Highlights of International Joint Commission's Biennial Meeting on Great Lakes Water Quality

by Alan Clarke and Sally Cole-Misch

More than 600 Canadians and Americans met in Toledo in mid-November to discuss the state of the Great Lakes Basin Ecosystem and how to restore water quality to the largest freshwater system in the world. The International Joint Commission's 1987 Biennial Meeting on Great Lakes Water Quality, held November 16-18, 1987 in Toledo, Ohio included presentations by the Great Lakes Water Quality and Science Advisory Boards and workshops on four topics: the Great Lakes Water Quality Agreement; Fluctuating Great Lakes Water Levels; Integrated Monitoring; and Remedial Action Plans for Areas of Concern. Brief summaries of these workshops and other activities during the meeting start at left.

Presentation of the Great Lakes Water Quality Board

In their presentation to the Commissioners and meeting participants, Board Co-Chairpersons Valdas Adamkus and Elizabeth Dowdeswell highlighted major points from the Board's 1987 Report on Great Lakes Water Quality. They stressed that, while considerable progress has been made in the last 15 years to achieve the goals of fishable, swimmable and drinkable water in the Great Lakes, the nature of problems has shifted from relatively simple and straightforward ones, like over-enrichment, to the more complex issue of persistent toxic substances. Jurisdictional initiatives like the development of remedial action plans for Areas of Concern in the basin have been met by a great deal of public interest and involvement, which the Board considers extremely encouraging.

In reviewing progress over the last two years, the Board has centered its efforts on a five-point management strategy. First, the Primary Track focuses on abatement and control of 11 critical and persistent toxic pollutants. While abatement and corrective action has been taken for more than a decade, additional measures are needed because these pollutants remain in the ecosystem at unacceptable levels. Second, the Comprehensive Track looks at all chemicals reported to be present in the Great Lakes Basin Ecosystem; in this area an inventory of 362 toxic substances have been identified and will be used to assess these substances and options for future controls.

Remedial action plans for Areas of Concern, the third part of the Board's management strategy, represents a challenging departure from most historical

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As a part of other recommendations, emphasis was also placed on eliminating the sources of toxic chemicals, particularly in Areas of Concern, in order to effectively deal with pollution over the long term, and education of citizens, including children, so that future generations will be able to anticipate and prevent pollution from entering the Great Lakes system.

The Science Advisory Board's Council of Great Lakes Research Managers also presented a brief summary of the dilemma between research needs for the Great Lakes Basin Ecosystem and the amount of money now available in both countries to complete the necessary research to determine the amount, effects and possible solutions to pollution problems. The Council's future programs include completing its evaluation of almost 250 chemicals identified in the Great Lakes Basin Ecosystem, providing detailed guidelines for the application of environmental epidemiology, and looking at how to consider all the various media that contribute to human exposure of toxic chemicals. Dr. Andy Gilman, on behalf of the Human Health Effects Committee (a joint committee between the Science Advisory Board and the Water Quality Board), reviewed the committee's work over the past ten years in making recommendations on groundwater protection and improvement in fish monitoring programs, developing chemical toxicity and risk profiles, and other initiatives.

**Workshop Topics**

Four workshops were included in the Biennial Meeting to provide more in-depth information sharing on particular topics. On Tuesday afternoon, presenters in the session on the Great Lakes Water Quality Agreement reported on progress to restore and maintain the quality of the Great Lakes. Several speakers and audience participants stressed the need for greater governmental and public commitment to the Great Lakes Water Quality Agreement, as well as greater interaction between and among all jurisdictions, agencies, institutions and the public in the Great Lakes basin. An outline of the Protocol Amending the Agreement, which resulted from a formal review of the document by the Parties, was also presented and discussed (for information on the Protocol, see related story on page 5).

A workshop on Great Lakes fluctuating water levels on Tuesday afternoon focused on progress made by the IJC under the Levels Reference, which it received from the Parties in August 1986. Frank Quinn of the National Oceanic and Atmospheric Administration reviewed the history and causes of fluctuating levels, and government actions and programs undertaken during recent high water conditions also were discussed. In the Commission's presentation to update workshop participants on reference activities, the Commissioners stressed the need for public input by February 1, 1988 on the Report of the Task Force and the background paper on the long-term study (for more information on progress under the reference see article on page 7).

In the workshop entitled, "Towards Integrated Monitoring" held on Wednesday afternoon, concerns were raised with respect to current implementation of integrated monitoring techniques, particularly the tendency to take an isolated approach. For example, although there are notable results in water chemistry trends for eutrophication and contaminants in whole fish and herring gull egg tissue, much needs to be done to integrate all aquatic and terrestrial information into an overall Great Lakes "health" monitoring system. The air must be considered a significant factor for pollutants in all the Great Lakes, as evidenced by the statistics that the percentage of PCBs entering the lakes from the atmosphere are 90, 58, 78, 13 and 7 percent for lakes Superior, Michigan, Huron, Erie and Ontario, respectively.

Finally, the remedial action plan process for Areas of Concern was explored in a workshop on Wednesday afternoon. Several points were raised during the discussion, including that implementation of remedial action plans requires a formal institutional structure; remedial action plan maintenance is necessary because of the iterative process; public participation is essential in the implementation of the plans; and that we must build on the record of success with remedial action plans to keep the momentum going.

Brief summaries of each workshop were presented at a final plenary session late Wednesday afternoon. Toledo Coun-
clipsperson Steve Yarborough reported on the workshop on fluctuating Great Lakes levels and Charles E. Herdendorf, Professor of Zoology at Ohio State University, outlined the Agreement workshop. Michael Finkler, Environmental Specialist Supervisor for Standard of Ohio Oil Company in Toledo, provided participants with a report of the integrated monitoring workshop. While Thomas L. Kovacic, Director of Public Utilities for the City of Toledo, summarized the RAP discussions.

Positive reviews were received in evaluations from participants who attended the Biennial Meeting. Many commented on the usefulness of the workshop sessions in providing information and a range of views about important issues and concerns facing the Great Lakes. The meeting also provided an opportunity for all participants to witness a piece of history, with the signing of the Protocol Amending the Great Lakes Water Quality Agreement. One environmental reporter, who has written about the IJC and attended its meetings for several years, wrote that "it all came together for the IJC at Toledo ... the commission that watches over United States and Canadian boundary issues -- from pollution to diversion of Great Lakes waters, from lake levels to ice booms -- deserves whole-hearted praise."

Environmental Exhibition and Invention Convention Activities

More than 50 exhibitors provided informative displays during the meeting from a variety of environmental, governmental and other organizations. A unique part of the exhibition was the participation of elementary-aged inventors from the Toledo Public Schools. Approximately 300 students from 40 schools, as well as their teachers and parents, participated in the 1987 Invention Convention cosponsored by the school system and the International Joint Commission.

One of the primary goals of the Commission in hosting its Biennial Meeting around the Great Lakes basin is to involve the community in the issues surrounding the lakes. The Invention Convention is an annual national program which encourages students to create inventions on several topics, and the Toledo system has produced several regional and national award winners in the few years it has been involved with the program. This year's convention focused on the Great Lakes. After a preliminary review of these inventions, 39 inventions were selected for display as part of the Environmental Exhibition. During the opening ceremonies of the Biennial Meeting, Toledo's Mayor Donna Owens assisted the Commissioners in presenting further awards to 19 of these students for their creative inventions related to the preservation of the Great Lakes.

Dick Brunt and Suzanne Yeager, Directors of Science and Communications respectively for Toledo Public Schools, and Horizon teachers Rayna Humason and Sharon Ulrich provided the leadership for this successful joint venture. As one of the respondents to the meeting's evaluation questionnaire noted: "The Invention Convention was the best way yet to develop early awareness because these 'inventions' involved young people in seeking solutions."

Keynote Speakers

The Commission was honored to have the heads of both countries' environmental agencies as keynote speakers during the Biennial Meeting. Tom McMillan, Minister of the Environment for the Government of Canada, spoke to a large audience after dinner Tuesday evening. He reviewed the threats to the Great Lakes system as a result of our industrialized society, efforts to restore the ecosystem, and emphasized that the Great Lakes are a continental treasure that should be valued and protected.

Lee Thomas, Administrator of the U.S. Environmental Protection Agency, addressed meeting participants at lunch Wednesday, before signing the Protocol Amending the 1978 Great Lakes Water Quality Agreement with Mr. McMillan. Mr. Thomas stated his optimism that progress will continue to occur in the Great Lakes system under the Great Lakes Water Quality Agreement because of five key ingredients: the solid foundation of positive interaction between the two countries through the IJC, the history of progress that has occurred in Lake Erie and in other areas in stopping eutrophication; the management and accountability systems that have been added to the Agreement by the Protocol; the involvement of citizens, industry, private interest groups and both governments in the review of the Agreement; and the common objectives for environmental protection that both countries share.
While many interesting events took place at the IJC’s Biennial Meeting last November, the most historic was the signing of the 1987 Protocol Amending the 1978 Agreement between the United States and Canada on Great Lakes Water Quality. U.S. Environmental Protection Agency (EPA) Administrator Lee Thomas and Canadian Minister of the Environment Tom McMillan represented their respective governments at the official signing ceremony on Wednesday, November 18, 1987, which was witnessed by all participants of the Biennial Meeting and local citizens of Toledo, Ohio after lunch.

