PREVENTING WATER QUALITY PROBLEMS BY LOCAL PLANNING AND ZONING IN THE SAGINAW BAY WATERSHED

Saginaw Bay Watershed Conference
March 16, 2012

A Great Lakes Restoration Initiative (GLRI)

Introduction

Funding
• Great Lakes Restoration Initiative (GLRI) by U.S. Environmental Protection Agency (EPA)

Project Team
• Planning & Zoning Center (PZC) at Michigan State University (MSU)
• East Michigan Council of Governments (EMCOG)
• Saginaw Basin Land Conservancy (SBLC)

Advisory Assistance
• Michigan Department of Environmental Quality (DEQ)

Project Purpose

To protect water quality in the Saginaw Bay by preventing future water pollution through:
1. Education
2. Collaboration
3. Coordination
4. Technical assistance
5. Action by local government
6. Action by land owners
7. Action by water quality advocacy organizations and other local organizations

Project Study Area

The Saginaw Bay Watershed:
• Michigan’s largest watershed (8,709 square miles)
• Associated with 22 counties
• Drains approximately 15% of Michigan’s total land area
• Pilot sub-watersheds:
  • Pigeon River
  • Pinnebog River
  • Cass River
  • Rifle River
Rifle: Ogemaw & Arenac Counties

- County planning and zoning apply in all but two of the townships in Ogemaw county.
- There are four other watersheds in Ogemaw County, including parts of the Au Gres, Rifle, Tittabawassee, and Au Sable River Watersheds.
- Arenac County has a new County Plan, but no county zoning.

Pigeon/Pinnebog: Huron County

- Both sub-watersheds overwhelmingly drain agricultural land uses and, to a smaller degree, undeveloped and urban lands.
- Illustrated are the Pigeon and Pinnebog River Watersheds including all of their tributaries and lands that feed runoff into them.
- There are four other watersheds in Huron County as well, including parts of the Cass, Elk Creek, Bird Creek, and Sebewaing River Watersheds.

Cass River Sub-Watershed
Tuscola, Sanilac and Saginaw Counties

- Everything upstream ends up downstream, including contamination (sediments, nutrients, pesticides, human and animal waste, etc.);
- Human and animal health impacts;
- Potential loss of recreational opportunities; and
- Healthy watersheds are necessary for a healthy economy.

Why be Concerned About Water Quality in the Saginaw Bay and Your Local Rivers?

Background

Saginaw River/Bay Area of Concern (AOC)

- Saginaw River/Bay is one of 14 AOCs in Michigan
- Includes all 22 miles of the Saginaw River & Saginaw Bay
- Designated an AOC by EPA since 1988

Great Lakes Restoration Initiative (GLRI)
Implementing the AOC Plan

- The GLRI program identifies goals, objectives, measurable ecological targets, and specific actions for each of the following five focus areas:
  1. Cleaning up toxics and AOCs;
  2. Combating invasive species;
  3. Promoting nearshore health by protecting watersheds from polluted run-off;
  4. Restoring wetlands and other habitats; and
  5. Tracking progress and working with strategic partners.

Background

Saginaw River/Bay Area of Concern (AOC)

- Of the 14 Impairments criteria, Saginaw River/Bay includes 10:
  1. Restriction on fish and wildlife consumption
  2. Eutrophication or undesirable algae
  3. Degradation of fish and wildlife populations
  4. Beach closings
  5. Degradation of aesthetics
  6. Bird or animal deformities or reproduction problems
  7. Degradation of benthos lakebed ecosystem
  8. Degradation of phytoplankton and zooplankton populations
  9. Restriction of dredging activities
  10. Loss of fish and wildlife habitat

Hydrologic Cycle

Water for drinking, irrigation, industry
Understanding Your Watershed

- Key components of ecosystems.
- Area of land that drains to a common outlet.
- Water running downhill to the lowest point.

Rifle River Natural River Plan

- Created in May 1980 under Michigan’s Natural River Program.
- The goal of the plan is to preserve, protect and enhance the Rifle River environment in a natural state for the use and enjoyment by all generations.
- Including the Rifle River, there are 13 other designated natural rivers in Michigan.

