

Great Lakes Water Quality Agreement Review

Review Work Group F: Research and Monitoring

Discussion Synopsis

Revised Draft — July 18, 2006

I. Synopsis methodology

The Great Lakes Water Quality Agreement (GLWQA) Review Work Group (RWG) on Research and Monitoring (Group F) held a series of conference calls on in May and June to assess the Annexes 11 and 17 of the GLWQA. This document summarizes RWG discussion outcomes from the April 28th kick-off meeting and the five conference calls. The purpose of this document is to summarize the RWG discussions to date in order to elicit feedback from RWG participants. Comments are welcome on this document to help ensure that the summary accurately reflects perspectives from RWG participants. Please submit any comments on this summary to the RWG co-chairs, Paul Horvatin (U.S. EPA) and John Lawrence (Environment Canada).

In many cases, the RWG discussions identified areas of agreement around certain perspectives and answers to the questions under the 5 elements of the Review Framework (clarity, relevancy, achieving results, management framework, and accountability). In other cases, the group either did not finalize discussions or failed to reach consensus. These topics will likely require additional discussion to determine how to appropriately characterize the responses in the RWG report. This document summarizes discussion related by Annex, by Review Framework Element, by question. Summary points are grouped either as “areas of agreement” or “for discussion”.

Review Working Groups are also asked to consider a number of overarching questions when conducting their review. While aspects of these questions have been discussed by RWG F as part of the element by element review, it will likely be necessary to consider these overarching questions from an integrated perspective.

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 implementation¹, 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 implementation², 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?

¹ “Implementation” is defined as the achievement of the goals set out in the Agreement and not as a formal review of Governments’ programs.

² Ibid.

5. What new approaches, if any, should be instituted to improve the operation and effectiveness of the Agreement?
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Annex 11: Clarity

1. *Does the Agreement contain defined, clear and adequately communicated purpose, goals, objectives, programs, provisions and other measures?*
 - (a) *Is the text of the Agreement and the objectives, programs and other measures described therein clear?*
 - (b) *Are program outcomes and/or environmental outcomes clearly identified?*
 - (c) *Are there outdated terms, concepts or references?*

Areas of agreement:

- While some aspects of Annex 11 are clear, RWG participants identified several areas for improvement.
 - Several participants noted that the first sentence and other language in part 4 are not clear, and that there is a need to improve the clarity of terminology used in this part.
 - It was noted that Part 1(c) of Annex 11 contains ambiguous phrases such as “cause and effect” and “application of predictive techniques.” It was noted that there may be benefit in clarifying these phrases.
 - It was noted that in part 3(a-f) of Annex 11 it is not clear whether the list is meant to be exhaustive.
 - Members are not sure of what “overflows” refers to in Annex 11, part 3 (c).
- Some references in Annex 11 are out of date and do not reflect progress that has been made related to monitoring, surveillance, and indicators. For example:
 - The reference to the 1975 GLISP is outdated, and it may not provide the best model.
 - The language in Annexes 11 and 17 does not recognize what has been accomplished since 1978 and 1987. Progress has been made on certain endpoints or targets – while other endpoints deserve more attention.
 - The SOLEC work on indicators is not referenced in the Annex.
- Annex 11’s specific references such as Lake Trout are not necessarily the only areas where surveillance, monitoring, and indicators are important to address the goals and objectives of the GLWQA. Annex 11 is imperfectly linked to the General and Specific Objectives of the GLWQA, so it is difficult to clearly see how monitoring and surveillance assessments address the Agreement.
- The language in Annex 11 emphasizes “control measures” and gives the Annex a legislative and/or regulatory focus. This focus could be interpreted as being overly prescriptive. For example, 1(c) refers to “whole lake response to control measures...”; should be broadened out to include “whole lake response to control, remediation and restoration measures...”. Similarly, in 1(d), it should read “leading to the development and implementation of appropriate pollution control measures, remediation or restorative measures.”
- To the extent different formatting of the GLWQA has significance (e.g., italics means the language was added after the 1987 amendments), there should be explanatory notes in the document in whatever form it is made available.
- Different printings of the Agreement contain different, sometimes significantly different, language. This leads to confusion and potential misinterpretation.

