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# IJC Science Advisory Board

Capitol Skyline Hotel, Hall of States Room A&B
10 I Street SW, Washington DC, 20024
**May 3, 2017 – 1pm to 4pm**

Toll free dial in number: 1-877-413-4781
Conference ID: 9722054

**Attendees:**

RCC: Norman Grannemann, Gavin Christie, Christopher Winslow, Christine Mayer, Deborah Lee, Ian Campbell, Kyle McCue, Patricia Chambers, Tareq Al-Zabet, Tom Speth, Val Klump, Yingming Zhao, Yves Michaud

SPC: Carol Miller, Jeff Ridal, Clare Robinson, Dale Phenicie, Dave Allan, John Livernois, Henry Lickers, Lucinda Johnson, Michael Murray, Scott Sowa

Guests: Eric Emery (USACE), Sandra Eberts (USGS)

IJC Staff: Lizhu Wang, Matthew Child, Cindy Warwick, Glenn Benoy, Mark Burrows, Raj Bejankiwar, Victor Serveiss

**Meeting Record**

1. **Welcome and Round Table Introduction**

   All members introduced themselves. Co-chairs commented that this is a good opportunity to talk to each other and learn what each other is doing. Coordination of the Committees' project will benefit IJC's work. The agenda (attached) was approved by consensus.

2. **Overview of Current RCC and SPC Activities and Discussion of Joint/Collaborative Opportunities**

   **SPC Report Out:**

   - **Information Coordination and Flow**
     - The goal of the project is to identify barriers to the flow of information needed to assess programs and progress towards GLWQA objectives and to support GLWQA management and policy decisions.
     - The objectives are to identify and assess past and present efforts that focus on data and information flow in the Great Lakes basin and to conduct a pilot data and information flow assessment for two GLWQA objectives.

- The project has been underway for almost two years. It has created a database for 1200 programs and 9 million records with online presentations at state/provincial/federal scales. The project has identified information flow barriers, lack of indicators, and lack of delivery system.
- A draft contractor report was received in 2016 and the workgroup is completing its report based on the contractor's report. The final work group report will summarize all findings and include recommendations to address barriers to the flow of information across the Agreement's nine general objectives. A draft of the database and Prezi is expected to be completed within a couple of months.
- Comments and discussion:
  - ✓ The criteria used to judge information flow barriers are based on how our investments are realized in the lakes and watersheds.

- **Fertilizer Application**
  - The objectives of the project are to summarize state of knowledge on inorganic fertilizer vs. manure use in western Lake Erie basin; assess potential of existing watershed models to distinguish contributions to the lake; assess potential of current monitoring programs to quantify contributions to the lake; and identify knowledge gaps, including to help improve potential for management response to reduce loadings and impacts.
  - The project has determined that cropland acreage has decreased and average farm size has increased; commercial fertilizer application is declining in MI watersheds and is relatively flat in OH and IN watersheds since the 1980s; has incomplete data for Ontario; manure applications vary spatially and the use % has been relatively consistent over time; and application rate of fertilizer P is approximately 4 times of manure P.
  - The project also found that SWAT model is widely used; SPARROW model is useful at regional scale; and other models have limited application in Western Lake Erie basin.
  - There are many data/information needs, including:
    - ✓ Tile drainage at adequate scale (U.S.)
    - ✓ Fertilizer application (Ontario)
    - ✓ Intensive livestock operation (Ontario)
    - ✓ Geospatial data on manure application
    - ✓ Implications of non-fertilizer agricultural product use
  - The draft final technical report from contractor is expected in May; and finalized technical report is expected by the end of June.

- Comments and discussion:
  - ✓ USGS just published a report on fertilizer application by County;
  - ✓ there is a study at University of Toledo to characterize spatial extent of drain tiles in an Ohio study area;
  - ✓ Chris Winslow (workgroup member) has several contacts that can provide information on fertilizer and manure uses.

- **Energy Transportation and Water Quality**
  - The objectives of this project are to synthesize existing information on potential water quality and ecological impacts of unrefined hydrocarbons in the Great Lakes region and identify research, monitoring, and information needs in light of potentially changing transport modes.

  - The science synthesis and summary reports will address the potential water quality and ecological impacts to the Great Lakes associated with unrefined liquid hydrocarbons; best current assessment of research, monitoring, and other information needs to better understand the hazards of unrefined liquid hydrocarbons in the Great Lakes region; and make recommendations (science and/or science-policy) that could form the basis of advice to the Parties.

  - Project completion is expected by late fall 2017.

  - Comments and discussion:
    - ✓ The projects will focus on hazards; LimnoTech is the contractor; the project will include an assessment of applicable models but will not conduct modelling; will not do a complete risk analysis; there will be high level analysis of spill response activities including hazard mitigation and unintended consequences;
    - ✓ Sea Grant and Great Lakes Commission, among others, have related activities related to transportation, spill risk and response.