Rifle River Natural River

- The Rifle River Natural River District includes an area 400 feet wide on each side of and parallel to all channels of the designated mainstream and to the designated tributaries.

The Rifle River Non-Point Source Watershed Management Plan

- Developed in 1999 by:
  - Huron Pines RC&D Area, Inc.
  - Saginaw Bay RC&D Area, Inc.
  - Rifle River Watershed Restoration Committee
- “In order to assure that growth within the Rifle River watershed does not adversely impact the region’s natural resources, proper planning is of paramount importance.”
Rifle River Non-Point Source Watershed Management Plan

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<thead>
<tr>
<th>ISSUES</th>
<th>STRATEGIES FOR IMPROVEMENT</th>
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<td>Sedimentation from road/stream crossing</td>
<td>Livestock exclusion fencing</td>
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<td>Eroding streambank segments</td>
<td>Livestock stream crossings</td>
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<tr>
<td>Impacts transmitted from various agricultural activities</td>
<td>Animal waste storage facilities</td>
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<td>Stormwater runoff from developed lands</td>
<td>Filter/buffer strips</td>
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<td>Improperly functioning septic systems</td>
<td>Nutrient management</td>
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<td>Industrial and municipal surface water discharges</td>
<td>Integrated pest management</td>
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<td>Thermal pollution</td>
<td>Grassed waterways</td>
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<td>Recreational use conflicts</td>
<td>Mulch tillage</td>
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<td>Agricultural drainage</td>
<td>No-till</td>
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- These two watersheds have plans— and they’re good!
- Your community and local organizations have worked hard to create these plans and now it is time to help implement them.


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<td>Two-stage ditches</td>
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<td>Conservation tillage</td>
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<td>Development of Comprehensive Nutrient Management Plans for agriculture</td>
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<td>Buffer strips</td>
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<td>Stream bank stabilization</td>
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<td>Tile outlet repair</td>
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<tr>
<td>Stormwater, wetland, and stream buffer ordinances</td>
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<td>Native plantings</td>
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<td>Low-Impact Design practices</td>
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<td>Wetland restoration and protection</td>
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<td>Volunteer clean-up and public education.</td>
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<td>Livestock exclusion from watercourses</td>
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<td>Identify and correct illicit discharge connections</td>
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<td>Land Conservation</td>
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The Cass River Rapid Watershed Assessment (RWA)

- Developed in 2008 by the Cass River Rapid Watershed Assessment Technical Committee (members consisting of various federal, state, and local agencies and organizations)
- “The RWA provides a brief assessment of the Cass River watershed’s natural resources, resource concerns and conservation needs.”

“Nonpoint source pollution is the primary pollution threat facing the water resources of the Cass River Watershed. Nonpoint source pollution is any pollutant carried off the land by water or wind and deposited into surface water.” Can include sediment, fertilizer, pesticides, herbicides, fungicides, vehicle lubricants, etc.
Your Local Watershed Plans

The Cass River Rapid Watershed Assessment (RWA)

**Issues**
- Eroding stream banks
- Poor road/stream crossings
- Storm runoff
- Cropland erosion
- Loss of riparian & wildlife corridors
- Loss of wetlands
- Channelization
- Septic effluent
- Crop fertilizers
- Livestock waste
- Thermal pollution
- Lack of proper zoning
- Invasive species

**Goals for Improvement**

- Institute responsible land use protection and public policy to protect parcels within the watershed that provide groundwater recharge, key wildlife habitats, headwater stream protection, important wetland functions, coastal areas, etc.
- Identify sites contributing to water quality problems and work with producers to implement Best Management Practices (BMPs).
- Identify sites that are unnaturally adding sediment to the river system and implement a system of Best Management Practices where possible.
- Increase and develop citizen involvement/public awareness and responsible use of the watershed through stewardship and education.

