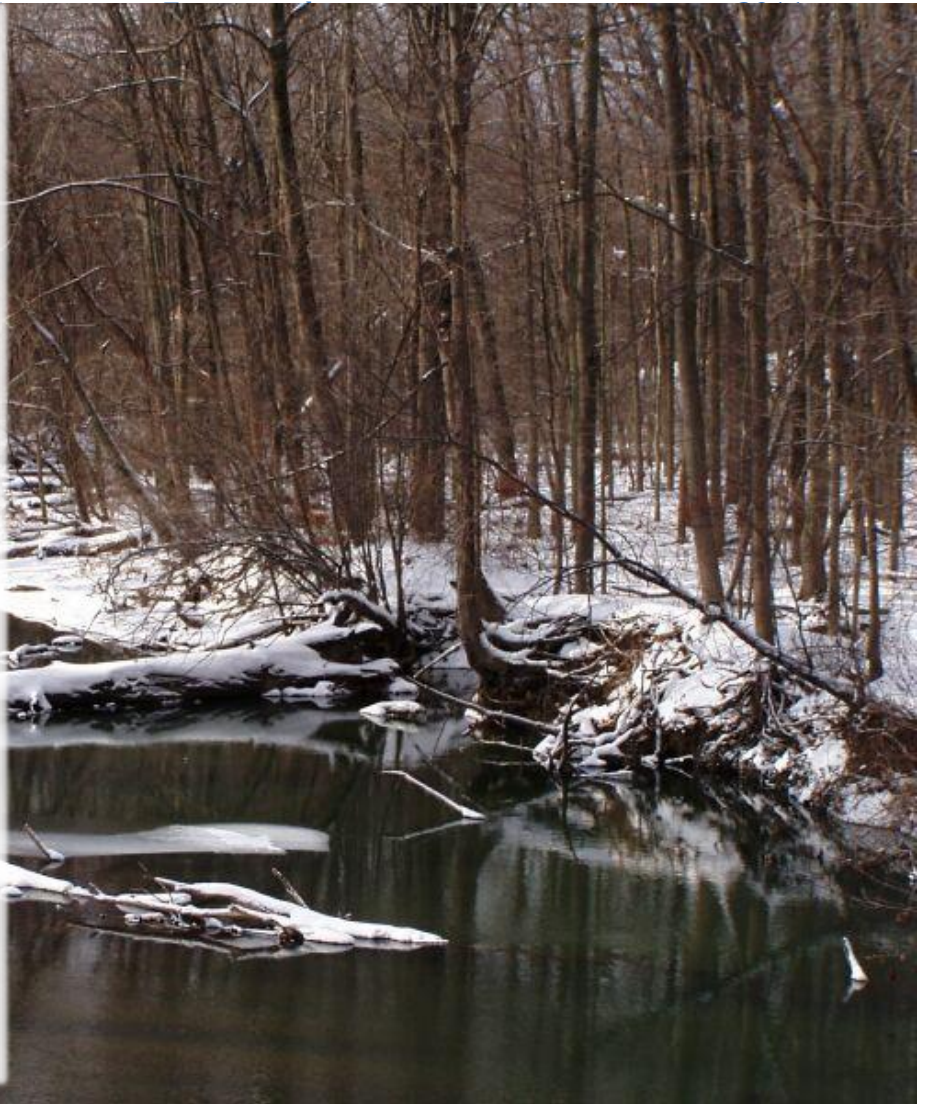


# Northwest Indiana Watershed Management Framework Project

Final Report

2012



*Together We Make The Difference*

Northwest Indiana Regional Planning Commission

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## Introduction

The Northwest Indiana Regional Planning Commission (NIRPC) was awarded an IDEM 205(j) grant (ARRA stimulus funding) in February 2010 to help improve the capacity of local stakeholders and NIRPC in protecting and improving water quality within Northwest Indiana. The tasks of the grant were to work with local stakeholders in updating the *Watershed Management Framework Plan for Lake, Porter, and LaPorte Counties* (2005); integrate critical water quality needs identified in local watershed management plans, the Greenways & Blueways Plan, and the NIRPC Watershed Framework into the *Northwest Indiana 2040 Comprehensive Regional Plan* (CRP); and update the *Sensible Tools Handbook for Indiana* to include water quality and green infrastructure best management practices. This report summarizes the project activities that occurred February 3, 2010 through February 2, 2012 to accomplish the grant tasks and objectives.

## Narrative Task Summary with Supporting Documentation

### Task A

*The Grantee shall work with local stakeholder to update the 2005 Watershed Management Framework Plan for Lake, Porter, and LaPorte Counties (Framework Plan). Specific responsibilities include, but are not limited to:*

- *Strategizing next steps for implementing the Little Calumet River Western Branch Watershed Management Plan (WMP) and assist municipalities and citizen groups in the development of at least two (2) Section 319 proposals to implement the WMP in their subwatersheds*
- *Working with Northwest Territory RC&D and Lake, Porter, and LaPorte County SWCDs to help identify and meet with producers interested in advising on a WMP in these areas and develop a work plan for watershed planning within NIRPC's Kankakee Basin jurisdiction*
- *Collecting and reviewing data and using data to update the 2005 Framework Plan with existing WMPs, TMDLs, and other new information*

NIRPC held two stakeholder input sessions to begin this task specifically to gather watershed stakeholder recommendations on how the Watershed Framework could be improved as a watershed planning tool. The first meeting was held by NIRPC on July 28, 2010 at Valparaiso University with the assistance of IDEM watershed specialists and a Valparaiso University facilitator. Invitations were extended to the County SWCDs, Northwest Territory RC&D, local watershed groups, the Kankakee and Little Calumet River Basin Commissions, DNR Lake Michigan Coastal Program, and Indiana Dunes National Lakeshore. The general consensus of the participants was that the 2005 Framework Plan was too generalized and that information was presented at too large a scale (HUC-8) to assist in WMP development. Using this feedback, NIRPC set about to reorganize the Watershed Framework in a manner which followed IDEM's 2009 WMP Checklist as closely as possible, concentrating on the Watershed Inventory elements.

Watershed Inventory elements added with the updated included:

1. Geology/Topography
2. Hydrology
3. Soils
4. Land Use & Land Cover
5. Other Planning Efforts
6. Endangered, Threatened, and Rare Species
7. Relevant Relationships
8. Data & Targets
9. Water Quality Information
10. Habitat & Biological Information

A second facilitated stakeholder input session to gather feedback on the Watershed Framework structure and information was held on September 17, 2010 at NIRPC. Invitations were distributed through NIRPC e-mails lists, DNR Lake Michigan Coastal Program e-mail lists, and personal invitations. NIRPC provided an update from the last meeting and presented a conceptual outline of new Watershed Framework based upon stakeholder input from the July 28<sup>th</sup> meeting. Example figures and data for the Watershed Inventory elements gathered to that point by NIRPC were also presented to the group. The participants expressed that the level of detail provided was extremely good and would be much more useful in helping to develop a watershed management plan. Feeling that there was general consensus and support for this approach NIRPC began to write the update.

The Watershed Framework was organized to present watershed characterization information in a separate chapter for each sub-basin within the NIRPC planning area including the Little Calumet-Galien, Kankakee, and Chicago. Watershed (HUC-10) boundaries and data were expanded to present information outside the NIRPC planning area for those watersheds in which its boundary was shared with an adjacent county (Figure 1). (Data presented for Illinois was limited to land cover data.) Additionally, an implementation chapter was included to highlight implementation activity options, potential funding program summaries, and implementation programs by source.

Additional information included:

1. Problems & Causes
2. Potential Sources & Pollutant Loads
3. Next Steps
4. Prioritization
5. Potential Partners

NIRPC's provided progress updates and solicited feedback on the Watershed Framework at several venues including:

- Stakeholder Input Session- 7/28/10
- Environmental Management & Policy Committee- 8/2/10
- Stakeholder Input Session- 9/17/10
- Environmental Management & Policy Committee- 10/7/10
- LaPorte County SWCD Board meeting- 12/6/10

- Porter County SWCD Board meeting- 12/21/10
- Kankakee River Roundtable- 6/7/11
- Environmental Management & Policy Committee- 8/4/11
- Lake County SWCD Board meeting- 8/4/11
- Environmental Management & Policy Committee- 12/1/11
- Kankakee River Basin Commission- 12/15/11
- Lake County Surveyor meeting- 1/13/12
- NIRPC Full Commission meeting- 1/23/12

The Watershed Framework is posted and will be maintained on the NIRPC website <http://nirpc.org/>. NIRPC also created a Facebook page to share information and provide an additional format for stakeholders to interact and provide feedback during the project.

During the third quarter of the project (7/1/10-9/30/10), NIRPC collaborated with stakeholders in the Plum Creek-Little Calumet River Watershed to submit a Section 319 grant application to develop a watershed management plan. Plum Creek (also known locally as Hart Ditch) was identified as concern by stakeholders during the development of the West Branch Little Calumet River Watershed Management Plan. Under base flow conditions Plum Creek discharges into the Little Calumet River where flows move westward towards Illinois. However, during high flow events a diversion structure redirects these flows eastward into the Little Calumet River towards Lake Michigan. Plum Creek is considered to be a major contributor of *E. coli* and other pollutants to the Little Calumet River. Local stakeholder and NIRPC intent with the proposal was to close a gap in WMP coverage with the HUC revisions and to reengage stakeholders in the West Branch Little Calumet River Watershed Management Plan.

