

## **Final Report to the New York Great Lakes Protection Fund**

**Project Title:** “Enlightening Educators about the LaMPs”

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### **Project Overview:**

New York Sea Grant, in cooperation with the Great Lakes Program at the University at Buffalo has completed the development and implementation of a teacher training program entitled: **“Enlightening Educators about the LaMPs.”** The objective of this project was to create CD-ROM presentations, educational compendiums and provide a schedule of teacher in-service workshops to build awareness of the Lake Erie and Lake Ontario Lakewide Management Plans, and provide information needed to infuse environmental stewardship activities into classrooms throughout the state. After gaining insight into the LaMP process, educators were able to involve their students in this environmental process as a means of enhancing critical thinking and problem solving skills. Utilizing what was learned in workshops and material in the CD-ROM and resource binders, educators were immersed in the LaMP process and learned first-hand about the scientific data and community input necessary to make sound decisions concerning environmental pollution problems.

### **Geographic Area Addressed:**

This project is designed to service the teacher training needs of educators in the coastal counties of New York State bordering both Lake Erie and Lake Ontario. Additionally, through a workshop at the Science Teachers Association of New York State Annual Conference (held in Fall 2001), teachers who lived outside the coastal counties, but who include Great Lakes topics in their teaching, were able to participate. Teachers from Niagara, Orleans, Erie, Monroe, Wayne, Oswego and Chautauqua Counties were involved in these workshops.

### **Scope of Work:**

According to the 1999 Lake Erie LaMP Status Report, “The LaMP has the mandate of ensuring that public opinion is solicited, considered, acknowledged and incorporated where appropriate throughout the process.” The public, including educators and their students, cannot provide public opinion if they are unaware of the LaMP process and its environmental role. This project has brought together educators, policy makers, researchers, and Sea Grant Extension Specialists, to work towards understanding the problems, and what must be done to restore the health of Lake Erie and Lake Ontario. In total, over 200 educators and 125+ concerned citizens have learned about the LaMP process, and what teachers must do to educate their students on remediation efforts and pollution prevention. This educational process will better prepare

students living in coastal communities along Lake Erie and Lake Ontario to develop a stewardship toward these waters and the entire Great Lakes Ecosystem.

**Workshops Offered:**

Buffalo Public Schools	Mar. 31, 2001	22 participants
Erie II BOCES	April 25,2001	18 participants
Fredonia Middle School	April 25,2001	11 participants
Great Lakes Ed. Center	Sept. 13,2001	11 participants
UB Workshop	Oct. 24,2001	20 participants
STANYS Conference	Nov. 6,2001	29 participants
Great Lakes Ed. Center	Nov. 15,2001	16 participants
Erie II BOCES	Dec. 6,2001	19 participants
UB Workshop	April 15,2002	9 participants
UB Workshop	May 13,2002	28 participants
UB Workshop	May 15,2002	17 participants

A total of 11 workshops were conducted specifically for this project. The workshops ran from March 31, 2001 to May 15, 2002. In addition, LaMP information was infused into a number of other teachers’ workshops that focused on other Great Lakes topics, such as exotic species. There were 80 additional teachers who participated in these workshops. Four different public presentations were also given on the LaMPs over the duration of the project. Over 125 participants learned about the LaMPs at these presentations. Unlike the teachers who attended the LaMP workshops, no stipends were given during general public presentations or teachers at the other workshops. In total, more than **400** teachers and stakeholders learned about the LaMPs through this project. For most teachers who were involved, one should take in the multiplier effect where an average teacher works with between 25-150 students per day, depending on their grade level and subject area. So, there were at least 5,000 students who learned about the LaMPs from involved teachers, and there may have actually been over 20,000 students who were exposed to this information.

To enhance the learning process and provide teachers with a hands-on approach, the Center for Great Lakes Environmental Education located at the Great Lakes Lab Field Station was designated as the locations for two workshops. Two workshops were held at the Board of

Continuing Educational Services (B.O.C.E.S.) Teacher Training Center in Dunkirk. A class on LaMPs was scheduled as part of the teacher-training program at the University at Buffalo. Additionally, a workshop was presented for the Science Teachers Association of New York State Annual Conference, providing an opportunity for teachers outside of the selected workshop locations to participate.