**Roles of Major Players**

- Federal Agencies
  - EPA
    - Funded GLRI and other enhancement activities
  - DNR
    - Role in wetland permits
  - USDA
    - GLRI
    - Funds restoration initiative (e.g., through the Great Lakes Restoration Initiative (GLRI)).
- State Agencies
  - Landowners
    - Implement BMPs and Low Impact Development
  - Road Commission
    - Dredging permits
  - Conservation organizations and watershed organizations
    - Education of farmers and other landowners
  - USGS
    - US Environmental Protection Agency (EPA)
    - National Institutes of Health (NIH)
    - Coastal Landscapes
  - Army Corp.
    - Wetland permits
  - DEQ
    - Manage State Land Trust Fund grants
  - WCA
    - Coastal wetland and critical habitat areas
  - USDA
    - Fund conservation organizations and watershed organizations
- County Agencies
  - Drain Commissioners
    - Review and approve plans for BMP implementation
  - Road Commission
    - Manages negative impacts from road crossings and use of de-icers
- Local Governments
  - Education on BMPs and Best Management Practices
  - Land Trust Fund
    - Permanent funds to support acquisition of land
- Local Master Plans
  - Support cleanup and delisting
- Federal Agencies
  - DNR
    - Manage State Land
  - Education
  - Support cleanup partnerships
  - Natural Resource
    - Land Trust Fund
  - EPA
    - BMP and Low Impact Development
  - City of Saginaw
    - Stormwater
  - US Environmental Protection Agency (EPA)
  - US Department of Agriculture (USDA)
  - US Department of the Interior
  - US Fish and Wildlife
  - US Army Corps of Engineers
  - US Geological Survey (USGS)

**Outcomes**
- Clean water that is fishable and swimmable, with less sediment, fertilizers and pesticides.
- Happy users.
- Happy taxpayers.
- De-list the Bay!
### Local Role

- Education on BMPs and low impact development practices.
- Local governments should identify their main issues of concern in the master plan, then create goals and objectives for resolving these issues.
- Develop and adopt regulations (in the zoning ordinance and others) that support these plans to ensure that progress will be made.
- Adequate ordinance enforcement.
- Coordinate with various stakeholders in the community to leverage resources and educate on the importance of water quality.

### What PZC at MSU is Doing

- Developed a Watershed Protection Planning & Zoning Assessment Tool to evaluate water quality protection measures and applied it to about 100 jurisdictions.
- Provide appropriate recommendations and sample language to update Master Plans and Zoning Ordinances in about 100 local governments.
- Assisting the local governments through the adoption process.
- Lined up basic planning & zoning training for local governments.
- Developing LID Best Management Practices Guidebook for Local Governments.
- Free consulting to local governments!

### Watershed Protection Planning & Zoning Assessment Tool

**Part 1: Conformance with Michigan’s P&Z Enabling Acts:**

- ✓ Documents refer to a “planning commission”
- ✓ Plan has undergone an official 5-Year review
- ✓ Plan contains a land use component
- ✓ Plan contains an infrastructure component
- ✗ Plan includes redevelopment plans for blighted areas
- ✓ Plan contains a zoning plan component
  - ✓ A proposed schedule of regulations
  - ✓ Standards to be used when considering rezonings
  - ✓ Suggested boundaries of zoning district
  - ✓ Land use categories on future land use map relate to the zoning map
  - ✓ Plan offers recommendations for implementing proposals
- ✓ Zoning Ordinance contains or is accompanied by a zoning map and text that states regulations for districts
Part 2: Master Plan Analysis:

- The estimate of impervious land cover was 5.2%* (relatively low); studies indicate that water quality begins to decline as the overall watershed develops beyond 10% imperviousness.

- Community should continue to keep impervious cover low by encouraging Best Management Practices for new development that support impervious surface reduction.

*This percentage does not include roads.

Part 2: Master Plan Analysis:

The plan identifies only one specific goal related to water quality in the “Goals” sections:

- Promote the protection of sensitive environmental resources including but not limited to waterways, wetlands, steep slopes, important wildlife habitat, springs/seeps, shorelines, and dark skies.

- Maintaining and improving water quality (drinking water, surface and groundwaters), natural and recreational areas, air quality and other environmental attributes.