This application did represent a slight shift in focus from the project scope of work, which called for a West Branch Little Calumet River Watershed Plan Implementation application. This change occurred for several reasons. The watershed boundary discrepancy noted above was one factor. A number of other factors were raised by watershed stakeholders.

First, due to controversial legislature driven changes occurring within the structure of the Little Calumet River Basin Commission during that time period, no local lead organization other than NIRPC could be identified to move forward with on the ground implementation. However, NIRPC was discouraged from applying for a grant in an implementation role by the IDEM Watershed Specialist at the time. IDEM strongly recommended that NIRPC first demonstrate to it could lead and manage a management plan before applying for implementation funds.

Second, many of the critical areas identified in the West Branch plan were located within the levee system and not in upland locations. This severely limited implementation and did not account for upland impacts which are the primary drivers in water quality and habitat degradation.

Other potential funding programs to develop a WMP for the Plum Creek-Little Calumet Watershed will continued to be pursued locally as the 319 grant application submitted in 2010 was not selected.

During the 7<sup>th</sup> quarter of the project (7/1/11-9/30/11), NIRPC coordinated the submittal of a 319 grant application to update the 2002 Deep River-Turkey Creek WMP and implement a cost-share program. Commitment letters were included by the Lake and Porter County SWCD's, Lake County and Porter County Surveyor's Offices, Lake County Parks Department, Gary, Hobart, Merrillville, New Chicago, Purdue University Calumet, IL-IN Sea Grant, DNR Lake Michigan Coastal Program and Save the Dunes. The goal of the proposed project during year one was to update the existing Deep River-Turkey Creek (2002) & Little Calumet River (2008) watershed management plans (WMPs) for those areas that overlap with the Deep River-Portage Burns Waterway Watershed. Updates for these plans are needed to address issues including: conversion of HUC boundaries from 11- and 14-digit to 10- and 12-digit; significant changes in land use since 2002; insufficient water quality data (geographical coverage and frequency) to characterize and prioritize implementation; revisions in WMP checklist requirements; consistency with Section 6217 measure; and a number of goals in the Deep River –Turkey Creek WMP have been addressed through NPDES MS4 requirements.



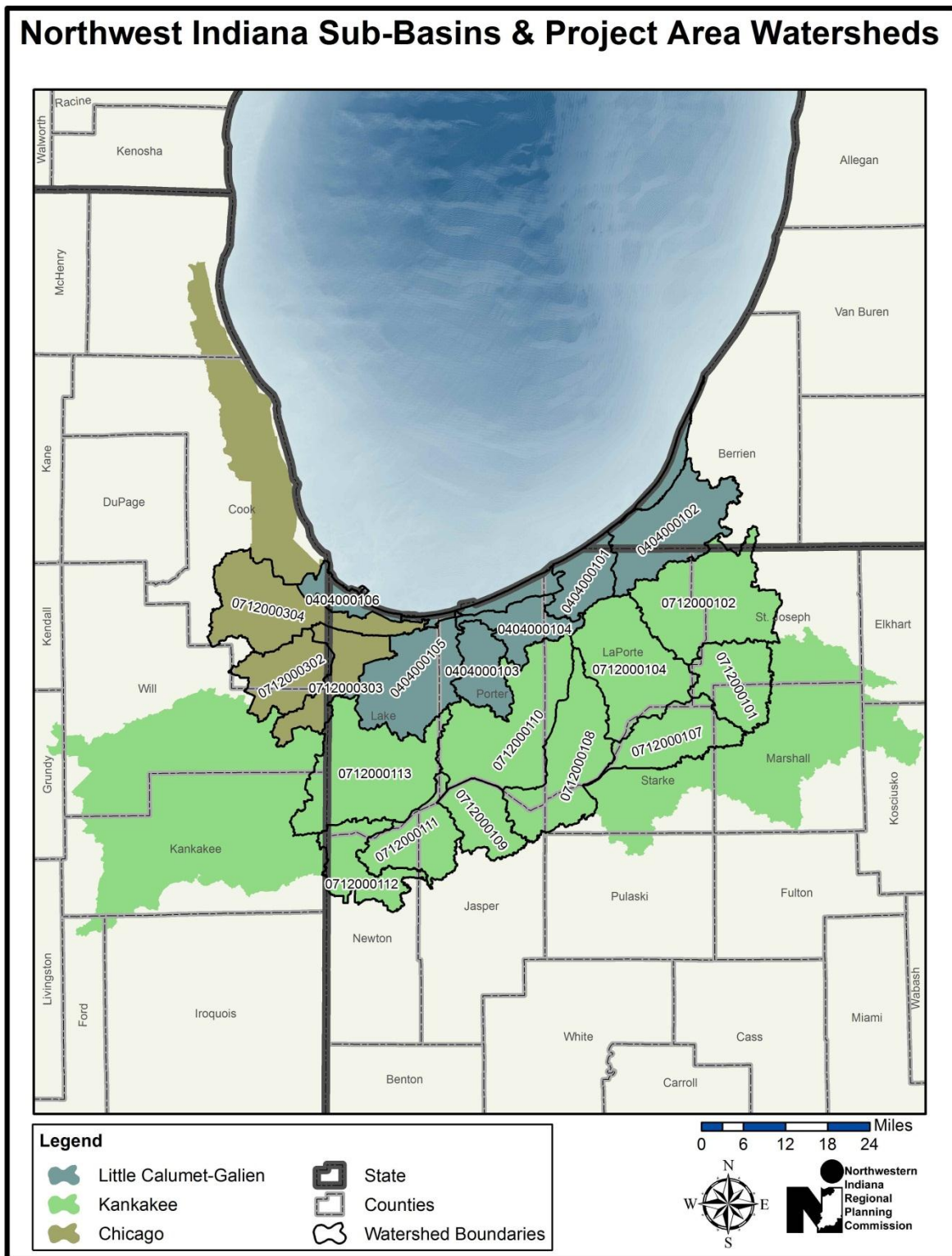


Figure 1 Sub-Basins and Project Area Watersheds

## Task B

*The Grantee shall fully integrate critical water quality needs identified in local watershed management plans, the IDNR Coastal Nonpoint Pollution Control Program, the Greenways and Blueways Plan, and the NIRPC Framework Plan into the Northwestern Indiana Regional Planning Commission's 2040 Comprehensive Regional Plan (CRP) planning process. Specific responsibilities include, but are not limited to:*

- *Meet with the 2040 CRP team to generate a detailed plan for integrating water quality information into the CRP*
- *Conduct an analysis of priority preservation areas and critical restoration areas identified in existing WMPs, TMDLs, and NIRPC Greenways and Blueways Plan for incorporation into the CRP. Overlapping areas shall be highlighted for protection in the 2040 CRP*
- *Collect data, develop impervious surface maps, and research best management practices for incorporating impervious surface targets and Low Impact Development practices into the 2040 CRP*

### **The CRP Planning Process**

The development of the CRP is the culmination of 18 major public meetings along with many more committee and focus group meetings in Northwest Indiana that began in 2008 and included a range of plan-making activities. A brief overview of the major steps of the planning process is provided below. For more detailed information on the planning process, please refer to the 2040 CRP newsletters and the meeting reports, available at [www.nirpc.org](http://www.nirpc.org).

### **Vision and Goals Development**

A regional forum on the future of Northwest Indiana was convened by NIRPC in December 2008. Attended by nearly 500 Northwest Indiana residents, the forum laid the groundwork for CRP's INVision Northwest Indiana statement and set an agenda for many of the issues to be addressed by the CRP. The forum was the first of its kind for Northwest Indiana and created a new awareness of the value of dialogue and collaboration among residents.

Through the months of May and June 2009, NIRPC led five workshops across the region for residents and stakeholders to participate in developing draft goals for the CRP. Rather than starting with a predetermined set of goals, the workshops were organized to cumulatively build on resident-driven ideas. The CRP goals and their related objectives were synthesized by the CRP Steering Committee and were put into their final form during the summer of 2009.

### **Subregional Cluster Workshops**

Four subregional cluster workshops were held in September of 2009. The workshops offered an opportunity for residents to begin to focus on where future development, redevelopment and conservation should occur in the region. Nearly 140 participants attended the four subregional cluster

workshops. Attendees were given the opportunity to state their preferences for the location of new growth and development, transportation system improvements, protected natural and environmental features and a range of other factors. The workshops provided NIRPC with a foundation of needs and opportunities to be considered in development of the CRP. Key themes synthesized as a result of the process included:

- A clear call for transit
- Regeneration of the urban core
- Preservation of agricultural and natural resources
- The need for collaborative governance
- Economic competitiveness – moving business, labor and education in the same direction
- Sustainable natural and environmental resources
- Priorities and equity – the role of NIRPC and its partners in implementation

### Regional Scenarios Development

Beginning in 2010, NIRPC used a scenario planning process approach to arrive at the Growth and Revitalization Vision described above. Informed by the goals and the results of the sub-regional cluster workshops, alternative futures were developed and compared with one another to determine performance in meeting regional objectives. The purpose of scenario planning is to educate and inform the public regarding regional land use, development, conservation and transportation outcomes and consequences. This gives residents the knowledge to make informed choices about alternative means for achieving the region's goals. The process used Community Viz™ decision support software.

