IF YOU DON'T *MEASURE* IT, YOU WON'T *MANAGE* IT!

Measuring and Celebrating Incremental Progress in Restoring and Maintaining the Great Lakes

Based on a Public Meeting on October 22, 1997 in Thunder Bay, Ontario

Co-sponsored By:

Lake Superior Programs Office
Ontario Ministry of Environment and Energy
Environment Canada
Great Lakes Water Quality Board of the International Joint Commission

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I. Executive Summary

On October 22, 1997, the Great Lakes Water Quality Board (WQB) of the International Joint Commission (IJC) convened a public meeting in Thunder Bay, Ontario to provide key Lake Superior stakeholders an opportunity to interact with Board members on a timely issue. Approximately 50 people participated. The public meeting focused on one of the WQB's recommendations in the IJC's 1995-1997 Priorities Report (i.e., that the Parties and Remedial Action Plan (RAP) stakeholder groups adopt a step-wise approach to use restoration and demonstration of incremental progress in order to sustain RAP processes). The public meeting was designed to explore creative and practical ways of measuring and celebrating incremental progress with key stakeholders from Lake Superior RAPs, the Lake Superior Binational Program and Lakewide Management Plan (LaMP), and other interested individuals.

In general, participants felt that RAP and LaMP processes are sound, but implementation can be improved in many places. Further, the value and benefits of such community-based processes have not been clearly nor broadly communicated. Continuous and vigorous oversight of these RAP and LaMP processes by governments and local stakeholders will be needed to ensure that we achieve the desired ecosystem results.

> "The degradation of the Great Lakes Ecosystem occurred as an incremental process over at least a century. While we hope for a more rapid recovery, it is important to recognize that restoration will also be incremental, and that each increment, however small, represents an important step..."
>
> *Jake Vander Wal, Director*
> *Lake Superior Programs Office*

Measuring and celebrating incremental progress through RAPs and LaMPs will be essential to sustaining momentum and necessary long-term commitments. Key findings from this WQB public meeting include:

- there was strong agreement that delisting is not the ultimate goal of RAPs and LaMPs - the goal is restoring beneficial uses in Areas of Concern and the Great Lakes;
- it is critical that agencies continue to provide resource support and help facilitate RAPs and LaMPs; and
- there is a need to sustain momentum of RAP and LaMP processes to be able to achieve long-term goals of restoring uses as called for in the United States-Canada Great Lakes Water Quality Agreement.

Key recommendations from the public meeting steering committee and WQB include:

- the IJC, Parties, Jurisdictions, and RAP/LaMP groups must place greater emphasis on reporting on both process milestones (e.g., securing funding for implementation, the number of permits/control orders issued, etc.) and ecosystem milestones (e.g., environmental and ecosystem results as defined in Annex 2 of the Great Lakes Water Quality Agreement) to help build a record of success;
- the Parties, Jurisdictions, and RAP/LaMP groups need to operationalize the concept of measuring and celebrating incremental progress through the use of graphics which measure the degree of use restoration or some other creative, measurable techniques; and
- Commissioners from the IJC must become "champions" of celebrating incremental progress in restoring uses at both the local and lakewide level (i.e., they must become much more active in helping celebrate incremental progress at RAP and LaMP stakeholder meetings).

II. Introduction and Background

The Great Lakes Water Quality Board (WQB) of the International Joint Commission (IJC) is the principal advisor to the Commission on all matters relating to the United States-Canada Great Lakes Water Quality Agreement (GLWQA). Members of the WQB are senior program managers from federal, provincial, and state regulatory and resource management agencies. The WQB is charged, among other things, to keep currently informed on ecosystem status and management of the Great Lakes, and to provide independent advice to the IJC on such issues. Under a revised policy to improve public involvement and consultation, the IJC has directed each of its Boards to convene one public meeting per year to encourage greater stakeholder involvement and improve consultation.

Building on the success of the WQB's 1996 public meeting in Rochester, New York (Water Resources Board of the Finger Lakes - Lake Ontario Watershed Protection Alliance, Great Lakes Water Quality Board of the International Joint Commission, and New York State Department of Environmental Conservation 1997), the WQB convened its 1997 public meeting in Thunder Bay, Ontario on October 22. The public meeting focused on one of the WQB's recommendations in the IJC's 1995-1997 Priorities Report. Specifically, the WQB recommended that the Parties and Remedial Action Plan (RAP) stakeholder groups adopt a step-wise approach to use restoration and demonstration of incremental progress in order to sustain RAP processes (IJC 1997). The public meeting was designed to explore creative and practical ways of measuring and celebrating incremental progress with key stakeholders from Lake Superior RAPs, the Lake Superior Binational Program and Lakewide Management Plan (LaMP), and other interested individuals. The purpose of this report is to convey the findings and recommendations from this October 22nd public meeting.

III. Structure of the Thunder Bay Public Meeting

The WQB met in Thunder Bay so that Lake Superior stakeholders could interact with Board members, as the Board received input and feedback on the best ways of measuring and celebrating incremental progress in restoring the Great Lakes (Appendix 1). Fifty people participated (Appendix 2).

The public meeting began with plenary presentations from the WQB on the need to measure and celebrate incremental progress in order to sustain RAP and LaMP processes. The WQB presentations challenged participants to examine critically how RAP and LaMP processes are currently measuring progress and to identify creative ways of measuring progress in order to sustain the necessary long-term commitments to RAPs and LaMPs (see Section IV).

Following the WQB presentations, five case studies, focusing on progress and achievements, were presented (see Section VI):

- Nipigon Bay RAP (Ken Cullis, Lake Superior Programs Office, Thunder Bay, Ontario);
- Deer Lake-Carp River (Jim Bredin, Michigan Office of the Great Lakes, Lansing, Michigan);
- Thunder Bay RAP (Patrick Morash, Lake Superior Programs Office, Thunder Bay, Ontario);
- St. Louis River and Bay RAP (Karen Plass, St. Louis River Citizens' Advisory Committee, Duluth, Minnesota); and
- Lake Superior Binational Program (Ed Iwachewski, Lake Superior Programs Office, Thunder Bay, Ontario; John Jackson, Lake Superior Binational Forum, Kitchener, Ontario).

Four breakout groups were then used to focus on specific questions (see Section V). Each breakout group received a common question (i.e., Are RAP/LaMP processes working and achieving environmental results, or is there a better way?). In addition, each breakout group received one unique question:

- The WQB recommended a step-wise approach to restoring beneficial uses. What are the best ways to measure and make known incremental progress in restoring uses?
- Federal, state, and provincial governments are undergoing devolution of responsibilities. Considering

this, what are the appropriate roles of federal, state/provincial, and local governments in communicating and celebrating improvements in restoring uses?
- The GLWQA calls for the selection of remedial measures to restore uses in RAPs. Under what conditions is it acceptable to assert that all reasonable remedial and preventive actions have been taken to restore uses?
- Full restoration of uses in some Areas of Concern (AOCs) will require actions by LaMPs. In addition, full restoration of uses in some lakes will require actions by RAPs. Therefore, what needs to be done to strengthen necessary RAP-LaMP-Binational Program linkages?

Subsequently, in a plenary session, each breakout group presented a summary of its conclusions; a facilitated discussion to reach agreement amongst the entire group followed.

As well, during lunch Mayor David Hamilton of Thunder Bay presented a thoughtful and inspirational speech which demonstrated the importance of celebrating successes that have been achieved collectively, while recognizing that there is much to be done (Appendix 3).

IV. Workshop Challenge to Measure and Celebrate Incremental Progress

In 1985, the WQB identified 42 AOCs around the Great Lakes where environmental effects were particularly pronounced. Of these there are 11 areas located in Canadian waters, 26 in United States waters, and 5 which are shared along connecting channels. One AOC (Collingwood Harbour, Ontario) has been restored and was delisted in 1994.

As far back as 1985 the WQB recognized the importance of measuring and celebrating progress at numerous points when it recommended that each jurisdiction describe each AOC in relation to a six category sequence for problem resolution (IJC 1985). The categories included:

1. Causative factors are unknown and there is no investigative program underway to identify causes.
2. Causative factors are unknown and an investigative program is underway to identify causes.
3. Causative factors are known, but a RAP not developed and remedial measures not fully implemented.
4. Causative factors are known and RAP developed, but remedial measures not fully implemented.
5. Causative factors known, RAP developed, and all remedial measures identified in the plan have been implemented.
6. Confirmation that uses have been restored and deletion as an AOC.

Subsequent to the Board's 1985 report, the 1987 Protocol to the United States-Canada GLWQA formalized the establishment of RAPs. Restoration of beneficial uses within the AOCs is the primary mission of RAPs, and is an essential step in restoring the integrity of the Great Lakes Basin Ecosystem.

