



LOWER KALAMAZOO RIVER GREENWAY PLAN

PREPARED FOR MICHIGAN DEQ
DECEMBER 2018



DEVELOPED BY

ODC NETWORK

DAVID NYITRAY, CHIEF OPERATING OFFICER

DAN CALLAM, GREENWAY MANAGER

TRACEY NALLY, DEVELOPMENT MANAGER

GMB ARCHITECTURE AND ENGINEERING

MATT HULL, LLA

NATE BOSCH, LLA

BRUNS LEADERSHIP CONSULTING

REBECCA BRUNS

ACKNOWLEDGMENTS

The Lower Kalamazoo River Greenway Master Plan has been generated with extensive planning, study and input. The ODC Network wishes to thank the hundreds of individuals, groups, and organizations for sharing their insight, vision and historical knowledge.

FUNDING SOURCES

Michigan Department of Environmental Quality
Michigan Sea Grant



The statements, findings, conclusions, and recommendations in this report are those of the authors and do not necessarily reflect the view of the funding entities.

REPORT CONTENTS

VI EXECUTIVE SUMMARY

1 INTRODUCTION

TO THE LOWER KALAMAZOO RIVER GREENWAY
PLANNING REPORT

- 1 SETTING THE STAGE
- 2 WHAT IS A WATERSHED?
- 2 WHAT IS A GREENWAY?

4 FORMING CONNECTIONS

COOPERATION AND PARTNERSHIPS FOR THE SUCCESS
OF THE LOWER KALAMAZOO RIVER GREENWAY

- 4 FINANCIAL SUPPORT OF PLANNING PROCESS
- 4 CORE PLANNING TEAM
- 4 ADVISORY GROUP

7 THE PLANNING PROCESS

PAST, PRESENT, AND FUTURE

- 7 INTRO TO THE PLANNING PROCESS
- 8 PLANNING IN ACTION

11 THE CONTEXT

UNDERSTANDING THE LOWER KALAMAZOO RIVER
GREENWAY TODAY

- 11 COMMUNITY FABRIC
- 11 HISTORY
- 12 CONTEXT OF PLANNING EFFORT
- 12 EXTENT OF THE GREENWAY
- 14 GREENWAY POPULATION CENTERS
- 17 OVERVIEW OF LAND USE
- 17 NATURAL FEATURES
- 23 RECREATION AND PARK SPACE
- 26 MAJOR ENVIRONMENTAL CONCERNS

31 THE PLAN

SETTING THE VISION

- 31 OVERARCHING GOALS
- 32 TYPES OF PRACTICES AND IMPROVEMENTS
- 35 SEGMENT A: GUN RIVER, PLAINWELL, AND OTSEGO
- 39 SEGMENT B: OTSEGO TO CITY OF ALLEGAN
- 43 SEGMENT C & D: CITY OF ALLEGAN TO NEW RICHMOND
- 49 SEGMENT E: NEW RICHMOND TO LAKE MICHIGAN
- 53 SEGMENT F & G: RABBIT RIVER

59 FIRST STEPS

THE FUTURE OF THE KALAMAZOO RIVER GREENWAY

- 59 FIRST STEPS

60 ADDITIONAL RESOURCES

LEVERAGING COMPLETED STUDIES WITHIN THE LOWER
KALAMAZOO RIVER GREENWAY

- 60 BIBLIOGRAPHY AND FURTHER READING

MAP CONTENTS

MAPS

3	STUDY AREA MAP	28	BROWNFIELD SITES MAP
10	MAP OF FOCUS AREAS	29	EPA CLEANUP MAP
13	GREENWAY MAP	30	LANDFILL SITES MAP
14	POPULATION DENSITY MAP	33	GREENWAY SEGMENTS MAP
15	DEVELOPED AREAS MAP	36	SEGMENT A: OTSEGO/PLAINWELL/GUN RIVER PLAIN MAP
16	AGRICULTURAL LANDS MAP	40	SEGMENT B: OTSEGO TO CITY OF ALLEGAN MAP
18	FISHERIES MAP	44	SEGMENT C: CITY OF ALLEGAN TO STATE GAME AREA MAP
19	LAND USE MAP	46	SEGMENT D: STATE GAME AREA TO NEW RICHMOND MAP
20	STATE FORESTRY/GAME LANDS MAP	50	SEGMENT E: NEW RICHMOND TO LAKE MICHIGAN MAP
21	ECOLOGICAL RARITY INDEX MAP	54	SECTION F: LOWER RABBIT RIVER MAP
22	TOPOGRAPHIC RELIEF MAP	56	SECTION G: UPPER RABBIT RIVER MAP
24	GREENWAY PARKS MAP		
25	GREENWAY TRAILS MAP		

EXECUTIVE SUMMARY

The ODC Network (ODC), a 501(c)3 nature-based education and conservation non-profit organization, was commissioned in January 2018 by the Michigan Department of Environmental Quality (MDEQ) to develop a master plan for a Lower Kalamazoo River Greenway in Allegan County (KRG). The purpose of this plan is to implement a greenway corridor along the Kalamazoo River in Allegan County addressing **environmental restoration, recreation, conservation, and education**.

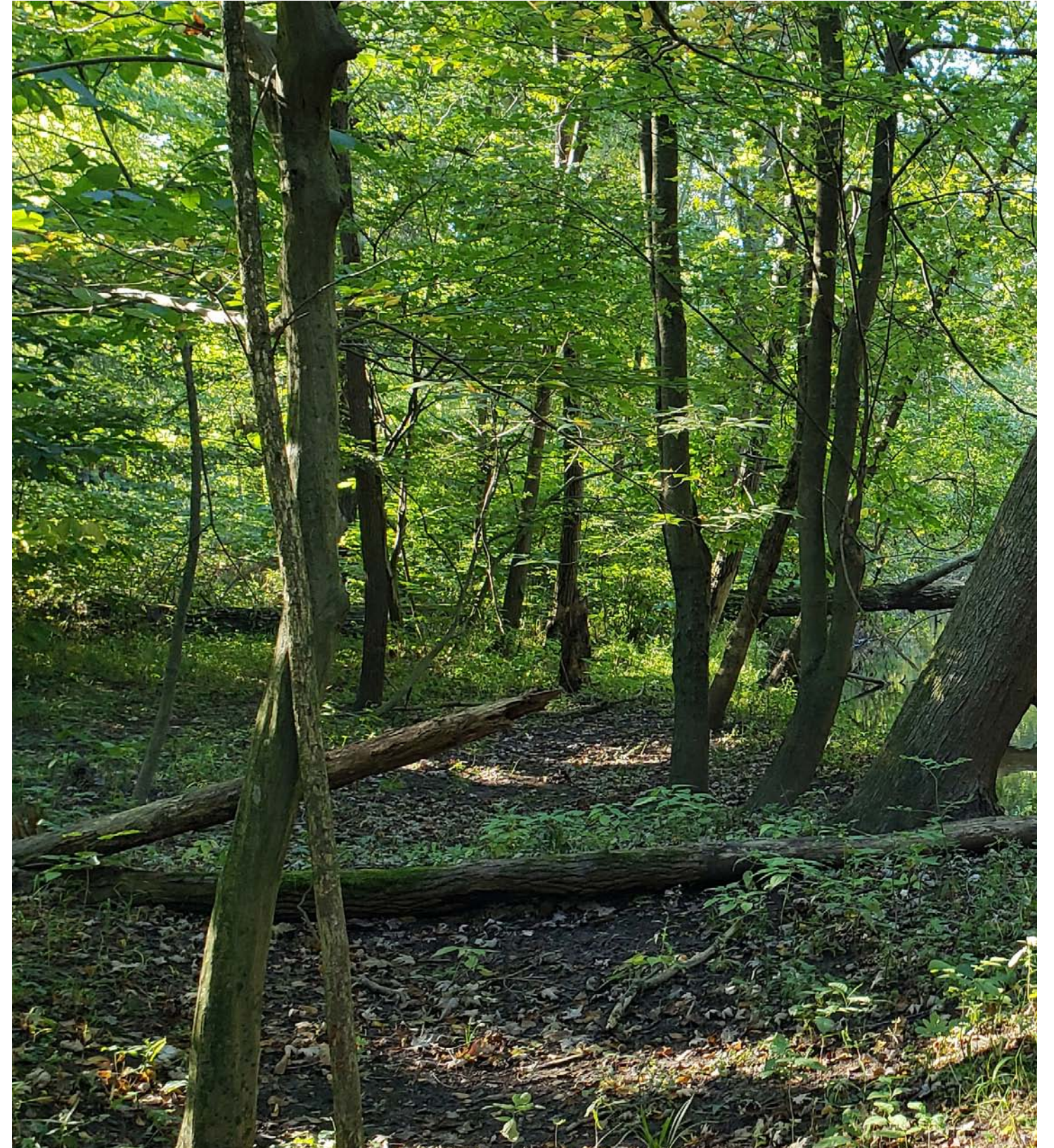
It was imperative to seek input from each community in order to develop an overarching plan for potential greenway projects connecting Allegan County communities. This took place with ODC staff conducting individual conversations and many group and public meetings. Representatives from units of government, conservation organizations, residents, plus county, state and federal agencies were sought for their knowledge and vision. After a year of community input and the review of existing reports, the ODC and their core team, consisting of GMB Architecture and Engineering and Bruns Leadership Consulting, developed this master plan.

The Kalamazoo River in Allegan County is part of a United States Environmental Protection Agency (EPA) Superfund designation for polychlorinated biphenyls (PCB) contamination, restricting use of the river and planning future activities in some situations. While the ongoing cleanup efforts will likely continue for years, the development of a Kalamazoo River Greenway will allow communities to:

- Promote safe usage of the river
- Enhance connectivity along the river

Additional issues facing the river corridor beyond the PCB levels include:

- Excess sedimentation
- High phosphorus levels
- Invasive species
- Land use impacts
- Lack of safe access points
- Need for economic development
- Negative reputation of the river





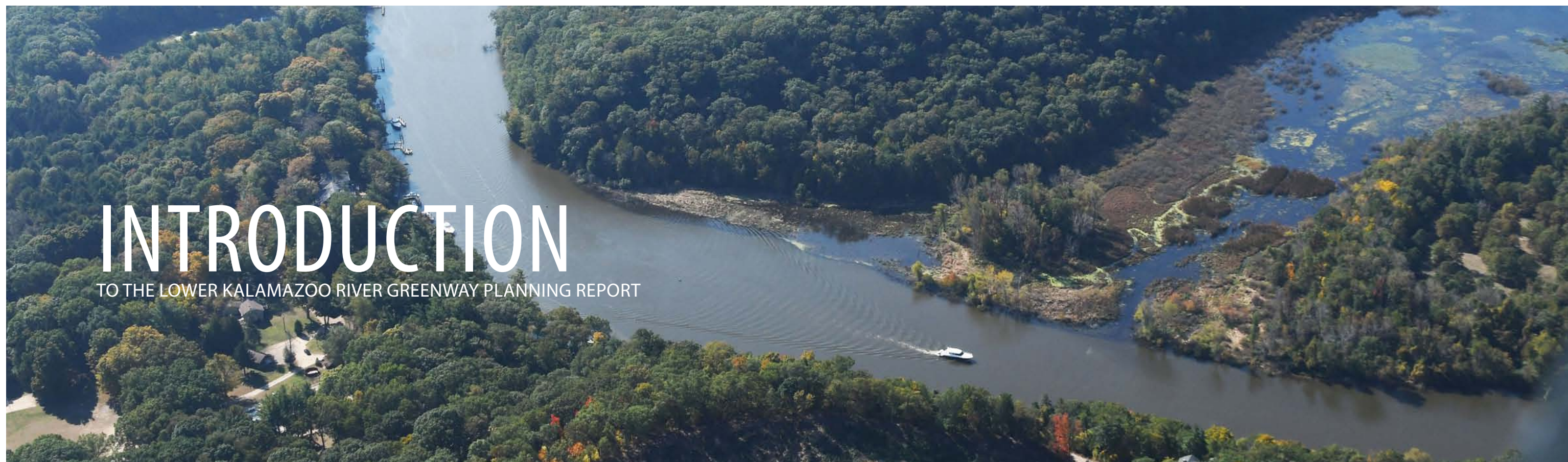
While there were numerous site-specific opportunities identified during the process, there were several broadly encompassing goals identified for the greenway. These included:

- Provide the means and opportunities to improve recreational assets and access along the river corridor
- Create opportunities for active and passive interpretation and education to inform visitors about safety, cultural history, natural history and recreation.
- Work on improving environmental quality along the rivers and their watersheds and address key ecological issues
- Implement best practices to reduce stormwater, sediment, and nutrient issues within the Kalamazoo Watershed
- Enhance regional economic development
- Protect and preserve existing areas of high quality habitat

To accomplish these goals, the following are examples of potential priority projects that could create the greatest positive impact:

- Select land acquisition
- Creating safe river access points
- Creating non-motorized pathways
- Improving river navigability
- Fixing severe sources of erosion
- Adding restrooms and other visitor amenities
- Protecting areas of high quality habitat
- Planning for long-term river restoration

This plan is to assist and guide each community to form a collaborative partnership to begin to plan and implement the KRG to address environmental restoration, recreation, conservation and education initiatives. This plan will also position units of government and organizations to be eligible and more competitive in seeking state and federal funding for their communities.



INTRODUCTION

TO THE LOWER KALAMAZOO RIVER GREENWAY PLANNING REPORT

SETTING THE STAGE

The ODC Network (ODC), a 501(c)3 nature-based education and conservation non-profit organization established in 2000, was commissioned in January 2018, by the Michigan Department of Environmental Quality (MDEQ), to develop a master plan for a Lower Kalamazoo River Greenway (KRG).

In conversations State Representative Mary Whiteford had with Allegan County residents, local elected officials and government agencies, it became apparent that a consensus was forming regarding an untapped asset, the Kalamazoo River. With encouraging studies, successful restoration, and future plans for the river by the EPA, communities have become interested in integrating nature and urban life and unifying regional efforts to establish one common greenway master plan.

A master plan would assure the waterway continues to improve to its original glory by providing:

- Recreation assets
- Opportunities for active and passive interpretation and education to inform visitors about safety, cultural history, natural history and recreation.
- Environmental quality and Address key ecological issues -- especially invasive species -- to ensure that areas of high quality habitat are maintained
- Implementation of best practices to reduce stormwater, sediment, and nutrient issues within the Kalamazoo Watershed.
- Economic development
- Preservation and protection of existing habitat

The proposed master plan includes community input from a wide cross section of individuals who discussed the Kalamazoo River's existing treasures and assets and ways the master plan could be a

catalyst in the planning and development of potential opportunities with the stakeholder priorities in mind. This official plan will position governing bodies to secure funding from state and federal agencies as well as to receive buy-in from communities and philanthropic entities. These groups can support a greenway plan through: funding, zoning ordinances, policies and long-term maintenance on proposed projects.

Over many years, extensive research and discussions have taken place, throughout the county, related to the river's existing water quality, wildlife and habitat. It was vital that the ODC collect information as a cornerstone for the master plan. It was also necessary to build the trust of the community that this effort would be led by an experienced and qualified organization. The ODC has served since 2009 as a lead partner on a similar successful initiative the Macatawa River Greenway (MRG) that was initiated in 1996.

The MRG has preserved 19 miles along the Macatawa river corridor in Ottawa County, secured over \$11 million dollars of public and private investment, protected 1387 acres, and made available to the public 20 miles of pedestrian trails. In addition, the ODC has been the lead agency in Project Clarity, an initiative in the Macatawa Watershed to reduce phosphorus and sediment in the river with more than a hundred on-the-ground projects resulting in a 45% reduction in phosphorus.

WHAT IS A WATERSHED?

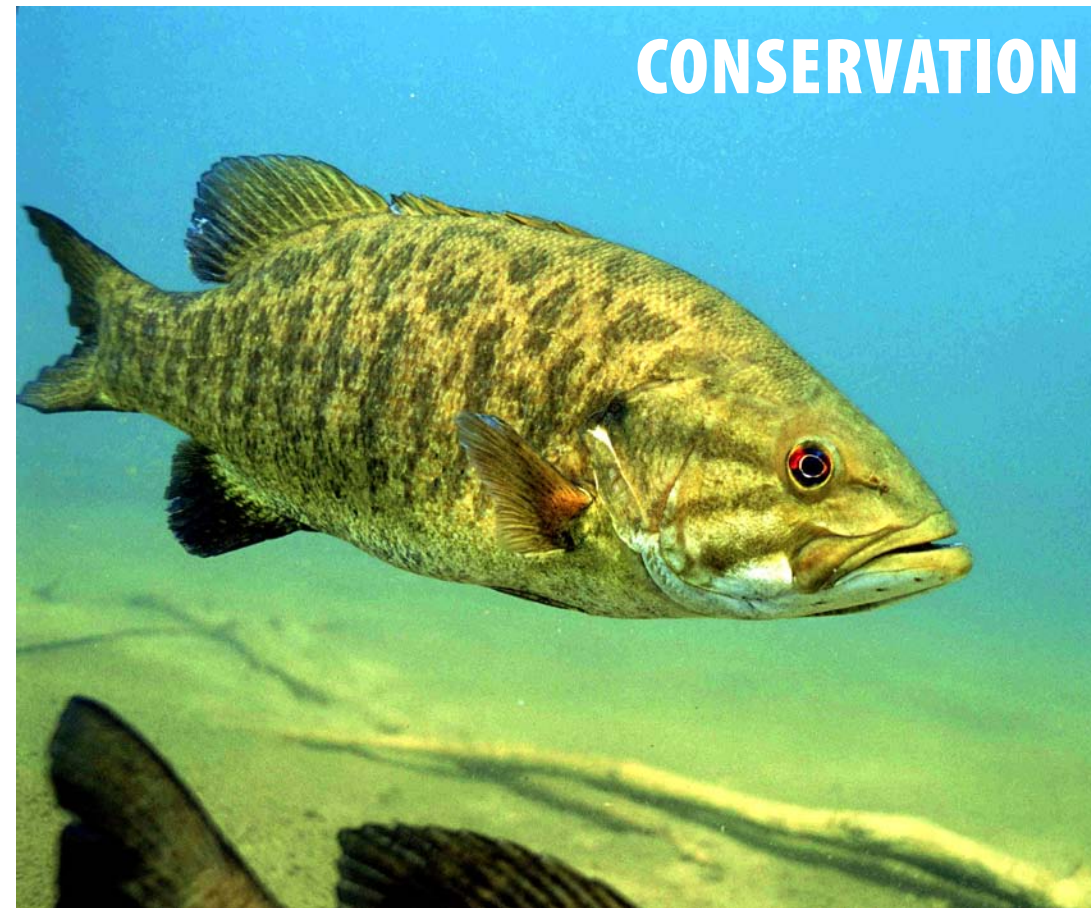
A watershed is an area that drains to a single point. Often times, a watershed will be used to describe an area where water will flow to a body of water, be it a stream, lake, or even an ocean. A common analogy is a bathtub, where all the water inside of it eventually flows to the drain. Watersheds are generally far larger and more encompassing than greenways, which are narrower and more closely hug the river or stream it follows. While watersheds send water to rivers and lakes, they can also hold sources of pollution, which can include sediment, nutrients, sewage, and toxins.

WHAT IS A GREENWAY?

Greenways are corridors of protected green space managed for the benefit of conservation, economic vitality, and recreation. Greenways typically follow natural features like rivers linking people and habitat across a geographic region. In addition, greenways have been demonstrated to:

- Increase community support for addressing environmental restoration
- Promote recreation
- Encourage conservation
- Improve education on water quality and watersheds

The Kalamazoo River Greenway is focused around the green space along the Kalamazoo River corridor encompassed within Allegan County, which ranges from the width of the river to miles on either side. For the purposes of our planning, most of our efforts were focused within and near the hundred year floodplain (the areas along a river that have a 1% chance of flooding in a year), although in many instances the contributing watersheds will have to be taken into account as well.



Top Left: clean up effort along Kalamazoo River

Top Right: kayak fishing on river

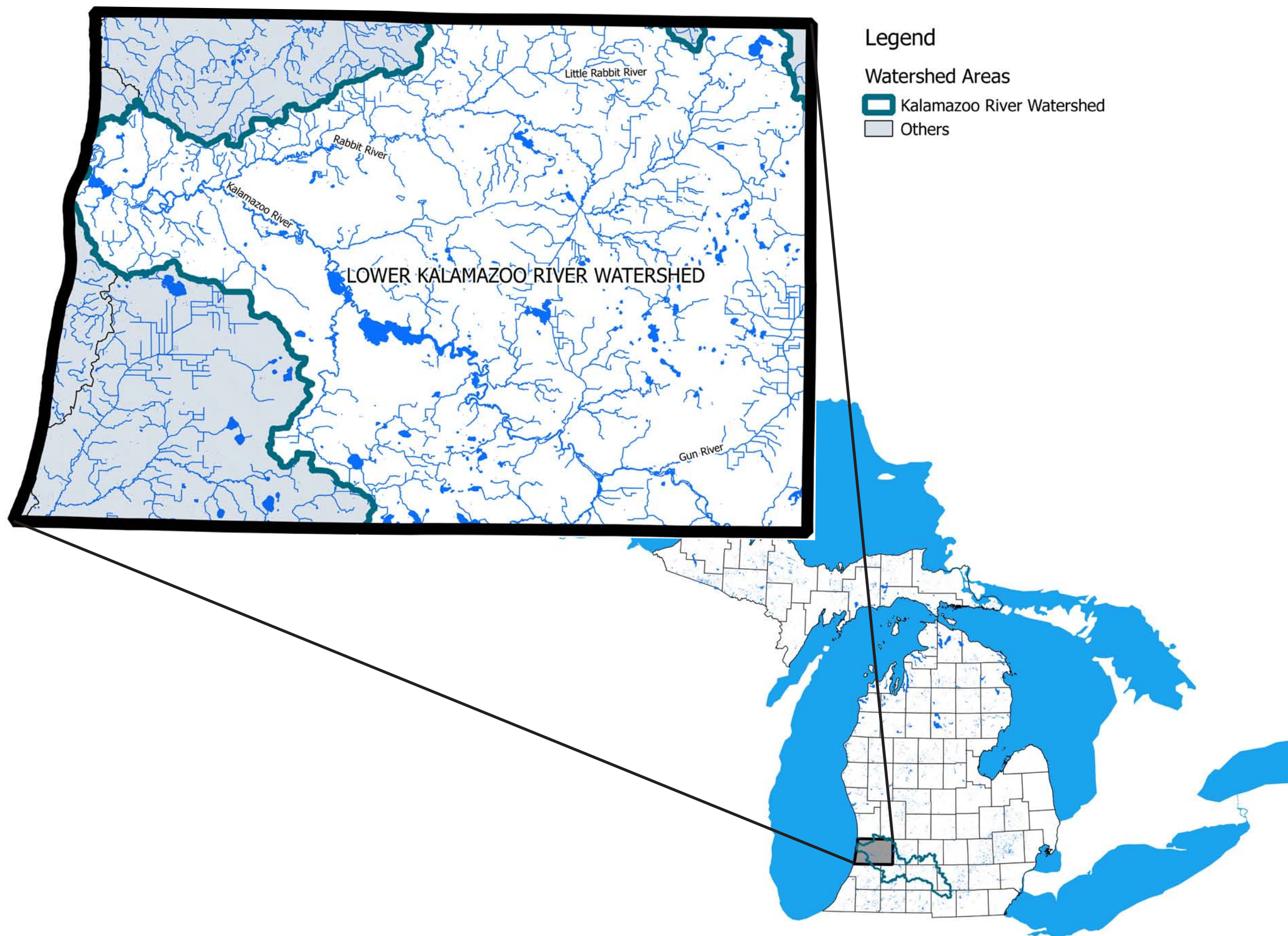
Bottom Left: rock bass in native habitat

Bottom Right: Macatawa River Greenway interpretive signage



STUDY AREA MAP

The Kalamazoo River Greenway corridor will focus on the areas along the Kalamazoo, Rabbit, and Gun Rivers in Allegan County, roughly between a quarter and half mile on either side of the channel, including lands with importance for conservation and/or recreation. The majority of Allegan County (just over 75%) drains into the Kalamazoo River, with smaller corners draining to the Macatawa to the northwest, Grand to the northeast, Black to the southwest, and directly into Lake Michigan to the west. Major tributaries that join the Kalamazoo in Allegan County include the Rabbit and Gun Rivers, with numerous smaller streams and drains. With its low gradient in the county, the river widens in several places to form lakes (Kalamazoo Lake in Saugatuck and the impounded Lake Allegan) and several large marshes, including Pottawatomie, Ottawa, and Swan Creek. Numerous other kettle lakes and ponds dot the watershed, including Miner, Dumont, and Monterey Lakes. Kalamazoo Lake also serves as a natural harbor along Lake Michigan -- the only one in Allegan County, with the nearest ports located in Holland to the north and South Haven to the south.





FORMING CONNECTIONS

COOPERATION AND PARTNERSHIPS FOR THE SUCCESS OF THE LOWER KALAMAZOO RIVER GREENWAY

“The Kalamazoo River is an integral component to the quality of life in the City of Saugatuck. Reducing the sediment that gets deposited into the Kalamazoo Harbor has been a primary concern of elected leaders and citizens for many years. A greenway master plan will be important to effectively address sediment issues and therefore is critical to the future success of the Saugatuck area.”

*Kirk Harrier, City Manager
City of Saugatuck*

FINANCIAL SUPPORT OF PLANNING PROCESS

The Lower Kalamazoo River Greenway Master Plan was financially supported by the Michigan Department of Environmental Quality (MDEQ) Office of Administration with additional support from the Michigan Sea Grant. The statements, findings, conclusions, and recommendations in this report are those of the authors and do not necessarily reflect the view of the funding entities.

CORE PLANNING TEAM

The ODC partnered with GMB Architecture and Engineering and Bruns Leadership Consulting in facilitating the community meetings and providing design, content and maps for the master plan.

The ODC objectives were to serve as the lead for:

- **Community Partners:** identifying and coordinating key community partners who would support the development of and promote the implementation of the KRG Master Plan.

- **Data Collection:** aggregating current and past contaminated sediment and wildlife/habitat data and cataloging levels throughout the proposed greenway corridors. The analysis would lead to the recognition of contamination hotspots including brownfield sites, ecological areas of concern, erosion and sedimentation issues, and potential areas for contaminated sediments.
- **Community Engagement:** surveying residents and community stakeholders to determine community needs, wants, and opportunities connected with greenway development. In addition, to growing community buy-in from multiple sectors including but not limited to: businesses, pre-K12 and post secondary education, local governments, and community organizations.
- **Master Plan:** providing a priority list of projects that potentially will provide the greatest positive impact on the community.

ADVISORY GROUP

As an organization located in and serving Allegan County, the ODC initiated the greenway process with invitations to key county stakeholders to serve on an advisory group. To ensure success of future projects, it was imperative this group be engaged with the greenway project and use this knowledge, experience, and local connections to engage their communities in this process.