The Protocol is the result of negotiations between the two countries that began in early 1987, after the International Joint Commission submitted its Third Biennial Report to governments. Upon receipt of that report, the Parties were required to review the Agreement. Public hearings were held in late summer/early fall and formal negotiations included, primarily, government representatives of the U.S. Department of State and EPA, Canadian Department of External Affairs and Environment Canada, as well as public interest group representatives as observers. Reports such as the review of the Agreement by the Royal Society of Canada and the National Research Council of the United States and others were also used in the IJC’s and the Parties’ evaluations.

Negotiators did not change the purpose, policy and general objectives of the 1978 Great Lakes Water Quality Agreement, which is to restore and maintain the chemical, physical and biological integrity of waters of the Great Lakes and the IJC, although concern has been raised as to the potential sources of funding to carry out programs laid out in the revised Agreement. In a press briefing following the Agreement signing, EPA Administrator Thomas stated that funds will have to come from a combination of federal, state and private sources, particularly when he does not expect to receive increases in the agency’s budget. Mr. McMillan emphasized a similar joint approach to funding programs under the Agreement in Canada. Despite this concern, the Protocol was reported on by various environmental reporters as a commendable agreement to deal with problems that have been clearly identified by the IJC.

Copies of the revised Agreement are available from the IJC Great Lakes Regional Office, 100 Ouellette Avenue, Eighth floor, Windsor, ON N9A 6T3, or P.O. Box 32869, Detroit, MI 48232. Call (519) 256-7821 in Canada or (313) 226-2170 in the U.S.
Three reports are available for distribution from the International Joint Commission Great Lakes Regional Office, 100 Ouellette Avenue, Eighth floor, Windsor, ON N9A 6T3 or PO. Box 32869. Detroit, MI 48232. For further information about these or other IJC reports, call (519)256-7821 in Canada or (313)226-2170 in the U.S. PChE: A Case Study includes the proceedings of a workshop on Great Lakes Coordination Research, focusing on the available data for PCB contamination. The report is from the Commission's Council of Great Lakes Research Managers. Proceedings of an atmospheric deposition workshop held in early 1987 are also available. Entitled Mass Balancing of Toxic Chemicals in the Great Lakes: The Role of Atmospheric Deposition, the report addresses what evidence supports the theory of atmospheric deposition as a major source of pollution to the Great Lakes.

Finally, the Commission's 1986 Activities Report serves as the Commission's annual report and highlights some of the Commission's activities in 1986. The report also outlines the status of all current and previous references to the IJC. Copies of this bilingual report can be obtained from the above address or from either Section Office at 100 Metcalfe, 18th floor, Ottawa, ON K1P 5M1, or 2001 S Street NW, Second floor, Washington, DC 20440, (202) 673-6222.

The Canadian government released a document in late December outlining policies for several water quality and water quantity issues. Included are discussions on fish habitat management, wetlands preservation, water quality standards, water data and information needs, water use conflicts, water transfers, flooding, climate change, and other issues. Copies of the Federal Water Policy document can be obtained from Environment Canada, Communications Branch, 25 St. Clair Avenue East, Sixth floor, Toronto, ON M4T 1M2, (416)973-1093.

The third in a series of comprehensive reviews on environmental trends and issues, State of the Environment: A View Toward the Nineties was recently made available by the staff of The Conservation Foundation. The report underscores the need to overhaul the nation's current approach to pollution control so that environmental priorities more closely reflect health risks posed by various pollutants. It also indicates that important, early victories over conventional air and water pollutants are less overwhelming when compared to environmental effects of accumulated toxic wastes and associated damage to groundwater, loss of tropical and temperate forests, and damage to the upper atmosphere.

Background information and individual state data summaries are available by contacting Kenneth Cook or Dana Lauren West at The Conservation Foundation, 1250 Twenty-Fourth Street, NW, Washington, DC 20037, (202)293-4800.

Tax. Chemicals in the Great Lakes Basin Ecosystem: Some Observations. It is a summary of information on changes in the quality and health of the Great Lakes ecosystem, designed to evaluate the socioeconomic dimensions of toxic chemicals pollution. The scale of effects of this pollution cannot be determined by the survey, but the authors feel that major initiatives to reduce our reliance on products and processes which involve toxic chemicals would yield important social and economic benefits. Copies of this report may be obtained from Tom Muir (416)336-4951 or Anne Sudder (416)336-4949, at the Water Planning and Management Branch, Inland Waters Directorate, Ontario Region, 867 Lakeshore Road, Box 5050, Burlington, ON L7R 4A6.

Warnings on the Wind, a half-hour documentary which explores the sources, pathways and kinds of airborne toxics, has been produced by the Center for Environmental Study. The program centers around the Great Lakes because of the potential for warnings about the health of the ecosystem the lakes can provide. The videotape is available in 1/2" VHS format for $40. 3/4" VHS for $50, or rental for $10 in US funds. Contact the Center for Environmental Study, Room 7OM, 153 Bostwick NE, Grand Rapids, MI 49503, (616)456-4848.

The Canadian Council of Resource and Environment Ministers has published the report of its National Task Force on Environment and Economy. The mandate of the task force is to foster and promote environmentally sound economic development, and it supports the main findings of the World Commission on Environment and Development. The task force's report set out a number of recommendations, including the formation of round tables that bring organizations together to focus on environment-economy integration, the development of conservation strategies, and Canada taking an international leadership role in these areas. Copies of the report are available through the Canadian Council of Resource and Environment Ministers, 4905 Dufferin Street, Downsview, ON M3H 5T4, (416)667-4714.

Conclusions and recommendations of a two-day workshop sponsored by Great Lakes United are included in a report entitled Citizen Action in Developing Cleanup Plans for the 42 Great Lakes Toxic Hot Spots. Findings of the workshop's participants include that most governments responsible for developing cleanup plans for Great Lakes toxic hot spots are not committed to including the public in the planning process. The report concludes that the federal governments, as well as the states and provinces, must provide adequate funding to support the public advisory committees and other public involvement programs developed for the 42 Areas of Concern in the basin.

For more report information, contact Great Lakes United at 24 Agassiz Circle, Buffalo, NY 14214, (716)886-0142.

For those who would like to catch some fish in cold weather but have never tried the sport, the University of Wisconsin Sea Grant Institute is once again offering for fishing, a 20-page illustrated booklet especially designed for newcomers to the sport. The handy booklet includes a summary of Wisconsin ice fishing regulations, tips on proper clothing and gear, and advice on catching walleye, northern pike, yellow perch and bluegills. The fact sheet "Danger Thin Ice" is also available for the person who likes winter fun on ice, whether on foot or by vehicle.

To receive copies of the free fact sheet and the booklet $1 (U.S.) funds, send a self-addressed, stamped envelope to the University of Wisconsin, Sea Grant Communications Office, 1800 University Avenue, Madison, WI 53705, (608)262-6393.

On a different subject, the Wisconsin Sea Grant Office has also published a 28-page Coastal Processes Workbook: Evaluating the Riske of Flooding and Erosion for Great Lakes Coastal Property. The booklet presents step-by-step summaries of how to determine the risk of flooding for lakeshore properties and estimating minimum construction setbacks for properties with and without shore protection. Four easy-to-use tables, nine illustrations and a glossary of terms are also included. Copies of the workbook for $1 (U.S.) funds are available from the University of Wisconsin Sea Grant Communications Office at the above address.

Harbor House Publishers, Boyne City, Michigan have produced a new coloring book on The Great Lakes. The 24-page book depicts scenes from around the lakes, with an emphasis on the Great Lakes ore boats and ocean ships that cruise the inland waters. The book is priced at $1.95 (U.S. funds) and is being made available at book and gift shops. Harbor House Publishers is located at 221 Water Street, Boyne City, Michigan 49712, (616)582-2814.

Treasures in Your Garbage is a delightful children's book that tackles our present garbage and waste problems in an educational and entertaining format. Children learn how they can help by recycling in their homes; composting their kitchen wastes and reusing objects that often end up in their garbage. The book contains 16 detailed drawings suitable for coloring and a number of blank pages on which children are asked to contribute drawings of their own to complete the story. This flexible format allows a child to use the book as a reader, a coloring book and a sketch pad. Copies are available for $2.25 ($1.25 in the U.S.) and are available at the office of Focus on Public Focus, 720 Bathurst Street, Suite 403, Toronto, Ontario M5S 2R4, (416) 536-9616.