The scenario planning technique allowed NIRPC to blend different policy directives, which had been identified through public and stakeholder outreach meetings, with regional demographic, land use and transportation data to create a series of discrete, measurable alternatives. In these different alternatives, the principal variable was the physical location of people and jobs: population and job growth was directed to certain parts of the region to show that the impacts of growth, in terms of the natural environment, congestion and other factors, can vary depending on where it occurs. NIRPC developed four scenarios, each based on a different set of assumptions about the future that reflected existing policies and/or the vision and goals expressed by residents during extensive public workshops.

- **Trends** – This scenario envisioned a future where current regional development patterns continue unchanged. The scenario served as a baseline, illustrating recent documented trends. In general, the scenario illustrated a continuing movement of people out of established urban and suburban centers and into rural areas and the suburban periphery. Development tended to be low density with a separation of uses and a low level of transportation connectivity.
- **Local Plans** - This scenario envisioned a future where the regional growth and distribution of population and employment was consistent with the full build-out of local municipal and county land use plans. Historic trends and zoning codes were substituted in areas for which there is no updated plan. This scenario depicted a 2040 in which every city, town, and county generally has



grown in the manner directed by current plans, absent any additional regulation (including current local regulations which may restrict growth). The purpose of this scenario was to create a broad understanding of how the development, conservation and transportation outcomes of current municipal and county plans might fit together on a regional level. It reflected the cumulative impact of current plan policy in Northwest Indiana.

- **Livable Centers** - This scenario envisioned a future where the majority of population and employment growth was concentrated within the Northwest Indiana's 41 cities and towns – more so than it has been in the past – with less development in unincorporated areas than previously experienced. This scenario intensified growth within “livable center” locations, which are mixed-use (civic, commercial, residential, etc.) activity centers in each municipality that are served by existing utility infrastructure and the roadway network and have the potential to be well-served by public transportation. This pattern was largely based upon the work completed at the five subregional cluster workshops.
- **Urban Core Regeneration / Infill** - This scenario envisioned a future where a significantly higher percentage of population and employment growth occurred in the historic core communities of Gary, Hammond, East Chicago and Michigan City. This scenario represents a stark reversal of current trends. Instead of expanding outward into rural areas, emphasis was placed on infill development and sustainable redevelopment of the historic core communities, where there is multimodal transportation connectivity, existing infrastructure and vacant land. In general, development tended to be higher density and mixed use.

### **The Preferred Direction – A Synthesis of Ideas**

Throughout the months of September and October 2010, NIRPC held a series of eight outreach meetings in locations around the region to seek public feedback on the scenarios and select the “preferred scenario” for Northwest Indiana. At each meeting, an explanation of the four scenarios was presented, followed by discussion. At each meeting, consensus was reached on a preferred scenario. Participants then were asked to identify projects, strategies and policies in order to implement their selected scenario.

No single scenario received full endorsement by the public or NIRPC committees. Instead, elements from different scenarios were recommended for use, and a hybrid scenario emerged. It included a combination of the Livable Centers and the Urban Core Regeneration / Infill scenarios, blended with elements of the Local Plans Scenario. Ultimately, these choices fundamentally formed the Growth and Revitalization Vision.

### **Elements of the 2040 Comprehensive Regional Plan**

The 2040 CRP represents NIRPC's official policy guide for directing planning and intergovernmental collaboration in Northwest Indiana. It does not substitute for other technical and mandated plans and programs developed by NIRPC in association with constituent agencies and stakeholders. Rather, the

CRP serves as a general guide to all those programs providing continuity in agency mission, services and implementation. The key elements of the 2040 CRP are as follows.

1. Growth and Conservation Pattern
2. Transportation
3. Environment and Green Infrastructure
4. Human and Economic Resources
5. Stewardship and Governance
6. Implementation

The 2040 CRP establishes NIRPC's direction and pathway to achieving Northwest Indiana's 2040 Vision and Goals. As the program relies heavily on voluntary collaboration and cooperation among its regional constituency, success of the program will be borne by the region as a whole. This in and of itself was a major theme in CRP development. NIRPC bears overall stewardship for the program, and given the success of collaborative ventures in the past, NIRPC looks forward to a successful relationship with our partners in the pursuit of the 2040 CRP program.

The 205j funding allowed NIRPC to gather and synthesis the information and data that were used to address the Environment and Green Infrastructure element noted above

The environment is one of the three pillars recognized at the foundation to building a sustainable and vibrant future for Northwest Indiana. Its importance was recognized by Northwest Indiana residents throughout the public input process NIRPC engaged in to develop this 2040 Comprehensive Regional Plan (2040 CRP). Environmental planning is also one of the core functions assigned to NIRPC by the state in its enabling legislation. The environmental pillar of the 2040 CRP can be best envisioned as an overarching Green Infrastructure Network for the region (Figure 2).

The Green Infrastructure Network is the convergence of an *Ecosystem Approach*, *Green Infrastructure Approach*, and the *Urban Revitalization* and *Livable Communities* strategies that are described at length in the Growth and Conservation chapter. Establishing a network of "green infrastructure" that coexists with urban development and the transportation network, will consist of agricultural and natural areas that merit protection connected by well-buffered streams, trails and recreational open space. The benefits to this combined approach include:

- Cleaner air and water
- Healthier people, land and ecosystems
- Better connectivity for fish and wildlife conservation
- Safer, more cost-effective public infrastructure
- Higher property values and more efficient project development
- Enhanced resilience of communities to climate uncertainty
- Reduced vulnerability to natural disasters
- More sustainable energy, land and resource consumption
- Improved quality of life

An *Ecosystem Approach* plans for environmental preservation by focusing on environmental protection at a larger scale within the context of natural systems. An ecosystem approach requires looking beyond project boundaries, specific pollutants or species, regulatory programs and checklists. The ecosystem approach targets conservation efforts to areas that support functional assemblages of species and habitats, provides connectivity between these areas and buffers them from disturbances and negative impacts. This approach also can lead to more cost-effective and efficient ways to avoid and minimize impacts while identifying and seizing conservation and mitigation opportunities that are quickly disappearing with development pressures. An ecosystem approach allows for preservation and enhancement of the rich ecological heritage and globally significant biodiversity Northwest Indiana enjoys.

While the ecosystem approach helps to protect the ecological integrity of the region, a *Green Infrastructure Approach* focuses on planning to maintain and enhance the many valuable services and functions that the natural environment provides to the economy and the residents of the region. This approach enables the evaluation of land use decisions and conservation opportunities based on their practical value and focus on the cost effectiveness of protecting the environment and using environmentally based approaches to solving human problems.

Finally, the strategies of *Urban Revitalization* and *Livable Centers* address long-term land use planning. By directing population growth into established urban areas, cities and towns, development pressure on remaining green spaces can be alleviated.

The Environment and Green Infrastructure section of the 2040 CRP addresses the current condition of the various building blocks of green infrastructure in Northwest Indiana, including water resources, forest resources, managed lands and open space, soils and prime agricultural land. Other actors and plans that are actively engaged in maintaining or building the region's Green Infrastructure Network are also highlighted. A set of strategies including policies, projects and implementation activities for protecting and growing our Green Infrastructure Network by 2040 were also presented.

Several existing state and regional conservation and restoration plans provided guidance in identifying critical areas for conservation and/or restoration in Northwest Indiana and developing environmental policies. The recommendations included in the 2040 CRP build on the foundation of the opportunities identified during all of these previous planning efforts. These included:

- Indiana Nonpoint Source Management Plan - Indiana Department of Environmental Management (IDEM), 2009
- Local Watershed Management Plans
  - Deep River / Turkey Creek - City of Hobart, 2002
  - West Branch Little Calumet River / Willow Creek - Gary Storm Water Management District, 2008
  - Galena River, LaPorte County SWCD, 2010
  - Trail Creek, Sanitary District of Michigan City - 2007
  - Dunes Creek, Save the Dunes - 2006

- Salt Creek, Save the Dunes - 2008
- Indiana Wetlands Conservation Plan – Indiana Department of Natural Resources, 1998
- Indiana Comprehensive Wildlife Strategy - IDNR, 2006
- Indiana Statewide Forest Assessment & Strategy- IDNR, 2010
- Coastal & Estuarine Land Conservation Program (CELCP) Plan - IDNR, 2008
- Northwest Indiana Regional Greenways & Blueways Plan - NIRPC, 2007
- 2006-2010 Statewide Comprehensive Outdoor Recreation Plan - IDNR, 2007
- Lake Michigan Coastal Area Public Recreation Access Inventory - IDNR, 2008
- Needs Assessment of Public Access Recreation Sites within the Indiana Coastal Area - IDNR, 2009
- Chicago Wilderness Green Infrastructure Vision - Chicago Wilderness, 2004

The 2040 CRP Vision Statement addresses the environment and green infrastructure in its “Vibrant Region” and “Revitalized Region” vision themes: *Growth is planned, natural and rural areas are valued and protected, and our environment is clean.* Four goals and their related objectives provide the framework for further action and initiatives to bring about achieving these vision themes.

