentives to private owners and developers

Objective C-3.2: Reduce development encroachment in floodplains, wetlands, and riparian buffers.									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Avoid development in floodplains**	Improve zoning and development ordinances to preclude development in floodplains	Avoid building within flood plains	Prioritize acquisition in flood plains		Plan developments with conservation buffers around waterways	Avoid building within floodplains		Avoid building within floodplains
B	**Adopt riparian buffer setbacks and protection ordinances**	Adopt riparian setback ordinances or overlay districts						Educate local governments on the value of riparian setback ordinances	
C	**Pursue Opportunities to restore and expand existing wetlands**	Seek funding to restore wetlands on public property	Seek funding to restore wetlands on public property	Purchase wetland property. Participate in wetland mitigation planning efforts. Pursue funding for wetland restoration			Seek funding to restore wetlands on public property	Educate local governments on the value of preserving both wetlands for flood protection, stormwater storage, and water quality. Participate in wetland mitigation planning efforts	Seek funding to restore wetlands on public property

Performance Measures

- # of communities with floodplain protection ordinances
- # of communities with riparian setback ordinances or riparian zoning overlays
- # of communities with wetland protection ordinances

Objective C-3.3: Increase riparian lands in public ownership to manage conservation corridors and increase recreational access to waterways.									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Acquire riparian properties for conservation and public recreational access and use**	Acquire riparian properties for conservation and public recreational use		Acquire riparian properties for conservation use			Acquire riparian properties for conservation use	Acquire riparian properties for conservation and public recreational use	Acquire riparian properties for conservation use
B	**Increase purchases of conservation easements or public access easements on riparian properties**	Purchase conservation easements in riparian properties	Offer land for public acces or conservation	Purchase conservation easements in riparian properties	Allow public access for active and passive recreation	Allow conservation easements in new developments			

Performance Measures

- Miles of riparian stream corridors in public ownership

RECREATION

GOAL R1: Encourage and promote regional coordination and planning in trail development

Objective R1-1: Inventory and evaluate existing and potential trail corridors in NW Indiana									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Continue to maintain & update "Regional Priority Corridors Map"**	Participation in 3PC	Participation in 3PC	Participation in 3PC	Participation in 3PC	Participation in 3PC	Participation in 3PC	NIRPC hold monthly 3PC meetings	Participation in 3PC
B	**Determine if existing trail corridors are feasible for development**	Protect abandoned rail corridors	Work with local gov't & land trusts	Purchase property & work with municipalities	Make available for trails through agreements	If corridor available, incorporate in development	If corridor available, incorporate in site plan	Work with local gov't and map	Make available for trails through agreements
C	**Analyze waterways for canoe and kayak feasibility and access points**	Work with NWIPA and incorporate in plans	Allow water access for canoes and kayaks	Purchase land for launches	Allow water access for canoes and kayaks	Provide launches in new developments	Allow water access for canoes and kayaks	Plan for increased access to waterways	Allow water access for canoes and kayaks
D	**Collaborate with entities and local landowners on new trail corridors**	Work with property owners	Work with municipalities on donation or compensation	Work with landowners on easement or purchase	Make available for trails through agreements	Work with local planning offices on corridors	Work with local planning offices on corridors	Assist local and county municipalities with new trails	Work with local planning offices on corridors
E	**Involve South Shore Trails and NW Indiana Paddling Association in building citizen coalitions**	Reach out and collaborate on new plans and ordinance creation	Join SST and NWIPA to advance regional goals	Collaborate on similar visions and develop mutual strategies	Invite to help plan for expansion of recreational opportunities	Collaborate on new development designs	Partner with sponsorships and/or support events and projects	Invite to stakeholder groups for planning and funding	Contact for teaching or training opportunities

Performance Measures

- # of miles of additional trail built in Priority Corridors
- # of corridors which turn blue, or completed, on "Regional Priority Trails and Corridors Map"
- # of new trail corridors added to map
- Amount of boat launches developed for canoes and kayaks
- # of meetings with private landowners regarding adjacent trail development

Objective R1.2: Encourage consideration of trails into local and regional development review procedures									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Promote trail corridor networks in local comprehensive plans**	Adopt trail-friendly language						Promote best practices for local governments	
B	**Amend local ordinances to mandate trails in new subdivisions where feasible**	Update zoning and subdivision codes				Work with local gov'ts on progressive designs		Promote best practices for local governments	
C	**Mandate connections to existing trails for new subdivisions**	Update subdivision codes				Incorporate connections to trails in design		Promote concepts to local gov'ts	
D	**Develop minimum design standards for consistent trail development at both local and regional scale**	Incorporate in subdivision and zoning codes				Design subdivisions with best practices		Mandate standards for federally-aided projects	
E	**Encourage local entities to involve regular citizen input on new trail creation and upkeep of existing facilities**	Create citizen led group with public entity input on trails	Encourage local officials to involve citizens in trail development	Encourage local officials to involve citizens in trail development				Encourage citizen input at regional planning level	

Performance Measures

- # of new Comprehensive Plans adopted with trails prioritized in new developments
- # of subdivision or related ordinances revised to reflect trail placement in new developments
- # of new canoe and kayak launches created in new developments
- # of new trail advocate groups formed between citizens and local officials

Objective R1.3: Cooperation with interstate entities									
	Policy/Activity	Local Government	Private Property	Land Trusts/ Advocates	Linear Corridor Owners	Developers	Corporate Property Owners	Federal, State & Regional	Institutions of Education
A	**Foster consistent communication with partner MPO's in Chicago (CMAP) and SW Michigan (SWMPC)**							Continue to invite to regional meetings (TPC, 3PC, etc)	
B	**Review bi-state trail planning initiatives including the development of the tri-state Marquette Greenway**							Cooperate with Chicago and Michigan partners regularly	
C	**Consult with non-motorized advocate groups on garnering support for multi-state trail initiatives (Active Transportation Alliance, Trails for Illinois, Harbor Country Trails)**			Work with both local entities and NIRPC on a consistent basis for trail development				Invite advocates to NIRPC meetings and attend theirs regularly	

Performance Measures

- # of meetings annually between CMAP and SWMPC officials regarding cross-state trail coordination
- # of meetings between NIRPC staff and neighboring advocate groups in Illinois and Michigan

GOAL R2: Promote the benefits of trails

Objective R2-1: Produce products that guide and educate region residents on trails									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Update and distribute the Greenways & Blueways Map**	Have copies at municipal offices	Promote map to friends and family	Promote to members	Sponsor maps	Use maps to plan trails at developments	Sponsor maps and distribute at local offices	Update and distribute map every 4 years	Distribute at schools and campuses
B	**Collaborate with local entities on signage promoting proper use of trails**	Develop signage plan with installation and design		Encourage local entities to install signage and assist	Allow signage along corridors	Incorporate signage in new developments		Promote NIRPC Unified Wayfinding Guide for federal projects	Work with locals on signage on campus and campus locations
C	**Update current, and develop new maps for water trails**	Work with NWIPA on maps	Promote map to friends and family	NWIPA to take lead on map developments	Sponsor new maps	Use maps to plan launches at new developments	Sponsor new maps	Seek new map opportunities with NWIPA and help with funding	Distribute at schools and campuses