> "We need to make sure our environmental and resource management programs achieve ecosystem results. Measuring these ecosystem results and celebrating progress are essential elements for achieving our long-term goal of restoring and maintaining the physical, chemical, and biological integrity of the Great Lake Basin Ecosystem."
>
> *David Ullrich, U.S. Co-Chair*
> *Great Lakes Water Quality Board*

Through the GLWQA, the Parties agreed to develop and implement RAPs. RAPs are an iterative, action-planning process used to identify the responsibility and time frame for implementing remedial and preventative actions necessary to restore impaired uses in a three-stage process. Stage 1 includes problem definition and identification of sources and causes of environmental degradation; Stage 2 identifies goals and remedial and preventive actions to restore beneficial uses; and Stage 3 requires confirmation of the effectiveness of those measures

and restoration of the beneficial uses.

Because the purpose of RAPs is to restore beneficial uses, considerable emphasis has been placed on describing "progress" in the context of the number of beneficial uses restored within each AOC. This becomes problematic, however, in AOCs where problem definition has been completed, a plan for restoring beneficial uses established, an implementation framework developed, and all actions proposed for restoring beneficial uses implemented, but a period of natural regeneration is required. Environmental recovery is in progress, yet a focus on the three stages of RAPs as identified in the GLWQA may fail to see it as such. Therefore, there is a need for additional measures of progress that not only demonstrate change and sustain participation, but also support the terms of Annex 2 of the GLWQA. As an initial attempt, U.S. Environmental Protection Agency and Environment Canada encouraged use of RAP status pie diagrams to depict progress in restoring uses (Environment Canada and U.S. Environmental Protection Agency 1994). These RAP status pie diagrams had four quadrants: problem definition; plan preparation; plan implementation; and use restoration. A shaded portion of each quadrant was used to represent, in general, the portion of each stage completed. A more thorough approach to incremental reporting is now called for to demonstrate the extent to which actions are implemented and beneficial uses restored.

Annex 2, section 4(c) of the GLWQA calls for the Parties:

> *"to classify Areas of Concern by their stage of restoration progressing from the definition of the problems and causes, through the selection of remedial measures, to the implementation of remedial programs, the monitoring of recovery, and, when identified beneficial uses are no longer impaired and the area restored."*

Classifying RAPs according to implementation and monitoring of recovery affords the opportunity to recognize successes with local communities and strengthen the program basin-wide. RAP participants should celebrate that all reasonable and practical efforts have been made to restore beneficial uses and to celebrate completion of the implementation phase. Formal recognition of this milestone by governments and the IJC gives credit to the extensive degree of effort, while recognizing that a period of natural recovery is required before delisting can occur. This requires agreement with the RAP Team and Public Advisory Committee (PAC).

Before an AOC can be declared to be in a mode of natural recovery, there are a number of issues and principles which must be addressed. First, stating that RAP implementation is complete and an AOC is in a mode of "natural recovery" is not delisting. Being in the "natural recovery" mode is a result of completing all reasonable intervention for all identified beneficial uses, based on an existing understanding of the state of recovery and available tools. Time is required for the environment to fully respond to meet the delisting targets for all beneficial uses identified in the Stage 2 Report.

Monitoring and surveillance commitments are a requirement of entering the natural recovery mode. Commitments must be obtained to monitor progress towards achievement of delisting targets. This provides a method of determining the state of natural recovery, whether the recovery can be accelerated based on new science and technology, and the achievement of delisting targets.

Entering the natural recovery mode must be accompanied by a commitment of governments or other partners to maintain their responsibilities. Governments will continue to undertake environmental assessments and improvements as part of their mandates, beyond the needs of the RAPs. Further, PACs and RAP Teams must agree that RAP implementation is complete, and that all reasonable intervention has been taken at this point in time.

The challenge exists, therefore, to identify and measure gains towards reaching restoration targets. This is particularly important in areas which may be addressing eutrophication, habitat restoration, and sediment

remediation.

- In the case of eutrophication, several RAPs have set phosphorus loading reduction targets from point and nonpoint sources in order to meet specific water quality objectives for receiving water. When necessary actions have been taken and the phosphorus load reductions have been met, residual phosphorus in the system may slow ecosystem response and the attainment of the delisting target in the receiving waters could take time. It is therefore essential to identify the progress, although the system itself may not be restored.
- Similarly, RAPs are setting targets for rehabilitation of habitats in riparian zones, littoral areas, and coastal wetlands. It is feasible that the necessary actions have been completed to physically rehabilitate habitat to a condition anticipated to support healthy fish and wildlife communities, however, colonization and recruitment may not yet be responding or sufficiently documented.
- Another increasingly familiar condition is in the context of sediment management strategies. In some AOCs, the preferred option is to institute source control and allow for natural recovery to enhance benthic populations, or to reduce food web movement of contaminants that result in fish consumption advisories, deformities in biota, or reproductive impairments. Once source controls have eliminated or dramatically reduced contaminant loadings, impairments will remain until cleaner sediment covers the more polluted deposits. Recovery could take several to many years.

In each of these tangible instances, the question arises as to how to report that no further active intervention is needed, but that a period of natural recovery is required to fully achieve the delisting targets. We must celebrate, as a substantial milestone, that implementation of a particular RAP is complete.

Quantifying and celebrating the successes of the RAP program should be neither an academic nor a bureaucratic exercise. To continue to restore the Great Lakes will require a clear articulation of the accomplishments to date and the challenges facing those who recognize the need to do more. By giving full credit to thousands of individuals for their accomplishments, it is hoped that community stakeholders will continue to be motivated to overcome the remaining obstacles.

Criteria for entering the natural recovery stage

Several Jurisdictions and the IJC are poised to celebrate, as a substantial milestone, that implementation at a particular RAP is complete. Ongoing monitoring is an integral step to delisting, therefore, a requirement in this process is that the Parties and Jurisdictions clearly articulate a framework to evaluate progress through data collection, interpretation, and reporting.

Guidelines are being proposed to justify a decision to intervene no further. It is imperative that the RAP Team, the local public, and senior officials in the Agencies concur with the assertion that active intervention at an AOC has been sufficient, realistic, and defensible. Proposed guidelines include:

- All reasonable and practical implementation has occurred to address the sources of environmental degradation with present day tools.
- Commitments to a monitoring plan and program are in place to measure progress towards environmental restoration, and a mechanism is in place to report systematically to the public at a predefined frequency.
- The time scale for natural recovery is agreed upon by the PAC/public and the agencies because the severity of the impairments will influence the rate of recovery.
- The PAC and local public are satisfied with current conditions and the natural recovery strategy.
- A pollution prevention or other maintenance plan is in place to reduce the risk of future degradation, and to ensure that natural recovery can proceed.
- A process is in place to respond to future development pressures and emerging technologies such that environmental recovery is sustainable and further intervention can take place if warranted.

Delisting would occur when there is concurrence that the delisting targets for the AOC have been met. This places significant pressure on governments to design and commit to assessing ecological recovery, and to ensure there will be further intervention, if warranted.

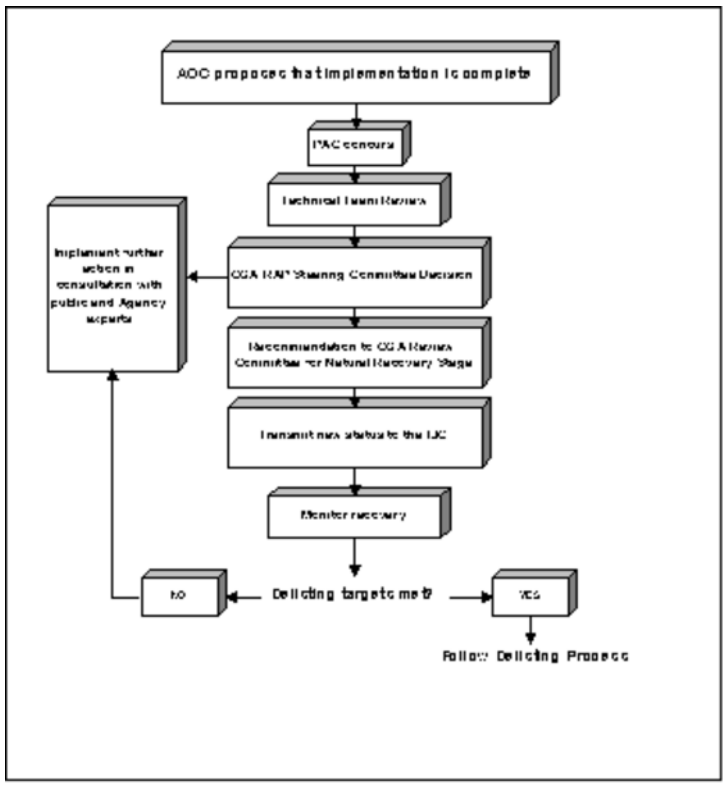


Figure 1. Proposed step-wise approach in Canada to achieving concurrence that an AOC is in the Natural Recovery mode and to be designated as an Area of Restoration.