This group formed with the intent that they would collaborate with one another in the planning and development of future projects and provide the leadership to:

- Implement the necessary policies
- Find ways to fund the proposed projects and
- Encourage their residents to support the effort.

A strong section of individuals accepted our invitation and provided their input and guidance as part of the advisory group. The group represented federal (USDA) and state (DNR, DEQ) agencies, county commissioners, township supervisors, parks & recreation administration, conservation district and other

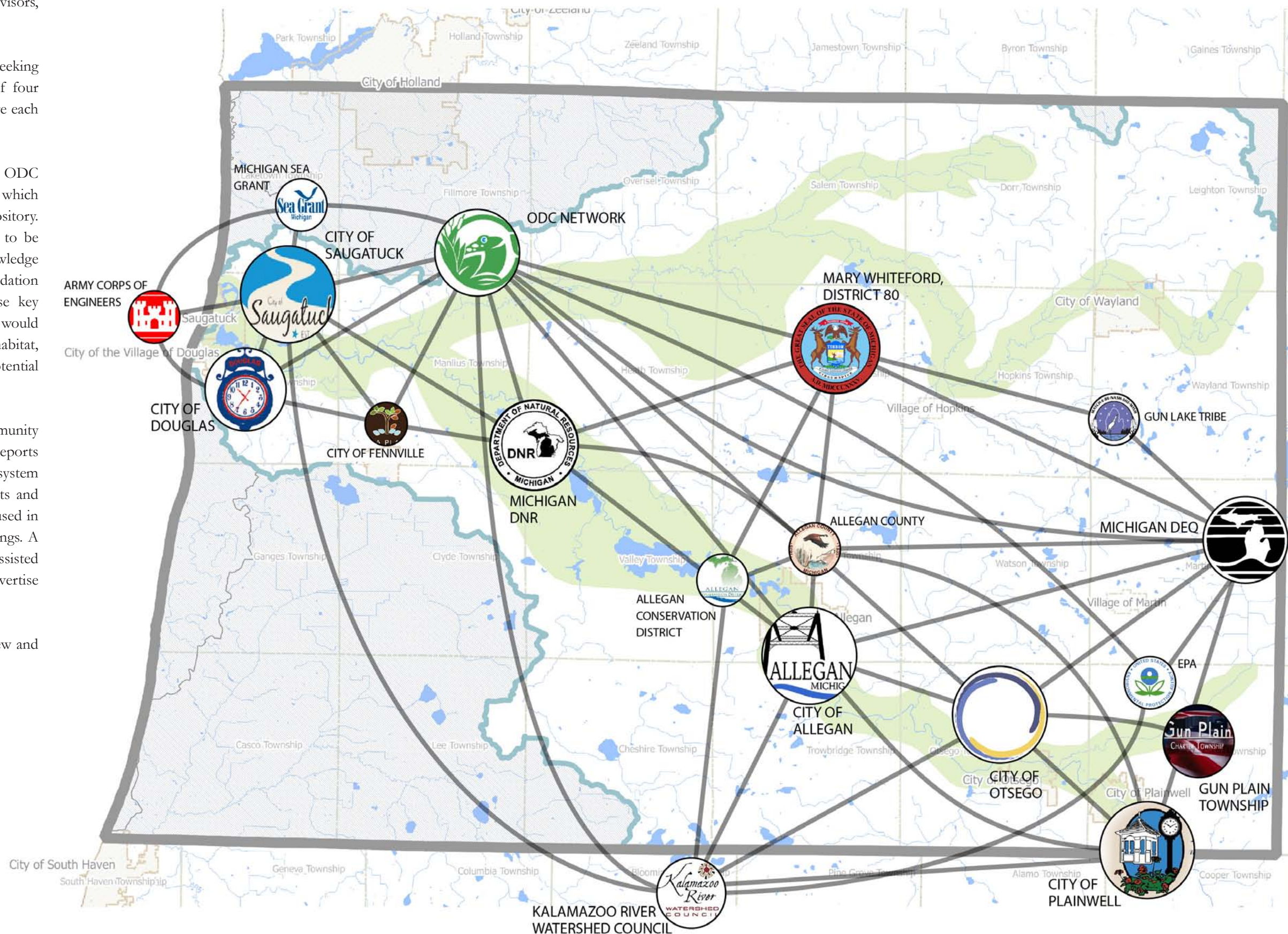
environmental groups, economic development supervisors, business owners, and a local Native American tribe.

The group met three times early in 2018 prior to seeking community input. They assisted in the determination of four focus areas where projects might be proposed and where each community input meeting would be held.

These advisors were instrumental in directing the ODC to existing river condition reports and assessments which positioned the ODC to become a future public repository. The group also recommended other key stakeholders to be interviewed by the ODC in order to obtain additional knowledge about the river so an even more informed recommendation could be made for the greenway master plan. These key stakeholders contributed insights on how a greenway would be instrumental for education, conservation, wildlife/habitat, economic development and safety while also sharing potential philanthropic support.

The group stayed informed of ODC's progress as to community stakeholder meetings and the collection of existing reports and assessments with an online shared document system that included meeting agendas, minutes, existing reports and assessments, contacts and marketing documents to be used in the advertisement of the four county community meetings. A lead administrator from each of the four focus areas assisted ODC in determining the best venue, time and way to advertise their respective community meeting.

The Advisory Group reconvened in November to review and provide final input of a draft of the KRG master plan.





THE PLANNING PROCESS

PAST, PRESENT, AND FUTURE

INTRO TO THE PLANNING PROCESS

At the beginning of 2018, the core team met and determined that the planning process should be a systems approach; interactive and collaborative by bringing together:

- Existing research regarding the condition and quality of the river
- Multiple city and township administrators to share and discuss future plans
- Incorporate these plans with community input

Making sure this was a collaborative effort was a top priority in order to have the final greenway master plan be mutually beneficial for all the communities within Allegan County.

TIMELINE

The core team first established a timeline to assign responsibilities and assure that the expected outcomes were met in a timely and efficient manner.

ADVISORY GROUP

The second step was to establish an advisory group. This group served as a significant resource to the core team. The group's views on current Kalamazoo River treasures; how they envisioned a greenway might benefit their community; and potential opportunities they saw in a county-wide greenway were captured and used as a model for the community meetings.

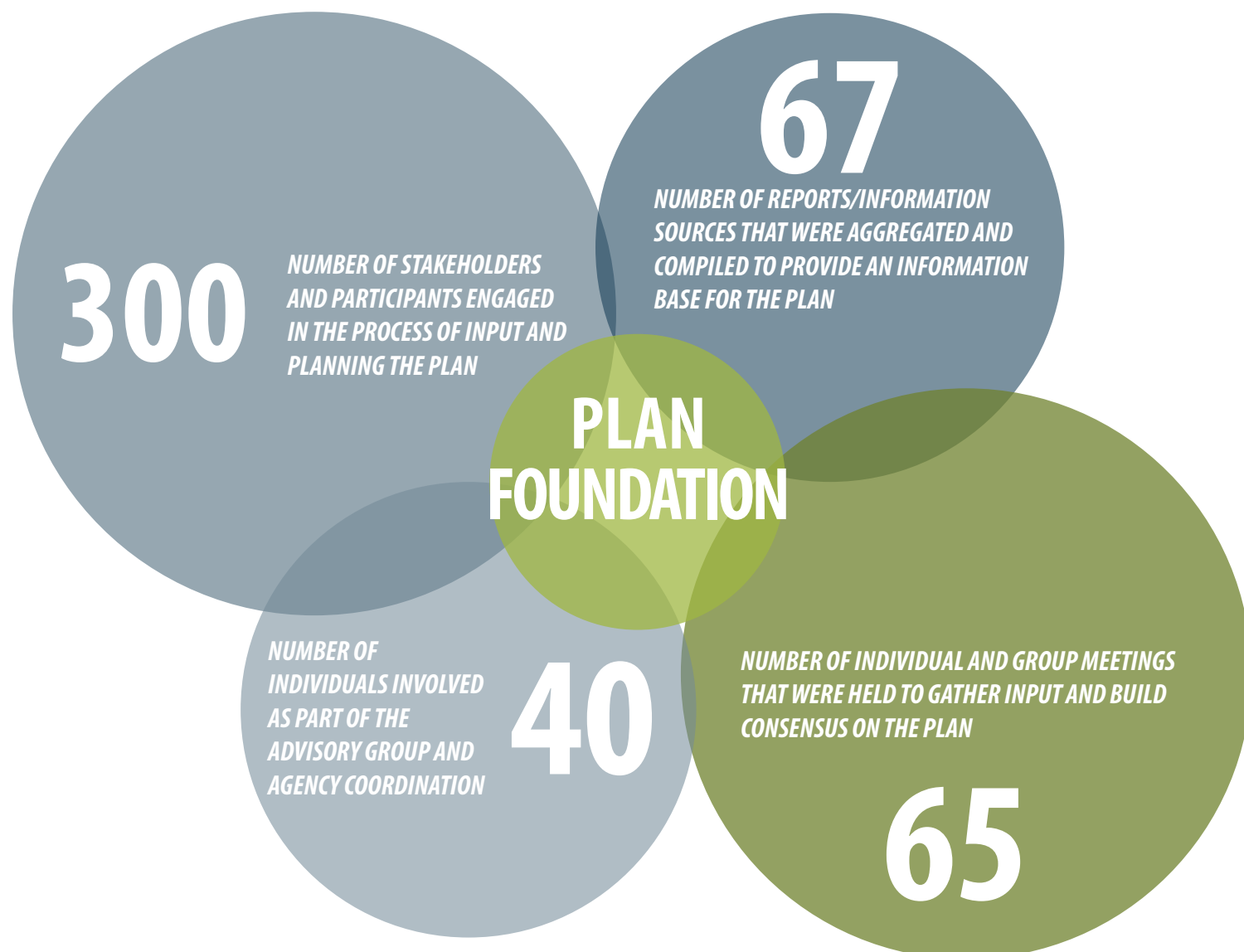
PUBLIC INPUT FOCUS AREAS

In collaboration, the core team and advisory group defined four focus areas within Allegan County where community input would be sought. Due to each of the areas' unique features and potential use of a greenway, having separate community meetings allowed for a more engaged and vibrant discussion. Four areas allowed a critical mass of citizens at each location to provide input about their community.

EXISTING PLANS

One of the goals for developing the master plan was to efficiently and effectively build upon current data and knowledge. There was some concern by the advisory group that the master plan process would duplicate documents that had already been developed by many of the communities. Many hours were spent by the ODC staff reviewing and summarizing these reports, dating back to the early 1990s, by government agencies, communities, groups, and individuals.

With the assistance of the advisory group, the ODC obtained 12 management/action, 4 remedial action, 8 assessments and 6 feasibility and analysis plans for the lower part of the Kalamazoo River. In addition, 21 government, regional and local organizational websites provided valuable information on wildlife, habitat and water quality of the river. For further context and details of these management plans refer to the appendices.



PLANNING IN ACTION

ADVISORY GROUP MEETINGS

An average of 15 advisory group members participated in the planning and process discussions. Interest and higher attendance grew throughout the year due to positive publicity and progress made by the core team.

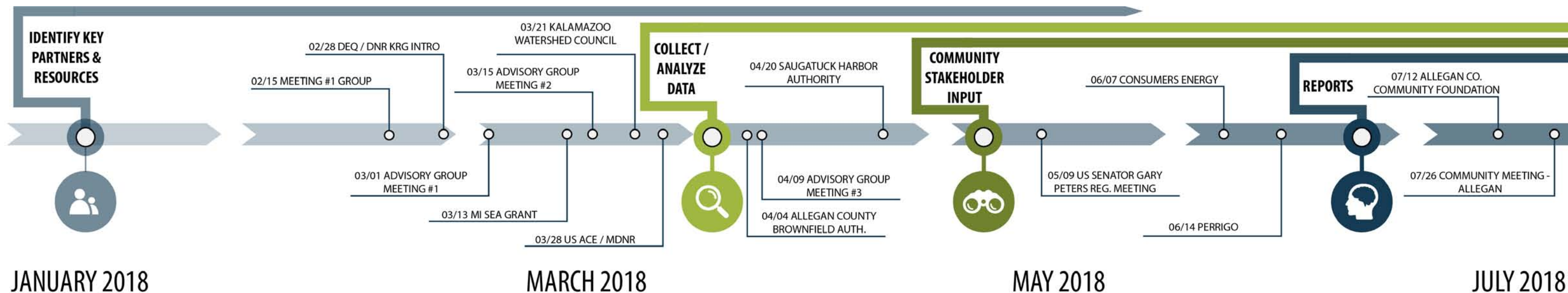
PROPOSED PLAN

The Advisory group identified existing sites along the river corridor that could be immediately enhanced for public use as well as offered suggestions for new sites to consider for future planning. The advisory group had representatives from all sectors of land ownership and management which provided for a broad perspective.

The Advisory group met four times in 2018: March 1, March 15, April 9 and November 15. In the first three meetings, the group determined:

- Project vision and goals
- Role of the advisory group
- Guiding principles and critical success factors
- Hopes and fears around the greenway
- Actions and community evaluation
- Potential stakeholders
- Community input focus areas
- Existing data collection repository process

In the final November meeting the group reviewed the draft and provided final input for the master plan.



PUBLIC ENGAGEMENT

After planning for the best method to survey the residents, four community meetings, one in each of the focus areas, took place in July and August of 2018. Five advisory group members (two from Saugatuck/ Douglas) hosted their respective meetings with the core team facilitating. The hour and a half meetings were held at publicly known facilities that would accommodate maximum attendance. This resulted in representation from residents, governing officials and business owners.

Focus Area	Date	Venue Location	Attendance
Central Allegan/ State Game	July 26, 2018	Allegan Griswold Auditorium	32
Otsego/ Plainwell/ Gun Plain Township	Aug 1, 2018	Gun Plain Charter Township Hall	32
Rabbit River	Aug 14, 2018	Salem Township Hall	10
Saugatuck/ Douglas/ Potawatomi Marsh	Aug 15, 2018	Saugatuck Brewing	68

Attendees were guided through a consistent format and invited to sit in small groups at tables that

provided a map of their designated area, stacks of sticky notes and markers with an easel nearby. Everyone was asked to write individual responses on separate notes to the following questions which were then collected and placed onto their respective easel:

- What do you consider to be existing Kalamazoo River assets and treasures in your community?
- What opportunities or desires do you see for a Kalamazoo River Greenway?
- What are your top three priorities for a greenway in your area?

A scribe from each table took turns sharing their group’s answers. To the surprise of many, including the core team, similar themes were appearing. These were noted by the facilitators placed on the graphic map.

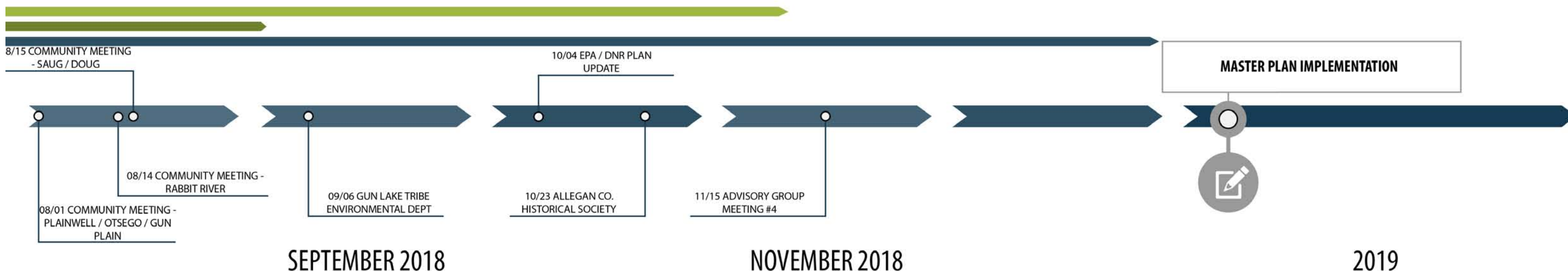
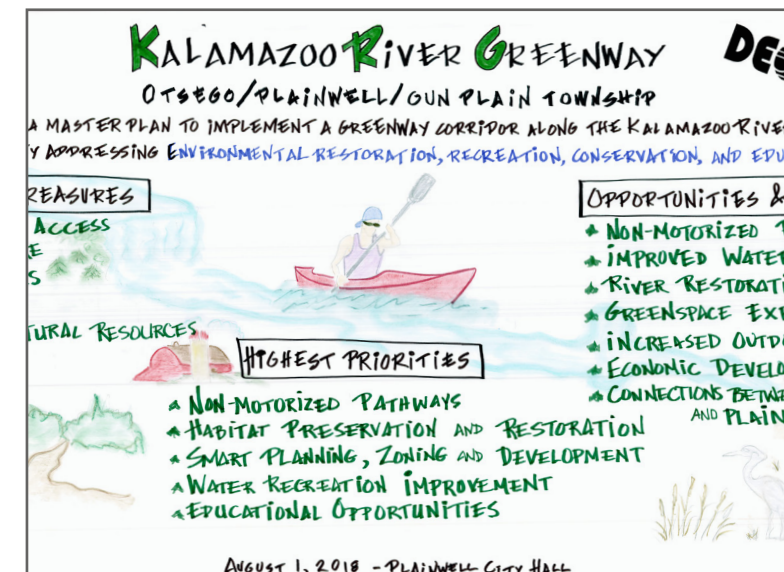
After discussions ended on the first two questions about treasures, assets, opportunities and desires, each group was invited to select from their individual responses their top three priorities for a greenway. These too were shared publicly and captured by the facilitators. All the flip chart sheets with the sticky notes and the graphic maps were retained by the core team and later summarized and used in the determination of recommended first steps in developing the greenway.

Top Left: Central Allegan Community Meeting

Top Right: Advisory Group Meeting

Bottom Left: Sticky Note Idea Generation at the Saugatuck / Douglas Community Meeting

Bottom Right: Sample of final community input board for Otsego/ Plainwell (see appendices for full boards from each meeting)

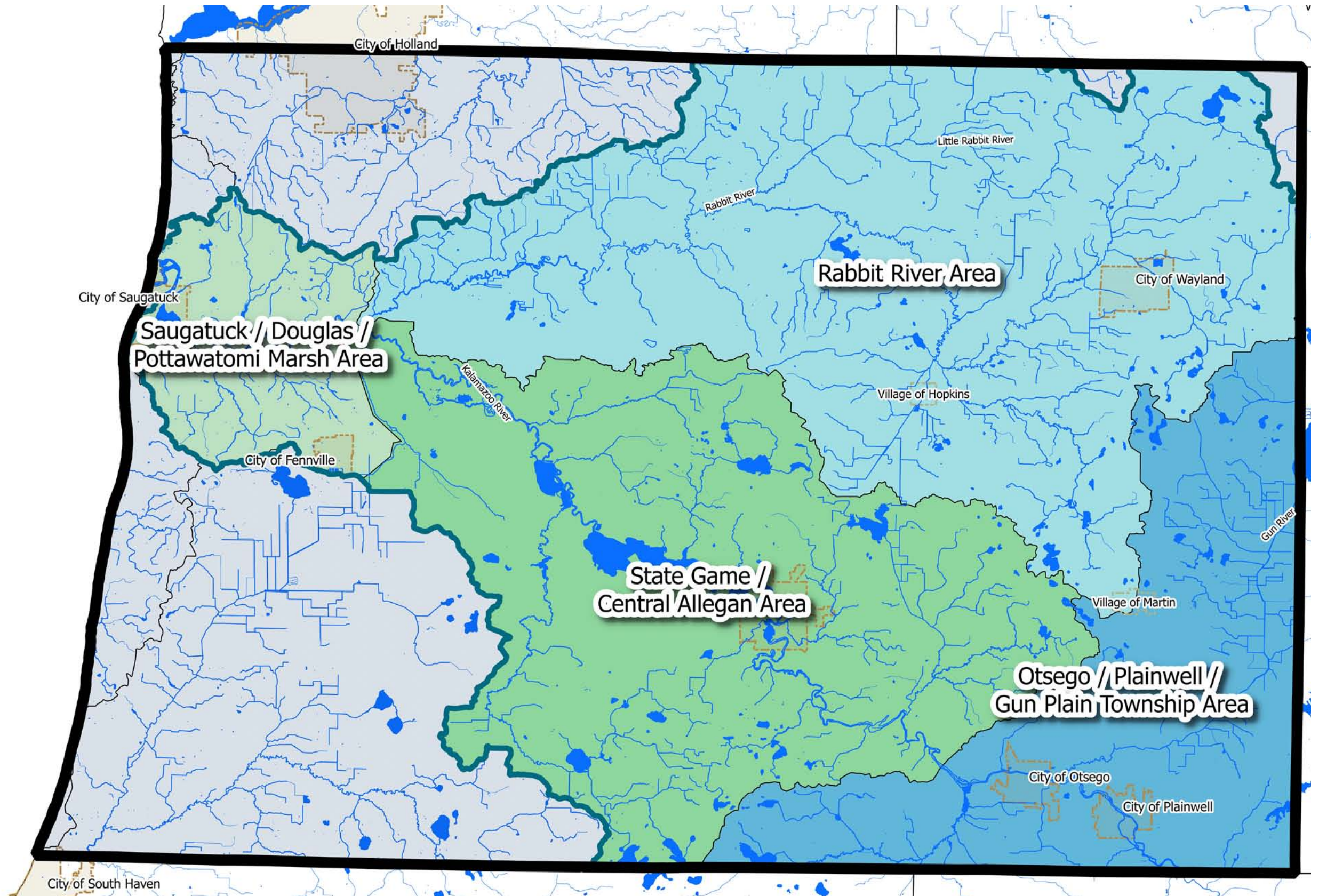


MAP OF FOCUS AREAS

The four focus areas were determined with the seven subwatershed districts, specific characteristics, demographics, challenges, and connectivity to the Kalamazoo River and its tributaries in mind. While the county has a number of clustered communities that have their own identities, for the purpose of planning and holding community input sessions, we divided the Kalamazoo Watershed in Allegan County into four areas. We encouraged community members and local officials to attend the meeting in their area, but several attended other sessions.

On the western end of the Kalamazoo River lies Saugatuck and Douglas. Both cities flourish due to tourism around their waterways. The sister cities of Otsego and Plainwell plus surrounding Gun Plain, Martin, and Otsego Townships focus of the river are more encompassed by their close proximity and economic development surrounding repurposing the river from industrial to public use.

The northern part of the county in the Rabbit River watershed is mainly agricultural, which would focus mostly on future restoration and conservation projects. With some similarities to the Rabbit River, the central Allegan/State Game area has miles of natural, undeveloped water frontage with the exception of the City of Allegan. The city's focus for a greenway is around their lake and interest to the improvement of its water quality.





THE CONTEXT

UNDERSTANDING THE LOWER KALAMAZOO RIVER GREENWAY TODAY

COMMUNITY FABRIC

The context for the Kalamazoo River Greenway master plan is complex and nuanced, much like the diverse communities and landscapes within the watershed of the Kalamazoo River in Allegan County. This diversity may explain, in part, why until now there has been limited cohesive action taken across the whole of the county. At one corner of the county sit a pair of small cities with an industrious history of working along the river. At the other is a pair of resort communities nestled among the coastal dunes with a channel to Lake Michigan. In between are large tracts of preserved and protected forest and wetlands, productive farmland, and the county seat, sitting astride the river at the head of a large impounded lake. While each of these areas of the watershed have their own characteristics, demographics, and challenges, the connectivity of the Kalamazoo River and its tributaries bind them together into a whole.

HISTORY

History shows that the Kalamazoo River has played a significant role in the settlement of Allegan County. Settlers were attracted by the sources of water power and soon utilized the transportation value of the river with traders and lumbering pioneers moving their goods.

With the introduction of railroads, the river was no longer used for transportation but quickly enjoyed by residents and visitors as a recreational destination. Accounts from early residents tell of a river that was quiet and beautiful. Young couples could canoe for miles in solitude. The fishing was good, and anglers could often catch enough bass, salmon, or catfish for several meals.

After the Civil War and into the 20th century, various industries flourished which used the river for water intake and waste discharge. These industrial practices, residents using the river for disposal of sewage and trash, and changes in land use led to the degradation

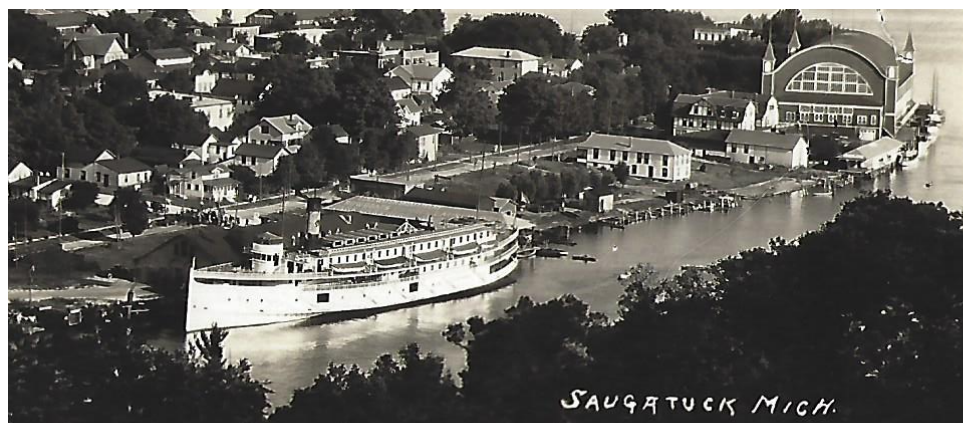
of the river from pre-settlement conditions. It was the result of industrial waste disposal that the entire Kalamazoo River below the City of Kalamazoo was designated as a Superfund site. In 1980, Congress established the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in response to growing concerns over the health and environmental risks posed by hazardous waste sites. CERCLA is informally called Superfund.

WHAT IS SUPERFUND?

Superfund was established in 1980 by an act of Congress, giving EPA the funds and authority to clean up polluted sites.

Goals of Superfund:

- Protect human health and the environment by cleaning up polluted sites
- Involve communities in the Superfund process
- Make responsible parties pay for work performed at Superfund sites.



Top: Saugatuck Harbor during the early 20th century



Below: Kalamazoo River near Saugatuck during the early 20th Century

Historic images courtesy of the Allegan County Historical Society



According to the EPA, the Kalamazoo River was designated as an Area of Concern (AOC) under the 1987 Great Lakes Water Quality Agreement. The river was listed as an AOC due to historic releases of PCBs associated with de-inking operations at local paper mills. Because of this, the EPA has maintained certain priorities in the area including remediation of PCB-contaminated sediments in the river, control of nonpoint source pollution (particularly phosphorus) and habitat restoration. The communities represented in the Allegan County portion of this area, to which this greenway master plan is focused, have suffered negative health, financial, environmental, and recreational impacts.

While cleanup efforts are ongoing and likely will be for years to come, the effort of establishing a designated greenway will allow folks to further safely reconnect with nature and one another using the Kalamazoo River.