Performance Measures

- # of copies of Greenways & Blueways Map printed and distributed per year
- # Number of water trail maps (Lake Michigan and Kankakee River) distributed per year
- # Number of safety signs installed along regional trail routes

Objective R2.2: Promote the development of amenities and wayfinding to accommodate trail users									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Promote Unified Trail Wayfinding Guide to all entities**	Adopt standards for local trail projects		Promote standards in region	Incorporate designs on trails within corridors	Use guide for signage design at new developments	Use guide for wayfinding to properties from trails	Educate region entities on guide	Use guide for wayfinding on campuses
B	**Mandate all new federally-aided trail projects to use standards in Unified Trail Wayfinding Guide**	Incorporate costs in federal applications		Promote standards when advocating				Mandate for all federally-aided trail programs	
C	**Fabricate and install signage along waterways using NIRPC's Water Trail Signage Manual**	Use guide on water trail access and routes	Allow signage on property along water trails	NWIPA to promote design manual on routes	Allow signage on property along water trails	Incorporate designs in new developments	Allow signage on property along water trails	Promote guide to all regional entities for implementation	Allow signage on property along water trails
	Encourage the use of public art along trail corridors	Contact local high schools or colleges to promote art	Sponsor art projects	South Shore Arts to work with schools and local entities on projects	Sponsor art projects	Collaborate with local artists with trails in developments	Collaborate with local artists with trails on property and sponsor	Promote national best practices and work with local entities on implementation	Art students to work with local entities on projects – schools to sponsor
	Promote innovative trail design amenities (benches, shelters, etc.)	Incorporate new designs in local projects	Work with communities to sponsor amenity	Collaborate with local entities new facilities	Install new amenities within corridors	Incorporate amenities in new developments	Install new amenities on trails on property	Encourage amenities on trails region-wide	Install new amenities on trails on property

Performance Measures

- # of local entities who promote Unified Trail Wayfinding Guide standards on local trail facilities
- Inclusion of Guide standards in all NIRPC-attributed project solicitations for new trails
- # of signs installed along regional water trails
- Amount of public art projects initiated along regional trail corridors
- # of new amenities (benches, water fountains, restrooms, etc) installed along particular trail in given year

Objective R2.3: Involve "non-traditional" partners to the trail development process									
	Policy	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Invite health providers an opportunity to promote trail benefits**	Collaborate with local hospitals on wellness programs		Collaborate with health providers on support for trails	Incorporate wellness programs at office locations		Incorporate wellness programs at office locations	Invite health providers to NIRPC topical committee meetings	Collaborate with health providers to improve curriculum
B	**Dialogue with local foundations on creative funding strategies**	Meet with foundation representatives on mutual trail strategies	Contribute on behalf of trail development to local foundation	Partner with foundations on funding trails or amenities	Work with foundations on matching monies for trails	Work with foundations on matching monies for trails	Work with foundations on matching monies for trails	Invite foundation representatives to NIRPC meetings	Partner with foundations to produce funding programs
C	**Partner with retail outlets who sell trail-related equipment on trail promotion campaigns**			Partner with retailers to hold events and grow members				Contact retailers on strategies to promote trail use	
D.	**Seek support from local developers and local businesses on supporting existing and new trail facilities**	Partner with businesses on amenity sponsorship and events	Shop at businesses that openly support trails	Partner with businesses on amenity sponsorship and events	Work with local entities to support trails and amenities	Work with local entities to support trails and amenities	Work with local entities to support trails and amenities	Connect businesses and local entities on trail development	

Performance Measures

- # of meetings per year with health providers and their associates
- Contact with each county community foundation in the NIRPC region
- # of meetings with retail outlets and creation of partnerships to build interest in trails
- # of meetings with local developers in region on promoting trails in their new proposals

Objective R2.4: Promote best practices in operations and maintenance (O&M) of trails									
	Policy	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Encourage local officials to take part in O&M training**	Seek training for municipal staff in region and beyond		Encourage local officials to attend training				Provide and/or inform local entities about training opportunities	
B	**Create a resource site on the NIRPC webpage promoting use of best O&M documents**							Develop site on NIRPC webpage at Greenways & Blueways link	
C	**Continue policy of mandating progressive maintenance plan for all newly funded federally-aided trail projects**	Improve existing O&M plans to reflect national best practices		Advocate for better trail maintenance policies where deficient				Provide and/or inform local entities about best practices and aide in their implementation	

Performance Measures

- # of O&M workshops facilitated by NIRPC
- Outline for progressive maintenance plan highlighted in NIRPC-attributable federally-aided projects

GOAL R3: Maintain funding priorities to allow for implementation of trails

Objective R3.1:Facilitate a collaborative regional-level decision-making environment									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Facilitate a collaborative regional-level decision-making environment**	Participate at NIRPC 3PC meetings		Participate at NIRPC 3PC meetings				Engage regional stakeholders at meetings & workshops	
B	**Encourage participation at monthly Ped, Pedal and Paddle Committee (3PC) meetings**	Send municipal trails representative		Send representative				Promote 3PC meetings and attend regularly	
C	**Foster collaboration between regional stakeholders to prepare funding solicitations for federally-aided trail projects**	Partner with other entities on trail projects of mutual interest		Encourage local entities to submit trail applications				Promote and assist federal funding programs for trails	

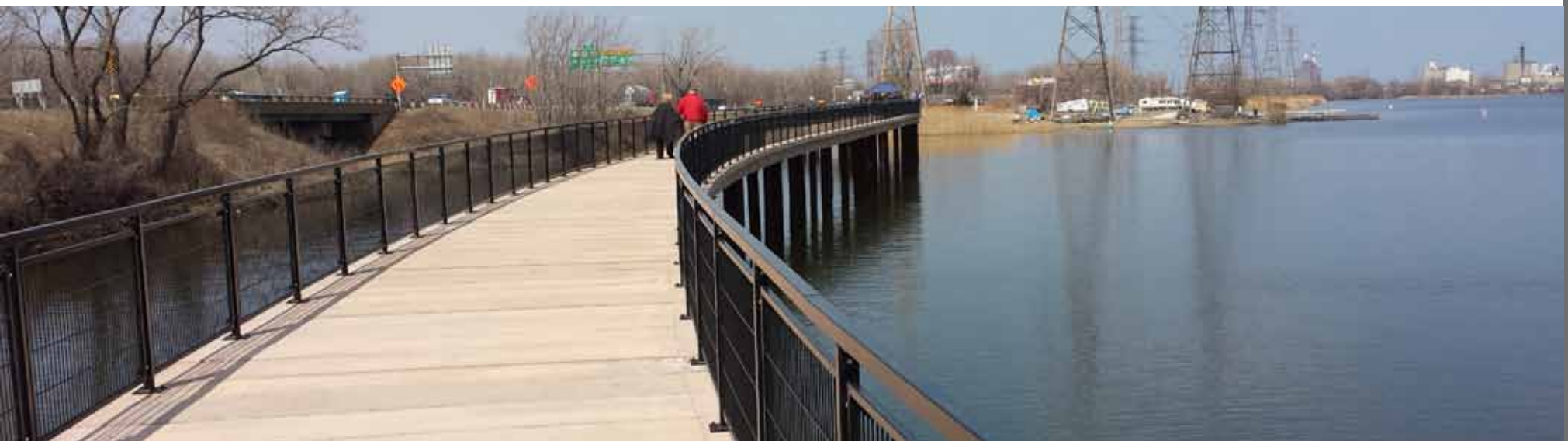
Performance Measures

- # of media and social outlets which notify public of monthly 3PC meetings
- # of meetings with local entities on development of funding applications

