



September 29, 2009

Dr. Paul Pilon

Engineering Adviser, Canadian Section, International Joint Commission

Dr. Mark Colosimo

Engineering Adviser, United States Section, International Joint Commission

Dear Drs. Pilon and Colosimo,

Subject: Response to IRG Review of “The Formulation and Evaluation of Lake Superior Regulation Plans for the International Upper Great Lakes Levels Study”

References:

1. IRG Review of Formulation and Evaluation Strategy, May 5, 2009
2. The Formulation and Evaluation of Lake Superior Regulation Plans for the International Upper Great Lakes Levels Study
3. Socio-Economic Sector Evaluations of Lake Superior Regulation Plans for the International Upper Great Lakes Levels Study, July 14, 2009
4. Ecological Evaluation of Lake Superior Regulation Plans for the International Upper Great Lakes Levels Study, July 14, 2009

This is the Board’s response to advice and comments provided by the Independent Review Group (IRG). The IRG met with the IUGLS team at the Canada Centre for Inland Waters in Burlington, Ontario on April 20, 2009 to discuss the strategy. We apologize for the lengthy delay, but many of the comments and suggestions required the Board and the TWGs to schedule additional meetings and workshops to respond to these comments, and these comments also influenced the Board approach to the socio-economic sectors analysis (Ref 3) and the ecological analysis (Ref 4), as they are all integral to this strategy. Overall, the reviews and comments helped to strengthen our explication of the planning and evaluation processes that the Board chose to undertake, and to make our technical teams explain their suite of complex approaches and interrelationships more clearly. However, we would like to note that every single recommended action by the IRG was covered in some manner by the three documents. We are pleased that the recommended actions of the IRG both supported and strengthened the Board’s overall approach.

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Peer reviewers expressed support for the general planning approach, but made recommendations and suggestions for over a dozen topic areas. Some of the suggestions that were offered, though interesting, we felt went well beyond the mandate of the IRG, and overlapped the Board's decision making prerogatives and, in some cases contradicted the IJC Directive to the Board. Hence we do not consider some of the suggestions as pertinent, and have noted that in our response. While we appreciate the effort and thoughtfulness that went into those comments, it is important for the IJC and the IRG to more carefully monitor and enforce the basic objectives inherent in the scope of services for the peer reviewers. The Terms of Reference for the IJC IPR are highlighted here:

- “The overarching charge shall be to evaluate **the appropriateness and sufficiency** of the work plans, studies, models and monitoring efforts used to inform decisions related to evaluating:”
- “The review should focus on the **scientific aspects connected with the issues**, not on the decision-making process within the purview of the Commission itself.”

Following these fundamental distinctions, the Study has separated those review comments which fall under the Terms of Reference for the IPR into two categories: those that address the “appropriateness and sufficiency” of the overall approach versus those that are merely suggestions to be considered and which may be addressed by the Board if they are deemed to be within the mandate of the Study as determined by the Board and the IJC.

The IRG review includes many suggestions, but only three specific recommendations for more specificity (the Integrated Ecological Response Model, Synthesis of Existing Environmental Studies, and the Adaptive Management Protocol). The Study acknowledges that these elements were presented in their preliminary stages by design, as part of the overall intention to invite peer review during development and to use that guidance to improve the study. Two subsequent peer review documents (references 3 and 4, above) provide more information, and have been subsequently peer-reviewed as well. Our responses to those documents are being finalized within the context of an overall and more coherent plan formulation and evaluation strategy.

The reviewers summarized their analysis as follows:

“The IRG’s review team has assessed the proposed methodologies and considered the needs related to public understanding of study findings. The shared vision process proposed by the PEG (Plan Evaluation Group) shows high promise and appears to incorporate sound principles of planning, evaluation and decision-making. However, the review team found that:

- *A number of the proposed methods are not described with enough detail to enable the review team to be able to fully evaluate the recommended approach without reviewing cited references.*
- *The proposed methods may not always be appropriate to the task, for example reliance on net basin supply forecasts.”*

The following Study responses are based on review of the IRG comments and subsequent work done to prepare for the IRG review of the economic sectors and ecological evaluation methodology. The first four issues regard plan formulation and the remaining issues are related to plan evaluation. In the introduction to the four plan formulation issues, peer reviewers wrote:

The proposed approach to plan formulation involves multiple investigators developing a variety of what appear to be a series of closely related plans. Given that there will be adjustments made to fine tune each plan, would it be more effective to start with fewer candidate plans?