In Canada, a specific process has been proposed for determining when an AOC is in a natural regeneration stage. Initially, a group of technical experts working on resolving the environmental problems for the AOC should detail the actions implemented, provide a rationale for no further intervention, and propose a monitoring plan to track natural recovery. Next, agreement with the public would be achieved, at a minimum through the PAC (or Binational PAC). A technical review team would then evaluate the materials presented to the Canada-Ontario RAP Steering Committee which consists of federal and provincial agencies with representation from Ontario PACs. Once concurrence with the monitoring requirements and commitments are made, the RAP Steering Committee would recommend to senior officials of the Canada-Ontario Agreement (COA) Review Committee that the status of the AOC be redesignated as an Area of Restoration. These officials would then commit to the monitoring plan, and transmit documentation to the IJC signifying this milestone (Figure 1). The agencies should periodically report on progress towards delisting targets. Based on the monitoring results, there could be a need to implement further action, initiated through this process.

Such a process, if followed, is one example of how to measure and celebrate incremental progress in a pragmatic fashion. However, there are a number of issues which must be addressed. These include:

- Designating a RAP as fully implemented must be undertaken with rigor. There is the potential for considerable and valid public concern and scepticism that this approach will be used to justify a lack of action, despite there being reasonable opportunities to take necessary actions.
- This designation must also be applied exactingly to preclude other jurisdictions from opting for natural regeneration despite considerable environmental degradation. This is particularly important in the context of expensive, but accessible, technologies for activities such as sediment remediation and infrastructure improvements.
- Integral to this approach is the explicit need for monitoring to continue in order to measure progress towards the delisting targets and to intervene further if recovery rates are unacceptable. The continued presence of the agencies maintains their commitment to the GLWQA and offers the potential to adapt the management strategy as new opportunities and technologies emerge.
- As a corollary, research is required to understand natural recovery processes and to better determine the most effective strategies for restoring environmental quality. RAPs that fall within this monitoring mode offer a unique opportunity to refine and transfer techniques for ecosystem rehabilitation.
- Periodic meetings with the PAC will be needed to report on and discuss progress, and to determine whether new measures need to be taken.

V. Workshop Discussions and Deliberations

As noted earlier, specific challenges in celebrating incremental progress in RAPs/LaMPs were examined by four breakout groups. Each group considered a common question, and a unique question (see Appendix 1). Key findings made by breakout groups are explored below by question.

Question 1

Are RAP/LaMP processes working and achieving environmental results, or is there a better way?

Participants noted that the intent of RAPs and LaMPs is good (i.e., community-based processes to restore uses). However, the value and benefits of such community-based processes have not been clearly nor broadly communicated. Overall, participants felt that the processes are sound, but implementation can be improved in many places. Continuous and vigorous oversight of these RAP and LaMP processes will be needed to ensure we achieve the intended ecosystem results.

Most Lake Superior RAPs are visible and appear to be achieving results. The RAP process has brought added value to many small communities which lacked political clout and were often seen as a low priority within government. In many large and jurisdictionally complex AOCs (e.g., Detroit River, Toronto Waterfront), RAP processes have not worked well and need to be revitalized. A new approach and/or structure may be necessary in some of these AOCs to overcome existing barriers to progress. RAPs and LaMPs have done a good job of identifying the nature and extent of problems, but have frequently had difficulty in making the transition from planning to implementation. Committed and coordinated governments, along with well informed and educated publics, will be key to making the transition from planning to implementation.

Participants felt that the role of government in many processes should be clarified. In many situations, participants felt that there was a loss of real or perceived agency support for RAPs and LaMPs. Governments must stay committed and provide financial and human resources for the long-term process of restoring uses and monitoring recovery. In order to sustain RAP and LaMP processes for the length of time it will require to restore many uses, leadership will be required from federal, state, provincial, and local governments, and local publics. Governments and other key stakeholders must ensure a proper response to recommendations (e.g., Lake Superior Forum, RAP). There must be a commitment to accountability in RAPs and LaMPs, and to adherence to timelines. The group also noted the challenges of dealing with different agencies having differing internal structures and decision-making processes, and ensuring adequate communication between and among agencies and publics.

Participants recommended that marketing of RAPs and LaMPs be undertaken to:

- strengthen involvement of local government;
- ensure sufficient support from elected officials;
- rejuvenate support where it is lacking (governments may want to reorganize agency personnel into geographic teams, rather than by specialties);
- broaden funding support (funding sources invest where success has been proven);
- overcome perception that RAPs are a failure across the board (based on locations where little progress has been visible or reported for large metropolitan RAPs like Metro Toronto and Region and Detroit River);
- adequately demonstrate progress (measure, report, and celebrate incremental improvements); and
- communicate and publicize successes, even small ones.

In summary, participants emphasized that the goals of RAPs and LaMPs are rehabilitation and protection, and not delisting until beneficial uses have been restored. Priority should be placed on sustaining agency support, informing and educating publics, and measuring and celebrating incremental progress in order to sustain momentum of RAP and LaMP processes.

Question 2

The Water Quality Board recommended a step-wise approach to restoring beneficial uses. What are the best ways to measure and make known incremental progress in restoring uses?

Breakout session participants recognized the importance of establishing both short- and long-term goals for RAPs and LaMPs. For example, for many AOCs the restoration of beneficial uses and delisting will be a long-term goal. In general, short-term goals should focus on achieving improvements/successes and celebrating milestones. Two categories of milestones were emphasized: cleanup milestones and process milestones. Participants agreed that one promising way of celebrating cleanup milestones was the reporting on the degree of use restoration by each RAP. For example, if mercury levels in northern pike have decreased from approximately 2.5 mg/kg in the mid-1980s to approximately 0.7 mg/kg in the mid-1990s and the (State) standard for safe human consumption is 0.5 mg/kg, then this means that Deer Lake pike have achieved approximately 90% of the reduction target (goal) for safe human consumption (Figure 2). Such measurement of the progress toward targets and goals would be beneficial in all RAPs. Further, governments and RAP/LaMP groups must be challenged to develop and operationalize additional, creative methods for measuring incremental progress. Indeed, the GLWQA calls for reporting progress at many different points in the planning and implementation process (see Annex 2, Section 4, Article C).

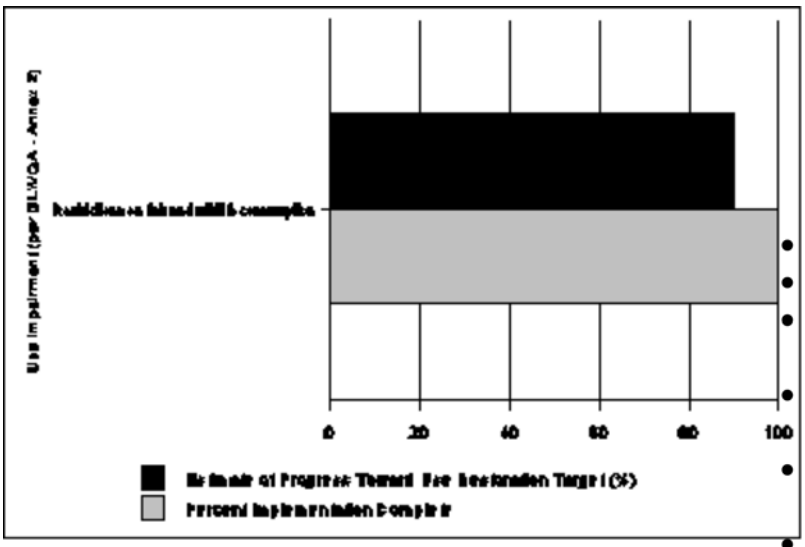


Figure 2. Progress in Deer Lake/Carp Creek RAP implementation and restoration of fish/wildlife consumption.

Equally as important is to report and celebrate the achievement of process milestones. Breakout session participants noted that there are numerous kinds of process milestones. Examples include:

- securing funding;
- settlements with industries;
- incorporating a PAC or obtaining nonprofit status;
- achieving secondary or tertiary treatment at wastewater treatment plants;
- issuance of new/updated control orders or permits;
- documenting the number of citizens involved in a project;
- sponsoring cleanup days;
- getting RAP goals and requirements incorporated into Official and Master Plans;
- agreeing on indicators and implementing monitoring programs;
- measuring public recognition of progress through surveys; and
- securing commitments and endorsements required for implementation plans.

Participants acknowledged that there are undoubtedly many other examples of process milestones. The point is that there should be many kinds of process milestones that would be measured and celebrated. Further, participants noted that the achievement and celebration of process milestones will increase the rate of achievement of cleanup milestones (i.e., restoration of uses).

Question 3

Federal, state and provincial governments are undergoing devolution of responsibilities. Considering this, what are the appropriate roles of federal, state/provincial, and local governments in communicating and celebrating improvements in restoring uses?

Participants agreed that devolution was most appropriately viewed in light of three questions:

- What did we have before, and did we do a good job?
- What is the effect of devolution? and
- What are the options?

Members cited the benefit of simplifying administrative practices by pooling resources of agencies with similar mandates. The Lake Superior Programs Office was suggested as one effective model.

As traditional reporting protocols rely on formal agency procedures, few agencies are accustomed to communicating for the purpose of celebrating. Participants identified numerous communication needs/considerations:

- determine who the audience is and the motivation for communicating in that different agencies have different responsibilities;
- ensure that federal and state/provincial governments share responsibility for celebrating successes on a Great Lakes basinwide or international level;
- encourage industry to play a key role, but avoid promoting solely its own initiatives;
- advocate for increased communications technology to make information more accessible; and
- consider establishing a coordinating institutional mechanism like the Lake Superior Binational Program.

