Name of Organization: Great Lakes Commission

Type of Organization: Interstate Agency or Commission

Contact Information: Dr. Michael J. Donahue

The Argus II Bldg., 400 Fourth St.

Ann Arbor MI 48103

Phone: (734) 665 - 9135 **Extension:**

Fax: (734) 665 - 4370

E-Mail: mdonahue@glc.org

Project Title: Rapid Response Plan for Great Lakes Aquatic Invasions

Project Category: Invasive Species

Rank by Organization (if applicable): 0

Total Funding Requested ($): 151,495 **Project Duration:** 2 Years

Abstract:

The introduction and spread of Great Lakes nonindigenous invasive species (NIS) in the Great Lakes-St. Lawrence system threatens the economic and ecological health of the region. Early detection of NIS introductions and monitoring of established populations will help significantly mitigate impacts. Currently, functional models do not exist for the prediction of NIS invasions nor are detection/monitoring programs im place to mobilize rapid response and implementation of appropriate eradication/control measures.

To promote a proactive approach to the prevention and control of NIS in the Great Lakes-St. Lawrence system, three project components are proposed: 1) identification of ports, harbors and shorelines at high risk for NIS introductions; 2) monitoring of high-risk areas for new invasions and spread of existing populations; and 3) development, promotion and implementation of a model rapid response plan that will provide the region with increased ability to anticipate, prevent and respond to NIS invasions.

Geographic Areas Affected by the Project

States:

- [x] Illinois
- [x] Indiana
- [x] Michigan
- [x] Minnesota
- [x] New York
- [x] Pennsylvania
- [x] Wisconsin
- [x] Ohio

Lakes:

- [ ] Superior
- [ ] Huron
- [ ] Michigan
- [ ] Erie
- [ ] Ontario
- [x] All Lakes

Geographic Initiatives:

- [ ] Greater Chicago
- [ ] NE Ohio
- [ ] NW Indiana
- [ ] SE Michigan
- [ ] Lake St. Clair

Primary Affected Area of Concern: All AOCs

Other Affected Areas of Concern:

Problem Statement:

Approximately 150 nonindigenous aquatic nuisance species have become established in the Great Lakes system since the middle of the 19th century. The rate of introductions has increased significantly in the last 50 years due largely to the opening of the St. Lawrence Seaway system and attendant waterborne commercial traffic. The ballast water of commerical vessels has been identified as a leading vector for the introduction and spread of such species and, once established, controlling the spread of these species is both technically difficult and expensive. (Control efforts for purple loosestrife, zebra mussels and sea lamprey alone have been assessed at $365 million per year on a national scale.) NIS management programs must be technically, ecologically, economically and politically feasible and, consequently, predictive capabilities to assess risks of new introductions are extremely important. Such capability will increase the probability for early detection upon initial introduction and allow "rapid" response efforts for eradication/control to be mobilized. Predictive modeling can narrow the NIS target list, making it more feasible to identify specific monitoring locations or ecological communities at risk for invasion. Once species are discovered in a new area, it is critical to quickly act. Eradication/control of NIS populations is more probable if the nonindigenous species is detected early in the invasion process, at which point the number of individuals in the NIS population is low and eradication measures can be applied quickly and in a targeted manner.

The proposed predictive regime on which to base NIS management poses a variety of challenges. First and foremost, which species should be monitored and how should a monitoring protocol be established for species that may be unknown? On what basis should risk assessments be formulated/applied in efforts to identify high risk ports, harbors and shorelines where these species most likely will be introduced? Where should monitoring programs be established to increase probability of detection? How should rapid response plans be structured to respond to NIS introductions and spread in a time frame that can maximize the possibility for eradication/control? How can rapid response plans be structured to avoid political obstacles that might impede action within a reasonable timeframe? These are all pressing public policy issues that will be addressed.

The proposed project has three components. The first component will identify ports, harbors and shoreline areas that are at high risk for introductions. These introductions may be either from outside the Great Lakes - St. Lawrence System or may be spread from infested waters within the system. The second component will support the development of a monitoring protocol to promote the early detection of NIS in areas of the system identified as "at risk" for invasion. The final component will entail developing a model approach for a rapid response program.