Although an interesting point, we feel that this is primarily a Board decision, and does not really address either “appropriateness” or “sufficiency” of the planning process. The Study acknowledges that the process will produce many slightly inferior plans, but believes there are benefits to this approach. This approach allows each investigative group to pursue a specific strategy (e.g., optimization, refinement of current rules, interest-based simulation, etc.). This will increase our confidence that the final plans will be a good subset of a range of approaches and not derivations of one particular approach. Also, through pursuing plan formulation from different perspectives, we will gain insights and understanding that we would miss if, for example, we limited the development to only varying the particular parameter values defining Plan 1977A releases.

PLAN FORMULATION ISSUES

*1. **Legal Review:** Reviewers asked that IUGLS prepare a legal review of how the treaty supports or inhibits regulation, especially for the environment, which is not a purpose explicitly protected by the treaty.*

1. Response: The Board agrees, as it had intended to undertake such an analysis and recently initiated a scope of work for this review.

*2. **Perfect Forecast Scenarios:** Reviewers suggested the study follow the example of the Lake Ontario regulation study and use perfect forecasts to estimate the potential of better forecasts to improve the outcomes of regulation.*

2. Response: The Study team has subsequently suggested working with plan formulators and other technical working groups on at least three specific ways to incorporate perfect forecasts into the analysis. First, one of the members of the plan formulator team (Dr. Dave Watkins, Michigan Technical University) will use ‘perfect forecasting’ in his optimization approach. Second, the Study will use ‘perfect forecasts’ to develop “ideal possible” water level regimes for the sectors represented by different technical working groups. Third, perfect forecasting will be used in the adaptive management effort to explore the limits of regulation to attenuate extreme water levels. These plans are in the early stages of development and will evolve with input from the Board, experts and stakeholders. The idea for using perfect forecasts is that we could show a select, knowledgeable group of experts a lake levels situation that they might not like (high or low) and then ask, how would you like it to be? The current regulation plan makes release decisions based on very crude assumptions about future water supplies, so even if the intent in the rules is to please the stakeholder, it may produce levels the stakeholder doesn’t like because

it used bad assumptions. The use of a perfect forecast eliminates that concern, so we can say, (1) even if we had perfect knowledge of the future, this is as far as we could go in meeting your desires, and (2) now that you know your choices, which is the least objectionable?

Optimization Approach

The Study teams are using different approaches in formulating plans in a competitive but collaborative approach, with each team trying to satisfy the same array of management objectives through a different formulation approach. Some are making changes to control parameters in the current regulation plan; some begin with unregulated levels and then add regulation selectively to reduce damaging high and low levels. All teams may make use of 'perfect forecasting' in their development process to both gain insights to improve their methodologies and also to demonstrate what is possible. For example, the current Plan 1977A attempts to balance the lakes using simple forecasts of water supplies in the next five months. The team changing parameters on Plan 1977A can substitute the actual water supplies to determine not only how much better the plan could be with better forecasting, but also determine how to accommodate the risks associated with forecast error into their methods. It is expected that the value of hydrological forecast improvements, something between the simple method now in use and perfection, will also be demonstrated through this approach..

Dr. Dave Watkins is trying to optimize levels for the given objectives, and this should allow the most systematic use and most effective assessment of the value of 'perfect forecasting'. Dr. Watkins is planning to use both a perfect foresight and a "stochastic" model. The stochastic model will choose the optimal release from Lake Superior in the current month based on multiple possible forecasts of future supplies. The array of possible supplies underlies the risks of using a release strategy; depending on the rules for using the forecast arrays, the results will be closer or farther from the best possible outcome.

