

1998-99 Annual Report

for the

GREAT LAKES PROGRAM

at the

State University of New York at Buffalo

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Executive Summary

There is no more important natural resource for the social and economic well-being of the people of western New York and southern Ontario than the Great Lakes. As such, it is natural and logical for Great Lakes issues to be at the forefront of UB's environmental research, education, and service functions. The **Great Lakes Program** provides the leadership necessary to make this goal a reality. We accomplish this through our mission to develop, evaluate, and synthesize scientific and technical knowledge on the Great Lakes Ecosystem in support of public education and policy formation. This mission of the **Great Lakes Program** is complementary to and supportive of the mission of the University. The University at Buffalo seeks to be a nationally recognized comprehensive research institution that, among other goals, "will support organized science and technology research in key areas deemed intellectually important, key to our own development because of their empowering characteristics, and with the promise of long-term economic benefit to the region and nation", including a special mention of the "environment" among the science and technology research focus areas. Also, as a major Public University, UB insists on using its intellectual resources to provide a range of services to its local and regional communities.

Over the past several years, considerable progress has been made in raising the stature of the **Great Lakes Program** and UB in the area of Great Lakes research to the point where our vision of becoming one of the top three Great Lakes research and education academic centers in the basin is realistic. UB faculty participation in **Great Lakes Program** activities during the past year has been quite good, with participation coming from the Department of Civil, Structural and Environmental Engineering, the Department of Geography, the Department of Biological Science, the Law School, and the Medical School. The **Great Lakes Program** has also formed partnership(s), written proposals, and collaborated on research and outreach activities with a variety of organizations in the Great Lakes basin on both sides of the border. Great Lakes Program activities during the past year that have been accomplished in support of our vision and goals include: **Great Lakes Program** faculty affiliates obtaining new research funding in the amount of approximately \$350,000 for Great Lakes topics; participation by **Great Lakes Program** faculty affiliates in at least five ongoing Great Lakes research projects; contributed to the educational training of a dozen graduate students through its research activities; co-hosted an environmental seminar program; obtained support for, organized and co-hosted several conferences and workshops on Great Lakes issues; collaborated with other environmental entities on campus to establish the Environment and Society Institute; conducted teachers' workshops in schools and teacher training centers throughout Western New York; partnered with other New York organizations to help form the NYS Coalition of Great Lakes Legislators; undertook a project to provide a series of Reference Charts and a Lower Great Lakes organization database for the new legislator coalition and other Great Lakes stakeholders in the State; served on several public forums, advisory panels, Boards, and peer review panels related to Great Lakes issues; continued our publication of important Great Lakes education and information dissemination documents, including our newsletter, *Perspectives*, and our unique and extremely popular research review publication, *Great Lakes Research Review*. These and other successes are documented in the following report.

Finally, since joining forces with New York Sea Grant and thereby sharing the services of Helen Domske as our Associate Director, the education and outreach activities of the **Great Lakes Program** have provided a valuable and recognized public service on behalf of the University. This added visibility provides an indirect benefit to the Program's research efforts, and it is our opinion that University support of the outreach component of the Program is well worth the investment.

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Great Lakes Program - 1998-99 Annual Report

History and Evolution of the *Great Lakes Program*

For more than a dozen years, the *Great Lakes Program* has dedicated its staff and funding to protect and preserve the resources of the Great Lakes while serving, on behalf of the University at Buffalo, the research, outreach and educational needs of those who live around these "Sweetwater Seas."

From its early beginnings, as a project of then New York State Assemblymen, John B. Sheffer II and William B. Hoyt, the *Great Lakes Program* has grown in its scope and efforts. Both Sheffer and Hoyt were aware that the future environmental, socioeconomic, industrial and recreational development of the Western New York region was tied to the resources of the Great Lakes. These political visionaries, joined forces with then UB Provost, William R. Greiner, to plan the development of a Western New York Center for Great Lakes Resources. According to early correspondence between Sheffer and Greiner, the "principle purposes would be to function as a clearinghouse and resource center for information related to the Great Lakes". Although the *Great Lakes Program* has evolved into an important research center within the University, education and public outreach remain a very important service-related role of the program. Among the variety of service activities highlighted below, the *Great Lakes Program* continues to maintain a library which houses Great Lakes information for use by scholars, researchers, educators, students, and the general public.