As a result of breakout group discussions, participants encouraged the following:

- use existing or establish new institutional structure (e.g., Lake Superior Binational Program, Lake Superior Programs Office, LaMPs) to coordinate communication efforts and celebrate successes;
- ensure all levels of government remain committed to a communication framework; and
- develop a communications plan to coordinate the required, cooperative, multi-agency approach to communicating successes.

Historically, governments frequently measured success by the number of permits issued, enforcement actions taken, dollars spent, etc. Greater emphasis must be placed on measuring ecosystem results (e.g., the environmental or ecosystem return on resources invested, the change in water/sediment quality, and biological community structure and composition).

Question 4

The Great Lakes Water Quality Agreement calls for the selection of remedial measures to restore uses in RAPs. Under what conditions is it acceptable to assert that all reasonable remedial and preventive actions have been taken to restore uses?

One major prerequisite for stating that implementation is complete is that source control has been achieved. Participants recognized, however, that because "success" can only be based on existing tools, there is potential to intervene actively in the future, as new and more affordable technologies evolve, and in response to scientific research.

Breakout session participants identified a number of considerations/factors which must be addressed before it can be declared that a RAP is fully implemented. These include:

- the decision to take no further action is site-specific, driven by risk assessment and cost/benefit or socioeconomic analysis;
- delisting occurs only when local goals are met and agencies concur;
- monitoring commitments are in place with an emphasis on local, municipal, and state/provincial

cooperative approaches;
- source control has been achieved;
- a process has been established for long-term tracking of quality and sustainability after delisting (i.e., incorporating RAP goals into Municipal Office Plans);
- mechanisms are in place to identify emerging issues;
- a continuous improvement process exists to re-examine the cleanup targets and reconsider additional implementation based on monitoring results and new technologies;
- local "alliances" exist to re-evaluate other options in light of monitoring and technological results;
- governments keep obligations to report to IJC/public; and
- governments work with the IJC and the public to standardize indicators and their endpoints across jurisdictions (level playing field).

Participants articulated that complete implementation of a RAP is not sufficient for delisting. Delisting is a rigorous process that requires that restoration targets have been achieved. Given that some RAP goals and delisting targets were developed as much as ten years ago, it is valid for RAPs/PACs to reassess the validity of their goals. It is, therefore, also valid for governments, whose mandate it is to protect the basin ecosystem and the humans therein, to demand that the delisting criteria meet their own standards and criteria, and are consistent with the GLWQA.

Question 5

Full restoration of uses in some AOCs will require action by LaMPs. In addition, full restoration of uses in some lakes will require actions by RAPs. Therefore, what needs to be done to strengthen necessary RAP-LaMP-Binational Program linkages?

Participants felt that existing links between RAPs and LaMPs are very weak with little exchange of information. This is compounded by the fact that there is no formal charge or requirement from governments or encouragement from the IJC to link the two programs.

Numerous solutions to strengthen the RAP-LaMP linkage were identified:

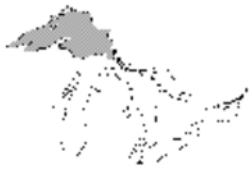
- establish mechanisms to evaluate RAP goals/objectives/actions with regard to LaMP goals/objectives /actions;
- have one representative from each RAP-PAC on LaMP Forums;
- organize regular "State of the Lake" conferences to bring RAPs and LaMPs together (other smaller meetings would also be worthwhile);
- involve all other partners, such as Great Lakes Fishery Commission, in events like "State of the Lake" Conferences;
- clarify roles and responsibilities for RAP and LaMP implementation, and demonstrate interdependencies; and
- evaluate innovative approaches for coordinated implementation.

Participants recognized possible conflicts, but felt that they could be avoided with good facilitation. Participants also noted that even if a RAP moved toward "absence of injury" as a criteria for delisting, this may not be sufficient to solve the problem from a lakewide perspective. For example, although natural recovery of mercury contaminated sediment in Peninsula Harbour may be considered acceptable in the RAP, it may not be consistent with the virtual elimination goal under the Lake Superior Binational Program. Additionally, it was noted that there is potential for conflict in decisions on impairment status and recommendations for actions resulting from RAP and LaMP processes.

VI. Examples of Accomplishments

The October 22nd public meeting also provided an opportunity to present case studies of measuring and celebrating progress. Following, are five case studies discussed at the meeting:

Lake Superior Binational Program



The Lake Superior Binational Program (LSBP) was developed in 1991 by the federal governments of Canada and the United States, the province of Ontario, and the states of Michigan, Minnesota and Wisconsin to restore and protect the Lake Superior Basin. The LSBP committed its partners to expand, coordinate, and accelerate their environmental protection programs in two major areas:

- Initiating a zero discharge demonstration program aimed at achieving zero discharge of designated persistent bioaccumulative toxic substances, which may degrade the ecosystem of the Lake Superior basin. This and other program components related to chemical issues have been incorporated into the LaMP for Lake Superior.
- Establishing a more comprehensive effort designed to identify impairments and restore and protect the Lake Superior Basin Ecosystem. This broader program includes habitat inventory, protection, and reclamation projects in the basin, and other components directed at economic and ecological sustainability.

> "Without the involvement of communities in the Great Lakes Basin our progress will be slowed, if not, in some cases halted."
>
> *David Hamilton, Mayor*
> *City of Thunder Bay*

The LSBP functions successfully because of the commitment of many partners. Agencies and Tribal organizations are represented by senior staff at the Management Task Force which oversees the LSBP. Technical and professional staff form the Lake Superior Work Group, the agency working committee. Individuals, interest groups and stakeholders from around the basin make up the Lake Superior Binational Forum, the public advisory committee composed of 12 Canadians and 12 Americans. Both the Work Group and the Forum have a number of subcommittees which focus on topics of concern such as ecosystem objectives, sustainability, special designations, communications, habitat, pollution prevention, and zero discharge. In addition, the LSBP has active partnerships with other organizations around the lake, such as the Protected Area Managers and the Lake Superior Committee under the Great Lakes Fishery Commission. One major accomplishment of the Forum has been consensus on phaseout timetables for designated critical pollutants.

While the LSBP coordinated and accelerated activities of the partners, the Lake Superior Binational Forum provided the mechanism to reach multi-stakeholder agreements with an overarching vision statement entitled "Vision for Lake Superior". The Forum's Vision opens with the statement, "...water is life and the quality of water determines the quality of life." The Vision statement goes on to identify the desired future condition of the Lake Superior basin, including the strong linkage between sustainable ecology and economy, the role of individual citizens, and the need to address multiple resource management.

An important aspect of the LSBP is its strong recognition of the linkages between the land and lake. The LSBP's ultimate goal is to restore and protect the integrity of the Lake Superior basin ecosystem. Beyond the initial water quality focus, interrelated issues like terrestrial habitat and land use, which are related to economic and ecological sustainability, have been incorporated into the program. This was reflected in the crafting of the Ecosystem Principles and Objectives for the Lake Superior Basin, which organized the objectives into the areas of habitat, terrestrial wildlife, aquatic communities, developing sustainability, and human health.

The broadening of the LSBP has taken time, but already a number of successes have been realized. Certainly the LSBP agreement on a Vision and Ecosystem Objectives must be viewed as a significant milestone.

Indicators to monitor progress towards the objectives have been proposed and implementation teams formed. Critical habitat in the basin has been identified and strategies for restoration and protection are under development, but many habitat projects have already been completed. New initiatives dealing with sustainability are also underway.

Through LSBP partnerships, the Lake Superior ecosystem can be both restored and protected. The goal of a sustainable, new condition is possible as the LSBP considers ecological and economic sustainability as one goal.

For further information, contact Jake VanderWal (Lake Superior Programs Office, 1194 Dawson Road, Thunder Bay, Ontario, phone: (807) 768-1826).

St. Louis River/Bay RAP

The St. Louis River is the largest U.S. tributary to Lake Superior, draining 9, 412 km^2 of Minnesota and Wisconsin. The lower reaches of this river system are dominated by urban and industrial land uses, including a major port. The RAP was initiated in 1989 and nine of the fourteen use impairments have been identified (Table 1).

Significant remediation has occurred at three contaminated sites. At the USX site in Duluth, residual tar, contaminated water, solid waste, pipeline contents, PCB-laden transformer liquids, ammonium sulfate stockpiles, and several acres of PAH-contaminated dredge spoil were identified and treated, landfilled, or recycled. Three areas of concern remain to be addressed at this site, including contaminated sediment.

Remediation at the Interlake site in Duluth has been largely completed, with 567,750 liters of water and 43,545 tonnes of contaminated soils (46% was thermally treated on-site and the rest was landfilled) having been treated. In addition, 176,450 kg of PAHs were destroyed.