CONTEXT OF PLANNING EFFORT

A number of studies, plans, reports, and documents have been assembled over the decades, all focusing on different aspects of the county. Rather than attempt to replicate all of the work that has gone into this foundation of knowledge, we hope to leverage the strengths of these plans to help inform and coordinate future efforts. Recreation and waterfront master plans, watershed management plans, environmental testing reports, and others will all be important in informing future decisions. A complete bibliography of relevant materials is provided as an attachment at the end of this plan.

EXTENT OF THE GREENWAY

Defining a greenway itself can vary greatly based on communities. For some communities, a greenway may wind up being the width of a bike lane, while others are encompassing entire floodplains and river valleys. For the context of the KRG through Allegan County, there are several broader pieces of

greenspace connected by narrower sections of river. In a few instances, the greenway proper may be no wider than a quarter mile, but it will expand to capture larger features such as Lake Allegan, the Allegan State Game Area, and the Pottawatomie Marsh. Areas for incorporation include areas with features of natural, cultural, or recreational importance that fit in with the broader greenway context. While many of the recreational, educational, and ecological goals of the greenway will be located within this narrow corridor, important aspects of management, including but not limited to pollutant sources, invasive species, adjacent pathways, and habitat corridors, are located in the greater watershed and surrounding landscape.



Upper Left: removing contaminated sediment near Otsego





Upper Right: stream restoration at Pine Creek impoundment

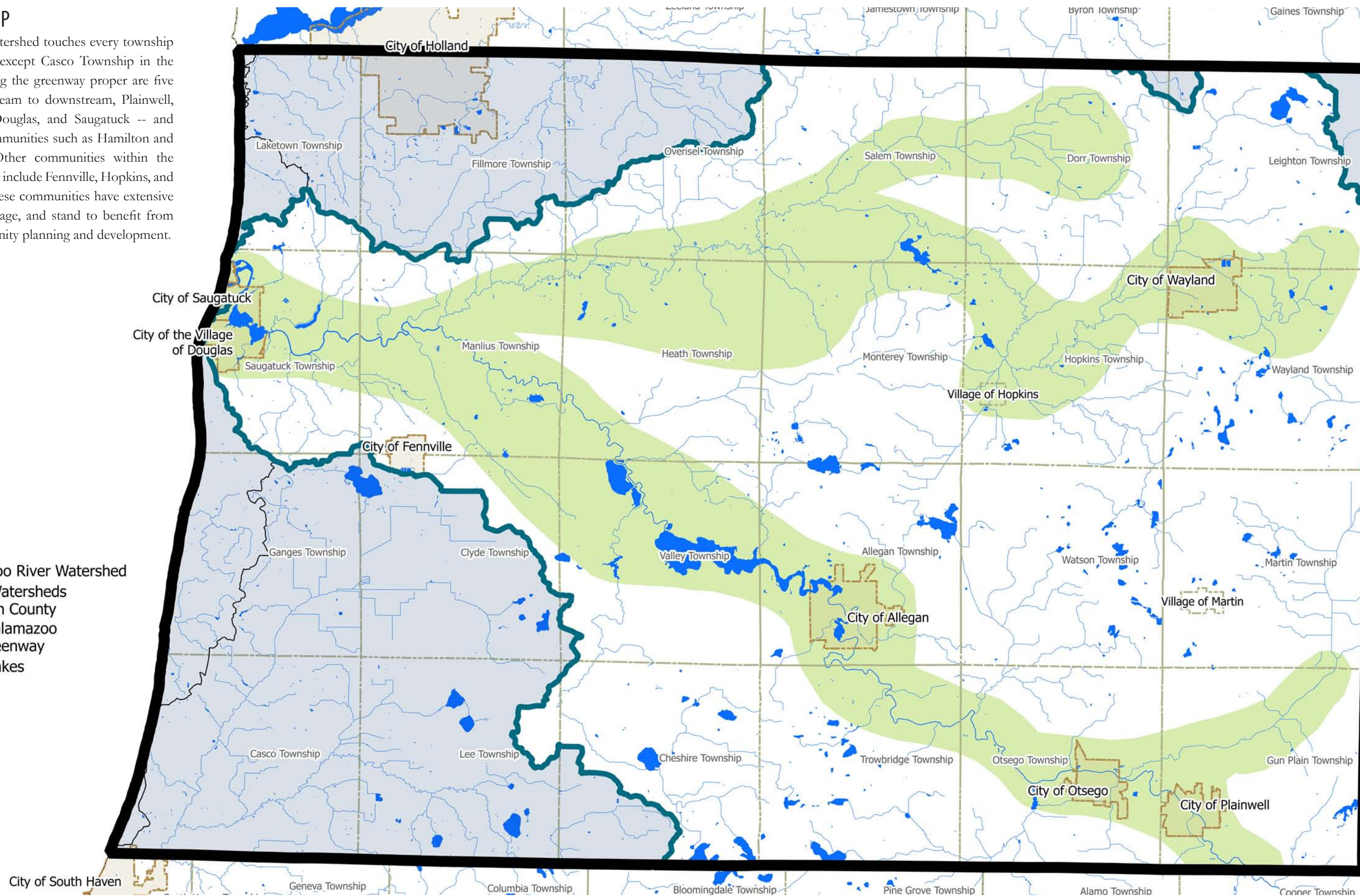
Lower Right: New Richmond Bridge

GREENWAY MAP

The Kalamazoo Watershed touches every township in Allegan County except Casco Township in the far southwest. Along the greenway proper are five cities -- from upstream to downstream, Plainwell, Otsego, Allegan, Douglas, and Saugatuck -- and unincorporated communities such as Hamilton and New Richmond. Other communities within the drainage of the river include Fennville, Hopkins, and Martin. Many of these communities have extensive river or water frontage, and stand to benefit from further intercommunity planning and development.

Legend






-  Kalamazoo River Watershed
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes

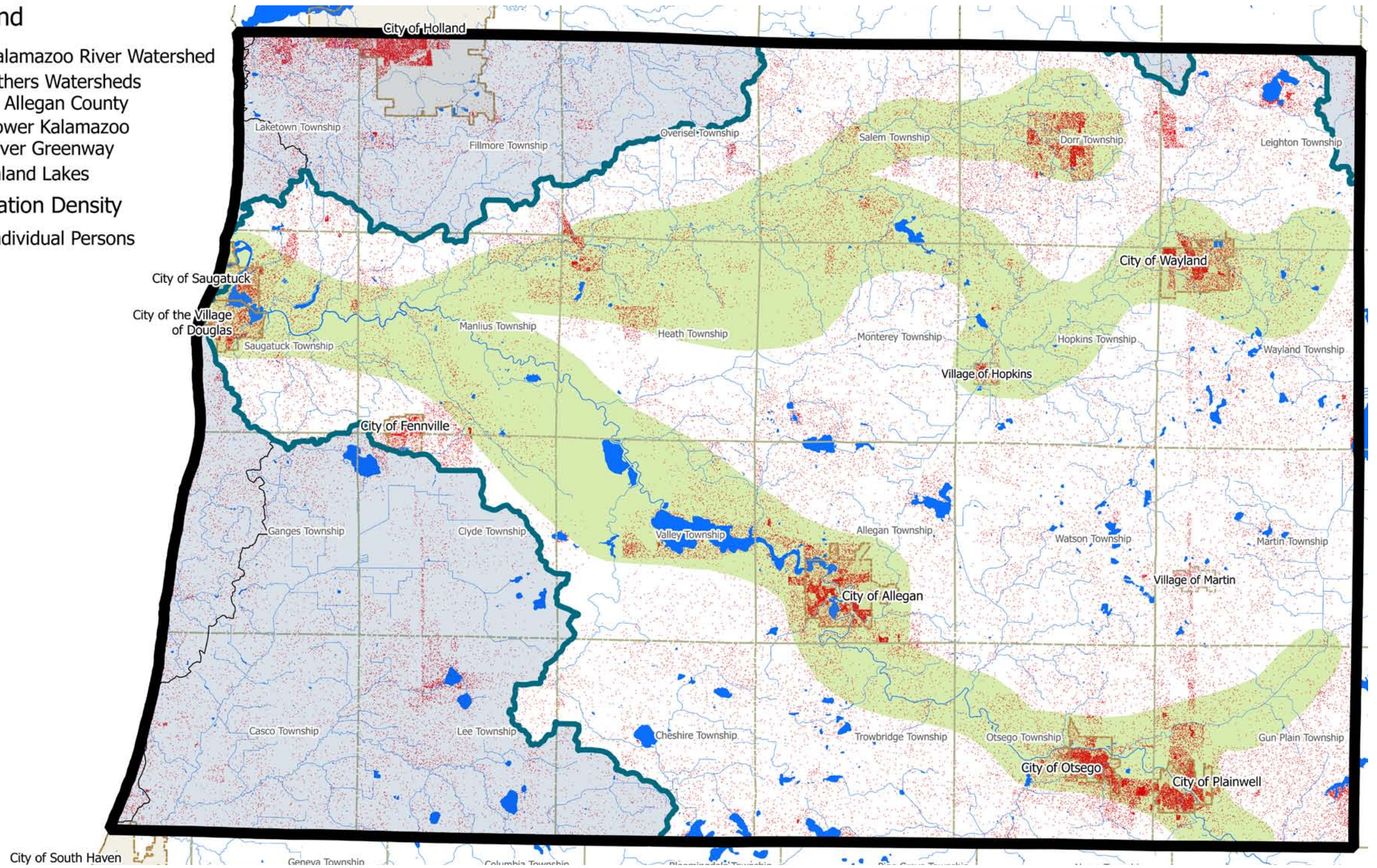


POPULATION DENSITY MAP

Compared to other West Michigan counties, the population of Allegan County is relatively low and spread out. With just under 120,000 residents, the total county population is not even half of neighboring Ottawa, Kent, and Kalamazoo counties. The most densely populated area in the county - the southern neighborhoods of Holland - are outside the project area. The Plainwell/Otsego area has a high concentration of people along the M-89 corridor south of the river, as does the city of Allegan. Saugatuck and Douglas have relatively low permanent populations, but the number of residents and visitors rise significantly during the summer tourism season. Throughout the rest of the county, the population is spread out in low numbers, including along the greenway corridor, largely consisting of single family homes and farms.

Legend

-  Kalamazoo River Watershed
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes
- Population Density**
-  Individual Persons



GREENWAY POPULATION CENTERS

Plainwell - the southeastern most city in Allegan County, with a population of around 3,800. US-131 is on its western border and M-89 splits the middle of town from east to west. The Kalamazoo River and its historic Mill Run bisect the city. Former paper mills still line the banks of the river and manufacturing continues to be a significant source of jobs. It is a bedroom community for the Grand Rapids and Kalamazoo metro areas.

Otsego - located largely to the south of the Kalamazoo River, about four miles downstream from Plainwell. Also on M-89, but west of US-131, it also has a history of manufacturing along the river. Its population is roughly 4,000 people.




Allegan - located close to the geographic center of the county, the city of Allegan is the county seat. Its population is just under 5,000, with the largest employer being the pharmaceutical manufacturer, Perrigo. The Kalamazoo River runs through the middle of the town, with much of its downtown being a short distance from the water, which has been a focal point in recent years.

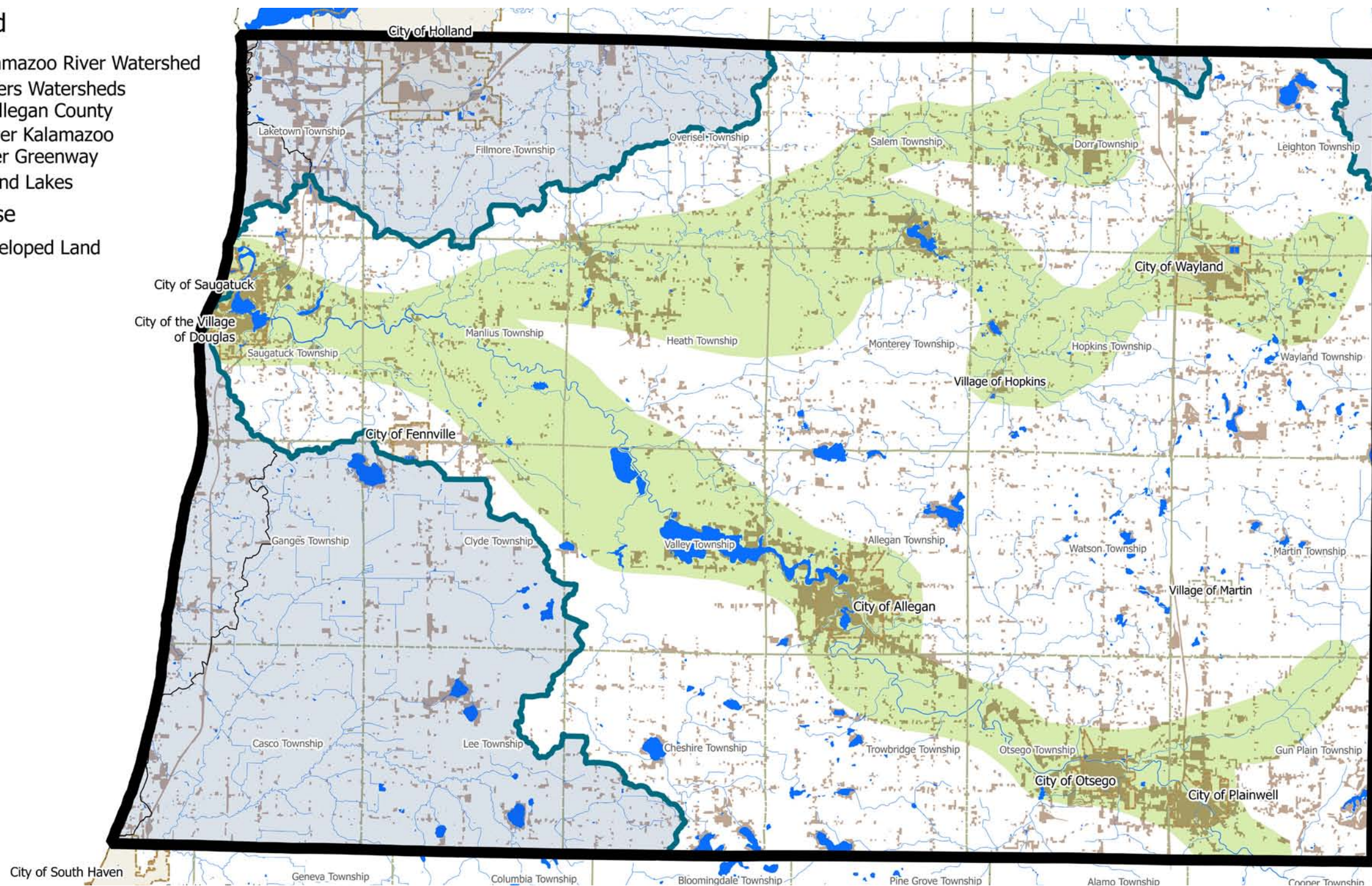
Fennville - a small city of around 1,400 residents located on M-89 between Clyde and Manlius Townships. While not located on the river proper, it is the closest city to the Allegan State Game Area, located at its western edge. It is known for nearby wineries and orchards, and with its position between Allegan and Douglas, presents as a day trip for many area visitors.

DEVELOPED AREAS MAP

Mirroring the population density of Allegan County in several ways, the developed areas along the Kalamazoo Greenway largely cluster around the small cities it passes through. Businesses, industry, and homes make up much of the developed land in the Plainwell, Otsego, and Allegan areas, with a great deal of it along the riverfront. Saugatuck and Douglas also have large areas of development, particularly homes and small businesses, which spread out into the surrounding township. Other areas of development follow major roadways through communities, such as along M-89 through Fennville and Allegan and M-40 through Hamilton. The largest tracts of undeveloped land prevail through the Allegan State Game Area, particularly in the areas around the Ottawa and Swan Creek Marshes.

Legend

-  Kalamazoo River Watershed
 -  Others Watersheds in Allegan County
 -  Lower Kalamazoo River Greenway
 -  Inland Lakes
- Land Use
-  Developed Land



Hamilton - an unincorporated community in Heath Township along M-40, Hamilton is the largest community located on the lower Rabbit River. The railway trestle bridge and the dam protecting it historically connected via rail to Holland and now serves as a park for the community. Largely an agricultural community, the population is under 2,500 people.

Douglas - upstream and on the other side of Kalamazoo Lake from Saugatuck, Douglas became a city in the mid-2000's. Similar to Saugatuck, its permanent population of just over 1,000 grows significantly during summer tourism. Most manufacturing that once occurred has since left town, leaving tourism as the major economic driver.

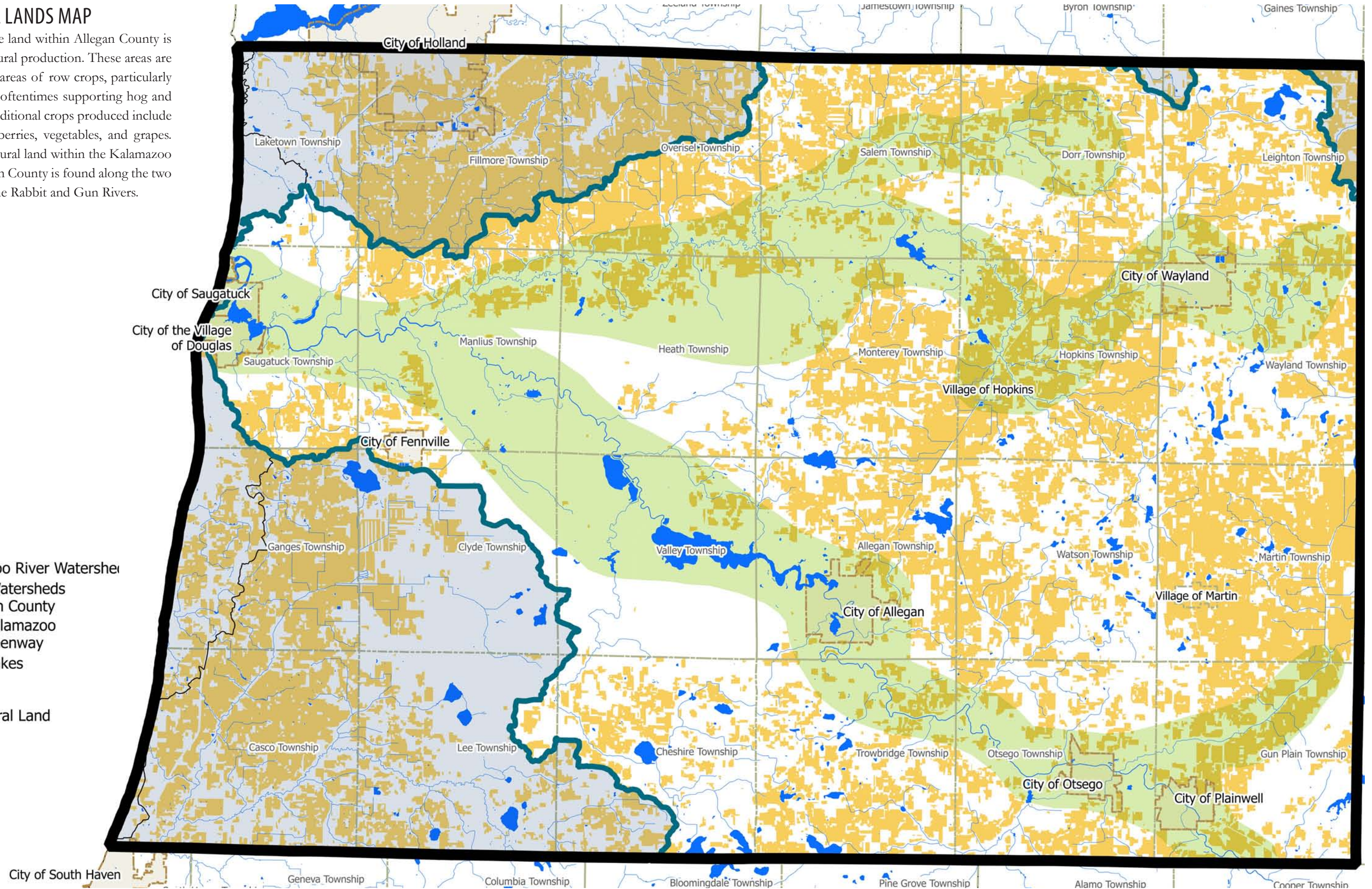
Saugatuck - a city of just under 1,000 permanent residents, it is located closest to the mouth of the Kalamazoo River, and serves as a harbor for small vessels on Lake Michigan. Tourism is its largest industry, including charter fishing and other water-based recreation, with a significant increase in population during the summer months. It has several large parks and tracts of freshwater coastal dunes within and adjacent to its boundaries.

AGRICULTURAL LANDS MAP

Just over half of the land within Allegan County is currently in agricultural production. These areas are dominated by large areas of row crops, particularly corn and soybeans, oftentimes supporting hog and dairy operations. Additional crops produced include wheat, apples, blueberries, vegetables, and grapes. Most of the agricultural land within the Kalamazoo Watershed in Allegan County is found along the two largest tributaries, the Rabbit and Gun Rivers.

Legend

-  Kalamazoo River Watersher
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes
- Land Use**
-  Agricultural Land





OVERVIEW OF LAND USE

The land use throughout Allegan County is rather distinctive when compared with the rest of West Michigan. While it does have some small towns and areas of heavy agricultural use, the extensiveness of the state game area in the middle of the county gives much of the Kalamazoo River an untamed feeling not unlike areas farther up north. This is reflected in the relatively high levels of forested or undeveloped

land (41.8%), compared with developed (6.3%) and agricultural (51.9%) (NOAA C-CAP 2010 dataset). Along the corridor of the Kalamazoo River in Allegan County, 29% of the core habitat is considered intact, higher than the adjoining Gun River (23%) and Rabbit River (10%), and far higher than more developed areas such as Grand Rapids (6%) and Holland (3%) (ESRI Living Atlas).

NATURAL FEATURES

The Kalamazoo is one of the largest rivers in Michigan, spanning and draining parts of eight counties, the last of which is Allegan. It is the seventh longest river located entirely within Michigan, draining just over 2,000 square miles with a median flow of 2,253 cubic feet per second at New Richmond (USGS). Like much of the river, the section that flows through Allegan County travels southeast to northwest, dropping roughly

140 feet from Plainwell to Saugatuck. Lake Allegan is the largest lake located on the river, created by a hydroelectric dam just downstream of the City of Allegan. Four other retired hydroelectric dams were located along the river, with one having been removed in 2018 and another scheduled for 2019. The river widens to form several marshes, including Swan Creek, Ottawa, and Pottawatomie, as well as Kalamazoo Lake, which separates Saugatuck and Douglas near its mouth. The Rabbit and Gun Rivers are the two largest tributaries to join the Kalamazoo

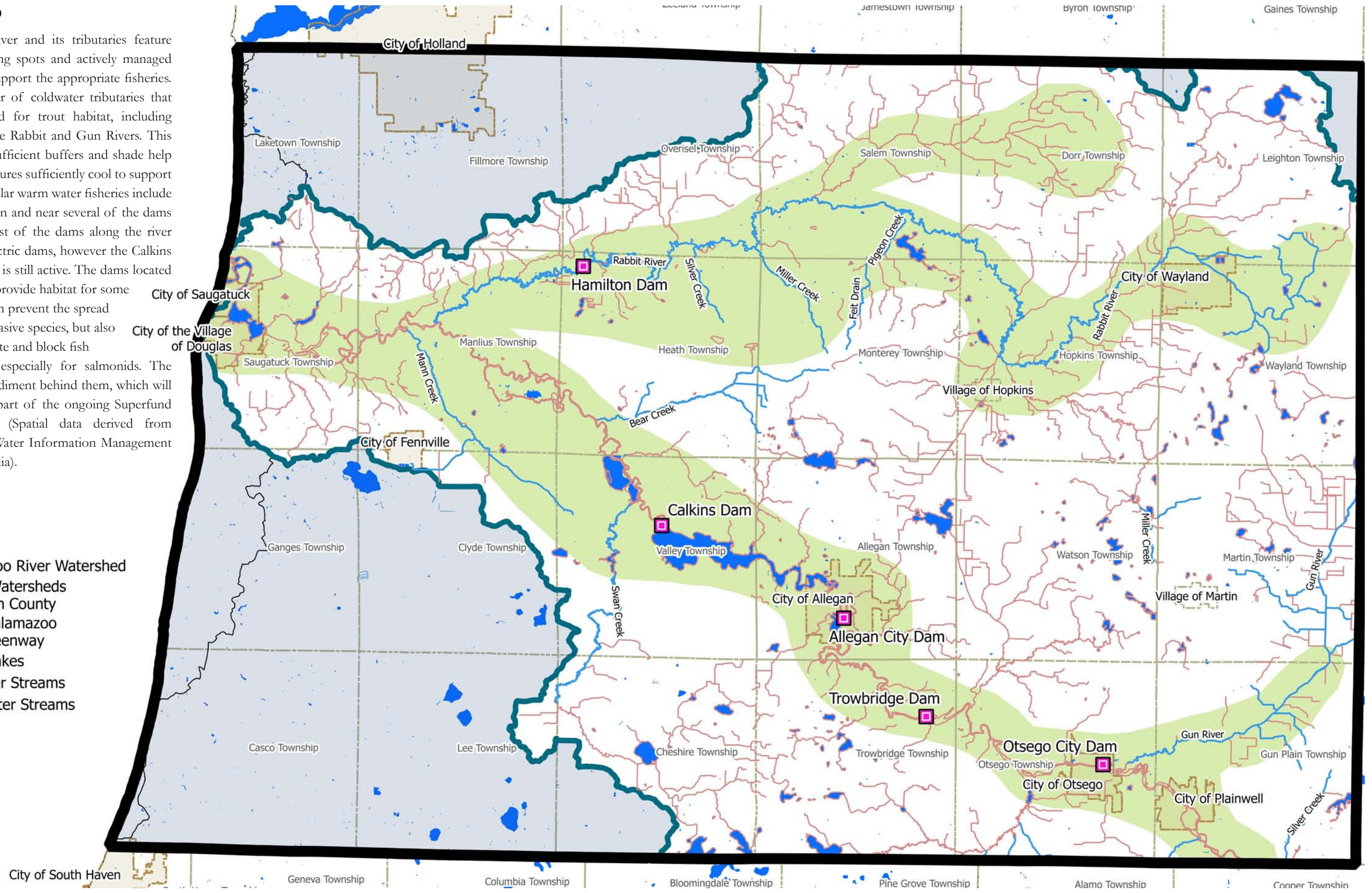
in Allegan County. The Gun meets the Kalamazoo between Plainwell and Otsego, while the Rabbit joins just upstream of New Richmond. While there is some development on the river, primarily in and around the five cities, the river corridor remains fairly natural, especially in the large Allegan State Game Area between Douglas and Allegan. The river corridor below the Calkins Dam, as well as lower segments of Bear Creek, Sand Creek, Swan Creek, and the Rabbit River, have all been designated as natural rivers by the DNR.