For discussion:

- The Annex (and Agreement) does not currently reference a cyclic, continual improvement process — moving from goals to objectives to targets, indicators, and monitoring to baselines to objectives and reporting (plan-do-check-act) to managers. In addition, part 1(c), it is unclear how this part of Annex 11 works in coordination with the other Articles and Annexes of the GLWQA.
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Is there a need to rewrite or add language to incorporate a continual improvement process that discusses how monitoring results of water quality trends will be used to update the GLWQA? In other words, is the monitoring described in Annex 11 clearly linked to “outcomes” and goals for the GLWQA?

- Section 4 does not seem to fit with the rest of the Annex. It is unclear why Ecosystem Health Indicators would be in this Annex, especially since they read more like Objectives than indicators. Perhaps this section should be in Annex 1, not 11. The Work Group should discuss this further. [*Comment by Jay Unwin*]
 - Need for a general statement re: development, implementation and reporting of indicators specific to objectives. [*Comment by Fred Fleischer*]
 - Need for specificity – can get too prescriptive; option: parties decide how to reach goals and objectives - monitoring and reporting is mechanism for accountability. [*Comment by Fred Fleischer*]
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Annex 11: Relevancy

1. *Is there a demonstrable need for the Agreement to achieve the stated goals/objectives?*
 - (a) *Have the environmental conditions/challenges originally intended to be met by the Agreement changed, and if so, what are the implications of those changes?*
 - (b) *Are the Articles/Annexes compatible with, and do they encourage actions beyond those required by, current domestic laws and policies of each country?*
 - (c) *Does the Article/Annex drive actions? If not, can you identify reasons why it does not?*
 - (d) *Does the Agreement reflect current/appropriate environmental management tools (e.g., legislation, guidelines and best management practices)?*

Areas of agreement:

- The RWG discussed adding hydrological connectivity monitoring to the tributary and boundary water surveillance monitoring.
- With regards to whether or not the annexes are compatible, the RWG agreed that in most areas the governments have laws that operate parallel to the agreement. The RWG suggested that some harmonization may be appropriate. Funding is a big driver in regards to this topic and some programs don't have sufficient funding.
- Participants indicated that Annex 11 has driven actions by the parties. It was noted that the GLWQA is what drove the Mass Balance studies. Annex 11 is part of the Clean Water Act on the U.S. side. Annex 11 is what drives the monitoring that is done by Environment Canada.
- With regard to Section 2 of Annex 11, the RWG discussed removing reference to the Great Lakes International Surveillance Plan. The group also suggested standardizing “surveillance” in the Agreement.
- The RWG discussed acknowledging citizen science/volunteer science in the agreement.

For discussion

- What additional points can be made to directly respond to the review questions above?
 - What are “emerging problems”? Need to be more specific. [*Comment by Fred Fleischer*]
Several current problems, such as invasive/non-indigenous species, are not addressed. [*Comment by Janet Keough*]
 - Discuss “joint” versus “coordinated” surveillance and monitoring. [*Comment by Fred Fleischer*]
 - Discuss accountability for reporting progress/results. [*Comment by Fred Fleischer*]
 - Status and trends information for local – to – whole lake scale reporting and public access to most trend assessments are not generally available. [*Comment by Janet Keough*]
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Annex 11: Achieving Results

1. *Are the programs, measures and policies stated in the Agreement sufficient to achieve the goals/objectives in the Agreement?*
2. *Are the demonstrated results consistent with goals and objectives in the Agreement?*
3. *Has the appropriate level of resources been dedicated to deliver the programs, measures and policies set out in the Agreement?*
4. *Is the science in the Agreement still relevant? If not, why?*
5. *Does the Agreement incorporate science to address emerging issues?*