Under the directorship of Dr. Ralph R. Rumer and, beginning in 1991, Dr. Joseph V. DePinto, the *Great Lakes Program* began to add multi-disciplinary Great Lakes research facilitation and direction to its role within the University and to carve out a new niche within the Great Lakes community. This new niche involved conducting and synthesizing the scientific and technical research necessary to aid rational policy and decision-making for the complex Great Lakes ecosystem. Today the *Great Lakes Program* is one of approximately ten university-based (including U.S. and Canada) Great Lakes research centers. The special capability of the Program to develop and apply ecosystem-level mathematical models of the relationship between anthropogenic and natural stressors and the system responses to those stressors places it among only two or three of those research centers with a similar capacity. In summary, the *Great Lakes Program* is widely recognized throughout the basin "as a major contributor to the scientific and technical knowledge base used for forming public policy and managing Great Lakes resources" (*Great Lakes Program* 1990-1991 Annual Report).

Great Lakes Program Today

Mission

Under Dr. DePinto's direction, the mission statement of the program was modified to reflect its evolution toward science and technically oriented research.

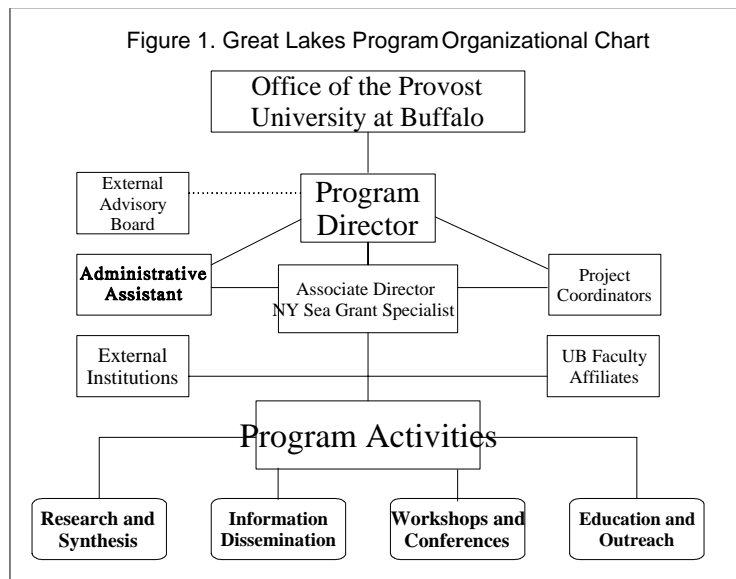
The mission of the Great Lakes Program is to develop, evaluate, and synthesize scientific and technical knowledge on the Great Lakes Ecosystem in support of public education and policy formation.

In carrying out this mission, the *Great Lakes Program* attempts to involve UB faculty from a wide range of fields in multi-disciplinary research, education, service and outreach on the Great Lakes. Among the

fields in which the *Great Lakes Program* has been involved are: engineering, health sciences, natural sciences and mathematics, social sciences, planning, and law.

The mission of the *Great Lakes Program* is complementary to and supportive of the mission of the University. The University at Buffalo seeks to be a nationally recognized comprehensive research institution that, among other goals, “will support organized science and technology research in key areas deemed intellectually important, key to our own development because of their empowering characteristics, and with the promise of long-term economic benefit to the region and nation.” Included among the science and technology research areas which meet these criteria is the “environment.” Also, as a major Public University, UB insists on using its intellectual resources to provide a range of services to its local and regional communities. **There is no more important natural resource for the social and economic well-being of the people of western New York and southern Ontario than the Great Lakes. As such, the University at Buffalo would be remiss by not maintaining a leadership role in research, education, and service related to the health and integrity of the Great Lakes ecosystem.**

The *Great Lakes Program* assists the University in its stewardship of the Great Lakes by serving as a facilitator and "broker" for research, education and service/outreach activities of the University at Buffalo on issues related to the Great Lakes ecosystem. To accomplish this role, the program has joined forces with faculty from the University at Buffalo and other United States and Canada universities throughout the Great Lakes basin. Not only is faculty cooperation international, it is interdisciplinary as well. *Great Lakes Program* affiliates include faculty members from UB Schools of Architecture and Planning, Engineering and Applied Science, Medicine and Biomedical Sciences, Law, Graduate School of Education, and the Faculties of Natural Sciences & Mathematics, and Social Science. A list of faculty and staff affiliates of the *Great Lakes Program* is presented in Appendix A.



