Saginaw Bay Greenways Collaborative, Michigan


Photo courtesy of National Park Service, Rivers & Trails

Overview

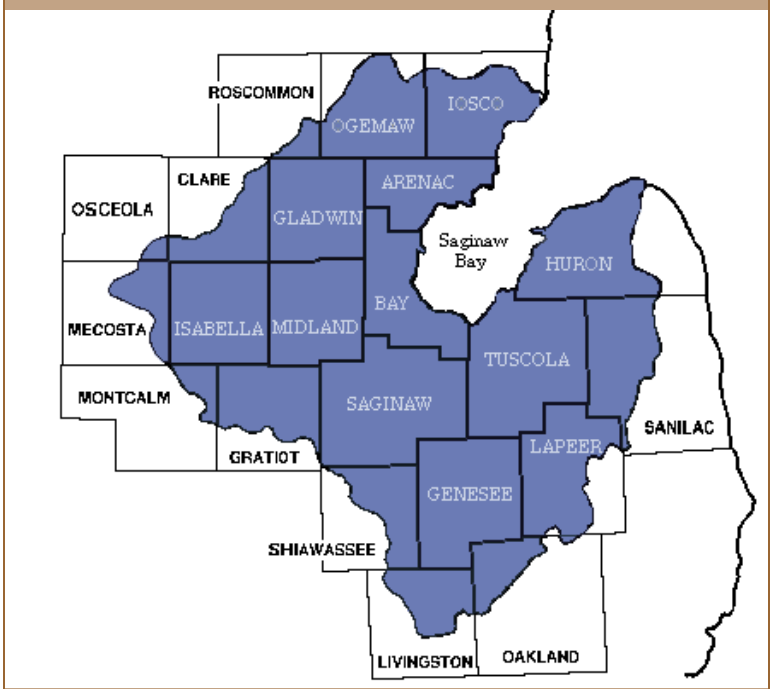
The Saginaw Bay Greenways Collaborative (the Collaborative) represents a group of local, state, and federal agencies, nonprofit organizations, and concerned citizens united around the goal of developing a green infrastructure system in Saginaw, Bay, and Midland counties in Michigan. Various members of the Collaborative are motivated by interests in wildlife, water quality, non-motorized transportation, recreation, urban and land-use planning, tourism, and economic development. The planning work, which included an extensive public and local government involvement component, was funded primarily by the Saginaw Bay Watershed Initiative Network.

The Saginaw Bay Greenways Collaborative created a vision for a green infrastructure network by using a scientific and community participation approach to identify land best suited for conservation and recreation in Saginaw, Bay, and Midland counties. The Collaborative identified and mapped important green infrastructure elements (hubs, cores, and corridors) across the tri-county region (Figure 1) and is making this information available to municipal leaders and decision makers to include in pertinent land use plans at all scales and jurisdictions.

The Collaborative based the planning process on three key elements of successful greenway and green infrastructure initiatives:

- A thorough resource inventory and analysis of the project area, based on the most accurate and current resource information available,
- Public involvement in the development of a green infrastructure plan, and
- Development and distribution of information to the public on the project and the benefits of greenways and green infrastructure.

Figure 1: The Saginaw Bay watershed.



Credit: Jonathan Jarosz, Saginaw Bay Greenways Collaborative

In their summary report, which was released in early 2005, the Collaborative recommended an implementation strategy that addresses organizational development and possible funding mechanisms and identified a range of tools and resources available to help communities and the region conserve, protect, and restore the green infrastructure network.

Highlights

A highlight of this project is the evolution of the Collaborative's interest from a trails focus to a greenways focus, and then to a green infrastructure focus. This was driven by the interests of stakeholders, by the agriculture- and natural resource-based aspects of the region's economy, and by the presence of a national wildlife refuge and several large rivers whose watersheds encompass several counties.

Saginaw Bay Greenways

The degree of community involvement is also unusual. Early in the planning process, partners in the Collaborative held one-on-one meetings with local officials to familiarize them with the concept of green infrastructure and the idea of planning concurrently for growth and conservation. They held a speaker series to educate the public about the same concepts and to generate media and public awareness of the planning effort. Collaborative members also conducted educational programs about greenways for elementary and middle school children and sponsored a poster contest. The Collaborative organized a well-attended greenways charrette in which staff of local agencies and organizations and members of the public learned more about green infrastructure and together created a map-based green infrastructure vision for the three-county area.

Background and Context

Saginaw-Bay City-Midland is the northernmost Metropolitan Statistical Area in Michigan. It lies at the southern edge of Michigan's timber- and tourism-based forest landscape. In 2001, the Michigan Land Resource Project predicted that by 2040, if current land use patterns continue, the state's developed areas will increase by 178%. The rate of land development in Michigan outstrips population growth by eight times. The rate of land development in Bay County exceeds the state average by 27 times.

