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AGREEMENT REVIEW COMMITTEE

Report to the Great Lakes Binational Executive Committee: **Volume 1**

This report by the Agreement Review Committee (ARC) is a synthesis of findings, results and recommendations from nine Review Working Groups and a governance and institutions workshop formed to review the Great Lakes Water Quality Agreement (the Agreement). The views expressed in this Review Report are not necessarily the views of the Government of Canada or the Government of the United States of America, their Departments or Agencies, the States or Provinces or of any other organization or entity.

Review of the Canada–U.S. Great Lakes Water Quality Agreement

FINAL REPORT TO THE GREAT LAKES BINATIONAL EXECUTIVE COMMITTEE

Review of the Great Lakes Water Quality Agreement

Agreement Review Committee
September 2007

Preface

This report by the Agreement Review Committee (ARC) is a synthesis of findings, results and recommendations from nine Review Working Groups and a governance and institutions workshop formed to review the Great Lakes Water Quality Agreement (the Agreement). The views expressed in this Review Report are not necessarily the views of the Government of Canada or the Government of the United States of America, their Departments or Agencies, the States or Provinces or of any other organization or entity.

Executive Summary

Through a year-long process, over 350 Canadians and Americans (the Reviewers), representing a broad cross-section of the Great Lakes community, participated in a review of the Great Lakes Water Quality Agreement (the Agreement). The combination of time, effort and resources dedicated to this binational exercise is unprecedented. Conducted under the guiding principles of openness, transparency and inclusiveness, the Review Report, prepared by the Agreement Review Committee (ARC), draws on the work of the Reviewers and provides an overview and synthesis of many of their key findings and recommendations. It is organized into five themes: (1) the Purpose and Scope of the Agreement; (2) Outdated Agreement Elements; (3) Pressing Issues and Emerging Threats; (4) Agreement Accountability and Implementation; and (5) Including Other Orders of Government and the Public.

Since its signing in 1972 by the Governments of Canada and the United States (the Parties) to address growing environmental problems identified in the late 1960s, the Agreement has been widely viewed as a model of international management and protection of a shared natural resource. Amendments made in 1978, 1983 and 1987 further enhanced the Agreement's reputation as a leading edge model that has provided a binational vision for the Great Lakes Basin Ecosystem and allowed for the Parties to coordinate the management of this globally-significant resource into the 1990s. There was, however, a broad call from the Reviewers for renewal and revisions to the Agreement, so that it can once again serve as a visionary document driving binational cooperation to address long-standing, new and emerging Great Lakes environmental issues in the 21st century.

Although the overall purpose of the Agreement – to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem – still resonates with Reviewers, the 2007 Review found that stronger linkages are needed between the stated purpose and the measures in the Agreement's Articles and Annexes. Provisions related to chemical integrity should be updated; physical and biological integrity should receive more focus; and the integration of all three in an ecosystem approach (with a clear articulation of what ecosystem approach means), also merit enhanced attention if the Agreement is revised. Reviewers also highlighted that many of the Agreement's standards and deadlines, and some of its concepts, are now outdated. Newer approaches, such as watershed management planning, should also be strengthened for achieving the purpose of the Agreement. Further, the Reviewers emphasized that the Agreement should be revised to specifically address today's pressing issues, including the impacts of climate change, aquatic invasive species and urbanization. There was also recognition that these issues affect biodiversity.

There was widespread concern amongst Reviewers that inadequate and inconsistent funding has hampered the overall success of the current Agreement. Reviewers cited the need for establishing specific results, designating responsible entities and improving mechanisms to hold them accountable, setting timelines and reporting on progress to achieve the goals of the Agreement. Reviewers also called for periodic updating of the Agreement. Though the review of the Agreement's governance and associated institutions was limited, a clear call for a more effective governance structure was heard, one that would better reflect the full range of participants involved in the implementation of the Agreement. Along with the Parties, other orders of government and members of the Great Lakes community play a critical role in the implementation and should be reflected in the Agreement. More meaningful public and partner participation in the development and implementation of a renewed Agreement was recommended.

The 2007 Review has refocused attention on the critical importance of the Agreement. The Parties have the opportunity to re-establish the Agreement's role as a guiding "North Star" for Great Lakes protection and restoration by providing a powerful call to action – for the good of the Great Lakes, and all who rely on them.

Synthesis of Key Findings, Results and Recommendations

Theme 1: The Purpose and Scope of the Agreement

1. The Agreement should serve as the “North Star” for the protection and restoration of the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem, providing a clear, high-level vision that will function as a guide for concerted action.
2. The purpose of the Agreement – to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem – remains sound and relevant and should be fully translated into the Articles and Annexes of the Agreement.
3. The ecological and geographic scope of the Agreement should be clarified to reflect the critical link between chemical, physical and biological integrity and the health of the Great Lakes Basin Ecosystem.
4. In clarifying the ecological and geographic scope of the Agreement, groundwater, to the extent that it affects the purpose of the Agreement, should be further considered.
5. Consideration should be given to promoting and expanding opportunities for greater collaboration with other governments whose territory is not covered by the Agreement, building, for instance on progress to conserve, protect and enhance the St. Lawrence River Ecosystem under the Canada-Québec Agreement on the St. Lawrence.

Theme 2: Outdated Agreement Elements

1. The Agreement Articles should be written in such a way to retain their effectiveness long into the future.
2. The Agreement Annexes should evolve to effect the purpose of the Agreement and reflect current conditions and challenges.
3. The Agreement Annexes should be streamlined, integrated and reduced in number so that they work more effectively with each other and the Articles.
4. The Agreement Annexes should be cross-referenced and their interrelationships clearly identified within each Annex so that implementation can be more effective.
5. The Agreement should include a process for identifying and implementing new binational approaches for addressing issues.
6. The Agreement should highlight, emphasize and facilitate watershed planning as an effective approach to achieving the purpose of the Agreement.
7. The significance of international sources of pollutants to the Great Lakes Basin Ecosystem should be acknowledged in the Agreement.

Theme 3: Pressing Issues and Emerging Threats

1. Consideration should be given to developing new annexes to address pressing issues, or incorporating them specifically into the Agreement, as appropriate. The Agreement should include a streamlined process to address pressing issues that currently exist including the impacts of urbanization, climate change and aquatic invasive species.
2. The Agreement should include a streamlined process for identifying and addressing emerging threats that may impact the Great Lakes in the future, on a more timely basis.

Theme 4: Agreement Accountability and Implementation

1. The Agreement's governance structure is critical to its success and should be carefully considered and addressed as the Parties move forward.
2. The Parties should consider how the Agreement interacts with outside entities, and international or intergovernmental agreements.
3. The Annexes should include specific results and timelines to achieve the purpose and goals in the Agreement; and the Parties should clearly designate responsible entities.
4. The Agreement should include provisions for regular Annex-by-Annex review and reporting on progress, noting that there are some existing reporting mechanisms: a standard, streamlined reporting framework should apply across the Annexes; the Agreement Annexes should be reviewed individually and updated according to a schedule to be determined.

Theme 5: Including Other Orders of Government and the Public

1. The Agreement should recognize the critical role and essential participation of other orders of government, including: (1) Tribes and First Nations, (2) states and province and (3) local governments and authorities. These entities should be included in the revision and implementation of the Agreement.
2. The Agreement should recognize the critical role and essential participation of the public in the successful implementation of the Agreement by the Parties and other orders of government. The public should be consulted in any revision of the Agreement.
3. The Agreement should recognize the importance of accessible information for decision making to foster greater involvement of other orders of government, non-government organizations and the public.

Introduction

The Great Lakes – Superior, Michigan, Huron, Erie and Ontario – constitute the largest system of fresh surface water on earth, containing about 20 percent of the world’s surface fresh water.¹ Less than one percent of the system’s water is renewed annually by precipitation.² In addition to the natural beauty, ecological complexity and significance of the Lakes, the region is home to nearly 40 million Americans and Canadians, supports the culture and life ways of Tribes and Aboriginal Peoples, provides drinking water to millions of people, and is the foundation for billions of dollars in shipping, trade, agriculture, fishing and recreation.

Over the past 150 years, the Great Lakes have faced many serious environmental challenges. These issues continue to evolve and new challenges will be faced in the future. In recognition of the need to develop a mechanism to help resolve potential disputes concerning declining water quality in the Great Lakes and other boundary waters shared between Canada and the United States, the two countries signed the Boundary Waters Treaty (BWT) in 1909. The International Joint Commission (IJC) was also established at that time to advise the Parties on matters related to transboundary water.

The Evolution of the Agreement

By 1970, signs of an ecosystem under stress were clearly evident. A series of events focused attention on the need to clean up the Great Lakes. These included the “death” of Lake Erie due to phosphorus from detergents and sewage, and other more visible signs of pollution such as the fire on the oily surface of the Cuyahoga River in Cleveland, Ohio.³

As conditions deteriorated in the Great Lakes, concerns grew for both ecosystem and human health effects from pollution being discharged into the Lakes.⁴ In 1972, based on studies and advice from the IJC, the Governments of Canada and the United States (the Parties) signed the Great Lakes Water Quality Agreement (the Agreement or GLWQA) in recognition of the urgent need to improve environmental conditions in the Great Lakes.⁵ The 1972 Agreement established the commitment to restore and enhance water quality in the Great Lakes Basin Ecosystem. Objectives were specifically aimed at reducing nuisance conditions and the discharge of substances toxic to human, animal or aquatic life. In addition, specific numerical targets were included in the Agreement for the reduction of loadings of phosphorus to Lakes Erie and Ontario. A role was also provided to the IJC to advise and assist the Parties in the implementation of the Agreement.⁶

In 1978, 1983 and 1987, several significant amendments were made to the Agreement reflecting shifts in its implementation and an evolving understanding of the complexity of issues affecting the Great Lakes Basin Ecosystem. In 1978, the Agreement was amended to introduce the concept of the “ecosystem approach”, which recognizes the interconnectedness of all components of the environment, including humans, and the need for an integrated perspective in addressing issues of human health and environmental quality. The 1978 amendment also committed the Parties to the virtual elimination of persistent toxic substances and established a list of toxic chemicals for priority action. The Agreement was amended again in 1983 to enhance efforts to reduce phosphorus inputs into each lake by setting target loads for each Great Lake required to achieve the water quality objectives in the Agreement.

¹ Environment Canada and U.S. EPA, *Our Great Lakes* (2004)

² Environment Canada and U.S. EPA, *Our Great Lakes* (2004)

³ Lee Botts and Paul Muldoon, *Evolution of the Great Lakes Water Quality Agreement* (2005)

⁴ International Joint Commission, *A Guide to the Great Lakes Water Quality Agreement, Background for the 2006 Governmental Review* (2005)

⁵ *Ibid*

⁶ Article VII – Powers, Responsibilities and Functions of the International Joint Commission

The Agreement was amended once more by a Protocol negotiated between the Parties in 1987. The 1987 amendment codified the concept of Areas of Concern where beneficial uses of the ecosystem had been significantly degraded, and committed the Parties to the remediation of these sites. In addition, the 1987 amendment introduced other new Annexes focusing on non-point contaminant sources, Lakewide Management Plans, contaminated sediment, airborne toxic substances, contaminated groundwater and associated research and development. The role of the IJC also changed in response to the 1987 Protocol and the creation of the Great Lakes Binational Executive Committee (BEC). The binational approach of the IJC's reporting on progress was replaced by the bilateral approach of the BEC⁷ and the IJC's role was confirmed as being an advisor to the Parties and an evaluator of the performance of the Parties in implementing the Agreement.⁸

The Agreement today is a lengthy document made up of a Preamble⁹ followed by 15 Articles and 17 Annexes that describe in great detail the programs and other activities the Parties intended to carry out, "...to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem". The Articles of the Agreement are comprised of policy goals, major commitments, and organizational and procedural matters. The Annexes contain detailed program descriptions, schedules and reporting arrangements.

Accomplishments under the Agreement

Since 1972, decades of sustained effort have been reversing the damage caused to the Great Lakes Basin Ecosystem since the industrial revolution in the 19th century. Government agencies, non-governmental organizations and the public in both nations have put tremendous effort into restoring the Great Lakes and their watersheds and protecting them from pollution, habitat destruction and loss of native species. Governments at all levels have spent billions of dollars and assigned thousands of people to the task. Businesses, industry and the agricultural sector have also committed significant amounts of resources to change products and production methods to reduce their impacts, and to clean up polluted areas. The IJC, community groups and non-governmental organizations have also played significant roles in the restoration and protection of the Great Lakes.

Even though many challenges remain, the accomplishments achieved to date in restoring and protecting the Great Lakes Basin Ecosystem are impressive. The implementation of commitments in Annex 3 (Control of Phosphorus) resulted in controlling eutrophication in the open waters and is regarded as one of the great accomplishments of binational efforts in the Basin. The Agreement has driven significant reductions of persistent toxic substances such as polychlorinated biphenyls (PCBs) and dichloro-diphenyl-trichloroethane (DDT), thereby improving the health of the Great Lakes Basin Ecosystem.¹⁰ In many cases, the Agreement has served as a powerful driver for reforming environmental laws and policies within the United States and Canada, informing laws such as the U.S. *Clean Water Act* and the *Canadian Environmental Protection Act*, and many provincial, state and municipal laws and bylaws.

The Agreement prompted action to improve management and spurred the development of scientific programs, initiatives and reviews across the Great Lakes Basin. Often cited as one of the most forward-thinking diplomatic achievements for the environment, the Agreement has served as a model for other

⁷ Governance and Institutions Workshop report, page 14

⁸ Governance and Institutions Workshop report, page 14; IJC Task Force Report to the Governments (May 8, 1991)

⁹ The preamble contains the introductory statements to the Agreement on pages 1 and 2 of the GLWQA

¹⁰ International Joint Commission, *A Guide to the Great Lakes Water Quality Agreement: Background for the 2006 Governmental Review* (2005)

international agreements to protect and restore environments elsewhere in the world.¹¹ Its strengths include the establishment of common objectives and commitments for protecting and restoring the waters of the Great Lakes Basin Ecosystem, the facilitation of information sharing, and cooperation on research and monitoring.

Previous Reviews of the Agreement

Under the terms of the Agreement, the Governments of the United States and Canada are required to conduct a “comprehensive review of the operation and effectiveness of the Agreement” every six years, after the release of every third biennial report issued by the IJC on progress made by the Parties toward achieving the objectives in the Agreement.¹²

Since 1987, when the Agreement was last amended, the Parties have consulted twice – in 1992 and 1999 – on reviewing the Agreement. Both reviews were limited in scope because the Parties, its partners and most stakeholders reached a sizeable consensus that available resources should be dedicated to implementation, rather than a full review of the Agreement. The 1999 Review focused on assessing seven of the 17 Annexes¹³ and participation was limited to a team of government experts. The 1999 Review did not result in changes to the Agreement; however, many of the findings of the 1999 Review remain valid today and were considered during the current review of the Agreement.

Current Review of the Agreement

The obligation to undertake the current review of the Agreement (the 2007 Review) was officially triggered by the release of the IJC’s 12th Biennial Report in September 2004. Unlike earlier reviews, there was widespread support this time within the Great Lakes community for a substantive review of the Agreement. The Parties recognized this growing consensus and in response have conducted a broad-based and inclusive review of the Agreement’s operation and effectiveness.

The 2007 Review resulted from the cooperation and involvement of more than 350 Canadians and Americans (the Reviewers), comprised of representatives from federal, state, provincial and local governments; individuals from Tribes and Aboriginal groups; non-government organizations; industry; academia; and the interested public. The scope of the review, level of binational participation and the combination of time, effort and resources that have been dedicated to this undertaking is unprecedented. The Parties, via the BEC, conducted the 2007 Review under the guiding principles of an open, transparent review process that allowed for the involvement of all interested parties.¹⁴

A binational Agreement Review Committee (ARC) was formed to lead and coordinate the 2007 Review and prepare this Draft Agreement Review Report by synthesizing the key findings, results and recommendations from a series of Review Working Groups and a workshop on the Agreement’s governance and institutions. Over a nine month period beginning in April 2006, nine Review Working Groups (RWGs) conducted an intensive review of the Agreement using a common approach and

¹¹ Alliance for the Great Lakes, Biodiversity Project, Canadian Law Association and Great Lakes United: *The Great Lakes Water Quality Agreement Promises to Keep; Challenges to Meet* (2007)

¹² Article X (Consultation and Review), *Revises Great Lakes Water Quality Agreement 1978*, as amended by Protocol signed November 18, 1987

¹³ Annex 1: Specific Objectives; Annex 2: Remedial Action Plans and Lakewide Management Plans; Annex 3: Control of Phosphorus; Annex 7: Dredging; Annex 11: Surveillance and Monitoring; Annex 12: Persistent Toxic Substances; and Annex 14: Contaminated Sediments

¹⁴ U.S. EPA and Environment Canada, *Guide to the Agreement Review Process* (January 6, 2006); BEC Co-chair announcement of launch of the Agreement review (March 2006)

methodology. The Review also included a two-day workshop in November 2006 on governance and institutions, conducted by two independent co-convenors to review governance provisions under the Agreement. This report summarizes the Reviewers findings and recommendations along five themes: (1) Purpose and Scope of the Agreement; (2) Outdated Agreement Elements; (3) Pressing Issues and Emerging Threats; (4) Agreement Accountability and Implementation; and (5) Including Other Orders of Government and the Public. A full account of the observations and findings of each of the Review Working Groups and the Governance & Institutions workshop can be found in Appendix 1 of this Review Report.