Organizational Structure and Functioning of the Great Lakes Program

In order to best serve its role in the University as stated above, the *Great Lakes Program* has organized itself as presented in Figure 1. It is administered by a Program Director, Dr. DePinto, who is a Professor in the Department of Civil, Structural and Environmental Engineering and has over 20 years experience in Great Lakes research and synthesis.

A unique collaborative arrangement with the New York State Sea Grant Institute has provided for a joint *Great Lakes Program* Associate Director/Sea Grant Great Lakes Extension Specialist. Helen Domske has filled that position since the inception of this arrangement in 1993. Her primary responsibility within the *Great Lakes Program* is to coordinate education and outreach activities. Much, although not all of her activities, overlap her responsibilities for both positions. Funds for her salary and some operating expenses for this position are being provided through the New York Sea Grant SUNY

budget; the ***Great Lakes Program*** provides additional operating funds and clerical support for Ms. Domske's activities that relate to the Program. Two years ago, NYSG consolidated its Buffalo area extension services by moving into space occupied by the Environmental Engineering and Science Group of the Civil, Structural and Environmental Engineering Department; it is located in 204 Jarvis Hall immediately adjacent to the ***Great Lakes Program*** offices in 202 Jarvis. This space, provided by the School of Engineering and Applied Science, houses three Sea Grant extension staff (including Helen Domske) and has room for four staff total. This new initiative represents a milestone for the Program and UB in terms of cementing a close relationship with New York Sea Grant Institute and SUNY Stony Brook, where the central offices are housed. The hybrid position also fosters a relationship between UB and the Cornell Cooperative Extension at Cornell University.

Additional ***Great Lakes Program*** staff includes an Administrative Assistant, Monica Moshenko, who provides clerical, budgetary, logistical, and editorial work to the Program. Ms. Moshenko has been with the Program since 1990, and she has not only provided excellent administrative assistance but she has been a valuable ambassador for the program throughout the Great Lakes community.

The ***Great Lakes Program*** maintains an External Advisory Board comprised of individuals who bring to the Program a broad base of knowledge and experience related to the Great Lakes. The External Advisory Board is made up of representatives from UB, US Fish and Wildlife Service, NYS Department of Environmental Conservation, NOAA-Great Lakes Environmental Research Laboratory (GLERL), Great Lakes Center at Buffalo State College, Great Lakes Commission, McMaster University, NY Sea Grant Institute, SUNY ESF, Erie County Department of Environment and Planning, and local industry. Advisory Board Members provide valuable insight into the future direction of our research program and the education and outreach activities of the Program relative to its mission and vision, thus ensuring that its perspective is current and inclusive of important Great Lakes problems and issues. A listing of current Board members and their affiliations is presented in Appendix B of this report.

The ***Great Lakes Program*** staff regularly collaborates with other faculty and research associates at the University. These collaborations include research and assessment, publications, conference and workshop organization and facilitation, and seminars on Great Lakes issues. The Program also supports graduate and work-study students who focus their activities on specific projects conducted by the Program.

Also shown in Figure 1 are the four categories of Program Activities pursued by the ***Great Lakes Program*** in an effort to accomplish its mission. They include:

1. Facilitate, coordinate, and/or direct multi-disciplinary scientific, engineering, socio-economic, and policy-oriented studies (basic and applied research, synthesis and assessment studies) that contribute to a system-level understanding of and have implications on policy formulation and management of the Great Lakes Ecosystem.
2. Serve as a Great Lakes Information Clearinghouse to disseminate news of the latest scientific findings, policy and management decisions, and assessments of the State-of-the-Ecosystem to legislators, managers, researchers, and the general public.
3. Attempt to develop linkages between the development of scientific understanding on the structure and functioning of the Great Lakes Ecosystem and the information needs of society through the coordination and sponsorship of workshops, seminars and conferences.
4. Facilitate an interest in and understanding of the Great Lakes Ecosystem by means of developing

and participating in public education and outreach programs for interested stakeholders in our region, especially the citizens of Western New York.

Facilities

In addition to its offices in 202 Jarvis Hall and its library in 205 Jarvis Hall, the *Great Lakes Program* maintains a computer laboratory for Great Lakes environmental data analysis and modeling. Until very recently, this laboratory was housed in 1022 Furnas Hall, but because of SEAS needs for that space, this facility has been moved into Trailer D. With funds from both the University and externally-funded sponsored programs, the Program has built a laboratory with five SUN workstations, a SUN server, three PC's, and an array of peripherals. In addition to access to SEAS and CIT supported software through UB's network, the PC's in this lab also contain a variety of compilers, graphics, wordprocessor, and GIS software. These facilities are available to any faculty affiliate working on a Great Lakes problem.