Areas of agreement:

- The RWG agreed that the monitoring programs, measures and policies stated in the Agreement are not sufficient to achieve the goals and objectives in the Agreement.
- The RWG discussed question #2(a) for Annex 11. Part (a) of Question #2 asks, “Were the programs, policies, and measures that were initially required to be implemented under the Agreement developed? If not, why not?” The RWG agreed that the short answer to this question would be “yes”, but that a laundry list of programs/policies may need to be developed to support this question.
- The RWG discussed question #2(b) for Annex 11. Question #2(b) asks, “Are any parts of the Agreement in any way an obstacle to progress?” The RWG agreed that it is not the Agreement that is the obstacle, but rather the political priorities, budget cuts, personnel cuts, etc. that are the obstacles to progress.
- The RWG discussed question #2(d) for Annex 11. Question #2(d) asks, “Are there any other barriers to progress?” The RWG agreed that funding, resources, personnel, political environment, etc. are all barriers to progress.
- The RWG discussed question #3(a) for Annex 11. Question #3(a) asks, “Is the allocation of resources considered sufficient to meet the goals and objectives of the Agreement?”
 - The resources are inadequate. People tend to react only when something terrible happens.
 - There is often governance as a result of reaction and not pro-action.
 - The RWG agreed that there needs to be resources at a constant basis. We can’t just start and stop when we want.
 - The RWG agreed that the definitions of monitoring, surveillance, and research need to be looked at and defined more.
 - The RWG agreed that the Agreement needs to address the surveillance component as well as the data component.
- The RWG discussed question #4 for Annex 11. The RWG agreed that most of the science in Annex 11 is out of date [specifically the target for the P. hoyi indicator]. The RWG agreed that the answer to question #4 is “yes, the science is necessary but it is not sufficient.” The RWG agreed that “hydrology” should be added to the Agreement.
- Annex 11 should call for a binational approach and commitment from the parties to monitor and assess to specifically address the objectives of the GLWQA.
- The revision needs to call for status AND trends information specific to the goals and obj. of the agreement and call for reporting of status and trends in a timely way and manner accessible to managers, policy makers and the public.

For discussion:

- Annex 11 is clearly geared towards chemicals and water quality. Does the Annex focus sufficiently on monitoring of outcomes? Should the Annex include more focus on monitoring related to human health and ecosystem health outcomes?
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- The RWG discussed question #5 for Annex 11: *Does the Agreement incorporate science to address emerging issues?* The RWG agreed that while this answer is mostly yes, the answer still needs more development. How proactive should the Annex be in identifying and accommodating emerging issues?
 - How can parties be held more accountable for reporting on progress/findings from monitoring? [Comment by Fred Fleischer] *Note: Is this question more relevant to the Accountability review element?*
 - How are monitoring programs initiated by other annexes? [Comment by Fred Fleischer]
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Annex 11: Management Framework

1. Are management and coordination approaches identified in the Agreement?

- (a) Is management and coordination specified? If so, briefly outline.*
- (b) Are management and coordination approaches appropriate and sufficient to ensure achievement of the goals of the Agreement?*
- (c) Do management and coordination approaches facilitate priority setting to address issues of greatest importance?*
- (d) Are there demonstrated synergies and linkages with other initiatives (i.e., international programs, strategies or Agreements)?*

Areas of agreement:

- The language on “coordination and management” in Annex 11, Section 2 may need to be revised or reworked, as it does not directly address the review element terms.
 - The section is purposefully vague to allow the parties to determine the methods and terms of implementation. It was noted that there are efforts underway between EPA and Environment Canada to increase coordination.
- Annex 11, Section 2 specifies “a Joint program” and calls for coordination.
- It was emphasized that the International Joint Commission (IJC) should review the success of coordination, cooperation, and management under the Agreement. Other work groups are addressing the role of IJC as well and that this group is not expected to assess the IJC in any comprehensive manner.
- Sections 1, 2, and 3 (a-f) of Annex 11 address the review element question 1(b).