In May, 2007, the Draft Review Report was released for a 60-day public comment period. Following the public comment period the ARC finalized the Review Report based on feedback received (see Volume 3, Compendium of Comments), and is now providing this Final Review Report to the BEC for consideration.

The Challenge: Making the Great Lakes Greater

The Agreement has not been revised for nearly 20 years and while there has been progress in restoring and improving the health of the waters of the Great Lakes Basin Ecosystem, there are still serious threats to the physical, biological and chemical integrity of the Ecosystem. Many scientists have voiced concern that the Great Lakes are exhibiting symptoms of stress from a variety of sources and impacts including: nutrient loadings, toxic contaminants, invasive species and land use changes.

Environmental problems have become increasingly complex over the years and the Great Lakes Basin Ecosystem faces many new and re-emerging challenges that are not specifically addressed in the existing Agreement. Some of the most pressing issues include the impacts of aquatic invasive species, climate change and urbanization; the remediation of contaminated sediment; and the long-range transport of toxics. Other threats may be emerging, like chemicals of concern that are not currently listed in the Agreement.

Measures to restore and protect the Great Lakes must be well aligned with domestic activities and laws, along with multilateral environmental commitments, many of which came about after the Agreement was last revised in 1987. International efforts on a wide spectrum of environmental issues will both influence – and be influenced by – progressive actions in the Great Lakes Basin Ecosystem.

The work of restoring and maintaining the Great Lakes Basin Ecosystem and preventing further degradation must continue. Citizens; federal, state, provincial and local agencies; Tribes and Aboriginal Peoples; elected officials; and stakeholder groups, including non-governmental organizations, industry groups and the agricultural community, play a vital role in the protection and restoration of the Great Lakes Basin Ecosystem and should again be guided by a Great Lakes Water Quality Agreement that is visionary. The Governments of the United States and Canada have an opportunity to revitalize the Agreement to once again set a clear path for making the Great Lakes greater.

Theme 1: The Purpose and Scope of the Agreement

Article I of the Great Lakes Water Quality Agreement states that:

“The ‘Great Lakes Basin Ecosystem’ means the interacting components of air, land, water and living organisms, including humans...”

Article II of the Great Lakes Water Quality Agreement states that:

“The purpose of the Parties is to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem.”

The purpose of the Agreement is fundamental to its success. The Agreement has been widely viewed as a model of international management and protection of a shared natural resource. The purpose of the Agreement, when written in 1972 and expanded in 1978 to include the term “ecosystem”, has facilitated the development and implementation of numerous programs and other measures that have, in turn, enabled progress in restoring and protecting the Great Lakes Basin Ecosystem. While the Agreement was formerly the principal driver for restoration in the Great Lakes, this leading role is less clear in 2007.

General Discussion

Purpose

The overall purpose of the Parties – to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem – still resonates with the Reviewers.¹⁵ The Agreement falls short to the extent that the Articles and Annexes fail to adequately give effect to the purpose statement. The linkages between the purpose statement and the measures called for in the Annexes to achieve this purpose are weak, and in some cases, absent. Further, with the addition of several new Annexes during previous revisions, the document has become less coherent and the means for achieving the Agreement’s purpose obscured. Strengthening the linkages between the purpose of the Agreement and measures required to achieve it (described by other Articles and the Annexes) would allow the Agreement to better address the current and future conditions and challenges in the Basin.¹⁶

Scope

The most intense debate amongst Reviewers was focused on the **ecological scope** of the Agreement. A vast continuum of interpretation exists on this point, ranging from a strict water quality focus to a full ecosystem approach (see Figure 1). While Reviewers were unable to arrive at a consensus about the correct interpretation¹⁷, it has been suggested that the purpose of the Agreement has allowed for a certain latitude in interpretation that has fostered the development of many programs beyond a strict water quality focus. From a different perspective, however, the Agreement has been instrumental in driving progress in restoring and maintaining water quality in the Great Lakes Basin Ecosystem, but has fallen short by focusing more attention on chemical integrity and less on physical and biological integrity.¹⁸ The result is that the Agreement has been less effective in reaching chemical, physical and biological endpoints. There was also recognition that biodiversity, a component of biological integrity and an indicator of ecological integrity, is a key factor in maintaining and improving water quality.¹⁹ What is certain is that the

¹⁵ SIWG report, page 3; RWG D report, page 39; RWG A report, page 24; RWG C report, page 8

¹⁶ SIWG report, page 8

¹⁷ RWG A report, pages 4, 17 and 18

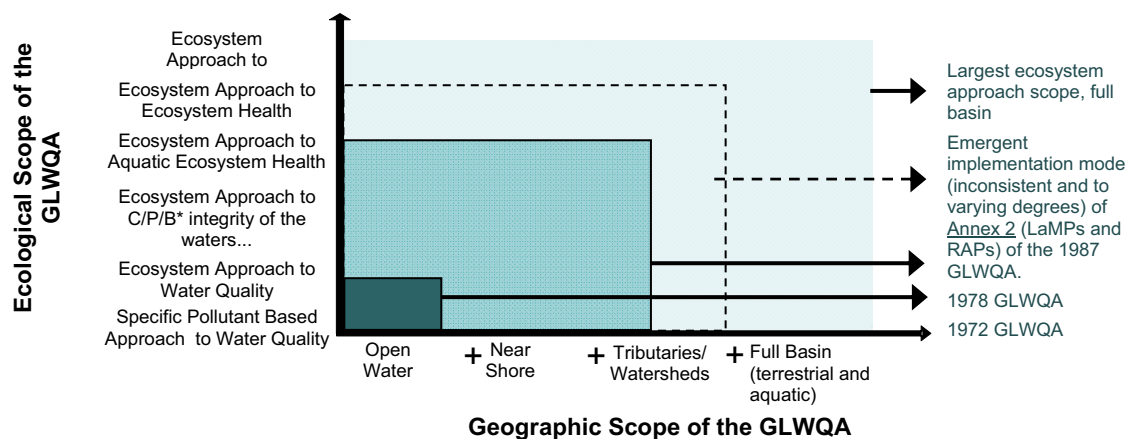
¹⁸ RWG F report, page 14

¹⁹ SIWG report, page 9

Agreement needs to make the link between chemical, physical and biological integrity and the health of the Great Lakes Basin Ecosystem by ensuring that the purpose is translated to the measures described in the Annexes.

Figure 1*: “Ecosystem Approach” – A Continuum of Interpretations amongst Reviewers

**Adapted from SIWG report (page 4)*



* C/P/B: Chemical, Physical and Biological

It is also important that the **geographic scope** of the Agreement be more clearly defined as it has been subject to wide interpretation by the Reviewers (see Figure 1) from having a sole focus on open waters to more broadly spanning the open waters, nearshore, inland areas, tributaries and watersheds within the Great Lakes Basin. Despite the continuum of interpretations on the geographic scope of the Agreement, the 2007 Review has not provided a strong case that a lack of clarity in the geographic scope of the Agreement has constrained progress in addressing environmental concerns. In fact, there are numerous examples of activities that have addressed problems from a broad geographic perspective. For example, Remedial Action Plans and Lakewide Management Plans under Annex 2 have focused much of their efforts upstream in the watersheds (consistent with provisions in Annex 13) in order to address the causes of downstream impairments.

Another issue discussed amongst Reviewers is whether the Agreement’s definition of the Great Lakes Basin Ecosystem²⁰ should encompass the Basin’s groundwater resources. The Agreement addresses groundwater only as a source of contamination (Annex 16), and not as a component of the Great Lakes Basin Ecosystem or as a resource that needs to be protected and sustained.²¹ There is now a better understanding of Great Lakes groundwater systems than there was in 1987 when the need to address contamination from groundwater was written into the Agreement. There is also recognition of the importance of understanding the interrelationship of groundwater and surface water as it affects water quality in the Great Lakes²² and opportunities for greater coordination on managing groundwater.

²⁰ “Great Lakes Basin Ecosystem” means the interacting components of air, land, water and living organisms, including *humans*, within the drainage basin of the St. Lawrence River at or upstream of the point at which the river becomes the international boundary between Canada and the United States (Article 1, Definition (g))

²¹ RWG H report, page 5

²² RWG H report, page 6

Groundwater, as it affects the achievement of the Agreement’s purpose, should be further considered if the Agreement is revised.

Another component of the issue related to defining the geographic scope of the Agreement discussed among the Reviewers is whether or not the Agreement should include the entire St. Lawrence River.²⁰ Currently the Agreement excludes the portion beyond the international boundary at Cornwall, Ontario²³; that is, the portion that is located solely in the Province of Québec. This exclusion reflects provisions of the 1909 Boundary Waters Treaty. However, despite the fact that a portion of the St. Lawrence River is not included in the geographic scope of the Agreement, the Parties are encouraged to promote and expand opportunities for greater collaboration with the Province of Québec, building, for instance, on progress to conserve, protect and enhance the St. Lawrence River Ecosystem under the Canada-Québec Agreement on the St. Lawrence.

Clarifying the ecological and geographic scope of the Agreement could facilitate its ability to keep pace with scientific understandings of new threats and issues, new programs and current tools.²⁴ The Agreement should provide a stronger mandate for activities beyond the open waters and chemical integrity and an emphasis on using the ecosystem approach. The Agreement’s framework, scope and vision are its heart and soul. The purpose provides the foundation for all work carried out to restore and protect the Basin and should be the driver for restoration and protection in the Great Lakes Basin Ecosystem. The Parties should consider clarifying the scope of the Agreement to create stronger linkages between the chemical, physical and biological integrity of the waters and the health of the Great Lakes Ecosystem.²⁵ The Agreement continues to be necessary to manage the Great Lakes as a shared resource and to guide binational and domestic restoration and protection efforts in the Great Lakes Basin Ecosystem.

Synthesis of Key Findings, Results and Recommendations

- 1. The Agreement should serve as the “North Star” for the protection and restoration of the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem, providing a clear, high-level vision that will function as a guide for concerted action.**
- 2. The purpose of the Agreement – to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem – remains sound and relevant and should be fully translated into the Articles and Annexes of the Agreement.**
- 3. The ecological and geographic scope of the Agreement should be clarified to reflect the critical link between chemical, physical and biological integrity and the health of the Great Lakes Basin Ecosystem.**
- 4. In clarifying the ecological and geographic scope of the Agreement, groundwater, to the extent that it affects the purpose of the Agreement, should be further considered.**

²³ See definition of “Great Lakes Basin Ecosystem” in footnote 20

²⁴ RWG A report, page 12

²⁵ RWG A report, page 14

5. **Consideration should be given to promoting and expanding opportunities for greater collaboration with other governments whose territory is not covered by the Agreement, building, for instance, on progress to conserve, protect and enhance the St. Lawrence River Ecosystem under the Canada–Québec Agreement on the St. Lawrence.**

Theme 2: Outdated Agreement Elements

When the Agreement was first signed in 1972, it was designed to address a number of binational issues confronting the Great Lakes at that time, such as the reduction of loadings of phosphorus to Lakes Erie and Ontario. Subsequent changes to the Agreement in 1978, 1983²⁶ and 1987 also responded to pressing issues of the day. Canada and the United States continue to work under provisions designed for realities of 1987 while trying to address the conditions and issues faced in 2007. More recent advances in science, research, management practices and policy, as well as progress in program delivery have not been captured within the Agreement and these issues were noted and supported by the Reviewers. The Agreement contains key terms that require definition, outdated standards, deadlines and concepts, and fails to embrace (through implementation) new approaches, like watershed management planning and the broader consultation that is generally associated with activities in the Great Lakes Basin.²⁷

The Agreement's limitations in addressing newer concepts, approaches or standards have often been imposed not by the Agreement itself, but rather by the Parties choosing not to update the Agreement. In the case of the Agreement's Specific Objectives (Annex 1), for example, the Reviewers pointed out that there is a mechanism to update the Objectives but there has been a failure to implement it through bilateral consultative processes.²⁸

General Discussion

The Agreement needs to be both lasting and flexible. While some sections of the Agreement should provide longevity, others should be adaptable to accommodate changes in our understanding of the Great Lakes Basin Ecosystem, progress on implementation and completion of tasks. The 2007 Review found deadlines long past, entities no longer in existence and outdated standards and concepts.²⁹ The majority of the Specific Objectives³⁰ in the Agreement date back to 1972 and do not reflect the current knowledge base, advancements in analytical methods or modern approaches to developing water quality criteria.³¹ In addition, many Review Working Groups found that a number of the Annexes have not kept pace with scientific understanding, new issues, programs and/or current tools available.³² Newer, more effective management approaches are also being used in the Basin today that are no longer driven by provisions in the Agreement, like watershed management planning, adaptive management, pollution prevention, biodiversity initiatives and airshed management.³³

Between 1972 and the Agreement's last revision in 1987, many Annexes were added to the Agreement to reflect the current conditions and challenges in the Basin.³⁴ The 2007 Review found that certain Annexes

²⁶ In 1983, a Phosphorus Load Reduction Supplement was added to Annex 3 of the 1978 Agreement outlining measures to reduce phosphorus loading throughout the Basin

²⁷ RWG A report, page 64; RWG B report, page 3

²⁸ RWG B report, page 7

²⁹ RWG A report, page 58 (regarding Article 6); RWG B, page 3

³⁰ Annex 1

³¹ RWG B report, page 33

³² RWG A report, page 3; RWG B report, page 3; RWG C report, page 3; RWG D report, pages 3,4; RWG E report, page 5; RWG F report, page 3; RWG G report, pages 3,4; RWG H report, page 3; Governance and Institutions Workshop report, pages 4,5

³³ RWG C report (pages 11,40); RWG B report (pages 45,35); SIWG report (pages 9-14)

³⁴ The current Agreement contains 17 Annexes: the original eight from 1972, four more added in 1978 and another five added in 1987

may no longer be necessary because of similarity in content to other Annexes, and could be better addressed by being folded into a related Annex.³⁵ Other Annexes could be removed because they have run their course, met their objectives³⁶, or have been replaced by programs now in place by the Parties.³⁷ In addition, many of the Annexes reference other Annexes or contain similar provisions, but not in a consistent manner. For the toxics related Annexes in particular, Reviewers indicated that they are not well integrated and should be cross-referenced or consolidated.³⁸

The current structure of the Annexes can lead to confusion and lack of accountability for actions. In response, the Annexes should be thoroughly cross-referenced, their interrelationships clearly identified within each Annex, and integrated so that they work more effectively with each other and the Articles. This will increase the understanding and ease of use of the Agreement and ensure internal consistency and accountability.

More critical to achieving the purpose of the Agreement, the Reviewers have pointed out elements of the Agreement that do not reflect an understanding of current environmental conditions and challenges.³⁹ More appropriate management tools are available in some cases along with a more recent suite of domestic laws and policies.⁴⁰ Reviewers examining the shipping Annexes⁴¹, for instance, indicated that global realities for shipping have far surpassed what is called for in the Agreement and are no longer driven by provisions in the Agreement. There was recognition, however, that the regional focus for the shipping Annexes was relevant in 1987 when designed.⁴²

Similarly, Reviewers suggested that global sources of persistent toxic substance to the Basin should be emphasized with a link between international efforts to reduce these pollutants and management mechanisms within the Great Lakes Basin.⁴³ Though much progress has been made on reducing toxic substances in the Basin, Reviewers stressed that there are significant inputs of airborne pollutants coming from global sources⁴⁴ which should be recognized within the Agreement. The Parties need to work within other international agreements to reduce toxic substances entering the Great Lakes.

While some environmental challenges, like eutrophication, are still similar to those described in the Agreement, the environmental conditions and the science to evaluate such issues have evolved.⁴⁵ The science-based Annexes are vulnerable to becoming outdated quickly without a flexible process or management framework to effectively prioritize, coordinate and make decisions in response to trends and conditions identified through research, monitoring and surveillance.⁴⁶ The Agreement would be more effective if it could respond to the current conditions and understanding of the Lakes while maintaining longevity and relevancy for the coming years.