Designing Best Possible Outcomes by Perspective

The Study has already asked and received guidance from different stakeholders and experts about the water levels they would consider ideal. For example, Muskegon area shore property owners like water levels close to average (see Figure 1), but given the relatively small effect that the regulation of Lake Superior has on levels below it, these shore property owners will not realize their ideal even if maintaining more average levels on Lake Michigan was the only regulation objective. Alternatively, plan formulators can produce water level series from each new plan, and shore property owners can apply their own criteria to rank plans.

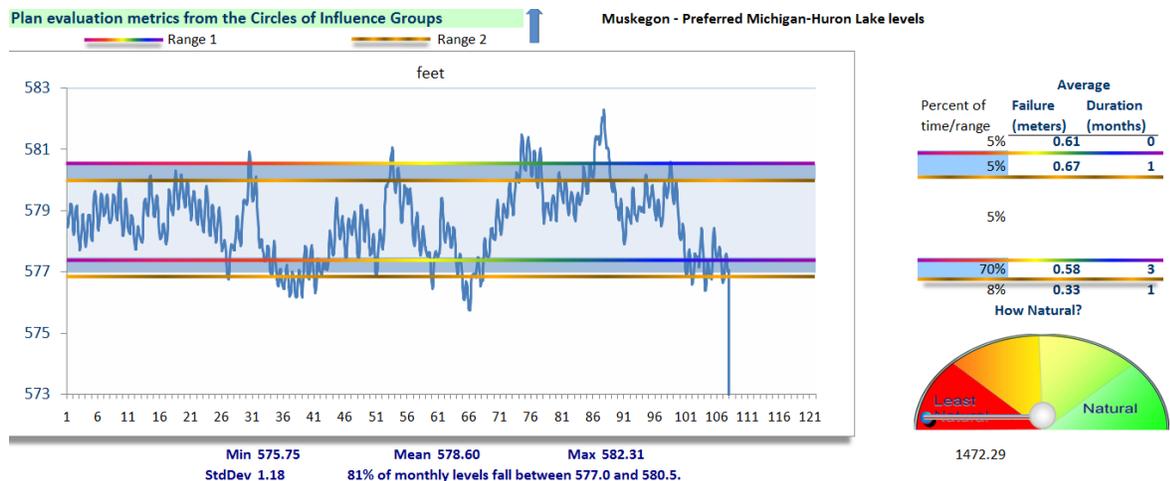


Figure 1. Preferred Levels from the Muskegon Circles of Influence Meetings

One or two knowledgeable representatives from each technical working group will be presented with actual 20th century water level elevations. Based on what we already know, PEG will present periods of that history that different TWGs would have preferred to change. For instance, the 1950s and 1970s water levels will be of interest to representatives from the Coastal TWG because these high water periods accounted for nearly \$260 million in damages along the Lake Michigan shoreline and \$43 million in U.S. damages on Lake Superior¹. PEG will develop an interactive water balance model that will allow Coastal experts to change water levels within the possible envelope afforded by the limits of regulation. Water levels would be calculated using the actual supplies that occurred, so participants would be limited only by the physical characteristics of the control structure. This approach could also be useful in educating stakeholders about the limits of regulation, another peer review suggestion. The results of these exercises could be used to describe tradeoffs (for example, the tradeoff between damages on Superior and the lower lakes), and to refine interest satisfaction curves.

The Role of ‘Perfect Forecasts’ in Adaptive Management

Clearly, we have limited skill at forecasting climate regime shifts, or even confirming these shifts as they are occurring. At the same time, the central notion of adaptive management for climate change on the Great Lakes is that if we knew when and how water level regimes or impact regimes were going to shift or had shifted, we could change the regulation plan, consider new or additional regulation structures, or adapt policies and behaviors on land to reduce the negative and increase the positive aspects of changes in climate or ecological and economic conditions.