The East Central Michigan Planning and Development Region has released its summary of Proceedings: A New Way for the Bay, a brief discussion

Published by Scholarship at UWindsor, 1988
Background Paper Completed For Levels Reference Plan of Study

An approach for examining the wide range of possible solutions to the problems of fluctuating water levels in the Great Lakes-St. Lawrence River basin was proposed in the recently circulated "Background Paper to the Plan of Study." If adopted by the International Joint Commission (IJC), the objectives and procedures presented in the background paper would guide its investigations of this set of problems.

The August 1, 1986 Reference to the IJC from the Governments of the United States and Canada is a mandate to address the increasingly significant problems created by lake level extremes. Aside from the traditional importance given to the electric power and navigation sectors of the Great Lakes basin economy, it is now recognized that interests such as shoreline development, recreation and the environment are becoming increasingly important and must be fully taken into account. The background paper identifies the following areas which need increased attention:

- increased geographic scope, recognizing the full extent of the area affected;
- a whole system view, recognizing that the Great Lakes are an interdependent hydrologic system interacting with a complex ecology, natural and human-made;
- expanded attention to the full range of affected interests within and outside the basin, including, but not limited to, domestic water supply and sanitation, navigation, agriculture, shore property, flood control, wildlife and others as listed in the reference;
- expanded consideration of a full range of measures focusing on both high and low lake levels and management of the lakes themselves as well as the land use and economic activity within the coastal zone and basin as a whole;
- enhanced public information; and
- expanded attention to institutional barriers to adopt measures that address identified problems and to alternatives that lower the barriers, including the possibility of remedial or compensatory actions to offset adverse effects on those interests.

With regard to the study process, the Commission has advised governments by letter dated December 10, 1987, that "the magnitude and complexity of the study requires that it be addressed in two phases." The study approach will include elements which successively define the problem, define a broad range of measures, develop and test tools to evaluate measures, and provide a mechanism to assist the IJC in its recommendations to governments.

Phase I, with a report in May 1989, will supply a comprehensive framework for the systemic evaluation of measures, a preliminary assessment of the main types of measures, and an outline for the initiatives of Phase II. Phase II, with the final report in September 1991, will apply the evaluation procedures in detail to specific selected measures identified in Phase I.

Specifically, Phase I will include a characterization of fluctuations and their environmental and socioeconomic consequences. A comprehensive analysis of the socioeconomic component will be built upon the application of state-of-the-art economic modeling and collection of critical baseline data to employ the models in a sound manner. A number of potentially important social impact variables that may not be captured by economic parameters will also be included in the analysis of impacts, such as employment changes and household disruptions due to permanent or emergency evacuation. The Commission has begun experimenting with ways to involve the public in the development of the Plan of Study. The Commission will continue to...
The August 1, 1986 Reference to the IJC is a mandate to address the increasingly significant problems created by lake level extremes.

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Seek and encourage public involvement in other key study areas, such as a review of study recommendations and conclusions prior to the IJC's report to governments. In addition, representatives from the public have been appointed to some functional groups, which will undertake the detailed work of the study. Since the evaluation framework and preliminary assessment in Phase I will not provide a sufficient level of detail required to provide full response to the reference, the IJC will complete a final report in September 1991. It is the goal, objective and intent of this study to proceed to that final level of detail so as to comply fully with the reference requirements. These include determining the full costs and benefits of selected measures, including any new or altered works or other regulating measures, singly or in combination, which appear to be economically and environmentally practicable.

Recognizing the dynamic nature of the physical, economic and social environment, it will be prudent to develop an analytical capability that recognizes the dynamic nature of decision making and the need to have a decision support tool available for use by governments in the implementation and operation of lake level operational and management plans.

In addition to the detailed analysis and final report produced during Phase II, this study has as its expressed goal and purpose to initiate a continuing management process that will enhance understanding of the options for both high and low water conditions available for consideration by governments over time.

For more information about the reference, please contact Alan Clarke, Information Officer, Canadian Section, 100 Metcalfe, 18th floor, Ottawa, ON K1P 5M1, (613)995-2984 or Frank Bevacqua, Information Officer, U.S. Section, 2001 S Street NW, Washington, DC 20440, (202)673-6222.
The Council of Great Lakes Governors announced in early February that an endowment fund will be established by the eight states to fund water quality projects in the region. Each state will contribute money towards the initial goal of $100 million based on the amount of Great Lakes water the state uses, and additional funds will be sought from corporations, foundations and individuals, and from settlements of environmental litigation.

Governors in each of the eight Great Lakes states will propose legislation in the next session, so that the fund can be formally established in 1989. The interest generated from the fund will be available for use once four of the eight states have passed legislation to create the endowment fund.

A review board will likely be established to review proposed projects, to be based on the Toxic Substances Control Agreement signed by the Governors in May 1986. Further information on the fund can be obtained from Bonnie Koenig, Council of Great Lakes Governors, 310 South Michigan Avenue. Tenth floor. Chicago, IL 60604. (312) 427-0092.

The US Supreme Court ruled in December 1987 that private citizens and groups may not sue polluters for damages for past violations of the Clean Water Act. The ruling was a result of a suit between Gwaltney of Smithfield and the Chesapeake Bay Foundation, which originally resulted in a $12.8 million penalty against Gwaltney for discharging pollutants into the Pagan River in Virginia 87 times between 1981 and 1984. Justice Thurgood Marshall wrote for the court that citizen suits are intended to stop continuing water pollution, not to remedy past violations: only the federal and state governments may use the Clean Water Act to seek penalties for illegal pollution wholly in the past.

Consumer’s Power Company and Detroit Edison received a license from the Federal Energy Regulatory Commission (FERC) on July 30, 1969 to build and operate a pump-storage hydroelectric plant on the shores of Lake Michigan. The Ludington plant, which is the largest in North America, is capable of pumping 43,000 million gallons per day. By contrast, the Detroit wastewater treatment plant, the largest in the Great Lakes, releases an average of 800 million gallons per day.

A pump storage facility uses surplus power capacity during low demand hours to pump water to a storage reservoir, which is then released during the high demand period to produce needed power by reversible turbines. Without a barrier to passage, an estimated 181 million fish are killed each year in the pumping/generating process at the Ludington plant, more than any other power plant in the United States. Various estimates have placed the loss of game and forage fish at ten to twenty million dollars.

The FERC required the utilities last year to develop a temporary solution to the fish kills and research a permanent way to block the fish. The state's two largest utilities recently offered to pay for temporary protection nets to keep fish from being killed at the plant, which the Michigan Department of Natural Resources (DNR) rejected, stating that a permanent solution is needed to comply with FERC requirements. The Michigan United Conservation Clubs and the National Wildlife Federation have also petitioned the FERC to order fish kills stopped as a prerequisite to continued operation of the facility.

Requests for further information should be sent to FERC, Office of Public Information, 825 North Capital Street NW, Washington, DC 20426. (202) 376-4141.

Three new Great Lakes Water Quality Board members have been appointed by the Commission to fill vacancies for the States of Minnesota, New York and Ohio. Barbara Lindsey Sims is Assistant Commissioner with the Pollution Control Agency; Salvatore Pagan is Associate Director of the New York State Department of Environmental Conservation; and Richard Shank is the Director of the Ohio Environmental Protection Agency.

Recently appointed by the Commission to the Great Lakes Science Advisory Board are Audrey Armour, Assistant Professor and Assistant Dean with the Faculty of Environmental Studies, York University; Katherine Davies, Research Consultant with the Department of Public Health of the City of Toronto; and Michel Sliwitsky, Director, Institut national de la recherche scientifique. Université du Québec (Water Research Centre of the University of Quebec). Terms were also extended to Dick Frank of the Ministry of Agriculture and Food; Hal Humphreys, an Environmental Epidemiologist with Michigan’s Department of Public Health; Henry Lickers, Director of the St. Regis Environmental Division, Akwesasne Nation; and Walter Lyon, Engineering Consultant and Adjunct Professor of Civil Engineering for the University of Pennsylvania.

The international environmental organization Greenpeace will send its boat, the Beluga, on a six-month voyage of the Great Lakes and Mississippi River this summer. The European fire boat, built in 1961 in Germany and retrofitted by Greenpeace with a laboratory and sleeping quarters in 1983, has toured several of the European waterways testing for indicators of water quality. The boat will spend two weeks in the St. Lawrence River, then move through the Great Lakes system for three months and into the Illinois waterway and the Mississippi River for another three months. Along the way scientists will test for a range of priority pollutants, including continuous testing of levels of pH, conductivity and temperature.

A post report on sample findings will be released. To obtain a detailed itinerary and more information about the excursion, contact Joyce McLean, Greenpeace Canada, 427 Bloor Street West, Toronto, ON M5S 1X7. (416) 922-3011.

