

## Background

### *Areas of Concern*

The 1978 Great Lakes Water Quality Agreement (GLWQA; see Box 1), signed by the governments of Canada and the United States and amended in 1987, improved accountability and encouraged the implementation of best practices and the use of new technology in remediation activities. The two countries, working in cooperation with state and local governments and the Commission, designated areas that were particularly degraded as “Areas of Concern.” Figure 1 shows the current Areas of Concern.

### *Purpose of This Report*

Within the limits of available information, the International Joint Commission describes the status of remedial activities in Great Lakes Areas of Concern and notes the future actions and resources required to restore beneficial uses (see Box 2). The Commission also makes

### ***Box 1***

#### ***The Boundary Waters Treaty and the Great Lakes Water Quality Agreement A Legacy of Leadership to Protect and Restore Our Shared Resources***

The 1909 Boundary Waters Treaty stipulates that "boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other." The treaty created the International Joint Commission to prevent and resolve disputes along the boundary. Commencing in 1912, the Commission, at the request of the U.S. and Canadian governments, conducted several studies on pollution affecting the Great Lakes. A 1970 Commission report, completed at the request of the U.S. and Canadian governments, noted pollution problems in lakes Erie and Ontario and the St. Lawrence River<sup>1</sup>, and culminated in the signing of the Great Lakes Water Quality Agreement in 1972.

Excess nutrients (e.g. phosphorus) in the lakes were the target of the original agreement. In 1978 the governments strengthened their commitment to restore the Great Lakes and called for the “discharge of any or all toxic substances to be virtually eliminated.” In addition, the goals of the Agreement were broadened from restoring and enhancing "water quality in the Great Lakes system" to restoring and maintaining the "chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem."

recommendations to the Canadian and United States governments on actions they can take to achieve restoration

**Figure 1. Areas of Concern in Canada and the United States.**

Annex 2 of the Agreement, which deals with Areas of Concern, indicates that the ability of plants, animals and humans to thrive in these locations can be particularly compromised by the presence of contaminated sediment, urban wastewater pollution, nonpoint source pollution, inland contaminated sites and degraded habitat. To restore and protect environmental quality in the Great Lakes, Annex 2 calls for the development and implementation of Remedial Action Plans for Areas of Concern.

In 1987, the two governments designated 42 Areas of Concern, with 25 sites in the United States, 12 in Canada and five in connecting channels shared by the two countries. Plans are being developed and implemented binationally at three of the shared Areas of Concern—the St. Marys River, St. Clair River and Detroit River Areas of Concern. The United States and Canada are developing and implementing

**Box 2**

***Impairment of Beneficial Uses***

The Great Lakes Water Quality Agreement [Annex 2, Section 1(c)] states that “impairment of beneficial use(s)” means a change in the chemical, physical or biological integrity of the Great Lakes System sufficient to cause any of the following:

- (i) restrictions on fish and wildlife consumption;
- (ii) tainting of fish and wildlife flavour;
- (iii) degradation of fish and wildlife populations;
- (iv) fish tumors or other deformities;
- (v) bird or animal deformities or reproduction problems;
- (vi) degradation of benthos (bottom-dwelling organisms);
- (vii) restrictions on dredging activities;
- (viii) eutrophication or undesirable algae (increased nutrient levels lead to increased algae levels);
- (ix) restrictions on drinking water consumption, or taste and odour problems;
- (x) beach closings;
- (xi) degradation of aesthetics;
- (xii) added costs to agriculture or industry;
- (xiii) degradation of phytoplankton and zooplankton populations (free floating plants and animals); and
- (xiv) loss of fish and wildlife habitat.

separate national Remedial Action Plans for the other two shared Areas of Concern—the Niagara River and St. Lawrence River Areas of Concern. In 1991, the United States government added an Area of Concern (Presque Isle Bay, Pennsylvania), making a total of 26 Areas of Concern in the United States.

The Canadian government declared two Areas of Concern restored (Collingwood Harbour, 1994 and Severn Sound, 2003) and one Area of Concern (Spanish Harbor, 1997) as an Area of Concern in recovery. In 2002, the United States government designated Presque Isle Bay as an Area of Concern in Recovery Stage<sup>2</sup>.

### ***Responsibilities of the Commission***

The Great Lakes Water Quality Agreement [Annex 2, Section 4(d)] requires the two governments to submit Remedial Action Plans for each Area of Concern to the Commission for review and comment at three stages:

1. when a definition of the problem has been completed;
2. when remedial and regulatory measures are selected; and
3. when monitoring indicates that identified beneficial uses have been restored.

