INTERNATIONAL JOINT COMMISSION
GREAT LAKES WATER QUALITY AGREEMENT
PUBLIC FORUM

Niagara Falls, Ontario
November 1-2, 1997

COUNCIL OF GREAT LAKES RESEARCH MANAGERS

Harvey Shear, Canadian CoChair, CGLRM

Good morning Commissioners, ladies and gentlemen. I am Harvey Shear with Environment Canada and it is my pleasure to begin the presentation of the Council's '95-'97 report. My U.S. CoChair, Jeffrey Reutter will complete the presentation.

This is my first meeting as Canadian CoChair of the Council. Before I start I would like to ask any Council members who are present if they would just stand and wave their arms about. Well, I guess there aren't any. Okay.

As an introduction, I would like give you a sense of what research has contributed to the Great Lakes. Many of these things you have heard before:

- The recovery of Lake Erie depended very much on a focused binational research effort which led to very dramatic improvements in the lake, and generated an interest in nutrient management worldwide as a result of our effort sin Lake Erie.
- Our research and support of RAPs, for example, Hamilton Harbour, Green Bay, Fox River, Nipigon Bay, Bay of Quinte; those RAPs could not have done the work that they have done without very strong research support.
- The identification of toxic substances as an issue in the Great Lakes depended very much on a strong research program at a variety of agencies, universities, etc.
- Our work in identification of human health effects of contaminants has, of course, depended very strongly on very strong research efforts on both sides of the basin.

I would like to quickly review our '95-'97 activities. The Commission in 1995, essentially gave us one priority. We had a listing of several as I recall and basically the Commission told us that we had one priority, to look at how to improve the effectiveness of Great Lakes research in the face of major budgetary restrictions. I would like to take this opportunity to thank John Cooley from Department of Fisheries and Oceans who was the Canadian CoChair of the Council, and Nelson Thomas, now retired from U.S. EPA for their leadership in this effort.

This particular priority derived from a number of specific activities over the last two years. We built on the Public Forum that was held in Duluth in 1995. We developed a strategy to involve research managers in looking at how to improve research. We consulted the research community and we developed a report and recommendations on various mechanisms to improve research. Specific activities involved a survey of the research community, looking at the extent of budget reductions and that is in the 1995-97 report. We produced a white paper which explained the Council's objectives and gave examples of successful research areas in the Great Lakes. That white paper was used for discussion purposes at a number of meetings; one public meeting in association with the Council's November 1996 regular business meeting where local researchers and interested public were involved. There was also a roundtable at SOLEC '96 in Windsor which

generated considerable discussion and ideas. Following that was a panel discussion at the 40th Conference on Great Lakes Research in Buffalo this June.

The result of all of these activities led to a number of recommendations and I am going to go through the ideas that emerged. I won't read the recommendations out. As I said they are in the Priorities Report. You'll be able to read the slide as well as I can talk to it.

- The first area we heard about was **Partnerships** and the need for research partnerships. They currently exist at a variety of levels and we need to look at some innovative approaches to continue them, to make the maximum use of the funding that we have -- federal/provincial, federal/state, state/provincial, international partnerships -- there should really be no barriers to research, because science is international. We should be able to have access to equipment, to data, and perhaps even cross-border funding (Dare, I say it!). This led to the recommendation on partnership mechanisms which you see up on the slide now.
- In a related area of **Collaborative Efforts**, we currently have a number of collaborative efforts in place -- university, government cooperation -- but I think we can improve on those, particularly government/university where we might make better use of graduate students, post-doctoral fellows, which tend to be very efficient and fairly low cost ways of getting research done. We also need to look at research that's more targeted, mission-oriented, to use the buzz word of a couple of years ago. And to give some credit for synthesis work, because it's very often the case that we collect information, publish it in a journal, but in terms of the kind of work that we need to do in the Great Lakes, there may not be the kind of integration and synthesis that's required. There aren't very many universities that would give academic credit for a synthesis type of project as opposed to a new and innovative research which leads to either a Masters or Ph.D. There are some universities that do but we need to look at ways of getting more of the work that is being done synthesized and reported out. That led to the recommendation you see on the slide now.
- Research has played an important role in **RAPs and LaMPs**. Good science has led to a number of sound decisions in the RAPs and will in LaMPs, as LaMPs develop. We need to overcome some barriers that currently exist. In many cases, researchers don't get any credit for the work they do on RAPs and LaMPs and this sort of thing needs to be fixed. They may get a pat on the back or a thank you from the RAP team but in terms of their regular work, if it doesn't lead to a primary publication, they may not necessarily get credit for it.