The Dow Chemical Company started the Saginaw Bay Watershed Initiative Network (WIN) to fund sustainable development projects. The Conservation Fund administers the program, which promotes economic, environmental, and community sustainability in the Saginaw Bay watershed. One of the products of WIN's first funded project, in 1999, was the Tri-County Trails Guide, which inventoried and mapped trails in the area. The staff who worked on it soon became interested in looking at connections between trails, habitats, and water quality.

WIN
SAGINAW BAY
WATERSHED
INITIATIVE
NETWORK


Photo courtesy of National Park Service, Rivers & Trails

WIN members formed a committee called the Land Use Task Group because of concerns about sprawl and uncoordinated land use, and their combined effect on the sustainability of the region. They wanted to develop a plan to help manage growth and to identify ecologically significant areas that should be protected. This group applied for a grant from WIN to do a greenways assessment and plan for the tri-county area. They received the grant and work started on the project in May 2001.

Members of the initial group brought in staff of the Rivers, Trails, and Conservation Assistance Program (RTCA) to serve as the project facilitator. RTCA is a National Park Service technical assistance program that provides staff to work with fledgling community-based efforts to conserve rivers, preserve open space, and develop trails and greenways. RTCA was already working on similar regional greenways initiatives in southeast and northwest Michigan. Barbara Nelson-Jameson, outdoor recreation planner, and Mark Weaver, community planner, with RTCA worked with the Collaborative to develop a public planning process, a public education plan, and a work plan for the project, including the milestones it should meet. They also helped facilitate the public meetings and the greenways charrette.

The East Central Michigan Planning and Development Region acted as the financial agent for the grant and housed the GIS portion of the work. The Saginaw County Metropolitan Planning Commission was the primary contractor for the general coordination of the project.

Process of Developing a Tri-County Green Infrastructure Plan

The Collaborative set up a steering committee consisting of representatives of the Saginaw County Metropolitan Planning Commission, Ducks Unlimited, Bay County Department of Environmental Affairs, East Central Michigan Planning and Development Region, Little Forks Conservancy, Saginaw Basin Land Conservancy, Bay Area Community Foundation, and The Conservation Fund. This committee guided the Collaborative's work.

The Collaborative also set up a technical advisory committee responsible for ensuring that the resource inventory criteria, methods, and data used in the GIS analysis were scientifically correct. The committee consisted of 30 specialists representing public, private, and academic institutions. Several members of this committee contributed valuable GIS data, which helped to reduce duplication of effort.

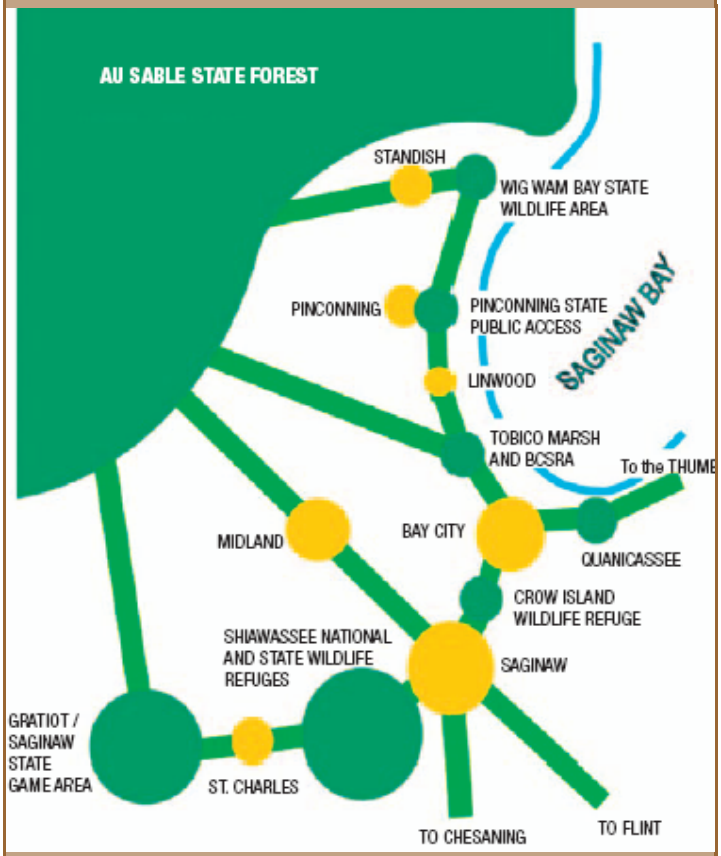
The evolution of the Collaborative's interest from a trails focus to a greenways focus then to a green infrastructure focus occurred because of the region's abundant natural resources and because of stakeholders' interests. The Collaborative learned that the stakeholders wanted a more holistic approach to the greenways planning process and the identification and inventory of ecological hubs, cores, and corridors within the project area. Approximately 50 percent of the land in the three counties is agricultural, and citizens were interested in habitat linkages and watershed protection. The area includes a national wildlife refuge and several large rivers that have multi-county watersheds. The Conservation Fund's concurrent research and advocacy of the green infrastructure concept cemented the decision to make the plan a guide for growth that would conserve ecologically significant land for the benefit of people and nature.