³⁵ For example, RWG G recommended a single annex for ship source pollution within the Great Lakes. See RWG G report, page 6; also see RWG B report, page 37

³⁶ For example, the Dredging Sub Committee described in Annex 7 (Dredging) completed many of its tasks and has not been active since 1989. See RWG E report, page 4

³⁷ RWG B report, page 28

³⁸ RWG B report, page 3

³⁹ RWG E report, page 4; RWG D report, page 9 ; and RWG F report, pages 8,9

⁴⁰ RWG E report, page 4

⁴¹ Annexes 4, 5, 6, 8 and 9

⁴² RWG G report, page 21

⁴³ RWG B report, page 23

⁴⁴ RWG B report, pages 31,32

⁴⁵ RWG D report, pages 8, 11

⁴⁶ RWG F report, page 6

Based on the findings of the 2007 Review, the Agreement would be more effective if provisions remained timely and appropriate for a longer period. Where provisions do go out of date, there should be a process to respond and update accordingly. There should also be ways to deal with new issues.

The Parties should continue to develop and embrace new approaches as required. Much like the development of the Great Lakes Binational Toxics Strategy in 1997 and the State of the Lakes Ecosystem Conference reporting initiated in 1994, continued cooperative and coordinated approaches are essential to achieving the purpose of the Agreement. A process for developing, expanding and improving upon such approaches could be made part of the Agreement. The Reviewers evaluating the Agreement's provisions on Toxics indicated the possibilities of expanding the current Great Lakes Binational Toxics Strategy structure to identify and prioritize chemical threats for management responses.⁴⁷

Watershed management planning is a prime example of an effective approach that bears only passing reference within the current Agreement. Annex 13 (Pollution from Non-Point Sources) charges the Parties, in conjunction with state and provincial entities, to implement watershed management planning, including pilot projects, to reduce non-point source inputs.⁴⁸ Reviewers examining Annex 13 indicated that, when added in 1987, the Annex served as an important catalyst in the development of watershed planning and non-point source control techniques.⁴⁹ In 2007, however, these types of initiatives are no longer considered demonstration projects or new approaches, having been implemented by the Parties and others, and need to be moved into full scale implementation.⁵⁰ The Agreement should promote this transition and better reflect the extent to which this tool is being used by the Parties and its implementation partners. Consistency in applying watershed management planning across the Basin could be facilitated by setting overall direction for watershed approaches within the Agreement and by connecting binational and national policies and programs with local implementers. Many Reviewers identified that the Agreement is currently one of the only means for providing a binational response and Basin-wide leadership on this issue.⁵¹

The large number of outdated elements pointed out by the Reviewers provides support for revising the Agreement to reflect the environmental conditions of the Great Lakes Basin Ecosystem and the associated science, policies and management approaches for the year 2007.

Synthesis of Key Findings, Results and Recommendations

- 1. The Agreement Articles should be written in such a way as to retain their effectiveness long into the future.**
- 2. The Agreement Annexes should evolve to effect the purpose of the Agreement and reflect current conditions and challenges.**
- 3. The Agreement Annexes should be streamlined, integrated and reduced in number so that they work more effectively with each other and the Articles.**
- 4. The Agreement Annexes should be cross-referenced and their interrelationships clearly identified within each Annex so that implementation can be more effective.**

⁴⁷ RWG B report, page 4

⁴⁸ Annex 13

⁴⁹ RWG D report, page 4

⁵⁰ RWG D report, pages 6, 9, 17 and 40

⁵¹ SIWG report, page 7

5. **The Agreement should include a process for identifying and implementing new binational approaches for addressing issues.**
6. **The Agreement should highlight, emphasize and facilitate watershed planning as an effective approach to achieving the purpose of the Agreement.**
7. **The significance of international sources of pollutants to the Great Lakes Basin Ecosystem should be acknowledged in the Agreement.**

Theme 3: Pressing Issues and Emerging Threats

There is a need for a process within the Agreement to explicitly address pressing and emerging threats and issues on a more timely basis.⁵² While the Agreement does not necessarily limit the options of the Parties to address new pressing issues or emerging threats to the Great Lakes, the Agreement is not currently serving as an effective driver for addressing them.

General Discussion

The Agreement has not been updated to fast track critical issues⁵³, potentially leading to a focus on past problems and negatively skewing research and monitoring activities in the Great Lakes. The 2007 Review identified examples in the Agreement's Annexes and Articles where revisions – both specific and general – are needed to address the pressing and emerging threats affecting the environmental conditions the Great Lakes Basin Ecosystem. Three of the most notable and **pressing issues** identified were the impacts of urbanization, climate change and invasive species.

Urbanization was found to be a key issue not currently addressed by the Agreement.⁵⁴ Growth and urban expansion in the Great Lakes Basin has brought massive increases in land development and corresponding changes to land use patterns.⁵⁵ Stressors from urbanization exhibit both proximate effects in nearshore areas as well as lake-wide effects – for example, impacts include elevated levels of pathogens and harmful pollutants; untreated sewage from combined sewer overflows and undersized treatment systems; increased water temperatures; contaminated groundwater; increases in anaerobic conditions; fragmentation of habitat and loss of biodiversity; waterborne disease outbreaks; and public concerns about the safety and quality of drinking water.⁵⁶

The Reviewers also identified the impacts of **climate change** as a key issue affecting the Basin that is not currently addressed⁵⁷ by the Agreement. Many Great Lakes Basin climate change scientists have determined that the regional climate is already changing.⁵⁸ Moreover, climate change has the potential to have profoundly adverse impacts on the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem by affecting water supply, water quality, pollutant loadings, natural ecosystems and biodiversity, human health and beneficial uses.^{59,60} The Reviewers emphasized that

⁵² RWG A report, page 81, in reference to Overarching Question 4

⁵³ RWG D report, page 45, in reference to Overarching Question 4

⁵⁴ RWG C report, page 29

⁵⁵ Great Lakes Commission, Linking Brownfields Redevelopment and Greenfields Protection for Sustainable Development in the Great Lakes. (2001) (as referenced in the SIWG report, Annexes page A-20)

⁵⁶ SIWG report, pages 5, 6

⁵⁷ The SIWG noted possible vague and indirect links to climate change in Article III, General Objectives (related to “heat”), Annex I (related to “temperature”) and Annex 11 (related to “research provisions”); (SIWG report, Annexes, pages C-36,C-37)

⁵⁸ SIWG report, pages 11, 12

⁵⁹ SIWG report, pages 11, 12;

⁶⁰ Beneficial uses: “The ability of living organisms to use the Great Lakes Basin Ecosystem without adverse consequence” (includes the 14 uses identified in Annex 2)

including a focus on the impacts of climate change explicitly within the Agreement would strengthen binational research and adaptation strategy development in the Great Lakes Basin.⁶¹

Similarly, the Reviewers noted that the Great Lakes are facing environmental and economic damage from the ongoing introductions of **Aquatic Invasive Species (AIS)**, for example, by affecting water quality, contributing to biodiversity loss by degrading habitat, competing with native species and short circuiting food webs; and by increasing costs to industry, municipal and recreational interests.⁶² The Reviewers pointed out that the Agreement does not currently address AIS as a stand-alone issue⁶³ and recommended that since strong binational attention and coordination is critical for achieving any progress to control existing invasive species and prevent new invaders,⁶⁴ the GLWQA could assume this organizing role, if revised.

The 2007 Review also highlighted the importance of **nearshore** areas, both aquatic and terrestrial, as the most diverse and productive areas of the Great Lakes ecosystem and where many of the pressing issues are exhibiting their impacts. Reviewers noted that the Agreement does not adequately deal with nearshore areas⁶⁵ and further, that the critical issue of the nearshore should be referenced and addressed within the Agreement.⁶⁶ Some Reviewers have pointed out that there is ambiguity regarding the geographic focus of the Annex 2 (RAPs and LaMPs) and in particular, whether LaMPs apply only to open waters or also include the nearshore waters, inland, tributaries and watersheds.⁶⁷ Reviewers believe that the Agreement should span not only the open waters, but also include the nearshore.⁶⁸ Similarly, other reviewers noted that Annexes 3 and 13 lack clarity on terms such as “nearshore waters”. Annex 3, specifically, does not adequately address nearshore eutrophication issues that have grown in recent years.⁶⁹ Based on these findings, further attention to nearshore issues is warranted.

Additional **emerging threats** not addressed by the Agreement were also raised by the Reviewers. Chemicals of concern not currently listed in the Agreement (e.g., pharmaceuticals, flame retardants, personal care products) could benefit from targeted action via the Agreement.⁷⁰ For example, while Reviewers found that Annex 12 (Persistent Toxic Substances) was relevant as far as it addresses persistent toxic substances, there are concerns that non-persistent but continuously-available substances, such as some pharmaceuticals and other potential endocrine disrupting compounds, may not be adequately covered.⁷¹

While recognizing that the Great Lakes cage aquaculture industry is of a scale and dispersion that does not appear to currently be causing significant effects other than localized waste deposits under and adjacent to cage aquaculture facilities, some Reviewers recommended that this emerging issue be addressed by the Agreement (especially in relation to phosphorus loadings).⁷²

The Reviewers noted that the Agreement has not evolved to address these new problems that arise, and that language should be added to indicate that Agreement objectives will evolve with new science,

⁶¹ SIWG report, page 12

⁶² SIWG report, page 14

⁶³ SIWG report, page 15

⁶⁴ SIWG report, page 15

⁶⁵ RWG D report, pages 15, 36

⁶⁶ RWG F report, page 9; SIWG Report, page 6; RWG C report, page 17

⁶⁷ RWG C report, page 6

⁶⁸ SIWG report, page 3

⁶⁹ RWG D report, page 39

⁷⁰ RWG B report, page 46; RWG H report, page 10

⁷¹ RWG B report, page 3, in reference to Annexes 12 and 15

⁷² SIWG report, pages 17-19

technology and discoveries.⁷³ The scope of the Annexes has not kept pace with scientific understanding of threats to chemical, biological and physical integrity of the lakes. The environmental challenges contemplated in some of the Annexes have changed.⁷⁴ Further, the Reviewers recognized the importance of including specific lists of monitoring and research needs to keep sustained commitment and attention focused on particular needs and concluded that a process is needed to ensure that emerging water quality issues receive appropriate attention.⁷⁵

In the same vein, the Reviewers found that the current governance and institutional framework is neither receptive nor flexible enough to address these changing priorities and emerging issues on a timely basis.⁷⁶ As new threats to the waters of the Great Lakes Basin Ecosystem arise, the Parties seem unable to (a) deal as quickly and effectively with these issues as they impact public health, fisheries and other forms of life and (b) recognize the progress on completing the work on existing programs and reallocate resources accordingly.⁷⁷

The Agreement has not been updated to effectively accommodate a host of contemporary pressing and emerging threats and issues. Still, the Reviewers recognized that threats continue to change and every pressing and emerging threat and issue to the Great Lakes cannot be named or listed in the Agreement. The Agreement needs to be both lasting and flexible and fulfill its role as a driver for action in the Great Lakes. In view of this, the Agreement should include a streamlined process for dealing with pressing, known threats and another process for identifying and addressing emerging threats as they become known and understood, thereby enhancing the Agreement's operation and effectiveness.

Synthesis of Key Findings, Results and Recommendations

- 1. Consideration should be given to developing new annexes to address pressing issues, or incorporating them specifically into the Agreement, as appropriate. The Agreement should include a streamlined process to address pressing issues that currently exist including the impacts of urbanization, climate change and aquatic invasive species.**
- 2. The Agreement should include a streamlined process for identifying and addressing emerging threats that may impact the Great Lakes in the future, on a more timely basis.**

Theme 4: Agreement Accountability and Implementation

Some of the key elements that ensure the successful implementation of an agreement or program, be it environmental or otherwise, include: clarity of its vision, goals and outcomes; inclusion of the implementation partners; adequately resourced activities; and regular reporting in order to gauge success and to highlight and recommend changes to improve implementation. A strong accountability framework provides an important feedback mechanism and is critical for the success of any agreement or program. With respect to the Agreement, the Parties have also heard from the IJC and others that an accountability framework that is clear, strong and workable is central to achieving the Agreement's objectives.⁷⁸

⁷³ RWG A report, page 36

⁷⁴ RWG C report, page 3

⁷⁵ RWG F report, page 8

⁷⁶ Governance and Institutions Workshop report, page 8

⁷⁷ Governance and Institutions Workshop report, page 10

⁷⁸ International Joint Commission, Advice to Governments on their Review of the Great Lakes Water Quality Agreement (August 2006)

General Discussion

Clarify Governance

The 2007 Review has highlighted that, if the Parties decide to revise the Agreement, governance and accountability mechanisms are critical and need to be carefully considered and addressed as the Parties move forward. The Reviewers found that the Agreement lacks a clear and strong management and implementation framework which has hindered implementation for some binational activities and that many actions specified within the Agreement may not be implemented as described, or at all.⁷⁹ For example, the Reviewers who evaluated the toxics-related Annexes noted that the Agreement identifies no responsible entity to oversee and coordinate these Annexes.⁸⁰

In addition, there is not a mechanism for the implementation of the biennial consultation process that is called for in Annex 1 (Specific Objectives) and Article IV (Specific Objectives).⁸¹ Annex 16 (Groundwater) is another example where it is unclear which entities are responsible for its implementation which hinders accountability.⁸² The Reviewers concluded that these issues need to be addressed for the Agreement to be effectively implemented.⁸³ In general, the Agreement falls short on clearly identifying who does what, with whom and within what specified amount of time.

The Reviewers also noted that there needs to be a clear recognition that the governance and institutional framework under the Agreement must provide for effective coordination and collaboration with other orders of government engaged in the implementation of the Agreement (e.g., States and Provinces, cities and municipalities, Aboriginal Peoples and Tribes).⁸⁴ The Reviewers recommended that future revisions to the Agreement should preserve the “binational” nature of the governance and institutions related to the Agreement. This approach would recognize that Canada and the United States remain sovereign in the development and implementation of their respective programs, while emphasizing that the success of the Agreement demands that activities be undertaken in a collaborative and coordinated manner.⁸⁵

The 2007 Review found that the Agreement should remain the primary mechanism for binational cooperation on protecting the Great Lakes Basin Ecosystem, and at the same time, strive to be complementary and mutually reinforcing of other important agreements that are also essential to the protection of the Great Lakes Basin Ecosystem. In considering whether to reference other agreements within the Agreement, attention should be paid to ensuring consistency, avoiding overlap or duplication, or impinging on the implementation of other international or domestic agreements.⁸⁶

⁷⁹ RWG A report, page 63 ; RWG B report, page 12 ; RWG D report, page 13

⁸⁰ RWG B report, page 4

⁸¹ RWG B report, pages 14,15

⁸² RWG H report, page 4

⁸³ RWG B report, page 4

⁸⁴ RWG A report, page 64

⁸⁵ Governance and Institution Workshop report, page 3

⁸⁶ RWG A report, pages 64, 82

Increase Accountability

Most of the Reviewers identified a need for increased accountability, consistent and appropriate funding by the Parties and others, and a greater emphasis on implementation of the Agreement.⁸⁷ The implementation of the Agreement is complicated. There are a large number implementation partners, such as government agencies and private institutions, with no formal commitments under the Agreement. An expansion of institutions and organizations in the Great Lakes Basin with an interest in the Agreement increases the complexity of building relationships and makes coordination and effective engagement more challenging.⁸⁸ The Reviewers found that more effective and perhaps formal collaboration and improved relationships are needed.⁸⁹

In conjunction, the Reviewers found that including specific results, responsible entities and timelines to the Annexes would also add a high level of accountability to the Agreement.⁹⁰ Some Reviewers pointed out that mandated prescriptive requirements in the Agreement would quickly go out of date and that workplans developed outside the Agreement to implement Agreement goals would be more dynamic, easily updated and more responsive to changing conditions, needs, pressing issues, etc.⁹¹ Consequently, the implementation of the Agreement needs to be flexible.

Streamline Review

Although the Agreement does contain provisions for the Parties to conduct a periodic review of the operation and effectiveness of the Agreement⁹², the Reviewers were in favour of a more streamlined process that would allow for timely reviews and updates to parts of the Agreement, instead of a once every six-year wholesale review that can be resource and labour intensive.⁹³ These more timely reviews and updates would allow for changes to both binational and domestic programs that implement provisions of the Agreement, which would help the Parties meet their goals and objectives.

Consistent Reporting

The Great Lakes stakeholder community looks to various reporting requirements of the Parties and of the IJC as the most important accountability mechanisms regarding the Parties implementation of the Agreement. Many members of the Great Lakes community have pointed out that accountability mechanisms, such as plans for action, management plans and reporting, are lacking or non-existent within the Agreement as a whole and in specific Annexes. The Reviewers also highlighted that it is increasingly difficult to both focus on implementation and deliver the large number of reporting requirements within the Agreement.⁹⁴ Additionally, reporting has been inconsistent and in some cases has not occurred as outlined.⁹⁵ For example, no reports on Annex 16 have been made to the IJC, while other Annexes have no reporting requirement at all for deliverables on a regular basis. Other venues (State of the Lakes Ecosystem Conference, Great Lakes Binational Toxics Strategy, Lakewide Management Plans, etc) were found to address some of the required reporting elements in the Agreement, but not all Agreement reporting requirements have been met. The 2007 Review found that a revised Agreement should look to streamline reporting requirements so that they are less burdensome and provide an easier method of accountability to the Great Lakes Community.