For discussion:

- Sections 2, 3, and 4 address management and coordination to a certain degree. Should these sections further address coordination, management, or other topics? Is the current language expansive enough to cover specific programs?
 - The Agreement does not explicitly set priorities. An appropriate question is: does the agreement help the agencies set their priorities?
 - Section 1(d) of Annex 11 helps to drive priorities for funding and research. Could there be some guidance to the parties on how to set priorities on a bi-annual basis?
 - The RWG could recommend an alternative by requesting the formation of a committee charged to establish priorities lake by lake or on a basin wide basis.
 - It was noted that the IJC could be asked to strengthen their bi-annual report, if there is there a need to establish better reporting and accountability mechanisms.
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- There is an obligation to report back to the general public and stakeholders as priorities are established and finalized. A stronger biannual report would fulfill most of the reporting needs discussed.
- An important question: is the capacity to move forward with new linkages supported in the Agreement? Annex 11 does link to some important programs such as the lake wide management programs, the integrated atmospheric deposition network, etc.
- There are many initiatives or programs and the RWG may need to distinguish between basin-wide and lake-specific programs. The RWG did not reach agreement on this topic. Annex 11 does not call for compatible / coordinated programs in the US and Canada that would allow for regional and whole lake assessments, status and trends, etc. [*Comment by Janet Keough*]
- BEC is not mentioned anywhere in the Agreement, and yet that is supposed to be the Management Committee for the Agreement.
- Are there demonstrated synergies and linkages with other initiatives? The BTS and GLFC have monitoring needs, although these are not mentioned in the Agreement; IADN, LaMPs and RAPs have monitoring needs, however, these are mentioned in Annex 11.
- How extensive/specific should a reporting program be, and how is information management to be addressed to ensure information access by other annexes / all agencies? [*Comment by Fred Fleischer*]

Annex 11: Accountability

1. *Is there comprehensive monitoring and reporting?*
2. *Is there a defined role for the IJC and are adequate tools and data provided to fulfill its role?*
3. *Does the Agreement enable an effective level of commitment?*

Areas of agreement:

- Some reporting takes place, but it is not necessarily under the auspices of this agreement. Annex 11 does not identify any reporting obligations.
 - A recent meeting of the International Association of Great Lakes Research (IAGLR) was a prime example of this. IAGLR monitoring is still being funded. Current projects address phosphorous loading in Lake Erie, studying the effect of brominates (flame retardants) etc. Monitoring is not adequately funded. It was indicated that the parties established a monitoring inventory (see <http://binational.on.ec.gc.ca/bec/intro-e.cfm>). The group could add this as a potential recommendation: the parties should update and review the monitoring and surveillance inventory on a periodic basis.
 - Appendix B from the Water Quality Board was once included in the Agreement (1987) and it called for periodic reporting on surveillance and monitoring (the last version was published in 1987 or 1989).
 - The Lake wide Management Plans (LAMPs) require reporting bi-annually.
 - Reporting on indicators was discussed as part of SOLEC.
 - The 1985 Evolving System for Great Lakes Management could be referenced even though it needs to be updated. It is a must read for the group (an excerpt was sent out to the RWG before the first conference call); participants should take a look at performance measures that have been proposed in the past.
- There is a clearly defined purpose and implementation language, but there is nothing to address compliance and evaluation issues or components. There are no performance indicators for Annex 11 to determine progress.