At the head of Newton Creek in Superior, Murphy Oil upgraded its wastewater treatment system and initiated cleaning of an impoundment. Future work should address problems in Newton Creek proper and in Hog Island Inlet (which lies at the mouth of Newton Creek, in Superior Bay).

A project focusing on the Nemadji River (a tributary to the St. Louis River) has been completed, and a number of recommendations may reduce non-point pollution from red-clay soils. Funds are being sought for implementation.

Table 1 - Use Impairments in St. Louis River/Bay

Use Impairments	Status
Restrictions on fish and wildlife consumption	Impaired
Degradation of fish and wildlife populations	Impaired
Fish tumors or other deformities	Impaired
Degradation of benthos	Impaired
Restrictions on dredging activities	Impaired
Eutrophication or undesirable algae	Impaired
Beach closings	Impaired
Degradation of aesthetics	Impaired
Loss of fish and wildlife habitat	Impaired

Mercury reduction has been the focus of a number of activities, most notably by the Western Lake Superior Sanitary District. Through a zero-discharge project and accompanying handbook, they have been pivotal in education projects and have also served as a mentor to smaller wastewater treatment plants in other parts of the basin.

Pollution prevention initiatives by industry include water reuse by Lake Superior Laundry, in Superior, which resulted in savings of 38 million liters per year. Similarly, Georgia Pacific, also in Superior, is working with their Duluth plant to utilize wastewater in the production of a feed additive.

Sewage issues have been addressed on both sides of the state

line; Superior has prepared "sewershed" maps to assist in the assessment of stormwater and Duluth has worked to minimize sewage bypass by actively reaching out to residents to reduce inflow and infiltration of clear water into the sanitary sewer system with a combination of inspections, education and financial assistance to homeowners.

Aquatic and wetland habitats in a portion of Keene Creek in Duluth have been restored with the removal of milled wood from former lumber mill operations and the restoration of wetland vegetation. Up to 5 meters in depth of boards and wood waste from former sawmills was found, sometimes immediately below the water surface.

A common tern nesting area was created on Wisconsin Point in Superior to provide a second local nesting site for these birds. Common terns are classified as endangered in Wisconsin, threatened in Minnesota, and a species of special concern nationally. In recent years they have nested at only seven locations in Minnesota and Wisconsin, with one of these being Interstate Island in the St. Louis River.

In response to development pressure, approximately 138 km^2 of riparian land within the St. Louis River watershed has been placed into public ownership. The State of Minnesota purchased 89 km^2 and Minnesota Power donated 24 km^2 in the upper reaches of the St. Louis River. The State of Wisconsin purchased 24 km^2 in the lower portion of the river, including most of the steep, red-clay, highly erodible Red River watershed and about 8 kilometers of St. Louis River shorelands.

The St. Louis River Citizens Action Committee has recently obtained non-profit organization status. This body coordinates/facilitates a range of community-oriented activities designed to involve citizens, in a "hands-on" fashion, in the RAP.

For further information, contact Karen Plass (CAC Executive Director, 394 Lake Ave. South, Room 303a, Duluth, MN 55802, phone:(218) 733-9520, e-mail: slrcac@cp.duluth.mn.us); Brian Fredrickson (Lake Superior Coastal Non-point Coordinator, Minnesota Pollution Control Agency, Duluth Government Center, Suite 704, 320 West Second St., Duluth, MN 55802, phone: (218) 723-4663, e-mail: brian.fredrickson@pca.state.mn.us); or Nancy Larson (Lake Superior LaMP Coordinator, Wisconsin Department of Natural Resources, 810 W. Maple St., Spooner, WI 54801, phone: (715) 635-4075, e-mail: larson@dnr.state.wi.us).

Thunder Bay RAP

Thunder Bay is located on the north shore of Lake Superior. The AOC extends about 28 km along the shoreline and up to 9 km offshore. Water quality problems are primarily a result of discharges from the pulp and paper products and wood preservation industries. Four pulp and paper mills currently operate in the AOC: Avenor, Provincial Papers, Abitibi-Price, and Thunder Bay Packaging.

> "Those of us within the Great Lakes family are very aware of our collective successes, but the time is right to trumpet our horns and share our accomplishments..."
>
> *Bob Hartley, Chair*
> *Thunder Bay Public Advisory Committee*

Fish and wildlife populations and habitat are impaired due to shoreline hardening, pollutants, and mill waste. Habitat improvements have resulted from the dredging of these wastes, decreased organic loadings, and the installation of secondary treatment plants at the mills. However, habitat in the AOC is not expected to return to conditions prior to industrialization. Walleye spawning habitat that has been created is being actively used. Fish populations which were originally limited by low levels of oxygen and high biological oxygen demand are now characterized by increased fish presence and a wider variety of species. An effort to rehabilitate lake trout affected by lamprey predation has proved to

be extremely successful. Some areas in Thunder Bay now yield lake trout harvest similar to historic levels.

Local observations of fish tumors are similar to those found in relatively pristine areas and are not clearly linked to measurable pollutants. No incidences of deformities in cormorants have been reported recently (1996), furthermore, the cormorant population has increased by 10 percent in the last three years.

Fish advisories due to mercury have been lifted for smaller size classes. This reflects significant decreases in mercury loadings to the system following the closing of a chlor-alkali plant in 1977. Historic anoxia due to high organic enrichment previously resulted in the complete absence of benthos in large zones of the AOC. Loading reductions again are responsible for improved conditions. As a consequence of source control and navigational dredging, benthic populations in the Thunder Bay AOC are improving, and a period of natural recovery is required for further improvement.

A major obstacle to full environmental recovery is contaminated sediment associated with the Northern Woods site. As of August 1997, a sediment cleanup has begun, jointly funded by industry and the provincial and federal governments to address the most seriously polluted zones. This $9.3 million remedial action will substantially advance the RAP, and contribute to improved benthic, fish, and wildlife populations. Further sediment treatment and the creation of habitat zones will begin in Spring 1998.

Process changes and enhanced effluent treatment at Avenor, Abitibi, and Provincial Papers (voluntary and MISA/CEPA regulations) have resulted in improved effluent quality and subsequently, improved receiving water quality. Changes at Avenor (bleached kraft pulp mill) have resulted in non-detectable levels of dioxins and furans.

The City of Thunder Bay has completed an assessment of stormwater loadings and combined sewer overflows and has developed options for upgrading the primary wastewater treatment plant. A pilot plant evaluation is underway to determine the most effective treatment technology. In addition, the City has made improvements to washroom facilities/septic systems based on recommendations from PAC Chippewa Beach Subcommittee.

Aesthetics are improving due to the continued efforts by the municipalities to enhance the waterfront by activities such as removing old wooden structures and abandoned works, and the creation of park land with habitat features. Overall, 70% of actions to be taken to restore beneficial uses in the Thunder Bay AOC have been implemented, and beneficial uses are being restored incrementally, as illustrated in Figure 3.

Public involvement continues to form a significant and successful component of RAP activities. Thousands of people have engaged in activities including the Great Lake Superior Cleanup and Wake up to Your Waterfront which was expanded in 1997 to an entire community cleanup. Lake Superior Day, an annual community celebration of Lake Superior, continues to attract newly participating communities and thousands of citizens. Community partnerships are being developed through Thunder Bay 2002. This green community initiative encourages water and energy efficiency, waste reduction and green space naturalization among homeowners.

For further information, contact Jake VanderWal (Lake Superior Programs Office, 1194 Dawson Road, Thunder Bay, Ontario, phone: (807) 768-1826, fax: (807) 768-1889); or Bob Hartley (PAC chair, phone: (807) 683-5832).