FISHERIES MAP

The Kalamazoo River and its tributaries feature many popular fishing spots and actively managed areas designed to support the appropriate fisheries. There are a number of coldwater tributaries that should be managed for trout habitat, including large sections of the Rabbit and Gun Rivers. This includes ensuring sufficient buffers and shade help keep water temperatures sufficiently cool to support these fisheries. Popular warm water fisheries include areas in Lake Allegan and near several of the dams along the river. Most of the dams along the river are retired hydroelectric dams, however the Calkins Dam below Allegan is still active. The dams located along the river can provide habitat for some types of fish and can prevent the spread of some aquatic invasive species, but also detrimentally separate and block fish passage upstream, especially for salmonids. The dams also collect sediment behind them, which will require cleanup as part of the ongoing Superfund restoration efforts (Spatial data derived from Michigan Surface Water Information Management System and Wikipedia).

Legend

-  Kalamazoo River Watershed
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes
-  Coldwater Streams
-  Warmwater Streams
-  Dams

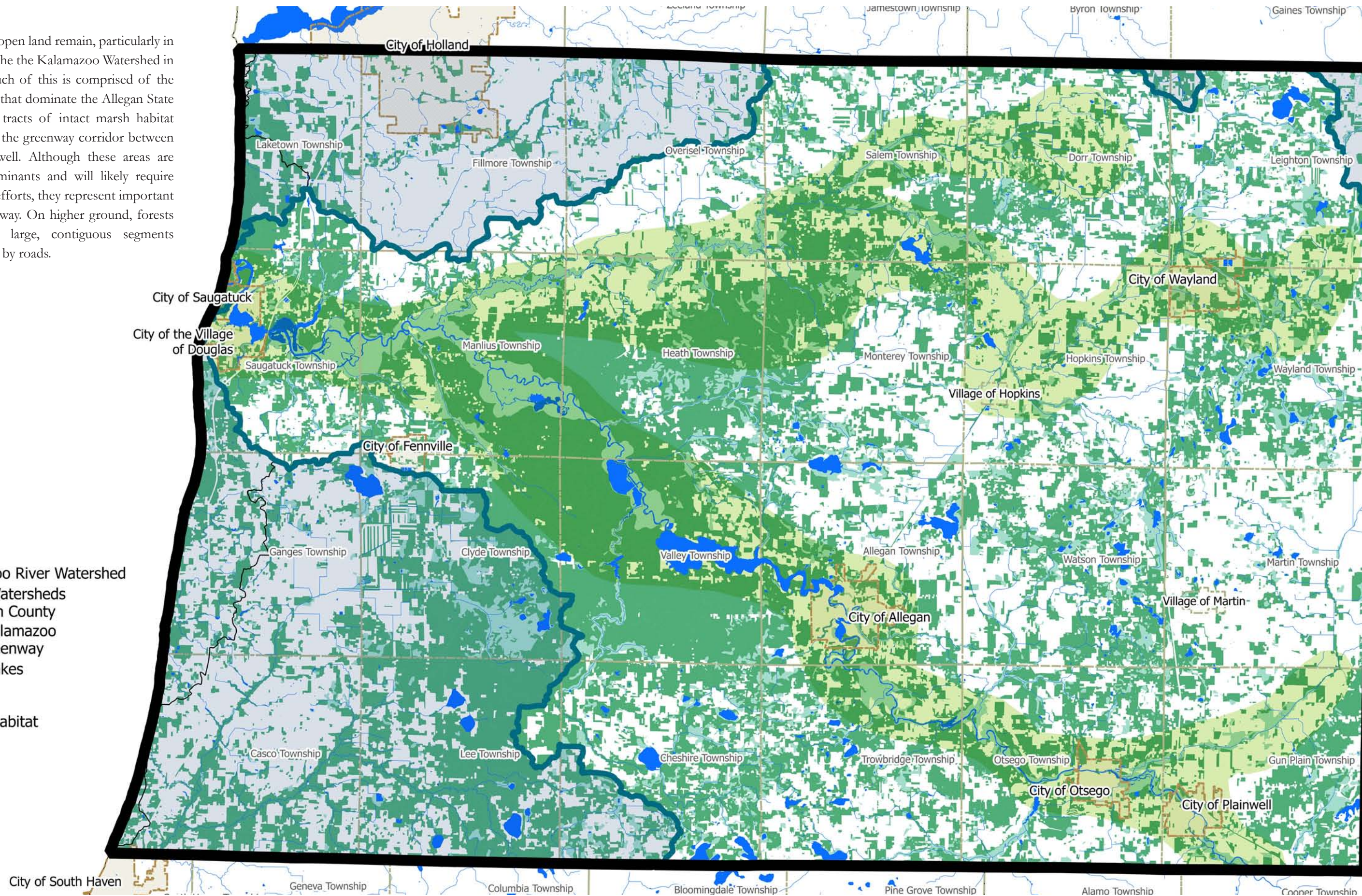


LAND USE MAP

Significant areas of open land remain, particularly in the western end of the the Kalamazoo Watershed in Allegan County. Much of this is comprised of the forest and wetlands that dominate the Allegan State Game Area. Large tracts of intact marsh habitat can be found along the greenway corridor between Douglas and Plainwell. Although these areas are impacted by contaminants and will likely require future remediation efforts, they represent important assets for the greenway. On higher ground, forests can be found in large, contiguous segments occasionally divided by roads.

Legend

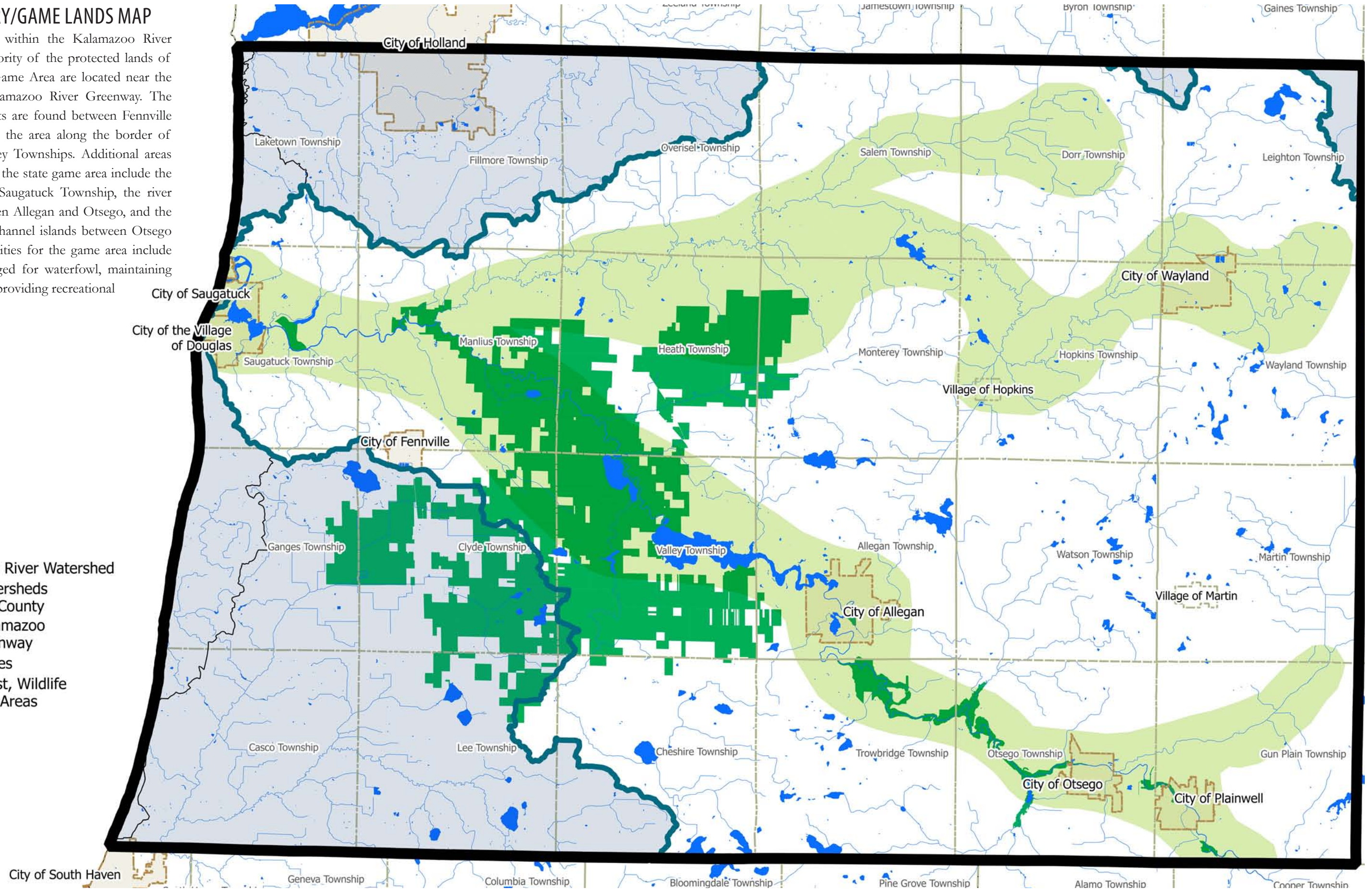
-  Kalamazoo River Watershed
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes
- Land Use**
-  Upland Habitat
-  Wetland



STATE FORESTRY/GAME LANDS MAP

While not entirely within the Kalamazoo River Watershed, the majority of the protected lands of the Allegan State Game Area are located near the middle of the Kalamazoo River Greenway. The two largest segments are found between Fennville and Allegan and in the area along the border of Heath and Monterey Townships. Additional areas managed as part of the state game area include the Webster Marsh in Saugatuck Township, the river bottomlands between Allegan and Otsego, and the wetlands and mid-channel islands between Otsego and Plainwell. Priorities for the game area include several areas managed for waterfowl, maintaining habitat quality, and providing recreational access to the river.





- Legend**
-  Kalamazoo River Watershed
 -  Other Watersheds in Allegan County
 -  Lower Kalamazoo River Greenway
 -  Inland Lakes
 -  State Forest, Wildlife and Game Areas






ECOLOGICAL RARITY INDEX MAP

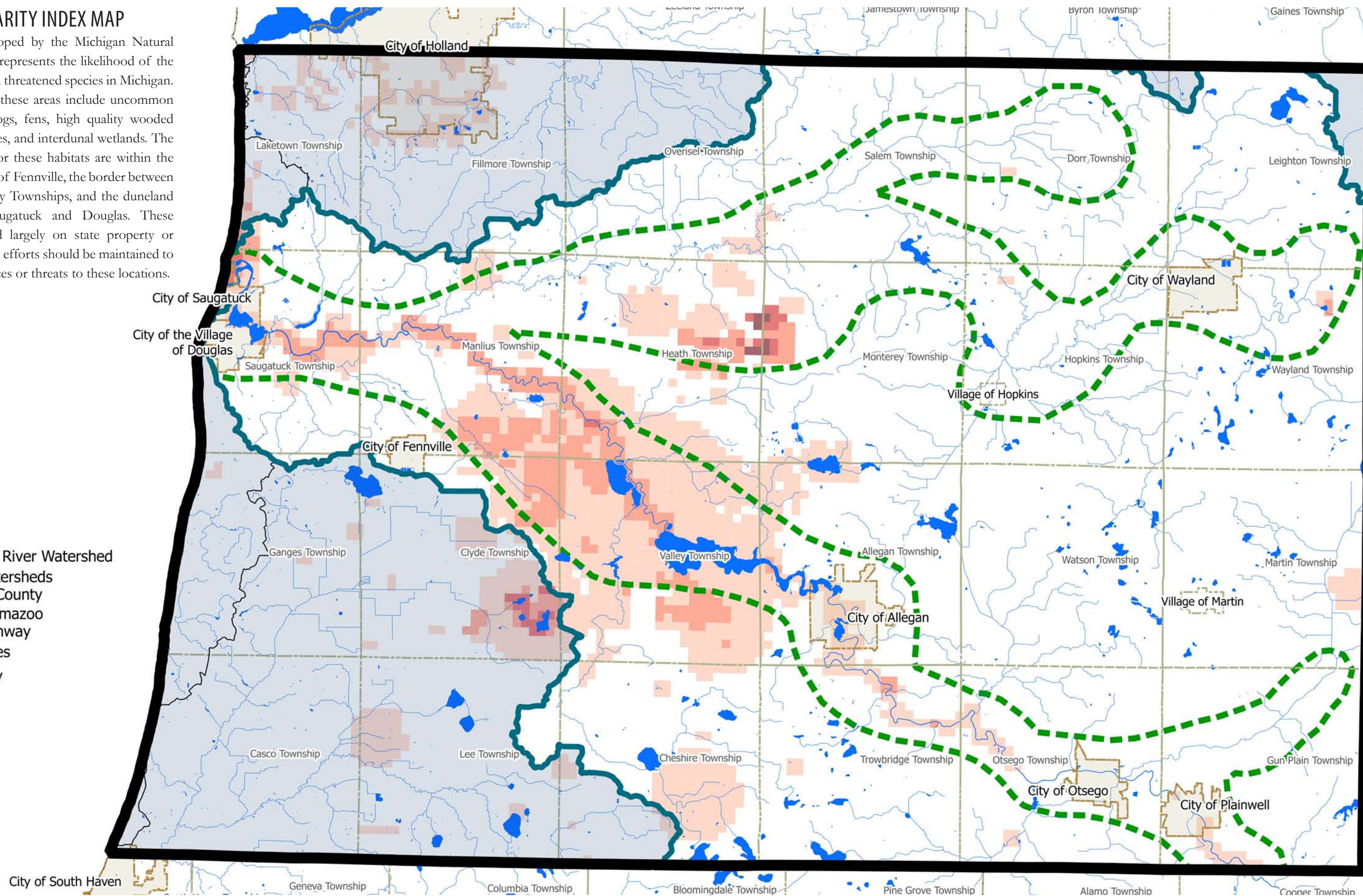
This dataset, developed by the Michigan Natural Features Inventory, represents the likelihood of the presence of rare and threatened species in Michigan. In Allegan County, these areas include uncommon habitats such as bogs, fens, high quality wooded wetlands, open dunes, and interdunal wetlands. The primary locations for these habitats are within the state game area east of Fennville, the border between Heath and Monterey Townships, and the duneland that surrounds Saugatuck and Douglas. These habitats are located largely on state property or other parklands, and efforts should be maintained to minimize disturbances or threats to these locations.

Legend

-  Kalamazoo River Watershed
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes

Ecological Rarity



-  Not Rare
-  Rare
-  Very Rare











TOPOGRAPHIC RELIEF MAP

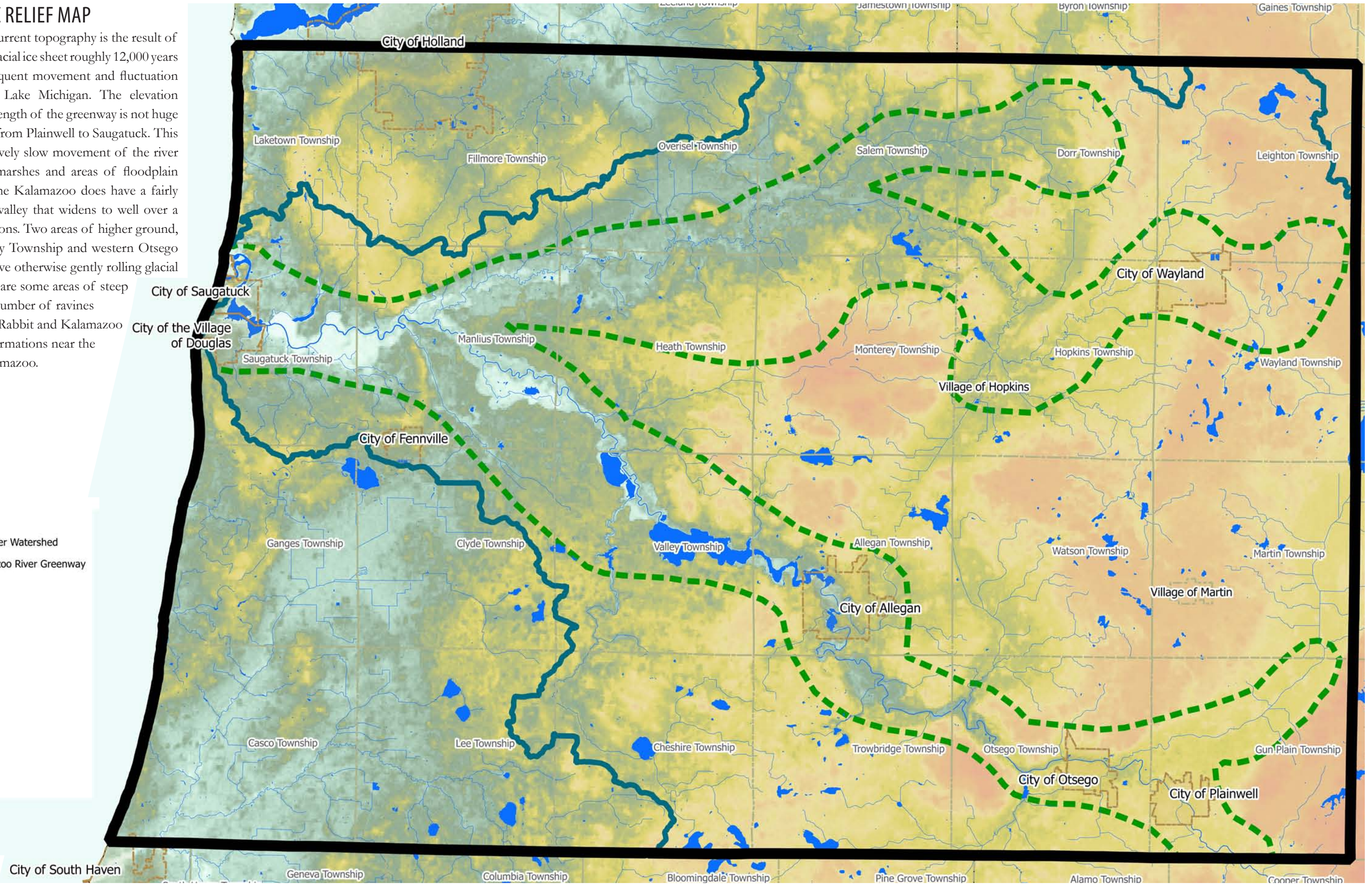
Allegan County's current topography is the result of the retreat of the glacial ice sheet roughly 12,000 years ago and the subsequent movement and fluctuation of its rivers and Lake Michigan. The elevation change across the length of the greenway is not huge - roughly 140 feet from Plainwell to Saugatuck. This results in the relatively slow movement of the river and several wide marshes and areas of floodplain along its banks. The Kalamazoo does have a fairly well defined river valley that widens to well over a mile in some locations. Two areas of higher ground, in central Monterey Township and western Otsego Township, rise above otherwise gently rolling glacial topography. There are some areas of steep relief, including a number of ravines that feed both the Rabbit and Kalamazoo Rivers and dune formations near the mouth of the Kalamazoo.

Legend

-  Kalamazoo River Watershed
-  Lower Kalamazoo River Greenway
-  Inland Lakes

Elevations

-  <574
-  623
-  666
-  718
-  767
-  823
-  1125
-  1217+



RECREATION AND PARK SPACE

The quantity and quality of existing natural features in Allegan County provide the backdrop for many high quality recreational activities along the greenway. Hunting, fishing, motorized and non-motorized boating, hiking, and other pastimes are all significant parts of these communities, and they were repeatedly brought up during plan development. Efforts to help sustain those high quality habitats along the river will help to preserve and improve these locales and help ensure that the corridor remains higher quality than many neighboring watersheds. The wide tract of land managed by the DNR contains beautiful forest, river, and marshland, already primed for recreation, with private and publicly held land nearby with high value as well. Excellent waterfowl habitat can be found in several wide, marshy expanses of the river, attracting nesting and migrating birds. Fishing opportunities range from the large, deep waters of

Lake Allegan to many favorite spots along the river. Sturgeon spawning habitat, salmon and steelhead running from Lake Michigan, and rare cold-water trout streams can also be found along the greenway.

There are already a number of parks and green spaces within the larger communities of Allegan County. Between the five cities and townships along the greenway, they have a total of 42 parks. However, only about half are along the river or within the greenway corridor, and most of these spaces are concentrated in the relatively confined spaces of city limits. There are a handful of parks managed by the county, and two state-operated recreation facilities in the Allegan State Game Area and Saugatuck Dunes State Park. As cited in the Allegan County Parks Plan, goals for the improvement of these communities include the increased development of trails and waterfront access, and concerns about lack of trails, safety, and funding.



Above: Allegan County Fairgrounds

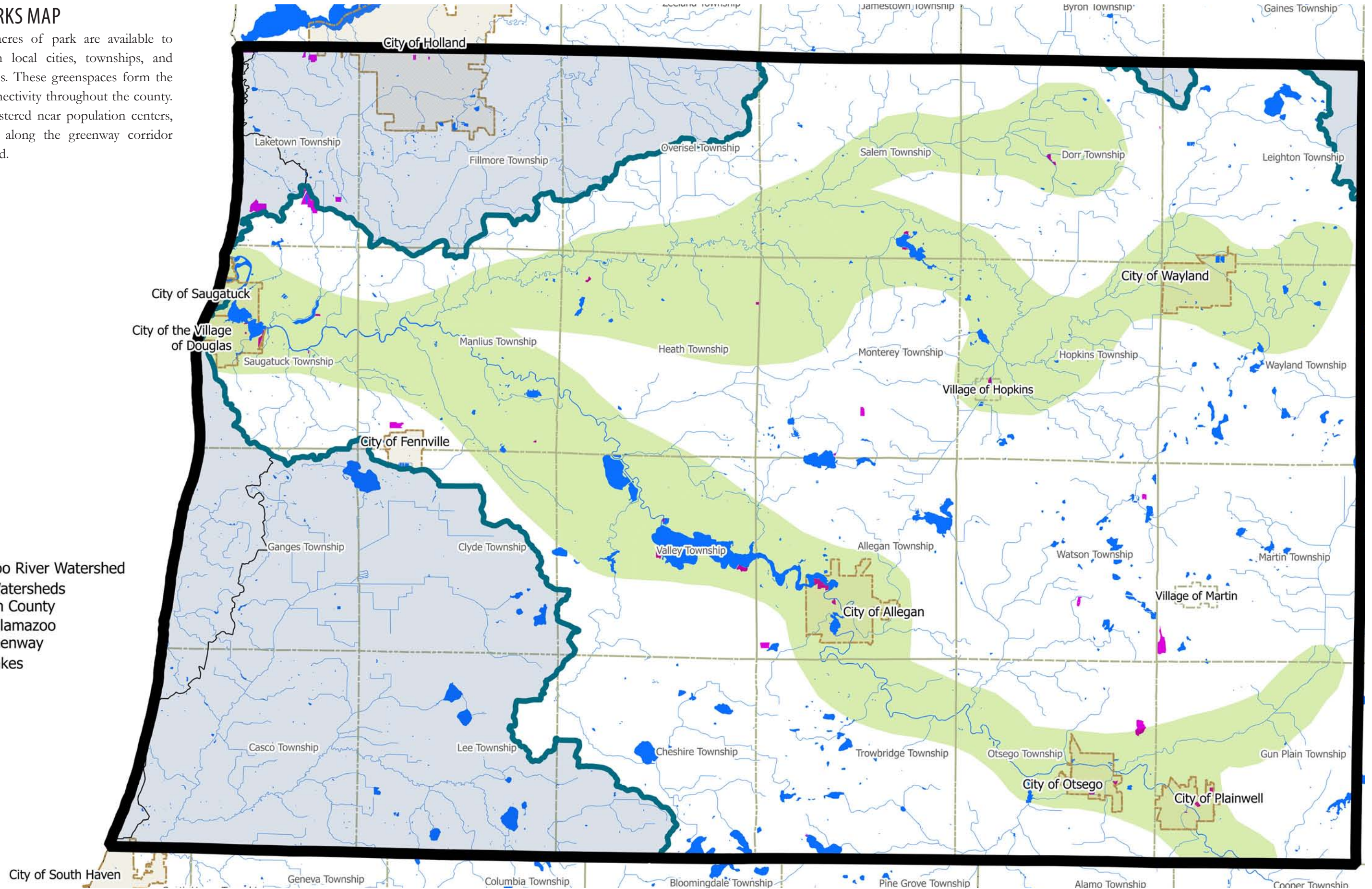
MUNICIPALITIES / TOWNSHIPS RECREATIONAL FACILITIES IN ALLEGAN COUNTY							
<i>(INFORMATION REFERENCED FROM ALLEGAN COUNTY'S RECREATION PLAN)</i>							
LOCATION	# OF PARKS	TOTAL ACRES	REC PLAN?	# OF STAFF	PLANS IN 5 YEARS?	TYPES OF IMPROVEMENTS PLANNED	RECREATION ISSUES
CITY OF ALLEGAN	8	78	YES	3.5	YES	RIVERFRONT RENOVATIONS / MT. BIKE TRAIL	TRAILS, BOAT ACCESS, IMPROVING EVENT SPACING / RECREATION ALONG RIVERFRONT
ALLEGAN TOWNSHIP	0	0	YES	0	YES	MNRTF GRANT FOR ACQUIS. & DEVEL. OF LAKE PROPERTY	LACK OF TRAILS
CASCO TOWNSHIP	1	20	YES	0	NO	NONE	FUNDING, MORE PARKING, EVENT CENTER
CHESHIRE TOWNSHIP	0	0	NO	NO RESP	NO RESP	NO RESP	NO RESP
DORR TOWNSHIP	3	20	IN PROG	NO RESP	NO RESP	NO RESP	NO RESP
CITY OF DOUGLAS	8	26	YES	NO RESP	NO RESP	NO RESP	NO RESP
CITY OF FENNVILLE	1	3	YES	0	NO	N/A	NO RESP
FILLMORE TOWNSHIP	1	20	YES	0	NO	N/A	LACK OF TRAILS, YOUTH & SENIOR REC
GANGES TOWNSHIP	1	<1	NO	0	YES	IMPROVE PARKING & WALKING ACCESS TO GLENN BEACH	PARKING, ACCESSIBLE PARKS, MORE ACCESS TO LAKE MICHIGAN
HEATH TOWNSHIP	2	15.5	YES	0	YES	IMPROVEMENTS TO SCHUTMAAT PARK	NO RESP
VILLAGE OF HOPKINS	2	4	NO	NO RESP	NO RESP	NO RESP	NO RESP
LAKETOWN TOWNSHIP	7	32.5	YES	0	YES	CONTINUE DEVEL. OF NEWEST PARK	TRAILS, YEAR ROUND REC, PROVIDING FOR ALL PHYSICAL ABILITY
LEE TOWNSHIP	0	0	NO	0	NO RESP	NO RESP	NO RESP
LEIGHTON TOWNSHIP	2	6	NO	0	NO	N/A	NO RESP
MANLIUS TOWNSHIP	0	0	NO	0	YES	DEVELOP REC PLAN	NO RESP
MARTIN TOWNSHIP	0	0	NO	NO RESP	NO RESP	NO RESP	NO RESP
MONTEREY TOWNSHIP	0	0	NO	NO RESP	NO RESP	NO RESP	NO RESP
CITY OF OTSEGO	3	98	YES	DPW STAFF	YES	UPGRADES TO MEMORIAL PARK	FUNDING
OTSEGO TOWNSHIP	0	0	NO	0	NO	N/A	NO RESP
OVERISEL TOWNSHIP	0	0	NO	NO RESP	NO RESP	NO RESP	NO RESP
CITY OF PLAINWELL	7	85	NO	DPW STAFF	YES	TRAIL EXTENSION	RIVER WALK EXTENSION, RIVER ACCESS, CONNECTING TO KVR TRAIL
SALEM TOWNSHIP	1	8	NO	0	YES	UPGRADES TO PARK	PARK AREA, SOFTBALL / BASEBALL
CITY OF SAUGATUCK	10	335.6	YES	20	YES	NEW PATH FROM PARK ST. TO OVAL BEACH	PEDESTRIAN SAFETY / CONNECTING TO OTHER BIKE TRAILS
SAUGATUCK TOWNSHIP	4	33	YES	0	YES	BLUE STAR TRAIL	CAPITAL REPLACEMENT, OPERATION FUNDING, VANDALISM / LITTERING
VALLEY TOWNSHIP	0	0	NO	0	NO	NO RESP	NO RESP
WATSON TOWNSHIP	0	0	NO	0	NO	N/A	NO FUNDING
CITY OF WAYLAND	5	32.5	YES	0	YES	ADD SPLASH PAD, ADD BARRIER FREE PLAYGROUND EQUIPMENT, INTER-URBAN TRAIL	FUNDING, AGING EQUIPMENT, ENCOURAGING USE
WAYLAND TOWNSHIP	0	0	NO	0	NO	NO	FUNDING

GREENWAY PARKS MAP

More than 1,000 acres of park are available to the public through local cities, townships, and private organizations. These greenspaces form the foundation for connectivity throughout the county. While most are clustered near population centers, future connectivity along the greenway corridor should be considered.

