
Name of Organization: Eastern Michigan University (CEITA)

Type of Organization: College or University

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Project Title: GIS to Support the Lake Huron/Erie Corridor

Project Category: Emerging Issues

Rank by Organization (if applicable): 0

Total Funding Requested (\$): 147,000 **Project Duration:** 2 Years

Abstract:

The Lake Huron/Lake Erie corridor is comprised of the St. Clair River, Lake St. Clair and Detroit River. These two rivers are Areas of Concern (AOC) within the Great Lakes. In 1996, the third priority recommendation in the Detroit River Remedial Action Plan (RAP) report, was to develop a geographic information system (GIS) for the St. Clair/Detroit River AOC's. It was recognized then, that timely access to accurate spatial data in a GIS is a key tool for efficient and cost-effective decision making when addressing environmental issues. Addressing the information needs of the RAP's with a comprehensive GIS, will greatly assist the environmental restoration goals of the Lake Erie Management Plan (LaMP). Along with addressing LaMP goals, a GIS with this areal extent could help address the environmental problems associated within Lake St. Clair and be instrumental in spills planning and with implementation of the binational Lake Huron/Erie corridor environmental monitoring strategy, currently being developed. This GIS would also be a key asset for mapping habitat locations identified in the biodiversity atlases being developed by the U.S. and Canada and be used culturally for mapping historic features as part of the American Heritage Rivers designation for the Detroit River. This project will assemble and disseminate available data sets on commercial, industrial, and environmental information, and on imagery, habitats, cultural, transportation, hydrologic and physical features. Our ultimate goal is to provide consistent spatial data layers covering the Lake Huron/Lake Erie corridor. A GIS developed with this scope will support Lake Huron/Lake Erie corridor environmental management and will provide a solid foundation for interagency spatial data sharing and collaboration across the binational region.

Geographic Areas Affected by the Project

States:

- | | | | |
|-------------------------------------|-----------|--------------------------|--------------|
| <input type="checkbox"/> | Illinois | <input type="checkbox"/> | New York |
| <input type="checkbox"/> | Indiana | <input type="checkbox"/> | Pennsylvania |
| <input checked="" type="checkbox"/> | Michigan | <input type="checkbox"/> | Wisconsin |
| <input type="checkbox"/> | Minnesota | <input type="checkbox"/> | Ohio |

Lakes:

- | | | | |
|--------------------------|----------|-------------------------------------|-----------|
| <input type="checkbox"/> | Superior | <input checked="" type="checkbox"/> | Erie |
| <input type="checkbox"/> | Huron | <input type="checkbox"/> | Ontario |
| <input type="checkbox"/> | Michigan | <input type="checkbox"/> | All Lakes |

Geographic Initiatives:

- | | | | | | | | | | |
|--------------------------|-----------------|--------------------------|---------|--------------------------|------------|-------------------------------------|-------------|-------------------------------------|----------------|
| <input type="checkbox"/> | Greater Chicago | <input type="checkbox"/> | NE Ohio | <input type="checkbox"/> | NW Indiana | <input checked="" type="checkbox"/> | SE Michigan | <input checked="" type="checkbox"/> | Lake St. Clair |
|--------------------------|-----------------|--------------------------|---------|--------------------------|------------|-------------------------------------|-------------|-------------------------------------|----------------|

Primary Affected Area of Concern: Detroit River, MI

Other Affected Areas of Concern: St. Clair River, MI

For Habitat Projects Only:

Primary Affected Biodiversity Investment Area: Lake St. Clair/Detroit River

Other Affected Biodiversity Investment Areas:

Problem Statement:

The Lake Huron/Lake Erie corridor is part of an international boundary between the United States and Canada. It comprises the St. Clair River, Lake St. Clair and Detroit River. The Detroit River Stage 1 RAP outlined AOC issues. These issues included contaminated sediments, point (both municipal and industrial discharges) and non point (stormwater runoff, air deposition and combined sewer overflows) sources and habitat issues which included habitat loss and the potential impacts of existing water and sediment quality on biota. These are issues which affect the entire corridor.

The Upper Great Lakes Connecting Channels Study and the Stage 1 RAP identified upstream contaminant inputs as contributing the largest proportion of many contaminants when compared to the classes of inputs within the AOC. In recognition of this situation, the Detroit River General Water Use Goal 3 states that addressing impaired beneficial uses will require a basin wide effort (i.e. the Lake Huron/Lake Erie corridor) for remediation.

As described above, remediation and habitat restoration of the St. Clair River, Lake St. Clair and Detroit River is a complicated issue. Implementation of many of the RAP recommendations are now impeded due to the lack of a mechanism to make ecosystem data accessible to interested parties. This project fulfills this objective by providing an easy, reliable and cost-effective mechanism to make accessible and distribute, a wide variety of data sets in a standardized geo-referenced environment to stakeholders to use, for spatial data analysis and thematic mapping purposes.

Communication among stakeholders is the foundation of effective ecosystem management. Thematic mapping based on spatial analysis will be an important visual component of the communication effort needed to assist decision makers and the general public, in making better informed decisions. This proposed GIS project cuts across and overlaps several Great Lakes priority projects because it has the potential to further the restoration and maintenance of the chemical, physical and biological integrity of the Lake Huron/Lake Erie corridor ecosystem.