**Goal: Managed growth that protects farmland, environmentally sensitive areas and important ecosystems**

Objectives:

- Promote the development and preservation of regional greenways and blueways (water trails) and establish linkages between them
- Encourage the concentration of development around existing infrastructure
- Encourage redevelopment of infill sites within established centers
- Promote compact development and smart growth through techniques such as transit-oriented development, traditional neighborhood development and conservation design
- Foster the development of local food systems and a local food economy
- Preserve prime agricultural land and rural landscapes
- Encourage and plan for the protection and responsible use of shoreline areas
- Improve access to major regional parks and preserved open lands, including the Indiana Dunes

**Goal: Reduced flooding risks and improved water quality**

Objectives:

- Achieve water quality standards and designated uses of our lakes and streams
- Complete, improve, and implement watershed management plans
- Promote stormwater best management practices including the development of green infrastructure and the reduction of impervious surfaces
- Facilitate regional planning for adequate collection and treatment of wastewater and the elimination of the inappropriate use of septic systems

- Promote the upgrading of aging water infrastructure
- Facilitate the development of a regional stormwater strategy
- Facilitate regional planning for water supply and demand
- Preserve floodplain and wetlands

**Goal: Improved air quality**

## Objectives:

- Achieve national ambient air quality standards for all pollutants, including carbon monoxide, ozone and particulates
- Reduce air toxics, greenhouse gases and other harmful emissions
- Improve the aesthetics – noise, odor, discoloration – of air
- Reduce the disproportionate impact of industrial and transportation emissions on environmental justice populations
- Coordinate land use and transportation policies to reduce motor vehicle trips

**Goal: Clean land**

## Objectives:

- Maximize the number of brownfields returned to productive use
- Facilitate a regional solid waste and landfill strategy
- Promote the acquisition and protection of green space
- Mitigate transportation and land use impacts

Achieving these goals will require the active buy-in and support of not only NIRPC and other organizations and elected officials, but also involved residents. As with other initiatives, ongoing challenges relate to the level of funding available to expand the capacities of NIRPC and partner organizations are very real. NIRPC and its partners will need to be creative and resourceful in identifying opportunities to coordinate efforts and seek alternative funding sources to support expanded initiatives, increased protection of regional resources and ongoing involvement in encouraging sustainable development techniques.

These environmental recommendations dovetail in many ways with those related to supporting Livable Centers, concentrating growth on infill sites in the core communities, and improving transportation choices across the region. Achieving the 2040 CRP vision will require planning “with nature”, anticipating dynamic natural processes and managing ecological systems to both minimize the impacts of urban development and be adaptive to changes caused by urban development.

**Water Resources**

Water is one of the region’s most important resources; it is what first attracted residents and commerce to the area. Realizing its importance and protecting it will maintain it as a resource for future



generations. It can serve a central role in establishing regional identity and opportunity. Plan recommendations include:

### ***Conservation Measures***

1. Priorities for conserving wetlands based on water quality, flood control, and groundwater benefits should be made at the watershed or sub-watershed level, using criteria as established in the Indiana Wetlands Conservation Plan. The historical and recreational benefits of wetlands should also be considered in identifying conservation priorities.
2. Promote source water planning in the Kankakee Basin.
3. Use treated effluent for irrigation and other gray water uses (such as toilet flushing or industrial cooling processes).
4. Develop and advocate for water conservation strategies appropriate to each water user group in the region- including industrial, agricultural and energy production users.
5. Encourage water conservation strategies for residential and commercial development, including plumbing retrofits in existing buildings, use of water-conserving plumbing fixtures in new construction, and the use of high efficiency mechanical systems and appliances.
6. Promote growth in areas with access to Lake Michigan water, rather than in the Kankakee River watershed or in areas without existing water service.

### ***Impact Reduction Measures***

1. Restrict development activity within the watershed of “high quality” streams or lakes, as designated by IDNR.
2. Discourage or restrict development activity within designated floodplains and within the recharge area of wetlands.
3. Protect aquifer recharge areas with appropriate buffers, rather than just surface water bodies.
4. Protect streambank habitat and riparian areas with significant buffering from adjacent urban development, coordinating these efforts with expansion of the regional trail system where appropriate.
5. Reduce sediment pollution, in particular from agricultural uses, by restoring stream buffers.
6. Work with farm operators to control runoff and pollution (including pesticides and herbicides) and implement innovative irrigation solutions.
7. Limit active use of sensitive shoreline and streambank areas that are prone to erosion or other environmental degradation.
8. Restore natural hydrology patterns where previous channelization or other engineered solutions have been used, including bioengineering solutions for shoreline and streambank stabilization.
9. Establish a model water use conservation ordinance for communities to adopt – addressing all types of water use (commercial, residential, institutional). The model water use conservation ordinance should include incentives such as reduced permit fees, expedited reviews and greater design flexibility, in exchange for incorporating “green” design elements.
10. Expand the metering of water use, to both raise awareness regarding water use and enable cost recovery mechanisms.
11. Audit water systems to detect leaks and inefficiencies, and target upgrade efforts to systems that are experiencing the most water loss through leakage.

**Management Measures**

1. Fund and pursue studies of critical groundwater recharge areas, to document and enforce necessary recharge area protection buffers.
2. Encourage consideration of precipitation as a resource to be used close to where it falls, rather than as a nuisance to be conveyed to another location.
3. Minimize impervious surfaces, including consideration of minimizing roadway widths and opportunities to create planted medians.
4. Pursue opportunities to restore and expand existing wetlands, thereby reducing stormwater run-off and filtering discharge.
5. Target implementation of stormwater management practices toward highly erodible lands, utilizing deep-rooted native vegetation.
6. Plan and design any channel modification activities to mitigate negative physical, chemical, and habitat impacts.
7. Develop and implement an on-site wastewater operation and maintenance program
8. Study the feasibility of county on-site wastewater districts.
9. Document all new and existing on-site wastewater disposal systems in the ISDH iTOSS tracking system.
10. Support the installation of water detention systems to maximize on-site pollutant removal, in the context of a regional stormwater strategy.
11. Coordinate & assist the nine communities that have combined sewer systems to separate the systems and reduce CSO incidents by working toward their Long Term Control Plans (LTCPs).
12. Develop and implement watershed management plans. Coordinate with adjacent counties and states that share watershed boundaries with Northwest Indiana in watershed management efforts.
13. Use waste water and stormwater fees to fund watershed level planning and implementation.
14. Pursue strategies to assist property owners in the elimination of the inappropriate use of septic systems.

**Ecological and Open Space Assets**

Ecological and open space assets will form the backbone of a regional Green Infrastructure Network. Realizing their importance and protecting them will provide the organizing strategy for accommodating future population and employment growth. Plan recommendations include:

**Conservation Measures**

Pursue strategic open space acquisition that provides opportunities to expand existing open spaces and improve network connectivity, for the benefit of both the regional trail system and wildlife and biodiversity habitats.

1. Conserve and protect lands identified through Indiana Biodiversity Initiative (IBI) as “high priority” open spaces.
2. Conserve and protect existing forests, especially large remnant forests and those in riparian areas.
3. Establish preserves in areas with remnant plant and wildlife communities, including upland habitats, allowing for their future viability through expansion.

4. Protect or restore connectivity between natural areas and habitat types to support ecosystem function.
5. Preserve large contiguous tracts of open space with permeable soils.
6. Preserve open space and natural areas that are ideally suited for scenic resources and recreational opportunities.
7. Promote the development and preservation of regional greenways and blueways (water trails) and establish linkages between them.

### ***Impact Reduction Measures***

1. Protect sensitive areas and forestlands through creation of sufficient buffer zones.
2. Seek opportunities to maintain or restore habitat connections through agricultural areas, in conjunction with natural drainage, filtering and irrigation solutions.
3. Preserve and enhance strategically sited green areas in developed areas to mitigate their impacts on the region's ecosystem and wastewater system.
4. Improve access to major regional parks and preserved open lands, including the Indiana Dunes, in particular via non-motorized transportation.

### ***Management Measures***

1. Develop a regional funding strategy for the ongoing maintenance of natural open spaces, including reforestation efforts.
2. Encourage habitat protection and restoration on both public and private lands, through appropriate regulation and incentives.
3. Encourage cooperative land management agreements that allow for habitat protection and maintenance on private properties.
4. Expand the use of best management practices, with special attention to control of exotic and invasive species.
5. Encourage the adoption and enforcement of tree preservation ordinances.
6. Where deemed beneficial to the region, support artificial habitat creation in areas where natural habitat areas are too degraded or fragmented to restore effectively.
7. Coordinate education, training and technical assistance, especially to develop strategic partners in open space management.
8. Increase public awareness and access to the open space network, through a coordinated branding and marketing effort that highlights the ecosystem and human health benefits of regional open spaces.

### **Brownfields**

Returning contaminated properties to an environmentally safe condition, and to either active or conservation use, will be a vital component of the region's vision for 2040; improvements will be realized through a variety of initiatives discussed here and in the growth and conservation chapter. Plan recommendations include:

1. Facilitate the mitigation and reuse of brownfield sites, in particular in the core communities.

2. Work with the business sector to develop strategies and incentives to encourage voluntary remediation programs (VRPs) for brownfield sites.