- Comprehensive is a key word in the review element question. SOLEC reports progress indirectly on indicators. There are other annexes that do call for reporting on a biannual basis. SOLEC was clearly designed and promoted by BEC to meet the requirements in the Agreement.
 - SOLEC did a cross walk between Agreement and SOLEC indicators. SOLEC should consider adding the reporting on the Agreement as an appendix.
- Annex 11 does not provide a clear chain of accountability to achieving human health and ecosystem health outcomes.
 - Are the lakes fishable, drinkable, and swim-able? These accountability issues are important to decision makers, politicians, and the public. It was noted that individual agencies must address swim-able, fishable, drinkable questions and report on this to the public.
 - Annex 1 calls for "ecosystem objectives"; Annex 2 calls for "ecosystem health indicators"; Annex 11 calls for monitoring of indicators – GLWQA has the right spirit in reference to this "framework". There are not specific "performance measures" for GLWQA.
- It was noted by participants that the 1987 protocol changed the way IJC worked; people were very disappointed and believed the system was not working effectively. The role of the parties was increased. The IJC was strapped for funding starting in 1987. From 1987 on, the information tools and the data provided by the IJC were not as effective.

For discussion:

- There is a need for clarification of focus on "waters of Great Lakes" versus broader ecosystem health. Is water quality or the broader human and ecosystem health outcomes at the core of the Agreement? The answer to this question will drive different scopes with regard to research and monitoring.
 - There needs to be linkages to the annexes and the articles which address reporting. The group may consider tightening and detailing the role of IJC relative to monitoring. One article says the IJC may request any information or data as necessary. The RWG identified the need for more discussion related to the IJC.
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[*Comment by Tom Muir*]: there is no visible evidence that the 1987 Protocol in and of itself changed the role of the IJC and the way it worked. Article VII of the 1987 Agreement Protocol is virtually identical in wording to the 1978 Agreement text.

Instead, the evidence (e.g., 4th Biennial Report, Appendix A) suggests that the IJC itself, through the Commissioners, made their own policy decision to make the changes which effectively eliminated monitoring and research as a priority item for the IJC. The rationale given there is higher work loads under the 1987 Protocol and the need for more resources which were supposed to be called for from the Parties. These resources were never forthcoming and instead the IJC Regional Office in Windsor has seen major cutbacks in staff and resources.

My own recollection is that the Parties and WQB wanted such changes as it lent some measure of control of the IJC's activities and critical reports on key and sensitive issues. These issues were now to be left to the WQB which never really picked up the same ball, and it really put the WQB fox in charge of the hen house, and effectively put the IJC out of the business of reporting, critiquing and recommending on the monitoring and research agenda. According to reports made during our conference calls, the IJC has not asked Environment Canada staff responsible for monitoring and surveillance for any data since 1987, thus proving the point. Moreover, it is well known that the WQB effectively reports on itself, and has since 1988, so what can you expect of that.

The bottom line is that we cannot, nor can any RWG, fully respond to the Accountability criteria and questions without fully dealing with the roles and responsibilities of the IJC. The apparent decision to have another as yet unnamed and unstruck RWG consider Article VII and the IJC is a not too subtle effort to sideline this most important Review element and is really an intolerable and arbitrary limit on what is supposed to be an open and transparent consultation and Review.

Annex 17: Clarity

1. *Does the Agreement contain defined, clear and adequately communicated purpose, goals, objectives, programs, provisions and other measures?*
 - (a) *Is the text of the Agreement and the objectives, programs and other measures described therein clear?*
 - (b) *Are program outcomes and/or environmental outcomes clearly identified?*
 - (c) *Are there outdated terms, concepts or references?*

Areas of agreement:

- RWG members commented that Annex 17 reads like an outdated laundry list rather than a clear framework for identifying, prioritizing, and addressing research and development needs and activities. Clarity issues could arise since the Annex does not reflect areas where research programs currently exist and where they do not. In addition, it is unclear whether the “laundry list” approach is sufficiently dynamic to be responsive to and to address emerging and future issues, problems, and research needs. It might be useful to insert a cross-reference at this point to Article V (c) which states that “Research priorities are undertaken in accordance with Annex 17.” Additional discussion related to this issue included:
 - Priorities have changed significantly since the 1978 and 1987 versions – the language in Annex 17 is relatively clear, but it is also limiting in its focus on specific research needs listed in the Annex. At the same time, Annex 17 does provide some flexibility by referring specifically to other Annexes. In some cases, the other Annexes are more prescriptive.
 - It was noted that the Agreement (and Annex 17) does not provide a clear map of research needs and challenges.
 - It was noted that language in Annex 17 was used as a basis to develop the Great Lakes Initiative and to launch discussions on aquatic and human health issues in the basin, and that some of the programs suggested in the Annex already exist.
- It was noted that sections (j) and (k) are not clearly worded. In (j), the Parties would conduct research “to encourage the development of control technologies.” Section (k) is also confusing: “develop action levels for contamination.” What is meant by ‘for contamination’? The language on “action levels” refers to warnings like fish advisories.

[*Comment by Tom Muir*] I think this goes too far as a fair and accurate description. On its face, the Annex does what it says, which is to delineate, meaning to generally outline, research needed to support the goals of the Agreement. I think the authors of this Annex already had a working framework that they used to sketch these needs, and that was scientific consensus and weight of evidence, as it existed at the time. Some of these listed items led to relevant research that was needed, however, some were never done or hardly at all. In any case, all were and still are relevant, and in an unchanged, or sometimes updated, language or statement of form, are still needed research areas. These items still needed include: multi-media exposure (hardly done); interactive or combination effects (never done); population based human health effects studies of toxics (never done); non-native species (now ANS and not really done); lake levels and wetlands and water quality (parts of current IJC References); contaminated sediments; mass balance models; load reductions and development of technologies; process studies on pollutant delivery (e.g. non-point P); cause-effect of productivity and ecotoxicity (current whole lake studies, e.g., Lake Erie model), and there are others.

[*Comment by Michael Gilbertson*] I think it is important to remember where the “laundry list” came from. During the dark days of the first decade of Milton Friedman’s neo-liberalism – downsizing, small government, privatization, deregulation – there was a well-founded fear among research managers that “research” could be dispensed with. Thus the need for the Parties to amend the 1978 GLWQA with the

addition of Annex 17. We are not out of the neo-liberal era yet though there are signs that the edifice is crumbling. Thus we still need the laundry list.

For discussion:

- Would it be more appropriate to revise Annex 17 to provide a clearer framework or roadmap for developing, implementing, and updating a coordinated research strategy for the Great Lakes?
- Additional discussion related to this question is summarized below:
 - The RWG discussed that it may be useful to take a long-term view of the Agreement’s durability (e.g. 20 years), even though the Agreement is independently reviewed every six years. The RWG discussed that the purpose of Annex 17 is to encourage the parties to delineate research needs relevant to the objectives of the GLWQA; to develop priorities and strategies; to promote on-going prioritization of research; to call for inter-agency collaboration and efficiencies.
 - This approach could be accomplished by adding text to Annex 17 that calls for the development and updating of a “research plan”, similar to the reference to the “monitoring plan” in Annex 11 (paragraph 2, page 50). It was suggested that adding more information on proposed actions and intent could help Annex 17 stand alone.
 - It was noted that political context in which a potential revision to the GLWQA takes place will be important. It was suggested that the RWG should be careful not to open opportunities for others to remove important research aspects of the Agreement, which could result in the roll-back or elimination of research programs and initiatives. At the same time, however, it was noted that the failure to update the Agreement and Annex 17 potentially leaves the GLWQA open to the critique that the research needs outlined in the annexes are no longer relevant. It was emphasized that the RWG needs to create space to address emerging issues and to support dynamic system or basin wide research approaches.
- Need for a research and development annex – option is parties undertake research and development to achieve objectives and goals of the agreement; (2) need to assess options for defining what research is needed; (3) option to have each annex address research and dev in its own contents; and (4) linkages to other annexes specific objectives. [*Comment by Fred Fleischer*]