The Great Lakes Water Quality Agreement [Annex 2, Section 7(b)] also requires the governments to report every two years to the Commission on progress toward restoration of beneficial uses in the Areas of Concern. The Agreement also requires the

Commission to include information from these reports in its biennial reports [Annex 2, Section 7(b)]. Since 1987, only one comprehensive report on the status of beneficial uses has been prepared by the governments, and this report was submitted in 1994.

The Commission has submitted 11 biennial reports to the governments on progress toward restoration of Great Lakes water quality, the most recent one in September 2002. It has also submitted four detailed reports that assess progress in the Detroit River, Hamilton Harbour, St. Marys River and Niagara River Areas of Concern. The Commission also has commented on all Stage 1, Stage 2 and Stage 3 reports that have been submitted by the governments (see [www.ijc.org](http://www.ijc.org)). In addition, in 1991, the Commission developed and published guidelines for the listing and delisting of Areas of Concern.

#### Stages of Remedial Action Plan Development and Implementation

United States	Canada	Connecting Channels (Binational)
Stage 1: 12	Stage 1: 4	Stage 1: 1
Stage 2: 13	Stage 2: 6	Stage 2: 6 (St. Marys, St. Clair and Detroit rivers, two each for Niagara and St. Lawrence rivers)
Stage 3: 1 <sup>c</sup>	Stage 3: 2	Stage 3: 0

In the past year, the Commission has undertaken a comprehensive review of progress in developing and implementing Remedial Action Plans for all the Areas of Concern. As part of this work, in December 2001, the Commission requested

<sup>c</sup> Waukegan Harbour submitted a Stage 3 report to the Commission. The Commission did not concur that the report met the requirements of a Stage 3 document.

information from the two governments regarding Remedial Action Plan implementation and management. In January 2002, the governments provided some data, noting that much of the requested information was not available. In April 2002, information was gathered from surveys of Canadian and United States officials and community representatives on implementation activities, management of and accountability for the Remedial Action Plan process, and key challenges and successes. During October and November 2002, the governments worked with the Commission on filling information gaps. The Commission greatly appreciates the cooperation and assistance of the two governments in the preparation of this report.

The Matrix of Restoration Activities in the Areas of Concern that accompanies this report reflects this cooperative effort and represents, at this time, the best available indicators of progress on Areas of Concern. The CD-ROM of the Commission's Eleventh Biennial Report also includes this report, the Matrix of Restoration Activities and a clickable map of all Areas of Concern.

### ***Responsibilities of the Governments***

Federal governments—in cooperation with state and provincial governments, and in consultation with local governments and communities—were to jointly develop and cooperatively implement the Remedial Action Plans [GLWQA, Annex 2, Section 2(e)].

The governments assigned personnel—whether federal or state/provincial, assisted by agency technical and scientific experts—to define and describe the environmental problems, the impaired beneficial uses, the degree of impairment and the geographic extent of such impairment. The governments were also to define the causes of the impairments and describe all known sources and other possible sources of pollutants. This information makes up the content of a Stage 1 report.

Public advisory committees were assembled in most Areas of Concern to work with the governments on a plan to restore beneficial uses. These committees typically had representatives from multiple sectors, possessing unique points of view and representing particular stakeholder groups.

Federal and state governments, working with local governments and communities, selected actions necessary to restore beneficial uses. These recommended actions are the basis for Stage 2 reports.

As previously noted, the governments also are required to report biennially on progress, including the status of beneficial uses. The only comprehensive report was prepared in 1994.

### ***Remedial Action Plan Process***

According to Annex 2 of the Agreement, each Remedial Action Plan “shall embody a systematic and comprehensive ecosystem approach to restoring and protecting beneficial uses in Areas of Concern or in open lake waters” [Section 2(a)] and “serve as an important step toward virtual elimination of persistent toxic substances and toward restoring and maintaining the chemical, physical and biological integrity of waters of the Great Lakes Basin Ecosystem [Section 2(b)].”

To date, Remedial Action Plans have focused on the remediation of major sources such as contaminated sediment and inadequately treated wastewater. In addition, plans have addressed nonpoint source pollution, habitat rehabilitation, pollution prevention and other actions to restore beneficial uses.

Work in some toxic sites within the United States Areas of Concern has taken place under other programs, such as the United States Superfund program, and has not in the past been documented consistently in Remedial Action Plan reports despite substantial levels of expenditure and clearly positive impacts on environmental quality in some Areas of Concern (e.g. Niagara River).