Vision for the Great Lakes Program

The long-term vision for the *Great Lakes Program* does not involve a major deviation in the program areas or type of programs that make up our ongoing activities. We envision a continuation of our focus on large, multi-disciplinary, multi-institutional research and synthesis projects and on enhancement of the education and service portions of our mission. The vision statement for the *Great Lakes Program* can therefore be summarized in the following statement.

The vision of the Great Lakes Program is to become one of the top three Great Lakes research and education academic centers in the basin. We desire to be perceived as a primary source of knowledge necessary to support the Ecosystem Approach and Sustainable Development concepts for stewardship of the Great Lakes.

In order to achieve this vision, the *Great Lakes Program* must first become recognized as a strong and identifiable research and education unit by the entire University community. It must enhance the interest of more faculty from a wide range of disciplines to direct their expertise to multi-disciplinary Great Lakes activities. At the same time the Program must work to continue to enhance its identity throughout the basin as an important contributor to and synthesizer of Great Lakes knowledge. The 1998-99 Program activities designed to help achieve this vision are highlighted subsequently in this document.

Goals to Achieve Our Vision

In order to move toward the above long term vision, the *Great Lakes Program* has established, through consultation with its faculty affiliates and University administrators and through advice received from its External Advisory Panel, several short term goals/objectives. These short term (two to three years) goals include:

1. Work to modify the culture within the University so as to encourage and adequately reward multi-disciplinary environmental research, education and service, particularly that which is focused on Great Lakes issues.

2. Increase the involvement of faculty from the natural sciences and from economics/ management in Great Lakes research.
3. Focus research development efforts on *aquatic ecosystem modeling* in the Great Lakes. Managing water resources at the watershed scale and using what is called the **Ecosystem Approach** is a major national trend for which the Great Lakes community is a leader. It involves the reasoned integration of the physical, chemical, and biological (including man) components in attempting to understand and manage aquatic ecosystem integrity (as measured by multiple end-point indicators) in the face of its exposure to multiple stressors acting in concert.
4. Continue to develop collaborative research and education/outreach programs with other academic institutions, federal, state, and local government organizations, and private sector companies that have an interest in Great Lakes issues.
5. Work to attain an average annual sponsored programs budget of \$500,000 for externally sponsored programs directed or facilitated by the **Great Lakes Program**. This amount of annual sponsored programs is estimated to justify the University resources necessary to support important **Great Lakes Program** activities for which external funding is unavailable. Further discussion of this concept will follow in the budget considerations section.

Great Lakes Program Activities for 1998-99

Research

As mentioned above, the **Great Lakes Program** began placing more emphasis on science and technology research in the early 1990's. Evidence for this is presented in our record of research activity illustrated in Figure 2. During the 1998-99 reporting period new funding was received for three Great Lakes related research projects. Drs. James Jensen and John Van Benschoten from the Department of Civil, Structural and Environmental Engineering were awarded a grant from the U.S. Fish and Wildlife Service for a two-year, approximately \$150,000 study of the feasibility of treating ballast water with peracetic acid to kill potentially invasive species surviving in ballast tanks of cargo ships entering U.S. ports. Dr. Joseph V. DePinto received funding of approximately \$40,000 from the U.S. Army Corps of Engineers (Buffalo Office) to incorporate available data on the Buffalo River into a GIS-based Decision Support System for dredging of sediments in that system. Also, Dr. DePinto will shortly receive a continuation grant of \$140,000 from U.S. EPA-Region 2 to continue the work that he has been leading (involves faculty from UB and other New York Great Lakes Research Consortium institutions) to develop and apply toxic chemical mass balance models for Lake Ontario in support of various federal and international toxic chemical management programs.

The **Great Lakes Program** also played an instrumental role in procuring the 5-year, \$2.4M NSF-IGERT project. David Mark, Director of NCGIA at UB, is the Project Director of this project, entitled "Integrated Graduate Education and Research Training in Geographic Information Science." Dr. DePinto is the co-PI in charge of the Environmental Modeling research theme, and research on the Great Lakes will be an important part of the environmental modeling/GIS effort in this program.