An Ontario Ministry of the Environment study has found that fecal coliform bacteria levels on the Canadian side of the Detroit River increased between 1975 and 1984. The recently released Bacteriological Quality of the Detroit River Report, prepared for the Ministry by Canviro Consultants, states that ten out of 15 nearshore monitoring stations detected levels which exceeded provincial objectives in 1975, while 13 of 15 stations exceeded these objectives in 1984. Fecal coliform bacteria is derived from the feces of humans and other warm-blooded animals, and is a key determinant as to whether the water is safe for human body contact. The Provincial Water Quality Objective for fecal coliforms is 100 organisms per 100 millilitres of water.

The report concludes that the high level of bacteriological contamination of the river was due to known sources: combined sanitary/storm sewer outfalls, sewage treatment plants and tributary streams discharging into the river. For a copy of the full report, contact the Public Information Centre, Communications Branch, Ministry of the Environment, 135 St. Clair Avenue West, Toronto, ON M4V 1P5. (416) 323-4321.

The IJC’s Great Lakes Regional Office hosted a November visit by Japanese experts on waterfront rehabilitation and enhancement.

The nine experts from government and private sector development interests in the Tokyo area were on a tour of major urban waterfronts in the United States; Windsor was their only Canadian stop. During their visit, the experts learned about the IJC’s responsibilities, and discussed water quality concerns found in Tokyo: Harbor which are similar to those found in many Areas of Concern in the Great Lakes. Following a tour of the Windsor waterfront with city officials.
Japanese diplomats are welcomed by IJC Regional Office staff to Windsor.

Regional Office Acting Director Lovell Richie hosted a luncheon for the delegation.

To help the public, communities and states better understand the new requirements of the Safe Drinking Water Act of 1986, the US Environmental Protection Agency (EPA) has established a telephone hotline. The new line will provide information on the law, EPA's regulations and drinking water programs, including rules affecting public water supply and underground injection control. The hotline can be tapped toll-free by dialing (800)426-4791 or commercial (202)382-5333 in the Washington metropolitan area. They operate Monday thru Friday (except federal holidays) from 8:30 a.m. - 4:30 p.m. EST.

The Great Lakes and St. Lawrence River cruise and excursion industry is making a comeback and promises to play an increasingly important role in the region's tourism, outdoor recreation industry and local economic development efforts. That is the finding of a major new report available from the Great Lakes Commission, which documents this growing industry and highlights opportunities and obstacles for consideration by those in the business or otherwise involved in community development and tourism promotion. It features a comprehensive up-to-date map and a regularly scheduled cruise, excursion and ferry services listing.

The report is available in executive summary for $4.50 or full text for $7.50 (both US funds) from the Great Lakes Commission, 2200 Bonisteel Boulevard, Ann Arbor, MI 48109-313865-9135.

Wisconsin sport fishermen eat three times more fish than the average American citizen, according to a study by the State's Division of Health. Health officials conducted a two-part surveillance and blood analyses study in order to find out whether anglers follow state advisories about catching, cooking and eating fish from polluted waters. For more information or a copy of the report, contact Beth Jones, Wisconsin Department of Health and Social Services, 1 West Wilson Street, P.O. Box 309, Madison, WI 53701. (608)266-6914.

Three items concerning recycling which could affect one's daily life, depending upon eating habits and family age, have received attention from the media recently. First, the Executive Director of the Consumer Protection Board in New York, Edward Kessel, proposed that McDonald's (of hamburger fame) could 'perform a great service' if it voluntarily stopped putting Big Macs and other fast food products in plastic containers and switched instead to packages made from biodegradable materials. However, Gordon Boyd, who heads New York's Legislative Commission on Solid Waste Management, feels that legislation will be needed in order to force the packaging industry to make products from only recyclable materials.

According to reports in the Christian Science Monitor and Environment Magazine, Ecoplastics of Toronto, Ontario is manufacturing a low-density photodegradable polyethylene plastic called Ecolette, which disintegrates if it is left in the sun. When the ultraviolet light hits a plastic container made with Ecolette, the container will gradually become brittle and break apart, finally degrading into water and carbon dioxide. The manufacturer claims that plastic items kept indoors will not fall apart since most ultraviolet rays will not penetrate glass.

Finally, according to the Rhode Island Solid Waste Management Corporation, Americans throw out about 18 billion or five million tons of dirty disposable diapers in one year, or enough to stretch back and forth to the moon at least seven times. They estimate that by the time a baby is toilet-trained, he/she uses about 10,000 diapers. Most of these go to landfills, where they can take up to 500 years to biodegrade. Enough aluminum is disposed of annually to rebuild the American airfleet 71 times, enough steel to reconstruct Manhattan, and enough wood and paper to heat five million homes for 200 years.

A recent study by the New York State Department of Environmental Conservation found a dramatic decline in the levels of toxic pollutants discharged into the Niagara River over the last four years. Four-fifths of the reduction was due to changes in industrial operations mandated by state water pollution control programs.

Pretreatment requirements have reduced the levels of contaminants discharged by industries into public sewer systems, and implementation of best management practices has reduced leaks and spills at industrial plants. The remaining one-fifth of the pollutant reduction was due to manufacturing plant closings and process shutdowns, according to the report.

The August 1987 report was published by the Division of Water, New York State Department of Environmental Conservation, Region IX, 600 Delaware Avenue, Buffalo, NY 14202. (716)847-4600.

The Michigan Department of Natural Resources Great Lakes Information System (GLIS) is a comprehensive computerized geographical information source. GLIS also has a strong bibliographic information searching and retrieval capability so that information can be located, catalogued and evaluated for inclusion in the geographical information system. Mathematical simulation models are being located, evaluated, acquired or accessed. For more information, contact Frank Horvath, Chief Scientist, Great Lakes Information System, LWMD-MDNR, P.O. Box 30028, Lansing, MI 48909. (517)335-3457.

As was noted in a recent news release from the University of Wisconsin Sea Grant Institute, valuable management options should be maintained between sport and commercial fishing. Sport fishing groups are asking the Wisconsin Department of Natural Resources (DNR) to restrict or even eliminate the commercial alewife harvest because they believe it reduces the food available to salmon.

Every year, commercial fishing for alewives and other Great Lakes fish puts millions of dollars into Wisconsin's economy, but sport fishing is far more valuable than the commercial harvest. Because the abundance of alewives and other forage fish in Lake Michigan is uncertain, the DNR is conducting a major study to get more accurate estimates of the weight, distribution and abundance of the lake's forage fish. Results of the survey will be available in 1989.

Every year, the Detroit News selects 13 people as "Michigamians of the Year," or those men and women who have made the state a better place to live. Honorees are selected by the editors of the newspaper based on nominations from staff members and readers. Clifford and Sandra Saffy were chosen to receive this award for 1987. Cliff is U.S. chairperson of the Great Lakes Coalition, a binational organization of shoreline residents the couple founded three years ago, and was appointed by Governor Blanchard to the state's Great Lakes and Water Resources Planning Commission. Sandra organizes the activities of the Coalition and handles all correspondence. Cliff also served as moderator for the workshop on fluctuating lake levels at the IJC's Biennial Meeting last November and is part of activities under the levels reference.
What is an Estuary?
Estuary: from the Latin Aestuarium - "arm of the sea."
- The mouth region of a river that is affected by tides and marine salt water (F. Ruttner, Fundamentals of Limnology).
- An estuary is a semi-enclosed body of water that is connected with the ocean, whose water is measureably diluted by freshwater derived from the land (P.K. Weyl, Oceanography).
- Estuaries are semi-enclosed tidal basins containing water with measureable amounts of sea salt (M.G. Gross, Oceanography).

Given the above definitions, the only estuary in the Great Lakes basin is the St. Lawrence River estuary.

In Memoriam
The International Joint Commission, its board and committee members and staff express their deepest sympathies to the family of Dr. Fahmy K. Fahmy. Dr. Fahmy passed away from cancer on January 17, 1988. He worked as a toxicologist at the IJC's Great Lakes Regional Office for seven years and served as secretary for several of the Commission’s boards and task forces, including the Great Lakes Science Advisory Board and the Council of Great Lakes Research Managers. The Commission presented a resolution in honor of Dr. Fahmy at its February Executive Session, in recognition of his excellent service to the Commission and to the Great Lakes research community. Dr. Fahmy’s dedication, wisdom and his warm and gentle personality will be deeply missed.

Public Involvement is Top Priority For Thunder Bay RAP Team in 1988

by Jake VanderWal

The Thunder Bay Remedial Action Plan (RAP) team includes representatives of Environment Canada and the Ontario Ministries of the Environment and Natural Resources. The team is soliciting the public’s view on environmental quality in Thunder Bay, including the answers to questions about beneficial uses that should be restored and what means should be employed to restore those uses. Identification of formal and informal means to involve stakeholders in the RAP development and implementation process also is underway.

Last year’s efforts concentrated on pulling together existing data and planning the short-term and long-term activities required to fill information gaps. Significant activities included a workshop, held in Thunder Bay in early 1987, at which team members and resource staff developed an environmental map to detail the known information. The completed map includes data on specific areas of water quality degradation, as well as the environmental areas most in need of protection due to its natural sensitivity and to public interest.

