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FINAL

## BI-NATIONAL ASSESSMENT OF THE GREAT LAKES - SOLEC PARTNERSHIPS

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**Abstract.** Many administrative jurisdictions have authority over parts of the Great Lakes, sometimes with competing purposes as well as governance at differing scales of time and space. As demand increases for high quality information that is relevant to environmental managers, environmental and natural resource agencies with limited budgets must look to interdisciplinary, collaborative approaches for the collection, analysis and reporting of data. The State of the Lakes Ecosystem Conferences (SOLEC) were begun in 1994 in response to reporting requirements of the Great Lakes Water Quality Agreement between Canada and the U.S. The biennial conferences provide independent, science-based reporting on the state of health of the Great Lakes ecosystem components. A suite of indicators necessary and sufficient to assess Great Lakes ecosystem status was introduced in 1998, and assessments based on a subset of the indicators were presented in 2000. Because SOLEC is a multi-agency, multi-jurisdictional reporting venue, the SOLEC indicators require acceptance by a broad spectrum of stakeholders in the Great Lakes basin. The SOLEC indicators list is expected to provide the basis for government agencies and other organizations to collaborate more effectively and to allocate resources to data collection, evaluation and reporting on the state of the Great Lakes basin ecosystem.

**Keywords:** Great Lakes, indicators, SOLEC

### 1. Introduction

Governance in the Great Lakes basin is complex. Canada and the United States share a common border that runs through four of the five lakes. Both countries have several federal agencies with jurisdiction over some aspect of the Lakes. In the U.S., for example, there exists the U.S. Environmental Protection Agency (U.S. EPA), the U.S. Fish and Wildlife Service, U.S. Geological Survey, the National Oceanic and Atmospheric Administration, the National Park Service, and the U.S. Coast Guard, among others. In Canada, there are Environment Canada, Fisheries and Oceans Canada, Health Canada, Agriculture Canada, Natural Resources Canada, Transportation Canada, and others.

Eight U.S. states and two Canadian provinces contain part of the Great Lakes basin in their jurisdictions. Each of the states and provinces also has multiple agencies, including the state or provincial equivalent of an environmental quality agency and a natural resources management agency.

Within the Great Lakes basin are 83 U.S. counties, whose health departments, for example, monitor the swimming beaches. In Ontario, 41 Public Health Units monitor, among other things, swimming beaches and drinking water quality.

In the U.S., 29 Tribes have independent governance in the Great Lakes basin. In Canada, the relationship between the federal government and First Nations is more complex, but there are 64

recognized First Nations in the basin.

Also, the two countries have established special binational commissions, such as the International Joint Commission to assist the governments achieve their goals of restoring the integrity of the Great Lakes ecosystem and of preventing further pollution to the system, and the Great Lakes Fishery Commission to control infestation of the sea lamprey and to promote a multi-use fishery.

Despite governance in the Great Lakes basin being distributed among many jurisdictions with independent mandates, organizing frameworks do exist that facilitate cooperation and collaboration. One important element is the Great Lakes Water Quality Agreement (GLWQA) between Canada and the U.S. (United States and Canada 1987). First signed in 1972, and subsequently revised in 1978 and 1987, the purpose of the GLWQA is to "restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem." The current Agreement calls for the development of Lakewide Management Plans for each of the Great Lakes and their connecting channels, Remedial Action Plans for each of the 42 designated Areas of Concern, ecosystem objectives for each of the Lakes, and indicators of progress toward those objectives. The GLWQA also assigns responsibility to the governments of Canada and the U.S. to report on progress toward the goals of the Agreement every two years. The process of assessing and reporting on the status and trends of Great Lakes ecosystem components provides a framework for effective partnerships to develop among Great Lakes stakeholders.

## 2. What is SOLEC?

As demand increases for high quality information that is relevant to environmental managers, environmental and natural resource agencies with limited budgets must look to interdisciplinary, collaborative approaches for the collection, analysis and reporting of data. Also, for the governments of Canada and the U.S. to meet their commitments to the GLWQA, the environmental protection and natural resource activities of federal, state, provincial, tribal and First Nations agencies must be coordinated. A Binational Executive Committee (BEC), co-chaired by U.S. EPA and Environment Canada, is comprised of senior-level executives from these agencies, and it fosters the binational coordination of environmental programs. The concept of a biennial State of the Lakes Ecosystem Conference (SOLEC) to report on the condition of the Great Lakes ecosystem components was created by the BEC to fulfill, in part, the GLWQA requirements for assessing and reporting progress toward the goals and objectives of the Agreement. The conferences are science-based, and they are a result of consultation and collaboration between the U.S. and Canada, and between federal, state, provincial and local government agencies, environmental groups, industry and the public. Following each conference, the information presented, the assessments provided, and the inferences that were explored, were compiled, and a State of the Great Lakes report published (Canada and the United States 1997, 1999, 2001; United States and Canada 1995).

Four objectives were established for SOLEC: to assess the state of the Great Lakes ecosystem based on accepted indicators; to strengthen decision making and environmental management; to inform local decision makers of Great Lakes environmental issues; and to provide a forum for communication and networking among all stakeholders. The primary audience includes environmental managers and decision makers, but the information needed by senior administrators and the public is also considered.