Under the Great Lakes Water Quality Agreement, the United States and Canada have developed Lakewide Management Plans (LaMPs) to restore and protect the beneficial uses of the Great Lakes. The New York State Department of Environmental Conservation (NYSDEC) is an active participant in the LaMP program, working with Environment Canada, the U.S. Environmental Protection Agency, and other agency partners in this process. This project incorporated information and materials from all the LaMP partners to enlighten educators about the LaMP process. Although this material is typically well written and informative, few educators know how to access and utilize this information for the benefit of their students.

This project provided opportunities to involve the educational community and encourage teachers to have their students become involved in the LaMP process. Their students will be the voting citizens of the future, who will need to make enlightened decisions on the Great Lakes for years to come.

This cooperative program was designed to bring interested teachers in grades 6-12 together with researchers, managers, and education outreach specialists involved in the LaMP process. Through a CD-ROM, educational compendium and interactive teacher-training programs, the project informed teachers about the current environmental conditions, scientific data, and remediation efforts involved in the LaMPs. Teachers were informed about the LaMPs and were encouraged to involve students in environmental stewardship activities. To reach non-formal educators and stakeholders, four additional presentations were held to strengthen the LaMP community networks and improve the cooperation necessary to promote successful cleanup strategies.

The project was not designed to develop all new curriculum materials. Instead, it was designed to draw on educational materials that already exist and focus them on the LaMPs. Through the creation of a new CD-ROM based on the Lake Erie and Lake Ontario LaMPs, teachers have an efficient way to introduce their students to the LaMP process. Materials from the International Joint Commission, NYS Department of Environmental Conservation, Great Lakes Fisheries Commission, The Center for the Great Lakes Environmental Education, and local organizations have been utilized as part of the LaMP educational compendiums and the in-service workshops. The goal was to provide teachers with hands-on, classroom-ready activities that can be utilized in social studies, science, mathematics, language arts, and environmental education classes. Teachers are not looking to add entirely new curricula to their teaching loads; they are looking for innovative new ways to infuse regional topics, like the Great Lakes and the LaMPs into their classes.

Part of the project called for the creation of a paid team of educators and science coordinators to help with the creation of the CD-ROM and educational compendium. These educational experts were brought together to work on the two educational components of this

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project. The Great Lakes Program and New York Sea Grant have also provided educational materials of their own on Great Lakes issues that have been utilized in these educational products.

Although the International Joint Commission and the governments of the United States and Canada are responsible for the Lake Erie and Lake Ontario LaMPs, governmental agencies alone cannot be expected to produce all the answers and appropriate strategies. A cooperative effort is needed between concerned citizens, government, industry, and scientists, to bring about solutions to these important environmental issues. This project helped to bring about this cooperation, and instill awareness and understanding of critical issues facing the Great Lakes Ecosystem.

### **Methodology:**

The “**Enlightening Educators about the LaMPs**” project consisted of the following elements:

- 1.) Development of a Lake Erie and Lake Ontario LaMP educational compendium
- 2.) Creation of a CD-ROM presentation on LaMPs for educators
- 3.) Series of 10 Teacher Training Workshops
- 4.) Sessions (4) for non-formal educators and stakeholders
- 5.) Classroom Implementation & Student Involvement

### **Proeress:**

#### **Element #1: Development of a Lake Erie and Lake Ontario LuMP educational comuendium**

The Project Directors have worked with a team of trained educators to acquire and evaluate LaMP educational materials from various sources. An educational compendium has been prepared utilizing these LaMP materials. Educational materials have been adapted to specifically address issues relating to the Lake Erie and Lake Ontario Lakewide Management Plans. This work has helped to make the teaching materials classroom-ready, saving educators time and effort. It is believed that these efforts will also help to assure usage of the educational materials. Also, existing curriculum materials developed by experts at Ohio State University have been adapted to reflect the goals of this project. These materials have been classroom tested and have been readily be accepted by participating teachers.