I would point in this regard, to the role of research in RAPs and LaMPs to a recent editorial by Gail Krantzberg in the *Journal of Great Lakes Research* which sets the issue out in very clear terms, and the role of science in RAPs.

- Clear identification of research needs and implementation of research results by RAP teams and ultimately by LaMP teams is going to be particularly important. This led to the recommendation that you see here now. We want researchers to be actively involved in RAPs and LaMPs and to get credit for being active.
- A recurring theme is **Communication of Research Results** -- Marketing is as good a word as any -- the benefits of Great Lakes research. When research budgets were being threatened and in some cases, cut, many researchers said why are they cutting my budget? You asked, does anybody know what you're doing, and very often, nobody does know. At least the powers that control the purse strings may not necessarily have known what they were doing.

It may sound a little crass to say that we need to market research, but on the other hand, it is a way of getting the information out there, and making the public aware of what's being done and the value of it to the Great Lakes in this case. So we are looking at how we can market our research, how we can communicate, not only the results, but the value of the research that's being done. You know there are a number of possibilities,

looking at, i.e. we just heard the talk on sediments, treatment technologies, optimization of control for combined sewer overflows, drinking water protection, habitat rehabilitation. There are a number of areas where research is cutting edge, and should be marketed.

One problem, of course, most of us are trained as biologists or chemists or physicists or whatever and not as marketing experts, so we probably need a bit of training in that regard. This led to the recommendation you see now.

- **Coordination of the Use of Research Vessels**. In carrying out research on the Great Lakes, we use a variety of research vessels and we held an initial vessel coordination workshop back in March. We need to look at ways of improving our coordination in the use of equipment. I touched on that earlier. Improving, which will lead to more effective research. This led to the recommendation that you see now.
- Another thing we heard in our public discussion on priorities, Is **How Do We Set Research Needs and Priorities?** Very often research planning may be as low as 10% of the overall project life. I think that research planning in the context of management needs is much more essential. Research priorities (the word sometimes should be in there, it was inadvertently left off) are *sometimes* established in a vacuum and that needs to be fixed. We need to have clear management goals for which the research will be done. Of course, planning is more important than ever. There's an interesting table in our chapter of the Priorities Report which looks at the shift -- the old paradigm/new paradigm -- and the way that the Department of Fisheries and Oceans, for example, carries out its research. I would draw your attention to that chapter; it's very enlightening. That led to the recommendation you see now.
- **Why and How Do We Carry Out Comprehensive Studies?** Finally, given the size and complexity of the Great Lakes system, we often need to carry out very comprehensive studies. We've done that in the past. Those of you with long memories will remember the International Field Year of the Great Lakes, IFYGL. There's work... the Green Bay Mass Balance Study, Lake Michigan Mass Balance Study, we've got the air deposition network which is binational, we've got Lakewide Management Plans being developed which may require lakewide research. We've got a very complex, very large system and we need to be able to lever resources, combine funds, do collaborative studies. This kind of rolls in everything I said in previous slides, so that we can continue to carry out the large-scale complex studies that may be necessary to continue, understanding the system, particularly those lakes that are under severe stress and are changing from an ecosystem that we "sort of' thought we understood" to one that perhaps we don't really understand at all. That led to this recommendation regarding the large-scale binational studies.

I would now like to turn the rest of the presentation over to Jeff Reutter, my U.S. CoChair.

Jeffrey Reutter, U.S. CoChair, CGLRM

Thank you Harvey. I am the U.S. CoChair. I am the Director of four programs in Ohio and Ohio State University: the Ohio Sea Grant Program; Stone Laboratory, our biological field station and Lake Erie laboratory on Gibraltar Island on Put-in-Bay; the Center for Lake Erie Area Research; and the Great Lakes Aquatic Ecosystem Research Consortium, it is a consortium of 12 colleges and universities in Ohio.

I would also like to welcome Kelly Burch and Pennsylvania as the seventh Sea Grant Program in the Great Lakes completing the Sea Grant network. We are very pleased that they are coming in.