Extensive spatial information regarding existing and future environmental, economic, developmental, agricultural, cultural, recreational, and non-motorized transportation resources was gathered, integrated, and analyzed using geographic information systems (GIS) software. Project partners provided spatial data that already existed, and other data were developed as

needed. The GIS technicians used techniques and concepts developed in Maryland's and Florida's greenways analyses, the most important of which is that parcels that are linked to other natural areas are more valuable than isolated parcels. Once all the necessary data were gathered, the steps used to design the proposed green infrastructure plan were:

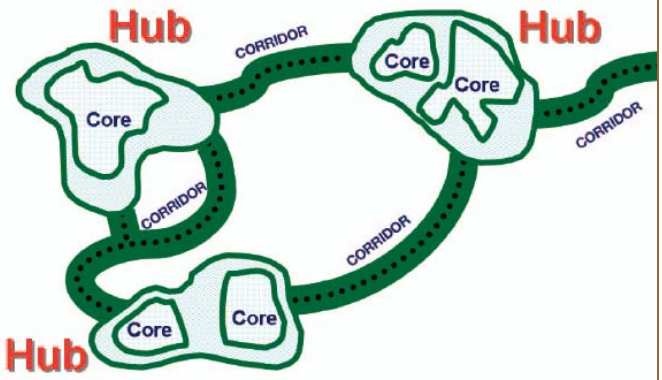
- Conduct a regional resource inventory and analysis to identify the area's strengths and weaknesses ecologically.
- Outline a preliminary green infrastructure network (Figure 2) in light of the area's environmental, social, and political needs.
- Use GIS suitability models to identify the most ecologically important parcels in the landscape, the "cores," (Figure 3) based on a set of predefined criteria. Cores must "contain at least 250 acres of interior natural cover and are often bounded by different land cover. … Existing conservation and recreation lands that cover at least 100 contiguous acres were also included as cores" (Saginaw Bay Greenways Collaborative, 2005).
- Examine natural areas surrounding cores to identify network "hubs," which are "natural areas containing one or more core areas and bounded by major roads and unsuitable land cover greater than 300 feet across" (Saginaw Bay Greenways Collaborative, 2005).
- Use least-cost path analysis, a GIS technique, to identify landscape linkages between cores and hubs. These "corridors" are at least 1,100 feet wide to allow safe passage for wildlife.
- Circulate the preliminary plan—in the form of GIS maps—to stakeholders and the public for comments and revisions.
- Revise as needed and keep current.

Figure 2: Schematic of green infrastructure plan.



Credit: Mark Weaver, National Park Service, Rivers & Trails

Figure 3: Hubs, cores, and corridors together form the green infrastructure network of ecologically important lands.



Credit: Saginaw Bay Greenways Collaborative

The resulting regional green infrastructure plan can guide local, regional, and state officials and land trusts as they make decisions about protecting land for conservation and recreation and developing other areas. The regional focus allows a wider and more ecologically valid viewpoint than is typically possible when planning is done on a single municipality or county basis. The "Vision of Green" encourages advance planning in land protection rather than impromptu action guided by present economic and political conditions.