AERAS OF DEGRADATION
Kaministiquia River
Water quality impairment from the forest products industry is significant in Thunder Bay. In a city where four operating pulp and paper mills produce approximately one million tons of paper and one-half million tons of kraft pulp annually, this comes as no surprise.

A review of the record of progress in improving water quality during the past two decades is, however, impressive. Conditions of gross pollution of Thunder Bay waters by woodwastes and raw sewage, described in reports around 1970, have disappeared. Loadings of biochemical oxygen demand (BOD) at the Great Lakes Forest Products mill on the Kaministiquia River, which flows into Thunder Bay, have been reduced by 50 percent while at the same time mill expansion has resulted in a doubling of production. As a consequence, the water quality in the lower Kaministiquia River has improved to an extent where river bottom deposits of sludges and rotting woodwastes are conditions of the past.

Dissolved oxygen levels have recovered greatly and during normal flows are able to support a significant population of walleye: these sport fish had been absent from the river for many years. Aesthetic conditions have also improved. Floating sludge mats surrounded by foam were a common site in the early 1970s; today they are nonexistent.

Nevertheless, many significant problems require attention. In spite of the improvements, loadings of organic wastes are still far higher than the Kaministiquia River can tolerate, particularly during low summer flows. A dry 1987 saw the return of severely depressed oxygen levels and dying fish. In addition, the discharge of persistent chlorinated organics to the Kaministiquia River and other areas in Thunder Bay have serious consequences, not only for the water quality of the immediate receiver but also to the whole Lake Superior ecosystem.

Inner Thunder Bay Harbour
Thunder Bay Harbour is the world’s largest grain handling port and the second largest port in Canada. Approximately 1,000 lake and ocean-going ships travel to Thunder Bay to load millions of tons of cargo annually. The historical water quality concern in the inner harbour has been related to the discharge of sewage by the former cities of Port Arthur and Fort William, the two cities that united to form...
Thunder Bay. Sewage treatment has resulted in reduced BOD loading and bacterial contamination and improved water quality.

A recent report issued by Environment Canada, however, has detailed a severe contamination problem. Northern Wood Preservers Inc., over a 50-year operating period, has been using a variety of chemicals to treat telephone poles, rail ties and building materials. Losses of chemicals have resulted in contamination of nearby lake sediments and waters with dioxins, furans, pentachlorophenol, creosote and other toxic pollutants. Thunder Bay RAP team members are involved in a joint agency investigation evaluating the extent and severity of the contamination problem and are recommending remedial measures. Because of the severity of the problem, it is hoped that remedial options will be available for interagency and public review in 1988.

Chippewa Park

Bacterial contamination and beach closures in a swimming area known as Chippewa Beach, located in south Thunder Bay Harbour, will come under scrutiny of the RAP team in 1988. This issue, which has received a great deal of public attention, will be addressed in a 1988 water quality study designed to determine the sources of pollution and to provide information about remedial measures.

AREAS REQUIRING SPECIAL PROTECTION

In preparation for full public participation, the RAP team interviewed representatives of a cross section of the Thunder Bay community to determine the levels of interest in the RAP process and to learn about specific concerns. Among the various responses, a high level of interest in the protection of fish and wildlife habitat was a clear priority. Three major areas requiring protection have been identified.

Lake Trout Fishery

During the late 1950s, the Thunder Bay lake trout population was severely damaged by the presence of sea lamprey. In the early 1970s, while stocks were recovering after the lampreys were brought under control, the lake trout became severely contaminated with mercury losses from a Dow Chemical chlor-alkali plant operating on the banks of the Kaministiquia River. This contamination resulted in the closure of the commercial fishery.

More recently, the lake trout population has rebounded due to efforts by a Ministry of Natural Resources stocking program. Ken Cullis, a Lake Superior fisheries biologist and RAP team member, states, “The Thunder Bay lake trout fishery is among the most productive in Ontario. In fact, a recent Creel survey indicated that anglers, mainly from the city of Thunder Bay, took 18,000 kg (39,600 lbs) of lake trout from Thunder Bay waters during the winter months alone.”

Studies of contaminant levels in recent years have shown that mercury and PCB levels in Thunder Bay lake trout are steadily decreasing. The current Ontario Guide to Eating Sport Fish reports that lake trout up to 55 cm (22 inches) in length are suitable for unrestricted consumption. Thunder Bay residents have expressed significant concerns that the headway
made in recent years not be lost to further contamination.

**Chinook Salmon Fishery**

The Thunder Bay Salmon Association, in cooperation with Ontario’s Ministry of Natural Resources, has constructed a salmon hatchery on the Kaministiquia River below Kakabeka Falls. Fisheries biologists report that the Kaministiquia River provides excellent habitat for spawning salmon. In order to ensure a viable salmon fishery in Thunder Bay, the water quality in the lower Kaministiquia River must be adequate to allow fish migration to and from spawning areas. Local interest in developing the salmon fishery will make cleaning up the Kaministiquia River a high priority.

**Thunder Bay Marshes**

Marsh areas along the Thunder Bay waterfront represent a significant portion of wetland habitat on the north shore of Lake Superior. The Lakehead Region Conservation Authority and the Ministry of Natural Resources have conducted detailed studies which indicate that these marshes support unique and diverse refuge for fish and wildlife. Early discussions with the public indicate that these marshes require special protection from physical destruction and chemical pollution.

**Public Participation in 1988**

The Thunder Bay RAP team is making public input into the RAP a high priority in 1988. Plans include open houses, information booths at local fairs, public meetings to solicit input and inviting stakeholders to submit written briefs detailing their concerns and recommendations for Thunder Bay water quality.

For more information about the Thunder Bay RAP process, please contact Jake VanderWal, Ministry of the Environment, Thunder Bay Regional Office, 435 James Street South, Thunder Bay, ON P7C 5G6 (807)475-1215.

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**Second Forum for RAP Coordinators Held in Toledo**

*by John Hartig*

About 200 people attended the second Forum for Remedial Action Plan (RAP) Coordinators sponsored by the Water Quality Board (WOB) and held immediately following the IJC’s Biennial Meeting, on November 19-20, 1987, in Toledo, Ohio. The purpose of the forum was to: 1) provide an opportunity for the RAP coordinators to learn from each other’s experiences; 2) provide a mechanism for IJC committees to disseminate information from RAP-related activities completed in the last year; and 3) provide additional guidance and clarification from the WOB to the RAP coordinators.

Tony Wagner, Canadian member of the WOB, served as moderator of the forum. Canadian IJC Chairman Pierre-André Bissonnette, U.S. Commissioner L. Keith Bulen and WOB Chairperson Elizabeth Dowdeswell opened the forum by welcoming all participants and noting the IJC’s commitment to the RAP program.

They expressed the Commission’s interest in seeing timetables of when specific remedial actions will be taken in each of the 42 RAPs, as these timetables will be used to measure progress. The Commissioners also recognized the importance of teamwork in accomplishing RAP program goals, and acknowledged the contributions of people working in many different areas to develop and implement the plans.

The forum was divided into eight subject areas. Brief summaries of the sessions are included below. For more information on the forum, contact John Hartig or Sally Cole-Misch, IJC Great Lakes Regional Office, 100 Ouellette Avenue, Eighth floor, Windsor.

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**Contaminated Sediment: Protocols for Assessment and Successful Remedial Actions**

The recommended strategy for the assessment of contaminated sediment problems has two data collection stages. The first stage, called Confirmation of Problem, is used if data are not recent or are limited. Three tests are performed under this stage and, if data collection confirm sediment contamination, the second stage of Detailed Assessment would be done. The detailed assessment stage has three basic components: collection of data on the physical and chemical characteristics of the sediments; laboratory bioassay tests for acute and chronic toxicity, sublethal effects and bioavailability; and taxonomically detailed, quantitative examinations of the community structure of the resident biota.

Various available and practicable options used by jurisdictions to deal with sediment in general and contaminated sediment in particular were outlined. The nature and extent of sediment contamination should be assessed before remedial options are considered. This should include an evaluation of available baseline data and, if necessary, collection of supplementary data in order to identify causes of contamination.

Finally, the number of currently available techniques for treatment of contaminated sediments is limited. While dredging of contaminated sediments was carried out in the past to maintain the waterways, this is now considered one of the remedial options available for the rehabilitation of an aquatic ecosystem. Contaminated sediment is often disposed.
in confined disposal areas (CDFs) along the shoreline; however, some CDFs are constructed upland, which involves the costly transport of dredged sediments. In some cases, disposal into CDFs can be restricted by high concentrations of contaminants in the sediment. Consequently, contaminated sediments must be treated before transport to a disposal site. The IJC’s Sediment Subcommittee is compiling a detailed list of remedial options for contaminated sediments.