Objective R3.2: Encourage eligible entities to fund regionally significant routes									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Promote completion of routes as identified on the "Priority Regional Trails & Corridors Map"**	Preserve and develop priority trail corridors		Advocate for preservation of corridors	Work with local entities to develop linear corridors	Install trails in corridors along developments or preserve right of way	Install or preserve trails in corridors adjacent to properties	Encourage priority routes to develop and revise map to gauge progress	Install or preserve trails in corridors adjacent to properties
B	**Collaborate with local entities on creative local match funding strategies**	Work with foundations, chambers of commerce, health, etc.	Consider donating corridors to local entities	Assist local entities with grant writing and seeking funding	Grant agreements or easements on property for trail use		Grant agreements or easements on property for trail use	Continue to promote new funding avenues for trails	Grant agreements or easements on property for trail use

Performance Measures

- Progress towards partnerships with local foundations, hospitals and corporations on securing funding for trail development (local match or entire project)




INDIANA
PENNSY GREENWAY

TRANSPORTATION

GOAL T1: Encourage and promote regional coordination and planning in non-motorized network development

Objective T1.1:Promote Complete Streets (CS) policies and practices in all regional and local transportation development decisions									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Encourage the adoption of Complete Streets resolutions or ordinances**	Write, review and adopt CS policies		Advocate local entities to adopt CS policies				Provide technical assistance in crafting policies	
B	**Follow, where possible, nationally accepted or recommended design standards**	Work with NIRPC, and research best practices		Promote best practices		Employ best practices		Promote CS best practices and policies at NIRPC meetings	Collaborate with municipal entities on best practices
C	**Hold annual workshops training local officials on the benefits of Complete Streets**	Attend CS workshops both locally and regionally		Attend CS workshops both locally and regionally				Schedule CS training on regular basis	Host CS training on college campuses

Performance Measures

- # of Complete Streets resolutions or ordinances adopted annually
- # of municipal adoptions of NIRPC's Complete Streets design guidelines (public domain document)
- # of Complete Streets workshops held annually

Objective T1.2: Incorporate consideration of bicycle and pedestrian accommodations into local and regional development review procedures.

	Policy Activity	Local Government	Private Property	Land Trusts/ Advocates	Linear Corridor Owners	Developers	Corporate Property Owners	Federal, State & Regional	Institutions of Education
A	**Encourage multi-use, clustered land use development that results in more convenient bicycle and pedestrian access**	Revise zoning and subdivision codes		Advocate for developments that support clustered land use		Design new clustered developments with bike and ped access		Promote and educate local entities on progressive land use design	Site new schools new established residential areas
B	**Educate and promote non-motorized concepts and policies within vision and regulation documents**	Revise zoning and subdivision codes		Advocate for bike and ped access at local levels				Provide forum for learning with meetings and workshops	Provide college-level classes on smart land use design
C	**Encourage consideration of long-range maintenance plans for non-motorized facilities**	Develop progressive maintenance policies		Advocate for progressive maintenance policies		Develop maintenance standards for POA's	Develop maintenance plans for properties	Promote progressive maintenance policies	
D	**Promote the development of a long-term sidewalk maintenance plan which inventories facilities in need of repair, or missing (gaps)**	Develop policy that prioritizes maintenance and addresses sidewalk gaps	Work with local entities to fix or install new sidewalks	Collaborate with local entities on developing maintenance plan			Work with local entities to fix or install new sidewalks	Promote and educate on best policy practices	Work with local entities to fix or install new sidewalks on campuses

Performance Measures

- Progress with entities adopting NIRPC's Creating Livable Centers (CLC) standards as described in 2040 Regional Comprehensive Plan
- # of municipal comprehensive plans and ordinances which incorporate provisions for pedestrian and bicycle facilities
- Adoption of maintenance plans for trails, sidewalks and related non-motorized facilities
- # of multi-year sidewalk maintenance plans adopted annually
- Miles of new bicycle lanes added annually
- # of sharrows added annually
- Miles of shared route (Class III) added annually
- Percent of roadway miles with complete sidewalks or bicycle facilities on both sides
- Percent of population within a ¼-mile network distance to sidewalk, trail or bike facility
- Percent of transportation-disadvantaged population within a ¼-mile walking distance to sidewalk, trail or shared use path

Objective T1.3:Reach out and involve "non-traditional" partners									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Involve health care providers, chambers of commerce, and other business associations in working at the regional level for non-motorized travel**	Partner with non-traditional partners on policy development and network funding	Begin dialogue with local entities to advance non-motorized travel options	Collaborate with non-traditional stakeholders to assist progress at local levels		Begin dialogue with local entities to advance non-motorized travel options	Begin dialogue with local entities to advance non-motorized travel options	Contact non-traditional partners and educate on how to advance policies	Work with non-traditional partners of creating safer environments for children to bike and walk
B	**Encourage municipal entities to partner with said stakeholders at local level, and involve them in advocacy committees to advance facility development**	Educate stakeholders on how to be effective contributors						Promote benefits of collaboration with non-traditional partners	

Performance Measures

- Adding contacts from the health care industry, tourism, civic organizations to NIRPC email list
- # of annual meetings between local officials and non-traditional partners on promoting non-motorized issues
- # of annual presentations before chambers of commerce and civic organizations on the benefits of non-motorized transportation

Objective T1.4:Coordinate bicycle and pedestrian planning at all levels of government, particularly in the same geographic area									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Work with entities such as the Little Calumet River Basin Development Commission, Indiana Dunes National Lakeshore, Kankakee River Basin Commission and others**	Reach out to government entities in community on partnership opportunities		Collaborate with quasi-governmental units on advancing bike and ped travel	Create partnerships for where corridors interact with quasi-government lands		Partner with quasi-governmental agencies to advance bike and ped travel on properties or sponsor	Invite quasi-governmental agencies to regional committee meetings and explore mutual goals	Facilitate dialogue with quasi-governmental entities on education opportunities
B	**Pursue legislative means to preserve and acquire abandoned rail corridors by local entities**	Plan and codify provisions in local codes for corridor preservation	Work with local entities on donations or purchase of corridors	Advocate preservation of trail corridors			Work with local and state entities on donations or purchase of corridors	Promote state and local legislative changes to preserve corridors	
C	**Encourage and assist in coordinating the design and installation of wayfinding systems that are consistent throughout the non-motorized network**	Develop design standards for local network system		Promote wayfinding where absent at local and county levels		Incorporate wayfinding per local plans in all new developments	Install wayfinding on properties where bike and ped networks exist	Promote use of Unified Trail Wayfinding Guide, and other signage standards in communities	Install wayfinding on campuses where bike and ped networks exist
D									
E									

Performance Measures

- # of annual meetings with representatives from governmental and quasi-governmental organizations
- # of local ordinances amended to advance the preservation of abandoned rail corridors
- Amount of new wayfinding elements installed