Legend

-  Kalamazoo River Watershed
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes
- Land Use**
-  Parks



GREENWAY TRAILS MAP

Trails currently located in Allegan County have a variety of uses, but largely do not connect or represent part of a cohesive system. Currently there are trails located at several parks, natural areas, and the state game area, used by pedestrians, horses, and snowmobiles. There are also additional sidewalks located within each of the cities along the greenway. There are no significant sections of trail that presently parallel the greenway, and it is not a high priority to connect the entire greenway with non-motorized path. However, increasing pathway in sections along the river, such as between Otsego and Plainwell or through Otsego Township into Allegan, could become sought-after assets.

Legend

Kalamazoo River Watershed

Others Watersheds in Allegan County

Lower Kalamazoo River Greenway

Inland Lakes

Trail Networks

Bicycle

Hiking

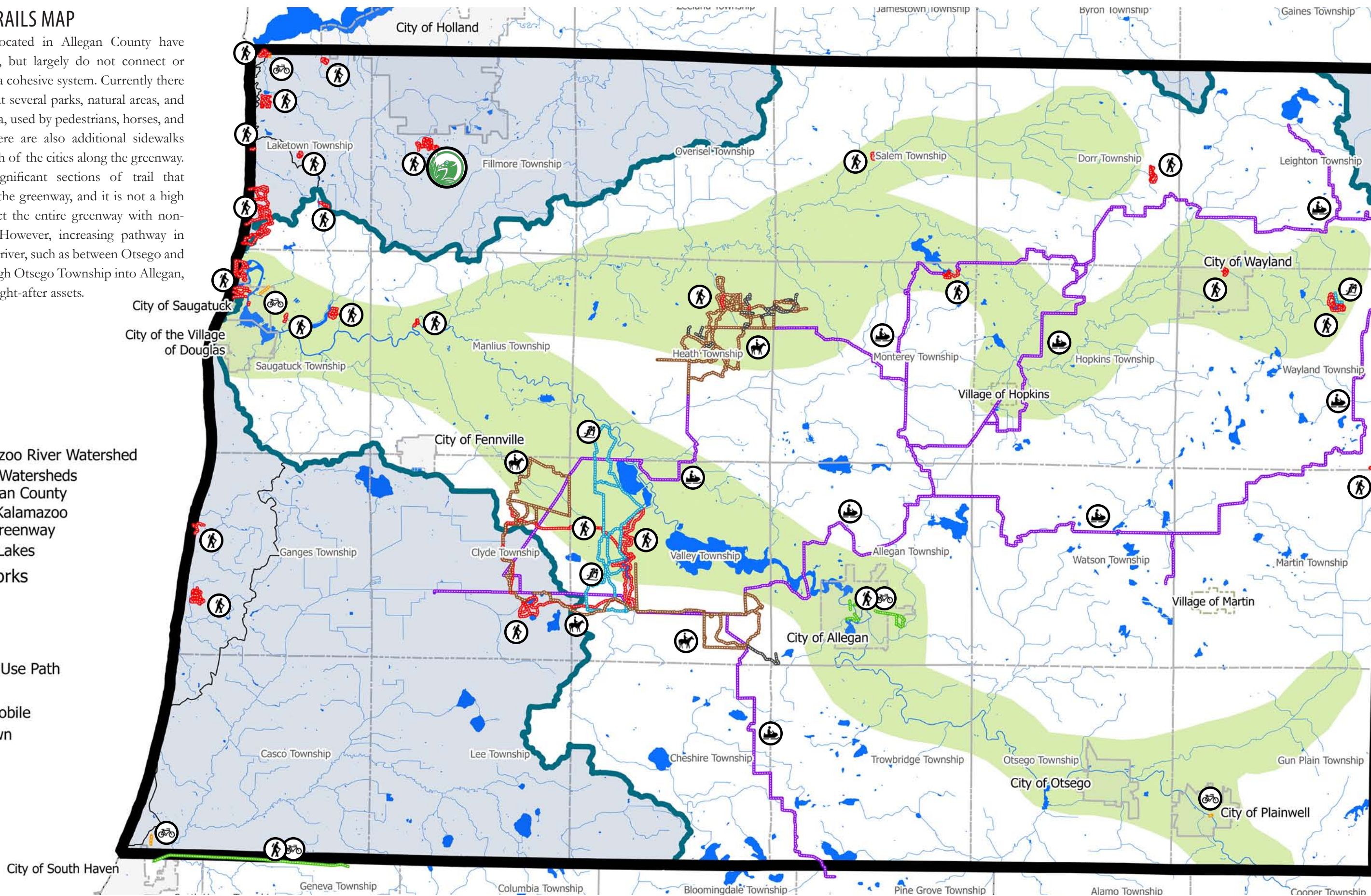
Horse

Shared Use Path

Ski

Snowmobile

Unknown





MAJOR ENVIRONMENTAL CONCERNS

Industry has shaped the history of the Kalamazoo River significantly, and not always for the better. Many of the communities, including Allegan, Otsego, and Plainwell, grew up with the river at the back or the edge of town, often used as a means of getting rid of waste from paper recycling and production. The legacy of several of these businesses has been the contamination that has been left behind, affecting waterfront properties as well as the streams themselves. The sediment contains PCBs and other trace chemicals that are hazardous to human health. While the water itself is safe for activities such as paddling and sport fishing (fish should not be eaten), the contamination often gives the river a worse reputation than it deserves.

The designation of the entire Kalamazoo River in Allegan County as part of an EPA Superfund site due to contamination of river sediments is certainly an encumbrance when it comes to planning and developing areas along the river, and has to some degree handcuffed communities from implementing community development and recreation plans until restoration is completed. While these sites and contaminated sediment are being systematically addressed by the EPA and the responsible parties through the Superfund program, the contamination is a factor that will impact ongoing planning and activities for decades to come. These cleanups, however, also provide possible means for partnerships and coordinated efforts that can result in improved recreational access and opportunities.

In addition to the contamination of sediments located along the river corridor, Lake Allegan is currently under a TMDL (total maximum daily load) for the nutrient phosphorus by the MDEQ. Phosphorus, which in excess can lead to algae blooms and degraded habitat in water bodies, can be traced back to both point sources (water treatment plants, factories) and non-point sources (farm fields, stream banks). The goal is to have total phosphorus levels in Lake Allegan reach no higher than 60 parts per billion during summer months; during TMDL development, these numbers ranged from 69 to 127 ppb. [See TMDL agreement for further details]

Regardless of the contamination issue, the excessive amount of sediment in the river remains an



Left: Sediment filled water near the mouth of the Rabbit River
Right: Stream restoration near Otsego

impediment. Even though the dam that forms Lake Allegan acts as a sediment trap, holding back excess sediment and minimizing the phosphorus that continues past the dam, sources of sediment and phosphorus remain a concern for the conditions along the river corridor. Many of the cleanup efforts that remain on the Kalamazoo River are significantly impacted by the dams scattered between Plainwell and Allegan, which have years of silt buildup behind them. Sources of sediment from both the Rabbit and

Kalamazoo River can impair downstream waters, and lead to sedimentation issues in Kalamazoo Lake and Harbor. Even though remediation will require either time or specific cleanup actions, sources of sediment and phosphorus throughout the watershed should be addressed to help minimize sedimentation.



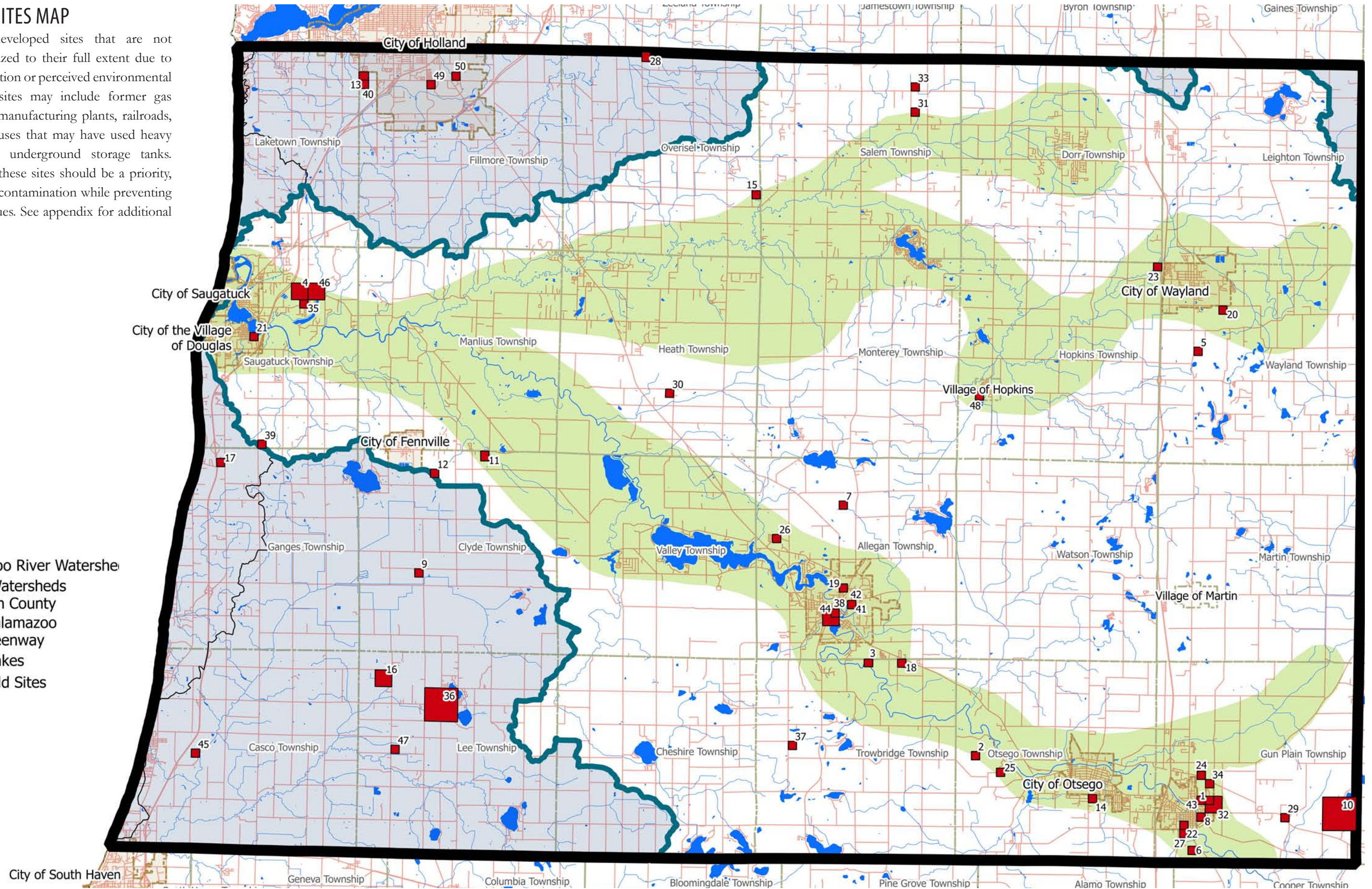
Upper Left: Dam removal work conducted by the EPA near Otsego
 Lower Left: Jewell Street waterfront, Otsego
 Right: Kalamazoo River in Plainwell

BROWNFIELD SITES MAP

Brownfields are developed sites that are not presently being utilized to their full extent due to historical contamination or perceived environmental conditions. These sites may include former gas stations, refineries, manufacturing plants, railroads, or other past land uses that may have used heavy chemicals or have underground storage tanks. Redevelopment of these sites should be a priority, working to address contamination while preventing further land use issues. See appendix for additional information.

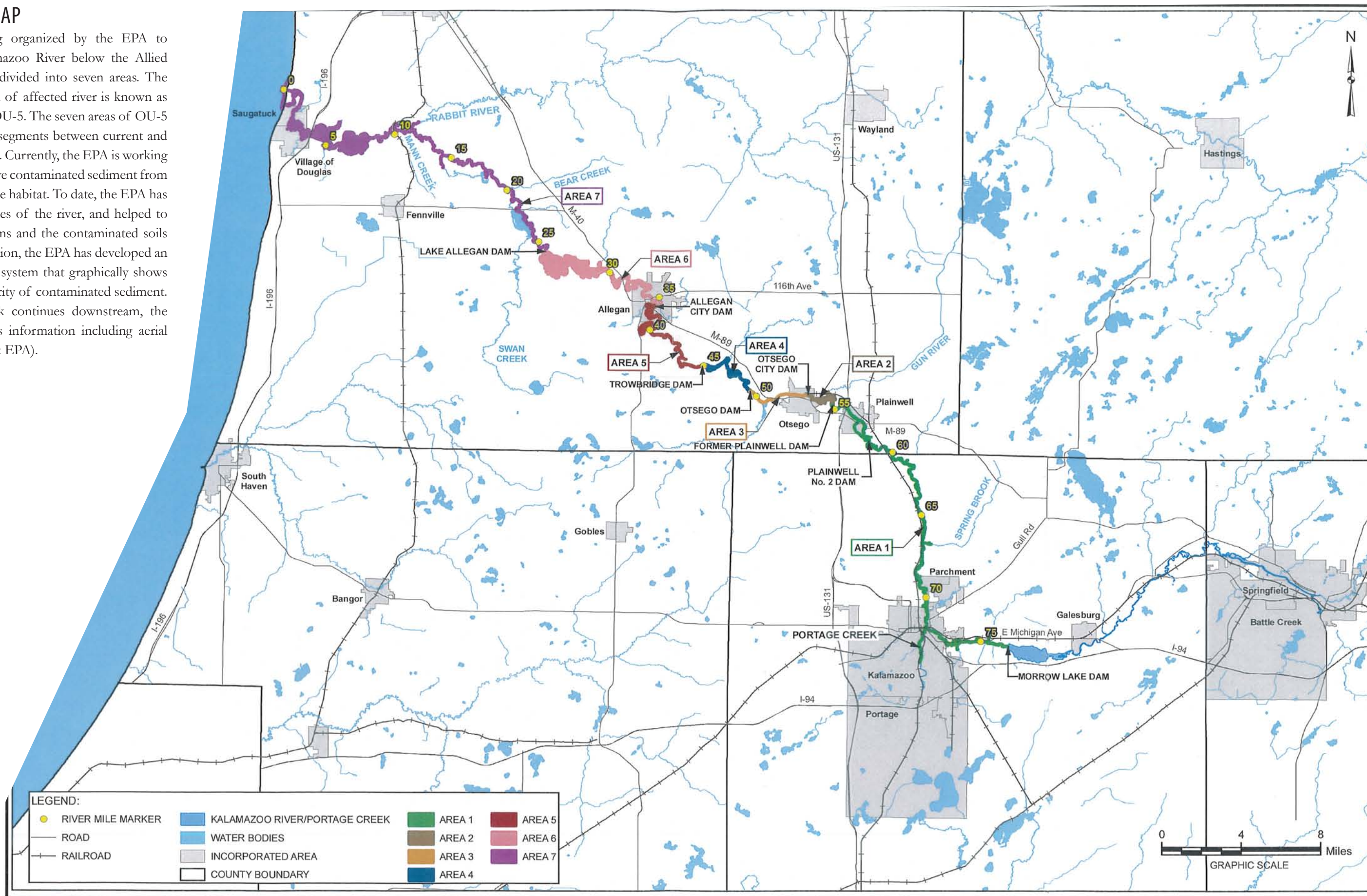
Legend

-  Kalamazoo River Watershe
-  Others Watersheds in Allegan County
-  Lower Kalamazoo River Greenway
-  Inland Lakes
-  Brownfield Sites



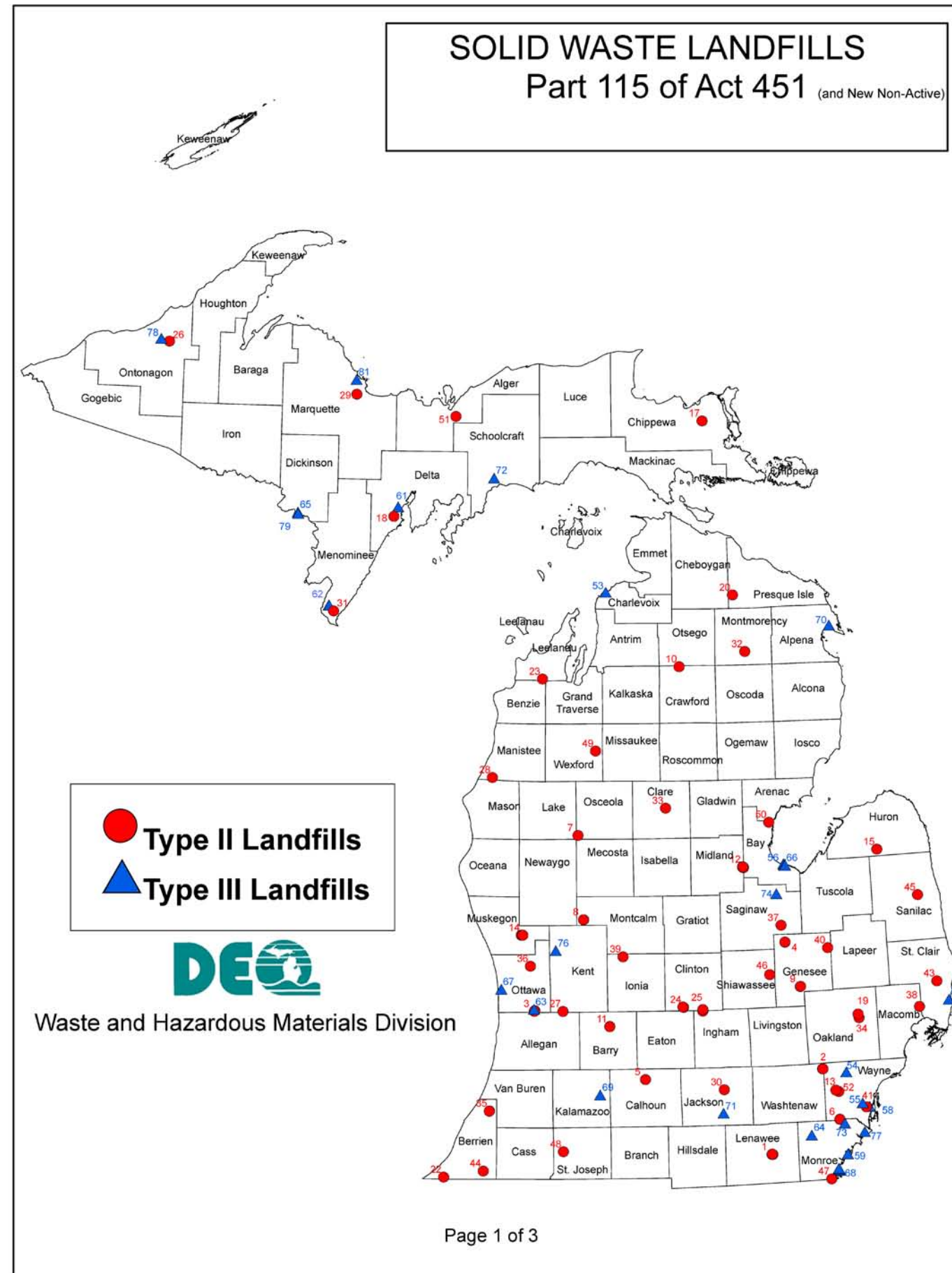
EPA CLEANUP MAP

Cleanup work being organized by the EPA to remediate the Kalamazoo River below the Allied Paper site has been divided into seven areas. The entire 80 mile stretch of affected river is known as Operable Unit 5, or OU-5. The seven areas of OU-5 are broken down by segments between current and former dam locations. Currently, the EPA is working downstream to remove contaminated sediment from the river and to restore habitat. To date, the EPA has cleaned up seven miles of the river, and helped to remove a pair of dams and the contaminated soils behind them. In addition, the EPA has developed an online map database system that graphically shows the location and severity of contaminated sediment. As remediation work continues downstream, the EPA will update this information including aerial photography (Source: EPA).



LANDFILL SITES MAP

Due to the contamination of Kalamazoo River sediment, any sediment dredged from the river will have to be stored in solid waste landfills that can accommodate them. Two regional locations have been designated to receive materials based on contamination level. For sediment up to 50ppm PCBs they can be brought to Ottawa County Farms Landfill in Coopersville, MI or Waste Management Inc' Autumn Hills Landfill in Zeeland, MI. While the option to build a storage facility for contaminated sediment in Saugatuck Harbor could be considered, the one-time cost of placing any dredged materials into a regional landfill may prove to be the most expedient option should a drop in lake levels in the short term necessitate dredging (Map source: Michigan DEQ).





THE PLAN

SETTING THE VISION

OVERARCHING GOALS

The Lower KRG plan is designed to layout a vision for the continued improvement of the river corridor for the benefit of the communities that lie along it. Through this plan, community members and visitors will have better ways of connecting with the riverfront and its communities.

To accomplish this, a broad, adaptive set of strategies have been laid out to provide strong but flexible guidelines to help project partners accomplish these goals:

- Provide the means and opportunities to improve recreational assets and access along the river corridor while protecting and preserving existing high quality resources
- Add opportunities for education – passive and active interpretation and use of different media to ensure the success of projects, safety of visitors, and to further share

- information of ecological, historical, and cultural significance
- Work on improving environmental quality along the rivers and their watersheds, with state and local partners, where feasible and appropriate, while coordinating with federal efforts
- Implement best practices to reduce stormwater, sediment, and nutrient issues within the Kalamazoo Watershed
- Implement projects with an eye toward economic development for the area while maintaining the character of the communities
- Protect and preserve existing areas of high quality habitat

Throughout our information gathering and public input process, concerns were raised about the environmental quality of the river. Most often, the ongoing Allied Paper Superfund Site cleanup and the associated cleanup efforts and their wide ranging impact on future river sites was repeatedly expressed.

The cleanup, led by the EPA and responsible parties, will likely continue to take place over the coming decades. While there are other concerns that affect habitat and water quality that can be addressed -- including non-point sources of sediment and nutrients, altered hydrology, and invasive plant and animal species -- holistic restoration of the river corridor will be delayed until these cleanups are completed. In the meantime, addressing the other issues above through habitat management, green infrastructure, and education can improve both the greenway corridor and the reputation of the river, which in turn will increase its use, health and value.

Beyond site specific projects at individual sites, there are some broader efforts that can be made within regions across the greenway.

“The Greenway Master Plan will be the bedrock for local governments to use in getting grants to increase economic development, recreation, and conservation of the Kalamazoo River.”

*Michael VanDenBerg, Supervisor
Gun Plain Charter Township*

TYPES OF PRACTICES AND IMPROVEMENTS

This planning report identifies a variety of improvements and practices that are both specifically and generally applied throughout the greenway. The broad categories are listed here to provide a context and understanding of the possibilities of how they might be employed.



AGRICULTURAL BEST MANAGEMENT PRACTICES

On farmland within these areas, encourage the adoption of practices that will help to minimize the amount of sediment and nutrients reaching the streams while mimicking natural flow of water to that of pre-settlement conditions. These may include, but not be limited to, no-till and conservation tillage farming, cover crops, buffer strips, tile drain control structures, and two-stage channel construction.



GREEN STORMWATER INFRASTRUCTURE

Utilizing techniques to manage urban runoff from hard surfaces to infiltrate rainwater. This will especially help in the areas that are upstream of Lake Allegan to help address phosphorus levels. This can include things such as rain gardens, porous pavement, and stormwater detention areas.



INFORMATION AND EDUCATION (I&E) OPPORTUNITIES

These can be tailored based on a specific site, but the goal would be to increase appreciation and awareness for the river and stops along it. These can include interpretive signage, safety information, river monitoring and conditions, fishing guidelines, wayfinding maps, or educational programs. An increase in signage - informational, interpretive, and wayfinding - can provide visitors with a better experience. Signs can provide an increased sense of safety, guidelines for site use, better understanding of sites of ecological or cultural importance, and direct them to other nearby parks and greenspaces for further exploration. Unifying parks and communities through collaborative marketing efforts can also generate benefit all partners.



INVASIVE SPECIES MANAGEMENT

Important all along the corridor, monitoring for and rapid response to invasive species threats along the corridor will help to minimize efforts. A great deal of work has been done at numerous locations already, and the focus should be to identify new threats quickly and help to keep the areas of highest quality in such a condition. Species of concern already found along or near the greenway corridor include phragmites, narrow leaf cattail, purple loosestrife, and Japanese knotweed.



PRESERVE EXISTING HIGH QUALITY HABITAT

Chief among the priorities along the greenway corridor should be preserving the areas that are rare and hold high ecological value. This can include habitats such as interdunal wetlands, fens, and bogs, or larger tracts of marshes, forest, and dunes that are highly contiguous. This should include invasive species monitoring and carefully preventing overuse of these sites.



ACCESSIBLE LAUNCHES

While there are already a good number of access point along the river for both motorized boats and non-motorized vessels, additional sites and clarification of site use were repeated as wants during input sessions. This should include additional access sites at locations where there are large gaps between locations, better defining the type of vessel utilized for each location (fishing boat, outboard, kayak, canoe, etc), and incorporate handicap accessible launches at those locations that do not already have them.