### ***Green Development Practices***

Demands placed on the natural environment as a result of siting, design and construction practices will have a significant impact on the success of the Green Infrastructure Network strategy. Plan recommendations include:

1. Coordinate urban development and open space planning efforts, per the growth management strategies outlined in the Growth and Conservation section of this Plan.
2. Encourage redevelopment of infill locations within established Livable Centers, per the growth management strategies outlined in the Growth and Conservation section of this Plan.
3. Preserve prime agricultural land and rural landscapes, per the conservation design strategies outlined in the Growth and Conservation section of this Plan.
4. Encourage the concentration of development around existing infrastructure, with a focus on upgrading rather than expanding urbanized areas.
5. Encourage site planning that both protects high quality natural features and minimizes the disturbance of natural topography and drainage patterns.
6. Avoid the fragmentation of existing ecosystems or the introduction of invasive plant types during development.
7. Establish consistency in local building codes and subdivision regulations, requiring responsible sustainable site planning and building design practices, including LEED-ND certification for site plans and LEED certification for new and renovated buildings.
8. Establish consistency in local building codes facilitating repurposing and renovation of existing buildings, requiring reclamation and reuse of construction waste, and minimizing the potential environmental effects of building demolition and site preparation.
9. Facilitate and support the use of alternatives forms of energy at all viable scales- including wind, solar and geothermal.
10. Require erosion and sedimentation control, and protection of existing trees and other vegetation, during construction projects.
11. Encourage responsible municipal practices with regard to maintenance and service provision, such as the use of low-impact fertilizers and herbicides, natural roadway de-icing agents, and environmentally friendly municipal vehicle fleets.

### **Implementation**

Protecting, restoring and expanding the Green Infrastructure Network will require an ecosystem and watershed approach to fully realize the region's vision. Paramount to implementing this approach is open dialogue, coordination, and flexibility among stakeholders as this approach looks beyond the political boundaries that we have become so accustomed to working within. The approach reflects how natural systems function and how we fit into the system, rather than viewing human and natural elements as opposing forces.

Strategies to implement related to the environment and green infrastructure includes the following:

**NIRPC actions:**

1. Encourage, review and comment on proposed open space acquisitions as requested, in particular as they relate to the Greenway Infrastructure Network.
2. Maximize all opportunities to protect the environment in the transportation planning program.
3. Upon request provide technical assistance to revise codes and develop standards/guidelines.
4. Collect and maintain current “best practices” information, including economic benefits and local successful examples of open space protection, private sector “green” development, and “green” municipal practices (hybrid fleet vehicles, natural de-icing agents, etc.). Encourage use of the information through easily available distribution.
5. Develop “model” code and development regulation concepts to address the following:
  - Maintaining and protecting natural features during site development
  - Reducing impervious surfaces and stormwater run-off impacts
  - Restricting development that would impact high quality waterways, floodplains, etc.
  - Maintaining appropriate buffers at wetlands, riparian areas, etc.
  - Tree preservation
  - Facilitating use of alternative energy sources- wind, solar, geothermal, etc.
  - Encouraging water conservation- “green” elements to incorporate, incentives to offer, etc.
6. Implement the Greenways & Blueways Plan components of the Green Infrastructure Network, in particular improving north-south linkages for species mobility and linking the trail network to local parks and recreation facilities
7. Engage in watershed scale planning initiatives, in particular for the watersheds that do not yet have a watershed management plan in place, including:
  - Continue multistate planning efforts with the Chicago Metropolitan Agency for Planning and the Southwest Michigan Planning Commission Work with partners to develop regional, watershed based approach to flood control and management strategies.
  - Support communities in educating, promoting, and providing technical support to the public and decision makers to implement the post construction development practices required in their municipal stormwater permits to protect water quality.
  - Support communities in educating and providing technical support for implementation of the erosion control practices required in their municipal stormwater permits to protect water quality.
  - Pursue wetland priorities per the Indiana Wetland Conservation Plan.
  - Support communities in educating and providing technical support to the public and decision makers for implementation of the water conservation strategies required in their municipal stormwater permits.
  - Promote and encourage community utilities to conduct water and wastewater system audits.
  - Provide technical assistance to communities/groups interested in developing watershed management plans (ex. data, mapping, project coordination).
  - Provide easy access to environmental data including GIS layers and mapping on NIRPC website.
  - Maintain and update Northwest Indiana Watershed Framework document.
8. To the extent possible, track local codes and regulations with the 2040 CRP to support the Green Infrastructure Network in both land use pattern and site development practices.
9. Maintain and update the Green Infrastructure Network map and encourage partners to assist with updates.

**Regional Partnership:**



1. To the extent possible align, and seek compatibility in county land use regulations with the 2040 CRP to limit isolated and inefficient development and ensure open space preservation (counties.)
2. Pursue coordinated open space acquisition to expand the Green Infrastructure Network according to 2040 CRP priorities.
3. Facilitate effective management and maintenance of privately held open space assets that are critical to the overall Green Infrastructure Network for regional biodiversity and habitat connectivity, including connections through active agricultural areas.
4. Promote and educate the public and decision makers in the nine remaining CSO communities to incorporate green infrastructure into their required Long-Term Control Plans (state).
5. Generate methods to encourage replication of successful sustainability innovations throughout small and large, public and private institutions in Northwest Indiana.
6. Support local and regional strategies to reduce solid waste, increase recycling and dispose of household hazardous.
7. Establish incentives and/or a differential assessment structure to support permanent land conservation efforts (counties, state).
8. Work with elected officials, county health departments and ISDH to implement septic system operation and maintenance program across region.
9. Work with local governments and nonprofit/advocacy groups to fill in gaps for watershed management coverage.
10. Work with partners to increase capacity for watershed management including but not limited to staffing, secure funding, data gathering and analysis.
11. Support academic institutions in long-term monitoring programs for habitat and water quality.

Partners include the:

- Local Governments
- Private Property Owners
- Corporate Property Owners
- Land Trust/Advocacy Groups
- Linear Corridor Owners
- Land Developers
- Federal & State Agencies
- Institutions of Education

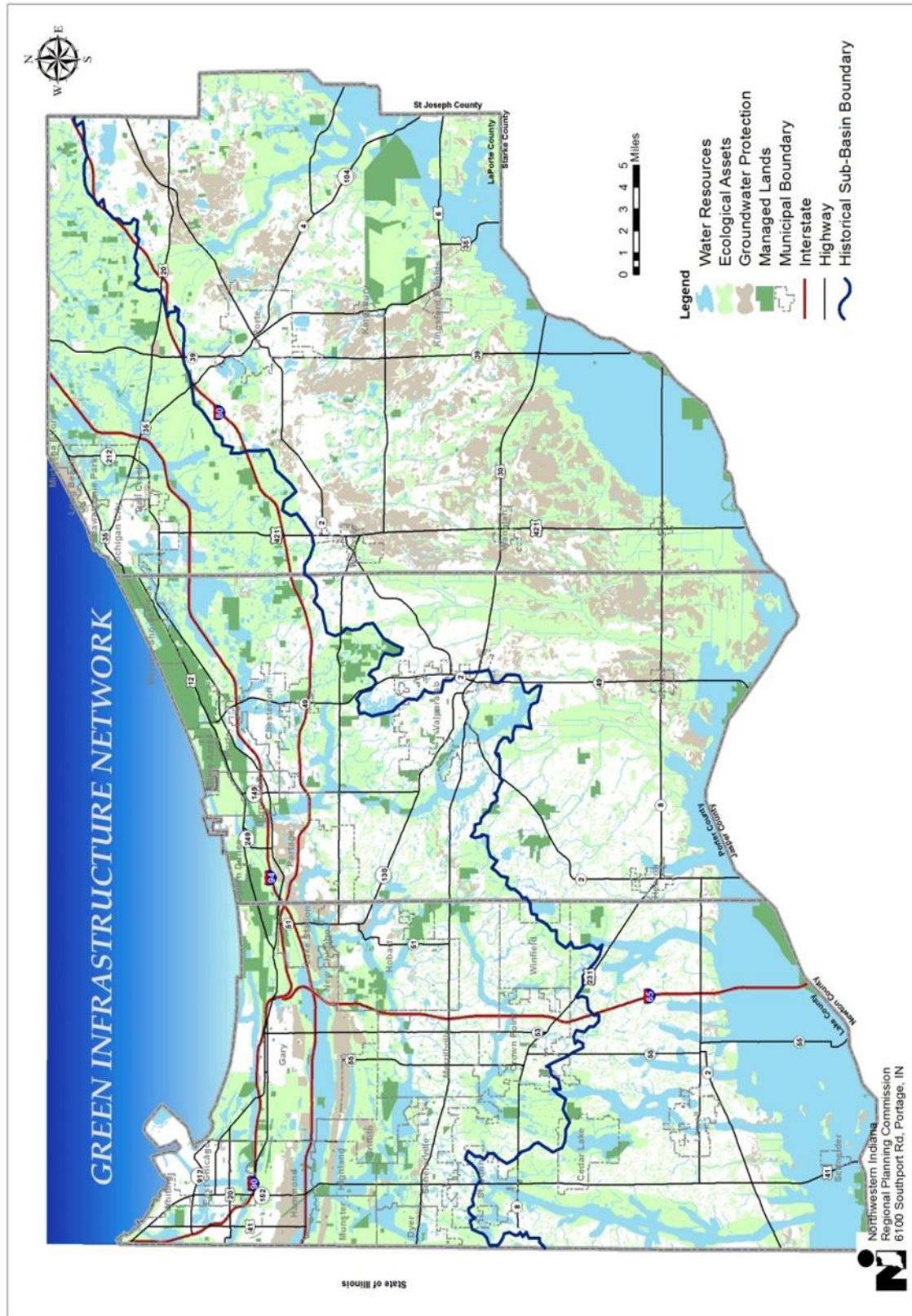


Figure 2 Green Infrastructure Network

### Task C

*The Grantee shall update the Sensible Tools Handbook for Indiana to include water quality and green infrastructure best management practices. The Grantee shall print and begin distributing one thousand (1000) copies of the document.*

A minor change in scope and revision of the budget line items for Task C was approved by IDEM. Water quality and green infrastructure best management practices were included in the 2040 Comprehensive Regional Plan (CRP) for Northwest Indiana instead of the *Sensible Tools Handbook for Indiana*. The CRP will be distributed to the Watershed Advisory Group, local affected municipalities and stakeholder groups, the NIRPC Environmental Management and Policy Committee, and others upon request.