- Ongoing research projects developed through the efforts of the **Great Lakes Program** include:
- Application of Geo-WAMS to the Cazenovia Creek Pilot Watershed Management Project (U.S. EPA through Erie County Dept of Environment and Planning)
 - Origin of particulate matter and distribution of HOCs in the benthic nepheloid layer of large lakes (NOAA-National Undersea Research Program)
 - Development of non-equilibrium desorption model for evaluation of contaminated sediments (NY Sea Grant Institute)
 - Atmospheric deposition of PCBs, t-nonachlor, atrazine and nutrients to Lake Michigan (U.S. EPA - GLNPO)

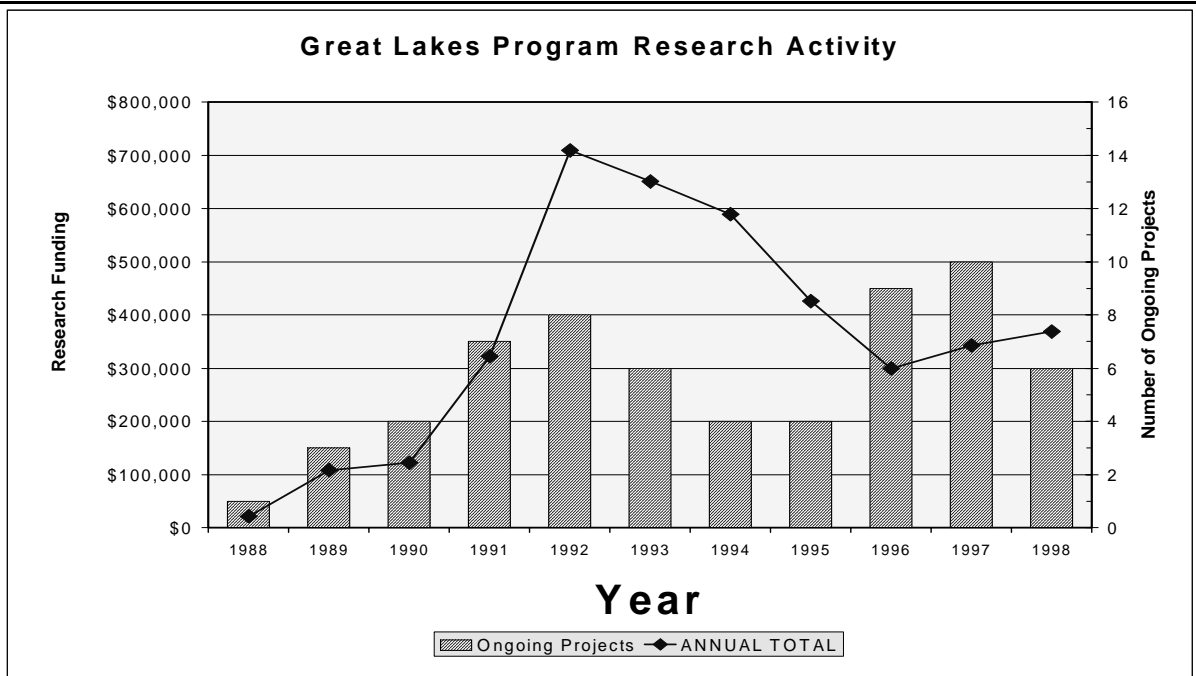


Figure 2. History of sponsored program activity of the *Great Lakes Program* for past ten years. Annual totals reflect sum of total project budgets for a given year; total funding for multi-year projects are distributed over those years.

- The Effect of zebra mussels on cycling and potential bioavailability of PCBs: Case study of Saginaw Bay (U.S. EPA - GLNPO)
- A summary of research activity is presented in Appendix C.