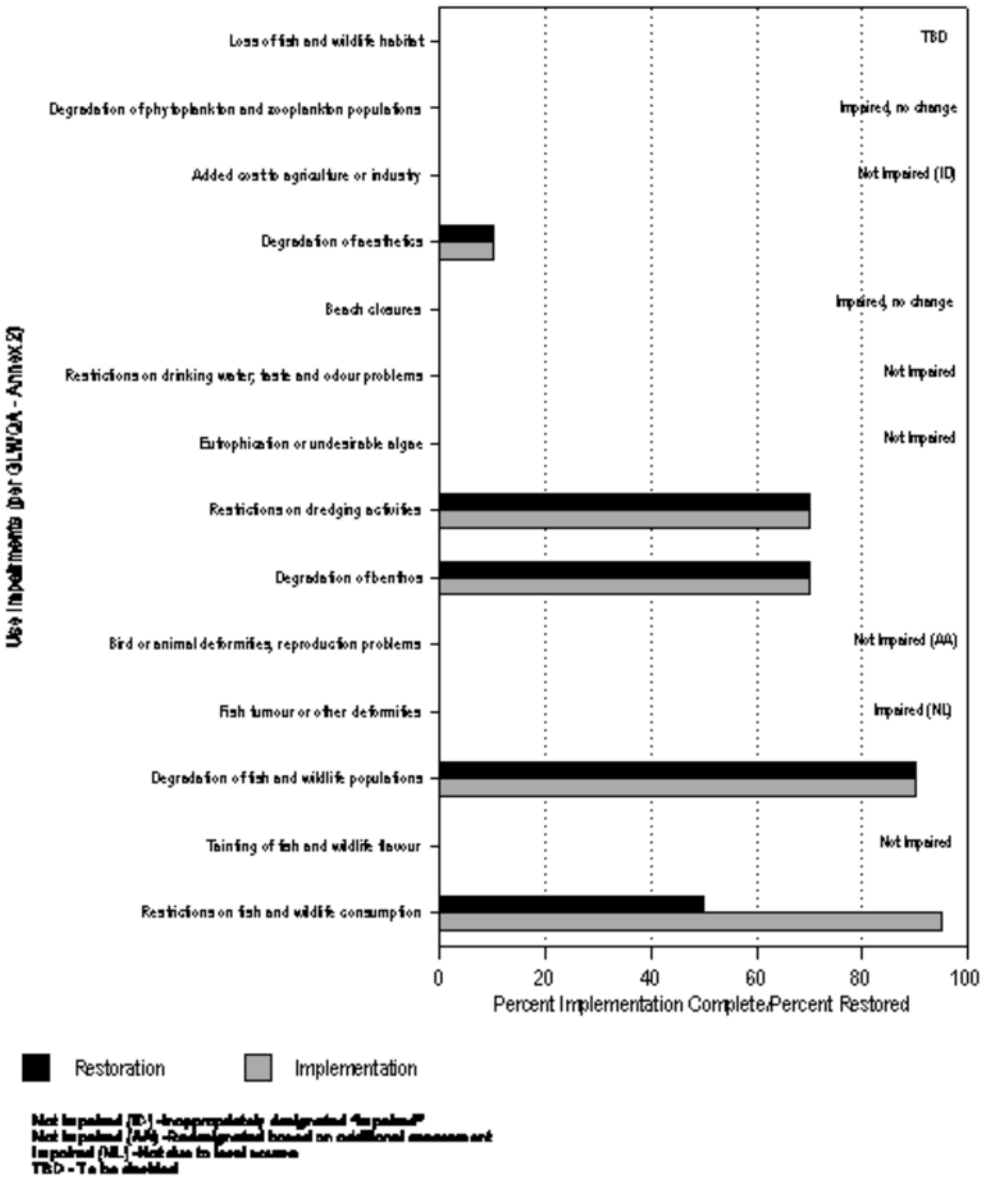


Figure 3. Progress on RAP implementation and achievement of delisting targets in Thunder Bay AOC.

Deer Lake/Carp River RAP

Deer Lake, a 367 hectare (906 acre) impoundment, is located in Marquette County in Michigan's Upper Peninsula. The Deer Lake AOC includes Carp Creek, Deer Lake, and Carp River. The Deer Lake watershed is relatively small, covering roughly 93 km (36 mi) of prime forested land. Mining iron ore is the major industry in the area, occurring outside the watershed. The city of Ishpeming is located southeast of the lake. A RAP for the Deer Lake AOC was initially prepared by the Michigan Department of Natural Resources (DNR) in 1987. The RAP has been updated periodically since that time.

Mercury contamination of fish in Deer Lake and its major tributary, Carp Creek, is the use impairment of concern. Fish in Deer Lake were contaminated with mercury in excess of the U.S. Food and Drug Administration action level and the Michigan Consumption Advisory level. Fish consumption and health advisories were issued for these waters in 1981 and 1982 and remain in effect. Studies of fish-eating birds

such as herons, kingfishers, and bald eagles in the AOC indicate elevated concentrations of metals.

Elevated levels of other metals have been observed, but have not been implicated in causing use impairments. A comparison of metals content of Deer Lake sediment with that of other lakes in the Upper Peninsula indicated mercury, copper, chromium, and nickel were higher in Deer Lake sediment than in most other lakes. Also, previous to 1985, excessive nutrient concentrations were found in the lake due to inadequate treatment of municipal waste.

Historically, the major source of mercury was mining processes. Laboratories in Ishpeming, one opened in 1929 and the other in 1948, used mercuric chloride in ore assays and research. Spent reagents were poured down drains connected to the sewer system. Mercury passed through the old Ishpeming wastewater treatment plant and combined sewer overflows. Spent mercury disposal was curtailed in 1981 when contamination of fish and sediment was discovered.

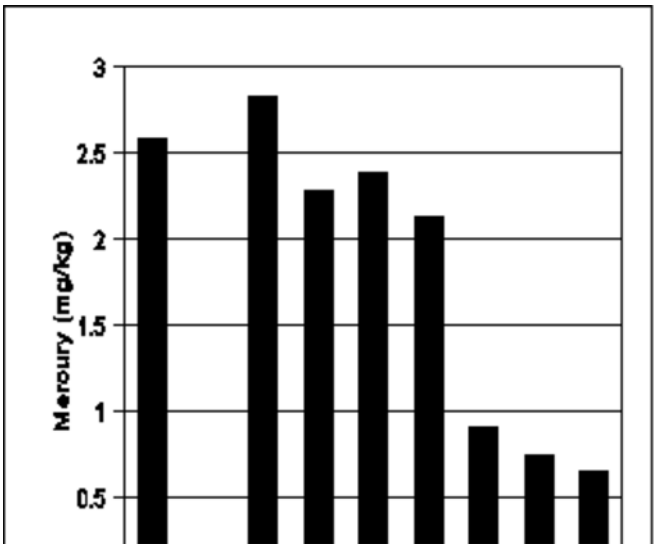
Construction of a new secondary wastewater treatment plant with nitrogen and phosphorus removal was initiated in 1984 and resolved the historical eutrophication problem in Deer Lake. Separation of storm sewers and sanitary sewers was accomplished at the same time. The total project cost was almost $20 million.

In the fall of 1984, a Consent Judgment was signed between the DNR and Cleveland Cliffs Iron (CCI), a major source of the ore, outlining a 10-year plan for monitoring and restoration of Deer Lake. At that time, the water level of Deer Lake was drawn down to the lowest possible level to kill most of the resident fish and minimize human and wildlife exposure. In 1986, rotenone was used to kill the remaining fish. The Consent Judgment also required CCI to operate the Deer Lake dam in such a fashion that the Deer Lake impoundment would be held at its maximum surface elevation to limit the transformation of sediment bound mercury to methylmercury. The impoundment was refilled in 1987.

The Consent Judgment was modified in 1992 with CCI responsible for monitoring mercury in northern pike. In order to comply with the modified Consent Judgment, a one-year benthic community and sediment metals study was initiated. In 1996, an extensive fish sampling program was required of CCI by the modified Consent Judgment.

Recent sampling of fish indicated that mercury levels remain elevated but are reducing at a slow rate. Benthic sampling indicated that mercury levels in Deer Lake sediment remain elevated. Nutrient monitoring also indicates that Deer Lake, though still eutrophic, will no longer be considered hypereutrophic. Using available mercury monitoring data and considering northern pike between 56 and 66 cm in length, a general decreasing trend for mercury concentrations is apparent (Figure 4). However, the mean mercury concentrations for fish fillets still exceed the Michigan Department of Community Health fish consumption advisory level.

The goal of the restoration plan identified in the RAP is to create an uncontaminated fishery in the lake and its tributaries. Following eradication of fish in 1986-87, the DNR introduced 15,000 stunted adult yellow perch, followed by almost a million walleye fry. Northern pike established in the lake naturally and walleye fry were stocked for four years. DNR fisheries biologists suggest that natural walleye reproduction has been sustained.



As a result of the remedial actions, a recreational fishery has developed since the restocking of Deer Lake. The DNR has designated the lake as a catch and release fishery in order to eliminate fish consumption, while still providing recreation opportunities. The catch and release

fishery in Deer Lake has gained attention from anglers throughout the midwest because of the outstanding pike fishery. In addition, in 1993, the local Trout Unlimited chapter in Marquette and the U.S. Department of Agriculture-Natural Resources Conservation Service jointly organized a bank stabilization project on the Carp River below Deer Lake to improve the trout fishery habitat in the area.

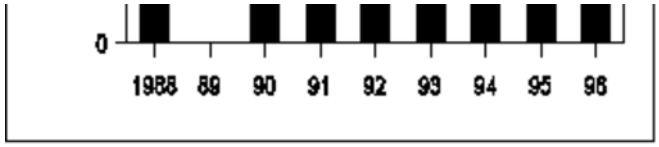


Figure 4. Decreasing mercury levels in northern pike at Deer Lake AOC.

Continued monitoring will indicate whether mercury levels in the Deer Lake ecosystem will eventually fall to levels found elsewhere in Michigan. At this point in time, all planned remedial actions have been completed, or are in the process of implementation. Also, area residents report the reoccupation of abandoned bald eagle nests with successful broods. From a local perspective, area residents have formed a community group for the AOC. A public meeting was held last September where stakeholder groups identified goals and selected community members to represent the stakeholder group. Key future projects include formation of the community group, identification of local goals, and continued review and updating of the Deer Lake RAP.