The approach will be similar to the approach used in producing ideal water levels (previous section) except that the duration would be longer, including the use of an interactive model in

¹ DeCooke, B.G., 1991. *Great Lakes Shoreline United States Inundation and Erosion Stage-Damage Relationships*. Consulting Report Prepared for the United States Army Corps of Engineers, North Central Division, 355pp., plus Appendices. (1987 U.S. dollar values)

which decision makers can specify any water level sequence possible with the supplies of a particular scenario, without having to develop a series of plans that approach the desired levels. For example, there might be a water supply scenario that transitions from the current to a very dry climate, producing very low water levels on Lake Superior. The Study might invite ecologists to design the Lake Superior levels they would like to see during the dry period to preserve Lake Superior ecosystems. Perhaps this would be done with and without a downstream control structure. The interactive model would limit the lake level changes to those possible given the supplies and structures. The resulting water level and flow time series would be evaluated using all the performance indicators and hydrologic attributes used in traditional plan evaluations, and the differences between this evaluation and the Plan 1977A evaluation for the same supplies would provide an estimate of the upper limit of what adaptive regulation could provide. With some additional work this approach could be used to evaluate policy changes other than regulation, such as changing the fleet of commercial vessels or re-drawing the 100 year floodplain.

3. Scenario Suggestions: *The study may wish to consider a scenario-driven analysis in which specified extreme event scenarios are used in the analysis. Noting that most stakeholders prefer levels closer to average, reviewers asked that the IUGLS team report on the current status of drought and high water contingency plans and building from there, consider a scenario-driven analysis using specified extreme events. These scenarios could consist of a water supply trace and an economic condition. A dynamic scenario could be created, tracking for instance, lower levels from climate change causing less commercial navigation, followed by a change in the depth requirements for shipping.*

Reviewers also suggested that the navigation analysis should be expanded to include lake and tributary barge transportation, and to recognize the environmental benefit of replacing truck and rail traffic. The IUGLS response is that expanding the navigation analysis to include a quantitative model of lake and tributary barge transportation would be expensive and difficult and likely would not help the Board decide whether a regulation plan was worth recommending.

The IRG felt that the implications for energy use and conservation, especially fossil fuel based technologies need to be documented for all scenarios, given the policy priority for energy conservation (greenhouse gases) and energy independence.

3. Response: The Study has begun to develop more formal scenario analysis concepts as part of its adaptive management approach, and has created a separate Adaptive Management TWG to deal with the range of issues raised by the IRG. Although the Board intends to develop recommendations for a new regulation plan to fit current, or historical conditions, due to the great uncertainty regarding future economic, environmental and climatic conditions, the Board has also decided to develop an adaptation strategy rather than design a plan today that could address a wide range of possible future conditions. However, the analyses for the current condition and adaptation to future conditions will not be separated by a firewall; many of the same people will work on both, many of the same models will be used, and where possible the same performance indicators will be used.

Assess the Current Status of Low and High Water Contingency Plans

The IUGLS TWGs will prepare general summaries of existing contingency plans to high and low water levels in their contextual narratives and may produce more detailed assessments as part of the Adaptive Management Strategy. One part of that strategy (approved by the Board) is to examine institutional alternatives that would more closely connect those who manage the impacts from lake levels to those who develop information about lake levels. A more involved assessment of contingency plans would be necessary to design the information system so that it was effective in meeting its purpose, which would be to improve water management outcomes.

Test Plans with Extreme Water Supply and Changed Economic Scenarios

The IRG suggested that IUGLS consider an accelerated growth scenario in which Chicago becomes a hub of global transportation. Navigation should include not only ship-oriented transport but also lake and tributary barge transportation. Navigation in both contexts is important as an economic driver of the region, but also from an environmental standpoint, by diverting traffic from less economically and environmentally-efficient rail and especially truck transportation. For all scenarios, the implications for energy use and conservation, especially fossil fuel based technologies, need to be documented, given the policy priority for energy conservation (greenhouse gases) and energy independence.