To make this accurate and detailed data accessible to Remedial Action Plan groups, non-governmental organizations (NGO), communities and the general public, we propose to distribute, on CD-ROM media, standardized data layers with easy-to-use software tools for constructing thematic maps. The data and software tools will be packaged and designed for installation on common computer operating system platforms. Users will not have to be GIS practitioners to use the data and customized mapping tools.

Proposed Work Outcome:

This proposal describes the scope of work for a 24-month project that assembles, categorizes, and distributes standardized data layers, covering the binational Lake Huron/Lake Erie corridor. The project will enable binational

cooperation for RAP project design and implementation, based upon a freely-shared, comprehensive, highly accurate and detailed, spatial information database. The processes we propose, to make the data accessible to Remedial Action Plan (RAP) groups, non-governmental organizations (NGO), communities and the general public are described below:

1. Develop and distribute a survey to U.S. and Canadian agencies responsible for AOC, Lake St. Clair remediation and habitat restoration efforts. The survey would evaluate data availability, cost of procurement, data needs and presentation standards required to assist stakeholders with Huron/Lake Erie corridor projects.
2. Develop data processing and presentation protocols, based on the survey.
3. Contact partnering agencies and prepare contracts needed to obtain selected data sets.
4. Process data and design customized mapping tools for standard mapping presentations.
5. Distribute standardized data layers and mapping tools on CD-ROM media to stakeholder agencies, Remedial Action Plan groups, non-governmental organizations (NGO), and communities.
6. Finally, we propose to disseminate the Huron/Lake Erie corridor data and mapping tools to the general public via the Internet from a Web site and server located in the CEITA laboratory at Eastern Michigan University. These data would also be made available to the Great Lakes Commission for inclusion into the GLIN program, if desired.

Project Milestones:	Dates:
Develop and Distribute Survey	09/2000
Processing and Presentation Protocols	12/2000
Prepare Contracts; Obtain Data/ Metadata	03/2001
Process Data; Design Mapping Tools	09/2001
Distribute Data and Public Outreach	04/2002
Disseminate Project Data via Web Server	08/2002
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Project Addresses Environmental Justice

If So, Description of How:

Recently, there are growing concerns among public policymakers about the potential exposure of urban residents to environmental pollution and the associated effects on their health. These concerns have been termed environmental justice. We believe this project addresses environmental justice by developing a database which can be used by policymakers to evaluate the spatial relationship between urban demographics (census data) and the location of contaminated sites within the AOC's (project data). The Detroit River RAP GIS can be a powerful tool in prioritizing remedial action sites based on their adjacency to the highest urban population areas.

Project Addresses Education/Outreach

If So, Description of How:

Educational institutions have been providing public education and outreach services for decades. In this project, there is an opportunity to inform the public and increase their awareness of the Detroit River and the efforts being undertaken through the RAP process to restore the river's impaired beneficial uses. This project proposes to address the education and outreach needs of the community by providing maps to citizen groups, the Detroit Public Schools, Friends of the Detroit River and other interested parties. The visualization of technical and cultural data is one of the fundamental uses of GIS, and these maps can convey these types of information in a manner more easily understood by the general public than data tables alone. We feel that this component can be an integral part of a successful program.

Project Budget:

	Federal Share Requested (\$)	Applicant's Share (\$)
Personnel:	100,000	10,000
Fringe:	7,788	0
Travel:	2,000	0
Equipment:	4,000	7,500
Supplies:	3,847	0
Contracts:	19,000	0
Construction:	0	0
Other:	0	0
Total Direct Costs:	136,635	17,500
Indirect Costs:	10,365	0
Total:	147,000	17,500
Projected Income:	0	0

Funding by Other Organizations (Names, Amounts, Description of Commitments):

Eastern Michigan University (EMU) will provide a match of \$17,500 toward the total grant funds provided for this project. EMU will provide funds for new equipment, tuition for graduate students, software licensing, and in-kind personnel services required for public outreach and dissemination.

Description of Collaboration/Community Based Support:

This project requires collaboration with several major U.S. and Canadian agencies. These agencies could provide the digital data sets needed to build the GIS for the RAP and AOC areas. These agencies would include the:

- * U.S. Environmental Protection Agency - Region 5;
- * U.S. Army Corps of Engineers - Detroit District;
- * Michigan Department of Environmental Quality;
- * U.S. National Oceanic and Atmospheric Administration - Great Lakes Environmental Research Laboratory;
- * U.S. Geological Survey - Great Lakes Science Center;
- * Great Lakes Commission;
- * Southeast Michigan Council of Governments;
- * Great Lakes Institute for Environmental Research - University of Windsor;
- * Environment Canada;
- * Ontario Ministry of the Environment and Energy; and
- * Essex Region Conservation Authority.

Community based support for this project would include groups such as Friends of the Detroit River, Michigan State University's Cooperative Extension Service, Wayne County Department of the Environment, the Detroit Public Schools, American Heritage Rivers, and Detroit River/St.Clair River RAP Steering Committees. Several of these groups would assist Eastern Michigan University with the Public Outreach component of this project.