Coastal Challenge

Land Use Planning in Michigan’s Shoreline Communities
An upwelling occurs in a lake or ocean when strong, steady winds push warm in-shore surface water away from shore causing colder, nutrient-rich water to rise.

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Land Use: A Cooperative Effort

When we talk of land use planning, the saying “think globally, act locally” is especially fitting. The combined effect of land use decisions, particularly along Michigan’s lengthy shoreline, impacts valuable natural resources and ultimately the health of the Great Lakes.

Individual cities, townships and villages around the state exercise land use planning authority. Unfortunately “global thinking” as evidenced by comprehensive planning and regional cooperation is the exception to the rule. Coordinated planning on a broad scale remains rare; individual communities cope as best they can with a complex array of issues.

Land use challenges range from managing explosive population growth and preventing urban sprawl, to redeveloping brownfields and maintaining a healthy economy—all while protecting natural resources and enhancing quality of life. It’s a tall order that has frequently propelled the topic of land use planning into newspaper headlines.

Given the impact of land use practices on our coastal resources, Michigan Sea Grant conducted a survey of more than 300 of the state’s coastal communities to gain a better understanding of how land use decisions are made at the local level.

Completed in December 2002, the survey sheds light on the tools, resources and barriers that impact land use planning along Michigan’s Great Lakes shoreline.

By understanding what takes place at the local level, land use organizations and state agencies can more effectively provide assistance in the form of funding, education and planning tools.

This issue of upwellings places Sea Grant’s coastal community survey into the broader context of Michigan’s coastal land use, highlighting land use planning concepts and strategies and presenting the primary environmental impacts on natural resources.

By recognizing the importance of local action and regional cooperation, in combination with new state-level land use initiatives, Michigan communities can begin to “think globally” and pursue a coordinated land use approach that protects entire watersheds, shorelines and, ultimately, the Great Lakes.

Jennifer Read Ph.D.
Michigan Sea Grant
Assistant Director
In support of a long-range restoration plan for the Great Lakes, Michigan Sea Grant will administer two projects selected for support from the National Sea Grant College Program. The initiatives will be led by the Great Lakes Commission and the Northeast-Midwest Institute.

These important preliminary studies will lay the groundwork for future restoration planning and implementation, says Michigan Sea Grant Interim Director George Carignan.

“Restoration of the Great Lakes Basin is a hugely complex and massive undertaking involving two countries, eight states, two provinces and many native American tribes,” says Carignan. “These early studies are intended to produce a framework for restoration that will enable an orderly approach to the many tasks that must be undertaken.”

The Great Lakes Commission, in partnership with the Great Lakes Sea Grant Network, will lead an effort to develop the scientific basis for a comprehensive restoration plan for the region. The ambitious two-year initiative will research ecosystem problems and needs; assess existing restoration initiatives; conduct focus groups that build on the development of state and provincial priorities; and convene a restoration planning forum to assemble outcomes.

These efforts support the work of the Council of Great Lakes Governors, which is developing a series of restoration planning priorities at the request of the Great Lakes Congressional Task Force.

The Northeast-Midwest Institute will lead a second initiative that will explore approaches that other regions have used to launch major ecosystem restoration initiatives. The Institute will compare and contrast other initiatives in order to develop a series of lessons relevant to the Great Lakes. It will also review the legislative history of key regional, national and international efforts to develop a useful reference for legislators.

These and complementary efforts will provide Congress with a scientifically defensible restoration plan for the Great Lakes. Such a plan is expected to have significant environmental, economic and social benefits for the Great Lakes region.
“When you look at environmental protection, land use is the underlying issue.”

Catherine Cunningham
Michigan Department of Environmental Quality
Coastal Management Program
Coastal Challenge
Land Use Planning in Michigan’s Shoreline Communities

From metropolitan Detroit to remote townships in the Upper Peninsula, Michigan’s coastal communities share more than just a section of Great Lakes shoreline: they also share management responsibility.