As part of the new Adaptive Management Strategy, PEG will ask each TWG to imagine unprecedented but plausible scenarios that would stress a particular service or resource. A 'navigation plus' scenario can be one of them, but initial sensitivity analyses suggests that commercial navigation would have to change in substantial and particular ways for it to influence Lake Superior regulation and vice versa. Ships now transit every combination of lakes; the value of shipping on any one lake is not that much greater than any other, so changing the regulation plan to keep Lakes Michigan-Huron higher would have little overall effect on shipping, helping ships that pass through Michigan-Huron except those also transiting Lake Superior, and hurting shipping on Lake Superior.

4. Climate Change: The IRG suggested that economic scenarios should be superimposed on the climate scenarios.

4. Response: The Board agrees, and has undertaken a review by its Economic Advisory Team to see how this might be best accomplished within the constraints of the study, data availability and consistency.

PLAN EVALUATION ISSUES

5. Stochastic Analysis: The IRG suggested that it might be more efficient to use fewer water supply sequences, arguing that an analysis of several stochastic water supply series that include very high and low conditions will provide essentially the same information as a 50,000 year

“long term continuous” simulation. The IRG also suggested that the IUGLS team assess system memory – how long is it before the impact of a regulatory action can no longer be detected.

5. Response: The Study agrees that a few selected water supply series could provide a disproportionate amount of evaluation insights, but will raise this with the Hydroclimate TWG before proposing a final response. To the degree that a stochastic water supply sequence actually represents the population of future water years, a full 50,000-year analysis can provide an extensive exceedance frequency distribution. On the Lake Ontario study, those analyses showed some plans to be better at controlling extreme levels except at the very rarest levels, at which point other plans were better. The Study acknowledges that these probabilities have to be questioned because the models generating the 50,000 years of supply may be based on simplistic assumptions about how dynamic the future climate will be, but having many flow sequences to test plans reduces the chance that we will miss a plan deficiency.

The Study investigated the issue of duration of impacts of a particular regulatory action. For a relatively large difference in initial lake levels, the effect was dissipated to less than 1cm after about 15 years with plan 1977A. Other plans might be faster or slower in response. Smaller changes may have a negligible effect.

6. More information on the Integrated Ecological Response Model (IERM): *The IRG wrote that they would like to review the IERM proposal, especially the PIs when it is ready, because what they saw in the PFEG review was too generic to comment.*

6. Response: More details were subsequently reported in “Ecological Evaluation of Lake Superior Regulation Plans for the International Upper Great Lakes Levels Study”, July 14, 2009. The IERM is still conceptual and is not ready for computer coding. Additional review of the IERM development was discussed at the Ecological Peer Review meeting on July 22, 2009 in Detroit. A response to that IRG review is being formulated.

7. Synthesis of Environmental Data: *The IRG pointed out that since there was so little money for data collection, the study should make a serious effort at synthesizing available research.*

7. Response: The Ecosystem Technical Working Group (ETWG) has and will continue to do that. Their efforts were presented at the July 22, 2009 peer review meeting and are documented in the peer review document for that meeting and the so-called ‘White Paper’ developed for IUGLS, also was provided to the IRG.

8. Review of Site Sampling Criteria: *The IRG wanted to review the site selection criteria for all TWGs when they were ready.*

8. Response: The criteria are more thoroughly discussed in the two new peer review documents provided to the IRG for evaluation on July 14, 2009.

9. More Information Needed on Adaptive Management: *The IRG notes that the adaptive management strategy was insufficiently described for the review team to evaluate and asked the*

PEG to clarify the specific tasks that will be undertaken including how “uncertainty” and “risk” will be defined and assessed, and how the approach will reduce uncertainty, and hence risk in future decision-making, by reducing data gaps in models.