Work in Areas of Concern is carried out by dozens of organizations, including federal, state, provincial and local governments and volunteer groups and businesses, among others. Funding mechanisms are equally complex and vary by country and also by state within the United States.

Remedial Action Plan practitioners include staff in public agencies at the local, state, provincial and federal levels as well as private parties and community members.

Private parties can become funding partners through legal settlements via the United States Superfund program and other enforcement programs, and through other mechanisms such as citizen lawsuits or voluntary agreements. Any change in Remedial Action Plan participants and leadership can also slow the pace of plan development.

Information for the Canadian and United States Areas of Concern, presented in the Matrix of Restoration Activities that accompanies this report, represents an initial attempt by the Commission to compile indicators of restoration activities and the organizations responsible for carrying them out.

The Commission recognizes that an unquantified number of person-years of effort and billions of dollars have been devoted to restoration activities by the governments and the private sector. Additional tracking and data collection by the governments are necessary to more accurately quantify past effort and estimate future needs.

In the 16 years since Areas of Concern were identified, considerable progress has been made in:

- identifying baseline problems ;
- developing remediation plans ; and
- building community support for restoration plans.

Despite such progress, in most Areas of Concern significant challenges remain, including:

- determining the status of restoration;
- setting priorities;
- securing resources to support restoration; and
- coordinating implementation efforts.

Gaps in information on what needs to be done make it difficult for governments to predict and secure adequate resources to restore beneficial uses. Much work remains to be done, especially in the Areas of Concern, to achieve the visionary goal of restoring the chemical, physical and biological integrity of the waters of the Great Lakes basin ecosystem. (For a discussion of approaches used by the two governments in dealing with restoration of Great Lakes water quality, see Box 3.)

### **Box 3**

#### ***National Approaches to the Restoration of Great Lakes Water Quality***

The quality of the waters of the Great Lakes is affected by contamination occurring within the Areas of Concern as well as by contamination originating outside the Areas of Concern that reaches the lakes via tributaries, groundwater and airborne deposition. Contamination comes from nonpoint source pollution, such as agricultural and urban runoff, point source discharges of contaminants, groundwater, and airborne movement of contaminants from hazardous materials sites. Such sites also represent hazards to those who live in the immediate vicinity (e.g. Love Canal).

#### **United States Approach**

To deal with this multitude of contaminants, federal and state governments operate under a number of separate but interrelated programs. These include the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund), the Clean Water Act, the Toxic Substances Control Act, the Oil Pollution Act and many state statutes, regulations and initiatives. These programs often require the government to seek the parties responsible for the original pollution and, where feasible, require them to clean up the sites or to fund cleanup efforts (the “polluter pays” approach).

Faced with remediation activities across the basin and the nation and with variations in funding from year to year, both federal and state governments seek funds for remediation from all programs available to them. In addition, they seek funds through legal proceedings from potentially responsible parties. When funds are provided, they are often limited to a specific site or program, greatly reducing flexibility. Funding requests by governments and funding decisions by legislatures are based in large part on their understanding of the relative risks to affected citizens. Remediation of sediment and work on wastewater plants take a position in line for funds. The efforts of the U.S. government to restore the integrity of the Great Lakes involve activities of many programs, most of which operate outside of those programs focused specifically on sediment remediation and wastewater infrastructure upgrades. The relative priority among these programs is established based on the government's assessment of relative need among programs.

#### **Canadian Approach**

In Canada, there are a series of acts that help direct environmental protection and litigation. At the federal level they include, but are not limited to, the Fisheries Act, the Canadian Environmental Protection Act, the Canadian Environmental Assessment Act, the Canada Water Act, and others. In Ontario there are the Municipal Industrial Strategy for Abatement regulations, the Ontario Water Resource Act, the Safe Drinking Water Act, hazardous waste regulations, the Pesticides Act, the Nutrient Management Act, the Environmental Protection Act as well as other statutes and permitting processes relevant to restoring Great Lakes water quality. In Canada, the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem contributes to Canada meeting its commitments under the Great Lakes Water Quality Agreement including those for Areas of Concern. The administration of the Canada-Ontario Agreement is entrusted to a Management Committee<sup>3</sup>, which includes a co-chair from Environment Canada and a co-chair from the Ontario Ministry of the Environment, as well as Regional Director General and Assistant Deputy Minister level representatives from all departments and ministries who are signatories to the Canada-Ontario Agreement<sup>3</sup>.