**Action: The workgroup does not currently have an RCC member; RCC membership on the Work Group would be welcome.**

- **Declining Offshore Lake Productivity**
  - The goal of the project is to characterize the phenomenon of declining offshore productivity in the lakes which at the same time are experiencing nearshore eutrophication, and assess tradeoffs associated with proposed reductions in external nutrient loads.

  - The objectives are to conduct a literature review of global experience on relationship between phosphorus load and fish communities in lakes; compile data on TP-fish productivity in Great Lakes; review development and application of ecosystem models capable of linking nutrient/lower food webs with upper food webs to inform

Annex 4 P load targets; and prepare and disseminate a technical synthesis report on this issue.

- Workgroup has developed an RFP for a contractor, reviewed three proposals, and selected LimnoTech as contractor.

- Discussion/Comments:
  - ✓ Joe Depinto recused himself from proposal review;
  - ✓ Technical report will be done by March 2018;
  - ✓ It would be nice to have a RCC member to serve on the workgroup; Yingming Zhao and Val Klump volunteered to serve on the workgroup.
  - ✓ Need to be careful in oversimplifying the relationship between P and fish biomass; the food web is complex and increasing P may increase mussels but have little impact on fish.

**RCC Report Out:**

- **Improved Research inventory in the Great Lakes region**
  - The research inventory provides research managers with an understanding of research capacity; allows Great Lakes researchers to identify similar studies, share experiences, and increase efficiency; and enables managers to examine the impact of research and the adequacy of research related to government agreements and to link research to policy questions.

  - The development of a next generation web-based inventory system will vastly improve the accessibility of the inventory. The improved system is halfway done and will be completed in late 2017. The results of its uses will be evaluated and reported annually afterward.

  - The project has made good progress and will be completed by the end of September 2017. The contractor is Kenjya-Trusant Group, LLC and web developer is Mr. Leo Martinez.

  - Project is about 85% complete. The next step is to test, finalize and launch new site by September 2017.

  - Comments and discussion:
    - ✓ The project is not about research data, but about research metadata.
    - ✓ The project will need maintenance funding to update both program function and data information.

- **Great Lakes surface and ground water model integration**

- This project was approved in February 2017. The objectives of the project are to assess the need and feasibility towards development of a fully-integrated surface and ground water model for the Great Lakes basin, and to provide a review of options on tools and approaches required to initiate a fully-integrated surface and ground water model for the Great Lakes basin.

- This project will synthesize the current knowledge of existing initiatives and approaches related to modeling efforts in integrating surface and ground water in the Great Lakes re**g**ion through literature review and a survey of science experts. This project will identify integrated modeling approaches for combined representation of surface and subsurface hydrological processes, and propose a plan regarding how to develop such a modeling platform and prepare necessary supporting data through a Great Lakes regional workshop.

- The 8-person project workgroup has had one conference call and has developed the statement of work to be provided to the IJC contracting preparation staff to be incorporated into the RFP.

- Comments and discussion:
  - ✓ Discussed whether the project is just trying to understand the hydrological process or will also identify what models and what data are needed, and how scattered of the data is. It was clarified that it will be just about surface and ground water connections, and the mapping component will provide information and baseline data needs.
  - ✓ The realistic objective of the project is to convince everyone that we need an integrated model. This work may overlap with GLAM and other board works.
  - ✓ It was asked that if this project will include Ottawa River. The answer is that it needs to be further discussed. However, the GLWQA defines the waters of the Great Lakes extending to the international boundary at Cornwall/Massena; therefore the Ottawa River is not part of the basin and therefore IJC's role under the Agreement does not extend to that watershed.

- **Great Lakes Nutrient Adaptive Management**
  - This project was approved in February 2017. The project is developed based on the white paper *"Opportunities for Implementing and Sustaining Science-Based Adaptive Management for Scientific Research and Ecosystem Management"* developed by RCC.

  - The overall goal of the project is to develop a process of using modeling approaches to effect ecosystem management through an adaptive management framework. The specific objectives are to (1) conduct an inventory of current or recent modeling activities potentially capable of integration for estimating outcomes of management actions for Lake Erie; (2) address how adaptive management can be integrated as part of the modeling approaches that will ultimately be used to identify the levers needed to pull in effecting ecosystem management; and (3) provide advice on how progress towards phosphorus reduction goals can be measured and communicated in an adaptive management framework.

- The 9-person project workgroup has had one conference call and has developed the statement of work to be provided to the IJC contracting preparation staff to be incorporated into the RFP.

- Comments and discussion:
  - ✓ There is a time lag between action and response. The project may want to consider incorporating such lags into the modeling process.
  - ✓ The project not only looks at the watershed models that link input from watersheds to the lakes, but also looks at in-lake models, as well as linkages between in-lake models and watershed models.
  - ✓ It is also an important part of the project to be able to track management actions and their outputs. It is the hoped that the project can identify levers to be pulled as management tools.

**Full SAB discussion:**

- **Discuss potential overlap in modeling activities associated with several projects**
  - A Committee member requested an update on SPARROW project. Staff provided an update that the project team has created a Great Lakes basin-wide SPARROW model. The results will be reported at IAGLR in May. The USGS is in the process of producing a USGS report. The USGS has mappers to show outputs and associated data.