NON-MOTORIZED PATH CONNECTIONS

While likely impractical to implement across the entire length of the greenway, adding trails and pathways in select locations can improve interconnectivity between communities and be an attraction for walkers, joggers, and cyclists who seek short to moderate length trips. These can connect to existing pathways and sidewalks, as well as other trail networks that pass through the greenway corridor, such as the Blue Star Trail and River to River Trail.



FACILITY IMPROVEMENTS

This a broad category that can include a number of additions to existing sites to make them more user friendly. This can include a number of improvements, including restroom facilities, parking, shelters and picnic areas, defined launches, maps, and signage.



CONTAMINATED SEDIMENT REMOVAL

Due to the PCB contamination of sediment within the Kalamazoo River channel, the river sediments will need to be cleaned up to safe levels. The EPA effort is systematic and ongoing, working from upstream areas to downstream areas. While this effort will not be directly managed as part of the KRG project, the restoration work that does take place will provide opportunities to create high quality habitat and have infrastructure in place to greatly improve recreational activities.


GREENWAY SEGMENTS MAP

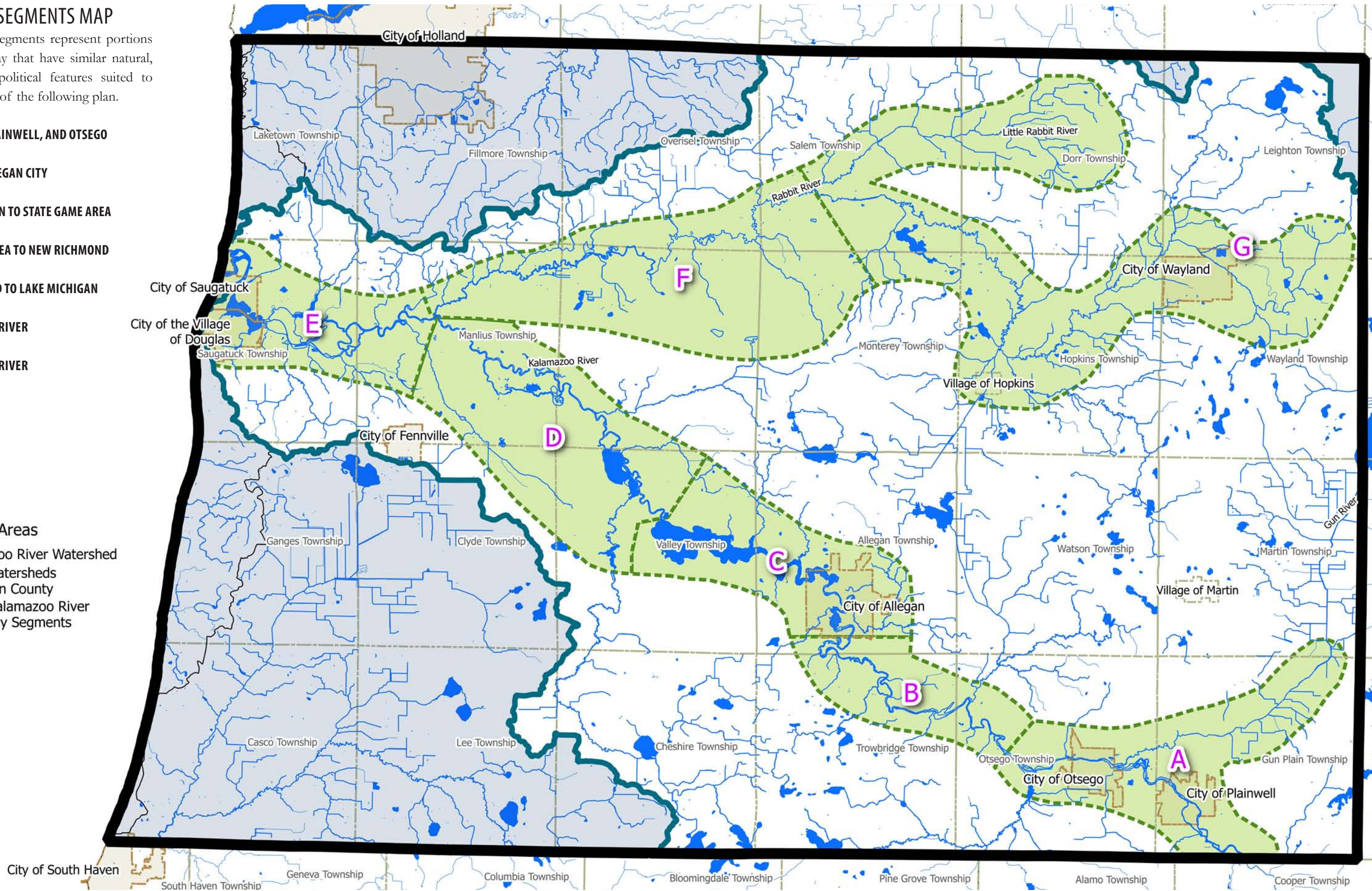
These lettered segments represent portions of the Greenway that have similar natural, geographic or political features suited to implementation of the following plan.

- A: GUN RIVER, PLAINWELL, AND OTSEGO**
- B: OTSEGO TO ALLEGAN CITY**
- C: CITY OF ALLEGAN TO STATE GAME AREA**
- D: STATE GAME AREA TO NEW RICHMOND**
- E: NEW RICHMOND TO LAKE MICHIGAN**
- F: LOWER RABBIT RIVER**
- G: UPPER RABBIT RIVER**

Legend

Watershed Areas

-  Kalamazoo River Watershed
-  Other Watersheds in Allegan County
-  Lower Kalamazoo River Greenway Segments



SEGMENT A: GUN RIVER, PLAINWELL, AND OTSEGO

Beginning in Plainwell and the surrounding Gun Plain Township, there are already several parks and greenspaces that take advantage of the waters that split the town. Between the main channel of the river on the east and Mill Run to the west, an emphasis has been placed by “The Island City” to improve access to the river and create bike lanes and pathways. Park spaces include Fannie Pell Park, Hicks Park, and Sherwood Park, with connecting bike lanes and the Riverwalk Trail providing destinations for residents. Surrounding Gun Plain Township has relatively limited pathways, and increasing the amount of both unimproved, natural trails and paved pathways was described as a desire by residents. Gun Plain’s Park and Recreation Plan notes the desire for more waterfront access for fishing, park space, and walking access, which could be located along the Kalamazoo or Gun rivers. Otsego also has improved pathway along the river, notably between Jewell and Farmer Streets, but much of downtown is further off the river than

Plainwell. Otsego’s recent waterfront plan calls for additional infrastructure, including more parking, a farmer’s market, pedestrian overlooks and bridges, and better boat access. Plainwell’s location between Grand Rapids and Kalamazoo also represents a waypoint along a future “River to River Trail” between the two metropolitan areas.

Connectivity issues remain in and between these three jurisdictions. US-131 runs between Plainwell and Otsego, with the busy M-89 corridor connecting the two. There is a large built up area on the west side of US-131 with a number of stores and restaurants that serve the two communities. Currently, there is a non-motorized pathway that crosses the US-131/M-89 interchange, however heavy traffic and numerous crossings and driveways pose safety questions. The river corridor, to the north of this business area, provides potential for non-motorized pathway and greenspace along its southern edge that could not only help to connect the communities of Otsego and Plainwell,

but provide a destination for recreation that could be utilized by customers, employees, and drivers travelling the US-131 corridor. While an underpass under US-131 on the south bank of the river could be a future option for a wider, more scenic connection, utilizing the existing overpass along M-89 before finding a path to the river would be more immediate and cost effective.

Kayaking has become increasingly popular along this stretch of the river, with a launch in the middle of downtown Plainwell at Fannie Pell Park and river access also at Sherwood Park. A small parking area at the end of Jewell Street in Otsego presents a small pullout area and portage around the dam at the Otsego Paper site. However, an additional nearby access point would be desired in the Plainwell/Gun Plain/Otsego area. Facilities such as safe and accessible launch points, restrooms, and river information would greatly benefit this stretch of river. This would also make emergency river access easier for local first

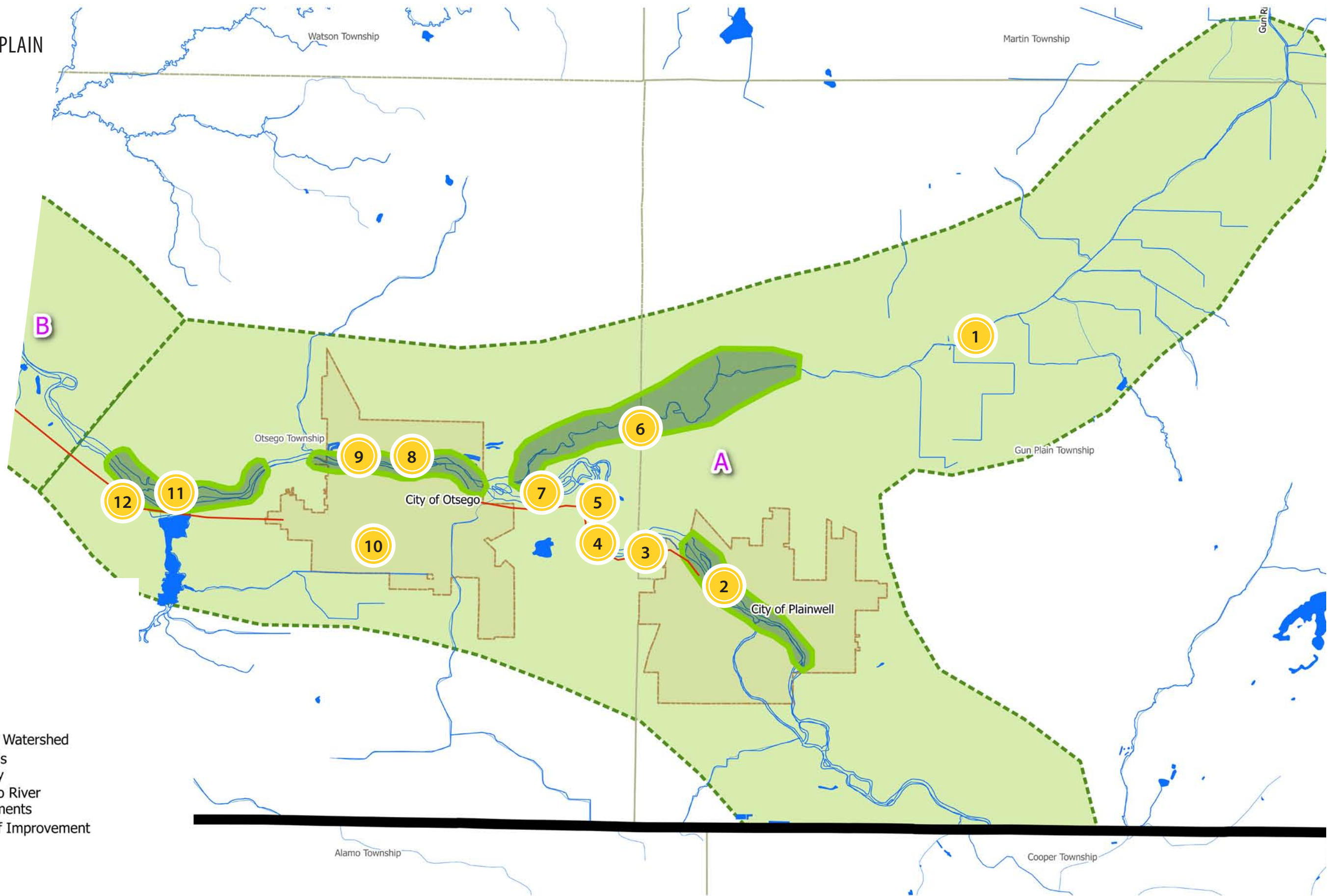
responders.

Numerous riverfront sites are presently locked into usage by current or former industries, including paper mills in Plainwell and Otsego. The large marshy area east of Otsego represents an important ecological asset. Due to contamination cleanup efforts, the area likely will not have a great deal of recreational value until well after these efforts are finished. However, ongoing management steps should be taken to ensure that the main river channel is open to paddlesports; education efforts are made to update visitors and residents on site history; and conditions for safety and habitat are managed to prevent these locations from simply becoming repositories for invasive species.

Below: Riverwalk Park, Plainwell



SEGMENT A: OTSEGO/ PLAINWELL/GUN RIVER PLAIN MAP



Legend

Watershed Areas

- Kalamazoo River Watershed
- Other Watersheds in Allegan County
- Lower Kalamazoo River Greenway - Segments
- Proposed Area of Improvement

1 GUN RIVER WATERSHED



- Implement agricultural best management practices in Gun River watershed within Gun Plain Township

2 WATERFRONT REDEVELOPMENT DOWNTOWN PLAINWELL



- Continue redevelopment of waterfront property in Plainwell around former industrial sites
- Address appropriate and necessary cleanup of sites
- Incorporate waterfront into site redevelopment

3 US 131 UNDERPASS



- Determine feasibility and potential for non-motorized underpass under US-131
- Look at providing safer non-motorized route between Otsego, Plainwell, and adjoining townships

4 MARSH INVASIVE SPECIES



- Continue EPA cleanup efforts around former dam site near 12th Street
- Monitor and treat for non-native species in the area

5 PARK & ACCESS POINT



- Create small park and access point to river at north end of 12th Street
- Include possible kayak launch, wildlife viewing area, and interpretive signage
- Development should not impact previously completed restoration work by EPA

6 GUN RIVER CORRIDOR



- Protect existing green corridor along Gun River in Otsego and Gun Plain Townships
- Focus on area from 10th Street to river mouth
- Seek small waterfront park/access point in Gun Plain Township

7 CONNECTING PATHWAY



- Construct non-motorized pathway along river between Otsego and Plainwell
- Focus on areas on south side of river
- Look for feasible areas for safe route connecting to but behind development along M-89 corridor

8 JEWEL STREET ACCESSIBLE LAUNCH



- Install accessible launch along waterfront, likely at Jewell Street road end
- Ensure safe portage route around Otsego City dam

9 OTSEGO WATERFRONT



- Waterfront development and improvements per Otsego's waterfront master plan
- Improved trails, parking, and waterfront access
- Add wayfinding and interpretive signage along waterfront trail

10 GREEN STORMWATER INFRASTRUCTURE



- Encourage adoption of green stormwater ordinances
- Use green infrastructure where possible on development projects

11 PINE CREEK ACCESSIBLE LAUNCH



- Make Pine Creek impoundment area primary access point to this stretch of river
- Improve signage in area to direct boat traffic here, avoiding private property
- Coordinate with EPA cleanup activities for potential infrastructure improvements

12 CONTAMINATED SEDIMENT REMOVAL



- EPA continuing ongoing stream restoration work around former dam site
- Removing contaminated sediment and restoring stream banks





SEGMENT B: OTSEGO TO CITY OF ALLEGAN

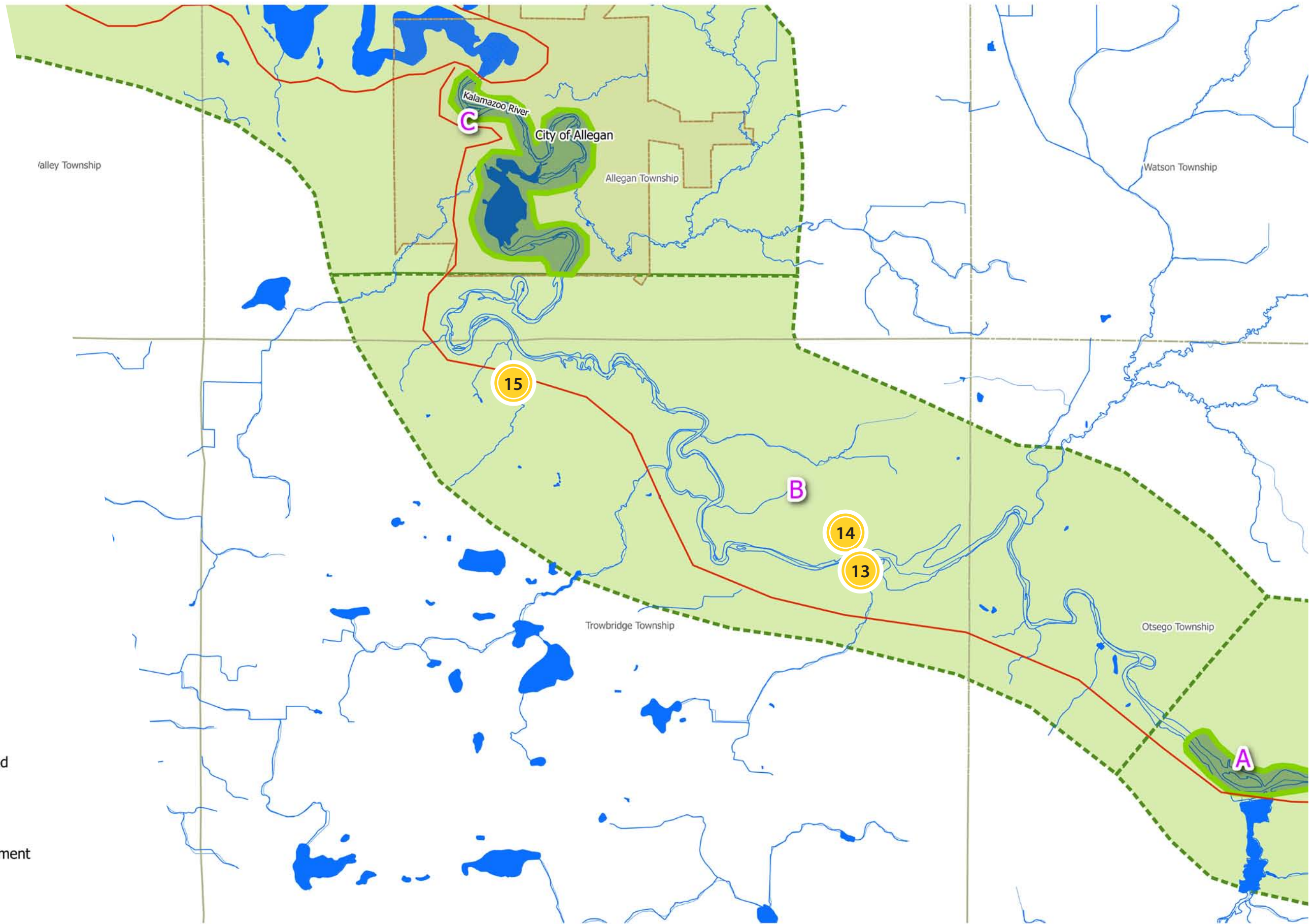
Downstream of Otsego are a number of small dams on an otherwise relatively undeveloped stretch of river. On the western outskirts of Otsego is the impounded mouth of Pine Creek, which is, for many, a significant access point to both the creek and the river. Recent work was conducted by the EPA in conjunction with the Department of Environmental Quality (DEQ) and Department of Natural Resources (DNR) to remove the Otsego (Township) dam that was located along River Road near the Bittersweet Ski area. Streambank restoration work was done on both sides of the river, and while more work is still needed, opportunities exist for improving an access point along this stretch of river. There are several road ends and pull-offs that see illegal river access, so a larger, more designated access would provide safety, education opportunities, and lessen impacts on other areas that are ecologically sensitive or on private property.

While there is an opportunity for expansion of pathway or greenspace along the south side of the river, neighbor and environmental impacts would need to be further assessed. However, this would provide a destination for residents of the west side of Otsego. It could also be the eastern entrance to an improved non-motorized pathway or bike lane on the south side of the river that could connect as far as the city of Allegan.

The planned removal of the Trowbridge Dam near 26th Street. This work will be extensive, and represents an opportunity to potentially expand and improve river access from 26th Street. Like the upstream former dam site in Otsego Township, further work will be needed to complete ecological restoration and remove contaminated sediment. Much of the the immediate river corridor in this area is already under control of the DNR, and will require some additional ecological restoration and control for invasive species. The crossing near 26th Street does represent a future access point following restoration activities.





Where the river wraps around much of the center of the city of Allegan there are multiple places for people to connect with the river. The city, which was built largely with the river at its back, has begun to embrace the waterfront as an asset. Extensive boardwalk and pathways connect Hanson and Mahan parks on the south side of downtown, with boardwalk connecting the two and a zip line spanning the river. Jaycee Park and the Trestle Trail over the river are on the north side of town. Identified as part of the Downtown Riverfront Development Project, further enhancements should be made to increase usage of the river, while ensuring safe usage around the Allegan City Dam and the Mill District. While there is a good deal of connection within the city, opportunities exist to connect to surrounding townships.

SEGMENT B: OTSEGO TO CITY OF ALLEGAN MAP



Legend

Watershed Areas

-  Kalamazoo River Watershed
-  Other Watersheds in Allegan County
-  Lower Kalamazoo River Greenway - Segments
-  Proposed Area of Improvement

13 26TH STREET ACCESSIBLE LAUNCH



- Following removal of dam and related activities, improve access to river off 26th Street at current EPA staging area

14 TROWBRIDGE DAM REMOVAL



- Remove Trowbridge Dam near 26th Street bridge
- Restore surrounding stream

15 ALLEGAN TO OTSEGO CONNECTOR



- Explore potential for non-motorized pathway connecting Allegan and west side of Otsego

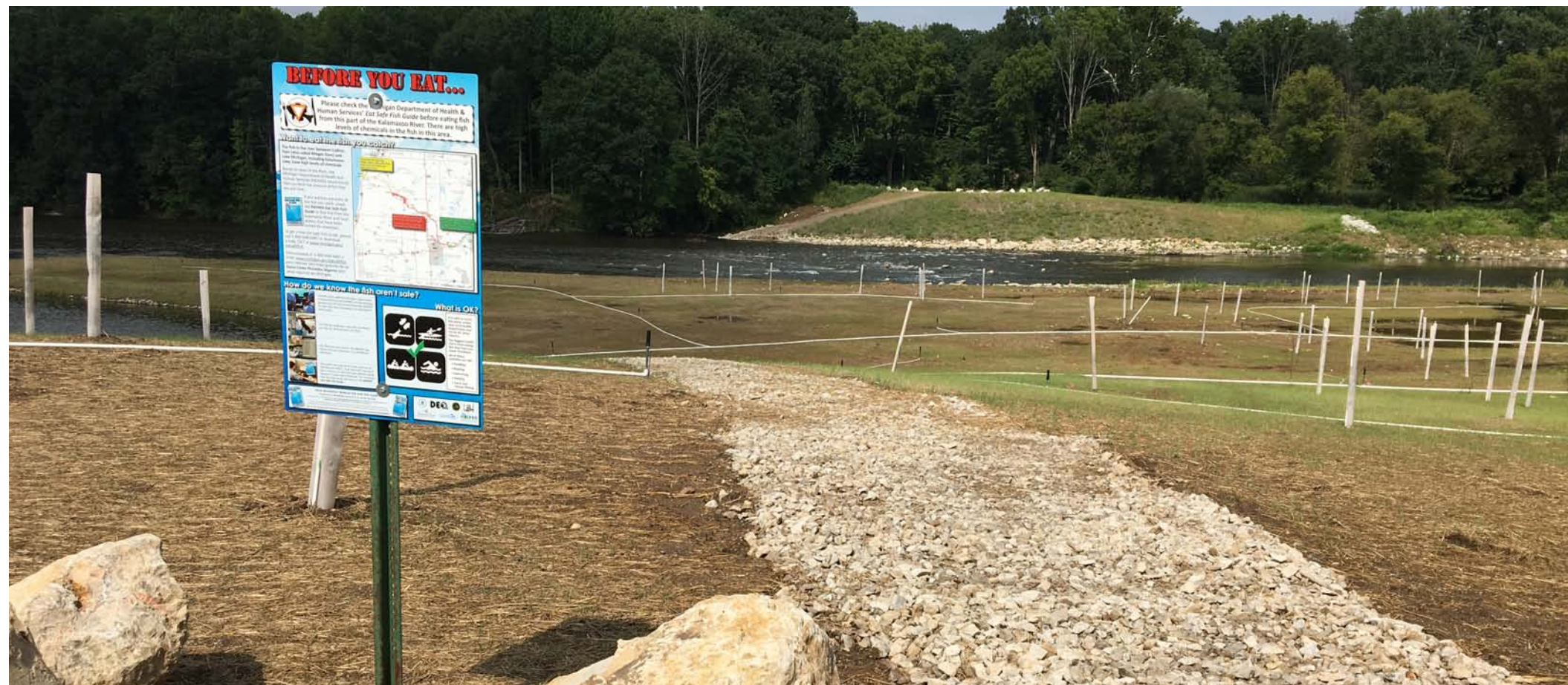


Image Credits

Lower Left: Trowbridge Dam Removal Project

Lower Right: https://belding.mi.us/belding_parks.php

Above: Environmental Protection Agency



SEGMENT C & D: CITY OF ALLEGAN TO NEW RICHMOND

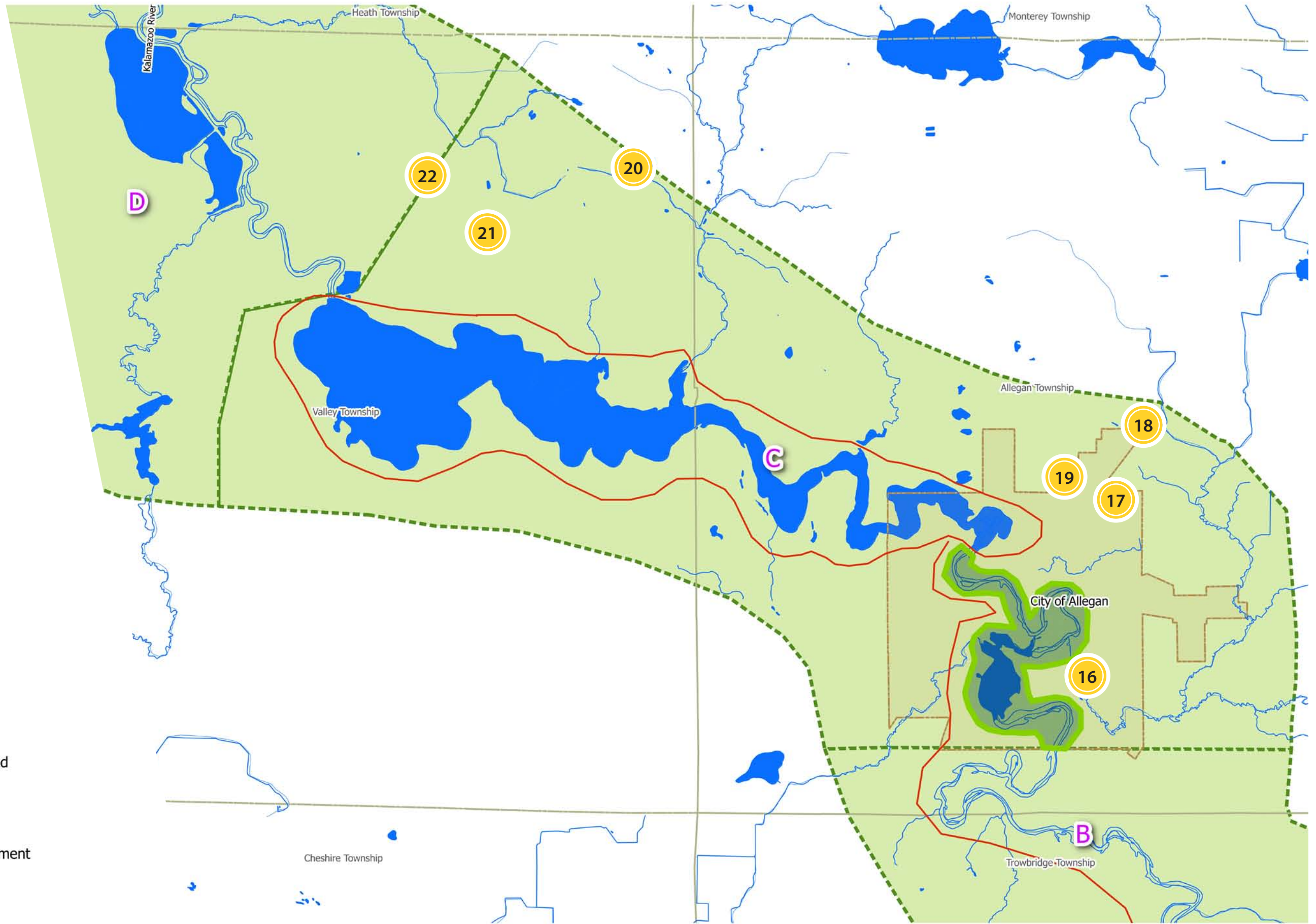
West of Allegan is the impounded Lake Allegan. This area begins where the urban area around Allegan meets the widening river near the north end of town and the county fairgrounds. Improving the river connection between the city and Lake Allegan can make both areas recreational gems for the area. Formed behind the dam at Calkins Bridge, the two square mile lake is surrounded by home sites, and is a popular fishery. The dam at the end is operated by Consumers Energy, and has nearby boat launches. Ensuring that the site is able to be used safely by both motorized and non-motorized boats, and that paddlers are able to safely portage around the dam, should be ongoing priorities. The size and length of the lake and proximity to Allegan make opportunities for a non-motorized pathway around the lake. Any such pathway should utilize existing right-of-ways and avoid private property. Ecologically, efforts should be continued to reduce levels of phosphorus in the lake and improve water quality. Ongoing

efforts to address the phosphorus TMDL by reducing input levels from the surrounding watershed should be continued and supported.