**Combined Sewer Overflow (CSO) Remediation**

The quantity and quality of CSO discharges can be of concern when attempting to meet water quality criteria for conventional and priority pollutants. Both quality and quantity are event dependent and can vary significantly, even during the course of a single event. Effective CSO remediation is typically an expensive undertaking, and will require an estimated investment of $4.6 billion dollars in the coming decades in the Great Lakes states alone. Funds at this time remain uncommitted.

The U.S. EPA Region V strategy has shifted from costly sewer separation to one involving the use of best management practices, with the application of control technology such as interceptor sewer storage and impoundment by outfall structures as demonstrated to be necessary by extensive impact assessment.

Five Ontario communities in the Great Lakes basin with populations over 250,000 have combined sewer overflows; three of these are within Areas of Concern. The various mechanisms for funding CSO remedial actions by Ontario Ministry of the Environment include pollution control planning, direct remedial works and storm sewer grants. The elimination of CSOs remains the goal, but the current focus is on 90% reduction or one discharge per year.

Toledo’s sediment sludge recycling project, located beside the Maumee River.

Effective control often requires cooperation among two and three levels of government.

**Mass Balances and Modeling**

Mass balances and water quality models are needed tools to make quantitative decisions about remedial options in Areas of Concern. A review of data sources for performing a mass balance was presented for the Cuyahoga River, followed by presentations on models used at Severn Sound, the St. Clair River, and at Green Bay. In the final example, it was pointed out that a good understanding of relative contribution of sources, coupled with a carefully formulated model, can lead to remedial actions to control chlorophyll and dissolved oxygen levels.

**Tour of Maumee River Area of Concern**

The first day of the forum ended with a tour of environmental facilities in the immediate area of the Port of Toledo. Participants viewed a sediment-sludge recycling project (i.e. the ‘Bug Bowl’), Port Authority facilities and a hazardous waste management facility.

**Involvement of Fishery Interests in Habitat Management**

Fishery interests have a once-in-your-career opportunity to work closely with environmental quality interests to create conditions which will produce high quality fisheries for clients. Areas of Concern are nearshore areas vital to fishery interests because they include critical habitat for many species of Great Lakes fish for migration, spawning and development of young; the areas are most vulnerable to point sources, tributary loadings and runoff; the condition of the area influences ecosystem health and productivity; and the vast majority of Great Lakes fishing occurs in such areas as connecting channels, embayments and lower reaches of tributaries. Habitat, target species and fishery management plans thus should explicitly become part of RAPs.

**RAP Research Needs**

A steering committee formed by the Science Advisory Board’s Council of Great Lakes Research Managers will aid in identifying research needs for Areas of Concern in the Great Lakes basin. The committee includes managers and scientists from the various research organizations in the Great Lakes region. The committee initially circulated a questionnaire to the jurisdictional RAP coordinators, asking them to identify research needs that would aid in developing their RAP. Next, members of the scientific community active in Areas of Concern research were asked to provide research recommendations. Based upon this combined input, the steering committee developed a draft document which was presented at the forum.

The committee identified three areas of needed research: problem assessment,
source control and in situ remediation. In addition, the social and economic considerations during the development of the RAP must also be identified and addressed.

Public Participation Group Discussion and Expert Panel

The program design for this session encouraged audience input and discussion, and elicited considerable response from forum participants. Four panelists and audience discussion of the successes and fears of the RAP process thus far produced several conclusions, including: the importance of the design of a public involvement plan which indicates information and consultation activities as essential for an effective program, and is integrated with the technical work program it supports; the need for involvement to be meaningful and for input to be reflected in decisions; a recognition that public participation needs to begin early in a project or program and not after misinformation or controversy has developed; the importance of managers and scientists improving their communication skills to better foster public support and understanding of complex issues; the need to commit adequate financial and human resources to ensure that a program will not falter once it has gained momentum; the role of neutral parties to facilitate or moderate meetings when dealing with a controversy or a hostile public; and the importance of using public involvement to build a constituency for a final decision and program direction.

How Clean is Clean?

As RAPs are implemented by the jurisdictions and Parties, improvements in the quality of water, sediment and biota are expected in the 42 Areas of Concern. The question has arisen about what degree of improvements will be necessary before an Area of Concern can be delisted. While the compliance with water quality regulations may be addressed by scientific criteria or indices, the definition and attainment of beneficial uses may be widely interpreted and involve political and social decisions beyond scientific interpretations. It was further noted that criteria development for delisting cannot be approached without also reviewing protocols for listing an Area of Concern.

Draft Plan Completed for Grand Calumet River/Indiana Harbor Canal

by Robert Hilton

In 1983, Indiana designated a portion of the Grand Calumet River, Indiana Harbor Canal and Indiana Harbor as an Area of Concern. While the state, federal and local governments have been striving for several decades to resolve the environmental problems in this heavily industrialized area, the environment continues to be impaired. Progress has been made, but contaminated river and harbor sediments still impact Lake Michigan fisheries, and municipal and industrial wastes are still polluting the surface and groundwaters.

The Indiana Department of Environmental Management (DEM) has the responsibility to develop a remedial action plan (RAP) which describes the actions necessary to address the environmental problems which impair the Lake Michigan nearshore water quality. In July 1987, a RAP work group was established. This work group has representatives from Indiana’s Department of Natural Resources, U.S. Geological Survey, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and the Northwest Indiana Citizens Advisory Committee, which is composed of representatives from area government, business, environmental groups and local citizens. A draft plan was completed in January 1988. The work group was guided by the following objectives while drafting the action plan:

1. The plan will define the geographical area which encompasses those activities which significantly impact the Lake Michigan nearshore water quality.
2. The plan will identify the principal sources of problems within the Area of Concern which are impairing the Lake Michigan nearshore. This is to include major industrial and municipal point sources and rural and urban mouth point sources.
3. The plan will establish monitoring activities to assess the progress of remedial actions.
4. Public participation will be used to develop and implement a plan which reflects the concerns of the citizens within the Area of Concern.

The overall goal of the RAP is to define the approach and necessary activities to improve water quality and the environ-
Industry lines the Indiana Harbor, part of the Grand Calumet Area of Concern. Credit: Lyn Kaatz Chary

Public Participation Contract
Awarded for Grand Calumet River/Indiana Harbor Canal RAP

by Lyn Kaatz Chary
and Sally Cole-Misch

The Grand Calumet River/Indiana Harbor Canal system sits in the extreme northwest corner of Indiana at the Illinois border. The Grand Calumet River basin is approximately 17,513 ha (43,242 acres) in size and includes some of adjacent Illinois, although the basin is primarily contained in Lake County, Indiana. It is bordered to the south by the Little Calumet River, and to the north by Lake Michigan.

The Grand Calumet River itself now originates in the Marquette Park Lagoons in Gary, Indiana. It is divided into two branches, east and west, relative to the Indiana Harbor Canal. The major section of the river is the east branch, which flows westward approximately 21 km (13 miles) to the canal and then turns north and northeast for another eight km (five miles) and empties into Lake Michigan. The west branch is approximately five km (three miles) long and is bisected by a natural divide. West of this divide the river flows into Illinois toward the Mississippi River, and east of the divide the water flows back towards the canal and into Lake Michigan.

Until the beginning of the 19th century, the Grand Calumet and Little Calumet were part of the same river and the water flowed eastward at a slow pace, through dunes, swales and extensive wetlands, and emptied into Lake Michigan at Marquette Park, where it now begins. It is believed that the Indians, who used the area for canoe transport, created a channel through the marshes that diverted...
much of the river’s flow and that eventually the mouth of the river became silted over; today the lagoons and the lake are separated by gently rolling dunes.

The diversion of the river by the Indians was the first of many which would follow. In the early 1900s, the U.S. Steel Corporation began construction of its massive Gary Works and not only channelized the river extensively but moved it underground through culverts for a mile or so and rearranged it course. In 1909, the first mile of the Indiana Harbor Canal was completed, linking the Grand Calumet River directly to Lake Michigan. In the 1950s, parts of the east branch of the river were moved again when the Indian Toll Road was constructed. The canal and harbor have been dredged for navigational purposes several times, and thus humans and industry have had an immense impact on this once shallow, sluggish river with its abundance of wetlands, fish and wildlife.

Today the Grand Calumet River runs through three heavily urbanized cities – Gary, East Chicago and Hammond – and through one of the most concentrated steel and petrochemical industrial complexes in the United States. It is estimated that more than 90 percent of the flow in the Grand Calumet River/Indiana Harbor Canal system originates as treated municipal and industrial wastewater, industrial cooling and process water, and stormwater runoff. Three municipal sewage treatment plants discharge directly into the river. Sediments in the system – both in the river and the canal/harbor – are over three m (10 feet) deep in many places and are made up of an alphabet soup of various inorganic contaminants, including heavy metals (primarily lead and iron), organics and toxics.