In summary, there has been significant progress in the Deer Lake AOC. Examples include:

- construction of the Ishpeming Wastewater Treatment Plant and separation of storm and sanitary sewers was completed;
- actions were taken to minimize human and wildlife exposure;
- natural reproduction of the walleye fishery has been sustained in the lake;
- mercury levels in fish remain elevated but are reducing;
- Deer Lake is no longer hypereutrophic;
- the fishery in Deer Lake has gained regional and national attention;
- all planned remedial actions have been completed, or are in the process of implementation; and
- community groups are taking an interest in the continuing effort.

For additional information, contact Sharon Baker (Department of Environmental Quality, Surface Water Quality Division, P.O. Box 30273, Lansing, MI 48909-7773, phone: (517)335-3310, e-mail: bakers@state.mi.us); Carl Lindquist (Marquette Soil Conservation District, 1030 Wright Street, Marquette, MI 49855, phone: (906)226-2461, e-mail: lindq@mail.portup.com); or Scott Chilman (Chair, Deer Lake Public Advisory Council, 102 South Main Street, Ishpeming, MI 49849, e-mail: sc@ellerbruch.nmu.edu).

Nipigon Bay RAP

Nipigon Bay is located at the most northern point of Lake Superior, approximately 110 kilometers northeast of Thunder Bay. The AOC spans over 200 square kilometers in area, within a watershed of over 38,000 square kilometers. Two communities are located in the vicinity of the Bay, Red Rock (population: 1,400) and Nipigon (population: 2,400). Use impairments in the area were primarily the result of discharges from Domtar Packaging Ltd., the accumulation of bark, wood fiber, and other organic matter from historic log drives, and the discharges from the Nipigon and Red Rock water pollution control plants. Excessive flow variations and water level fluctuations resulting from hydro-generation on the Nipigon River were also a concern.

Consumption advisories are in effect for chinook and lake trout due to toxaphene, and yellow perch due to mercury. The advisories are not, however, a result of sources within the AOC. Although historically there have been complaints by local citizens of fish tainting, there have been no recent reports of fish or wildlife tainting since the inception of the RAP program. Significant mill process changes that have occurred during the course of RAP implementation has resulted in reduced discharges of chlorinated phenols, the agents responsible for tainting. Incidence of fish tumors are comparable to background levels.

Actions to enhance healthy walleye and trout include habitat creation, stocking of adult walleye, a comprehensive water flow control strategy with Ontario Hydro, and over $30 million invested for effluent improvements at Domtar. Benthic communities have also responded to the mill upgrades, and the area of degradation now represents less than 1 percent of the spacial extent of the AOC. No further remedial strategies are planned to improve sediment quality. Natural recovery will continue to be monitored.

The foaming and odor problem at Domtar mill has been abated. Odor problems continue to arise from the Nipigon Sewage Treatment Plant and will remain an issue until its upgrade is completed. Although algae have been observed on walleye spawning grounds, subsequent investigations have shown that walleye spawn in these areas successfully. The charaphytic algae requires oligotrophic to mesotrophic conditions, and indicates the absence of eutrophic conditions for the AOC in general.

Based on remedial actions to date, which have included aquatic habitat restoration, and effluent treatment at the Domtar Packaging Ltd, a great deal of progress has been made in this AOC. Implementation of recommended actions are currently 95 percent complete (Figure 5). Overall, environmental recovery is such that the RAP Team and PAC estimate that restoration of beneficial uses is close to being fully achieved.

For further information, contact Ken Cullis (Lake Superior Programs Office, 1994 Dawson Road, Thunder Bay, Ontario, phone: (807) 768-2106, e-mail: kcullis@baynet.net).

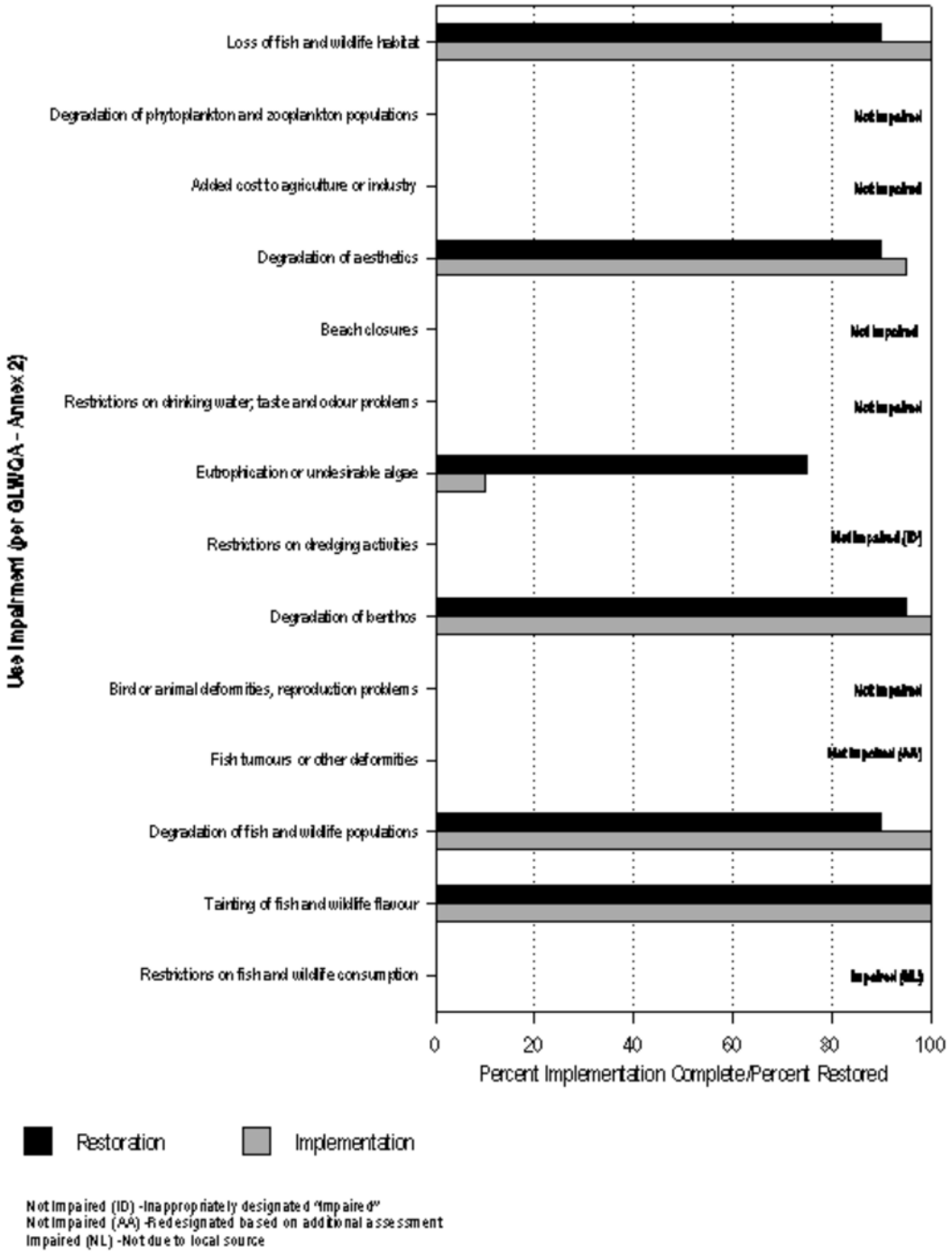


Figure 5. Progress on RAP implementation and achievement of delisting targets at Nipigon Bay AOC.

VII. Summary and Recommendations

In general, participants felt that RAP and LaMP processes are sound, but implementation can be improved in many places. Further, the value and benefits of such community-based processes have not been clearly nor broadly communicated. Continuous and vigorous oversight of these RAP and LaMP processes by governments and local stakeholders will be needed to ensure that we achieve the desired ecosystem results.

Measuring and celebrating incremental progress through RAPs and LaMPs will be essential to sustaining momentum and necessary long-term commitments. Key findings from this WQB public meeting include:

> "Like all long-term endeavors, ecosystem recovery and sustainability will be accomplished through incremental steps. We must be patient and we must press on."
>
> *Vic Shantora, Canadian Co-Chair*
> *Great Lakes Water Quality Board*

- there was strong agreement that delisting is not the ultimate goal of RAPs and LaMPs - the goal is restoring beneficial uses in AOCs and the Great Lakes;
- it is critical that agencies continue to provide resource support and help facilitate RAPs and LaMPs;
- there is a need to sustain momentum of RAP and LaMP processes to be able to achieve to long-term goals of restoring uses as called for in the GLWQA.

Key recommendations from the public meeting steering committee and WQB include:

- the IJC, Parties, Jurisdictions, and RAP/LaMP groups must place greater emphasis on reporting on both process milestones (e.g., securing funding for implementation, the number of permits/control orders issued, etc.) and ecosystem milestones (e.g., environmental and ecosystem results as defined in Annex 2 of the GLWQA) to help build a record of success;
- the Parties, Jurisdictions, and RAP/LaMP groups need to operationalize the concept of measuring and celebrating incremental progress through the use of graphics which measure the degree of use restoration (see Figures 2, 3, and 5) or some other creative, measurable techniques; and
- Commissioners from the IJC must become "champions" of celebrating incremental progress in restoring uses at both the local and lakewide level (i.e., they must become much more active in helping celebrate incremental progress at RAP and LaMP stakeholder meetings).