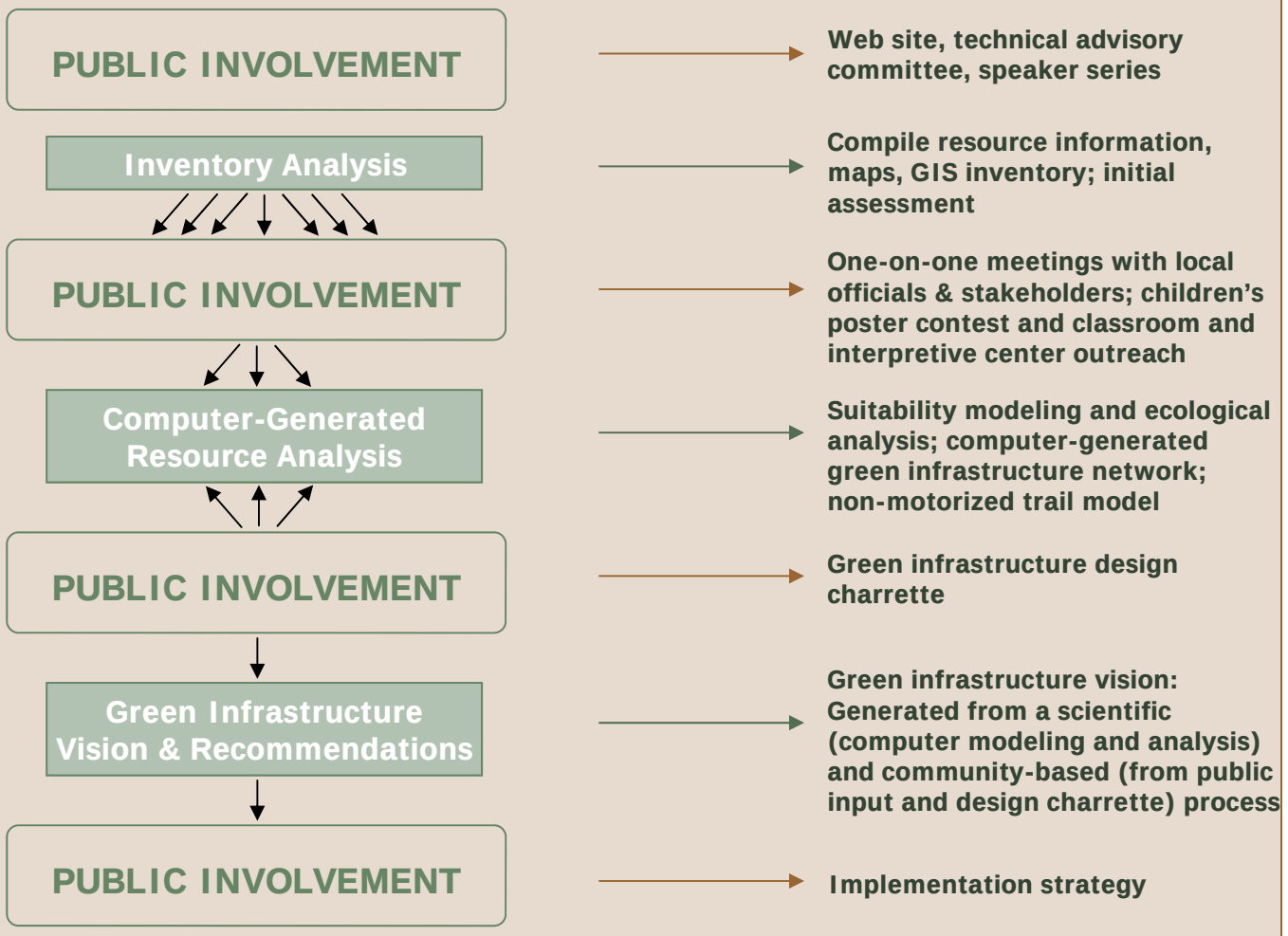
Public Involvement

The first public involvement undertaking (Figure 4) of the Collaborative was a speaker series designed to generate media coverage and excitement about the idea of a greenways plan. National and regional experts spoke about the benefits of greenways. The Collaborative also developed a Web site and a brochure, did television and radio spots, made public presentations, and staffed an educational display at various community events.

Partners in the Collaborative held one-on-one meetings with more than 50 local officials and land managers in the three-county region to provide an overview of the project; identify important social, cultural, historic, and environmental resources; and verify inventory and mapping data. A strong point of the meetings was that the Collaborative personnel did not tell officials that growth is bad, but instead advocated planning for growth and conservation concurrently. Leaders of the Collaborative later identified these meetings as critical to obtaining local buy-in to the regional green infrastructure system.

Collaborative members introduced teachers and students to the greenways concept through programs at the Saginaw Bay Visitor Center and through classroom visits. More than 150 elementary and middle school students submitted artwork for a poster contest based on the theme, "Greenways in our Community." The winning drawings were featured in a poster called “It’s Great To Be Green” (Figure 5, next page).

Figure 4: Science- and community-based planning process.



Credit: Adapted from graphic produced by Mark Weaver and Barbara Nelson-Jameson, National Park Service, Rivers & Trails

Figure 5: School students competed in a poster contest
to produce artwork that would help promote the benefits of greenways.