The Grand Calumet River Task Force is encouraged that the state is including public participation in the RAP process for the river and plans to have a program initiated by the end of March. In a draft outline the task force submitted to the state last fall, two areas were highlighted as critical parts of the planned public participation program:
1. Provide public education through the development of an extensive media campaign and written materials for broad distribution; hold public meetings and schedule speaking engagements to local organizations, schools and other groups; and possibly produce a short videotape for use by the local cable television station.
2. Develop a broad-based citizen stakeholder group, which will identify and prioritize present uses of the river and canal, what beneficial uses should be restored, and what remedial actions are necessary to achieve those uses.

In addition, the task force will prepare a summary of the draft RAP plan for distribution so that the largest audience possible will be able to read and understand the proposed remedial actions for the Grand Calumet River/Indiana Harbor Canal system. For further information on the public participation program, contact Lin Kaatz Chary, Grand Calumet River Task Force, 4012 Elm Street, East Chicago, IN 46312. (219) 397-4051.

Province of New Brunswick. In addition to the two Commission boards, participants included scientists, representatives of the various major users of the river and officials of agencies having management responsibilities for the river. An address by IJC Commissioner Robert Welch opened the workshop.

Through the efforts of its control and advisory boards, the Commission has had a long involvement in St. Croix water resource issues. The Board of Control, established in 1915, has a responsibility for a number of dams and fishways that affect water levels and flows in the St. Croix River. A recurring challenge has been trying to satisfy the level and flow requirements of various user groups of the river, including recreation, tourism, fisheries, industries and municipalities.

In 1961, the IJC recommended water quality objectives to governments, which the Parties adopted. They further requested that the IJC continually monitor water quality in the river. To accomplish that task, the Advisory Board on Pollution Control was established by the Commission in 1962 to report on water quality issues and pollution abatement efforts of industries and municipalities along the river. Since that time, the St. Croix River has changed from a river severely polluted by untreated industrial and municipal discharges to one capable of supporting the restoration of the Atlantic salmon fishery. The Board has directed its attention recently to factors which inhibit salmon restoration and to bacterial contamination, which resulted in the closure of a major part of the estuary to commercial shellfish harvesting.

The St. Andrews workshop provided an opportunity for the discussion and exchange of a wide range of information, leading to a better understanding of the St. Croix River system and the requirements of its various users. This exchange thereby increased the boards’ abilities to carry out their responsibilities on behalf of the Commission in its most eastern area of active responsibility.

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The IJC from Coast to Coast

IJC Workshop Highlights
Issues for St. Croix River

by Rudolph Koop

Since 1915 the International Joint Commission (IJC) has been involved in the St. Croix River basin, initially through its St. Croix River Board of Control and later through its International Advisory Board on Pollution Control. As a result of an initiative of the Advisory Board, the IJC held a workshop last September in St. Andrews, New Brunswick to consider a broad range of issues related to the sharing of resources of the river, which forms part of the boundary between the State of Maine and the Province of New Brunswick. In addition to the two Commission boards, participants included scientists, representatives of the various major users of the river and officials of agencies having management responsibilities for the river. An address by IJC Commissioner Robert Welch opened the workshop.

Through the efforts of its control and advisory boards, the Commission has had a long involvement in St. Croix water resource issues. The Board of Control, established in 1915, has a responsibility for a number of dams and fishways that affect water levels and flows in the St. Croix River. A recurring challenge has been trying to satisfy the level and flow requirements of various user groups of the river, including recreation, tourism, fisheries, industries and municipalities.

In 1961, the IJC recommended water quality objectives to governments, which the Parties adopted. They further requested that the IJC continually monitor water quality in the river. To accomplish that task, the Advisory Board on Pollution Control was established by the Commission in 1962 to report on water quality issues and pollution abatement efforts of industries and municipalities along the river. Since that time, the St. Croix River has changed from a river severely polluted by untreated industrial and municipal discharges to one capable of supporting the restoration of the Atlantic salmon fishery. The Board has directed its attention recently to factors which inhibit salmon restoration and to bacterial contamination, which resulted in the closure of a major part of the estuary to commercial shellfish harvesting.

The St. Andrews workshop provided an opportunity for the discussion and exchange of a wide range of information, leading to a better understanding of the St. Croix River system and the requirements of its various users. This exchange thereby increased the boards’ abilities to carry out their responsibilities on behalf of the Commission in its most eastern area of active responsibility.

https://scholar.uwindsor.ca/ijcfocus/vol13/iss1/1
An Introduction to the Great Festival of the Lakes

by Whitney Smith

The idea for a “festival of the lakes” came out of two experiences: living through a heatwave at a waterfront playground where none of the play could be done in the water, and seeing the IJC Third Biennial Report recommendation: “…that Governments consider a major program of public and consumer education.”

The proof of a real problem was that I could not and cannot swim in my lake. It was clear to me that it was going to take a few hundred thousand people working together to pay some serious attention to the fact that our water is losing its life as we stand idly by, wondering how such a thing could have happened. We are in a constant state of confusion about whether the water will ever be right again. What’s worse, we’ve become resigned to the Great Lakes as “bad news.”

I have a theory that if you put two complete strangers together beside a polluted river for enough time, eventually they will come up with a scheme to restore it. It may not work. Their scheme, but between the two of them they will realize that the tears in their eyes are not from homesickness – they’re from house-sickness.

The Great Festival of the Lakes is based on the premise that, in the final analysis, after all the incredible yet believable statistics are in about what our water has become, only the population of the ecosystem, or some representation of that population, can save themselves. A truly coordinated effort of citizens, experts and policy makers can break the inertia that stalls us. It must be done by the people themselves, with community participation and celebration of the treasure we hold before us, the Great Lakes.

The Great Festival of the Lakes is designed to increase awareness about water pollution and kindle the public’s vision and imagination for the Great Lakes. The eventual goal is for 20 or more local community festivals to be put on during one summer throughout the Great Lakes basin. Each of these local festivals becomes part of the whole Great Festival of the Lakes.

Most importantly, some “grand thing” will travel along the water, through one lake into another, visiting each roaring festival like a circus stopping along the way. It is this object from the water – a flotilla of barges, a squadron of boats, a flurry of sails and canoes traveling under the name “The Clean Laker” – that carries a message to the people along the shore: “The water, and what comes from the water, is part of our lives and our culture. The water is not separate or distant from us.”

To get a clearer picture of the whole festival, the following is proposed as its goals and objectives:

- It must build and sustain the commitment of the public toward solving the problem of water pollution in the Great Lakes, thereby giving politicians and governments the political will to implement cleanup policies.
- It is intended to serve as an entertainment-oriented, participatory public awareness campaign. Using cultural activity as the lever, we can deal with a serious problem in an accessible way.
- As an entertainment event the festival will generate far more publicity than the more conventional means of gaining support for environmental issues (e.g. school programs, advertising, etc.), thereby exposing many of the 40 million Great Lakes basin residents to the water quality issue.

Clean Water Ontario, a coalition of organizations representing more than a million Ontarians, has developed the festival proposal. Negotiations are underway to interest a parallel coalition in the U.S. as a cosponsor, and funding is being sought from foundations, corporations, private individuals, and all levels of government in Canada and the U.S.

The Great Festival of the Lakes will include a series of local weekend festivals in different waterfront communities around the Great Lakes. Each community will be encouraged to involve their bank of local talent to create a festival that suits them.

The festivals will feature cultural events, such as parades, performances, concerts, dancing and a carnival of booths and games, and sports events, including a triaqualon (a canoeing, swimming and windsurfing race), regattas and fishing derbies. Programs for children will be planned as well as exhibitions by local artists related to the theme of “celebrating the lakes.”

The festivals will also feature forums where citizens will get their chance to talk about the lakes. The theme of the community festivals is that everyone participates – not just professional performers and active environmentalists.

Each community festival will last two days, from Friday evening to Sunday evening. A great deal of excitement and awareness about the issue will be created while the community prepares for their festival and anticipates the arrival of “The Clean Laker.”

“The Clean Laker” will tour the lakes, docking at each waterfront festival. It will be comprised of two barges, with an exhibit and performance stage areas. An Ecology Exhibit will explain water quality, the concepts of hydrology in the Great Lakes.
Lakes, the differences between clean and polluted water and how everyone can help to restore the water quality of the lakes. Stage singers, actors and musicians will perform an upbeat yet thought-provoking musical documentary about people who live on the lakes and how they are struggling to bring the lakes back to life. The play will be modeled after “The Slick of ’76” produced by John Burt of River Barge Productions, which reviews the oil slick of 1976 that greatly affected the people who live and vacation on the St. Lawrence River.

The Great Lakes form the largest freshwater body in the world. This festival will focus on the commonality of the people who make their homes in the region. Concerns have been raised in several scientific reports that humans, as well as other species who live in the Great Lakes basin, receive greater burdens of toxic chemicals than any other region on the continent. The public support that can grow out of an awareness of this concern can be consolidated into a continuous and unrelenting drive toward remedial action for the lakes.

The theme of The Great Festival of the Lakes is simple: the critical condition of our five lakes. By celebrating our privilege as inhabitants of one of the richest natural resource regions on earth, perhaps we can be motivated to see why things need to be done, how they can be done, and when.