GOAL T2: Improve connections between sub-regional and interstate networks & destinations

Objective R1-1: Inventory and evaluate existing and potential trail corridors in NW Indiana									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Research and identify existing and/or previous bikeway planning performed on a regional, county or local level**	Provide local data on plans and policies for regional analysis		Assist with collecting data from government entities				Assemble plans at all levels of government and analyze for connection opportunities	Assist with collection of data
B	**Establish a process for identifying short local links to the regional trail network**	Inventory gaps in local non-motorized network and report to NIRPC		Assist with collecting data from government entities				Collect data and digitize into GIS format for accessible research and reporting	

Performance Measures

- Map areas where gaps exist between population areas and regional trails
- # of new connections to trails made annually
- Proportion of residences within a half-mile walking distance or 2-mile biking distance to specific key destinations, such as parks, business districts or elementary or middle schools

Objective T2.2:Complete links to major trip generators and enhance access to jobs									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Link to employment and retail centers, public transit stations and parks**	Identify local trip generators and employees		Advocate for connections to trip generators	Collaborate with all government entities on connections to generators		Collaborate with all government entities on connections to generators	Encourage connections to trip generators, especially Livable Centers	Identify connections needed to schools and campuses
B	**Make links accessible by bicycle within three miles and pedestrians within a half-mile of destination**	Create measurable plans and policies to achieve objective		Hold local entities accountable and assist with route identification		Create new developments near residential areas		Map and measure trip generation zones and non-motorized distances	Fill in sidewalk gaps near elementary and secondary schools
C	**Identify and map points of interest for recreational users and tourists to NW Indiana**	Produce map of local attractions with bike routes ID'ed		Promote regional destinations and safe routes to them	Sponsor mapping and signage efforts		Sponsor mapping and signage efforts	Update Greenways & Blueways Map with regional destinations	Assist in measuring popularity of local destinations

Performance Measures

- Linear feet of sidewalk improved or created in downtown districts and near parks
- # of transit stops with improved or created sidewalks
- Highlighting non-motorized networks and areas of interest on regional, county, and tourism maps
- # of jobs accessed in less than 30 minutes using walking or bicycling

Objective T2.3:Promote development of amenities to accommodate non-motorized users of all abilities									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Increase accessibility to people with disabilities by applying Universal Design (UD) standards**	Consult with ADA guidelines for street and sidewalk design.	Maintain sidewalks on property	Promote UD standards in new construction		Incorporate UD standards in site development plans	Apply UD standards in their existing facilities	Promote adherence UD standards for new projects	Apply UD standards around campus
B	**Encourage comfortable areas to walk and bike with landscaping, decorative lighting and benches**	Incorporate design policies in plans and ordinances	Keep sidewalks in good shape	Promote best practices at all levels of government	Explore public use of corridors and work with local entities	Design bike and walk-friendly developments	Create bike and walk-friendly environments	Promote best practices in regional plans and policies	Create bike and walk-friendly environments
C	**Provide property bicycle parking near destinations, and encourage adoption of bicycle parking ordinances for new developments**	Adopt bicycle parking ordinance		Promote bicycle parking ordinances		Design safe and secure bicycle parking close to entrances	Install safe and secure bicycle parking close to entrances	Promote bicycle parking model ordinances	Install safe and secure bicycle parking close to entrances
D	**Promote facilities such as public restrooms and water fountains, especially in areas of high bicycle and pedestrian activity**	Install facilities where need dictates		Advocate for new or improved facilities	Sponsor development of new facilities	Incorporate new facilities in developments	Sponsor development of new facilities	Promote new and improved facilities and use federal funding	Incorporate new facilities on campuses

Performance Measures

- Percent of total street crossings that meet accessibility standards (e.g. curb ramps, crosswalk grade cross slope, and no median barriers)
- # of new commercial developments in region annually that encourage safe pedestrian and bicycle movements
- # of new bicycle parking ordinances adopted annually
- Amount of amenities developed annually that cater to non-motorized travelers
- # of communities who actively promote Universal Design standards in subdivision and building codes

GOAL T3: Encourage and increase bicycle and pedestrian access to and from all transit and multi-modal facilities

Objective T3.1:Promote safe and convenient bike and pedestrian access

	Policy/Activity	Local Government	Private Property	Land Trusts/ Advocates	Linear Corridor Owners	Developers	Corporate Property Owners	Federal, State & Regional	Institutions of Education
A	**Identify potential park-and-ride facilities that could be developed along and/or near non-motorized transportation networks**	Work with transit agencies on design of facilities		Promote increased facilities along routes regionwide		Create facilities if developments are along transit routes	Create access to properties if adjacent to transit routes	Identify gaps where new facilities can be built along transit routes near networks	Create access to properties if adjacent to transit routes
B	**Consideration of bicycle parking, signage, connected sidewalks, lighting and regular maintenance**	Incorporate at or near transit stops		Encourage amenities where needed in region		Design connections to nearby transit stops with amenities	Install connections to nearby transit stops with amenities	Promote best design practices encouraging multi-modal connections	Install connections to nearby transit stops with amenities
C	**Promote the development of bicycle sharing programs at transit stations**	Partner with transit agencies and bicycle retail on placement of sharing stations		Promote bicycle sharing at regional transit locations			Sponsor new bicycle sharing stations where feasible in region	Identify transit stations that could benefit from bicycle sharing, and secure funding	Research need for sharing stations on campuses for transit access

Performance Measures

- # of park-and-ride facilities with bicycle lockers installed
- # of improved transit stops that are connected to streets, sidewalks or pedestrian paths by an accessible route and that have accessible boarding and alighting areas
- Progress towards the installation of bicycle sharing ports near stations
- Percent of transportation-disadvantaged population within a half-mile walking distance or 2-mile biking distance to a transit stop

Objective T3.2:Collaborate with transit operators to promote and provide multi-modal capabilities on all routes and vehicles									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Accommodate bicycles on transit vehicles**	Encour-age transit operators to install racks on buses			Expand Bikes on Trains South Shore Line to daily service (off-peak)			Promote bicycle ac-commoda-tions on all buses and trains	Install bike racks on all campus bus service lines
B	**Expand transit system to provide stops at or near trail corridors, with trailheads to be developed at existing transit stations and stops**	Work with transit agencies to extend ser-vice to trail corridors						Inventory opportuni-ties for transit to connect with trail cor-ridors	

Performance Measures

- # of buses with bicycle racks installed
- Expanding the South Shore Line's Bikes on Trains program to include off-peak weekday service
- Percent of population within a half-mile walking distance or 2-mile biking distance to a transit stop
- Percent of transit stops that are accessible

GOAL T4: Promote the benefits of bicycle and pedestrian networks

Objective T4.1:Update the Greenways + Blueways 2020 Plan and Map									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Distribute via all potential mediums**	Have maps ready at all municipal facilities		Promote map and plan on social media			Distribute map at places of business	Make maps available regionwide and mail to those outside region – publish plan online	Distribute maps at campus facilities
B	**Promote plan to all municipal entities within NIRPC three-county region**	Collaborate with NIRPC on public input to planning process		Promote plan update and participate in public comment				Reach out to all of Greenways Eight stakeholders on their feedback on plan before and after first draft	Involve college students in planning process