Education, Outreach and Service

The *Great Lakes Program* was energized by the comments from the review panel assembled by the University at Buffalo in April, 1998 to evaluate our program as an Organized Research Unit (ORU). According to the review panel, *“The outreach and service aspects of Great Lakes Program are outstanding and illustrate an uncommon degree of excellence and commitment that are rarely seen at this institution. The upper administration at UB should use Great Lakes Program as one of the shining examples of how UB does an outstanding job in public service and outreach. The panel was extremely impressed with the quantity of the Great Lakes Program efforts, their scope, and their impact. These efforts clearly help to put UB and Great Lakes Program on the map within the scientific community, and in the minds of average persons and policy makers within the Great Lakes region.”*

We worked diligently to maintain our Education, Outreach and Service programs during the past year. We continued to make a wider, more diverse community aware of the efforts of the *Great Lakes Program* and the University at Buffalo. Along with working with teachers, students, anglers and environmental groups, we continued to build and strengthen collaborative relationships with other agencies and programs. We are proud of the strong working bonds we have with the Great Lakes Sea Grant Network, NYS Department of Environmental Conservation, US Fish and Wildlife Service, Buffalo State College’s Great Lakes Center, the Buffalo Zoo and Aquarium of Niagara, and local Boards of Cooperative Educational Services (BOCES) and others. A productive relationship has been forged with

the newly opened Center for Great Lakes Environmental Education. The **Great Lakes Program** Associate Director, Helen Domske, was invited to conduct their initial teacher training projects and assist them with the development of their plan of work. All of these relationships serve **Great Lakes Program** and the University quite well, as well as providing valuable programs that help to protect the Great Lakes ecosystem.

The **Great Lakes Program** was instrumental in organizing the conference that proved to be the catalyst for the development of the NYS Coalition of Great Lakes Legislators. This event and subsequent projects provided visibility at the state legislative level to **Great Lakes Program** and the University at Buffalo. One of the most important accomplishments this year was the development of a series of Reference Charts and a Lower Great Lakes organization database that was developed at the request of the Coalition and Assemblyman Richard Smith. This project has been well received by the Legislators and agency representatives that have used it. We believe that the successful completion of this project and a web site currently being developed will have long-term benefits for **Great Lakes Program** and UB as we continue to make Legislators aware of our efforts for their constituents.

Many of our programs reached out directly to the University community. The annual campus-wide Great Lakes beach sweep resulted in a clean-up of Lake LaSalle and our portion of the Ellicott Creek bike path. It also resulted in television coverage, showing WNY the commitment that UB has to protecting the environment. Science Exploration Day, which **Great Lakes Program** plays a major role in conducting, brings 1,300 high school students to UB. This educational event provides exposure to campus programs and professors for students who may enroll at UB. We were also involved in the “Take Your Daughters to Work” program and the WNY Science and Technology Forum sponsored by the University at Buffalo.

The **Great Lakes Program** produced a number of publications during the year, including our newsletter, *Perspectives*, and an issue of *Great Lakes Research Review* that focused on the Lake Ontario-St. Lawrence Ecosystem. We also produced conference proceedings on the Lake Ontario Research project, which was funded by the USEPA. These publications, along with articles that have been written for other publications such as the Great Lakes Research Consortium and UB newsletters, led to over 9,000 readers learning about the work of **Great Lakes Program**. In addition to articles written, newspapers in three counties picked up a number of press releases that were written about **Great Lakes Program** programming efforts, providing more exposure for **Great Lakes Program** and the University.

More than 30,000 stakeholders learned about the Great Lakes through our workshops, presentations, seminars, and displays at events such as the State of the Lake Ecosystem Conference (sponsored by USEPA and Environment Canada) and the Buffalo River Waterfront Festival. More than 3,000 teachers and students were directly involved in teacher training programs, conferences, classes and presentations on Great Lakes topics.

Along those lines, the **Great Lakes Program** was pleased by the comments of the advisory panel: *“On the education front, the Panel was impressed that **Great Lakes Program** provided a unique educational opportunity for students that came under its umbrella. It was made clear to the Panel that those students associated with **Great Lakes Program** were more readily employed compared to their classmates. In addition, **Great Lakes Program** provided a means to expand the student recruiting base, the quality of the recruited students, and offered significant opportunities for students to network at workshops, seminars, and meetings.”* Throughout the year we continued our efforts to provide valuable educational programs and assistance for students at UB and those in area high schools, who represent future UB students. A stellar example of the activity of the **Great Lakes Program** in developing UB educational programs is its participation with Dr. Barry Boyer of the Law School in a graduate-level

class entitled Water Quality Seminar (the course was cross-listed in Law as Environmental Law I and in Civil, Structural and Environmental Engineering as a Special Topic course); this course, which was attended by roughly an equal mix of environmental engineering graduate students and law students, was organized as a semester-long examination of both the technical/scientific and legal/policy aspects of an important Great Lakes issue.