Dr. Shear has summarized the input that we received at SOLEC and IAGLR on improving the effectiveness of Great Lakes research. He's also listed our broad range of recommendations to address the issues that were identified and it is our intention to systematically address each of those recommendation during the next year. However, our specific priorities for the next biennium which are called for in our Terms of Reference from the Commission, include efforts to address the following:

- Communication of Research Results
- The need for and the establishment of a Great Lakes Modelling Summit. You'll find in the Priorities Report for '95-'97 in the completion report from the Lake Erie Task Force that that was the final recommendation of the task force.
- We are continuing to look at the Significance of Program Losses and Effects on the GLWQA
- We are looking at the issue of biodiversity and the Loss of Biodiversity within the Great Lakes region, and
- Continuing to work on the Research Inventory. With regard to the inventory first, I am really pleased with some of the improvements that have taken place. It's now a cooperative effort between the Great Lakes Commission and IJC, and working through GLIN, you can see the web sites to identify and find all of the 1996, 1997 data on research projects. Also within the past year, we've established a new search engine so it is now possible to do multiple searches of the data and it is much easier to search the database.

We've also made it easier for investigators to input their research data and information on their research project. They can now do that using an electronic form, essentially live, while they are on the net. If we look at a summary of 1996 and compare it to 1997, you can see that in 1996, we have 408 projects reported, $71-million in U.S. dollars within the region. So far in 1997, we have 277 projects reported and a total of $39-million. I think it's important at this point not to place too much significance on that reduction, clearly I am convinced it's going to ultimately be a very significant reduction, but it's not complete and we are still adding additional data.

We are also, unfortunately, seeing that one of the results of the budget-cutting process is that everyone within the region is severely overworked and simply taking the time to input the data is becoming more and more difficult.

If we look at the other priorities that we are establishing for the next biennium, one of the most important, I think, is the communication of research results. As Dr. Shear alluded to in the beginning, we have a couple of points that we want definitely accomplished in this biennium. We want to make better use of *Focus*, the IJC's newsletter. It's now on the website and we want to make better use of that website. When we met in March, we had a number of recommendations to improve the website and we're very pleased with what has been done. The Windsor Office and IJC has done a very good job in improving that website. It is now much more usable and much easier to find and there are many organizations within the region that are now linking to it.

We're also looking at promoting media participation at research conferences. There are a number of ways that we can do this. Essentially, we need to create opportunities for reporters to interact one-on-one with scientists. We found that we can stand up and make presentations, and it's difficult for reporters to do a quality report or article on that presentation, but if we can provide an opportunity for them to interact with the reporters for a half-hour afterwards, we can get a much better article and actually make it more beneficial for the science writer or outdoor writer or the environmental writer.

We've also recommended that we form a research communications task force. We are looking at Jennifer Day at IJC's Regional Office in Windsor as coordinating that. We identified each of the research communicators within the various agencies and offices within the region to participate on that. It is also interesting to note that we want to make better use of technology, but this decision was made at 4:45 pm, Thursday afternoon. The Council arrived here on Wednesday and that's one of the reasons not too many of our members are still here is that we have been meeting since Wednesday. At 4:45 pm Thursday, we made the decision to work and form this task force. Nothing more has been said about it, but I've already been contacted by a number of sportsmans' groups and environmental organizations that want to participate in some fashion, so maybe the best technique for communication is to whisper behind closed doors and it will sneak out.

With regard to our Great Lakes Modelling Seminar. Again, a recommendation from the Lake Erie Task Force.

We are looking at two suggested venues. The recommendation is that this take place once a year and that we bring together the modellers, research scientists and the managers. Clearly the models cannot be developed in a vacuum. The best models are those that are developed to respond to specific management questions. Two of the venues that have been suggested and that we are looking at is in some way operating with SOLEC in Buffalo in October 1998, and at IAGLR in Cleveland in May/June range of 1999.

With regard to the impact of program cuts, we have created a series of subcommittees. Each one of those subcommittees has taken on a specific IJC priority and they are endeavouring to look at the inventory and also the research that is going on within the region to assess the current state of science and research. We want to identify the needs and the gaps in that science and research and then we can work internally within the Council to modify the research programs and try to address those needs and close those gaps and we also can thereby identify where program cuts have created the most damage.

With regard to biodiversity, we are again looking at assessing the science and trying to get a better feel for the research background, current research, what is currently happening within the region on that issue and then get back to make recommendations to the Commissioners regarding IJC's role in that area.