  - The board had a broad discussion regarding how SPC's Fertilizer and Manure project model review could help on the Great Lakes Nutrient Adaptive Management project. It seems that the Fertilizer and Manure project has conducted a review on watershed models, especially models address loadings from watershed to the lake, which will be a big help to Great Lakes Nutrient Adaptive Management project. The SPC's Declining Offshore Lake Productivity will assess lake water quality and food web models. However, the in-lake food web and nutrient supply/consumption models and their link to watershed models may still need more work by RCC project. It was also pointed out that modeling data may not comparable across the two countries. It currently uses publically available data, which may have limitation on model accuracy, especially the tile drainage data is hard to get.

  **Action: Assessment of models completed for the SPC projects will be provided to the RCC workgroup.**

- **Great Lakes Early Warning System – discussion of draft RFP**
  - The objectives of the project are to synthesize current knowledge and approaches of environmental early warning systems and evaluate their applicability to the Great Lakes; develop a conceptual framework for a Great Lakes early warning system (including a procedure to identify threats ranging from those that are just over the horizon and may not yet be known, to those that are anticipated with some degree of confidence); organize an experts

workshop to verify a list of current and potential Great Lakes stressors and threats including their extent, likelihood and severity; apply the framework to a case study; and make recommendations to IJC about a framework for identifying and ranking emerging threats.

- A good progress has been made in organizing a special session at 2017 IAGLR meeting "Towards Development of a Great Lakes Early Warning System" with 7 speakers. A work Group has been formulated with participation from WQB, HPAB, and outside experts. Draft RFP has been developed and is being refined.

- Comments and discussion:
  - ✓ This effort is not new; for example in 1995 the EPA's SAB recommended the formation of a Great Lakes lookout panel.
  - ✓ The project will develop and apply a process for identifying the threats and stressors, but will have a limited focus on identifying stressors and threats; the results will include a preliminary list of stressor and threats.
  - ✓ Work done on low risk stressors and threats, which will help avoid high risk threats.
  - ✓ Policy changes in Canada and the U.S. may have impact on high and low risk threats.

**3. Discussion of Potential Collaborative Opportunities**

- Recommendations on sustainable restoration of Great Lakes
  - It was commented that the GLRI should have a target date for completion of restoration of the Great Lakes; GLRI should be a program; science should be part of it with funding dedicated to fundamental research; propose to create % of fund for research. Ideally there would be binational programming in place.

  - IJC is the place to make such recommendations. Other groups e.g., Council of Great Lakes Governors, may be able to assist in advancing the proposal.

  - The board had a broad discussion on this topic. It was discussed whether now is the right time to make such a recommendation due to the current proposed U.S. environmental program budget cuts. It was concluded that it is at the right time to develop a position statement so it is ready to go when the timing is right.. It is recommended that the effort should not be limited to GLRI but also need to be broadened to include Canada as a binational effort.

- Potential input on draft Lake Erie Lakewide Ecosystem Objectives
  - This agenda item was not discussed due to time constraints.

**4. Triennial Assessment of Progress**

- This item was not discussed due to time constraints, but was covered during the RCC/SPC separate Committee meetings.

5. **Preparation for Board Co-chairs Meeting**
    - Collaboration among boards will be the focus of the board co-chairs' meeting.

6. **Other Business**
    - None

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## Draft Agenda

| Time | Agenda Item | Lead |
|---|---|---|
| 1:00-1:15 | 1. Welcome and Round table introductions | SAB Co-Chairs |
| 1:15-2:20 | 2. Overview of current RCC and SPC activities and discussion of joint/collaborative opportunities | SAB Co-Chairs |
| | • SPC<br>a) Information Coordination and Flow<br>b) Fertilizer Application<br>• Energy<br>• Declining Lake Productivity | Work Group Co-Chairs |
| | • RCC<br>• Research inventory<br>• Surface/Groundwater Model Integration<br>• Great Lakes Nutrient Adaptive Management | Work Group Co-Chairs |
| 2:20-2:30 | **BREAK** | |
| 2:30-3:25 | • Full SAB<br>• Discuss potential overlap in modeling activities associated with several projects<br>• Great Lakes Early Warning System – discussion of draft RFP (***Attachment 1***)<br><br>4. Discussion of potential collaborative opportunities<br>• Recommendations on sustainable restoration of Great Lakes (***Attachment 2***)<br>• Potential input on draft Lake Erie Lakewide Ecosystem Objectives (***Attachment 3***) | Work Group Co-Chairs<br>&<br>SAB Members |

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|---|---|---|
| | • Other? | |
| 3:25-3:40 | 3. Triennial Assessment of Progress<br>• Highlights of individual Committee input<br>• Discussion of draft recommendations (***Attachment 4***) | Co-chairs |
| 3:40-3:50 | 4. Preparation for Advisory Board Co-Chairs meeting | Co-Chairs |
| 3:50-4:00 | 5. Other business | SAB Members |
| 4:00 | 6. Adjourn | |