- # of map copies distributed regionally in a given year
- # of sponsors who support map development

Objective T4.2:Create and/or expand public awareness and education programs with a particular focus on health and safety									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Focus on health, environmental, economic benefits, and other quality of life issues**	Promote benefits in plans and newsletters		Collaborate with local entities on public awareness		Market non-motorized benefits in new developments	Promote corporate wellness programs	Promote benefits at regional meetings and workshops	Update curriculum for educating on benefits
B	**Coordinate with entities on awareness programs such as Safe Routes to School, Bike to Work and Air Quality public education programs**	Work with NIRPC on these programs and implementation strategies		Advocate programs at all levels of government and schools			Programs and events promoting bicycling to work	Promote and assist with events and programs regionwide	Develop Safe Routes to School programs and events
C	**Educate law enforcement on violations involving both motorized and non-motorized movements and interactions**	Educate police departments on Share the Road policies		Promote Share the Road programs police departments				Advance enforcement strategies to governments entities	Educate campus police on proper bicycling behavior
D	**Promote bicycling and walking as legitimate transportation choices for commuting**	Hold events encouraging bicycling and walking to work		Promote safe commuting options in communities		Create developments with Livable Centers	Create incentives to bike or walk to work	Assist with policies and best practices	
E	**Expand and encourage safety education for pedestrians, bicyclists and drivers alike**	Hold bike rodeos for children and other programs		Develop safety guides for regional use			Make safety courses available for employees	Provide assistance and information to entities	Ask local police to conduct bike rodeos

Performance Measures

- Non-motorized related events that take place in a given year
- # of walking school bus programs at regional elementary and middle schools
- Weekly updates on NIRPC Facebook and Twitter pages encouraging bicycling and walking
- # of municipal programs teaching bicycle safety at schools
- # of walking or biking trips
- # of observed violations for motorists (failure to yield, distracted), bicyclists (failure to yield to pedestrians) and pedestrians (jaywalking)
- # of bicycle-involved and/or pedestrian-involved crashes over five years
- Collaboration with South Shore Trails to promote regional non-motorized network development
- Conduct on-site surveys every year for pedestrians and bicyclists assessing perceptions of safety and user satisfaction

Objective T4.3: Establish NIRPC as a resource for technical assistance to the local planning agencies as the local network connects to the regional bikeway system									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Continue to host Ped, Pedal and Paddle Committee (3PC) meetings as a regional roundtable promoting best practices and encouraging implementation**	Send representatives to 3PC meetings and other NIRPC meetings and functions	Attend NIRPC meetings to discover how to assist with regional goals	Send representatives to 3PC meetings and other NIRPC meetings and functions	Consider attending NIRPC meetings or working with staff on opportunities	Consider attending NIRPC meetings or working with staff on opportunities	Consider attending NIRPC meetings or working with staff on opportunities	Continue to host 3PC and other events and workshops	Consider attending NIRPC meetings having staff visit campus for presentation
B	**Keep NIRPC website and social media up-to-date on progress**	Monitor NIRPC website for updates	Regularly check NIRPC website	Monitor NIRPC website for updates	Monitor NIRPC website for updates			Assign NIRPC staff to keep current	Monitor NIRPC website for updates
C	**Create models tracking average trip lengths for walkers and bicyclists**	Submit data to NIRPC if possible		Help with research for NIRPC			Submit data on employees biking to work	Create models for measurements	Assist NIRPC with research

Performance Measures

- Regular monthly meetings of NIRPC's 3PC
- Monthly review of NIRPC website to keep non-motorized information current
- Produce aggregate average trip distance for all modes of travel, gauging potential for non-motorized travel

Objective T4.4:Promote the provision of public access to bicycles									
Policy/Activity		Local Government	Private Property	Land Trusts/ Advocates	Linear Corridor Owners	Developers	Corporate Property Owners	Federal, State & Regional	Institutions of Education
A	**Research options to install bicycle sharing ports**	Look into locating ports where feasible		Promote installation of ports where feasible				Research locations in region where ports would be feasible	Look into new ports at campus locations
B	**Collaborate with local entities to provide funding for bicycle sharing systems**	Seek creative funding for ports		Assist local entities with funding opportunities		Sponsor new port locations	Sponsor new port locations	Promote federal funding where feasible	Sponsor new port locations

Performance Measures

- # of bicycle sharing ports opened annually

Objective T4.5: Promote non-motorized transportation economic benefits									
Policy/Activity		Local Government	Private Property	Land Trusts/ Advocates	Linear Corridor Owners	Developers	Corporate Property Owners	Federal, State & Regional	Institutions of Education
A	**Provide data on economic gains from nearby trails and walkable business districts**	Collect sales data and jobs created		Conduct research on economic output		Provide data on home and rental costs	Provide data on employee numbers and sales	Collect regional data and provide baselines	Assist with data collection
B	**Encourage bicycle tourism market**	Work with chambers of commerce and install USBR signs	Offer homes for rental or space in yards for campers	Work with local and county tourism offices			Develop a "bike-friendly business" plan to attract visitors	Work with chambers, tourism and get signs installed	

Performance Measures

- Amount of United States Bicycle Route (USBR) signs installed per year
- # of new jobs created by trail corridors per year after opening of facility

GOAL T5: Maintain a set of funding priorities to allow for the implementation of a regional non-motorized transportation network

Objective T5.1:Maintain a collaborative regional-level decision-making environment									
	Policy	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Encourage regular participation at 3PC meetings**	Assign representative to attend		Assign representative to attend	Promote meetings and hold regularly		Assign representative to attend	Promote meetings and hold regularly	Promote meetings and hold regularly
B	**Keep updated email lists for meeting and funding notifications**	Confirm on email list for 3PC	Like NIRPC G&B Facebook page and Twitter	Confirm on email list for 3PC			Confirm on email list for 3PC	Regularly update lists	Confirm on email list for 3PC
Performance Measures									
• Regularly review NIRPC's Constant Contact lists • Monthly notices of 3PC meetings on NIRPC website and all social media									

Objective T5.2:Identify funding sources to implement and develop non-motorized transportation networks									
	Policy	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Promote and encourage non-motorized applications for NIRPC attributable federal funding programs (STP, CMAQ, HSIP, etc.)**	Participate in 3PC meetings for current information		Participate in 3PC meetings for current information or check NIRPC website			Participate in 3PC meetings for current information or check NIRPC website	Use 3PC meetings, emails and social media to notify about funding programs	Participate in 3PC meetings for current information or check NIRPC website
B	**Research all potential public and private sources outside traditional non-motorized funding avenues (partner with DNR Coastal Program grant referal service)**	Work with non-traditional sources for creative funding strategies	Consider donating land or finances for network development	Research new funding opportunities and share with local and regional entities	Consider donating land or finances for network development	Consider donating land or finances for network development	Consider donating land or finances for network development	Research new funding opportunities and share with local and regional entities	Assist in researching new funding avenues via student projects

Performance Measures

- Update pedestrian and bicycle facilities federal funding application with 3PC
- # of non-motorized plans created, or infrastructure developed with funding not attributable to NIRPC

GOAL T6: Reduce ecological impacts of transportation networks through promotion, deployment and management of green infrastructure.