More than 300 Great Lakes coastal communities exercise land use planning authority. They guide commercial and industrial development, accommodate population growth and protect some of the state’s most valuable natural resources—from an abundance of freshwater to coastal wetlands, forests and sand dunes.

“When you look at environmental protection, land use is the underlying issue,” says Catherine Cunningham of the Michigan Department of Environmental Quality (MDEQ) Coastal Management Program. “There are a lot of cumulative and secondary impacts of development.”

According to a study by the MDEQ, habitat fragmentation is one of the most serious impacts of coastal development that results in loss of native biodiversity. Other impacts include loss of natural shoreline features such as wetlands, conversion of unique coastal farmland, impacts on Great Lakes islands and water quality degradation.

Combined with dramatic population growth in many coastal communities, local planning commissions face a formidable challenge. However, says Cunningham, it’s one that can be met.

“The idea is not to stop growth but to manage it,” says Cunningham. “You don’t want development decisions to lead to conflict in the future.”

Michigan coastal communities are growing at a faster rate than inland communities. Unplanned development along the state’s Great Lakes shoreline can have serious long-term consequences such as habitat fragmentation, erosion and limited public access.
Lack of coordinated planning is one reason that conflicts occur, says Michigan Sea Grant Extension Specialist Mike Klepinger.

“The sheer number of governing bodies with land use planning authority has led to uncoordinated development,” says Klepinger. “Communities are influenced by development decisions made in adjacent communities. Coordinated planning makes sense from a watershed or shoreline perspective.”

To help shoreline communities make sound land use decisions, Klepinger surveyed all of the state’s coastal communities in 2002 to gauge the status of land use planning tools and resources available at the local level. The survey is part of Michigan Sea Grant’s sustainable coastal community development initiative.

“We wanted to determine the level of activity—how many coastal communities have Master Plans, whether or not they’re using Geographic Information Systems, and identify staff resources devoted to planning.”

Answers to these questions give an idea of the extent of planning taking place at the local level, says Klepinger, and begin to reveal gaps that could lead to serious environmental and social consequences. (See page 7 for the primary impacts of coastal development.)

**Brownfields, Greenways and Smart Growth**

For many communities, preserving rural open space is a common goal. The notion of “smart growth” provides a starting point for decisions on where to locate development within a community.

“Smart growth is directing public funds to already developed areas—areas that are already serviced by public infrastructure such as roads, sewers and water, and services such as schools and public transportation,” explains Victoria Pebbles, Senior Project Manager for Transportation and Sustainable Development at the Great Lakes Commission. “Smart growth aims to preserve and enhance existing communities before investing in new ones.”

Pebbles notes that smart growth is implemented at the local level but requires leadership at the state level—through laws, policies and guidance.

For urban areas, the challenge may be to create greenspace. One way to do this is by developing greenways, ecological corridors that provide wildlife habitat and recreational opportunities.

In Detroit, more than 15 waterfront greenways projects are completed or underway, creating a linked park system that includes boardwalks, trails, marinas and other waterfront amenities.

“It’s a remarkable accomplishment that not only enhances economic opportunity but creates waterfront access for the people of Southeast Michigan,” says Michigan Sea Grant Extension Agent Mark Breederland, who serves as Chair of the Greater Detroit American Heritage River Initiative Steering Committee.
Impacts of Coastal Development

Fragmentation of coastal habitats
Road and building construction fragment special coastal habitats that support a diversity of native plants and wildlife. Some of these natural communities are unique to the Great Lakes and many are globally rare. Land disturbance along the shorelines inhibits wildlife movement and can result in a loss of native biodiversity.

Water quality deterioration
Development often increases the amount of impervious surfaces such as buildings, roads and parking lots. These hard surfaces prevent water from soaking into the ground or draining naturally, resulting in increased stormwater and surface water run-off. In coastal urban areas with high populations, water pollution can stem from overloaded septic and sewer systems, resulting in high levels of nutrients in near shore waters.