According to the advisory panel, “*The Great Lakes Program has been an integral player in Great Lakes issues and policy development. As examples, Great Lakes Program was instrumental in the passage of the Great Lakes Management and the New York Great Lakes Protection acts. The Remedial Planning for the Buffalo River plan was also derived from a focused effort initiated at UB and within Great Lakes Program.*” We continued our involvement with public policy issues by working with the Niagara and Buffalo River RAPs, the Lake Erie LaMP Binational Forum, the Lake Ontario LaMP, State Legislators, and the USEPA.

Great Lakes Program – Plans for Future

Just as toxic chemicals were the focus of Great Lakes research and management in the 1980s and exotic species and habitat destruction caused many environmental changes in the 1990s, there will be new environmental challenges in the next century. We believe our past efforts have put us in a position to be able to face new environmental challenges while continuing to deal with problems that will not fade away with the changing of the century. Toxic contaminants in general and contaminated sediments in particular will continue to be a focus area, as they continue to impact the environmental health of the Great Lakes ecosystem. But taking an *Ecosystem* perspective in research, education and service will be the hallmark of our work. In this way, the **Great Lakes Program** is poised to face the next century as an important member of the Great Lakes research, education and outreach community.

Presented below in this section is a brief description of our plans and expectations for the coming budget period in the research and education/outreach/service components of the **Great Lakes Program**.

Research

Consistent with our vision and goals for the **Great Lakes Program**, research development plans for the upcoming year will focus on *aquatic ecosystem modeling* in the Great Lakes. We will continue to work with UB and Great Lakes researchers at other institutions throughout the basin to obtain funding for the development and application of mathematical models for support of understanding, management and policy decisions in the Great Lakes. More specifically, we expect continued funding for modeling research in cooperation with data collection on the fate and transport of toxic chemicals in large lakes, on the analysis of remediation strategies for contaminated sediments in tributaries and harbors of the Great Lakes, on understanding and managing aquatic systems subject to complex ecosystem interactions, and on incorporation of GIS in systems to analyze and interpret aquatic ecosystem data in the Great Lakes.

Major research support that we expect for the upcoming year includes:

- continued development and application of toxic chemical mass balance models for support of the Lake Ontario toxics management programs (funded at \$140,000 from EPA-Region 2);
- continued modeling research in Saginaw Bay to include development of a coupled pelagic-benthic food web model that also includes PCB cycling and bioaccumulation (expect \$75,000 from EPA-GLNPO);
- development of a screening-level mass balance model for mercury in Lake St. Clair (expect \$75,000 from EPA-GLNPO);
- development of a GIS-based Decision Support System for the Peconic Estuary (expect \$60,000 from Peconic Estuary Program).

We also have a large pre-proposal pending with New York Sea Grant to collect data and develop a modeling framework that will contribute to understanding of the relationship between nearshore and offshore ecosystems in Lake Ontario.

The *Great Lakes Program* has also been a leader in two major initiatives that would bring substantial research support to the *Great Lakes Program*. First, the *Great Lakes Program*, through its ongoing modeling research on Lake Ontario and through hosting of its annual Lake Ontario Research and Management Workshops, has initiated a movement to develop a bi-national, multi-institutional mass balance modeling study of Lake Ontario. We have been serving as a technical resource to EPA and NYS DEC in their consideration and planning of such a project. If it happens, we would see approximately \$5M spent over the course of about five years on a project similar to those that have already been done on Green Bay and Lake Michigan. The second initiative is related specifically to the development of a generic aquatic ecosystem modeling framework that would be usable on any Great Lakes ecosystem (indeed, could be applied to complex systems anywhere). We have requested funding from EPA in the amount of \$1.5M over three years to pursue this research and development project. The Great Lakes National Program Office of EPA has been championing this proposal with such arms of EPA as the Office of Science and Technology.

Education, Outreach and Service

The *Great Lakes Program* is dedicated to building university partnerships that will serve the university, the community and the environment. To that end, we are currently working with the Environment and Society Institute to develop a cooperative arrangement that would provide assistance with their outreach and education needs as well as meeting similar goals for the *Great Lakes Program*. We propose to assist the ESI with development of a brochure, an educational exhibit/display board, assist with some joint programming, and other projects. We also propose to assist ESI in the preparation of a regular newsletter that could be included as an insert in our *Great Lakes Program* newsletter, *Perspectives*, and perhaps in other UB environmental newsletters. These steps would help to inform the community about the role of ESI, at the same time we are carrying out *Great Lakes Program* outreach efforts.