Objective T6.1: Promote Ecologically Sensitive management of transportation Rights of Way

	Policy/Activity	Local Government	Private Property	Land Trusts/ Advocates	Linear Corridor Owners	Developers	Corporate Property Owners	Federal, State & Regional	Institutions of Education
A	**Promote and encourage invasive management on transportation rights of way**	Participate in conservation friendly RoW management working group		Participate in conservation friendly RoW management working group				Participate in conservation friendly ROW management working group	
B	**Promote native plantings on transportation rights of way**	Participate in conservation friendly RoW management working group		Participate in conservation friendly RoW management working group				Participate in conservation friendly ROW management working group	
C	**Promote and Support wildlife crossings in significant conservation areas.**	Participate in conservation friendly RoW management working group		Participate in conservation friendly RoW management working group				Participate in conservation friendly ROW management working group	
D	**Require culverts and other drainage structures be right sized for aquatic resource protection and connectivity**			Identify areas where culverts and drainage structures inhibit aquatic connectivity				Identify appropriate design standards	Identify appropriate design standards

Performance Measures

- Linear miles of right of way with invasive management plans
- Linear miles of right of way with native plantings
- # of wildlife crossings installed on roadways in significant conservation areas
- Model purpose and need statements for culverts and other roadway drainage structures

Objective T6.2: Expand use of functional green infrastructure practices for stormwater management in transportation rights of way									
	Policy/Activity	***Local Government***	***Private Property***	***Land Trusts/ Advocates***	***Linear Corridor Owners***	***Developers***	***Corporate Property Owners***	***Federal, State & Regional***	***Institutions of Education***
A	**Adopt a NIRPC Green Streets Policy**	Participate in a working group to develop a Green Streets policy						Participate in a working group to develop a Green Streets policy	
B	**Develop a Northwest Indiana Green Streets Manual**	Participate in a working group to develop a Green Streets Manual						Participate in a working group to develop a Green Streets policy	Participate in a working group to develop a Green Streets Manual
C	**Promote Adoption of local Green Streets Policies**	Adopt local green streets policies				Install green infrastructure in developments		Educate communities about the value of Green Street Policies and Incentivize their adoption	

Performance Measures

- Adoption of a NIPRC Green Streets Policy as companion to Complete Streets
- Completion of a Northwest Indiana Appropriate Green Streets Manual
- # of Presentations on Green Streets Policy adoption to local officials
- # of Green Streets Policies Adopted

INTEGRATION

At the beginning of this plan, we talked about the how greenways, by definition, include elements of conservation, recreation, and transportation. We also talked about how these elements exist across a continuum from the rural landscape to the urban landscape, but may look and feel differently depending on their location.

The previous chapters laid out priority conservation areas, priority waterways, priority trail corridors, and increased access to active transportation and outdoor recreation opportunities. They also discussed policies, goals, and implementation strategies that support progress toward each. How can NIRPC and the region tie these things together? A number of integration strategies are involved.

The Specturm of Integrated Uses

GEOGRAPHIC INTEGRATION

There are many areas in Northwest Indiana where high priority conservation areas, desirable water trails, and planned trail corridors overlap on the landscape. By highlighting these geographic intersections, the plan hopes to encourage all stakeholders and communities to consider the opportunities for exciting and synergistic projects. Geographic integration also can help prioritize locations for amenities and infrastructure investment. These could include restrooms, parking, and support businesses. Historic structures in these areas could be repurposed for public access or amenities.

For example, the medium priority South Lake Trail Corridor aligns with the mid-to-high priority Cedar Creek Water Trail, the Cedar Lake Core Natural Area, and the Town of Cedar Lake's Greenway Plan for Founders and Cedar Creeks. This juxtaposition could create an opportunity to leverage partnerships between town, county, NIRPC, and conservation groups which could in turn attract funding to create an amazing nature-based recreational amenity for south central Lake County. Figure IV-1 presents a broad perspective on these integrations. Further integration would involve Complete Streets designs to provide safe access to these areas of natural and cultural enjoyment. Sometimes these destinations are only a short walk or bike ride from one's home or place of employment, and with the proper infrastructure in place, the need to use a motorized vehicle becomes greatly reduced. This in turn aides with improved health and cost savings on gas and vehicle maintenance.

Vision 1: Dunes-Kankakee Trail Land Bridge

Currently a major gap exists on the planned Dunes-Kankakee (DK) Trail corridor between the Indiana Dunes Visitors Center, and downtown Chesterton and Porter. A concept to contruct a land bridge on the trail corridor east of State Road 49 over I-94 has great promise on many levels. These include an iconic gateway to the Indiana Dunes, offering a safe and aesthetic experience, and a unique draw for those on the expressway. Just south is the Little Calumet River, where canoe and kayak access can be planned. The City of Vancouver, WA consturcted a similar bridge as seen in the photo below.