The Allegan State Game Area comprises the majority of the river frontage and adjacent land between Calkins Dam and the confluence with the Rabbit River near New Richmond. This relatively untouched area represents the largest tract of cohesive habitat in the county, and as such should have minimal development. Designation as a wild river by the Michigan DNR should result in minimal development of the area, protecting in-stream and river valley habitat. While there should be little if any added points for public access to the river, there was mention of the desire for added facilities, signage, and restrooms at some of the connection points, such as the M-89 launch east of Fennville. The large marshes, Ottawa and Swan Creek, represent important wildlife habitat, and should be continued to be managed for invasive species.



SEGMENT C: CITY OF ALLEGAN TO STATE GAME AREA MAP



Legend

Watershed Areas

- Kalamazoo River Watershed
- Other Watersheds in Allegan County
- Lower Kalamazoo River Greenway - Segments
- Proposed Area of Improvement

16 GREEN STORMWATER INFRASTRUCTURE



- Encourage adoption of green stormwater ordinances
- Use green infrastructure where possible on development projects

19 DOWNTOWN ACCESSIBLE LAUNCH



- Install an additional barrier-free kayak launches near downtown Allegan

22 FACILITY IMPROVEMENTS



- Ensure designated areas and rules defined for safe use by both motorized and non-motorized boat traffic
- Install interpretive and wayfinding signage at parking areas

17 MILL DISTRICT IMPROVEMENTS



- Add additional wayfinding and interpretive signage around waterfront area
- Create natural areas in the Mill District
- Focus on cultural and natural history topics of note

20 LAKE ALLEGAN CORRIDOR



- Consider non-motorized pathway around Lake Allegan and Kalamazoo River
- Utilize existing right-of-ways adjacent to roadways
- Connect into City of Allegan
- Add observation points with interpretive signage along route

18 RIVERFRONT INVESTMENT

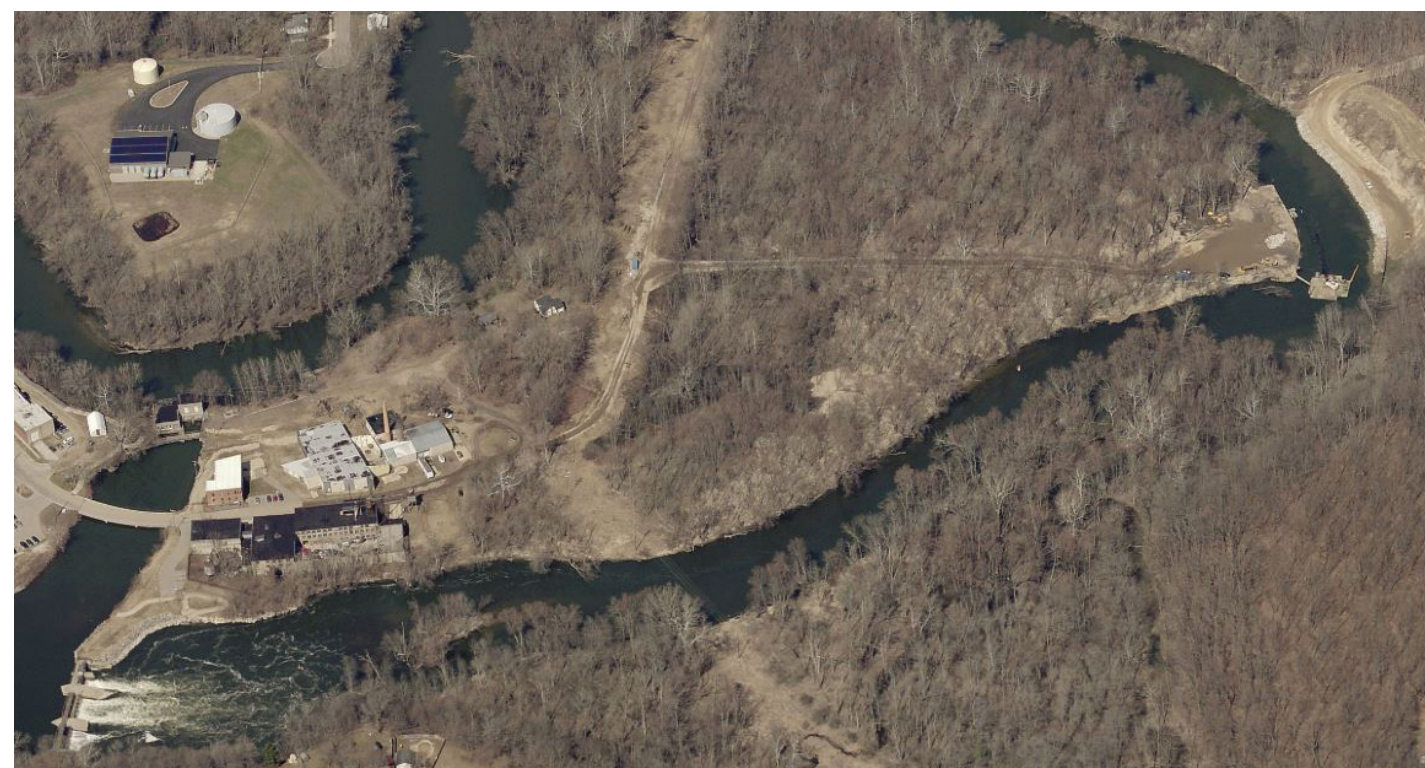


- Encourage private developments that utilize the riverfront features

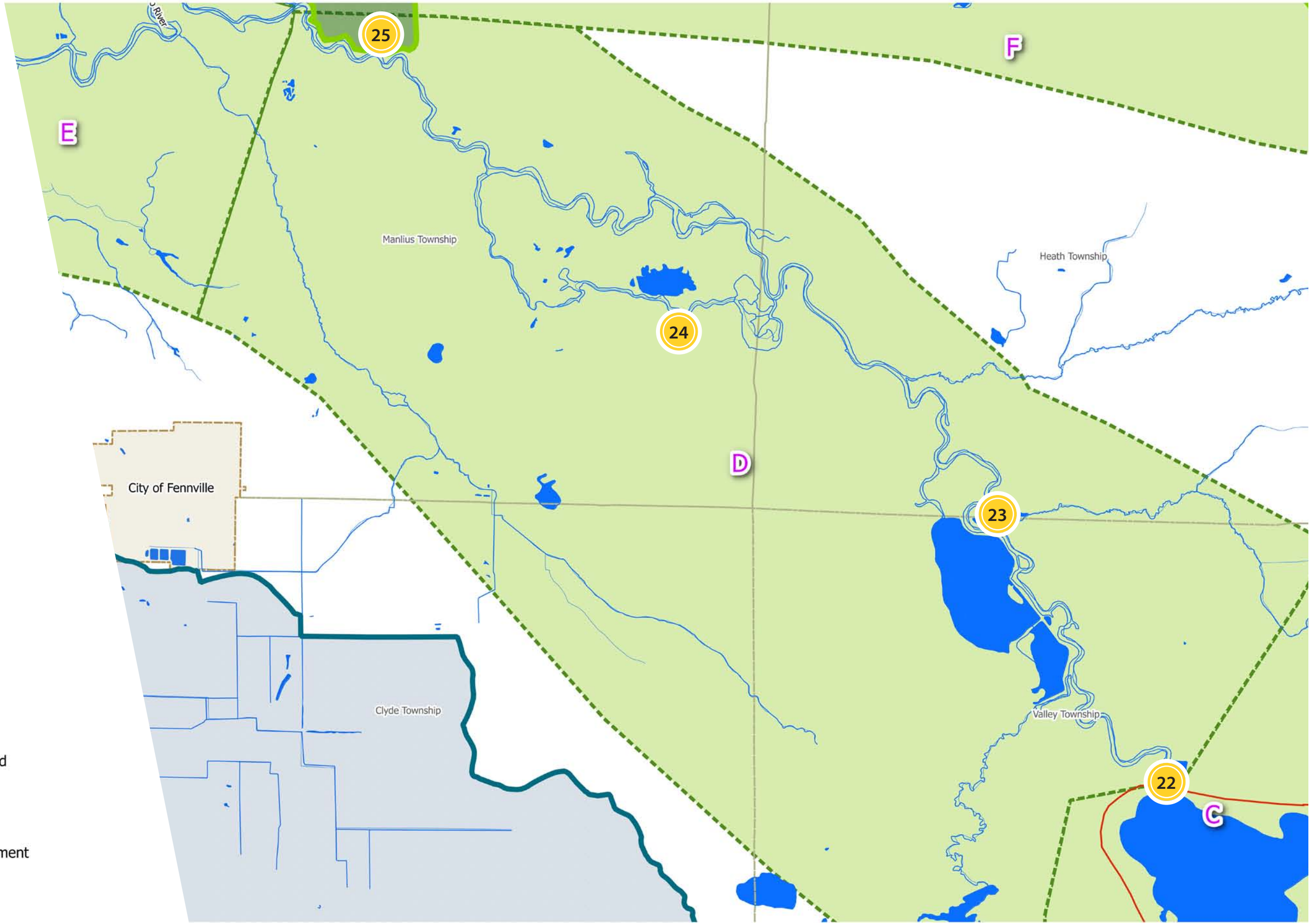
21 LAKE ALLEGAN HABITAT PRESERVATION



- Continue to address phosphorus TMDL on Lake Allegan
- Improve stormwater infrastructure in upstream areas
- Address agricultural non-point sources in upstream areas



SEGMENT D: STATE GAME AREA TO NEW RICHMOND MAP



Legend

Watershed Areas

- Kalamazoo River Watershed
- Other Watersheds in Alleghen County
- Lower Kalamazoo River Greenway - Segments
- Proposed Area of Improvement

22 CALKINS DAM IMPROVEMENTS



- Improve portage routes around the dam
- Ensure designated areas and rules defined for safe use by both motorized and non-motorized boat traffic
- Install interpretive and wayfinding signage at parking areas

23 M-89 LAUNCH IMPROVEMENTS



- Consider restroom and shelter additions at M-89 launch
- Install interpretive and wayfinding signage at parking area and waterfront

24 OTTAWA MARSH



- Identify and address invasive species in Ottawa Marsh as needed

25 RIVER ENHANCEMENT

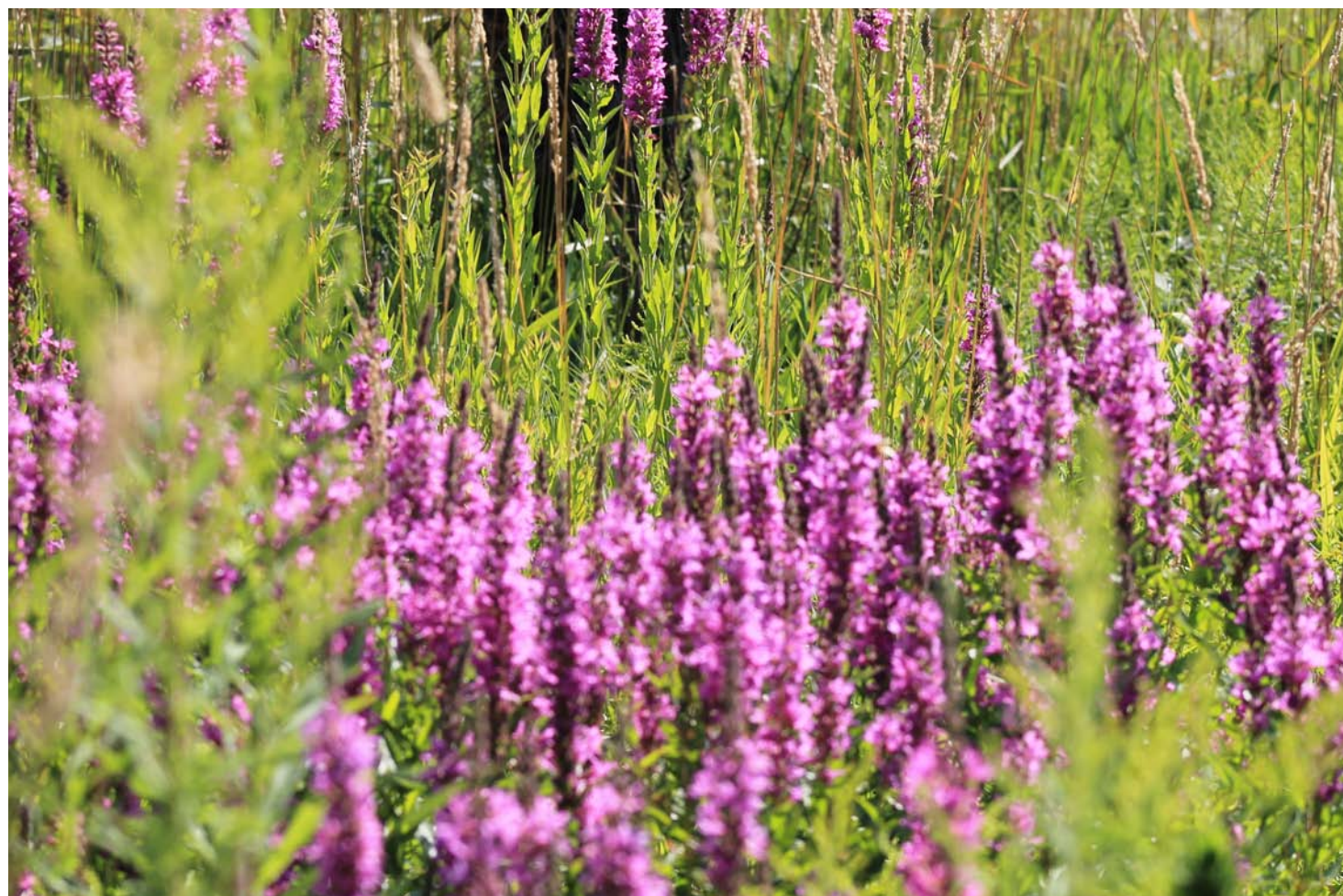


- Protect outstanding non-state land at junction with Rabbit River
- Consider trails to river, emergency river access, restrooms, shelter

Image Credits

Lower Right: <https://missionvalleynews.com/river-access-program-unveiled>

Above Right: http://www.coloprecast.com/?page_id=203



SEGMENT E: NEW RICHMOND TO LAKE MICHIGAN

Below the junction with the Rabbit River tributary, the Kalamazoo River passes the New Richmond County Park, the first large park with river access below the largest tract of the State Game Area. The site of the annual release of sturgeon, by the Gun Lake Tribe, it represents important riverine habitat for this and many other species. Additional opportunities for information and interpretation should be maximized here at one of the busiest locations along the river. Downstream are two additional large marsh complexes, the Pottawatomie and Webster Marshes. The former is privately held and managed, while the latter is managed by the DNR. Both areas have already had significant management performed for invasive species, and these control efforts should be continued. Access to the

Webster Marsh is typically made from the Hacklander boat launch or Schultz Park. This stretch of river also receives boat traffic that travels between Deep Harbor Marina and Saugatuck Harbor.

Saugatuck and Douglas, separated by the widening of the river into Kalamazoo Lake, is dotted with parks and access points all around Kalamazoo Lake. Wide streets and dedicated bike lanes and sidewalk, connecting to the vision for a broader Blue Star Bike Trail, enable riders to circle the harbor on land, while several road ends and parks provide water access. Better signage to direct and connect visitors between sites whether on the water or on land would be beneficial. While not as far along as several of the marshes, invasive species management has been underway in these communities, and continued efforts to keep phragmites, in particular, under control should continue.

Some of the highest quality habitat and rarest species can be found within a couple mile stretch of the mouth of the Kalamazoo River. There are several parks and preserves, including Saugatuck State Park, Tallmadge Woods, Patricia Birkholz Natural Area, and Saugatuck Harbor Natural Area, where visitors can experience these areas. Protecting and preserving these areas around Saugatuck should be one of the highest conservation priorities along the greenway. However, efforts to make sure that these areas are not overused or abused, should strike a balance between visitation and preservation. Future development on private property should be done in an environmentally friendly manner that is consistent with local zoning and the Tri-Community Master Plan.

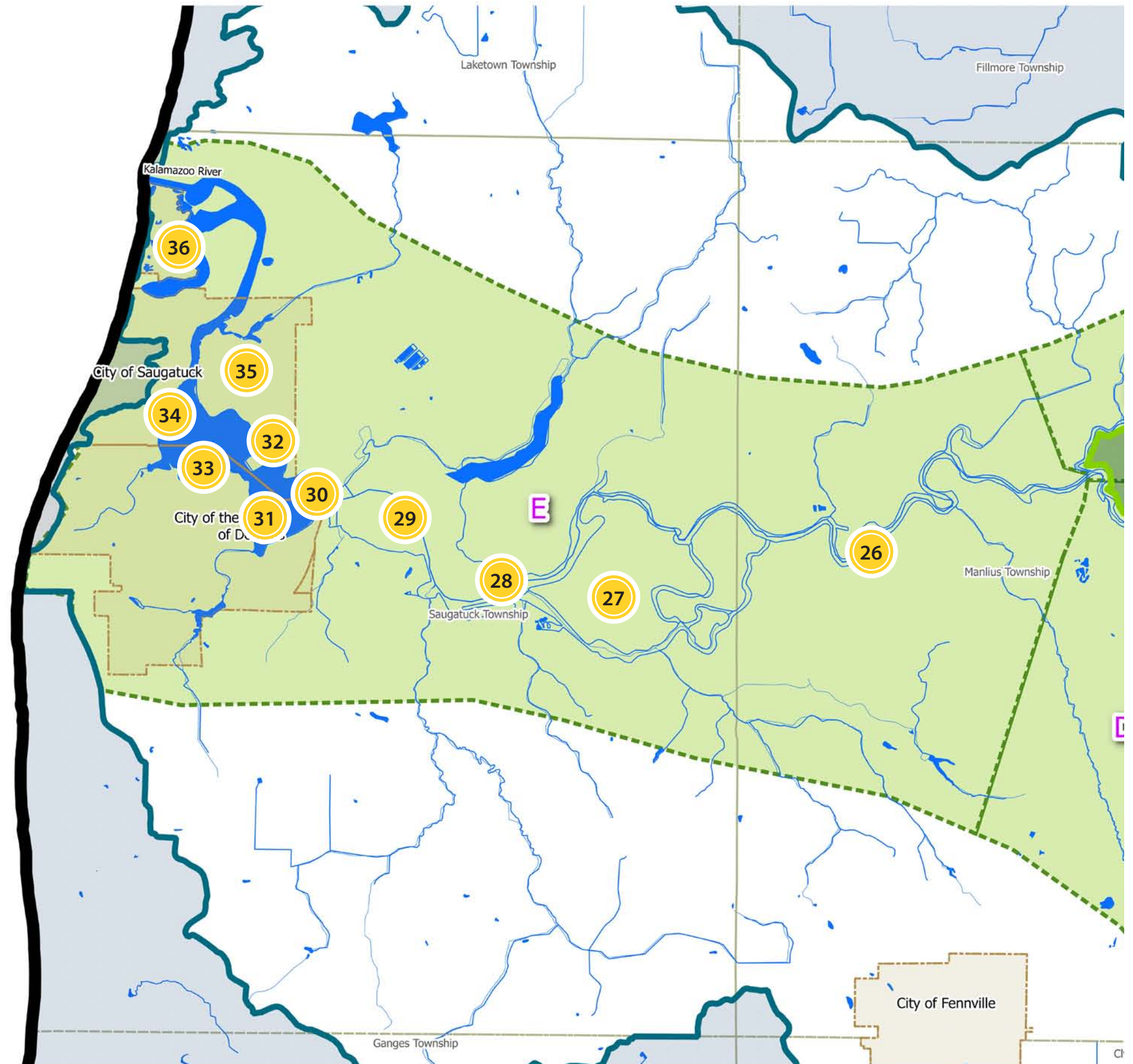
In addition, success for future projects will depend greatly on the willingness of the local municipalities to collaborate.

Throughout the public input process, it was very clear that residents desire open lines of communication between local government entities that other areas of the county benefit from. However, in many ways this area has both the high level of public interest and financial resources to be a key implementer of greenway projects in the future.

One particular issue that requires a collaborative approach is harbor management. While water levels in Lake Kalamazoo are high at the time of this plan's development, the viability of the harbor is dependent upon minimizing sediment transport from upstream. Area landfills should be able to accept any emergency dredgings that are made, however a more permanent means of funding these efforts, in conjunction with significant efforts to address upstream sources of sediment, should be pursued further.



SEGMENT E: NEW RICHMOND TO LAKE MICHIGAN MAP



Legend

Watershed Areas

- Kalamazoo River Watershed
- Other Watersheds in Allegan County
- Lower Kalamazoo River Greenway - Segments
- Proposed Area of Improvement

26 HACKLANDER SIGNAGE



- Install interpretive and wayfinding signage at Hacklander Boat Launch

28 NEW RICHMOND SIGNAGE



- Install additional interpretive and wayfinding signage at New Richmond Park

32 INTERCOMMUNITY PATHWAY



- Improve connections between Saugatuck, Douglas, and Saugatuck Township

34 ACCESSIBLE LAUNCH IN SAUGATUCK



- An accessible launch for access to downtown Saugatuck along area with breakwall

27 29 30 INVASIVE SPECIES MANAGEMENT



- Identify and address invasive species, especially phragmites, eurasian watermilfoil, purple loosestrife, and Japanese knotweed
- Continue efforts in Saugatuck Harbor, Wade's Bayou, Webster Marsh, Pottawatomie Marsh

31 HARBOR SETIMENT REMOVAL / MANAGEMENT



- Develop sustainable funding for harbor dredging when needed
- Work with upstream jurisdictions to reduce sediment inputs
- Dredging should result in safe harbor use and minimal habitat impact

33 DOUGLAS PUBLIC IMPROVEMENTS



- Public marina in Douglas for broader use of harbor and potential dredging funds

35 GREEN STORMWATER INFRASTRUCTURE



- Encourage adoption of green stormwater ordinances
- Use green infrastructure where possible on development projects

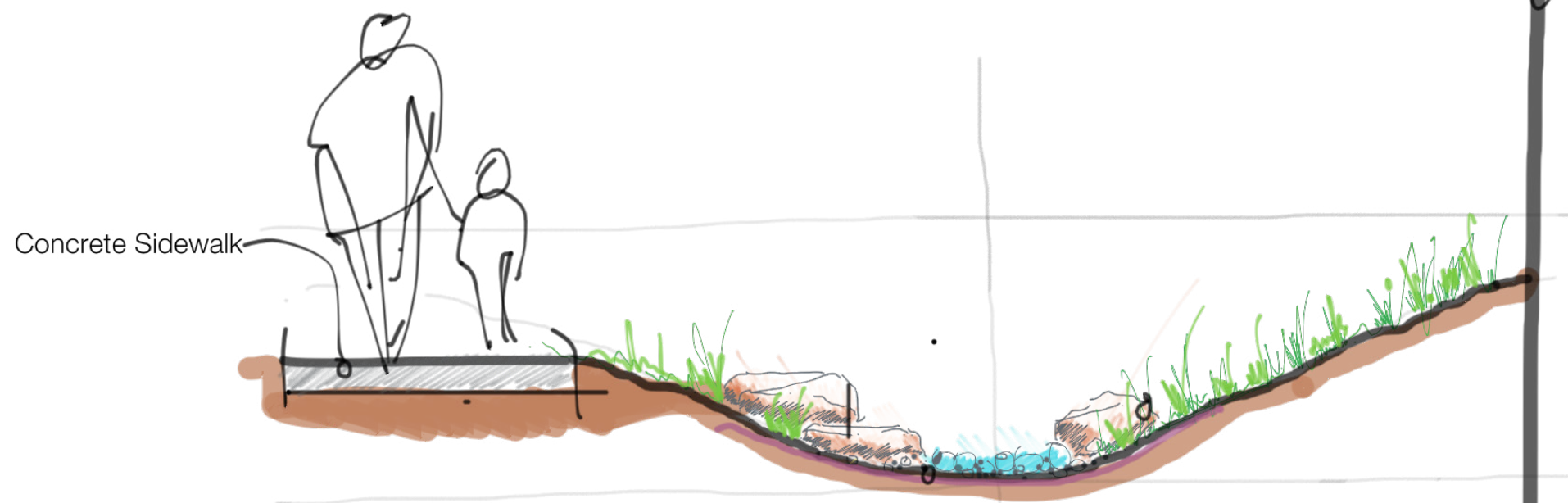
36 HABITAT PRESERVATION



- Protect dune habitats from invasive species
- Balance access to sensitive areas with need to protect them from overuse