The problem of NIS is second only to habitat loss as a factor causing significant declines in biodiversity. By developing the tools for early detection and rapid response, this project will help prevent NIS introduction and spread, and therefore help diminish future losses in the biodiversity of the Great Lakes-St. Lawrence ecosystem.

Proposed Work Outcome:

The proposed project will be conducted by the staff of the Great Lakes Commission using, when appropriate, the expertise available from representatives of the Great Lakes Panel on Aquatic Nuisance Species. A technical advisory committee will be convened, based in part on Panel membership, to provide technical advice and input for the project tasks presented below.

A) Identification of Areas at High Risk to NIS Invasion

There is a need to develop and apply predictive tools, (e.g., criteria), that will provide the basis for identifying ports, harbors and shoreline areas that are at high risk for NIS introductions. Potential criteria that could serve as predictive tools for NIS invasion include, among others, potential donor regions and associated dispersal pathways, inoculation rates into waterways, biological characteristics of successful nonindigenous invaders, invasion history and community vulnerability to invasion. This element has three tasks:
•Task One: An assessment/research report will explore the range of predictive tools that hold potential in identifying high risk ports, harbors and shoreline areas;
•Task Two: A workshop will be conducted to determine how predictive tools can be applied in the process of identifying waterways that are at high risk for NIS invasions.
•Task Three: Identification of high risk areas will be determined with application of the information collected from the aforementioned tasks. A map will be generated to identify the ports, harbors and shorelines of the Great Lakes-St. Lawrence region at high-risk for NIS invasions.

B) Monitoring Protocol

There is a need to establish a monitoring protocol in the prioritized areas of the Great Lakes-St. Lawrence system to facilitate early detection of NIS introductions and control the spread of established populations. In identifying the basic components of the proposed protocol, existing infrastructure should be used to the maximum extent possible. The Great Lakes Commission staff, in cooperation with the Great Lakes Panel on Aquatic Nuisance Species, will provide regional oversight on the development of monitoring protocol guidelines, and will promote partnerships and networks needed for an effective NIS monitoring program. This element also has three tasks:

•Task One: A survey will be conducted throughout state/provincial and federal agencies to collect information on the components of existing monitoring protocols such as parameters, frequency of occurrence, abundance, distribution, origins, methodologies and other aspects that will help define monitoring programs in high risk areas.
•Task Two: An assessment of survey results will be used to determine the extent of the monitoring coverage in each of the high risk areas throughout the Great Lakes-St. Lawrence system. This assessment also will be used to identify the monitoring components considered to be most instrumental in facilitating early detection of NIS introductions and spread.
•Task Three: Monitoring protocol guidelines will be developed based on information generated from the aforementioned tasks. These guidelines will be based on the best available, scientifically sound methods that will provide the most effective monitoring coverage. The guidelines will also enhance the development of model rapid response plans (see below).

C) Rapid Response Plans

With the occurrence of a NIS invasion, a rapid response plan is needed to establish a framework that can be used to address prevention and control priorities. It is proposed that in developing such a plan for NIS invasions, existing state and federal emergency response plans for pollution events (e.g., the Region 5 Oil and Hazardous Substances Integrated Contingency Plan) should be drawn upon as models. The NIS rapid response plan should include management options that are designed for use by local, state/provincial, tribal and federal emergency response personnel as a tool for procuring resources to mobilize appropriate eradication/control measures. Implementation of a rapid response plan is needed within a timeframe that will maximize the technical, economic and political feasibility of the effort. Response mechanisms delineated in the plans should be activated among the various levels of the response community in the event of a NIS invasion. The response plan should be coordinated with existing comprehensive state ANS management plans and related procedures/protocols. This element has four tasks:

•Task 1: Components of a NIS rapid response plan will be developed based on the following: a) lessons learned in regards to areas at high risk for invasions (Part A) and monitoring protocols (Part B); b) research on management

strategies and governing structures that could be effective in NIS prevention and control efforts; and c) analysis of how existing emergency response plans for both oil and hazardous materials (e.g., Region 5 Oil and Hazardous Substances Integrated Contingency Plan) could be applied to NIS plans.
•Task 2: A model approach for a rapid response plan to NIS invasions will be developed through the conduct of a workshop that convenes Great Lakes Panel membership with selected response authorities in the region, and other officials with expertise in this area. The workshop will be designed to facilitate sharing of information and consensus building in the process of model development.
•Task 3: Recommendations will be developed on a model plan for rapid response to NIS invasions in terms of its structure and implementation.
•Task 4: An outreach strategy will be designed to disseminate recommendations on the rapid response plan model and other project results to appropriate target groups through conference presentations, the Internet, and meetings held on a state/provincial level. The Great Lakes Panel on Aquatic Nusiance Species will lead efforts for the adoption and implementation of a system-wide rapid response plan.

Project Milestones:	**Dates:**
Project Start	10/2001
Advisory Committee /Project Scoping	12/2001
Identification of High Risk Areas	02/2002
Monitoring Protocol	10/2002
Rapid Response Plans	05/2003
Dissemination of Project Results	09/2003
	/
Project End	09/2003

☒ Project Addresses Environmental Justice

If So, Description of How:

Advancing NIS prevention and control efforts will yield basinwide benefits in terms of habitat preservation/improvement; protection of the sport and commercial fishery; and the more efficient and cost-effective targeting of public funds. This will benefit all sectors of society including those that have been historically underserved and disproportionately impacted.

☒ Project Addresses Education/Outreach

If So, Description of How:

Education and outreach is a major component of this project, as evidenced by the proposed methodology. The Great Lakes Panel, which includes 35 members drawn from all sectors of the community involved in/affected by ANS, will have a major role in all project tasks. Several aspects of this project will feature an open and inclusive process to ensure that all relevant interests are invited to participate. The Great Lakes Commission's dissemination capability – via conventional and electronic means – will ensure that the larger community is apprized of project outcomes and opportunities to apply them.

Project Budget:

	Federal Share Requested ($)	Applicant's Share ($)
Personnel:	61,675	4,345
Fringe:	21,585	1,520
Travel:	6,800	0
Equipment:	2,925	0
Supplies:	1,250	0
Contracts:	0	0
Construction:	0	0
Other:	19,350	0
Total Direct Costs:	113,585	5,865
Indirect Costs:	37,910	2,140
Total:	151,495	8,005
Projected Income:	0	0

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

Funding for the project is not being solicited from any other sources. However, the project will benefit substantially from existing and anticipated support for the Great Lakes Panel on Aquatic Nuisance Species as well as project-specific ANS activities managed by the Commission with the Panel's oversight.

Description of Collaboration/Community Based Support:

The Great Lakes Commission staff has extensive experience in ANS prevention and control. The staff has coordinated the Great Lakes Panel on Aquatic Nuisance Species since 1990, and has successfully completed more than a dozen projects addressing legislative, policy, outreach, planning and scientific aspects of ANS prevention and control. These projects have included the development of a model ANS management plan for states and model legislative guidance for states as well as the Great Lakes Action Plan, serving as a platform to launch ANS prevention efforts.

Building on relationships established via its coordination of the Great Lakes Panel and project-specific ANS activities, the Commission will solicit collaboration from key stakeholders, including but not limited to, U.S. EPA, state and provincial natural resource/environmental protection agencies, the U.S. Coast Guard, Fisheries and Oceans Canada, the Lake Carriers' Association, Great Lakes Shipping Association, St. Lawrence Seaway Development Corp., Sea Grant research programs, the Northeast-Midwest Institute, International Joint Commission, the Great Lakes Fishery Commission, emergency response agencies dealing with oil and hazardous substances, Lake Michigan Monitoring Coordination Council and Great Lakes Coastal Wetlands Consortium. Drawing from these and other collaborators, technical advisory committees will be formed, as needed, to ensure broad representation from the maritime, scientific/technical and policy/regulatory communities.