Our future efforts are not restricted to the UB community, but also reflect the needs and interests of the Great Lakes community. Future efforts will find us working on projects with NYS Department of Environmental Conservation, US Fish and Wildlife Service, NYGL Research Consortium, Sea Grant Network, USEPA, and other agencies that share our commitment to the Great Lakes. Programs such as the Lakewide Management Plans (LaMPs), Remedial Action Plans (RAPs), water quality programs, and aquatic exotic species will be areas of involvement. We have developed a strong foundation in these areas and continue to work on cutting-edge programs that deal with these environmental issues. Many statewide and basin-wide agencies consider the *Great Lakes Program* an important partner and we will continue to work with these groups as collaborators.

Budget Request

The *Great Lakes Program* annually receives operating funds in the form of an RDF account from the Provost's Office. These funds, which amounted to \$60,000 for FY97-98, are used for the administration, service, education, and outreach costs of the program that cannot be expected to be born by research or by other sponsored programs. These costs include publication of our newsletter, our issue of the *Great Lakes Research Review* and monographs, program-related travel, office equipment upgrading and maintenance, office supplies, contractual services (phone, mail, etc.), support for our seminar program, and support personnel (administrative assistant, Monica Moshenko, and student help). Whenever possible, external research funds pay a portion of the administrative assistant's salary to cover

time spent on sponsored programs; however, it has been difficult in recent years to remain competitive if this type of cost recovery is included in proposals. In this regard, it should be noted that the **Great Lakes Program** Administrative Secretary also handles all the Civil Engineering departmental clerical needs of the Program Director (e.g., seminar program coordination, faculty search committee chair, purchasing, student and faculty appointments, all equipment inventory for the EES group) and other faculty in the department participating in **Great Lakes Program** sponsored programs; this function significantly reduces the clerical load to the rest of the department. Additional UB support provides a 6% administrative override for the Program Director.

We believe that this Provost support (largely funding administrative, service and education activities) not only makes an important contribution to the service mission of the University but is an essential investment in the research development of the **Great Lakes Program**. By raising the visibility of the Program throughout the basin, it is much more likely that funding agencies, who receive the benefits of our service and education activities, will look to the Program to provide the research expertise that they require.

The basic problem is that the current level of support for the **Great Lakes Program**, which has risen by an average of less than 2% per year over the past seven years, is barely sufficient to support our current level of education and outreach activities and leaves virtually no funds for research development and programs that encourage faculty research participation. Last year we were able to offer an incentive to faculty participating in the New York Great Lakes Research Consortium Small Grants program by supplementing any UB funded projects by 10% from the **Great Lakes Program**.

Recognizing the importance of outreach and research development to the future success of the **Great Lakes Program** at UB, I would like to request that serious consideration be given to increasing the annual Provost budget of the **Great Lakes Program** by \$40,000 to a total of \$100,000. The additional \$40,000 would be used for the following two purposes. First, we would like to offer our own \$20,000 small grant program. This program would support the most meritorious seed money project that proposes to initiate a multi-disciplinary (faculty from more than one decanal unit) Great Lakes research program that demonstrates the most promise for future external funding by Great Lakes funding agencies. This program would be a mechanism for encouraging young faculty at UB to develop inter-disciplinary linkages and to collaborate through those partnerships on Great Lakes research. The second \$20,000 is proposed to support one-half of the salary of our Associate Director. Currently, Helen Domske's entire salary comes from New York Sea Grant, even though over half of her effort is devoted to either exclusively **Great Lakes Program** activities or to joint **Great Lakes Program**-NYSG activities. Another justification for this commitment on the part of UB to share in the support of our Associate Director is the offer on our part to support some of the development activities (discussed earlier) of the newly-formed *Environment and Science Institute*. This collaborative effort between the Program and the Institute not only makes sense in terms of us sharing our outreach experience and contacts with the Institute but it provides an economy of funding in this area. Finally, the joint position in question was originally funded by a legislative member item, but it has recently been absorbed by Sea Grant without a commensurate increase in its State budget. Without an increase in its budget, Sea Grant may not be able to maintain this position, a situation that would be devastating to the **Great Lakes Program's** and UB's public service and outreach activities on the Great Lakes. I, therefore, feel it is important that UB reaffirm its commitment to Great Lakes public service in general and to this UB-Sea Grant partnership in particular by supporting half of this crucial position.