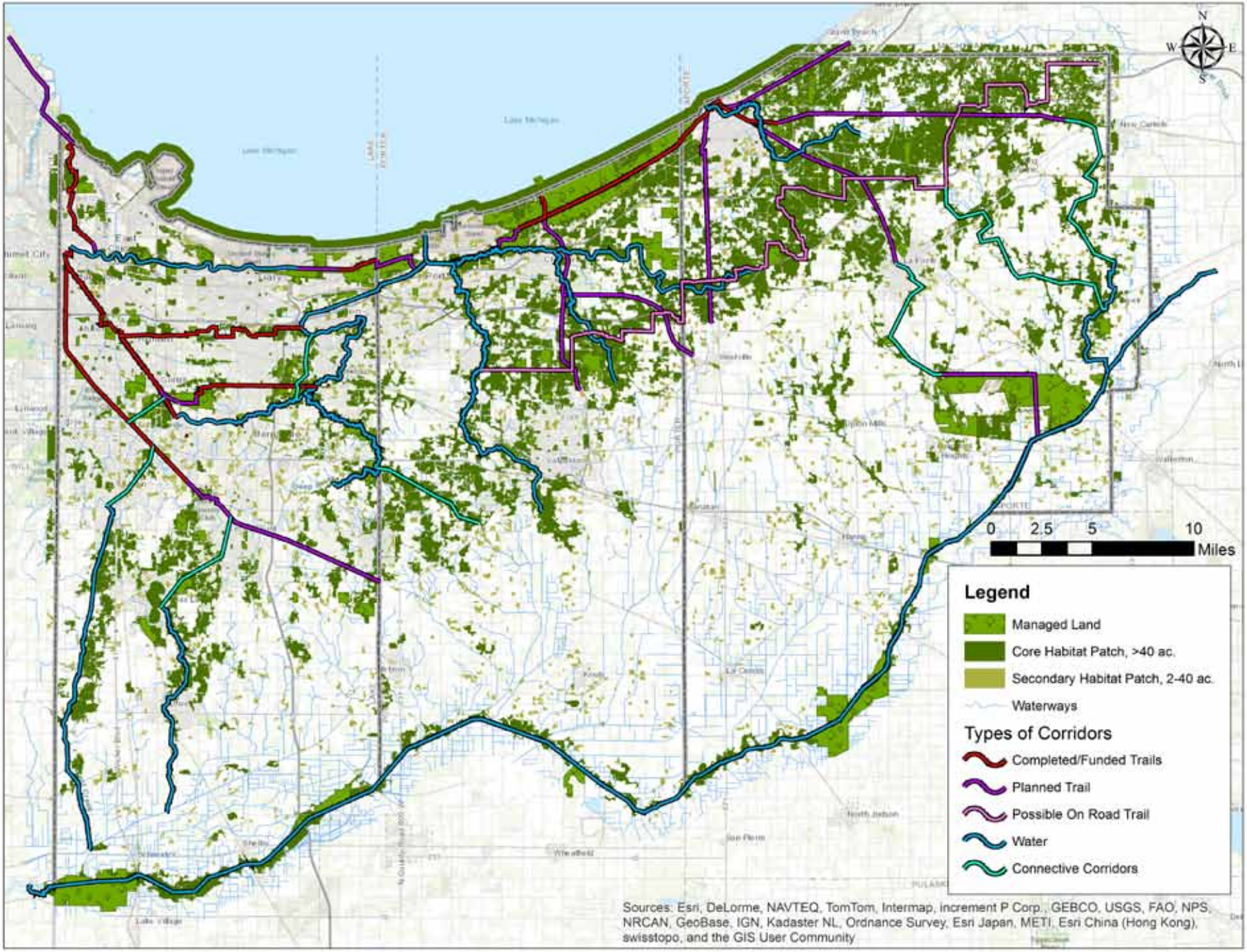


Figure IV Integrated Map of Recretational & Conservation Corridors

Vision 2: The Calumet Greenway

Stretching through the heart of Northwest Indiana, the Little Calumet River offers tremendous integration opportunities. The river begins its journey in LaPorte County at Red Mill County Park, and meanders westward into Porter County. Here the river traverses through the Indiana Dunes National Lakeshore, and becomes channalized in Portage, eventally flowing through Lake County, where a wide floodplain exists bounded by a levee system. Throughout the majority of this river corridor, large swaths of open space pervade. A recently paved levee trail in Lake County stops short of Three Rivers Park, where a corridor does exist to extend the trail east through Lake Station, and Portage. An abundance of natural attractions, land and water trails, and connections to many urban areas call for a broader anaylsis of a regionwide Calumet Greenway vision.

FUNCTIONAL INTEGRATION

In our region, most of the regional trail corridors are planned around existing abandoned rail right of way corridors and utility rights of way. Where these rights of way exist in or connect high priority conservation areas, managed native landscaping on the corridors would enhance their functional value as habitat connectors. In more urbanized areas, incorporation of green stormwater management practices into complete streets design guidelines can greatly increase the overall functionality of the urban public right of way.

Another opportunity for functional integration exists along our waterways. The priority blueways identified in this plan provide an existing network of connections between urban and rural, natural and manmade environments. In many cases, they are nestled in linear strips bottom-land habitat due to floodplain development restrictions, or in steep forested ravines prone to erosion. Buffering the floodplain habitat and erodible streambank with naturalized recreational trails and parks in the riparian zone will simultaneously protect and improve water and fishery health, increase flood protection and climate resilience, provide public access to water trails, and deliver quality of life amenities for neighboring communities and developments.

An example of this exists in the west branch of the Little Calumet River. For much of its length, the river flows between the levees of the Little Calumet River Flood Control and Recreation Project. By definition this is a flood control project. However, the project also includes a levee trail, and waterway access ramps. Future projects to restore hemi-marsh habitat within the floodway could provide enhanced opportunities for bird-watching and other passive recreation activities.

POLICY INTEGRATION

Many of the planning documents generated by NIRPC are driven by transportation planning requirements and needs. The Greenways and Blueways 2020 Plan serves as the active (non-motorized) transportation plan for Northwest Indiana. As such, it will drive regional investment of federal transportation funding into non-motorized amenities and complete street projects.

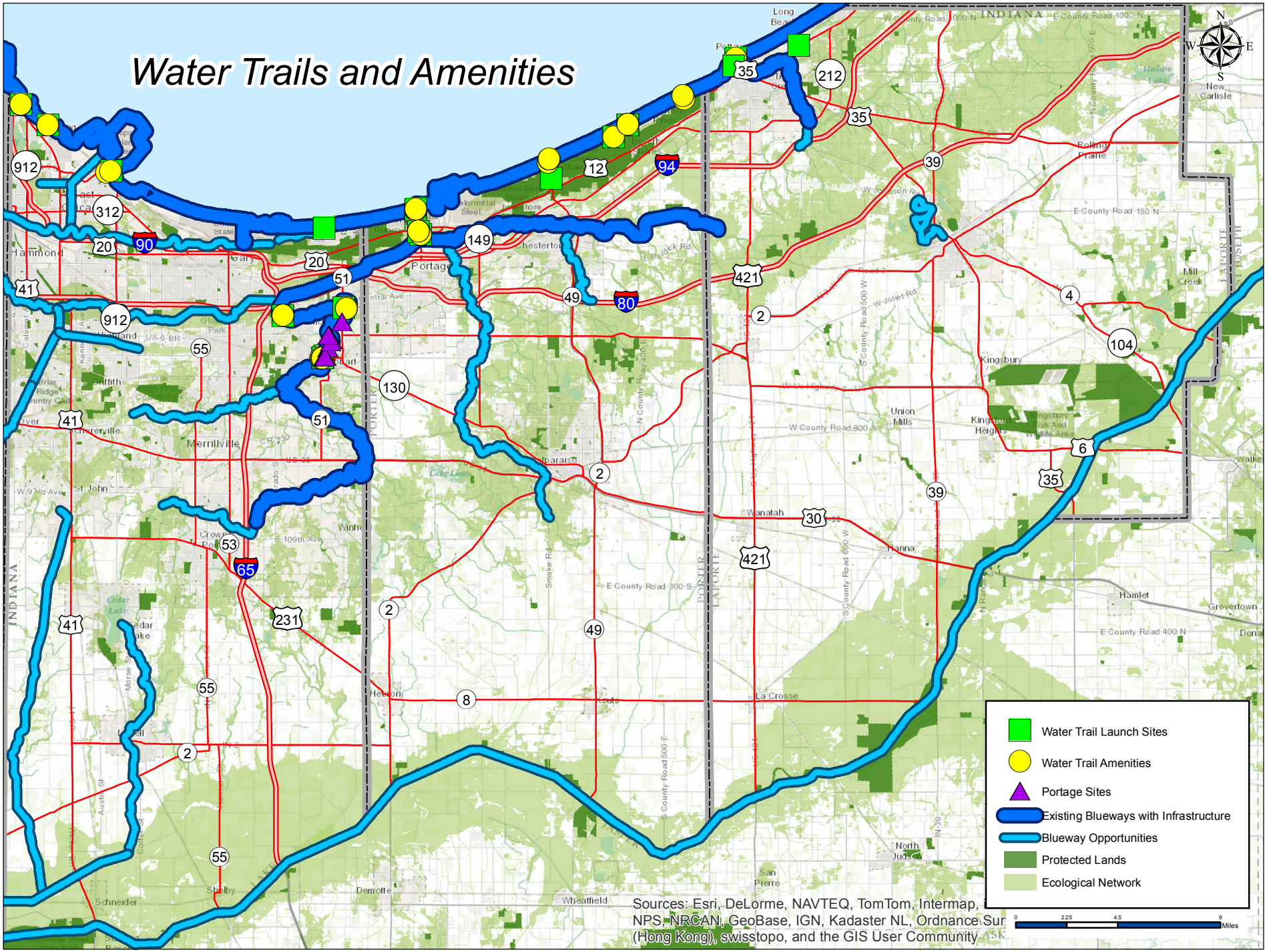
In addition, the federal agencies and regulations that drive us have recognized that integrating transportation planning with land use and environmental planning and regulations is critical to the success of regional transportation quality and successful transportation projects. Future implementation activities for this plan include developing policy guidelines that:

- Integrate green infrastructure considerations into NIRPC complete streets policies
- Incorporate habitat connectivity goals into road or trail projects with waterway crossings, trail crossings, or drainage projects
- Promote local ordinance adoption that address waterway setbacks, conservation development, urban green infrastructure, native plant recreational landscaping, and others

We hope this document can help local governments wishing to incorporate conservation, recreation, and environmental quality into their own land use, open space, or park plans and regulations. The document may also be a resource to other agencies, partners, and stakeholders working and investing in the natural resources and recreation landscape of Northwest Indiana.

Vision 3: Vital Streets

In 2016, the City of Grand Rapids , MI adopted the *Vital Streets Plan* which proposed a union between Complete Streets & Green Infrastructure principles. The result is a vision that establishes a set of design standards for a number of street contexts in urbanized or residential areas. The goals of the plan are to ehnace transit options and facilitate the safe passage of pedestrians & bicyclists, while incorporating environmentally sustainable practices. The *Vital Streets Plan* ensures that addtions to the street network, including rehabilitation of exisitng corridors, will adhere to standards that improve the citizens quality of life. The *Vital Streets Plan* represents an outstanding integration of concepts as proposed in the *G+B 2020 Plan*.


Water Trails and Amenities
INDIANA
Water Trail Launch Sites
Water Trail Amenities
Portage Sites
Existing Blueways with Infrastructure
Blueway Opportunities
Protected Lands
Ecological Network
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,
NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Sur
(Hong Kong), swisstopo, and the GIS User Community
Miles

Priority Trail Corridors

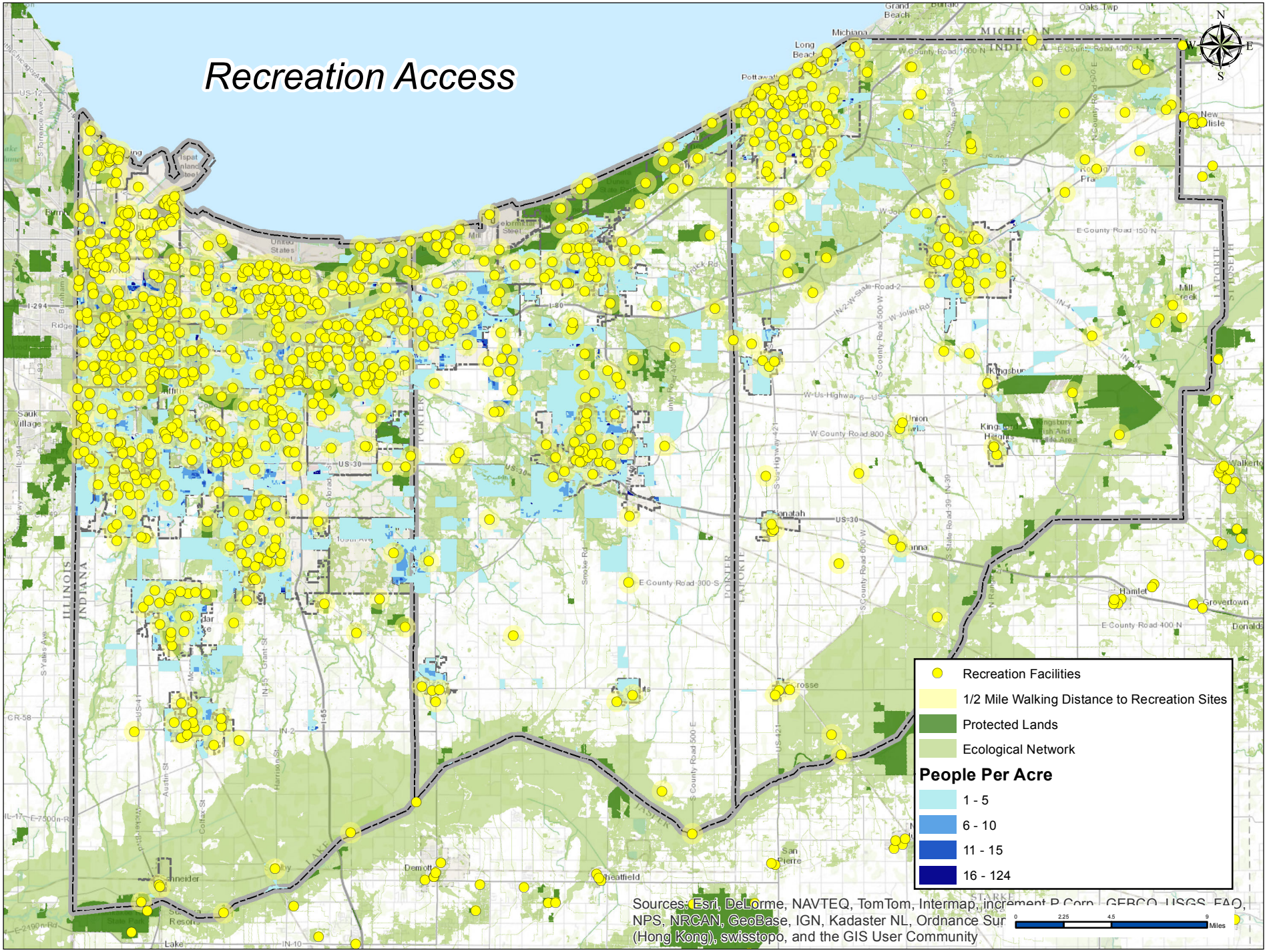
Burnham Greenway
Monon Corridor
Marquette Greenway
Marquette Greenway
Prairie - Duneland Trail
East Lake Corridor
Michigan Central Corridor
C & O Corridor
Wheeler Trail Corridor
SR 2 / Westville
Lincoln Memorial Trail
Chessie Corridor
SR 2 / Westville
Kingsbury Corridor
Lincoln Memorial Trail
West Creek Corridor
South Lake Corridor
South Lake Corridor
American Discovery Trail
Winfield Corridor
SR 2 / Westville
C & O Corridor
American Discovery Trail
Kankakee River Trail

Protected Lands
Ecological Network

Priority Trail Corridors

Completed / Funded
State Visionary Trail
High Priority
Medium Priority
Low Priority
Interregional Connection

0 2.75 5.5 11 Miles


Recreation Access
Recreation Facilities
1/2 Mile Walking Distance to Recreation Sites
Protected Lands
Ecological Network
People Per Acre
1 - 5
6 - 10
11 - 15
16 - 124
Miles
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Sur (Hong Kong), swisstopo, and the GIS User Community