The IRG asked how the IUGLS adaptive management strategy would reduce uncertainty in models, and hence, risk in decision making? In particular they asked how the IUGLS adaptive management strategy would deal systematically with:

- a) What are the most important facts that we know that help to answer the question?*
- b) What are the most important information gaps and priorities to address the question?*
- c) What is the value of waiting for more information in making decisions, in terms of the economic, social, and environmental benefits of making a better decision and perhaps avoiding irreversible change if we act today?*
- d) What do we do while waiting – research, preparing contingency and prevention plans?*
- e) Can we identify management solutions that are flexible in response to new information? Information can play a number of important functions in decision-making, including the evaluation of benefits in reducing risks, or the conversion of situations involving uncertainty to a situation in which risks can be quantified.*
- f) Is it possible to develop early warning, or leading indicators for the economy?*

The IRG asked whether Item 4 on page 31 refers to continued “resource production” continued operation while additional data are being acquired, or to production of commercially-harvested resources such as fish, in contrast to sustainable use of the Great Lakes in terms of what have come to be called “ecosystem services”?

9. Response: The new PEG proposal for Adaptive Management Strategy is included as Chapter 5 in both the ecological and socio-economic peer review documents dated July 14, 2009. The approach was modified based on advice garnered during an adaptive management workshop June 2-3, 2009 in Windsor, ON. This report was presented to two IRG groups on July 21st and 22nd in Romulus, MI., and discussed by the Board on Sept 10, 2009, with a modified version adopted by the Board..

The essentials of the strategy that apply to the questions raised about climate change and adaptive management by the IRG is that while the Study will evaluate regulation plans under a wide range of water supply scenarios, it intends to address climate shifts and substantially different economic and environmental conditions by developing a formal plan of adaptation to the actual changes as they are perceived to occur, based on certain ‘trigger points’. The IRG raised specific questions that are answered here based on the initial Study proposal, but it should be noted that the Board has made its decision about the proposal at its September 2009 meeting, taking into account IRG comments.

The design of the adaptive management plan for Lake Ontario regulation focused on uncertainties in models; a systematic analysis showed that the selection of a regulation plan was sensitive to the modelled assessments of shore protection damages and wetland diversity benefits but was not sensitive to any other modelling errors. Consequently, an Adaptive Management Strategy was designed to confirm the model estimates over time. The Study feels that the

selection of a regulation plan for Lake Superior will not be as sensitive to modelling error/uncertainty because the new plan is likely to be fairly similar to the existing plan, whose impacts have been carefully monitored and observed, not just modeled, over the last twenty years.

Response to the IRG's lettered issues:

- a. The most important facts to help to answer questions about the impact of model uncertainty will be developed through sensitivity analysis using extreme assumptions (What if there is no navigation? What if we underestimated the value of boating on Lake Michigan by half and overestimate the value of boating on Lake Superior?)
- b. The question of priorities will become a dominant part of adaptive management to a changing climate, environmental and economic conditions (not model error). For example, the IRG noted that Lake Superior is far more pristine. If net basin supplies drop under climate change, these pristine ecosystems could be threatened under the current plan, which would draw Superior down in proportion to dropping levels on Lake Michigan-Huron. A higher priority for Lake Superior ecosystems could drive an adaptation of the plan to forego the lake balancing objective, but the lower levels produced on Lake Michigan-Huron would cause substantial disbenefits (costs) to boating and coastal homeowners. The use of 'practice decisions' for the Adaptive Management Strategy, held with PIAG and experts, can help encourage an informed debate on such policy shifts which in turn may inform (if not drive) the decisions of the IJC to accept new priorities.
- c. Sensitivity analysis and the use of perfect forecasting will help determine the value of waiting for more information in making decisions, in terms of the economic, social, and environmental benefits of making a better decision and perhaps avoiding irreversible change if we act today.
- d. The Adaptive Management Strategy contained in the July 14, 2009 Ecosystem and Economics peer review documents (references 3 and 4) suggests that some analysis, such as the sensitivity analysis described above, can be done during the study, and that the institutions for adaptive management (who is involved, how is it funded, how are decisions made) must be designed during the study. In the "transition" period, the strategy will almost certainly propose a larger but purposeful system of climate observations and research to improve our skill at identifying significant climate change points. It is also possible that the Board will recommend periodic exercises to update the Adaptive Management Strategy and acquaint a new generation of water managers with the agreements reached at the end of the IUGLS.
- e. The Study believes that we will be able to identify management solutions (regulation plan changes, for example) that are flexible in response to new information such as changing water supplies because as great as the variety of future conditions may be, the water level regulation system is relatively

insensitive to them except as new structures and policies create new categories of response. For example, if the protection of Lake Superior ecosystems does receive a higher priority and climate drives supplies to all lakes down, there are specific changes in the regulation plan that we can identify now that would support those new priorities. If the priorities do not change, then the regulation plan would “adapt” far less; we might design a strategy, for example, that updates the means and standard deviations of the lakes in the balancing routine.