Conversion of agricultural lands and forests
Sprawling development patterns can consume agricultural and forest land that is economically valuable and provides benefits such as open space, wildlife habitat, watershed protection and scenic beauty. Unique coastal farmland influenced by lake-effect micro-climates is particularly vulnerable to development.

Loss of coastal wetlands
Coastal wetlands provide natural water retention and filtering capabilities and provide important fish and wildlife habitat. Unplanned development often results in draining and filling these ecologically valuable areas.

Impacts on Great Lakes islands
Great Lakes islands contain some of the most unique natural features, plants and animals in the region. Development can destroy these valuable landscapes and result in increased erosion, use conflicts and reduced public recreation opportunities.

Brownfields
A sprawling development pattern can occur at the expense of urban renewal, leaving former industrial sites (brownfields) unused. Successful brownfield redevelopment may reduce consumption of rural open space, enhance existing sites and contribute to economic vitality in urban areas.

Source: Michigan Department of Environmental Quality

Resources
For more information about land use planning tools, funding and public education, contact the following organizations:

- Great Lakes Commission
  www.glc.org

- Michigan Dept. of Environmental Quality Coastal Management Program
  www.michigan.gov/deq

- Michigan Land Use Institute
  www.mlui.org

- Michigan Land Use Leadership Council
  www.michiganlanduse.org

- Michigan Sea Grant
  www.miseagrant.umich.edu

- Michigan Society of Planning
  www.planningmi.org

- Michigan State University Extension Victor Institute for Responsible Land Development and Use
  www.msue.msu.edu/victorinstitute

- Northeast Michigan Council of Governments
  www.nemcog.org

- Southeast Michigan Council of Governments
  www.semcog.org
Some of the sites used to create the corridor are former industrial sites, or brownfields. In Michigan, guidelines for brownfield redevelopment took a major step forward in 2000 when regulations were broadened to include not only contaminated sites but also those considered to be blighted or functionally obsolete.

“Now it’s a quality of life issue,” says Lisa Szymecko of the Victor Institute for Responsible Land Development and Use. “It’s not just contaminant remediation. Communities want to get back their waterfront, or fit a master plan. The expanded scope of the brownfield guidelines gives planners an opportunity that didn’t otherwise exist.”

**A Master Plan for St. Clair County**

These and other land use strategies begin with local action but require a combination of regional cooperation and state leadership. In its plan for a sustainable future, St. Clair County is counting on all three.

Located just north of metropolitan Detroit, St. Clair County is one of Michigan’s largest coastal counties, with a population of 166,000. The county also boasts a lengthy and varied Great Lakes shoreline that stretches from sandy Lake Huron beaches, south along the St. Clair River to the unique delta wetlands of northern Lake St. Clair.

To accommodate a growing population—yet prevent consequences such as urban sprawl, transportation gridlock, loss of unique coastal habitat and deteriorating water quality—land use planners visualized an alternative future and created a Master Plan. The plan provides guidelines and recommendations to achieve balanced communities that allow economic growth yet maintain a high quality of life for county residents.

“We’re striving for a different vision, a different land use pattern that exudes many different values,” says Senior Planner Bill Kauffman.

Protecting natural resources and making the most of public tax dollars are high priorities. A map of St. Clair County projected for the year 2020 shows distinct districts that concentrate development where public services, such as water, sewer and transportation systems, already exist. Bisecting the map is a spider web of green—a network of coastal and river buffer zones, woodlands, parks and open space.

With funds from the MDEQ Coastal Management Program, St. Clair County also created a coastal community land use guide and made this and its Master Plan available online.

Local governments are not obligated to follow the Master Plan, says Kauffman, but many are doing so, incorporating ideas about open space corridors and developing zoning ordinances that guide development and protect natural resources. Their actions play a key role in how the plan unfolds.

“Our task is to convince communities that local leaders have a stake in this vision and need to take the appropriate steps to enable it to occur.”

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Waterfront redevelopment is part St. Clair County’s Master Plan. In the background, the Blue Water Bridge, which connects the U.S. and Canada, crosses the St. Clair River.