All of these policy and planning discussions are very important. But it might be appropriate to conclude our remarks with a very brief discussion of some current research efforts, current research results that we thought might be of interest to this particular audience. These efforts are both environmental and economic addressing fisheries, water quality, sediments, and a variety of issues. This is, again, a very, very small summary of some of the work that is going on, but we've also tried to document the impact in some areas:

- In the area of fish-hatchery production, we have had research that has increased hatchery production, six to ten fold, with no additional cost. Simply improving the management.
- In zebra mussel control, many of you saw the initial projections of 1989, estimating that between five and ten-billion dollars would be spent to control zebra mussels within the region. A very significant amount is still being spent. The average power plant in the region is now spending $350,000 per year to clean zebra mussels, but that's much, much lower than originally projected. We have been able to show them when to chlorinate, when to use the molluscicide. We have also been very successful in reducing the impacts of the controls by reducing the frequency and the duration of any chemical use.

A number of new projects underway:

- Looking at photodegradation of agricultural chemicals within wetlands. I think it's a very important area and very promising area.
- Many in the biotechnology area were using biotechnology in single-celled algae to remove heavy metals from waste streams and potentially from sediments and what's equally exciting there, is that there's always a concern over the release of a bio-engineered organism. This particular work right now has been just as effective after they make the engineering modification to the single-celled algae, they can freeze-dry the algae and only use the cell walls and still receive a great deal of success.
- Within the area of wetlands, we are trying to be more creative with our development and management strategies for the wetlands. There are projects underway now, looking at wetlands that have been overtaken by Phragmites, and literally going in and bull-dozing, taking a swaft off the top of the wetland, knocking out the Phragmites. It appears that many of the endangered that we have felt were lost, the seeds are still viable within this seed bank and when you knock off the Phragmites, the endangered species come back and increase biodiversity.
- Looking at contaminant transfer from zebra mussels up through the system and now we are seeing that a number of the other aquatic nuisance species are participating, in that the round goby is eating zebra mussels, and then being eaten by small mouth bass.
- Looking at creative habitat and economic enhancements. Artificial reef development in Lake Erie and currently underway, taking old Cleveland Stadium and using it to create artificial reefs in the Cleveland

area. We have been able to demonstrate that these artificial reefs attract 20 to 60 times as many fish as the surrounding area. And economically, they pay for themselves 2.75 times per year.
- We are also looking at options to, not solve the contaminant problem, but are there things that we can do in the short term to seal contaminants in, and thereby reduce the transfer of contaminants into the open lake, while we are still dealing with more permanent solutions to the problem?

Before I conclude, I would like to recognize all of the Boards and Council are made up of volunteers. We all have other jobs that we do and one of the things that allows us to be effective is the great support that we get from the staff at the IJC offices. In this past year, we were struggling for awhile because our lead in the IJC office, Dave Dolan, was recovering from a serious illness. Dave, it's great to have you back and I certainly do want to recognize all of the support we get from the IJC staff. It really helps us. With that, I will conclude and I appreciate the opportunity to present these results.

Questions and Responses:

Q: ***Elaine Kennedy***: I would like to make two points: one is I commend you on one of your bullets about government agencies collaborating with universities on focused, client-driven research projects. One of the things that came to my attention a couple of years ago was when a local committee on air quality tried to get information about the relationship between the quality of air in Cornwall, Ontario and lung diseases of various types in the area, they found that a doctor at McMaster had tried to do a study from Windsor right through to Quebec and found that the documentation from hospitals and doctors were so inconsistent and at that time, I thought why on earth can't somebody come up with the project for a university student to create an efficient questionnaire that could be used and would not add time to doctors and nurses' workload but could help answer these questions. I'm hopeful that something will come out what you have there. The question I would like to ask is, in looking at your research planning, one of the things I noticed in the creation of our Stage 2, we sort of can't send off our Stage 2 document to the IJC until it has gone through all its formal ratifications through the COA RAP steering committee and the PAC, etc. etc. Is there any way, early on, the research programs that the RAPs are looking at in the various AOC couldn't be sent to you so that you could see where, perhaps in Cornwall where one of our research programs is 'x', and you find the same thing is being looked at the Stage 2 in some other area -- Is there any way that you people can help coordinate those kinds of things so that the research can be done more efficiently?

R: ***(Jeff Reutter)*** I think that's a great suggestion. I know all of these are being documented. We're trying to be innovative in involving the research community within the RAP process. It's very clear that the most successful RAPs have some sort of a tie to the research community. There are many things that a good research scientist or even a good grad student could do to expedite the process. They are trained in literature surveys and they have access to data that the normal person doesn't. I think your suggestion is clearly one of the ones we will look at this year. It's something that makes a lot of sense.