SOLEC started in 1994 with a basic assessment of the state of the Great Lakes that included human health and socio-economics. In 1996, the conference looked more closely at the nearshore environment and at some land use issues. In both conferences, assessments were made of the health of the system using ad hoc indicators and expert opinion. For SOLEC 98, a comprehensive, basin-wide suite of indicators was developed. These indicators were to be easily understood and

were to objectively reflect the condition of the Great Lakes basin, the stresses on the ecosystem, and the human responses to those stresses. These indicators would provide predictable signs of ecosystem health and the progress being made to remedy existing problems. At SOLEC 2000, the indicator approach was implemented, and reports were received for 33 of the 80 indicators in the suite.

### 3. SOLEC Indicators

The SOLEC indicators list is a compilation of indicators that were derived, for the most part, from pre-existing indicators proposed or in use by other Great Lakes programs. Two important features of the list are: 1) each of the indicators is necessary for the evaluation of the Great Lakes, i.e., redundant indicators are not included, and 2) the suite of indicators, taken as a whole, is sufficient to evaluate the ecosystem components for SOLEC purposes. The process for identifying the indicators on the list required about 2 years of work that involved over 130 people.

A Core Group and an Expert Panel were created for each of the following subject areas: open and nearshore waters, coastal wetlands, nearshore terrestrial, land use, human health, and stewardship. There was no requirement for particular agency representation on these groups other than to ensure that both U.S. and Canadian expertise were involved. Each of the Groups mined indicators and indicator ideas from existing sources. The groups then screened their long list and revised, combined or created new indicators as needed. The work of all the groups was combined into the proposed SOLEC Indicator List and presented for discussion at SOLEC 98 (Bertram and Stadler-Salt 1999).

Before, during and after SOLEC 98, the process has been open. Four versions of the indicator list have gone through a cycle of stakeholder review and Core Group revisions (Bertram and Stadler-Salt 2000), and a process has been established for biennial review and revisions to be incorporated. In order for the SOLEC indicators approach to be successful, however, there must be consensus among federal, state, provincial and local management organizations that the SOLEC information is useful, and there must be collaboration and cooperation to collect, analyze and report the data.

### 4. SOLEC Participants & Partners

The selection of SOLEC indicators was a study in collaboration. Most of the Great Lakes management jurisdictions were involved, as well as industry and environmental groups, academia, Aboriginal groups, and private citizens. The BEC sets the general direction for SOLEC and the themes for the conferences. A SOLEC Steering Committee is responsible for identifying strategies necessary for the development and delivery of the SOLEC themes, setting the agenda for each SOLEC, convening the conferences, and issuing a conference proceedings and a State of the Great Lakes report. Membership on the Steering Committee is open to the BEC agencies and to other sectors, including environmental non-government organizations (ENGOS), industry, binational commissions, and private citizens. An Executive Committee, chaired and staffed by U.S. EPA and Environment Canada, implements the day-to-day activities of SOLEC.

The SOLEC indicators do not represent the singular view of any one or two agencies, but rather they are a compilation of the best ideas of the experts who participated. Of the 133 people involved with the SOLEC indicator selection process, only 48% represented federal, state or provincial agencies (Figure 1 upper). The rest were affiliated with academia (23%), ENGOS (11%) and other sectors.