Credit: Saginaw Bay Greenways Collaborative

The biggest public involvement event was the Tri-County Greenways Charrette, where more than 100 community participants had a chance to "contribute ideas, 'ground-truth' the maps, and let their voices be heard in changing our community for the better." The morning featured information on and discussions of green infrastructure concepts, values, principles, and strategies, as well as the basics of green infrastructure network design. Then Collaborative partners presented the results of the regional resource inventory and analysis. In the afternoon, nine teams of professionals and lay people worked with acetate overlays of the resource assessment data layers, base maps, and aerial photos (Figure 6) to develop their own version of a green infrastructure network for the tri-county region. Teams then made presentations on their results, followed by group discussion. Several groups of participants also brainstormed ideas for trail networks in each part of the region. Later, the nine alternative designs, along with the computer-generated models, were evaluated and consolidated into a green infrastructure design for each county. A distinct benefit of this public involvement format is that participants contributed intimate knowledge and human perspective and priorities about potential greenways in their communities. The Collaborative has a full description of the process for conducting this type of charrette. The process could be used to obtain public input on green infrastructure designs in other parts of the state or the country. Participants were later invited to review the draft Saginaw Bay green infrastructure network design and discuss implementation. The outcome of this charrette was a poster, "A Vision of Green," which explains the vision for green infrastructure in the region.

Figure 6: Tri-County Greenways Charrette.

Credit: Saginaw County Planning for Saginaw Bay Greenways Collaborative

Photo by Gene Nieminen/USFWS

"Just as we need 'smart growth' to strategically direct and influence the patterns of built infrastructure, we need 'smart conservation' to strategically direct our patterns of green infrastructure."

— The Collaborative

Results and Products

The Collaborative's report summarizing the green infrastructure plan for the tri-county area and outlining suggested implementation steps was released in early 2005. The plan (Figure 7, next page) they put forth capitalizes on the large tracts of land already protected in the area. Extensive tracts of the Au Sable State Forest in Midland County form the largest land-based hub in the three counties. Saginaw Bay and remnants of coastal wetlands on its edge form another important hub. The Shiawassee National Wildlife Refuge and the adjoining Shiawassee River State Game Area form the third major hub for the region. Most of the green infrastructure corridors identified by the Saginaw Bay Greenways Plan follow the network of rivers that flows into the bay.

The Collaborative produced an extensive resource inventory and associated GIS maps that were shared with local and regional municipalities for their use in land use and recreational planning. Other products of the Collaborative include two publicity posters, a brochure, and a Web site.

Photo by Barbara Nelson-Jameson

Implementation

Implementation of the green infrastructure system (i.e., protection and long-term management of the land in the network) will happen at the local level with help from the Collaborative using tools such as voluntary methods, land use ordinances, and zoning. The results of similar programs have shown that if the framework for funding and implementation is set up ahead of time, implementation goes much farther much faster. The Collaborative included recommendations for implementation in its 2005 summary report. These recommendations fall into four areas:

Organizational Framework and Leadership

- Establish a committed and effective leadership and coordination group of public and private partners to ensure that the vision becomes a reality. Participation of all stakeholder groups and jurisdictions is essential to success.
- Provide technical assistance, user-friendly maps and associated information, and other educational programs to municipalities so they can make wise planning decisions.
- Dedicate staff to "translating regional conservation goals to local planning and implementation actions" (p. 35).
- Secure funding from existing programs and identify new sources.
- Expand the Vision of Green throughout the Saginaw Bay watershed. WIN organizers are also supporting similar efforts in other parts of Michigan, and one day these various efforts may be linked in a continuous statewide "vision of green."

Technical Assistance and Outreach

- Maintain and update the green infrastructure maps and database.
- Continue to educate the region's citizens about the many benefits of preserving green infrastructure.