⁸⁷ RWG A report, page 6; RWG B report, page 11; RWG C report, page 3; RWG D report, page 13; RWG E report, page 5; RWG F report, page 4; RWG H report, page 11; SIWG report, page 4; and Governance and Institutions Workshop report, page 11.

⁸⁸ Governance and Institution Workshop report, page 2

⁸⁹ Governance and Institutions Workshop report, pages 13, 23; RWG A, page 82

⁹⁰ Governance and Institutions Workshop report, pages 3, 10; RWG A, page 82

⁹¹ RWG B report, page 7

⁹² Article X (Consultation and Review)

⁹³ RWG A, page 62

⁹⁴ RWG C report, page 4

⁹⁵ Examples are provided in the RWG D report, page 22 and RWG C report, page 4

Synthesis of Key Findings, Results and Recommendations

1. The Agreement's governance structure is critical to its success and should be carefully considered and addressed as the Parties move forward.
2. The Parties should consider how the Agreement interacts with outside entities, and international or intergovernmental agreements.
3. The Annexes should include specific results and timelines to achieve the purpose and goals in the Agreement; and the Parties should clearly designate responsible entities.
4. The Agreement should include provisions for regular Annex-by-Annex review and reporting on progress, noting that there are some existing reporting mechanisms: a standard, streamlined reporting framework should apply across the Annexes; the Agreement Annexes should be reviewed individually and updated according to a schedule to be determined.

Theme 5: Including Other Orders of Government and the Public

When the Agreement was written in 1972, the role of other orders of government and the public in the implementation of the Agreement was not specified. It is widely recognized, however, that the success of the Agreement to date can be directly attributed to the Parties working together with other orders of government (states, province, municipalities and local authorities, Tribes and First Nations) and the public. While the formal responsibility for implementing the Agreement clearly lies with the Parties, both Parties rely on implementation partners to deliver many of the commitments under the Agreement.

Government agencies, non-governmental organizations and the public in both nations have contributed significantly to the restoration of the Great Lakes and their watersheds to protect them from pollution, habitat destruction and loss of native species. Together, all orders of government have invested billions of dollars and assigned thousands of people to the task of implementing provisions of the Agreement. Businesses, industry and the agricultural sector have responded likewise, committing significant amounts of resources to change products and production methods to reduce their impacts, and to restore degraded areas. The IJC, community groups, non-governmental organizations and the public have also played a significant role in restoring and maintaining the Great Lakes Basin Ecosystem.

General Discussion

Reviewers found that because the current governance structure of the Agreement is not well known or clearly understood, entities beyond the Parties have found it challenging to fully participate and be included in decision-making.⁹⁶ It has also become apparent to many involved in the 2007 Review that the community that had coalesced around the existing Agreement has become fragmented.⁹⁷ Indeed, many of the Reviewers identified that the Articles and Annexes of the Agreement do not identify specific mechanisms for the engagement of other orders of government nor do they specify how the public should be involved in the implementation of the Agreement.⁹⁸

⁹⁶ Governance & Institutions Workshop report, page 13

⁹⁷ Governance & Institutions Workshop report, page 2

⁹⁸ RWG E report, page 26

The Reviewers identified a number of places in the Agreement where the recognition of these relationships between the Parties, other orders of government and the public would significantly strengthen the Agreement's implementation. The Reviewers noted that to be effective, the Agreement should establish mechanisms for identification and implementation of identified goals and objectives, including programs where states, province, Tribes, First Nations or local governments have the lead.⁹⁹ They also noted that better coordination and engagement could help align and focus these efforts on issues of common concern.¹⁰⁰

Lakewide Management Plans and RAPs are excellent examples from the Agreement where the involvement of all orders of government and the public has been instrumental in their successes.¹⁰¹ These partners have also been closely engaged in other successful actions in Great Lakes such as the reductions in phosphorus and other toxics loadings, the delisting of Areas of Concern and the protection of vital habitats. However, there are additional areas the Reviewers believe are best addressed by the Parties working together with multiple orders of governments and the public. These include watershed planning and management efforts which are largely the responsibility of various state, provincial and local orders of government. Similarly, addressing groundwater requires collaboration with many stakeholders.¹⁰²

State and provincial governments are specifically mentioned within the Agreement as interested or responsible entities. Some Reviewers have noted that the responsibilities of these entities are more defined in some areas than in others, and that the lack of clearly-delineated responsibilities can result in incompatible policies between jurisdictions. An example of this is state-wide no-discharge zones for sewage from ships, despite federally-mandated and approved marine sanitation devices aboard ships that meet or exceed state discharge standards.¹⁰³ Additionally, the Agreement is silent on the role of municipalities, Tribes and First Nations despite their vital role in implementation.

Whereas some other international environmental agreements such as the North American Agreement on Environmental Cooperation and the United States–Canada Air Quality Agreement explicitly address public consultation, some Reviewers were of the view that the Great Lakes Water Quality Agreement does not clearly reflect a current trend towards broader consultations on environmental issues.¹⁰⁴ Public consultation under the Agreement is explicitly required for actions undertaken for RAPs and LaMPs.¹⁰⁵ Furthermore, although the Agreement¹⁰⁶ also calls for public consultation in the development and adoption of the Specific Objectives, Reviewers noted that this has not occurred.¹⁰⁷

The role of the public under the Agreement, however, has in practice gone well beyond consultation with significant involvement in implementation actions and the successful development of RAPs and LaMPs as a natural outgrowth of the Agreement. What is not defined, however, is the public's role in decision making within the governance structure.

Non-governmental stakeholder groups are also playing an increasingly significant role as advocates for action, advisors to governments on Agreement programs, reviewers of government plans and progress, funding and implementation partners, and researchers of issues affecting the Lakes. They also act as an

⁹⁹ SIWG report, page 8 (footnote)

¹⁰⁰ RWG F report, page 7

¹⁰¹ RWG C report, page 20

¹⁰² RWG H report, page 14

¹⁰³ RWG G report, page 5

¹⁰⁴ RWG A report, page 5 (in reference to Article X)

¹⁰⁵ Annex 2, section 2(e)

¹⁰⁶ Specific Objectives Supplement to Annex 1, section 2(a)

¹⁰⁷ RWG B report, page 33

accountability mechanism to ensure that governments are effectively implementing the Agreement. Many Reviewers agreed that a revised Agreement should contain recognition or acknowledgement of the importance of these groups in the ongoing implementation of Agreement.

As discussed in Theme 4, the Reviewers also recognized that the expansion of institutions and organizations with an interest in the Agreement and the Great Lakes ecosystem increases the complexity of building relationships and makes coordination of effective engagement more challenging.¹⁰⁸ Further clarity regarding roles (beyond those of the Parties) should be included in the Articles, with specificity in the Annexes or in associated workplans developed to implement the Annexes. While it is acknowledged that any revision of the Agreement would be undertaken by the Parties, a mechanism should be created so that ideas, advice and concerns of the Parties' implementation partners can be considered in any proposed revisions to the Agreement.¹⁰⁹

Finally, the Reviewers believe that greater progress is required in the areas of reporting, data sharing, information management and communications to equip the Parties, other governments and organizations and the public to effectively understand and utilize information related to Great Lakes Basin Ecosystem for decision making and implementation.¹¹⁰ In particular, the Reviewers have pointed out the need to present information and data in formats that are accessible and useful to various constituencies, including the public, for informing decision-making.¹¹¹ A revised Agreement that recognizes the importance of accessible information for decision making would foster greater engagement from other governments and the public.

Synthesis of Key Findings, Results and Recommendations

1. **The Agreement should recognize the critical role and essential participation of other orders of government, including: (1) Tribes and First Nations, (2) states and province, and (3) local governments and authorities. These entities should be included in the revision and implementation of the Agreement.**
2. **The Agreement should recognize the critical role and essential participation of the public in the successful implementation of the Agreement by the Parties and other orders of government. The public should be consulted in any revision of the Agreement.**
3. **The Agreement should recognize the importance of accessible information for decision making to foster greater involvement of other orders of government, non-government organizations and the public.**

¹⁰⁸ Governance and Institutions Workshop report, page 7

¹⁰⁹ Governance and Institutions Workshop report, page 8

¹¹⁰ RWG F report, page 10

¹¹¹ RWG F report, pages 10, 11

Appendix A

Executive Summaries of Review Working Group Reports and The Governance and Institutions Workshop Report

Review Working Group A – Scope & Purpose; Goals and Objectives; Function

Executive Summary

This report summarizes the work conducted by Review Workgroup A, which was tasked with reviewing the scope and purpose, goals and objectives (**Articles I-III**); standards regulatory requirements and research (**Article V**); programs and other measures (**Article VI**); and management and administrative elements (**Articles X-XV**), as provided under the Canada – U.S. Great Lakes Water Quality Agreement. The above noted Articles were reviewed against five evaluation elements: clarity, relevancy, achieving results, management framework and accountability.

This report includes the following:

- Details on the Workgroup's discussions and findings regarding the application of the five review elements against the ten Articles under its purview;
- Recommendations, where the Workgroup generally agreed, for possible changes or additions to Articles and/or the Agreement;
- The Workgroup's responses to the five overarching questions; and
- Appendices that include: considerations for potential changes to the definitions in Article I of the Agreement; a Workgroup participant's suggestions for measures to increase or introduce enforcement and public participation in implementing the Agreement; details on Workgroup meetings and membership; and references and additional resources.

RECOMMENDATIONS AND KEY FINDINGS

Workgroup members identified the following recommendations and key findings about which they could *generally* agree. This list is meant to be representative and not exhaustive; full details are included in the body of the report.

Definitions, Scope and Purpose, and Objectives (Articles I-III)

The Workgroup generally agreed that *Article I (Definitions)* is clear and relevant. For the Article to be more clear and relevant, Workgroup members recommend the amendments to the following existing definitions: Boundary Waters of the Great Lakes System; Compatible Regulations; General Objectives; Great Lakes Basin Ecosystem; Great Lakes System; Hazardous Polluting Substances; Monitoring; Specific Objectives; Surveillance; Toxic Substance; Research; State and Provincial Governments; and, Tributary waters of the Great Lakes System. Workgroup members also recommended that to add clarity and make the Agreement more relevant, the following additional terms be included in an updated Agreement: Beneficial Uses; Groundwater; Contamination; Indicators; Chemical, Biological and Physical Integrity; Virtual Elimination; and, Implementation.

Appendix A (Considerations for Potential Changes to Definitions in Article 1 of the Great Lakes Water Quality Agreement) includes definitions used by the IJC's Science Advisory Board and Water Quality Boards that could serve as a starting point for future revisions to the Article.

In the Workgroups review of *Article II (Purpose)*, various perspectives were put forward on the clarity and purpose of the existing Agreement. Some members felt the current wording of the purpose statement of the Agreement, "to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem" is clear and adequately communicates the purpose of the

Agreement. However, other members felt the current language does not clearly describe the focus and intent of the purpose statement and how this purpose will be achieved. The Workgroup generally agreed that there remains a need for an international agreement for the Great Lakes; however, a continuum of opinions emerged regarding the focus and purpose of a revised agreement: most participants recommended that a revised Agreement use an ecosystem approach to protect water quality; one participant noted that a revised Agreement should have a narrow scope and focus on water quality only (no ecosystem approach); one participant recommended a revised Agreement should focus on the ecological integrity of the entire Great Lakes Basin aquatic ecosystem; while another participant recommended a larger scope for the Agreement to focus on the ecological integrity of the entire Great Lakes Basin ecosystem. The Workgroup did not reach consensus on these issues.

The Workgroup generally agreed that while the Agreement does commit the Parties to develop and implement programs and other measures to fulfill the purpose of the Agreement and to meet its objectives, and while progress has been made, the Agreement has not yet achieved the desired effect of restoring and maintaining the chemical, physical, and biological integrity of the waters of the Great Lakes Basin ecosystem. Specifically, Workgroup members noted that implementation has been hindered by a lack of dedicated resources sufficient for full implementation of the provisions of the Agreement. For example, Workgroup members cited: the lack of progress in delisting Areas of Concern (e.g. completing the remediation of contaminated sediment and improvements to waste water infrastructure); continued fish consumption advisories; an array of emerging issues not being currently addressed (such as invasive species and the growing threat to the Great Lakes from the array of emerging problematic substances including pharmaceutical and personal care products). The Workgroup also generally agreed that it is difficult to measure the overall progress of the Agreement.

The Workgroup generally agreed that *Article III (General Objectives)* is clear; it is not outdated, and remains relevant as written. The Workgroup generally agreed that the Article does contain some terms/concepts that need to be updated to reflect their current interpretation (e.g. the references to heat and groundwater). As well, Workgroup members generally agreed and recommended that the Article could be made more current through the addition of several new objectives to address critical and omitted issues such as: the cumulative or compound effects of combinations of harmful items such as toxic chemicals, materials, and heat; the threat of aquatic invasive species; the growing threat to the Great Lakes from the array of emerging problematic substances including pharmaceutical and personal care products; and, the negative impacts resulting from human induced climate change. Also, the Workgroup generally agreed that the Agreement is not designed to evolve as new problems arise and that language should be added to indicate that Agreement objectives will evolve with new science, technology and discoveries.

Standards, Research and Regulatory Requirements (Article V)

The Workgroup generally agreed that *Article V (Standards, Research and Regulatory Requirements)* is clear, relevant and is an example of an Article that demonstrates a strong specific relationship between the Agreement and its Annexes. Many mechanisms such as Lakewide Management Plans (LaMPs) have been developed under the Agreement; however, the Workgroup noted that whether these mechanisms are functioning well is a separate question that would require further discussion. Some of the Workgroup members were of the view that: dedicated resources have been insufficient for full implementation of Article V; there are clear indicators to determine progress for the first section of the Article, but not for the orientation of research programs and priorities and mechanisms for international cooperation (the second section of the Article). Also, many Workgroup members recommended that accountability mechanisms should be strengthened to ensure the Parties are meeting their stated commitments. Last, the

Workgroup generally agreed that there needs to be better coordination between what the IJC needs to carry out its role and responsibilities and the information that the Parties provide.

Programs and Other Measures (Article VI)

The Workgroup generally agreed the text of **Article VI (Programs and Other Measures)** is clear and that each of the sections (a-q) remains relevant and necessary. Workgroup members made the following suggestions to clearly identify program / environmental outcomes in the Article: text should be added indicating that pollution could come from municipal, private and non-point sources; the regulatory aspect of Section 1(a) could be added to Section 1(q), and to improve 1(q), text could be added to include pathogens and other chemical contaminants. Similarly, text should be added to Subsection 1(a) (iii) to include domestic septic systems, because septic system failures are a significant problem contributing to eutrophication and bacterial problems.

Workgroup members recommended that the Article could be streamlined and identified invasive species as a challenge that is not currently addressed in the Article and Agreement as a whole. Overall, the Workgroup generally agreed that the entire Article contains some terms and many dates that are now outdated, but the scope remains comprehensive and therefore would not need to be changed significantly.

Management and Administrative Elements (Articles X-XV)

For this group of Articles, the majority of significant issues were found *within Article X (Consultation and Review)* and *Article XI (Implementation)*.

In its review of **Article X (Consultation and Review)**, members of the Workgroup expressed the view that the Agreement does not reflect the current status of broader consultation and does not include sufficient mechanisms to allow a large number of interested parties to participate and adequately commit to the process (e.g. local and municipal levels of government, Aboriginal Peoples and Tribes and the public). The Workgroup generally considered Article X to be clear on general aspects, short on specific forms of implementation, and unclear on what organizations need to be consulted. Some members felt the Agreement needs to formally define a public/citizen engagement mechanism (e.g. citizen petition process or Citizen Advisory Committee). Some members of the Workgroup recommended that an additional Article be added on public consultation and participation which would explain the requirements for public participation and notification in one location within the Agreement. The Workgroup generally agreed that there is a need for increased coordination between other agreements that are not under the Agreement or the Binational Executive Committee, and that have a similar interest with the Agreement (e.g. St. Lawrence Plan).