Q: ***Dan Thomas, Great Lakes Sportsfishing Council***: I would like to address my comments to Dr. Reutter. We commend you on your comments and the education outreach efforts. The sportsfishing community, would like to work with the Council of Great Lakes Research Managers and the Great Lakes Sea Grant network on effecting that communication outreach, research results, biodiversity, biodiversity loss, exotics, habitat enhancement and the many other issues that affect our aquatic communities. Our award-winning website receives between 35,000 and 40,000 hits a month and it is one of the many ideal vehicles that we could use to enhance those information outreach efforts.

R: ***(Reutter)*** Dan, any website that is receiving 30-40,000 hits per month, we would certainly like to get our information into your website. We would like to work with you very much on that.

Q: I am ***Mary Powers***. I am from the ***Kalamazoo River AOC*** and also work with ***the Lake Michigan Forum***. My question is: the purpose of the Great Lakes research inventory is to evaluate the adequacy of research in

order to advise the Commission. Will the Council evaluate the inventory?

R: ***(Reutter)*** That is exactly what we're doing with each one of these subcommittees. What we've done is take each one of the IJC priorities and go back through the inventory and try to address how effective are we being at addressing that. We can't simply do it with number of projects. You need to take a much more indepth look at what each of those projects is addressing. To say that 10 projects are dealing with sediments doesn't tell me anything. To look at the various issues and try to identify the gaps and thence once we have identified the gaps, there are two things that need to be done. When a gap is identified, a simple solution is to run to the governments and say we need more money to fill the gaps, we'll do that for sure. Another solution, within our existing programs, is to modify our priorities and try to close the gaps and we have to do that for sure also. Both of those things will be done.

Q: ***(Powers)*** It does seem difficult to make recommendations without adequate evaluation, so when can we expect a reasonable evaluation so more recommendations can be made?

A: ***(Reutter)*** Our subcommittees are reporting back to the Council at the end of March 1998. That will be the end of the preliminary evaluation and we'll move forward from there. We are trying to move very quickly on this.

Q: My name is ***Manfred Kirschlin*** from the ***Bay of Quinte RAP***. The RAP monitoring programs have been terribly cut back to such a degree that huge database gaps have occurred in the monitoring programs in RAPs over the past two years. The public is very uncomfortable to accept progress reports by agencies when we know that a lot of it is based on assumptions but not substantiated by scientific fact. It really reduces the credibility of the RAP process and we feel that monitoring is crucial to prove to everyone involved, the communities, and everyone to know whether the efforts that we make, that are being made in restoration programs, what kind of results they produce, how they impact on the complexity of the ecosystem, and we feel that it's totally impossible to make a credible and acceptable statement on progress if they cannot be substantiated scientifically and it does a dis-service to the RAP process and to some degree is insulting to the public. Thank you.

R: ***(Reutter)*** I think I have to agree with you. The reverse is more true within the research community. We are criticized for studying something to death before we make a comment. In the RAP process, we are looking for ways to move it forward more quickly and we think monitoring is absolutely critical.

Q: ***(Shear)*** Manfred, if you have any suggestions for the Council, please let us know how to improve that situation.

R: ***(Reutter)*** Last question

Q: My name is ***John Carey***. I am with ***Environment Canada***. I am a little confused as to exactly why the Council of Research Managers feel they had to make recommendations regarding the importance of coordination of research. I am not sure exactly what's stopping you from coordinating research and who you thought you were making recommendations to that would achieve this coordination, if the Council of Research Managers can't achieve it. I would like to know what's stopping you from just getting on with it. Why do you need to make recommendations about this?

R: ***(Reutter)*** We are getting on with it. Which recommendation were you referring to?

Q: ***(Carey)*** The recommendation about research priorities being set in a vacuum. Recommendations about overall coordination of research. You are the managers, aren't you?

R: ***(Reutter)*** What we are trying to do with the issue . . . We found that the most effective research, RAPs is a

good example, a research scientist, particularly at the universities within the region can just about study a very wide range of issues. We would like to see that research coordinated onto the most important issues and that means, working closely with the private sector, with environmental groups, with agencies, to make sure that the research that is done, is addressing the most important problems, most effectively. Our goal is enhancing the effectiveness of Great Lakes research, so we are moving forward with it. I don't disagree with your comment.

Q: ***(Carey)*** Most of the recommendations that I saw were recommendations that should not a plan or actions that were helping it happen. I guess I would encourage you to get on with it.

L.H. Legault, Chairman, Canadian Section, IJC

Our thanks to the Council of Research Managers and we will now hear from Don McKay and John McDonald of the International Air Quality Advisory Board.