Annex 17: Relevancy

1. *Is there a demonstrable need for the Agreement to achieve the stated goals/objectives?*
 - (a) *Have the environmental conditions/challenges originally intended to be met by the Agreement changed, and if so, what are the implications of those changes?*
 - (b) *Are the Articles/Annexes compatible with, and do they encourage actions beyond those required by, current domestic laws and policies of each country?*
 - (c) *Does the Article/Annex drive actions? If not, can you identify reasons why it does not?*
 - (d) *Does the Agreement reflect current/appropriate environmental management tools (e.g., legislation, guidelines and best management practices)?*

Areas of agreement:

- The RWG discussed the relevancy of Annex 17. Annex 17 lacks a call for coordination and collaboration. We should stay away from methodology as is already done. Stick to specific research needs.

For discussion:

- This annex should take on more of a futuristic approach – should be usable in 20 years.
- Annex should call for priorities as they emerge.
- Consider research needs as identified by other programs and agencies responsible for research, e.g., GL Research Managers, Research Advisory Council, etc; others could be linked into GLWQA and have accountability for research and development and IM. [*Comment by Fred Fleischer*]

Annex 17: Achieving Results

1. *Are the programs, measures and policies stated in the Agreement sufficient to achieve the goals/objectives in the Agreement?*
2. *Are the demonstrated results consistent with goals and objectives in the Agreement?*
3. *Has the appropriate level of resources been dedicated to deliver the programs, measures and policies set out in the Agreement?*
4. *Is the science in the Agreement still relevant? If not, why?*
5. *Does the Agreement incorporate science to address emerging issues?*

Areas of convergence:

- Gaps were identified in Section 2(d) of Annex 17. Annex 17 does not address human health (e.g., tracked through through monitoring, assessment and reporting) or ecosystem health (e.g., tracked through ecosystem monitoring and surveillance programs and reporting) outcomes.
- Annex 17 needs to call for research that addresses causes and solutions to human health and ecosystem impairments, specifically linked to the goals and objectives of the GLWQA. [*Comment by Janet Keough*]

For discussion:

- The RWG agreed that in order to develop answers for questions #1-5 for Annex 17, the RWG needs to look into these questions more.
- The RWG will have to define these answers more and come up with a list of recommendations.
- Rather than trying to list specific research needs, the RWG may suggest developing a 5-year research needs analysis that gives the flexibility to change directions or emphasis as new problems or questions arise.
- Add linkages to IJC research agencies / advisory councils; and reporting of research results and information management. [*Comment by Fred Fleischer*]

Annex 17: Management Framework

1. *Are management and coordination approaches identified in the Agreement?*
 - (a) *Is management and coordination specified? If so, briefly outline.*
 - (b) *Are management and coordination approaches appropriate and sufficient to ensure achievement of the goals of the Agreement?*
 - (c) *Do management and coordination approaches facilitate priority setting to address issues of greatest importance?*
 - (d) *Are there demonstrated synergies and linkages with other initiatives (i.e., international programs, strategies or Agreements)?*

Areas of agreement:

- Members noted that little coordination and management of research activities is visible. No management or coordination mechanisms are specified in the Annex, and no established mechanism for prioritizing research is identified. Management and coordination are implicit in

the GLWQA, not explicit; participants noted that this can lead to falling short of expectations. It was also noted that Annex 17 reads like a shopping list, although it is not a complete list (nor should people expect it to be).

- A number of initiatives have been completed and these cooperative projects were on a number of different levels (provincial, lake by lake, etc). Many of these projects were done in spirit of GLWQA, but not addressed within Agreement. The RWG could acknowledge the existence of each of these initiatives.
 - Add references to the Great Lakes Commission LaMPs, RAPs, SOLEC, GLFC and the Binational Toxics Strategy, and reiterate that connections to other annexes are important as well.
- It was noted that the spirit of this Annex is to not be overly prescriptive. For example, “multi-media exposures” is a topic left open ended for further discussion and interpretation.
- The annex has a well defined purpose and sections addressing implementation, but there are no compliance or evaluation components.