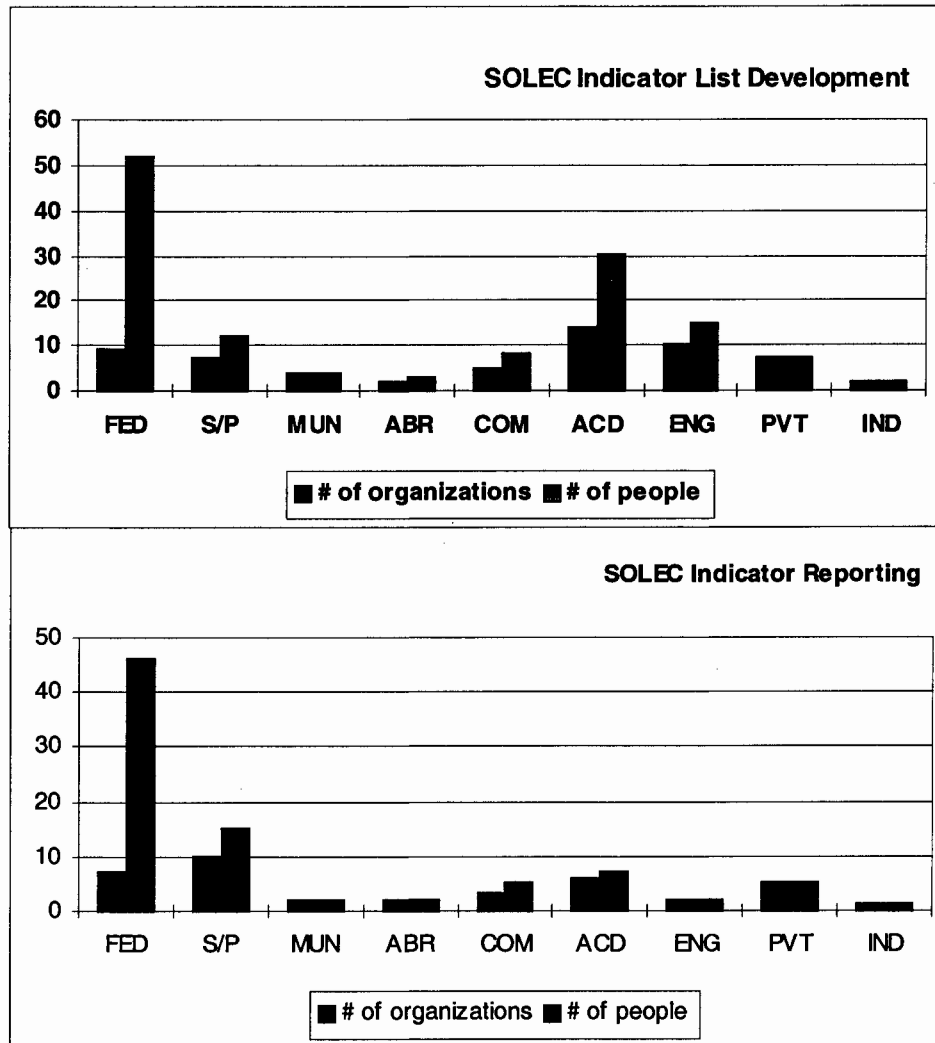


Figure 1. Number of organizations and number of people involved in the development and selection of SOLEC indicators (upper) and in the process of data collection, analysis and reporting (lower). FED = Federal, S/P = State or Provincial, MUN = Municipal, ABR = Aboriginal, COM = Commission, ACD = Academic, ENG = Non-government environmental, PVT = Private group or citizen, IND = Industry.

Within each sector, several agencies or organizations were represented. For example, there were 14 academic institutions, 10 ENGOs, nine federal agencies, seven state or provincial agencies, and seven private groups or citizens involved (Figure 1 upper). In addition, within some of the federal, state and provincial agencies, more than one Division, Office or Branch was involved, and other sectors such as ENGOs and industry share and compile information, thereby increasing

participation beyond named representatives. Also uncounted are the staff people within agencies or organizations who reviewed and commented on drafts of the indicator descriptions and other documents.

SOLEC partnerships continued during the preparation of the indicator reports for SOLEC 2000. Each report included sections on the purpose for the indicator, ecosystem objectives, the state of the ecosystem component, future pressures on the ecosystem, future actions that could be taken, and further work necessary to fully implement the indicator. The individual reports were then compiled and published electronically (Stadler-Salt and Bertram 2000).

Similar to the indicator selection process, the reporting was shared by people affiliated with multiple agencies and organizations. Of the 85 people who were acknowledged in the indicator reports as authors, contributors, or sources for data, 54% represented federal agencies, 18% represented state and provincial agencies, 8% were affiliated with academia, and the rest were affiliated with other sectors (Figure 1 lower). The weighting toward federal authors was consistent with government sponsorship of many of the annual monitoring programs which provided data for the SOLEC indicators. Because government experts were usually the most familiar with the data, they were invited to prepare the reports.

Although only 7 federal agencies were identified to be involved in the indicator reporting, (Figure 1 lower), within those agencies at least 20 divisional or office units were identified. State and provincial agencies (10), academia (6), and private groups, contractors or citizens (5) were also well represented.

### 5. Sustained Partnerships

SOLEC is more than just a conference. It is a framework for unifying ecosystem objectives, for conducting monitoring programs, for information management, and for assessing and reporting on the integrity of the Great Lakes. The conference is part of the SOLEC process, and it provides participants the opportunity to discuss and comment on the data and interpretation of the indicators.

SOLEC itself is not a monitoring program. Those programs are delivered by government agencies or other partnering organizations to support GLWQA requirements (e.g. Remedial Action Plans for Areas of Concern, and the Lakewide Management Plans), fishery management agencies, or other environmental management purposes. The SOLEC approach is to identify the data needed and then to request appropriate agencies or organizations to collect and/or share that information through SOLEC and other reporting venues.

For SOLEC to be sustained, and the indicators to be fully implemented, each indicator must have a sponsor, i.e., an agency or organization which commits to gathering the data, analyzing and interpreting them, and reporting on the indicator through SOLEC. Such agency commitments would ensure consistency in the quality and quantity of information available for each reporting cycle. Monitoring agencies have their own mandates for data collection, and they do not necessarily have the resources or the motivation to quickly redirect their established programs to new indicators. However, following SOLEC 2000, some federal and state agencies have committed to sponsoring some of the indicators.

Because SOLEC has its origins in the GLWQA, those agencies and organizations whose mission includes activities to "restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem" have a common interest in periodically evaluating progress toward that goal. SOLEC provides a framework for coordinated, collaborative assessments of the state of the Great Lakes. The SOLEC Executive and Steering Committees are open to suggestions on the indicators, methodologies, interpretation of the indicator data, or on the conference itself. SOLEC is expected to continue to evolve as data needs and environmental issues change.

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