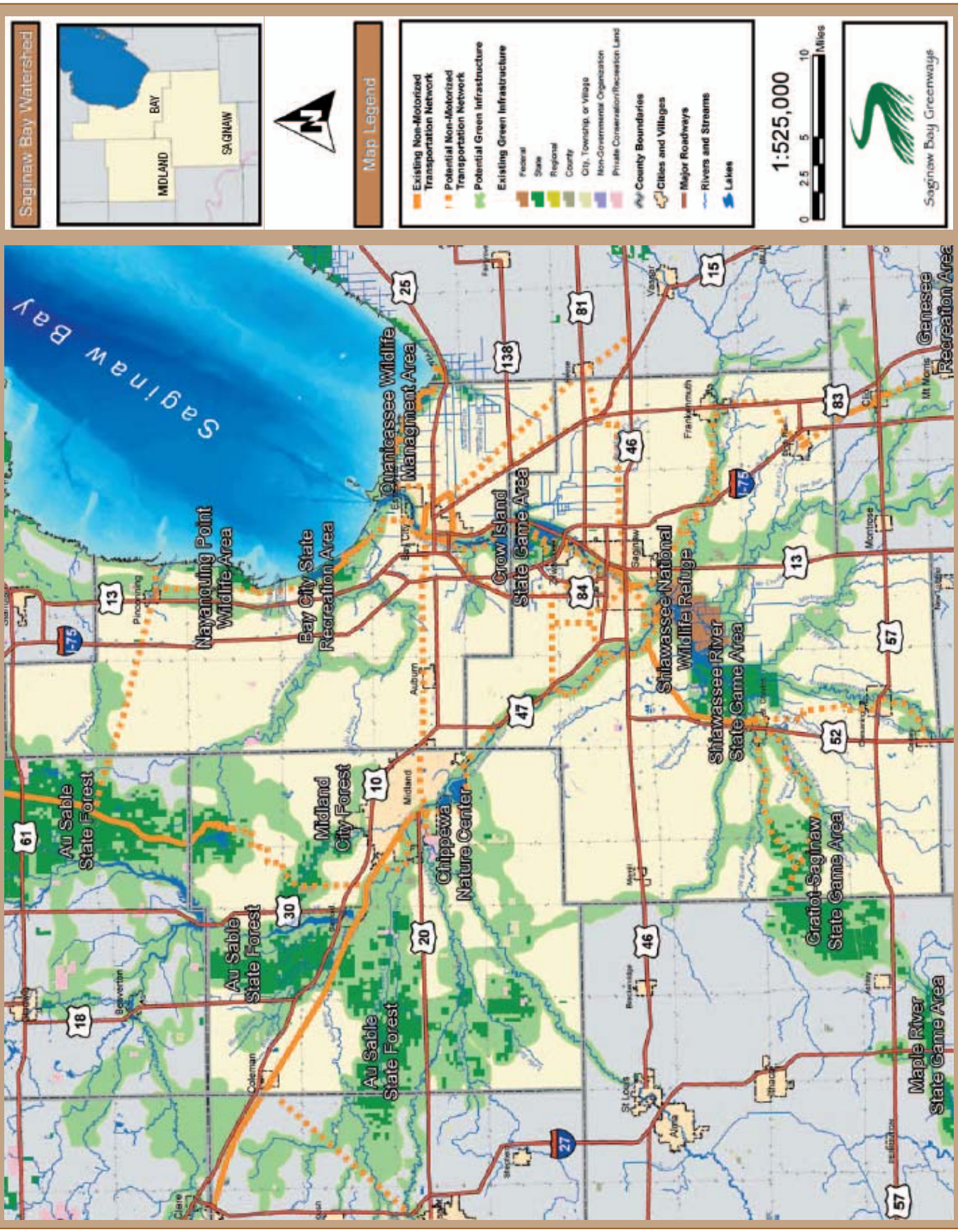


Figure 7: A vision of green: the tri-county area's green infrastructure plan.

Credit: Saginaw Bay Greenways Collaborative

Intergovernmental Cooperation and Regional Coordination

- "Encourage municipalities to revise their land use, recreation, open space, storm water management, and transportation plans within the context of the green infrastructure vision plan" (p.37) and encourage the development of regional, holistic plans for these needs.
- Encourage government agencies, land trusts, and other concerned organizations in the area to adopt the Vision of Green as their priorities for land protection.
- Create incentives for communities to work collaboratively on protecting and/or maintaining green infrastructure such as flood plains and wetlands for storm water management.
- Encourage developers and other private interests to include green infrastructure protection in their new projects and to retrofit older projects.
- Promote the development of a region-wide land use plan.

Funding and Support

- Develop an implementation quilt that identifies the stakeholders and partners involved, the various land uses in the region, potential funding sources, and potential land protection tools.
- Set up a private sector "Green Infrastructure Fund" for natural areas acquisition, restoration, and recreational improvements. Private dollars can leverage government funding. The GreenWays Initiative of Southeastern Michigan can serve as a model for this sort of fund. It leverages $6 government dollars for every $1 of private funds contributed.
- Explore the possibility of implementing development impact fees, tax incentives, ballot initiatives (bonds), and/or a private sector low-interest loan fund to benefit green infrastructure projects.
- Promote the expansion of the U.S. Department of Agriculture's Conservation Reserve Enhancement Program (CREP), which pays farmers and other holders of sensitive lands to protect and improve water quality and wildlife habitat.

Photo courtesy of National Park Service, Rivers & Trails

Financing and Benefits

Funding

A seed grant of about $30,000 from WIN funded initial development of the GIS data used in expanding the vision. A second grant from WIN totaled nearly $140,000. Matching funds and in-kind contributions totaling about $140,000 were received from the following organizations: Bay Area Community Foundation; Bay County Environmental Affairs & Community Development; The Conservation Fund; Kodak Greenways Award; Michigan Department of Environmental Quality Coastal Zone Management; Ducks Unlimited-Great Lakes Atlantic Regional Office; East Central Michigan Planning and Development Region; Little Forks Conservancy; Michigan Rails to Trails Conservancy; Midland Area Community Foundation; Midland County Parks and Recreation; National Park Service-Rivers, Trails, and Conservation Assistance Program; Saginaw Basin Land Conservancy; Saginaw Bay Watershed Initiative Network; Saginaw County Metropolitan Planning Commission; and Saginaw County Parks and Recreation Commission.