**Status:** The Compendium has been created and was used with 200+ educators.

#### **Element #2: Creation of a CD-ROM presentation on LaMPs for educators**

This CD-ROM focuses on the Lake Erie and Lake Ontario LaMPs. Each program is appropriate for classroom use, providing teachers with an efficient way to introduce these topics

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into their science class periods. The CD-ROM is image rich and stimulating to encourage students' attention and interest. These CD-ROMs can also be shared among teachers in a school building or throughout a school district.

**Status:** Version for both the Lake Erie and Lake Ontario LaMPs have been developed and used in the 10 workshops and 4 public presentations.

### **Element #3: Teacher Training Workshops**

Eleven successful workshops have been held, servicing more than 200+ educators. These workshops were designed to help teachers feel more comfortable with teaching Great Lakes and LaMP issues. The workshops have provided educators with classroom-ready materials to use with their students. These sessions have allowed classroom teachers to interact with researchers and information specialists who will act as resources for these teachers. The contacts and networks developed during these sessions are proving to be educational assets. We believe that the teachers involved with these workshops will take the information and curriculum materials back to their prospective schools and act as "master"teachers on Great Lakes and LaMP issues.

Funding for this grant has provided a \$20 stipend for each of the participating teachers. The money was designed to compensate teachers for their participation and cover mileage and other expenses incurred, or they could use the funds to purchase maps, books or other educational materials related to the Great Lakes. Many teachers have indicated that they will utilize the stipend to purchase Great Lakes related materials for their classrooms.

**Status:** Eleven workshops have been held, servicing 200+ educators.

### **Element #4: Session for Non-formal Educators and Stakeholders**

Much of the information on Great Lakes issues is being utilized by non-formal educators, policy-makers, and concerned citizens. In order to keep these educators involved with the LaMP process, four presentations were offered as part of the project.

**Status:** Presentations were given at the University at Buffalo and other locations for stakeholder groups around Western New York.

### **Element #5: Classroom Implementation & Student Involvement**

The true test for this project is to have the information utilized in classrooms in New York's coastal counties. By preparing educators and providing them with classroom-ready materials, it is believed that teachers will use these problem-solving activities with their students. The project was designed to provide an integrated approach to the LaMP process and Great Lakes education. Subjects such as language arts, mathematics, social studies, and environmental science can be integrated into the "Enlightening Educators about the LaMPs" project.

**Status:** Each of the 200+ educators involved in the workshops have indicated that they will utilize the information and material on LaMPs and the Great Lakes in their classrooms.

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## **Evaluation Component:**

Each in-service program has included an evaluative component. Forms provided have offered participants the opportunity to evaluate the workshops and make suggestions for improvement. These forms were thoroughly screened after every workshop, and changes were made, if necessary, to improve the quality of the program and the educational materials.

Through this project, and the creation of "master" teachers on LaMP and Great Lakes issues, it is believed that the benefits can be sustained for years to come. The teachers involved in the project have been included on a mailing list, and newsletters and information updates will be mailed to them. Notices of upcoming meetings and conferences will also be mailed to the participants, to keep interest levels high after the project is concluded.

**Status:** According to the educators' evaluations, the workshops have been worthwhile and well organized. The results have been very positive and all suggestions for improvements were considered and incorporated.

**Most importantly, the majority of the teachers involved were totally unaware of the LaMP programs and process for Lake Erie and Lake Ontario.** This fact that has been brought to light through the evaluation component strongly justifies this project. We believe these teachers are interested in sharing this information with students and other teachers.

Also, a number of teachers involved in LaMP workshops signed up for later workshops that were held on the topic of exotic species in the Great Lakes. This clearly demonstrates that they have developed a new-found interest in Great Lakes topics.

## **Project Schedule:**

Due to the late funding of this project, workshops did not begin until the spring of 2001. All workshops were completed by June 2002. The LaMP CD-ROM and educational compendium was developed during the spring and revisions were made throughout the project period. The project team met on several occasions and the team reviewed evaluations from the workshops. After the review of the evaluations, changes or improvements were incorporated into workshops. This helped to maintain the educational quality of the project.

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