Members of the Workgroup pointed out that **Article XI (Implementation)** does not contain provisions to hold the Parties accountable or to address the consequences for either Party if it fails to carry out the Agreement or has insufficient funds for implementation. Workgroup members expressed the view that the management and coordination approaches of the Agreement could benefit from: 1) provisions to strengthen accountability; 2) benchmarks for measuring progress; and 3) an implementation schedule that facilitates binational priority setting to address issues of greatest importance to the restoration and protection of the basin ecosystem. Members also noted the need for an explicit objective process (3rd Party or via the IJC) to uncover program deficiencies against performance (e.g. a Gaps Analysis) in order to assist in determining disparities between the achievement of the goals set out in the Agreement and the implementation of Governments' programs.

The Workgroup generally considered **Articles XII (Existing Rights & Obligations), XIII (Amendment), XIV (Entry and Termination)** and **XV (Supersession)** to be clear and relevant and generally operating effectively.

Review Working Group B – Toxics

Executive Summary

The Great Lakes Water Quality Agreement Review Toxics Work Group (hereunder “workgroup”) held conference calls on April 28, May 8, May 26, June 5, 19 and 30, 2006 to review Article 4 and Annex 1; July 24, 2006 to review Annex 10, and August 4 and 14, 2006 to review Annex 12, and September 11 to review Annex 15. The workgroup also held an in-person meeting on August 22, 2006, in Ann Arbor to finish reviews of Annex 10 and 12, and commence a review of Annex 15. Call and meeting notes are attached in Appendix 1 of this report. There have been approximately 20 attendees at each meeting or conference call from the United States and Canada.

Some general findings have emerged from the workgroup review of Article 4 and Annex 1, 10, 12 and 15 (hereunder the “Annexes”), which are reviewed below by major review element.

With respect to clarity, the workgroup has identified a number of key terms that require definition or further clarification. In addition, many sections of the Agreement are outdated and refer to deadlines long past and/or entities no longer in existence. Also, there is the general sense that the variety of chemical related Annexes are not well integrated together, but rather read as independent and separate pieces of a somewhat confusing puzzle. The workgroup feels that this should be rectified, either by further explanation of the purposes of each Annex, or by appropriate cross-referencing, or perhaps by some limited consolidation, where warranted.

With respect to relevancy, the workgroup generally feels that Article 4 and Annexes 1, 12 and 15 are still very relevant to the current needs of the Great Lakes Basin, whereas the specific need for Annex 10, which is to identify hazardous polluting substances around the basin that could potentially discharge to the basin, may no longer exist, and could perhaps be folded into one of the Articles or Annexes 4 and 8. Annex 15 is felt to be very robust and in need of only minor updating, whereas Annex 1 may require significant updates, particularly to the procedures for biennial consultation and to the methodologies for developing new water quality objectives (as well as other options detailed below in section 5). Annex 12 is relevant as far as it goes in addressing persistent toxic substances; however, there are concerns that non persistent but continuously available substances, such as some pharmaceuticals and other potential endocrine disrupting compounds, may not be adequately addressed by the Agreement.

Workgroup members recognized that the Agreement raises some challenging management issues such as multi-media transport, multiple exposure routes and impacts of complex chemical mixtures. Many members felt that revision of the Agreement would allow this forward-thinking and challenge-setting to be renewed and prevent the Agreement from becoming obsolete. All workgroup members felt that the importance of international sources should be emphasized in a revised Agreement, and should link to international efforts to reduce toxic pollutants from outside the basin and the two countries.

With respect to achieving results, there are significant points of disagreement within the group as to how effective the Parties have been in implementing the Agreement. Some workgroup members feel that much progress has been made in the Great Lakes Basin with regard to addressing toxic pollutants, both through the advent of regulatory programs such as the Great Lakes Initiative (GLI), and through voluntary programs such as the GLBTS. Other workgroup members, while acknowledging that progress has been made, are concerned that the level of resources dedicated to key programs, such as environmental monitoring, chemical screening, and human health research, have diminished significantly

in recent years, making implementation of the Agreement far more difficult. There are still fish advisories in the Great Lakes Basin.

With respect to a Management Framework for the Annexes, most workgroup members felt that this was a significant weakness, perhaps warranting the adoption of a “governance model” to oversee the activities of the various Annexes. With respect to Annex 1, it was recommended that the biennial consultation process be co-located with the biennial State of the Lakes Ecosystem Conference (SOLEC), and with respect to Annex 12, some workgroup members recommended that the GLBTS, or a similar program, be codified as the appropriate location for the overall management of the implementation of Annex 12 activities.

An overarching management issue was identified relating to the need to assess and characterize potential threats from newly-identified chemicals. The various list-making activities under Annexes 1 and 10 have not been maintained and are not well structured to fulfill this purpose. Scientific advances in computational screening of chemicals as well as monitoring and analytical capabilities accomplish some of what the Early Warning System section of Annex 12 calls for, but a coordination system that ties everything together in a Great Lakes context is lacking. Some workgroup members recommended the Agreement be revised to include a more robust and comprehensive framework for identifying and prioritizing among chemical threats. The GLBTS, or a similar program, would be a logical candidate for guiding this activity and would allow efficient coordination of prioritization and response actions.

Finally, consistent with the review on GLWQA reporting conducted by the IJC in 2001-2, the reporting requirements stipulated in the Annexes are not followed to the letter (i.e., there is no Annex 1 or Annex 12 report, per se), although there is significant reporting that takes place through the GLBTS Annual Report, the IADN report, the LaMP reports, etc. Options for rectifying this, discussed in detail below, include a gaps analysis of current reporting, providing “roadmaps” via the internet to relevant reports, and providing a roll-up report, perhaps as part of the GLBTS Annual Report, for all chemical related activities under the GLWQA.

Review Working Group C – RAPs and LaMPs

Executive Summary

The Working Group reviewed Annex 2 using the specific review elements. Annex 2 is fairly clear, although there is some ambiguity regarding some of its provisions. The Annex has led to some progress, although that progress has been slow. The ambiguity, however, is not the reason. The prime reason for the failure to make more rapid progress in achieving the goals in this Annex is the lack of and inconsistency of resources to conduct the work.

A primary point of ambiguity is related to whether the Annex focus is on the open waters only or on nearshore, inland, tributaries, and watersheds. This leads to questions about whether it is the intent that the Agreement/Annex 2 take an ecosystem approach or simply a water quality approach; whether the Annex focuses on the open waters only or on nearshore, inland, tributaries, and watersheds; and whether the Remedial Action Plans and Lakewide Management Plans are to be prepared and implemented in relation to Critical Pollutants using an ecosystem approach to the multi-media sources, pathways and distribution of this narrow group of contaminants, or are they for general ecosystem management and stewardship within the Great Lakes Basin.

Annex 2 has driven action in proportion to the Parties' commitment. Some of the environmental challenges contemplated and the concepts addressed in Annex 2 when the Annex was written have changed, making it outdated. In some areas, the scope of the Annex has not kept pace and seems focused on past problems/pollutants for BUIs that may have limited the ability to address emerging issues. U.S. and Canadian, federal laws, as well as state and provincial laws that exist are related to the Annex, and, in some cases, go beyond the requirements of the Annex. However, there are some goals that have not been achieved or addressed by current laws in both countries.

Accountability for action is not strong in the Annex. In some cases, silence in the Annex has produced inaction. Some people feel that there needs to be more detail to ensure the Annex addresses issues more effectively, while others feel that there is sufficient flexibility for the Parties to address issues that they believe need to be addressed.

There are a number of critical issues not addressed in the Annex including: emerging chemicals; TMDLs; mass balances; inclusion of non-AOC nearshore contamination concerns; no basis for remediation/recovery zones for AOCs; no mention of sustainability; no mention of LaMP ecosystem goals and milestones; no adaptive management; no precautionary principle. There is a concern that the Annex sometimes may be construed too narrowly, i.e., the LaMP's sole focus on chemical contamination in open waters.

Where the LaMPs and RAPs programs are effective is where all levels of government are committed to progress. Progress is dependent upon this and continued funding. Without the commitment of the Parties and other levels of government, there is not much inherent in Annex 2 that would drive action forward. The LaMPs have evolved beyond the specific language in the Annex and have been developed using an ecosystem and/or watershed-based approach.

Annex 2 talks about RAPs and LaMPs as having stages with a discrete endpoint. RAPs are generally following the process outlined in the Annex. Three RAPS have been delisted and there has been progress in addressing contamination in others. However, LaMPs are a longer-term tool under which other programs have developed.

Beneficial Use Impairments are poorly defined in the Annex and do not always reflect current problems in the AOCs and open lake. The BUIs are poorly defined and do not adequately address “injury to health and property” (referred to in the preamble of the Agreement on page 1) on both sides of the border.

These adaptations bring into question the necessity of the requirement for biennial reporting on LaMPs that use significant resources (time and money) of the Parties and can take resources away from implementation. Additionally, reporting on progress of the AOCs is supposed to occur every two years, but there has been inconsistent reporting. There is a time lag on RAP stage reporting, resulting in reporting gaps.

These comments and findings led the group to identify a series of recommendations related to the use of guidance documents, watershed management and the LaMPs, including adaptive management as a guiding principle, stressing human health factors, Beneficial Use Impairments, LaMP and RAP reporting, linking LaMPs and RAPs and monitoring and indicators.

Review Working Group D – Phosphorus and Non-Point Source Pollution

Executive summary

The Great Lakes Water Quality Agreement Review Work Group D (hereafter “workgroup”) comprehensively reviewed Annex 3 and Annex 13 by answering the questions posed in the Evaluation Framework. The findings for each Annex has been documented and reported via conference phone call summaries which are found in section 6 of this report. Findings and recommendations emanated from Annex 3 and Annex 13 reviews and were reached by consensus.

Annex 3, which was initially designed to minimize eutrophication problems in the Great Lakes by reducing phosphorus loads from multiple point and non-point sources, provides accountability, reporting, and monitoring for the total phosphorus loads to the Great Lakes. There is one goal for restoration of year-round aerobic conditions in the bottom waters of the Central Basin of Lake Erie that relates primarily to the open waters of the Great Lakes, but this goal does not seem attainable based on present observations that oxygen depletion rates are weakly controlled by phosphorus loads. It was believed aerobic conditions could be restored by successfully reducing total phosphorus loads to Lake Erie below 9600 metric tons, however, loads are below this target and anoxic conditions persist. The total phosphorus load is linked to offshore total phosphorus concentrations. The decline in open lake phosphorus concentrations in all the Lakes during the 1980’s suggested total phosphorus loadings were successfully in control. After, the 1980’s very little model analysis was done on the Great Lakes and with the exception of Lake Erie, total phosphorus load calculations stopped in 1991. The other goals of Annex 3 are dominated by references for substantial reduction of algal biomass in all the Great Lakes, bays and other areas of the Lakes. This is primarily a nearshore issue. While provisions for accountability, reporting, monitoring, and evaluation are provided in Annex 3 for the open water issues, the nearshore monitoring programs are only implied.

The 1999 Annex 3 review concluded that insufficient scientific justification existed for changing the phosphorus control objective and phosphorus load targets. This Review Workgroup recommends that the Parties should consider adding to Annex 3 a nearshore algal surveillance program, revision of the 1970’s models to reflect ecosystem structure and function change (role of invaders) that have occurred in the lakes. These revisions should result in a concerted research, monitoring and integrated modeling effort to quantitatively address nuisance algal conditions, including cladophora, in near-shore areas and nutrient depletion in open waters. The improved models should simulate system-level cause-effect relationships, i.e. the simultaneous low productivity and fish carrying capacity in the open water areas and nuisance algal bloom and mat formations in the nearshore areas of the lake. These models will provide more accurate predictions and if necessary, revised target phosphorus loads could then be developed on a watershed basis to address eutrophication problems in near-shore areas and bays resulting from tributary and wet weather loadings. This will require significant engagement by local governments to formulate local goals, objectives, programs, strategies and measures to address land use and growth impacts. As a result, a closer interface between Annex 3 and Annex 13 may be needed. The Great Lakes monitoring programs of the two countries should focus a larger percentage of monitoring efforts on the nearshore conditions in order to compare with the more traditional open-water conditions.

Annex 13 was formulated to abate and reduce diffuse pollution from non-point sources that negatively impact the Great Lakes ecosystem. Science on the subject was just emerging at the time the Annex was incorporated in the Great Lakes Water Quality Agreement as amended in 1987. Annex 13 was not reviewed in the 1999 review process. Annex 13 lacks substantive goals and objectives to guide efforts towards reducing non-point source loading contributions to the Great Lakes. For instance, there are no

binational criteria for what constitutes the minimum elements of a watershed plan at each scale appropriate for reporting. Moreover, there are no reduction targets, methods or monitoring programs defined to allow the evaluation of abatement and reduction in diffuse pollution. Although this Annex helped to stimulate development of Watershed Management Plans on a localized basis, there is no coordinated watershed tracking system among the various levels of government. Even more, no common definition of watershed Priority Hydrologic Units and no prioritization system exist. The workgroup experts positively agree that land management practices and land use have changed since the agreement was signed by the parties. However, it appears that local governments are typically responsible for designing and implementing land use regulations and controls so there is a disconnect between the entities responsible for implementing the Agreement and the entities with the authority to address land use challenges.

Annex 13 clearly needs to be refurbished. The group recommends a better name and a main objective: « Watershed management to control diffuse pollution ». Wetlands protection, enhancement and restoration merit a separate consideration, but may or may not be included in Annex 13. Clear goals and objectives have to be defined to control diffuse pollution and evaluate progress made through application of watershed management plans. The Parties should also coordinate reliable land use inventories that provide the status of land use abatement activities and how these activities contribute to attaining the goals and objectives to control diffuse pollution in the Great Lakes Basin. Coordination should be provided by the parties and defined in Annex 13 to allow involvement of all levels of governments and organizations to report on the efficiency of diffuse pollution abatement and reduction programs.

Review Working Group E – Sediment Related Issues

Executive Summary

This is the final draft report which encompasses the review period April 28, 2006 – September 25, 2006. The Sediment RWG held conference calls on May 9, May 30, June 13, June 27, July 18, August 1, August 15, August 29 and September 12 to develop a plan to complete their review of Annexes 7, Dredging, and 14, Contaminated Sediments, and to begin the review process pursuant to the five elements. The five elements are: relevancy, clarity, management framework, accountability, and achieving results. Articles 1 (Definitions) and 6 (Programs and other Measures) were also reviewed as they relate to Annexes 7 and 14.

Some time was spent initially in an attempt to balance the membership with regards to representation among government, academia and non-government agencies. Discussions on the elements were carried out with the whole group and then the Sediment RWG decided that it would be more expedient to split the RWG into two Sub Committees, one for each of Annex 7 and Annex 14.

Each Sub Committee held conference calls through August to finalize discussions on the five elements as follow: August 1 (clarity and relevance), August 15 (achieving results) and August 29 (management framework, accountability, and recommendations). A summary of the discussions for each element, by Annex, is included below.

A draft of this Sediment Report was distributed to the full membership for review and later discussed at the full Sediment RWG teleconference on September 12, 2006. On September 25, 2006, a revised final report was circulated to the RWG E and submitted to ARC. Once comments had been incorporated from the RWG E and ARC (ARC Feedback and Guidance to GLWQA Review Working Group Co-Chairs, November 2006), it was again circulated to the full membership on December 5, 2006, and final revisions were made prior to submission of the report to ARC on December 15, 2006.

Annex 7

The Annex 7 objectives are to identify previous and existing practices in both countries related to dredging activities, maintain a register of significant dredging projects undertaken in the Great Lakes and encourage information exchange related to dredging technology and environmental research.

General findings that emerged from the Annex 7 Sub Committee review are provided below by each major element.

Clarity: The Annex was found to be concise and straightforward, providing a clear articulation of its purpose and objectives.

Relevancy: The Annex was found to be relevant based on its charge at the time it was written, but currently, it is no longer as relevant. The Dredging Sub Committee, formed and tasked with specific activities under Annex 7, completed many of the tasks and has not been active since 1989. The focus and terminology are dated.

Achieving Results: The Dredging Sub Committee met most of their objectives, which were consistent with the goals and objectives of the Agreement at the time Annex 7 was written. The science and technology of dredging and dredged material management have advanced significantly.

Management Framework: The Annex provided for the creation of the Dredging Sub Committee and identified specific activities to be accomplished.

Accountability, The Dredging Sub Committee reported to the Water Quality Board with regard to what they were accomplishing. Currently this is no longer applicable, as they became inactive in 1989.

Annex 14

The Annex 14 objectives are to identify the nature and extent of sediment pollution in the Great Lakes System, develop methods to evaluate the impacts and to assess technological capabilities of programs to remedy such pollution.

In the review of Annex 14 according to each major element, the Annex 14 Sub Committee found the following:

Clarity: The Sub Committee found the objectives, although clear, were not complete: there is no overall goal or time-frame for achieving the objectives and there is no mention of frequency or extent of data exchange to coordinate research data. In addition, desired outcomes for surveillance programs and some terms need to be clarified.