Benefits

The work of the Collaborative got people thinking and talking on a regional basis and on a resource conservation basis. This is the first “green infrastructure” project in the state, and it’s helping to market the concept and terminology throughout the region and state. Another benefit of the Collaborative’s work was getting the U.S. Fish and Wildlife Service involved along with staff at the Michigan Department of Environmental Quality and Department of Transportation. A serendipitous coincidence is that the Governor's Land Use Council recently completed its investigation into what causes sprawl and current land use patterns in Michigan and how the state should combat sprawl and develop sustainable land use practices and policies. Members of the Collaborative hope that the new alliances, combined with a more regional view of green infrastructure planning and the Governor's emphasis on wise land use, will result in the development of incentives for this kind of regional planning and implementation.

In addition, the Collaborative’s educational materials note that green infrastructure provides the following benefits to the Saginaw Bay region:

Ecological

- Provides connections to maintain biodiversity
- Filters pollutants from air, water, and soil
- Aids in cooling streams and soils through shading
- Protects and enhances the water quality of rivers and lakes
- Recharges groundwater aquifers
- Buffers developed areas from floodwaters, saving lives and property
- Protects water resources such as riparian corridors and aquifer recharge areas

Economic

- Increases property tax revenues and home values because properties near and adjacent to green infrastructure often increase in value and generate greater overall revenue
- Encourages corporate relocation to the area by increasing quality of life
- Increases tourism and new business generation, such as bed and breakfasts, rental facilities, restaurants, and art galleries
- Attracts environmentally sensitive development

Social

- Provides an alternative to crime and drugs
- Increases socialization and celebrates diversity
- Improves human health and eases mental fatigue
- Ensures access for urban residents to large green spaces
- Enhances local residents’ sense of connection with nature and to each other
- Expands opportunities for recreation

Application of Green Infrastructure Principles

Principle 1: Protect green infrastructure before development.

Formation of the Saginaw Bay Greenways Collaborative occurred in recognition of the area's rapid development and out of a desire to preserve the area's agriculture, natural resources, and ecosystems before it was too late.

Principle 2: Engage a diverse group of stakeholders.

Founders and supporters of the Collaborative include representatives of more than a dozen national, regional, and local agencies and nonprofit organizations. The members of the group offered many opportunities for the public to engage in planning for the green infrastructure system—everything from programs and a poster contest for schoolchildren to a speaker series and a day-long greenways charrette.

Principle 3: Linkage is key.

Partners in the Collaborative quickly recognized that they wanted to concentrate on the ecological linkages afforded by a green infrastructure system rather than a simpler, less ecologically based greenways trail system. Involvement of RTCA staff brought the experiences of and contacts with staff at other successful greenways and green infrastructure programs. The multiple opportunities for public involvement engaged citizens from across the area in new partnerships for conservation and community preservation.

Principle 4: Work at different scales and across boundaries.

Leaders of the Collaborative found innovative ways to make their virtual organization work by having various supporting agencies and groups perform the necessary functions. The Collaborative benefited from the previous cross-jurisdictional work experience of key agency partners, such as the East Central Michigan Planning and Development Region, WIN, and the Michigan Department of Environmental Quality. The Collaborative represented an innovative and productive partnership among federal, regional, state, and local agencies and organizations.

Principle 5: Use sound science.

The Collaborative established a technical advisory committee whose role was to ensure that the resource inventory criteria, methods, and data used in the GIS analysis were scientifically correct. Local officials and the public were invited to ground-truth the data.

Principle 6: Fund up-front as a public investment.

The Collaborative was funded by Saginaw Bay WIN, which is supported by Dow Chemical Company and a dozen other regional foundations. Matching funds and in-kind support came from more than a half-dozen federal, regional, and county agencies and nonprofits.

Principle 7: Green infrastructure benefits all.

The protection of green infrastructure in the Saginaw Bay region helps shield communities and ecosystems from flooding, improves water and air quality, preserves aesthetic beauty, protects wildlife habitat and genetic diversity among native plants and animals, supports agricultural industries and tourism, and provides an abundance of recreation opportunities.

Principle 8: Make green infrastructure the framework for conservation and development.

Stakeholders quickly made Collaborative members aware of their desire for a more unified approach to conservation planning and growth management, which triggered the shift from an emphasis on greenways to an emphasis on green infrastructure. Participants in the Collaborative met with local and regional officials early in the process to explain the concepts of green infrastructure and planning for conservation as well as growth. These meetings were critical in gaining the support of the officials for the green infrastructure system.

Evaluation

Unique, innovative, outstanding elements

This project began with a focus on transportation, recreation, and human interaction with natural areas and gradually changed to a focus on protecting ecosystems and water resources and decreasing habitat fragmentation.