### Task D

*The Grantee shall prepare and submit an electronic copy of a progress report to the State with each invoice, on at least a quarterly basis. A total of no less than five (5) quarterly progress reports shall be prepared and submitted by the Grantee to the State. The Grantee shall prepare and submit two (2) electronic copies of a final written summary project report to the State by the close of this project.*

*The Grantee shall also report to the State through the following web site on a quarterly basis: <http://idem.arra.in.gov/>. Information will be requested in accordance with the American Recovery and Reinvestment Act of 2009 (ARRA) Section 1512, and may include:*

- 1. Grantee Data Universal Numbering System (DUNS) number*
- 2. Legal name of Grantee as registered in DUNS system*
- 3. Grantee physical location as listed in DUNS system*
- 4. United States Congressional District for Grantee physical location*
- 5. United States Congressional District for project physical location*
- 6. Grant award Electronic Data System (EDS) number*
- 7. Original total grant amount*
- 8. Cumulative grant amount reimbursed*
- 9. Estimated number of jobs created by project*
- 10. Estimated number of jobs retained by project*
- 11. Completion status of project (i.e. 0% complete, 25% complete, 50% complete, 100% complete)*

Eight quarterly reports and invoices were submitted to the State prior to the final report. Two hard copies and one electronic copy were provided.

## Project Results

The Northwestern Indiana Regional Planning Commission successfully completed an update of the Northwest Indiana Watershed Management Framework with the input and guidance of local stakeholders and IDEM. Local watershed stakeholders that had experience in developing WMPs or that had expressed interest in developing WMPs in the future clearly stated that the update must provide much more detailed information to be useful as a watershed planning tool. With this input, NIRPC set about structuring the Watershed Framework to follow IDEM's 2009 Watershed Management Plan Checklist structure as closely as possible. NIRPC has made the Watershed Framework available on its website for stakeholders to access. NIRPC also had the opportunity to network with potential future partners interested in developing or updating watershed plans for their watershed of interest. Through the development of the Watershed Framework, NIRPC was able to easily gather and share information with local stakeholders that was used to develop and submit two 319 grant application during the project time period.

NIRPC was also able to incorporate many critical water quality and habitat concerns identified in local plans and program into the 2040 CRP. The Environment and Green Infrastructure chapter of the 2040 CRP is the result of this effort. The Green Infrastructure Vision within this chapter was used to help guide future growth and develop strategies to protect and restore these environmental resources. The 2040 CRP was adopted by the NIRPC full commission in June 2011. An implementation committee has been formed to begin moving the 2040 CRP forward.

### Outcomes from Application Proposal- How Met/Fulfilled

The *Outcomes* described by NIRPC in its 205j grant application were reworked by IDEM to be the project tasks within the Scope of Work and are addressed above.

## Project Successes & Failure

NIRPC successfully updated the Watershed Framework and incorporated critical water quality and habitat concerns into the 2040 CRP. NIRPC was also able to develop new partnerships and strengthen existing ones with watershed stakeholders. As a result NIRPC was able to coordinate with stakeholders in the Plum Creek-Little Calumet River and Deep River-Portage Burns Waterway watersheds to submit two 319 grant applications during the project time period. While neither of these plans was chosen for funding, discussions continue on potential next steps to develop and implement WMPs for these drainages.

During the project's two-year time period, NIRPC worked with three different IDEM Project Managers. One of the benefits of a single project manager is the development of sense of familiarity and direction of a project between the PM and grantee. During each transition NIRPC and the IDEM PM had to try and reestablish this connection.

## Lessons Learned

There still appears to be a disconnect between local stakeholder and IDEM visions for addressing watershed planning gaps and reinvigorating existing WMPs within portions of Northwest Indiana. However, each appears willing to discuss future strategies as evident with an upcoming Watershed Roundtable Meeting being held at NIRPC on February 16, 2012.

## Future Activity

NIRPC provides a forum that enables the citizens of Northwest Indiana to address regional issues relating to transportation, the environment and community, and economic development.

NIRPC's Mission Statement is:

- To serve as Northwest Indiana's Metropolitan Planning Organization (MPO), and act as the designated recipient for certain transportation funding.
- To generate meaningful dialogue and cooperation on issues of common concern.
- To contribute to the development of a common vision pertaining to Northwest Indiana's future.
- To provide a forum in which elected officials and other decision-makers can develop and implement solutions to regional problems.
- To promote public-private partnerships.
- To provide a common voice for Northwest Indiana in its communications with the state and the federal government.

The Northwest Indiana Watershed Management Framework aligns with NIRPC's mission to generate meaningful dialogue and cooperation on issues of common concern, contribute to the development of a common vision, and to provide a forum to develop and implement solutions. The 2040 CRP, developed with the input of hundreds of stakeholders and citizens throughout the region, embraces the goal of clean water throughout the region and prioritizes watershed management planning as the most effective strategy to achieve it. The 2040 CRP demonstrates that the public and local elected officials in Northwest Indiana continue to look to NIRPC as a regional leader in watershed management planning.

Within the Watershed Framework, four critical tasks were identified as needing immediate attention to move forward with watershed plan development:

1. **Continuous Outreach:** Constant communication and outreach is needed to raise awareness of water quality and aquatic habitat problems identified in the Watershed Framework and to build collaborative partnerships that lead towards the development of watershed management plans.
2. **Scale:** Information in the Watershed Framework will need to be focused to the watershed (HUC-10) scale through the creation of "watershed templates" to assist stakeholders in the development of individual watershed management plans.
3. **Revitalization of Existing Watershed Management Plans:** Existing plans that have not moved into implementation need to be revitalized and coordinated with the latest information.



4. Coordination: Successful development and implementation of watershed management plans depend primarily on the coordination of a variety of stakeholder groups.

### **Continuous Education and Outreach**

In order for the Watershed Framework to be an effective watershed planning resource, the information it contains and its purpose will need to be promoted and conveyed in such a manner that a variety of stakeholder groups ranging from county and municipal officials to citizen groups can easily understand it. Key stakeholders will include those that can support and contribute resources towards the future development of watershed management plans. The benefits of the watershed approach will need to be conveyed so that the various stakeholder groups can see a clear benefit for them to participate. Establishing the stakeholder groups' primary motivators will need to be determined to best craft and convey the message.

NIRPC will work with a variety of partners such as the 2040 Comprehensive Regional Plan (CRP) Implementation Committee, SWCD's, and nonprofit environmental organization in developing an outreach strategy.

### **Scale**

Watersheds have a hierarchy consisting of nested hydrologic units. The largest unit addressed in the Watershed Framework is the sub-basin which can be several hundred square miles in size. While the sub-basin (HUC-8) level information was effective in organizing and presenting regional scale information, practical and effective watershed management occurs at the watershed (HUC-10) and subwatershed (HUC-12) level. While organized to follow IDEM's 2009 WMP Checklist as closely as possible, information in the Watershed Framework will still need to be zoomed into to the watershed scale to develop individual watershed management plans that can be implemented. NIRPC can provide this information and at that scale in the form of "watershed templates" to assist stakeholders in developing plans for their particular watershed of interest.

### **Revitalization of Existing Watershed Management Plans**

Within the Little Calumet-Galien sub-basin, the Deep River-Turkey Creek and West Branch Little Calumet River WMP's need to be revitalized and stakeholders reengaged so that implementation can move towards delisting waterbodies included on the 303d list. No coordinated effort currently exists to move these plans forward in implementation. The Deep River-Turkey Creek WMP, while an early IDEM approved plan, is largely non-implementable with no priority areas being identified and recommended actions being mainly MS4 requirement focused. For the West Branch Little Calumet River WMP, no coordinator or implementation committee was ever identified or formed to move it forward. Opportunities exist with both plans to realign them with current watershed boundaries to eliminate WMP gaps, eliminate management area overlap, and reengage stakeholders.

### **Coordination**

Successful development and implementation of watershed management plans depend primarily on the coordination of a variety of stakeholder groups. Some will have knowledge of existing programs or plans that may be integrated into the watershed plan. Others may be able to provide information on the issues and concerns, provide technical or financial assistance, or help implement the plan.

Ultimately the decision to move forward with any watershed management planning process, and its future success in implementation, relies heavily on stakeholder buy-in and coordination. NIRPC will continue to raise awareness of the nonpoint source issues identified in the Watershed Framework and seek potential partners to help build and foster collaborative working relationships that lead towards plan development and implementation.

### Prioritization

Significant strides have already been made in regards to watershed management within the Little Calumet-Galien sub-basin. However, gaps in watershed planning still exist within the sub-basin.