Relevancy: The Sub Committee felt that the Annex should be updated to reflect current conditions. There is now a better awareness and understanding of the environmental conditions and challenges. The challenges remain relevant: limited funding and resources, limited corporate and public involvement, insufficient research and technological development and lack of a decision-making framework.

Achieving Results: The Sub Committee found that with respect to achieving results, the Parties have not achieved the objectives of this Annex. For example, there is not a single source of the nature and extent of sediment pollution in the Great Lakes System, and the impact of the sediment contamination on the Great Lakes and ecosystem function is not completely understood. The Annex stipulates the need for an evaluation framework and a management framework but falls short in requiring implementation of frameworks (i.e. requiring correction of the problems). Annex 14 should propose accountability for remediation of contaminated sediments and reporting of progress. In other words, Annex 14 needs to be expanded to include more than the requirement for just gathering information, but should not duplicate the systematic and comprehensive remedial framework in Annex 2 for addressing all threats to water quality and ecosystem function.

Management Framework: The Sub Committee believes that there is no clear institutional framework even though a management framework (along with adequate resources) is the key to success. When evaluating the existing technologies for the management of contaminated sediments, the Annex needs to include a requirement to evaluate the anticipated short-term and long-term risks of each remedial alternative. In fact, the development of good delisting criteria in the form of a narrative, qualitative statement is required. Ultimately, work is getting done but there is room for improvement.

A sediment management framework process is needed that is binationally coordinated. A management framework could be the most beneficial for monitoring outcomes. However, flexibility needs to be maintained at the point of implementation due to the prevalence of site-specific conditions. The Sub Committee believes that the management framework should determine the goals and outcomes desired and evaluate how to manage the delisting criteria.

Accountability: The Sub Committee found that there are no provisions for accountability except for biennial progress reporting.

Recommendations

The Sediment RWG drafted some recommendations, the most important of which was to consider combining the outdated Annex 7 with Annex 14. As stated in the Draft Options Paper, 1999, the main purpose of Annex 7 is to deal with dredging for navigation purposes. Problems associated with contaminated sediments frequently arise when dealing with dredging for navigation purposes, requiring specific management responsibilities for both dredging techniques and disposal activities. It is in this area that there is significant overlap and a strong potential for duplication with the activities assigned to Annex 14. Clearly, what is needed is an Annex within the Agreement to manage all sediments, contaminated or not, within the Great Lakes, whether those activities are for dredging or removing sediments as a pathway source for contaminants (Draft Options Paper to the Binational Executive Committee on the Review of the Canada-U.S. Great Lakes Water Quality Agreement, July 1999)

Another option presented was that Annex 7 should be updated by including a statement that contaminated sediment at navigational dredging sites should be addressed under the Annex 14 framework.

It is also recommended that there should be a Sediment Working Group under the Water Quality Board which would focus on contaminated sediment and navigational dredging issues.

Other recommendations are provided for issues surrounding control of contaminant sources, the need for the Annex to be action-oriented (i.e. include remediation) and to include a focus on beneficial uses, the need to broaden sediment remediation options, to use risk management decision-making in evaluating contaminated sediment sites, and the need for public involvement..

Review Working Group F – Research & Monitoring

Executive Summary

The Great Lakes Water Quality Agreement (GLWQA) Review Work Group (RWG) F addressed Annex 11 (Surveillance and Monitoring) and Annex 17 (Research and Development) in the attached reviews. While the RWG noted that each of these Annexes has driven important progress toward achieving the goals and objectives of the GLWQA, the RWG agreed that there are important opportunities to improve the operation and effectiveness of both Annexes. Some of the key observations from RWG discussions are summarized briefly below.

Key Observations and Recommendations

Overall, the RWG strongly agreed that Annex 11 and 17 are critical to the success of the GLWQA. Research, surveillance, and monitoring provide the means to identify emerging issues and water quality trends that need to be addressed and they provide the means to fill critical scientific information gaps. Surveillance and monitoring also enable the Parties and others to measure the results of program activities and progress towards achieving water quality goals. In short, surveillance and monitoring enable results-based management. Research also provides the knowledge base for informed decision-making on policy and programmatic approaches, providing information on the potential efficacy of different interventions.

Most of the additional key observations and recommended areas for improvement are relevant to both Annex 11 and Annex 17, as described below.

1. Management and Action Planning Framework

The RWG observed that neither Annex 11 nor 17 contain provisions that call on the Parties to establish clear management frameworks that provide mechanisms for action planning and coordination and on-going prioritization of monitoring and research needs and activities. In addition, the RWG observed that Annex 11 could make a stronger connection to the role surveillance and monitoring information should be required to inform the Parties' efforts to set and adjust targets towards achieving the objectives of the GLWQA.

The RWG recommends that the Agreement call for the Parties to establish a robust management framework that enables effective and efficient management and implementation of monitoring and research activities related to water quality in the Great Lakes. Section V of this report, addresses this recommendation, and others, in greater detail.

2. Coordination and Collaboration

For both monitoring and research, the RWG believes that the Annexes should address the need for coordination and collaboration to a greater extent and call on the Parties to establish mechanisms to accomplish this. Since many useful monitoring and research activities and initiatives are conducted by others, such as State and Provincial governments, local and Tribal governments, academia, industry, and other organizations, the RWG believes that it is important to ensure that coordination and collaboration mechanisms are extended to address these areas.

The RWG recommends that the Agreement should call for greater and broader coordination and collaboration on monitoring and research related to Great Lakes water quality issues. While joint

monitoring and research programs may not always be feasible, expanding coordination and collaboration efforts is essential to improving the operation and effectiveness of monitoring and research.

3. Ability to Address Emerging Issues

Neither Annex 11 nor 17 call for mechanisms to enable the specific lists of monitoring and research needs to be updated to address emerging issues relevant to improving water quality in the Great Lakes. While the RWG recognizes the importance of including specific lists of monitoring and research needs to keep sustained commitment and attention focused on specific needs, the RWG believes that a process is needed to ensure that emerging water quality issues receive appropriate attention. Such a process can help ensure that the Annexes do not become outdated.

The RWG recommends that the Agreement should provide for an on-going, active process to ensure that emerging water quality issues receive adequate attention with regard to both surveillance and monitoring and research and development. RWG participants, however, emphasized the critical importance of ensuring consistency and continuity in the implementation of existing monitoring and research activities when addressing emerging issues.

4. Reporting and Accountability Provisions

While the Parties have taken some steps to improve reporting on monitoring and research activities, the RWG believes that significant progress is needed in the areas of reporting, data sharing, information management, and communications to equip the Parties, other governments and organizations and the public to effectively understand and utilize Great Lakes water quality information. Neither Annex 11 nor 17 contain reporting provisions and the Agreement lacks any focus on data and information management. In addition, some RWG participants indicated that they believe that existing reporting processes being implemented by the Parties should be modified to provide opportunities for broader public review and input.

The RWG recommends that the Agreement be modified to include stronger provisions for reporting and accountability. Reporting should address both the status of implementation of programs and activities to support the Agreement, as well as monitoring and research information that shed light on the “State of the Lakes.” In addition, the RWG recommends that a revised Agreement should outline a clear process for organizations and the interested public to provide input to and comment on monitoring and research objectives, targets, and action plans developed to support the Agreement.

5. Funding and Resources to Support Implementation

RWG participants expressed significant concern over inadequate and inconsistent funding by the Parties for monitoring and research activities needed to implement the GLWQA. RWG participants agreed that many monitoring and research programs do not have sufficient funding to adequately fulfill the purpose, objectives, and obligations of Annex 11, Annex 17, and the Agreement. Several RWG members observed that continued funding cuts have had a significant impact on the effectiveness of monitoring and research activities in recent years.

The RWG recommends that the Agreement should include provisions for periodic assessment of the implementation status and effectiveness of monitoring and research programs developed to address GLWQA provisions.

6. GLWQA Focus on Water Quality versus Ecosystem Integrity

The RWG had significant discussions on the implications of expanding the focus and/or interpretation of the Agreement (and Annexes 11 and 17) from water quality, with an ecosystem perspective, to a broader concept such as “ecosystem integrity.” Some RWG participants expressed strong concerns that such a broadening would distract attention and resources away from the Agreement’s core focus on water quality, weakening its effectiveness. Other RWG participants indicated that the Agreement could serve as an important and more powerful tool for addressing broader ecosystem health challenges that confront the Great Lakes basin. The RWG noted that these divergent perspectives on the fundamental focus and purpose of the Agreement have broad implications for all of the Articles and Annexes in the Agreement, and that it will be important for the GLWQA Agreement Review Committee (ARC) to consider these perspectives.

Overall, the RWG recommends that changes be made to the surveillance and monitoring, and research and development provisions of the GLWQA to address key issues identified during this review process and summarized in this report. The recommended changes could be made either through a revision to the current version of the Agreement or in the context of a new agreement.

Furthermore, the RWG recommends that the revised surveillance and monitoring, and research and development provisions of the GLWQA be drafted to explicitly address the needs and elements described above.

Finally, the RWG recommends updating and clarifying the definitions of the terms associated with Annexes 11 and 17 in Articles I and IV of the Agreement.

Review Working Group G – Shipping Annexes

Executive Summary

Annexes 4,5,6,8 and 9 were reviewed by Working Group G. These Annexes represent potential discharges of specific pollutants from ships, the oil handling facilities associated with ships or response to spills associated with ships.

Clarity

For the Annexes reviewed above, the working group generally found that the Annexes as originally written, were clear in defining what pollutant was to be dealt with, and what requirement was placed on the parties. In the context of the Agreement and these Annexes, the perceived threat was large commercial vessels.

Relevancy

The continued relevancy of the Annexes reviewed was a topic of considerable discussion. The globalization of trade has had huge impacts on the shipping industry, of which the Great Lakes trade is a very small but vibrant part. At the time of the signing of the Agreement, very few of the international conventions governing pollution prevention by ships had been ratified by either of the Parties. Nineteen years later, virtually all IMO conventions governing the pollution aspects of shipping have either been ratified, or are in the process of being ratified by the two countries. Regional focus has been replaced by global realities. The Great Lakes have, to some extent, been exempted and protected as being in ‘internal waters’ of both nations. However, the drafters of domestic legislation in either country have not used the specifics of Agreement as a model, when they brought the international conventions into force (although the overall intent is still roughly compatible in most cases).

Contrasting that, is the regional focus on pollution, which was inclusive of the threat from ships, which was the original intent of the Agreement and most recently as set out in the final report of the Great Lakes Regional Collaboration.

After the Exxon Valdez spill and passage of U.S. domestic national legislation in the form of the *Oil Pollution Act of 1990*, which occurred only three years after the signing of the Agreement, domestic policies set the stage for media politics, not science or the Agreement, to determine what marine agencies would be responsible for. Again, while the argument can be made that the legislation is compatible with Annex 4 or 9, the driver was clearly not the Agreement.

Jurisprudence, such as the Intertanko decision and the recent ruling by a California court that the Environmental Protection Agency has a role under the Clean Water Act in regulating ballast water discharges, have had, or will have, an effect on the ability of responsible agencies to stay within the tenets of the Agreement.

Results

Despite the somewhat negative view of the specific relevancy of the Agreement, with the exception of the introduction of aquatic invasive species, the desired outcomes for both countries from an overall perspective have been generally met. It is not perfect, oil spills still occur, though generally in very low levels, and more from sources that were not the primary targets in 1987. Chemical spills from ships are generally measured in drops or gallons, not tons and are significantly lower in number or amount than shore side spills. An interesting irony is that, the requirements set out in the Agreement under Annex 9 for spill response, and the expertise and equipment that was built up in anticipation of large ships source spills, in fact, has been primarily used for shore sourced spills.

Garbage and sewage discharge from large commercial ships is a non-issue.

The science and policy of cargo residue discharge is a continuing debate, including waste water discharge from slurry tanks. Research is continuing, but the original science that determined the current policy has yet to be discounted.

Like oil and hazardous chemicals, the focus has shifted from the original target of the Agreement. The role of recreational vessels, grey water discharges and the number of pump out facilities for them is now the current focus.

The marine side of oil handling facilities is well regulated in comparison to the state of affairs on the signing of the Agreement. Unfortunately, the number of ships utilizing them is significantly down from 1987.

The joint contingency plans originally set up under the Agreement have been a model for the Oil Spill Response Regimes for both countries. CANUSLAK has become the model for similar joint oil spill response exercises on either coast and even into the Arctic.

The requirement for studies to establish improved procedures for the abatement and control of pollution from shipping sources has resulted in many scientifically based policies and procedures for both countries.

Reporting requirements in the Agreement, as signed, required the Canadian Coast Guard and the United States Coast Guard and other interested agencies to meet annually to consider Annexes 4,5,6,8 and 9 and to provide a report to the International Joint Commission. Because of personnel efficiencies in the 90's, this was altered to a two-year cycle and reports have been provided consistently throughout the Agreement.

The discharge of ballast water and the threat of introduction of aquatic invasive species into the Great Lakes by ship sources has become THE principle issue of concern and the subject of the bulk of the biennial report and the majority studies since approx 1996. It is very briefly mentioned in Annex 6 1(b) as a problem worth studying.

Management

The organizations specifically tasked to undertake the responsibilities of Annexes 4,5,6,8 and 9 are the United States Coast Guard and the Canadian Coast Guard. Though clearly an organization charged with different priorities than in 1987, the United States Coast Guard is still the appropriate agency for these Annexes, and has been consistent as the 'go to' agency. On the Canadian side, the business of government has resulted in significant departmental reorganizations between the Canadian Coast Guard, Transport Canada and the Department of Fisheries and Oceans. The current Canadian Coast Guard operates as a Special Operating Agency with a very specific mandate different from that of 1987. From the point of view of the Agreement, while agencies have reported changes to the IJC, there is a need to acknowledge the current responsibilities of the various departments and to provide flexibility for any future reassignment of responsibilities.

Despite the above, all departments and organizations have been consistent in continuing to cooperate to achieve the overall requirements of the various Annexes. What does seem to have been lost with the dispersion of responsibilities (and the passage of time) is a consistent understanding of what exactly are the legal and political implications for each agency, with respect to the Agreement. In the intervening years, a significant amount of domestic legislation and regulatory authority has been promulgated with respect to pollution prevention from ships. It is not all consistent with the Agreement, nor is the current mandate of individual agencies an easy fit, at times, to accomplish requirements of the Agreement.

Accountability

Responsible Agencies have been consistent in their reporting to the International Joint Commission since the Agreement has been signed. The annual report, while changed to a biennial schedule, remains a key tool for all agencies to review “services, systems, programs, recommendations, standards and regulations relating to shipping activities for the purpose of maintaining or improving Great Lakes water quality.”

The role of States and Provinces are mentioned in specific areas of the Agreement as interested or responsible parties. In many cases this relationship is clear. In others it is less so, and in some cases has resulted in non compatible policies between jurisdictions – e.g. state-wide no discharge zones for sewage from ships, despite federally mandated and approved marine sanitation devices that meet or exceed State discharge standards.

The role of municipalities or the ‘public’ is not mentioned in any of the Annexes reviewed.

The oversight role of the IJC was clear in the review.

Crosscutting Issues

The role of AIS introduction from ships was also discussed under the Special Issues Working Group. The draft reports from that group suggest that the issue would be examined under the broader ‘biodiversity’ envelope. There is precedent in the Biodiversity Convention itself with respect to ships as well as in Canadian and U.S. policy that assigns ship specific response to Marine Agencies because of the safety aspects. The recent legal decision in the State of California and the future of the involvement of the Environmental Protection Agency remains to be seen.

There is also potential overlap under the general title of Annex 17. As directed in Annex 6 – Parties are under an obligation to undertake a study where the review of services, programs, recommendations, standards and regulations relating to shipping activities indicates areas of improvement. Annex 17, as written, is not inclusive of the requirements of Annex 4,5,6,8,or 9.

Recommendations

From the point of view of the review of Annexes 4,5,6,8 and 9, it is clear that much has changed since the signing of the Agreement. This change is sufficient to recommend that serious consideration be given by the parties to look at updating the specific requirements in the Agreement that deal with ship source pollution. A single ‘vessel source’ Annex might be an efficient approach in the future.

Review Working Group H – Groundwater Issues

Executive Summary

Annex 16 (Pollution from Contaminated Groundwater) was added to the GLWQA by Protocol in 1987, mainly in response to contaminated groundwater impacting the Great Lakes, such as along the Niagara River in New York. Although this is still a problem, the current Annex 16 addresses only the impact of contaminated groundwater on the Great Lakes and ignores the important issue of protecting and managing groundwater quality and quantity as a sustainable resource for drinking water and other agricultural and industrial uses vital for the Great Lakes economy.