Image Credit

Lower Left: <http://sw-marina.com/wp/>



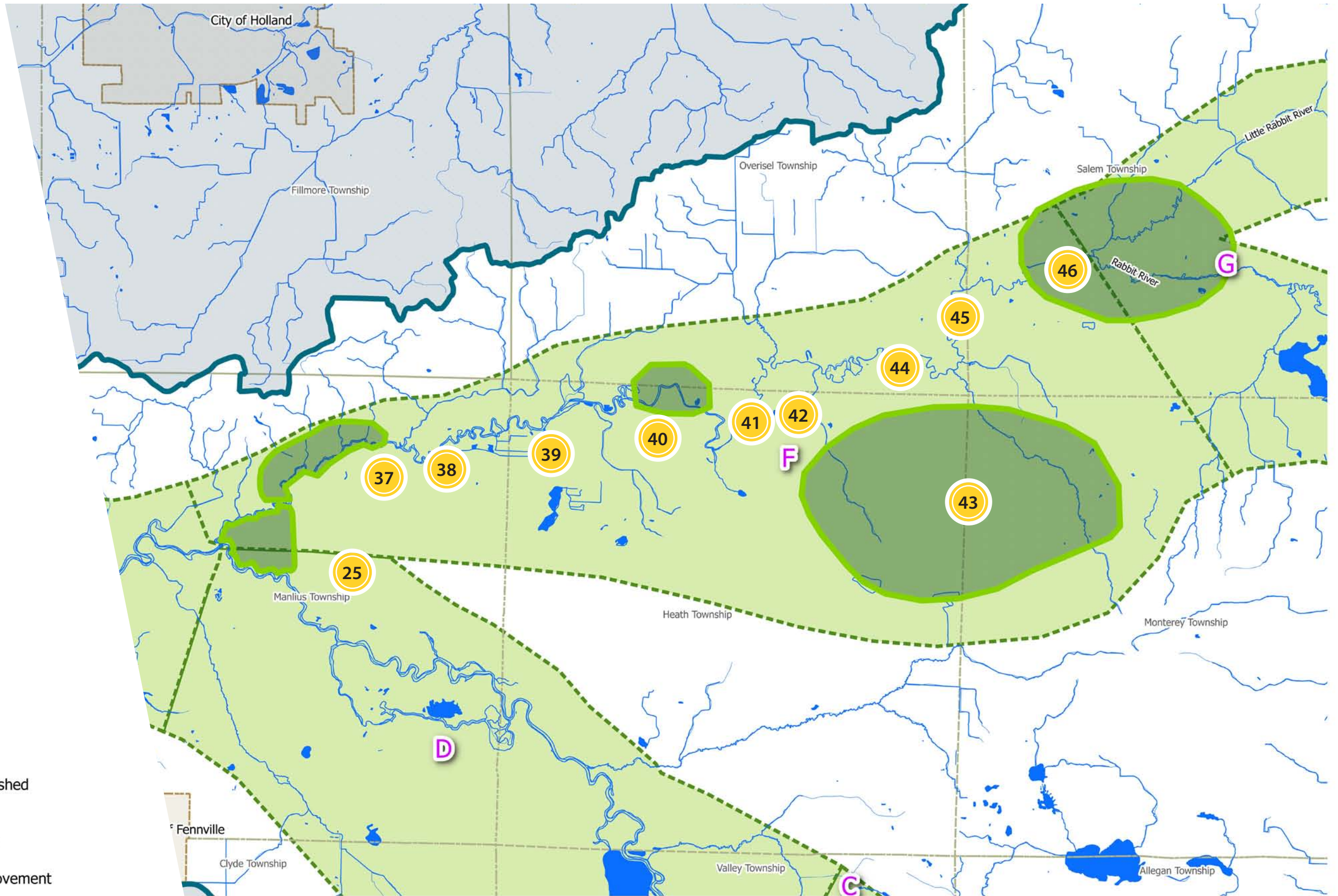
SEGMENT F & G: RABBIT RIVER

Not very far upstream of New Richmond is rather different topography and land use, with heavier agricultural areas closer to the narrower river valley. While the greenway corridor is relatively narrow in this area, it should not limit the focus or scope of work to that narrow area; rather, plans should be sure to encompass all impacting areas. There is concern about the amount of sediment reaching streams, and in several locations small drains and tributaries should be repaired and have hydrology issues addressed. In many locations, best management practices, such as wider vegetated buffers, are needed between streams and farmland. These not only help to filter sediment and nutrients, but can help shade and keep water temperatures cooler, providing better habitat.

One area that remains privately held is known as the Junction, a nearly 270 acre tract of land at the mouth of the Rabbit River. The acquisition and preservation of this tract would help provide an important and outstanding link of habitat along the river. Following the river upstream from the Junction is a favorite stretch of river for paddling and fishing. Additional greenspace and parkspace along this corridor should be sought. There is a desire for increased trails and greenspace for a variety of recreational activities throughout the Rabbit River corridor.



SECTION F: LOWER RABBIT RIVER MAP



25 LAND CONSERVATION



- Work with private landowners to conserve habitat near the confluence of the rivers
- Balance access to sensitive areas with need to protect them from overuse

39 AGRICULTURE BEST MANAGEMENT PRACTICES



- Improve width and quality of stream buffer along river corridor and tributaries
- Implement practices that reduce sediment and nutrient loading within Rabbit River watershed

42 TRESTLE BRIDGE



- Find suitable location upstream of trestle bridge for barrier-free kayak launch

45 COLD WATER FISHERIES



- Protect coldwater fisheries in tributaries to Rabbit River
- Protect buffers and minimize impacts from development

37 EROSION REPAIR



- Address severe gully erosion along lower Rabbit River
- Address upstream hydrology with best management practices
- Stabilize where they meet the river

40 EDUCATION IMPROVEMENTS



- Add additional wayfinding and interpretive signage around Schumatt Park and trestle bridge area
- Focus on cultural and natural history topics of note
- Increase outdoor education at facilities like Rabbit River Preserve

43 HIGH QUALITY & RARE HABITAT PRESERVATION



- Protect areas of high quality habitat in Heath/Monterey Townships
- Fens, bogs, high quality forest
- Highest prevalence of rare or threatened species in the county
- Limit access to these sites and monitor for invasive species

46 AGRICULTURE BEST MANAGEMENT PRACTICES



- Improve width and quality of stream buffer along river corridor and tributaries
- Implement practices that reduce sediment and nutrient loading within Rabbit River watershed

38 RECREATION IMPROVEMENTS



- Improve river corridor for fishing and paddling activities
- Consider implementation of woody debris management plan in river while protecting tree canopies
- Ensure sufficient habitat for cold water fishery (warm water in appropriate tributaries)
- Follow management and development guidelines laid forth in Natural Rivers Act of 1970

41 HABITAT PRESERVATION



- Improve and protect important waterfront habitats
- Marshes, swamps, and floodplain forests such as those found at Rabbit River Preserve

44 EROSION REPAIR



- Address severe gully erosion along upper Rabbit River
- Address upstream hydrology with best management practices
- Stabilize where they meet the river

Image Credit

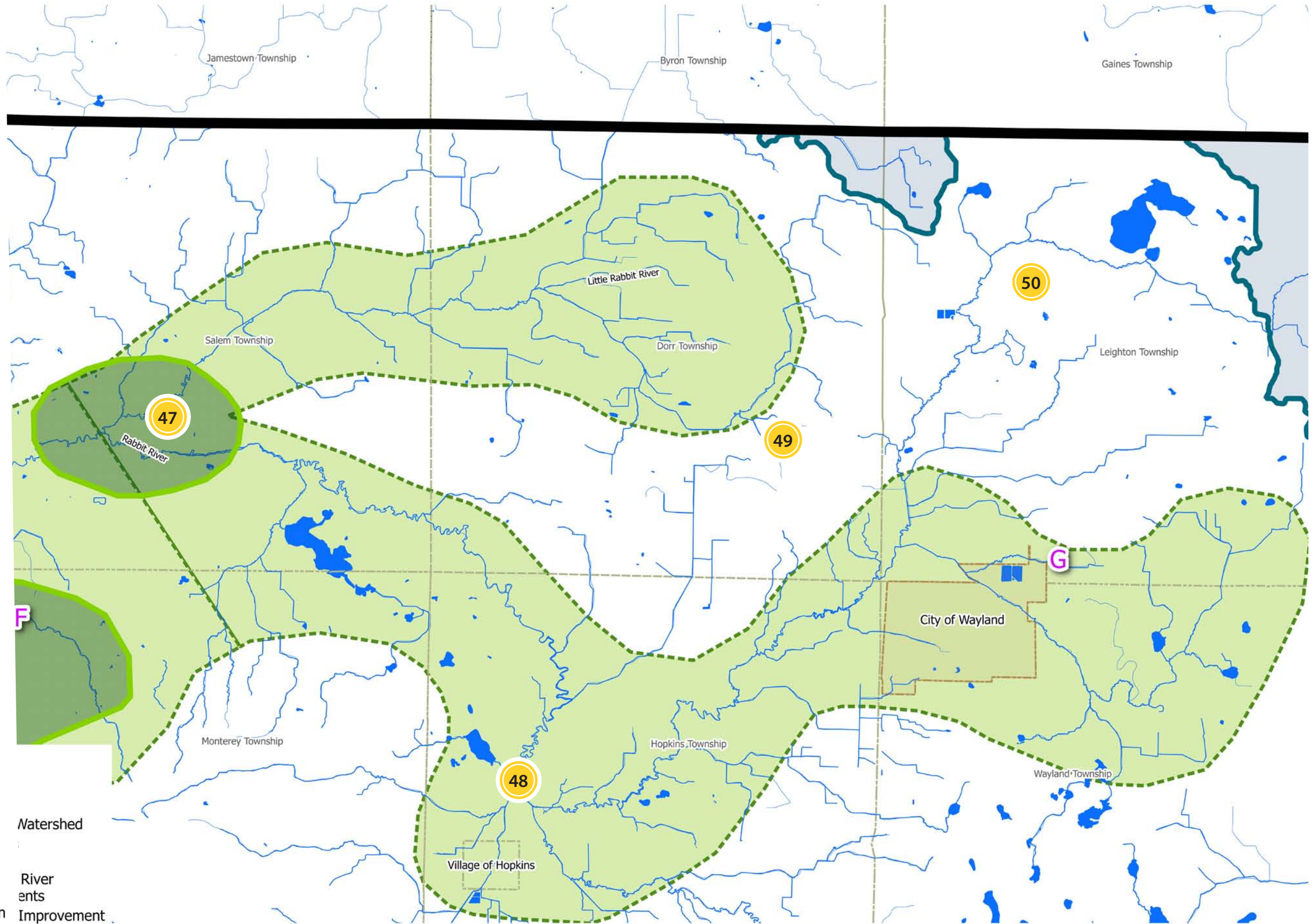
Left: <http://visitwashougal.com/fishing/>

Middle: <https://www.wataugakayak.com/river-kayaking/>

Right: <http://www.watersheddata.com/erosion-popup.aspx?rwndrnd=0.9500259624328464>



SECTION G: UPPER RABBIT RIVER MAP



Legend

Watershed Areas

-  Kalamazoo River Watershed
 -  Other Watersheds in Allegan County
 -  Lower Kalamazoo River Greenway - Segments
 -  Proposed Area of Improvement
- Watershed
- River
- Improvement

47 PARK & WATER ACCESS



- Create park/water access to Rabbit River and/or Little Rabbit River in Salem Township

48 COLD WATER FISHERIES



- Protect coldwater fisheries in tributaries to Rabbit River
- Protect buffers and minimize impacts from development

49 AGRICULTURE BEST MANAGEMENT PRACTICES



- Encourage adaptation of BMPs, including cover crops, reduced tillage, and tile drain management.

50 AGRICULTURE BEST MANAGEMENT PRACTICES



- Improve width and quality of stream buffer along river corridor and tributaries
- Implement practices that reduce sediment and nutrient loading within Rabbit River watershed

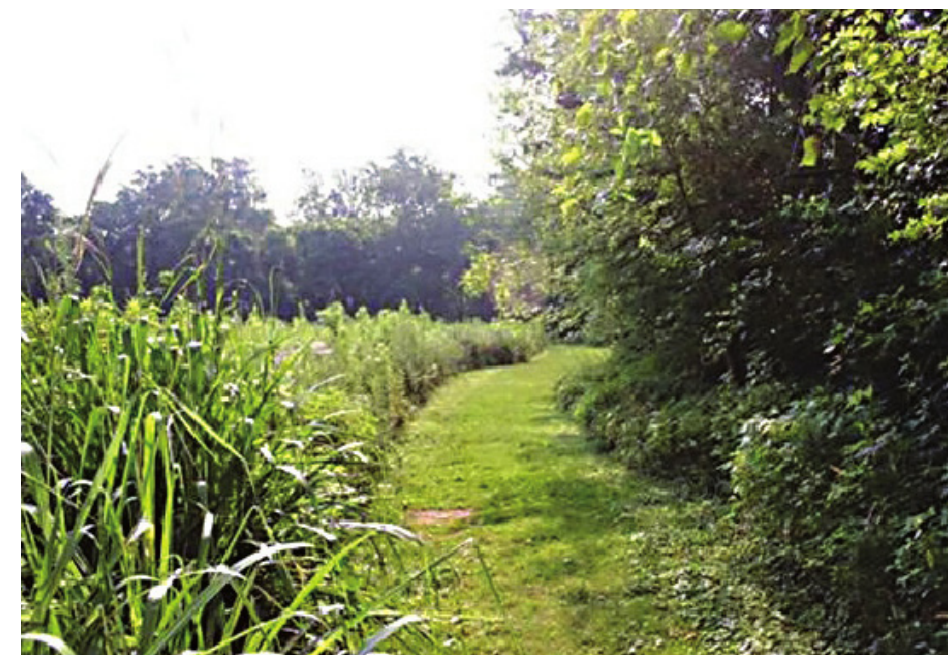
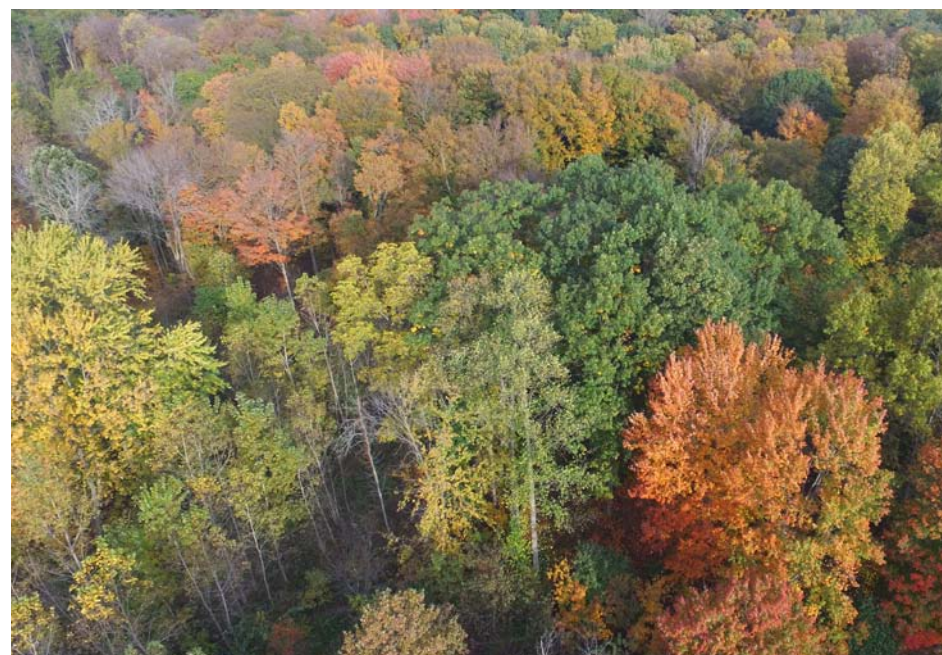


Image Credit

Left: <http://www.lax-a.net/es/escocia/dee/>

Lower Right: https://www.researchgate.net/figure/Mowed-buffer-strip-separating-a-forest-from-agricultural-land-in-Italy_fig6_237421394

Upper Right: <https://catawbalds.org/clc-reopens-spencer-mt-river-access-canoekayak-launch/>





FIRST STEPS

THE FUTURE OF THE KALAMAZOO RIVER GREENWAY

FIRST STEPS

The implementation and success of this master plan will be both an evolving and an ongoing commitment by current and future partners. Therefore, the ODC recommends the following first steps.

- Present Lower Kalamazoo River Greenway Plan to units of government, organizations, and businesses
- Seek endorsements and obtain signed MOUs

After adoption of the plan, the implementation and coordination of future greenway efforts will be dependent on more detailed steps including:

- Establish a greenway network partnership team to oversee

collaborative efforts and select an entity to coordinate this group.

- Begin integration of the master plan into local planning discussions
- Leverage public and private funding to maximize investment in greenway projects
- Conduct a periodic review of the plan to update priorities and account for completed work.

These efforts will ensure that the Lower Kalamazoo River in Allegan County will be restored and available to communities for recreation, education, and conservation, while providing a legacy for future generations.

For additional information please contact the ODC Network at odc@outdoordiscovery.org or by calling 616-393-9453.





ADDITIONAL RESOURCES

LEVERAGING COMPLETED STUDIES WITHIN THE LOWER KALAMAZOO RIVER GREENWAY

BIBLIOGRAPHY AND FURTHER READING

1. Alexander, Jackson, Kikuyama, Sasamoto, and Stevens, Kalamazoo River Watershed Land Conservation Plan. 2014. http://kalamazooriver.org/wp-content/uploads/2015/08/KRWLCP_Final.pdf
2. Allegan Conservation District, Gun River Watershed Management Plan. 2004. https://www.michigan.gov/documents/deq/ess-nps-wmp-gun-river_208913_7.pdf
3. Allegan Conservation District, "Rabbit River Watershed Pay-for-Performance Program." Program factsheet, 2017.
4. Allegan Conservation District, Upper Rabbit River Watershed Planning Project Watershed Management Plan. http://kalamazooriver.org/wp-content/uploads/2013/01/ess-nps-wmp-upper-rabbit_209163_7.pdf
5. Allegan County, 2015-2019 Recreation Plan. 2014. <http://cms.allegancounty.org/sites/Office/Parks/ParksPages/2015-2019%20Recreation%20Plan.pdf>
6. Allegan County, Brownfield Sites Map. 2006. http://www.allegancounty.org/docs/BRA/BRA20061114_map_Part201sites.pdf
7. Allegan County Drain Commission, Rabbit River Watershed Management Plan. July 2009. https://allegancd.org/wp-content/uploads/2012/12/Master-WMP_finalized82609_Part1.pdf
8. The Battle Creek River Watershed Management Plan. 2004. https://www.michigan.gov/documents/deq/ess-nps-wmp-battle-creek-river_208908_7.pdf
9. Calhoun Conservation District, Rice Creek Watershed Project. 2003. https://www.michigan.gov/documents/deq/ess-nps-wmp-rice-creek_208927_7.pdf
10. City of Otsego, "Community 5 Year Recreation Plan for The City of Otsego, Otsego Township and Otsego Public Schools." January 2010. <https://www.cityofotsego.org/wp-content/uploads/2018/07/5yearplan.pdf>
11. City of Plainwell, "City of Plainwell Community Recreation Plan 2016-2021." 2016. Prepared by Michigan Township Services. <http://www.plainwell.org/getattachment/Services-Departments/Visiting-and-Recreation/Parks-and-Recreation/2016-2021-Rec-Plan.pdf.aspx?lang=en-US>
12. City of Saugatuck, Harbor Management Plan. 2016. Prepared by Edgewater Resources, LLC. <http://www.saugatuckcity.com/images/adobe-files/harbor/08-22-2016-saug-harbor-plan.pdf>
13. City of Saugatuck, Saugatuck Township, and the City of the Village of Douglas. Tri-Community Master Plan. 2016. <https://ci.douglas.mi.us/wp-content/uploads/2017/06/UpdatedTri-Comm-Master.pdf>
14. City of the Village of Douglas, "Douglas Waterfront Public Marina Plan." 2015; updated 2017 (presentation). <https://ci.douglas.mi.us/wp-content/uploads/2017/06/MarinaMarketPresentation.pdf>
15. City of the Village of Douglas, Waterfront Master Plan. June 1, 2016. Prepared by Edgewater Resources, LLC. <https://ci.douglas.mi.us/wp-content/uploads/2017/06/DouglasWaterfrontMasterPlan.pdf>

16. Davis Creek Phosphorus Reduction Study. 2011. http://kalamazooriver.org/wp-content/uploads/2013/01/MASTER_Davis-Creek-Engineering-Report_2011_0916.pdf
17. Dexter, James L Jr., Pine Creek. 1991. Michigan Department of Natural Resources Status of the Fishery Resource Report 91-6.
18. Dexter, James L Jr., Silver Creek. 1993. Michigan Department of Natural Resources Status of the Fishery Resource Report 93-6. <http://www.michigandnr.com/PUBLICATIONS/PDFS/ifr/ifrlibra/status/waterbody/93-3.htm>
19. Dexter, James L Jr., Upper Rabbit River. 1991, updated 1996. Michigan Department of Natural Resources Status of the Fishery Resource Report 91-8. <http://www.michigandnr.com/PUBLICATIONS/PDFS/ifr/ifrlibra/status/waterbody/96-4.htm>
20. Diana, Matthew J, Silver Creek Survey Report. 2016. Michigan Department of Natural Resources.
21. Fishbeck, Thompson, Carr & Huber, "Hydrologic and Hydraulic Analysis of the Gun River Watershed." 2004. Prepared for Allegan Conservation District. https://www.michigan.gov/documents/deq/ess-nps-gunhh_201999_7.pdf
22. Forum of Greater Kalamazoo, Portage & Arcadia Creeks Watershed Management Plan. 2006. <http://kalamazooriver.net/wp-content/uploads/2013/05/WMP.pdf>
23. Four-Township Water Resource Council, Gull and Augusta Creeks Watershed Management Plan: the Four Township Watershed Area. Updated July 2017. https://kalamazooriver.org/wp-content/uploads/2018/02/FTWA_WMP_text_FINAL_8.7.17.pdf
24. Gun Plain Charter Township. Parks and Recreation Plan. July 2012. www.gunplain.org/images/pdfs/Park%20and%20Rec%20Plan%207-12-2012.pdf
25. Kalamazoo River Tourism, Recreation, and Environmental Planning Committee. "List of River Recommendations for Review" (undated).
26. Kalamazoo River Watershed Council, Kalamazoo River Watershed Management Plan. 2011. https://www.michigan.gov/documents/deq/wrd-nps-kalamazoo-wmp_387193_7.pdf
27. Kalamazoo River Watershed Council, The Kalamazoo River: Beauty and the Beast, Remedial and Preventive Action Plan for the Kalamazoo River Watershed Area of Concern. 2000. https://www.epa.gov/sites/production/files/2013-12/documents/2000_kalamazoo_river_rap.pdf
28. Michigan Department of Environmental Quality, "Biennial Remedial Action Plan update for the Kalamazoo River Area of Concern." 2007. https://www.michigan.gov/documents/dnre/dnre-water-ogI-aoc-KalRiver-RAP_337818_7.pdf
29. Michigan Department of Environmental Quality, "Stage 2 Remedial Action Plan Kalamazoo River Area of Concern." 2012. http://kalamazooriver.org/wp-content/uploads/2012/12/deq-ogI-aoc-KalamazooRiverStage2RAP_378185_7.pdf
30. Michigan Department of Environmental Quality, "Kalamazoo River/Lake Allegan Watershed Cooperative Agreement for the Reduction of Phosphorus Loading." October 1, 2016. https://www.michigan.gov/documents/deq/wrd-npdes-tmdl-agreement_616229_7.pdf
31. Michigan Department of Natural Resources, Michigan Statewide Comprehensive Outdoor Recreation Plan, 2018-2022. Prepared by Public Sector Consultants. https://www.michigan.gov/documents/dnr/SCORP2018-2022_Final2_609032_7.pdf
32. Michigan Sea Grant, Sustainable Small Harbors: Tools and Tactics Guidebook. 2017. <http://www.miseagrant.umich.edu/smallharborsustainability/files/2016/05/17-502-Complete-Sustainable-Small-Harbors-Tools-and-Tactics-Guidebook-digital-050817.pdf>
33. Otsego Downtown Development Authority, "Riverfront Redevelopment Land-Use Master Plan." 2018. Developed by C2 A&E.
34. Shuchman and Meadows, "Characterization of Kalamazoo Lake and Harbor Hydrology to Support Restoration Planning." September 2018, Michigan Technological University.
35. Smith, Gregg, Lake Sturgeon Rehabilitation in the Kalamazoo River. 2010, Michigan Department of Natural Resources, Fisheries Division. https://www.michigan.gov/documents/dnr/KzooRiverLkSturgeonRehabPlan_395540_7.pdf
36. Spoelstra, Jeffrey, "Kalamazoo River Area of Concern: Restoration Plan for the 'Loss of Fish and Wildlife Habitat' and 'Degradation of Fish and Wildlife Populations' Beneficial Use Impairments." Kalamazoo River Watershed Council, 2009. <http://kalamazooriver.org/wp-content/uploads/2012/12/Final-Kzoo-Fish-Wildlife-BUI.pdf>
37. United States Environmental Protection Agency, "Operable Unit 5 Area Map (draft)."
38. Wesley, J.K, Kalamazoo River Assessment. 2005, Michigan Department of Natural Resources. Fisheries Division Special Report 35. <http://kalamazooriver.org/wp-content/uploads/2012/12/DNR-Fisheries-Division-Kalamazoo-River-Assessment-2005.pdf>
39. Wesley, J.K., Mann Creek. 2001. Michigan Department of Natural Resources Status of the Fishery Resource Report 2001-3. http://www.michigandnr.com/PUBLICATIONS/PDFS/ifr/ifrlibra/status/waterbody/2001-3_Mann_Creek.pdf

WEB RESOURCES

Allegan Conservation District – Rabbit River Watershed Management Plan: <https://allegan.cd.org/programs/rabbit-river-watershed-project/rabbit-river-watershed-management-plan/>

Army Corps of Engineers – Great Lakes and Ohio Division Environmental Operations: <https://www.lrd.usace.army.mil/Missions/Civil-Works/Environmental/GreatLakes%20Programs/GreatLakesRemedialActionPlan/>

EPA Allied Paper Superfund Site: <https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0502325>

Gun Lake Tribe Environmental Department: <https://gunlaketribe-nsn.gov/departments/administration/environmental/>

Kalamazoo River Watershed Council: <http://kalamazooriver.org/learn/plans/>

Michigan Sea Grant – Sustainable Small Harbors: <http://www.miseagrant.umich.edu/smallharborsustainability/>

Michigan State University – River Wildlife Toxicology Study – 2002-03: http://www.riverwildlife.msu.edu/Pages_KRW/KRW_Overview.html

USGS – Kalamazoo River Gauge at New Richmond: <https://waterdata.usgs.gov/usa/nwis/uv?04108660>