<b>Subwatershed- No Existing Plan</b>	<b>Watershed Located IN</b>
<b>Duck Creek</b>	Deep River-Portage Burns Waterway
<b>White Ditch-Frontal Lake Michigan</b>	Trail Creek-Frontal Lake Michigan
<b>Kintzele Ditch</b>	Calumet River-Frontal Lake Michigan
<b>Dunes Creek (eastern portion)</b>	Calumet River-Frontal Lake Michigan
<b>Calumet River-Frontal Lake Michigan</b>	Calumet River-Frontal Lake Michigan

#### **Little Calumet-Galien Sub-Basin Watershed Planning Gaps**

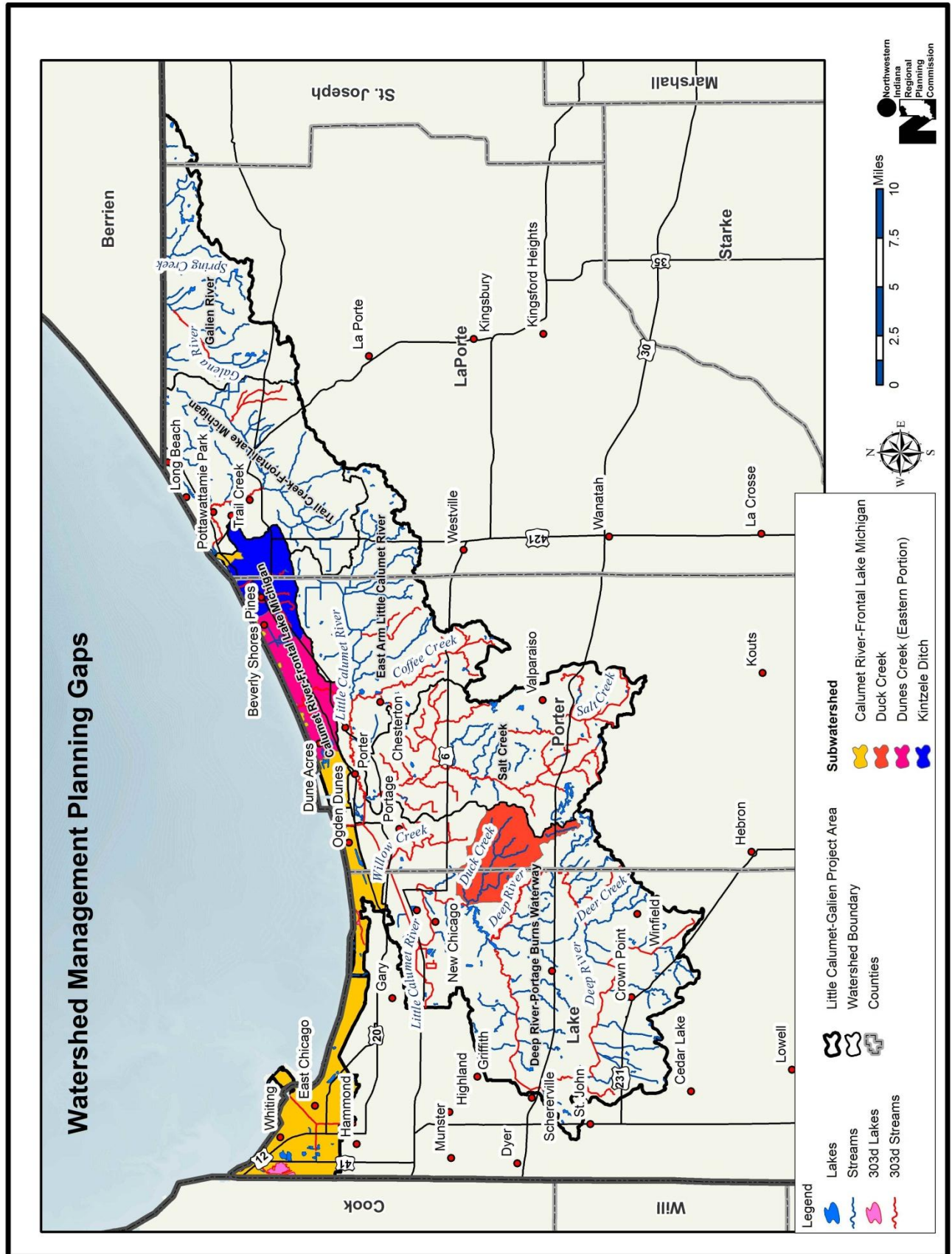


Figure 3 Little Calumet-Galien Sub-Basin Watershed Management Planning Gaps

For consistency in following the revised watershed (HUC-10) and subwatershed (HUC-12) boundaries while filling these gaps, NIRPC's recommendations are as follows for the Little Calumet-Galien sub-basin:

1. Update the 2002 Deep River-Turkey Creek WMP to align with the current Deep River-Portage Burns Waterway watershed boundary thereby incorporating the Duck Creek subwatershed. (This alignment would also incorporate a portion of the Little Calumet River included in the West Branch Little Calumet River WMP that is not currently being implemented.) The Deep River-Turkey Creek WMP does not identify critical areas for implementation and many of the implementation measures identified in it are now non-fundable or have been addressed through MS4 permitting requirements. Data presented in the Little Calumet-Galien Sub-Basin chapter demonstrates the need for progress to be made in this watershed. NIRPC did submit a 319 grant application for the 2012 funding cycle on behalf of a number of coordinating stakeholders in the watershed to update the plan and implement a cost-share program.
2. Incorporating the White Ditch-Frontal Lake Michigan watershed into the existing Trail Creek WMP to align with the Trail Creek-Frontal Lake Michigan watershed boundary. The Trail Creek WMP is currently active and has primarily focused on riparian land preservation and education and outreach to date. A NIRPC staff member currently serves on the Trail Creek WMP steering committee and has brought the opportunity to the committee's attention. The recommendation would need backing of stakeholders in the watershed and will be explored further. The Trail Creek and Galien River watershed groups have been coordinating to a greater extent of the past year. NIRPC would expect this to continue in the future and will provide technical assistance as needed.
3. The Town of Beverly Shores is currently having water quality data gathered by Valparaiso University, through a DNR Coastal Nonpoint Program grant, to assist in the development of a watershed management plan that would include Derby Ditch. Derby Ditch is located in the eastern portion of the revised Dunes Creek subwatershed. An opportunity may exist to include this information in an addendum to the Dunes Creek WMP, which is coordinated by Save the Dunes. Discussions will need to continue on how the stakeholders wish to address the area covered under a plan. The Town of Beverly Shores has expressed interest in NIRPC developing a watershed template to assist them.
4. Potentially including the Kintzele Ditch subwatershed with the work being done adjacently on Derby Ditch. This would cover the eastern two subwatersheds in the Calumet River-Frontal Lake Michigan watershed.
5. Develop a subwatershed management plan for the Calumet River-Frontal Lake Michigan watershed. This subwatershed presents possibly the greatest challenge. Much of the drainage area is highly urbanized and includes large portions of industrial uses. The only waterway occurring in the subwatershed is the Indiana Harbor Canal which is impaired for oil/grease, impaired biotic communities and *E. coli*. NIRPC is not currently aware of any interest in developing a watershed plan for this subwatershed but will explore opportunities.

No watershed management plans currently exist within the Kankakee sub-basin project area. Therefore many opportunities are presented depending on stakeholder interest. The following are NIRPC's recommendations for watershed planning priority within the Kankakee sub-basin project area.

1. Based upon the exceedance/threshold analysis performed by NIRPC using water quality data from IDEM between 1999 and 2010, NIRPC places the highest priority on the Singleton Ditch watershed. Phosphorous, BOD, and sediment annual loading rates rank fairly high based on

STEPL model results. The watershed also had the highest development rates observed in the study area along its northern boundary near St. John and Cedar Lake. A majority of the watershed's drainage area is located in southern Lake County. NIRPC has been informed that stakeholders in Lake Dalecarlia have expressed interest in developing a watershed management plan and had submitted a 319 application to IDEM within the past two years. A Lake Diagnostic Study and some restoration work have also recently been done for Cedar Lake. The presence of potential partners, including helping move a watershed plan and future implementation forward makes the Single Ditch watershed NIRPC first priority in the Kankakee sub-basin.

2. Based upon exceedance/threshold analysis and STEPL modeling results for phosphorous, BOD, and sediment NIRPC's second priority in the Kankakee sub-basin is the Mill Creek-Kankakee River watershed. A majority of the watershed's drainage is located within south central LaPorte County. A Lake Diagnostic Study was recently completed for the chain of lakes in the City of LaPorte indicating potential stakeholder willingness to collaborate in the development of a watershed management plan. The LaPorte County SWCD has demonstrated a strong commitment to watershed management and restoration through coordinating the development of the Galena River WMP and technical assistance on the Trail Creek WMP. The 7,100 acre Kingsbury Fish & Wildlife area lies within the watershed providing hunting and fishing opportunities and another potential stakeholder group.
3. NIRPC's third watershed priority area based upon exceedance/threshold analysis and STEPL modeling results for phosphorous, BOD, and sediment is the Crooked Creek-Kankakee River watershed. A majority of the watershed is located within Porter County and includes portions of the City of Valparaiso and the chain of natural lakes. Valparaiso has demonstrated their commitment to participating in watershed restoration through their implementation actions in the Salt Creek watershed. There is also a watershed group for the Valparaiso chain of lake. The Porter County SWCD has proven to be a strong partner and has technical staff to support plan development and future implementation.

The West Branch Little Calumet River WMP is currently the only watershed management plan existing in Chicago sub-basin study area. This plan covers one 14-digit subwatershed within the Chicago sub-basin and two other subwatersheds located in the Deep River-Portage Burns Waterway watershed within the Little Calumet-Galien sub-basin. Gaps in watershed planning are presented below for the Chicago sub-basin.