Annex 16 does not reflect the environmental challenges facing the Great Lakes related to groundwater quality and groundwater quality-quantity interactions and the reality of groundwater-surface water interaction and the role that nonpoint source pollution in contaminating groundwater. Due to this limited focus of Annex 16, it does not currently address or provide mechanisms for addressing groundwater trends, emerging problems, and the development of indicators. As such, it does not address groundwater as a resource that needs to be protected and sustained.

There is a better understanding now of the Great Lakes groundwater systems than there was in 1987. Legislation has kept pace to a certain extent. There have been some significant changes in legislation and new groundwater tools since Annex 16 was drafted that are not addressed in the current Annex; however, there is still much that is not known or understood. This is due to insufficient mapping of groundwater resources in the Great Lakes Basin. There is no coordination of cross-border monitoring networks to provide consistent information on groundwater.

The Review Group for Annex 16 concluded that the Annex has some problems. It is unclear who is responsible for implementing the requirements of Annex 16. Reporting on groundwater is inconsistent. Part of the difficulty is that reports can be onerous and are required too frequently. Annex 16 and Article 1 do not integrate groundwater adequately into the definitions of the Great Lakes System or the Great Lakes Ecosystem. Annex 16 and the GLWQA do not mandate pollution prevention for groundwater (source protection) equivalent to protections given to surface and tributary waters.

A significant amount of monitoring and research is needed to identify groundwater contaminants, their extent, and their travel times and loadings to surface water bodies. A sustained commitment to monitoring, modeling, and research is necessary to ensure that the requirements of Annex 16 are fully realized. It is most likely that the terms of Annex 16 will be satisfied when ground and surface water quantity and quality are managed in an integrated and watershed context.

The report identifies a series of research needs, findings, and recommendations outlined in Parts 7, 8, and 9. The recommendations focus on the following:

1. Re-titling Annex 16 “Groundwater”;
2. Groundwater–Surfacewater Interaction;
3. Groundwater mapping;
4. Clearly Identifying Responsible Agencies;
5. Groundwater Trends;
6. Groundwater Definitions;
7. Monitoring;
8. Modeling;

9. Reporting Requirements; and
10. Water Quantity Management.

Overview of Review Process

- The Groundwater Annex review group completed its review of Annex 16 by review elements. The team held biweekly conference calls to discuss the review elements and to review the draft document. A drafting team consisting of seven individuals representing both countries met twice in Windsor to develop the summary document and to finalize the report.
- As additional background material for the review of Annex 16, and to get an understanding of the findings and conclusions of previous review exercises conducted subsequent to the establishment of the Protocol in 1987, documents relevant to Annex 16 were reviewed and resulting recommendations were extracted and summarized for the RWG as shown in Appendix A.
- The working group has a total of 34 members, representing the two federal governments, the states and provinces, environmental organizations, industry, and Aboriginal Peoples and Tribes. Between 8 and 16 people participating on the conference calls and in the meetings.

Special Issues Working Group

Executive Summary

This final report from the Special Issues Working Group (SIWG) describes and provides recommendations on “...key issues affecting the Great Lakes Basin Ecosystem which are not addressed, or are not currently adequately addressed, by the [Great Lakes Water Quality] Agreement” (Agreement). The report covers specific topics that fall into two categories. First are three broad themes (climate change; biodiversity threats and responses; and watershed planning and land use) addressed by the SIWG Subgroups using a step-wise analysis approach. Second are additional specific topics that the SIWG identified as warranting separate attention (source water protection, invasive species, and cage aquaculture) after the step-wise analyses were completed.

OVERARCHING OBSERVATIONS

As a result of the review process, the SIWG has noted the following significant observations from across all the issues it addressed.

- While the Agreement’s purpose statement, “...to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem” is still valid and relevant, the purpose needs be revised to include more detail, consistency, and clarity for today’s conditions.
- The term “ecosystem approach” is in need of clarity and guidance. Those working to protect the Great Lakes have various interpretations of what such an approach is and what this kind of approach says about the scope of the Agreement. The SIWG’s prevailing view is that geographically the Agreement should span the open waters, near-shore areas, tributaries, and other aquatic and terrestrial areas (i.e., the full Basin). With regard to the ecological scope, the SIWG’s prevailing view is that the Agreement should take an ecosystem approach to the physical, biological, and chemical integrity of the waters of the Great Lakes Basin (and not single out one component of that integrity).
- The SIWG believes that the Agreement should also consider that stressors are upstream and in the watersheds, and it should provide guidance regarding implementation of the ecosystem approach.

Other overarching observations include:

- While recognizing that work remains to be done, the Agreement is **successfully fulfilling a number of its stated goals**, especially in addressing the chemical integrity of the waters of the Basin.
- The SIWG’s view is that **the Agreement is not achieving the desired purpose**. In particular, there is need for more attention to the conditions of and stresses to the physical and biological integrity of the Great Lakes Basin ecosystem.
- The Agreement’s **inability to address new, re-emerging and emerging issues**, such as near-shore eutrophication, cumulative impacts, climate change, off-shore industry, and aquatic invasive species, is testament to its current limitations.
- The policy goals of the Agreement could be expanded to reflect a broader scope of threats to the Great Lakes.

- Implementation of the Agreement is hindered by lack of political will to implement and fund required programs to protect and restore the Great Lakes.
- **Climate change** can be considered a stressor or threat that exacerbates most, if not all, of the other themes and specific topics identified by the SIWG. To be effective, the Great Lakes management paradigm needs to consider and address actual and prospective climactic changes.
- Throughout its work, the SIWG recognized that economic benefits accrue to Canada and the U.S. as a result of a vibrant Great Lakes ecosystem. Further, the Working Group took note of the costs of past, current, and future pollution and degradation to the system, the costs of remediation, and the current lack of resources to adequately address Great Lakes issues. **Economic costs and benefits** will need further attention if any revisions to the Agreement are to be considered.

SUMMARY OF THEMES AND TOPICS

The SIWG believes the special issues captured by the following themes and topics are significant threats to the waters of the Great Lakes Basin ecosystem. Without coordinated attention to these issues, the purposes of the Agreement will remain unfulfilled, and the physical, chemical, and biological integrity of the Great Lakes ecosystem will become increasingly compromised. Below are brief descriptions of the themes and topics addressed by the SIWG, followed by a summary of the SIWG's corresponding recommendations. More information and detail is provided in the body of the report.

Theme 1: Watershed Planning and Land Use

Since the origin of the Agreement, population growth and sprawl in the Great Lakes Basin have brought massive increases in land development and corresponding changes to land use patterns. Land use activities throughout the Great Lakes Basin are negatively affecting Great Lakes waters by altering much of the Basin's hydrologic regime through decreased infiltration and groundwater recharge, increased runoff, and increased flow through stream channelization. Great Lakes water quality and the greater Great Lakes Basin ecosystem are being further affected by the lack of meaningful coordination between local watershed and land use decision makers, and the binational and national policies and programs related to Great Lakes protection and remediation.

Theme 2: Biodiversity Threats and Responses

One measure of the health and functions of ecosystems is biodiversity. Moreover, water quality is maintained through various biotic and abiotic features and processes that are components of biodiverse landscapes and ecosystems. Separation of ecological functions and attributes from water quality impacts can result in incomplete and inherently unfeasible water quality recovery efforts. The integrity of ecosystems can also be compromised if certain thresholds are passed, after which loss of biodiversity and associated functions can cause fundamental system changes, further exacerbating water quality issues. Great Lakes biodiversity is threatened by major challenges including aquatic invasive species, terrestrial invasive species, habitat conservation and species management, cage aquaculture, near shore waters and coastal area management, and declining water levels/submerged lands.

Theme 3: Climate Change

Climate change has the potential to have profoundly adverse impacts on the chemical, physical, and biological integrity of the Great Lakes Basin ecosystem. Depending on the rate of change, the impacts could be ecologically extensive and economically widespread. Climate change is projected to have many, potentially severe, negative impacts on water supply, water quality, natural ecosystems, human health, and beneficial uses.

Specific Topic 1: Invasive Species

The Great Lakes are being assaulted by ongoing introductions of invasive species and are suffering significant environmental and economic damages as a result. Aquatic Invasive Species (AIS) cause beneficial use impairments (BUI), affect water quality by concentrating toxins and releasing them back into the water column, and increase turbidity. AIS are a leading cause of biodiversity loss in the Great Lakes, and can also themselves be considered biological pollutants that exacerbate existing problems because they reproduce and are generally able to withstand extirpation efforts.

Specific Topic 2: Source Water Protection

The Great Lakes are the drinking water source for tens of millions of people, and “fishable, swimmable, drinkable” has long been recognized as the encapsulation of a vision for the Lakes. Yet the Agreement does little to address the “drinkable” goal. Source protection—protecting the waters of the Great Lakes Basin, including aquifers as well as surface water—is the first barrier in a multi-barrier approach to drinking water protection.

Specific Topic 3: Cage Aquaculture

The impacts of cage aquaculture are not yet fully understood, but potential problems associated with it include localized elevations of nutrient concentrations from fish waste and excess feed, increased disease outbreak in concentrated fish populations (possibly resulting in subsequent risk for pathogens to spread to free-swimming populations), release of antibiotics in excess feed and fish excrement, and transfer of undesirable genetic characteristics of cultured fish to wild populations via cultured fish escapees.

SUMMARY OF RECOMMENDATIONS¹¹²

Theme 1: Watershed Planning and Land Use

- The Agreement should define “watershed planning” and “watershed management plans;”
- The Agreement should establish a broad institutional watershed planning framework with goals, objectives, implementation targets, and mechanisms to coordinate land use decision makers at all levels of government. One framework objective should be establishing watershed management plans that are developed and implemented with local partners, include all the tributaries across the Great Lakes Basin, are clearly linked to larger lake-wide targets, and are contributing to the goals set out in LaMPs and RAPs;
- Annex 13 should be strengthened to address the need for more systematic and comprehensive LaMPs that address the threats of land use patterns to water quality;
- Annex 2 should clarify that true implementation of the “ecosystem approach” requires watershed management planning;
- The Agreement should more explicitly address significant pollutants, such as nitrogen, that cut across all land uses from rural to urban;
- The Agreement should clarify that its scope covers the effects of land use on the water quality of the Lakes’ near-shore, coastal, and shoreline areas, and their tributaries; and
- The Agreement should provide a framework for more coordination around upstream sources of downstream contaminants between the Lakes.

Theme 2: Biodiversity Threats and Responses

- The Agreement should explicitly address the need for the protection, conservation, and recovery of aquatic and related terrestrial biodiversity as a factor in maintaining or improving water quality;
- The Agreement should explicitly note biodiversity as key measure and driver of ecosystem processes related to maintenance of water quality;
- The Agreement should provide for further research on biological (habitat) and water quality implications of emerging lands;
- The 4th line of the Agreement should be amended as follows:
 “REAFFIRMING their intent to prevent further pollution and degradation of the Great Lakes Basin Ecosystem owing to continuing population growth, resource development and increasing use of water.”; and
- A new annex should be created to address biodiversity OR Annex 2 should be revised to add biodiversity provisions.

¹¹² The following recommendations represent either the consensus or the prevailing views of the SIWG. There are diverging views on some recommendations. Where they apply, these diverging views are captured in the body of the report.

Theme 3: Climate Change¹¹³

- The specific objectives in the Agreement’s Annex 1 “Specific Objectives” should be refined so that language related to temperature and thermal discharges provides a direct link to climate change;
- Additional authority to address climate change should be articulated in the Agreement’s introductory language, in Article II, “Purpose,” particularly subsection (c); in Articles III and IV; in Article VII, referencing the IJC; in Article X, subsections (b) and (c); and in Article XIII; and
- A new annex should be created for the Agreement to support climate change-related monitoring and research OR Annex 17, “Research and Development,” and Annex 11, “Surveillance and Monitoring,” should include specific authorities for joint climate change-related monitoring and research.

Specific Topic 1: Invasive Species

- A new annex to the Agreement should be created to address invasive species by establishing clear goals and accountability mechanisms;
- Annex 11 should be amended to include AIS surveillance and monitoring; and
- The Agreement should take into account the goals, milestones, and specific recommendations included in the Great Lakes Regional Collaboration Strategy and its Aquatic Invasive Species appendix.

Specific Topic 2: Source Water Protection

- The Agreement should name source protection as one of its primary goals;
- The Agreement should charge the Parties to set specific binational targets for source water protection;
- The Agreement should commit the Parties to developing an overarching, Basin-scale framework to support local development and implementation of watershed-based source protection initiatives; and
- The Agreement should commit the Parties to identifying innovative source water protection programs, and developing mechanisms for sharing best practices in source protection among Great Lakes Basin jurisdictions.

Specific Topic 3: Cage Aquaculture

- The Agreement should include provisions for further research and monitoring in order to assess the contribution of nutrient loading and genetic transfers resulting from cage aquaculture in the Basin and corresponding long-term and long-range water quality and ecosystem impacts;
- The Agreement should state as a goal that cage aquaculture be managed so that it has no negative impact on water quality immediately adjacent to the sites, based on lake background conditions;
- The Agreement should include references to cage aquaculture in Annex 3, “Control of Phosphorus,” and Annex 13, “Pollution from Non-Point Sources;” and

¹¹³ The SIWG also identified several recommendations for the Parties to facilitate implementation of the climate change recommendations. These are identified in the body of the report.

- Annex 8, “Discharges from Onshore and Offshore Facilities,” should be expanded beyond a concern over discharges of harmful quantities of oil and hazardous polluting substances from offshore facilities to include concerns related to cage aquaculture.

CONCLUSION

Today the waters of the Great Lakes Basin are facing threats from all of the issues described by the SIWG in this report. Each threat is different, but significant, and is either not addressed or not adequately addressed by the current Agreement. These issues deserve specific attention when considering any changes to the Agreement.

Governance and Institutions Workshop Report

Executive Summary

“[Governance is the] complex art of steering multiple agencies, institutions, and systems which are both operationally autonomous from one another and structurally coupled through various forms of reciprocal interdependence”

Bob Jessop, 1999. *The Governance of Complexity and the Complexity of Governance: From G. Francis presentation to IJC WQB June 2005.*

“The Great Lakes Water Quality Agreement is only words on paper; it takes people to get things done.”

Frank Ettawageshik, Tribes representative, at the Governance and Institutions Workshop

In April 2006, the Governments of Canada and the United States launched a review of the 1978 Great Lakes Water Quality Agreement (the Agreement), as amended by Protocol in 1987. This report, the *GREAT LAKES WATER QUALITY AGREEMENT GOVERNANCE AND INSTITUTIONS: Workshop Review Report*, has been prepared, at the request of the Governments, to provide independent opinions and advice to the Governments on governance and institutional provisions of the Agreement. This report has been prepared by two, independent Convenors—one from Canada and one from the U.S. – based on input from a group of experts from the Great Lakes region selected by the Governments.

As the primary event in this review, the Canadian and U.S. Convenors conducted a workshop on November 29-30, 2006, in Detroit, Michigan to review the governance and institutions aspects of the Agreement. In addition, the Convenors conducted telephone interviews with a few invitees who were unable to attend the workshop. This report contains a detailed summary of observations and discussions expressed during this process, and includes observations related to the roles and functions of key institutions relevant to the implementation of the Agreement, including the Binational Executive Committee, the International Joint Commission and the IJC’s Great Lakes Regional Office, the Water Quality Board, the Science Advisory Board, and the Council of Great Lakes Research Managers. The Convenors encourage members of the Agreement Review Committee (ARC) and other interested individuals to read the report in its entirety to appreciate the range of perspectives expressed by workshop and interview participants.

The Convenors observed that several themes, which appeared to capture the essence of what was discussed by several participants, emerged from the discussions. At the same time, a number of workshop participants suggested that the draft report would be more useful to the ARC and the Parties if an attempt were made to identify key themes from the discussions. It is important to note, however, that the process was not designed to forge consensus among the participants on any issue under this review and no explicit consensus was achieved. Therefore, any attempt to offer general observations and conclusions must be done with caution. Neither did this process allow for the evolution of collective thinking by the participants as had occurred in other Review Work Groups commissioned by the ARC. The Convenors have sought to balance the spirit of this limitation with the desire to advance as clear as possible a message to the ARC, in light of the process used to conduct this review. After consideration of the remarks made at the workshop, the Convenors proposed a set of themes for consideration by participants. These themes were discussed on a conference call in mid-January with participants, and participants were given an opportunity to review them in the context of a draft Executive Summary. Key themes that emerged from this process are presented below.

First, most participants' observations focused on governance and institutional functions related to the Great Lakes Water Quality Agreement that could or should be improved. In some cases, participants offered specific suggestions for improving these functions. While the discussions did not focus on governance and institutional 'successes' under the Agreement, several were noted during the discussions. An underlying theme was that the future success of the Agreement hinges on the effectiveness of the governance and institutional framework that supports it, that this governance and institutional framework could and/or should be improved, and that the design of the governance and institutional framework will be influenced by the agreed upon scope and purpose of the Agreement.