For discussion:

- Could the Council of Great Lakes Research Managers (in coordination with IAGLR, LaMPs, RAPs, GLFC, etc.) establish the agenda to identify priorities? There are mechanisms which exist to hold such discussions, such as BEC. But the plans are not always implemented (the BEC does not do the coordination of research and prioritization). Membership on the CGLRM is limited. Planning an effective research agenda would, it seems, require rather broader input from Universities, business and industry, and the general public. [*Comment by Jay Unwin*]
- It was noted that some coordination may be provide for under other Annexes and Articles, and that it may be useful to raise this question with other RWGs. To what extent do and should the other Articles and Annexes address coordination and management related to research and development?
- R&D is a very large broad topic; can GLWQA hope to address all R&D in the GL or are there other options, e.g., GL RAC or individual annexes? [*Comment by Fred Fleischer*]

Annex 17: Accountability

1. *Is there comprehensive monitoring and reporting?*
2. *Is there a defined role for the IJC and are adequate tools and data provided to fulfill its role?*
3. *Does the Agreement enable an effective level of commitment?*

Areas of agreement:

- Most observations and recommendations regarding Accountability from Annex 11 apply to Annex 17. The RWG acknowledged however, that this annex is special due to its forward looking scope, vision and allowance.
- There is insufficient reporting on the progress of research, and the general research inventory is inadequate. No mechanism exists within the framework of Annex 17 to oblige parties to report and share this data and information.
 - A large issue surrounds the way the Great Lakes research inventory is tracked. The (voluntary) Council of Great Lakes Research Managers track only 1) dollars towards sub-sectors, and 2) number of projects.
 - It was noted that Annex 13 tells parties that they should report on surveillance activities.
 - It was noted that there is not a total void of documentation and data that supports accountability of the GLWQA. For example, SOLEC, Great Lakes Binational Toxics Strategy group and the Air Board all report on status and activities. The Science Advisory Board and Water Quality Board both report on research activities in biennial reports and make recommendations on research needs.

- Annex 17 is limited in its adaptability and foresight especially with regard to scientific research. The provisions addressing emerging issues need to be strengthened.
- There is a need to strengthen reporting pathways, and provide a more comprehensive guide in terms of what is being reported. Clarity is needed in terms of specific information flows, and responsibilities of data and research information sharing. Several efforts could help strengthen focus on accountability, including:
 - The commissioners want to focus on accountability for the 13th Biannual Report.
 - A third party National Research Council (NRC) review of the agreement was identified as an effective vehicle for assessing progress and driving increased accountability.

For discussion:

- There is a need for further discussion and assessment of the role of the IJC, the Science Advisory Board, and the Council of Great Lakes Research Managers related to coordinating comprehensive monitoring and reporting on research and development activities.
 - There is a reporting mechanism in place, however it is not mandatory. This was weakened in the wake of the 1987 GLWQA review, which changed the role of the IJC, removing some responsibilities associated with research and monitoring. These changes resulted from the recommendations of the 12th Biennial Report on the GLWQA.
 - Members noted that it would be potentially helpful to have the IJC as a 3rd party in data processing efforts. However, the IJC does not currently have the capacity to take on that charge. Others suggested that IJC may have a more important role as an “auditor” of activity and progress. The Parties should provide adequate funding to support forums for identifying GLWQA research needs, linking research organizations with the BEC, LaMPs, RAPs, and GLFC, and facilitating inventories and other ways to promote research on GLWQA priorities. [*Comment by Janet Keough*]
 - Members noted that this question needs greater research to know exactly what reporting does occur, and should be readdressed at a later date. The group noted that the late 80’s/early 90’s letter exchange regarding IJC’s role should be examined.
 - Should there be a general reporting requirement for each annex or for the full GLQWA?
 - Is there sufficient room within the annex to address emerging and unpredictable problems? Do the provisions in Annex 17 allow for sufficient foresight to address emerging issues until the next GLWQA review?
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