<b>Subwatershed- No Existing Plan</b>	<b>Watershed Located IN</b>
<b>Headwaters Grand Calumet River</b>	Calumet Sag Channel-Little Calumet River
<b>Grand Calumet River-Little Calumet River</b>	Calumet Sag Channel-Little Calumet River
<b>Town of Black Oak-Little Calumet River (western portion)</b>	Plum Creek-Little Calumet River
<b>Plum Creek-Hart Ditch</b>	Plum Creek-Little Calumet River
<b>Plum Creek-Little Calumet River</b>	Plum Creek-Little Calumet River
<b>Plum Creek Forest Preserve-Plum Creek</b>	Plum Creek-Little Calumet River
<b>Cady Marsh Ditch</b>	Plum Creek-Little Calumet River
<b>North Creek</b>	Thorn Creek

#### Chicago Sub-Basin Watershed Planning Gaps



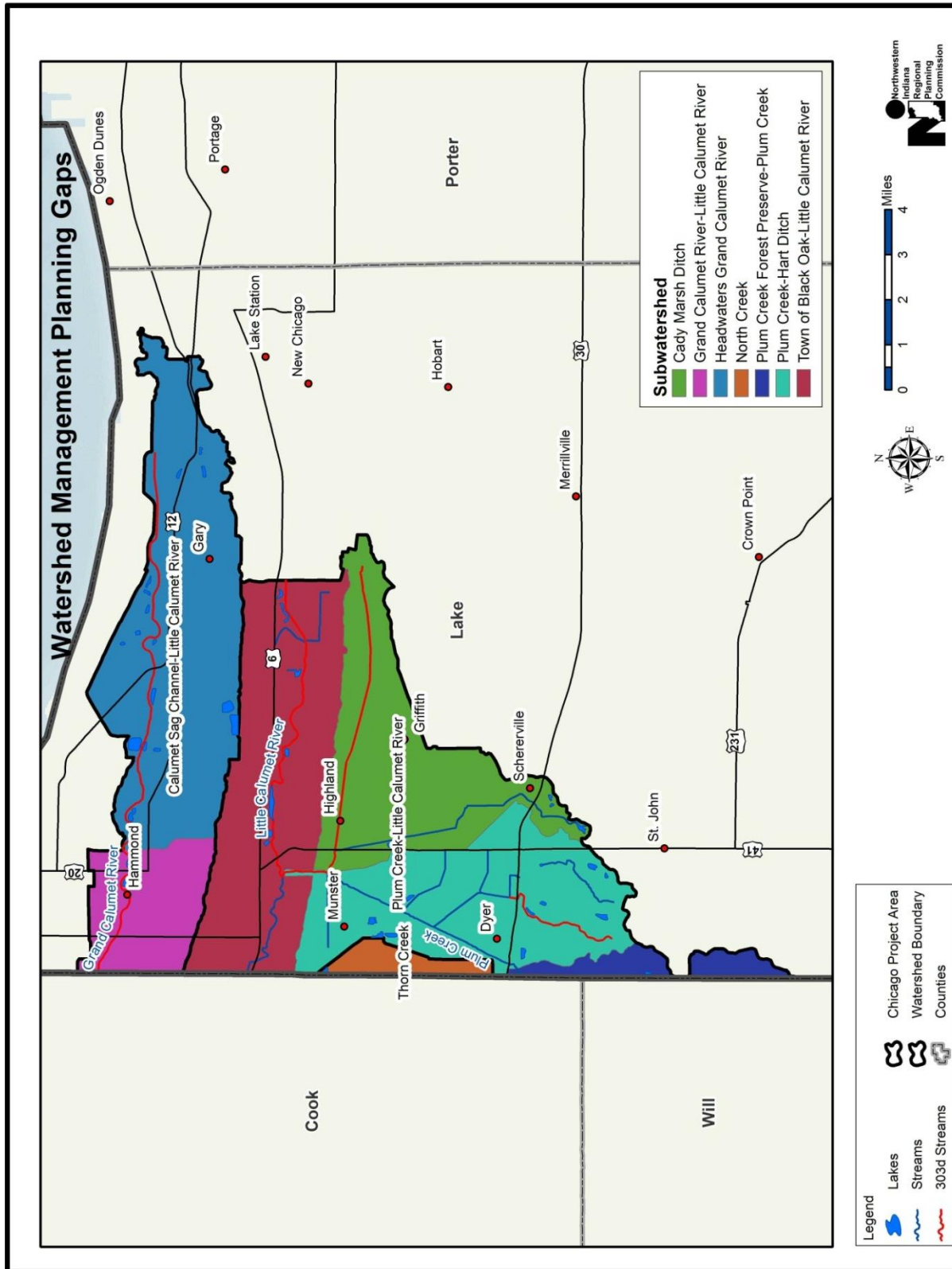


Figure 4 Chicago Sub-Basin Watershed Management Planning Gaps



For consistency in following the revised watershed (HUC-10) and subwatershed (HUC-12) boundaries while filling these gaps, NIRPC's recommendations are as follows:

1. Based upon the exceedance/threshold analysis performed by NIRPC using water quality data from IDEM between 1999 and 2010, NIRPC places the highest priority on the Plum Creek-Little Calumet River watershed within the sub-basin. Phosphorous, BOD, and sediment annual loading rates for its subwatershed rank amongst the highest within the sub-basin. The watershed also had the highest development rates observed in the study area around Dyer, Highland and Munster. NIRPC did submit a 319 grant application for the 2011 funding cycle on behalf of a number of coordinating stakeholders to develop a watershed management plan.
2. Coordinate with stakeholders in Illinois should a plan ever startup on the Illinois side of the Thorn Creek Watershed. Less than 10% the watersheds drainage area is located within Indiana.
3. Participate with stakeholders working on delisting the BUIs for the Grand Calumet AOC as opportunities present themselves.

Overall NIRPCs recommend priority watersheds for watershed planning include: the Deep River-Portage Burns Waterway watershed, the Plum Creek-Little Calumet River watershed, and the Singleton Ditch watershed.

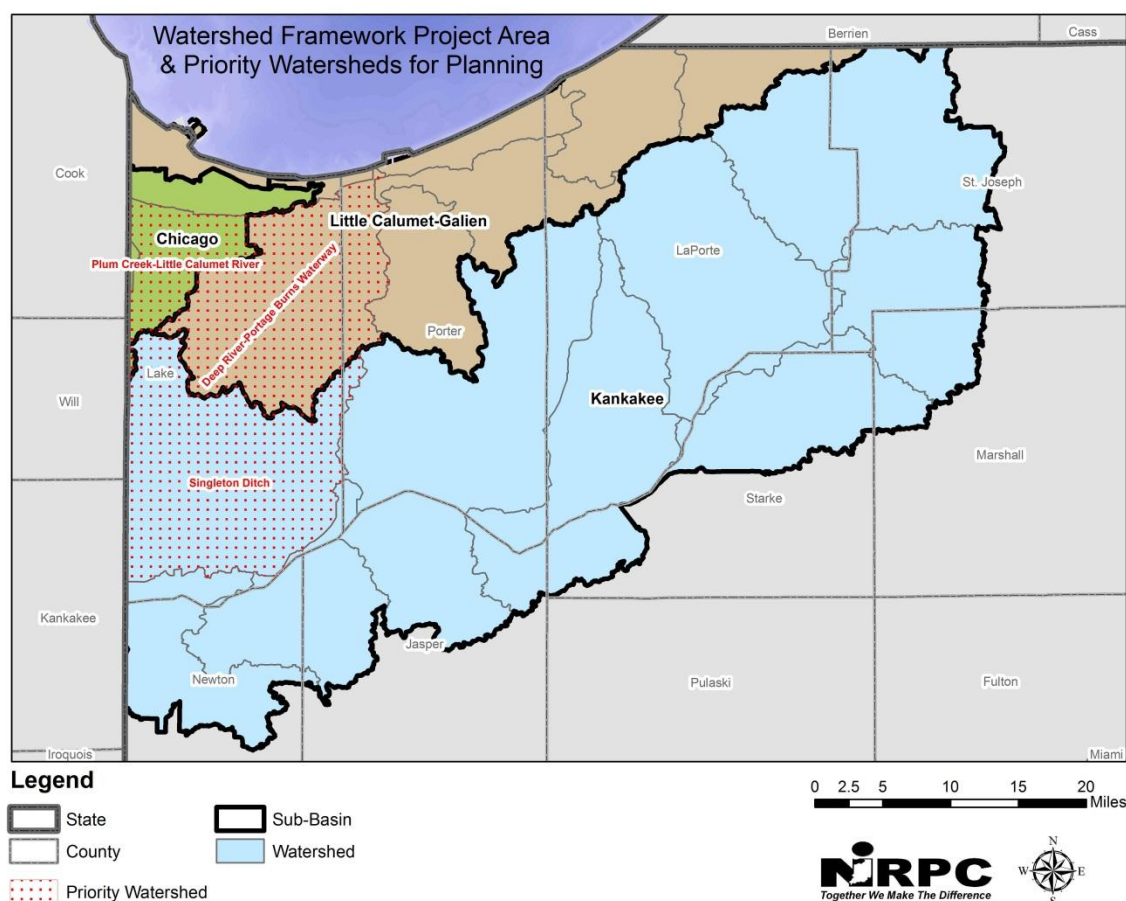


Figure 5 Priority Watersheds for Planning