A similar article will be reprinted in the Spring 1988 issue of the S.P.W.C.'s flagship publication, The Journal of Wild Culture. For more information about The Great Festival of the Lakes, contact Clean Water Ontario, 158 Crawford Street, Toronto, ON M6J 2V4 (416)598-8153.

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**INTERNATIONAL JOINT COMMISSION**

**Schedule of Meetings**
The following includes upcoming meetings scheduled by the Commission and its various boards. Please contact an IJC office for further information.

**March**
- 2-3 Workshop on Epidemiological Consultation
  Scarborough, ON
- 2-4 Tributary Monitoring Workshop
  Toledo, OH
- 3-4 Planning Committee for the Workshop on Epidemiological Consultation Report Writing Session
  Scarborough, ON
- 14 Technological Committee
  Milwaukee, WI
- 15 Public Information Committee
  Windsor, ON
- 16-17 IJC Executive Meeting
  Windsor, ON
- 22-23 Council of Great Lakes Research Managers
  Windsor, ON
- 28-29 Economy Environment Roundtable
  Windsor, ON
- 30-31 Water Quality Board
  Toronto, ON

**April**
- 8 Science Advisory Board Executive Committee
  Windsor, ON
- 11-12 Project Management Team Chicago, IL (tentative)
- 12-14 Joint AECC/Sediment Subcommittee Workshop on Sediment
  Objectives (tentative)
- 18 Public Information Committee
  Washington, DC
- 19-21 IJC Semi-Annual Meeting
  Washington, DC
- 24-26 Science Advisory Board
  Green Bay, WI
- 29-1 International Air Quality Advisory Board Expert Group on Monitoring Workshop
  St. Andrews, NB

**June**
- 2-3 IJC Executive Meeting
  Ottawa, ON
- 14-16 Ecosystem Integrity Workshop
  Burlington, ON

**General Conferences**
- Environment '88, a two-day seminar exhibition sponsored by the Federation of Environmental Technologists, will be held March 8-9, 1988 at the Marc Plaza, Milwaukee, Wisconsin. More than 28 speakers will discuss such topics as environmental compliance updates, liability, new technologies and laboratory reliability. In conjunction with the seminar, a certified hazardous materials management refresher course and exam, environmental services contractor workshop, and a Wisconsin DNR permit workshop will be held March 7.
- For more information on all programs, contact the Federation of Environmental Technologists, P.O. Box 185, Milwaukee, WI 53201. (414)251-8163.

- The Great Lakes Program at the State University of New York at Buffalo is sponsoring a conference, Environmental Dispute Resolution in the Great Lakes Bioregion: A Critical Appraisal. Discussions will center on the effectiveness of non-litigious methods for resolving environmental disputes on the basis of case studies centered around the Great Lakes basin.
- The conference will be held at the Center for Tomorrow, State University of New York at Buffalo on March 18 and 19, 1988. For further information contact The Great Lakes Program, 212 Ketter Hall, State University of New York at Buffalo, Buffalo, NY 14260, (716)636-2088.

- The Midwest Aquatic Plant Management Society will hold its Eighth Annual Meeting at the Marriott Hotel in Columbus, Ohio on March 20-22, 1988. This meeting will highlight new lake management technologies, applicator panel discussions and business concerns of the professional water resource manager. For further information, contact Robert Johnson, MAPMS, P.O. Box 100, Seymour, IN 47274.

- On March 23, 1988, a one-day seminar entitled Environmental Auditing will be sponsored by the Ontario Ministry of the Environment and the Pollution Control Association of Ontario. The seminar will be held at the Airport Holiday Inn, Toronto, Ontario. For registration and details, contact Mrs. S. Davey, P.C.A.O., Tether Cres, Aurora, ON L4G 5N7. (416)841-1317.

- The Technology Development and Technical Services Branch of Environment Canada will hold two conferences this spring. The Third Conference on Toxic Substances will be held on April 6-7, 1988 in Montréal, Québec and the 11th Arctic and Marine Oils spill Program is planned for June 1988 in Vancouver, British Columbia.

- For information on both programs, contact André Champoux, Environment Canada, Technology Development and Technical Services Branch, Conservation and Protection, Ottawa, ON K1A 0H3. (819)933-1199.

- April 8, 9 and 10, 1988 are the dates for this year's Lake Superior Regional Environmental Awareness Days in Duluth, Minnesota. Exhibitors from every
area of the “environmental umbrella” will provide information and displays, including a member
of the recent expedition to the North Pole. To register as an exhibitor or for more details, contact
Carol Langer, Regional Coordinator, DNR/MEEB, 1201 East Highway 2, Grand Rapids, MN 55744.

The International Joint Commission will hold its spring Semi-Annual Meeting in Washington, DC on
April 19-22, 1988. The Commission will meet with its boards and advisors to discuss their activities
and any relevant issues for resolution. Boards scheduled to appear include the Great Lakes Water
Quality and Science Advisory Boards, the International Air Quality Advisory Board, the Great
Lakes Levels Reference Project Management Team and the three Great Lakes regulation boards. Also
scheduled are the International Rainy River Pollution Board, the International Red River
Pollution Board, the International Advisory Board on Control of Water Pollution — St. Croix River and
the Flathead River International Study Board, which will provide the Commission with the
conclusions and recommendations of their study.

The annual conference of the National Association of Environmental Professionals will take place April
19-22, 1988 at the Court-of-Flags Hotel, Orlando, Florida. The theme for this year’s event is Toxics In
the Environment: Management Options and Solutions. Details and registration forms can be obtained
from NAEP, P.O. Box 9400, Washington, DC 20016 or call Robert Elhardt at (301) 652-2215.

The 12th Symposium on Aquatic Toxicology and Hazard Assessment will be held April 24-26, 1988
in Las Vegas, Nevada. The symposium will address scientific and political aspects of these subjects, as
well as laboratory, field and modeling studies. For further details, contact symposium chairperson
Ursula Cowgill, 2030 WH Dow Center, The Dow Chemical Company, Midland, MI 48674,
(517) 636-1735 or Co-chairperson Llewellyn R. Williams, EPA/EMSL, P.O. Box 15027, Las Vegas,
NV 89114 (702) 798-2138.

The Fifth Annual North American Recycling Conference will be held April 28-29 in Toronto,
Ontario. It is expected to attract 300 government and business officials in addition to waste
management and recycling professionals. The organizers are Recon International of Toronto and
Resource Magazine of Portland, Oregon. Contact Nicki Weiss, Conference Coordinator at Recon
(416) 480-2420.

The International Association for Great Lakes Research will hold its 31st Annual Meeting May
17-20, 1988 at McMaster University, Hamilton, Ontario. Fourteen special sessions are planned and
will include such topics as remote sensing, sediment water processes, rehabilitation of
Hamilton Harbour, chemodynamics of confined disposal facilities and benthic invertebrate ecology.
For information, contact Fernando Rosa, Environment Canada, 867 Lakeshore Road, P.O.
Box 5050, Burlington, Ontario L7R 4A6, (416) 336-4525.

The Great Lakes St. Lawrence Maritime Forum is holding their second annual International Great
Lakes/St. Lawrence Mayor’s Conference in Duluth, Minnesota, May 17-19, 1988. The forum includes
representatives from Ontario, Quebec and the eight U.S. states around the lakes, federal agencies
from both countries and major maritime industry associations.

For details of the conference, contact conference coordinators Wendy Wennberg or Gary Harms,
400 City Hall, Duluth, MN 55802, (218) 723-3536.

The Sixth World Congress on Water Resources will be held May 29-June 3, 1988 at the Ottawa
Congress Centre, Ottawa, Ontario. Three major themes will address the overall topic of “Water for
World Development” — policies and strategies, planning, and operation. A well-rounded program
of technical and tourist site visits as well as many social functions are also planned.

For more information contact The Secretariat, Sixth IWRA World Water Congress on Water
Resources, University of Ottawa, 631 King Edward Avenue, Ottawa, ON KIN 6N5, (613) 564-3902.

A short course entitled Design of Water Quality Monitoring Networks will be presented June 6-10,
1988 at Colorado State University, Fort Collins, Colorado, to detail procedures for designing a
water quality monitoring network which determines ambient water quality and assesses trends. Design procedures will apply to
fixed-station and special survey monitoring conducted in surface and groundwater.

For additional information, contact Thomas G. Sanders, Program Leader, Environmental
Engineering, Department of Civil Engineering, Colorado State University, Fort Collins, CO 80523,
(303) 491-5048.

The American Society of Civil Engineers will hold its 15th Annual National Conference on Water
Resources Planning and Management in Norfolk, Virginia, June 3-9, 1988. The conference will focus on Critical Water Issues and Computer
Applications. For further details, contact Mike Streech, Technical Program Chairman, Dannenbaum
Engineering Corporation, 3100 West Alabama, Houston, TX 77098, (713) 527/6489.