- Protect the water quality and near shore environment of lakes, ponds, streams, creeks, wetlands, etc. from degradation, siltation, pollution, and other human impacts.

Part 3: Zoning Ordinance Analysis:

Water Quality Elements contained in Site Plan Review:

- Conduct site plan review pending approval of other agencies’ permits (soil erosion, wetlands permits, septic and well permits, etc.)

- Reviews and comments requested from other agencies when applicable for water quality (County Road Commission, Health Department, Building Inspector, etc.)

- Risk of natural hazards from flooding, erosion, slumping of steep slopes or sandy soils, subsidence or other natural event has been adequately considered

- Explicit standards for environmental feature protection

- Standards for the storage and use of hazardous substances

- Prohibits grading or soil stripping prior to site plan review

- Requires a stormwater drainage plan for all new uses engaging in significant earth changes

Assessment is Tied to Basic Best Management Practices for Protecting Water Quality
Basic Principles of Water Quality Protection

1. Keep toxic materials out of streams and lakes
2. Keep sediment out of streams and lakes
3. Keep heated stormwater out of streams and lakes
4. Reduce impervious surfaces—allow for natural infiltration
5. Slow and reduce the volume of water entering streams
6. Protect groundwater from harmful discharges

Best Management Practices Guidebook Focused on Rural Areas

- To provide local units of government with information about how land development and other activities on the land affect water quality.
- To provide educational materials on best management practices that lower the impact of land use activities on our water.
- To provide sample language for your community’s master plan and zoning ordinance to ensure the lowest possible impact on water quality.

Essential Elements

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<thead>
<tr>
<th>Essential Elements in Master Plan and Zoning Ordinance</th>
<th>No</th>
<th>Yes</th>
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<tbody>
<tr>
<td>Goals and Objectives</td>
<td>X</td>
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<td>Environmental Inventory</td>
<td>X</td>
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<td>Coordinated Permitting</td>
<td>XX</td>
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<td>Coordinated Site Plan Review</td>
<td>X</td>
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<td>Earth Change Activity as Regulated Under Soil Erosion and Sedimentation Control Act</td>
<td>X</td>
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<tr>
<td>Accumulation &amp; Disposal of Waste (Junk &amp; Yard Waste) and Other Materials</td>
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• Communities can judge the level at which they are able to implement the approaches.

• A community may decide on the level they wish to pursue.

• For example, in places where land use is almost wholly agricultural, the community has little authority to regulate agricultural activities, but can play a role in providing educational materials and opportunities to its residents.

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**Good, Better, Best Approaches**

<table>
<thead>
<tr>
<th>IMPLEMENTATION TECHNIQUES</th>
<th>SUBSTANDARD/ NOT INCLUDED</th>
<th>Good</th>
<th>Better</th>
<th>Best</th>
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<tr>
<td>Conservation Easements</td>
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<td>Green Streets Bio-Retention</td>
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<td>PUBLIC EDUCATION</td>
<td>SUBSTANDARD/ NOT INCLUDED</td>
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<td>Agricultural BMPs</td>
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<td>Open Lands Vegetation Management</td>
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<td>Water Quality Monitoring</td>
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<td>Drain Clearing</td>
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<td>Road &amp; Bridge Repair and Stream Crossings</td>
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**Requested Outcomes**

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<tr>
<th>BEST MANAGEMENT PRACTICES</th>
<th>SUBSTANDARD/ NOT INCLUDED</th>
<th>Good</th>
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<th>Best</th>
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<tr>
<td>Parcel Splits for Buildable Area</td>
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<td>Land Division Alternatives</td>
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<td>Stormwater Management (Plan)</td>
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<td>Stormwater Management (Ordinance)</td>
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<td>Impervious Surface Reduction (Plan)</td>
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<td>Impervious Surface Reduction (Ordinance)</td>
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<td>Protecting Groundwater</td>
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<td>Natural Feature and Drain Setback</td>
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<th>RESOURCE PROTECTION TECHNIQUES</th>
<th>SUBSTANDARD/ NOT INCLUDED</th>
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<td>Resource Protection Overlay Dist. (Plan)</td>
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<td>Resource Protection Overlay Dist. (Ordinance)</td>
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<td>Floodplains</td>
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<td>Woodland Protection and Reforestation (Plan)</td>
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<td>Wetland Protection/ Restoration/ Creation</td>
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**We gave Pilot Jurisdictions a Homework Assignment to ID Requested Outcomes**