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Appendix 1 - Agenda for Thunder Bay Workshop

MEASURING AND CELEBRATING INCREMENTAL PROGRESS IN RESTORING THE GREAT LAKES

WEDNESDAY, OCTOBER 22, 1997; THUNDER BAY, ONTARIO

9:00-9:05 AM	Welcome to Thunder Bay
9:05-9:15 AM	Welcome from Water Quality Board and Introductions (V. Shantora and D. Ullrich)
9:15-9:30 AM	Water Quality Board Challenge • Measuring incremental progress (H. Tosine) • Classifying AOCs by stage of restoration (G. Krantzberg)
9:30-10:30 AM	RAP-LaMP Progress (Moderator: G. Sherbin) • Lake Superior Binational Program (E. Iwachewski and J. Jackson) • St. Louis River/Bay (K. Plass) • Thunder Bay (P. Morash) • Deer Lake- Carp River (J. Bredin) • Nipigon Bay (K. Cullis)
10:30-10:35 AM	Charge to Breakout Groups (G. Krantzberg)
10:35-10:45 AM	Coffee Break
10:45-12:30 PM	Breakout Group Discussions (4 facilitated sessions) (Facilitators: G. Krantzberg, E. Iwachewski, P. Morash, J. Hartig)
12:30-1:30 PM	Lunch (with luncheon address)
1:30-2:10 PM	Report Out From Breakout Groups
2:10-3:40 PM	Facilitated Plenary Discussion of Advice to WQB and IJC (Facilitators: G. Krantzberg and J. Hartig)
3:40-3:50 PM	Response From WQB Members (V. Shantora and D. Ullrich)
3:50-4:00 PM	Opportunity to Identify Other Issues Relative to Measuring and Celebrating Incremental Progress Which Should be Profiled to the IJC
4:00 PM	Adjournment

QUESTIONS FOR BREAKOUT GROUPS

Breakout Group A (Facilitator: J. Hartig)

- Are the RAP/LaMP processes working and achieving environmental results, or is there a better way?
- The WQB recommended a step-wise approach to restoring beneficial uses. What are the best ways to measure and make known incremental progress in restoring uses?

Breakout Group B (Facilitator: P. Morash)

- Are the RAP/LaMP processes working and achieving environmental results, or is there a better way?
- Federal, state, and provincial governments are undergoing devolution of responsibilities. Considering this, what are the appropriate roles of federal, state/provincial, and local governments in communicating and celebrating improvements in restoring uses?

Breakout Group C (Facilitator: G. Krantzberg)

- Are the RAP/LaMP processes working and achieving environmental results, or is there a better way?
- The Great Lakes Water Quality Agreement calls for the selection of remedial measures to restore uses

in RAPs. Under what conditions is it acceptable to assert that all reasonable remedial and preventive actions have been taken to restore uses?

Breakout Group D (Facilitator: E. Iwachewski)

- Are the RAP-LaMP processes working and achieving environmental results, or is there a better way?
- Full restoration of uses in some AOCs will require actions by LaMPs. In addition, full restoration of uses in some lakes will require actions by RAPs. Therefore, what needs to be done to strengthen necessary RAP-LaMP-Binational Program linkages?

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Appendix 3 - Luncheon address by
David Hamilton, Then Mayor of Thunder Bay

I welcome all of your to Thunder Bay and I thank you for the opportunity to speak today. We are honoured that the Great Lakes Water Quality Board has elected to meet on Lake Superior to discuss progress in restoring the Great Lakes.

As our current drinking water dilemma indicates, the protection of water quality is critical to the health of our

communities. Although the water supply in question is from an inland lake, this problem punctuates the need for the continuing work of groups that we are hearing about today.

In the Thunder Bay Area of Concern, there has been significant progress towards achieving the goals of the Remedial Action Plan (RAP). Several years ago, the RAP program and the goals for ecosystem restoration were gaining momentum. It's time we celebrate the important successes that we have collectively achieved, while recognizing there is much to be done.

Our community successes include effluent treatment improvements at our pulp and paper mills, fish and wildlife habitat restoration projects along a number of waterfront areas, and efforts to increase public access to the Great Lakes. I will discuss some of these briefly in a moment.

There have been many changes to the Thunder Bay harbour and they have taken place since European settlement more than 300 years ago. The shore has been transformed by industry and by the population which is now over 100,000. While some areas remain relatively unchanged from their natural state, other features have been completely modified by human activity.

One of the things that I see now when I drive to City Hall in the morning is a view of the McKellar and Mission Islands because one of the barriers that we constructed years ago as part of our industrial history has been removed. It may seem like an insignificant example, but where we used to drive or walk we were unaware that there was any connection with nature or water. Now we can look down that street and see the trees, the islands and at least a glimpse of the river from time to time. That to me is symbolic of our success and an example of our activities during an industrial era when we really turned our back on the lake.

Over the past hundred years, we built our industries and treated the environment, at best, with indifference and, at worst, with disrespect. And at times we treated Lake Superior, the largest freshwater lake in the world, as a giant septic tank, expecting that anything dumped into such a large body of water would surely go away.

Recently, much has changed: people's attitudes towards their environment have changes; the way in which governments and industry now operate has changed. A good example is the remediation project at the Northern Wood site. The federal government and the provincial government and three industries are working together as full partners to clean up the most significant area of sediment contamination in Thunder Bay.

This new and effective cooperative approach is a result of much planning and discussion which was provided in large measure by the encouragement and sometimes less than subtle pressure coming from the Thunder Bay RAP-PAC. This committee of some 25 community stakeholders worked diligently, under the able leadership of Mr. Bob Hartley, to recommend priorities for environmental restoration in Thunder Bay. The agreed-to water use goals set by the PAC are being incorporated into the City's vision for a revitalized waterfront as guiding principles to make our community more economically and environmentally sustainable.

You heard this morning about the many activities taking place around the lake and we are here today to discuss the need to measure our progress.

There is a spirituality of our Lake Superior and I believe that we are finding it, returning to those roots of humanity that we should have remembered during the industrial era when, with the railways and industry and elevators and all the best intentions, we barricaded ourselves from the lake. We turned our back to our beautiful lake and we treated the lake with disrespect. And while there has been much progress, we all realize that there is much more to do.

Over the past few years I have become very aware of the important work of the International Joint Commission. In the fall of 1995 I attended the Commission's biennial meeting in Duluth and I was delighted and encouraged by the number of citizens both interested and involved in Great Lakes issues. I mentioned

that governments and industries are changing the ways in which they do business with respect to the environment, but all of these changes start with individuals. The various projects that Jake VanderWal and his staff at the Lake Superior Programs Office have initiated in support of the Great Lakes Water Quality Agreement have resulted in an increased level of consciousness of the people of Thunder Bay. Each day more and more individuals are changing the way they think and act with respect to our environment.

Recently, a dedicated group of people has been working on a waterfront strategy for the City of Thunder Bay. The plan calls for increased public access via continuous pathways and a scenic drive from north to south. In addition, there is a recommendation to encourage residential development along parts of the waterfront. The strategy is set within a framework of environmental responsibility, ensuring that future development occurs, not as it once did with complete disregard for the lake, but instead, in harmony with our Lake Superior environment. The result, ultimately, will be a people- and environment-friendly place that conjures the spirituality of the lake and encourages and sustains community pride.

I have said in the past that regardless of the Canada-U.S. border and other jurisdictional boundaries, there is a need for a lakewide strategy to ensure that as Lake Superior citizens we continue to move along productively and in harmony with the lake. I feel that the Lake Superior Binational Program with stakeholders from all around the basin through the Lake Superior Forum is beginning to achieve this end. We are ensuring that what we did so poorly over the past hundred years will not happen over the next hundred years. We simply cannot afford that - neither from an economic perspective, nor from an ecological perspective.

With the improvements that have already taken place in the area, the groundwork is set to move forward. In addition to making progress on our waterfront, the City is also moving along in other areas. For example, a pilot plant evaluation is presently underway to determine the most suitable method of implementing secondary sewage treatment - a goal that we could achieve by the year 2000.

Darrell Matson and his staff in the Environment Division are working along with the Lake Superior Programs Office and others to implement a variety of pollution prevention activities including the establishment of a household hazardous water depot and a Mercdivert project to collect button batteries and fluorescent tubes. We are also working with our local green community initiative, Thunder Bay 2002, to deliver energy and water efficiency, and water reduction programs to homeowners. The program is expanding this year to incorporate the institutional, commercial and industrial sectors.

Finally, Lake Superior is very important to me and to the people of Thunder Bay. It is clear that through the efforts of our citizens, who are helping governments and others plan for the restoration and protection of this incredible resource, we can, with time reach our goals. I suggest to the Water Quality Board that it recommend to the Commission that without the involvement of communities in the Great Lakes Basin our progress will be slowed, if not, in some cases, halted. People can make the difference; people do make the difference.

Thank you.