Land use planning has received increased attention recently at the state level. The newly formed Michigan Land Use Leadership Council held its first public meeting on March 24, 2003 in Lansing. For more information, see: www.michiganlanduse.org
The use of Geographic Information Systems or GIS as a land use planning tool in Michigan coastal communities has increased from 11 percent in 1994 to 35 percent in 2002, according to Michigan Sea Grant's coastal community survey.

The data management software links complex database information—such as soil types, zoning boundaries and even property ownership—to geographic references, allowing quick analysis of land use features and characteristics.

"It enables you to see relationships that may not have been apparent without a visual reference," says GIS Analyst Trevor Floyd, who works for St. Clair County.

Floyd gives the example of a conservancy interested in protecting wetlands. For this task, GIS can link natural features information with land survey data, thus providing community planners a method to examine zoning and identify properties of concern. Parcel owners may then be contacted in order to increase public awareness and focus future efforts.

Floyd also notes current GIS applications specifically for working with watersheds. One capability enables technologists to map water flow as a way to visualize possible contaminant routes.
Michigan Sea Grant Extension Agents
McKinney and Hoagman Retire

A Familiar Face
on Grand Traverse Bay

“I see my job as basically being a resource for people about any Great Lakes issue—whether I’m the expert or I find an expert,” says McKinney, who retires May 31. “Over time, I’ve touched on just about every issue.”

One of the most serious has been land use and population growth along the coastline. “It’s always been a hot issue, but never more so than now,” says McKinney. “Many people recognize that what makes this region of the state unique is slowly being lost.”

McKinney helped to establish The Grand Traverse Bay Watershed Initiative (now The Watershed Center), a collaborative effort to protect Grand Traverse Bay.

Among his other accomplishments, McKinney developed maritime heritage programs and helped to establish the Manitou Passage Underwater Preserve. He educated countless residents about Great Lakes fisheries, water levels and the impacts of aquatic nuisance species.

His favorite part of the job has been working with the people of the seven counties in the Northwest region. “I’ve especially enjoyed working with students,” says McKinney. “The Great Lakes camp for young teens was always a high point. The hands-on learning really brings the issues home for the kids, and that’s very rewarding.”

During his tenure as an extension agent, McKinney led numerous tourism education activities and participated in nine international extension programs including three trips to Ireland, where he’ll visit again this summer.

John McKinney and his wife Anne plan to continue living in the Traverse City area, where he expects to be active in maritime heritage and environmental education projects.
**Telling the Lake Huron Story**

Spend a day with Walter Hoagman and you’re likely to get a whirlwind tour of coastal Lake Huron. A Michigan Sea Grant Extension Agent based in East Tawas since 1989, Hoagman has become a resident expert on everything from Lake Huron’s coastal plants and wetlands to fisheries, migrating birds and shipwrecks.

“I enjoyed this aspect of my job very much—the field days out walking the shore to collect material and plants, take photos and record observations about the birds, fish, and physical dynamics of Lake Huron,” says Hoagman, who retires May 31.

Hoagman used the data as a basis for creating two popular field guides: *Great Lakes Coastal Plants* and *Great Lakes Wetlands* as well as web pages highlighting unique features of the northern Lake Huron coastline. He shared his knowledge with students and adults during many educational presentations in northeast Michigan.

Before becoming an extension agent, Hoagman held faculty positions at the University of Virginia and Indiana State University. He worked on a United Nations project for the Mekong River in Southeast Asia (Cambodia).

Hoagman has published numerous scientific articles during his career and provided technical assistance to businesses, organizations and individuals on sportfishing, aquaculture, water quality, aquatic nuisance species, and shoreline ecology.

But his lasting memories, says Hoagman, will be of walking the coast with his black lab Bunker, collecting data along the Lake Huron shoreline.

“Taking information back to the office and putting together the coastal zone story—the ecology, hydrology and botany of Lake Huron—into two field guides has made the circle complete.”

Walter Hoagman and his wife Athelia will retire to Guthries Creek, Virginia, a tributary of Chesapeake Bay.