The degree of community involvement sought and generated by the Collaborative is unusual. They used all kinds of methods—everything from personal meetings with local officials to a public speaker series, a poster contest, school presentations, and a greenways charrette to educate and excite stakeholders about the concept of green infrastructure, the idea of concurrent planning for growth and conservation, and the green infrastructure plan itself.

Key problems, challenges, & lessons learned

Mike Kelly of The Conservation Fund says that one of the biggest challenges the Collaborative faced was that all townships and cities in Michigan have planning and zoning abilities, as do some counties, which can make it difficult to accomplish the kind of regional planning envisioned for the green infrastructure network. The Collaborative headed off potential turf battles by the one-on-one meetings that gave local officials input to the inventory and design process.

Kelly says that partners in the Collaborative also found it challenging to describe the concept of green infrastructure and the idea that you can plan for conservation. Local governments tend to be reactive to growth, so developing this plan required a whole new mindset. Kelly emphasizes the critical importance of involving and informing local governments from the beginning.

Related Effort

Several other innovative and collaborative green infrastructure projects have been undertaken in the Saginaw Bay region. Here's just one example of such a project.

The Flint River in Saginaw County has long been prone to flooding of the low-lying agricultural land and rural areas in the downstream reaches. Rapid development in the upstream segments exacerbated the situation. Planned setbacks of some of the river's dikes to expand the capacity of the floodway during high water events created opportunities to enhance wildlife habitat within the river corridor. The floodplain between the river and the new dikes contains lightly managed grassland, so water quality also benefits. Construction of a large reservoir resulted in creation of a 160-acre waterfowl production area managed by the nearby Shiawassee National Wildlife Refuge. The top of the dike surrounding the reservoir may also provide the public an excellent site for exercise and wildlife viewing.

Photo courtesy of National Park Service, Rivers & Trails

Sources and References

Saginaw Bay Watershed Initiative Network. 2001. A Year of WINS, 2001 Annual Report

The following products of the Saginaw Bay Greenways Collaborative provided valuable source information:

A Vision of Green, summary project report, 2005. http://www.saginawbaywin.org/ (Choose “current events,” then “Vision of Green report”)

Saginaw Bay Greenways, Powerpoint presentation

Saginaw Bay Greenways Collaborative press releases

“It’s Great to be Green” poster

“A Vision of Green” poster

A Brief History of Green Infrastructure, Powerpoint presentation

Saginaw Bay Greenways Web site www.saginawbaywin.org

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About Green Infrastructure

Green infrastructure is a strategic approach to land and water conservation that links lands for the benefit of nature and people, helps identify conservation priorities, and provides a planning framework for conservation and development. Green infrastructure is different from conventional approaches to conservation because it looks at conservation values and actions in concert with land development and growth management. Green infrastructure projects bring public and private partners together to work collaboratively toward a common land conservation goal. They help move beyond jurisdictional and political boundaries by providing a process for identifying, protecting, and restoring interconnected green space networks that conserve natural ecosystem functions and provide associated benefits to human populations. The green infrastructure approach appeals to people concerned about biodiversity, habitat, and land conservation as well as people interested in open space and land use planning at the community, region, or statewide scale. It also appeals to smart growth advocates because of its potential to lessen impacts and reduce the costs of built infrastructure.

Green Infrastructure Case Study Series

This series of case studies highlights successful and innovative green infrastructure projects from around the country. The series was undertaken so that readers can learn from and improve upon approaches tried by others. We hope that thorough, well-documented examples will allow readers to see the many possibilities and to adapt successful practices to their unique situations and challenges. Each case study addresses the same basic pieces of the story: overview, highlights, background and context, process, public education and participation, results and products, management and stewardship, financing, application of green infrastructure principles, and evaluation. Eight principles of green infrastructure, which are elements of most successful efforts, form the core of the case studies. The series illustrates concrete, real-life examples of how to assess and protect green infrastructure, including details about how each step was implemented.

About The Conservation Fund

The Conservation Fund is a national, nonprofit land conservation organization that forges partnerships to protect America's legacy of land and water resources. Through land acquisition, community planning, and leadership training, the Fund and its partners demonstrate sustainable conservation solutions emphasizing the integration of economic and environmental goals. Since 1985, the Fund has protected more than 4 million acres of open space, wildlife habitat, and historic sites across America.

The Conservation Fund's Green Infrastructure Program was created in 1999 to build the capacity of land conservation professionals and their partners to undertake strategic conservation activities that are proactive, systematic, well integrated, and applied at multiple scales. The program is a cooperative effort of the Fund and multiple public and private partners. Program products include a national course, workshops and conference sessions, publications, case studies, demonstration projects, a Web site, and related educational materials.

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