Second, participants noted several 'signals' that contribute to a perceived "window of necessity" for seeking improvements in the effectiveness of governance and institutions related to the Agreement. These signals include:

- An awareness that while water quality in the Great Lakes overall has improved significantly since the signing of the Agreement in 1972, some water quality concerns are increasing in some lakes;
- A sense that the Agreement is ill-equipped to effectively accommodate contemporary and/or emerging issues such as invasive species and the impact of climate change on water quality;
- Perceptions by many that the community that coalesced around the existing Agreement has fragmented, undermining concerted action;
- A sense that governance functions as now being carried out by the Parties have weaker links and accountability to the Agreement, decreasing its effectiveness;
- An expansion of institutions and organizations in the Great Lakes Basin with an interest in the Agreement increases the complexity of building relationships and makes coordination and effective engagement more difficult, especially in light of what the existing Agreement specifies in this regard;
- The absence of key implementers such as First Nations, Métis, and Tribes, and states, provinces, cities, and other local governments from the governance structure of the Agreement; and
- Perceptions of insufficient resources being devoted to implement the Agreement.

Third, participants identified several key attributes and functions that they believe to be important for the success and effectiveness of the Agreement and the governance and institutional framework supporting it. These attributes and functions include:

- The Agreement should serve as the "North Star" for the protection and restoration of water quality in the Great Lakes, providing a clear, high level vision that will function as a guide for concerted action;
- The Agreement should preserve the "binational" nature of governance and institutions related to the Agreement. This approach should recognize that Canada and the U.S. remain sovereign in the development and implementation of their respective programs, while emphasizing that the success of the Agreement demands that activities be undertaken in a collaborative and coordinated manner;
- Since this is an Agreement pursuant to the U.S.—Canada Boundary Waters Treaty, the International Joint Commission, which provides for equal representation from the two countries,

should be maintained as an important binational mechanism in the governance and institutional framework of the Agreement;

- The Agreement should provide a ‘continuous improvement framework’ that fosters the means to achieve this vision that includes and is driven by routine assessments of (1) the state of the Great Lakes, (2) the state of programs being implemented to improve water quality in the Great Lakes, and (3) the state of progress towards achieving the goals and objectives of the Agreement;
- Accountability for achieving the goals and objectives of the Agreement, and accountability for implementation of programs and actions to achieve these goals and objectives, need to be clearly assigned, made transparent and become an essential component of the Agreement;
- Planning and implementation of programs and initiatives to achieve the goals and objectives of the Agreement should be under the leadership of the Parties, recognizing that they are directly responsible for their own planning and implementation of federal programs;
- The governance and institutional framework under the Agreement must provide for effective coordination and collaboration with other orders of government (e.g., States and Provinces, cities and municipalities, First Nations, Métis, and Tribes), to ensure that planning and implementation activities are aligned effectively to achieve the goals and objectives of the Agreement in a timely manner;
- Recognizing that industry, academia, NGOs, and the interested public have important contributions to make towards implementing the Agreement, the Parties should develop a governance and institutional framework, including action planning and decision-making processes and forums, that provides for more meaningful consultation, engagement, coordination, and collaboration;
- The Agreement should call for the Parties, in collaboration with other entities as appropriate, to develop action plans with specific goals, measurable objectives, and timelines, and to devote the requisite resources to implement these plans;
- The Parties should ensure senior-level representation from all orders of government and other interests in the basin, as appropriate, on binational and bilateral mechanisms that are focused on developing action plans and their implementation to achieve the Agreement's goals and objectives; and
- Mechanisms should be in place to provide for effective input of current, reliable science and observations from monitoring data to inform the design of national program components and their bilateral coordination.

The report explores these and other observations in greater detail, respecting the various viewpoints that were expressed in the workshop and phone interviews. The Introduction section of the report describes the review process. The section on Governance summarizes governance needs and other observations. The Institutions section summarizes observations related to the key institutions relevant to implementation of the Agreement, and there is a brief section exploring Information Exchange and Institutional Relationships. The final section summarizes discussions on Options for Alternative Governance and Institutional Models.

The Convenors took great care in attempting to convey in this report to the ARC what the participants actually expressed and not to either overreach in portraying convergence of views or to insert their own perspectives on these critical issues. Any failure to do so is the fault of the Convenors, not of any participant.

Appendix B

The Review Design and Charge

The Review Design and Charge

The Review of the Canada–U.S. Great Lakes Water Quality Agreement (GLWQA or Agreement) began in April 2006. Under Article X, Section 4 of the Agreement:

“The Parties shall conduct a comprehensive review of the operation and effectiveness of this Agreement following every third biennial report of the Commission required under Article VII of this Agreement.”

The current review was triggered by the release of the International Joint Commission’s (IJC) 12th Biennial Report in September 2004.

In anticipation of the IJC’s 12th Biennial Report, the Great Lakes Binational Executive Committee (BEC) Secretariat prepared a discussion paper on the review of the Agreement for the January 2004 BEC meeting and endorsed a three stage approach to the Parties’ review of the Agreement that included, (1) design and scope of the review process, (2) review and analysis, and (3) implementation of actions by the Parties. To begin the review process, the BEC Secretariat formed the Agreement Review Scoping Committee (ARSC) and charged the ARSC with:

- Recommending the scope of the review and a process for reviewing the Agreement that is open, transparent, and inclusive; and
- Preparing a report on a recommended approach to the review for consideration at the July 2004 BEC meeting.

Review Design and Scope

The ARSC, whose members included representation from federal, state, and provincial agencies, as well as staff from the IJC, was formed in March 2004. In order to describe the process, the ARSC drafted A Guide to the Agreement Review Process that described the review process, general scope and objectives of the review, and the review organizational structure. Following the mandate set forth by Article X of the Agreement, the ARSC focused on directing a review that is comprehensive, and involves a review of both the operation and effectiveness of the Agreement.

The scope of this review is the entire Agreement with Article II (of the Agreement) serving as the guide for its scope. Article II, Purpose, states that,

“The purpose of the Great Lakes Water Quality Agreement is to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem. In order to achieve this purpose, the Government of Canada and the Government of the United States of America agree to make a maximum effort to develop programs, practices and technology necessary for a better understanding of the Great Lakes Basin Ecosystem and to eliminate or reduce to the maximum extent practicable the discharge of pollutants into the Great Lakes System.”

The IJC provided guiding principles for the conduct of the Review, which were adopted by the Parties, where appropriate. The principles call for a review that is open and transparent, inclusive, impartial, binational and timely. The principles also identify that the review be science and science-policy based, forward-looking, and consider governance and accountability.

The ARSC framed the review in two parts: First, the ARSC drafted five overarching questions to be addressed in the review of the Agreement; and, second, the ARSC provided an Evaluation Framework to

assist in defining the scope of the review and the nature of the questions to be addressed by the reviewers of the Agreement (see Appendix 2, Terms of Reference).

In conducting a review of the Agreement, reviewers were tasked with using five overarching questions to frame their analysis:

1. Is the Agreement's purpose statement still valid and relevant and does it reflect what should be the purpose of an international agreement for the Great Lakes?
2. Does the Agreement, and its implementation, achieve the desired effect of restoring and maintaining the chemical, physical, and biological integrity of the waters of the Great Lakes basin ecosystem?
3. Is the Agreement, and its implementation, sufficient to protect and restore the Great Lakes, or does it fail to address critical issues? If so what are they?
4. In what situation/cases does the Agreement successfully fulfill its intended purpose and current goals and where does it fall short? Are there common features that characterize successes or best practices, and are there areas needing improvement?
5. What new approaches, if any, should be instituted to improve the operation and effectiveness of the Agreement?

The Evaluation Framework described below was developed to assist reviewers to systematically and comprehensively assess the operation and effectiveness of the Agreement in a rigorous and objective manner. Five overarching review elements guide the framework, as defined below.

- **Clarity:** An assessment of the clarity of the purpose, goals, objectives, programs and other measures set out in the Agreement and whether there exists a shared common understanding or acceptance of the meaning of the terms of the Agreement;
- **Relevancy:** An assessment of the continued relevance of terms found in the Agreement;
- **Achieving Results:** An assessment of the implementation and appropriateness of prescribed programs, policies and measures and demonstrated progress including the application of sound science;
- **Management Framework:** An assessment of institutional structures set out in the Agreement, cooperation and coordination and assessing potential duplication with other initiatives or instruments of a similar nature, and synergies and linkages with other initiatives; and
- **Accountability:** Issues to be addressed include: the ease of access to, and quality of monitoring data for reporting purposes; the role of the IJC; and long-term sustainable commitment from the Great Lakes community.

As included in Appendix 2, the ARSC additionally drafted a series of specific questions under each of the review elements to be considered as a guide for the review process.

The Agreement review process document was the subject of public comment from January 7-March 8, 2005. ARSC finalized the Agreement review process at the end of 2005, with approval from the BEC, Environment Canada and the U.S. Environmental Protection Agency.

ARC Review Charge and Process

The overall charge for the review process for the Agreement Review Committee and the Review Working Groups is outlined below.

At its February 2006 meeting, BEC endorsed the creation of an Agreement Review Committee (ARC) to oversee and coordinate the process for the review of the Agreement, and to provide direction and guidance to nine Review Working Groups which were charged with undertaking the actual review. The

ARC was co-chaired by Environment Canada and the U.S. Environmental Protection Agency, and included members representing U.S. and Canadian federal, state, and provincial agencies; cities through representatives of the Great Lakes and St. Lawrence Cities Initiative; and Aboriginal and Tribal members, serving as individuals. Appendix C provides a list of ARC members.

BEC specifically charged the ARC with providing direction and guidance for the review process. As a component of this, ARC was tasked with performing the following review functions:

“With regard to the creation of working groups, ARC will:

1. Commence the review process with the creation of:
 - a. Review Working Groups (to review Agreement Articles and Annexes);
 - b. A Special Issues Working Group
 - c. A Governance and Institutions review
2. In coordination with BEC, determine a method to select members for each of the working groups, and identify memberships; and,
3. Create information materials and guidelines for working groups (through the ARC secretariat – see 1.5 below), including developing a consistent method of conducting and reporting on the results of the review process by working groups.

During the review, ARC will:

1. Identify and elevate important issues needing resolution to the BEC co-chairs, through the ARC co-chairs;
2. Ensure that the review process is proceeding effectively and meeting timelines and milestones;
3. Provide assistance, guidance and direction to working groups as needed, including consulting on outstanding and ongoing issues; and
4. Keep the U.S. Department of State and Foreign Affairs Canada periodically informed as to the progress of the review.

Following the review by the RWGs, ARC will:

1. Synthesize working groups’ findings and, based on the various Review Working Groups’ results and recommendations, prepare a draft Agreement Review Report;
2. Submit the draft Agreement Review Report to BEC for BEC’s consideration, approval and release to the public for a 60-day consultation period; and
3. Following the 60-day public consultation, prepare the final Agreement Review Report, including review findings and recommendations, and provide it to BEC for its consideration.”

The Review Working Groups Charge and Review Process

The review process was designed to ensure extensive stakeholder participation and BEC endorsed an open call for participants from all sectors of the Great Lakes stakeholder community. The review itself has been conducted by nine Review Working Groups (RWGs) which were charged by the ARC to analyze and evaluate the provisions of the Agreement.

The RWGs were co-chaired by Canadian and U.S. experts on specific areas of review. Membership comprised of Canadian and U.S. representatives of federal, provincial, state and municipal governments, along with individuals from Aboriginal groups, non-government organizations, industry, academia, and the interested public. The ARC drafted Terms of Reference for the RWGs that outlined the roles; participation; meeting frequency; deliverables; timelines; and milestones; and reporting requirements.

The RWG Terms of Reference outlined the following RWG structure and scope:

Group A: Scope and Purpose; Goals and Objectives; Function

- Definitions (Article I)
- Purpose (Article II and preamble clauses)
- General Objectives (Article III)
- Standards, Regulatory Requirements, Research (Article V)
- Consultation and Review (Article X)
- Implementation (Article XI)
- Standard Provisions (Articles XII, XIII, XIV, XV)

Group B: Toxics

- Specific Objectives (Article IV)
- Specific Objectives (Annex 1)
- Hazardous Polluting Substances (Annex 10)
- Persistent Toxic Substances (Annex 12)
- Annex 15 – Airborne Toxic Substances

Group C: Remedial Action Plans (RAPs) and Lakewide Management Plans (LaMPs)

- Annex 2

Group D: Phosphorus and Non-Point Source Pollution

- Annex 3
- Annex 13

Group E: Sediment Related Issues

- Annex 7
- Annex 14

Group F: Research and Monitoring Provisions

- Annex 11 – Surveillance and Monitoring
- Annex 17 – Research and Development

Group G: Shipping Annexes

- Discharges of Oil and Hazardous Polluting Substances from Vessel (Annex 4)
- Discharges of Vessel Wastes (Annex 5)
- Review of Pollution from Shipping Sources (Annex 6)
- Discharges from Onshore and Offshore Facilities (Annex 8)
- Joint Contingency Plan (Annex 9)

Group H: Groundwater Issues

- Annex 16

In addition to the above groups, a Special Issues Working Group (SIWG) was charged with reviewing “key issues affecting the Great Lakes Basin Ecosystem which are not addressed, or are not currently specifically addressed, by the Agreement.” The SIWG, at the direction of the ARC, adopted a stepwise approach, different from the Evaluation Framework used by the RWGs, to review the Agreement. The

Stepwise Approach outlined in the Terms of Reference for the SIWG focused on the following ten questions:

- (1) What is the issue;
- (2) What is its significance to the Great Lakes Basin Ecosystem;
- (3) How is the issue currently being addressed by the Governments;
- (4) Is there a need for further binational cooperation to address the issue;
- (5) How should Canada and the US cooperate to address the issue;
- (6) Does the current Agreement address the issue adequately/at all;
- (7) What are the advantages/disadvantages of including the issue in the GLWQA;
- (8) Is the GLWQA the most appropriate means of addressing the issue;
- (9) Does the GLWQA give authority to address these issues; and
- (10) Where are additional authorities needed?

The RWGs and SIWG convened over the course of nine months (April 2006 – December 2006), submitting final reports to the ARC in December, 2006. Over 350 individuals, encompassing the full spectrum of Great Lakes stakeholders, participated in the binational review process.

The Governance and Institutions review was focused on an assessment of governance and institutional aspects of the Agreement conducted at a two-day workshop in November, 2006. The Parties contracted independent convenors, one from the U.S. and one from Canada, to lead this portion of the review. Fifty-six persons, representing government agencies, major stakeholders, and key implementers in the Basin were invited to the workshop and thirty-three participated.

The Governance and Institutions Workshop examined:

- IJC Powers, Responsibilities and Functions (Article VII)
- Joint Institutions and Regional Office (Article VIII)
- Submission and Exchange of Information (Article IX)
- Terms of Reference for Joint Institutions
- Binational Executive Committee (Roles and Responsibilities)

The Convenors, with input from the workshop participants and other workshop invitees, submitted a final Governance and Institutions Workshop Review Report to the ARC in January, 2007.

Appendix C

Membership of the Agreement Review Committee

<p>Michael Goffin* Canadian Co-chair Environment Canada</p> <p>Cindy Warwick* Foreign Affairs and International Trade Canada</p> <p>Jenna MacKay-Alie Environment Canada</p> <p>Carolyn O'Neill* Province of Ontario</p> <p>Louise Lapierre Province of Québec</p> <p>Nicola Crawhall* Great Lakes and St. Lawrence Cities Initiative</p> <p>Dean Jacobs (Aboriginal member – individual)</p>	<p>Vicki Thomas U.S. Co-chair U.S. Environmental Protection Agency</p> <p>Nancy Nelson U.S. Department of State</p> <p>Bert Frey* U.S. Environmental Protection Agency</p> <p>Lori Boughton State of Pennsylvania</p> <p>Jim Bredin State of Michigan</p> <p>David Ullrich Great Lakes and St. Lawrence Cities Initiative</p> <p>Jim Zorn (Tribes member – individual)</p>
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Agreement Review Committee Secretariat

<p>Alison Kennedy Sridhar Marisetti Environment Canada</p>	<p>Mark Elster U.S. Environmental Protection Agency</p>
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**Susan Nameth served as Canadian Co-chair from April to December 2006*

**Susan Humphrey served as Canadian Co-chair from December 2006 to April 2007*

**Tobias Nussbaum represented Foreign Affairs Canada in March 2007*

**Joya Donnelly represented Foreign Affairs Canada from September 2006 to July 2007*

**Stephen Carty represented the Province of Ontario from April 2006 to February 2007*

**Anna Pace represented the Great Lakes and St. Lawrence Cities Initiative from April 2006 to June 2007*

**David Gravalles represented EPA during most of the ARC's deliberations*