• Follow the steps laid out on the next six slides

  1. Review the assessment
  2. Review your water quality protection approaches
  3. Compare to methods for protecting water quality
  4. Select “Good,” “Better,” & “Best” and contact us
  5. PZC custom tailors MP and ZO amendments for your community
  6. Contact us with any questions at any point.
STEP 1: REVIEW YOUR COMMUNITY’S ASSESSMENT

Review your community’s “Water Quality Planning and Zoning Assessment”
• Is the assessment of the community accurate?
• If not, please make corrections and provide citations (documents and page numbers), then return the assessment to us, as soon as possible.

STEP 2: LOOK AT YOUR COMMUNITY’S WATER QUALITY PLANNING AND ORDINANCE APPROACHES

Your community has been evaluated for the presence of basic water protection elements in your master plan and zoning ordinance.
• Look at the blue form: Water Quality Planning & Ordinance Approaches

Based on our criteria, your community may already fall into the categories of “good”, “better”, or “best”. If this is not the case and your community lacks a significant amount of basic protections, you should be concerned!

STEP 3: COMPARE YOUR WATER QUALITY PLANNING AND ORDINANCE APPROACHES TO THE METHODS FOR PROTECTING WATER QUALITY

• Look at the green form: Methods for Protecting Water Quality
• Compare the green form with your community’s Water Quality Planning and Ordinance Approaches (blue form)

What modifications can you make to improve existing plans and ordinances? Where your community has “nothing”, what kind of protections would you like to see?

STEP 4: CONTACT PZC AT MSU WITH YOUR DECISIONS

Send back completed “GOOD, BETTER, BEST FORM”

Share info with local land use decision makers (e.g. planning commissioners, planning staff, city/village council) and come to a consensus on what protections work best for the community.

Things to consider:
• Is the community meeting basic statutory requirements?
• Have you encountered issues in the past where these protections may have helped?
• Are we cooperating with our region to solve the problems in the Bay?
• What kind of capacity do we have to implement these changes?

When you decide, contact the Planning & Zoning Center at MSU.
Based on your responses, the PZC will craft Master Plan and Zoning Ordinance language specifically for the community.

- Is the community in the process of updating its Master Plan? This is the perfect time to ensure your water resources are receiving adequate attention!
- Be certain that the community is in compliance with Michigan’s most recent planning and zoning statutes.
- Because planning and zoning cannot apply retroactively, receive professional help and be better prepared for future development.

The Planning & Zoning Center at MSU is committed to helping Saginaw Bay-area communities achieve a higher standard for water quality protection and we will be available to assist you along the way.

Please contact us if you have questions regarding the project!

Phone: (517) 432-2222
Write: 310 Manly Miles Bldg.
1405 S. Harrison Rd.
East Lansing, MI 48823
E-mail: soucyr@landpolicy.msu.edu

Next Steps

PZC prepares sample Master Plan and Zoning Ordinance amendments for rest of the communities (March – April)

PZC continues to meet one-on-one with communities in Technical Assistance Workshop (February - April)

PZC Finishes & Distributes BMP Guidebook (June – July)

PZC assists communities with the Master Plan and Zoning Ordinance amendment adoption process (May – Sept.)

Project completion in mid-September 2012.

Contact Information

Mark A. Wyckoff, FAICP
Professor and Director
Planning & Zoning Center at MSU
Senior Associate Director, Land Policy Institute

Jacqueline Spry
Visiting Academic Specialist-Outreach at MSU

Project Website
http://www.landpolicy.msu.edu/SaginawBayProject

Great Place Network
http://www.greatplacenetwork.org/