- f. The Study will develop a more formal response during the development of the adaptive management strategy to the IRG question of whether it is possible to develop early warning, or leading indicators for the economy. We would begin with sensitivity analyses; as mentioned previously, for each of the major sectors affected by water level changes and climate uncertainty..

The IRG also specifically asked what the term “resource production” meant. The complete phrase is the fourth listed goal associated with adaptive management and reads “design of balanced policies that provide for continuing resource production while simultaneously probing for better understanding” (see insert). It means adaptive management provides the possibility of continuing to produce the resources associated with water (hydropower energy, cooling water for other types of energy and industrial production, conveyance for shipped goods, drinking water, etc.) while monitoring and adaptation address undesirable outcomes or risks over time.

10. Suggested discrimination regarding sites and species of special interest: The review team did not see evidence that the IUGLS team discriminated between the quality of the environmental resource each lake provides; for example Lake Superior is pristine compared to Lake Erie, which may mean that it is more important to preserve more natural water level regimes.

10. Response: The IUGLS team acknowledges that this is a valuable consideration. On the other hand, Lake Erie is much more biologically productive and sensitive to change. So protecting environmental values on all affected lakes must be equally addressed. The July 14, 2009 ecological peer review document addresses the technical aspect of this, stating that the selection of sites for ecological evaluation will consider ‘pristineness’ as an important attribute. This concept, as well as ‘ecosystem integrity’, is part of the Board’s decision process.

11. Stakeholder Education: Reviews reflected the comments of IUGLS study team members that many stakeholders are not cognizant of the physical realities and limitations associated with management of Great Lakes water levels. These misconceptions persist despite the various outreach efforts of the IJC and others. Reviewers asked whether this situation precluded the use of SVP, and asked how the study board would address this issue. The Independent Review Group suggested the PEG attempt to document the level of misunderstanding as part of this task.

11. Response: The Study agrees this is an important aspect of the overall Study goals. It is fairly common for the general public to be misinformed about the intricacies of water level management. These misconceptions have been documented on the Great Lakes; many complaints about levels on the Lake Ontario Public Interest Advisory Group questionnaire blamed the Corps of Engineers, for example, even though the Corps does not regulate Great Lakes levels. This is a

particular problem for homeowners who suffer flood and erosion damage; it is very common to hear homeowners in public meetings on the Great Lakes express the opinion that the IJC could control flooding if they cared about homeowners rather than power and shipping.

This lack of understanding is hard to eliminate completely because so many homeowners are never or rarely connected to any particular study or any outreach attempt, but the Board and PIAG are aggressively addressing the issue with general information (website and newsletter), public meetings, and ‘Circles of Influence’ workshops. The study team developed the so-called ‘fencepost’ (conceptual) regulation plans, each designed to optimize levels for a single interest or stakeholder group.

‘Circles of Influence’ workshops are designed to allow small groups of knowledgeable stakeholders and IUGLS planners to discuss sophisticated study issues in an open and informal way. The principle behind these Circles workshops is that the study will learn more and stakeholders will be more likely to trust the study if stakeholder experts have the opportunity to provide insights and aggressively challenge IUGLS planners in small group discussions. Although primarily designed to help identify stakeholder preferences, using the “best possible” scenario approach with these experts will help create a credible definition of the limits of regulation to satisfy stakeholder interests. Because these stakeholder experts are already trusted by larger stakeholder groups, and because they often interact on a more continuous basis with stakeholders through interest based organizations, doing this should improve the general understanding of the limits of regulation.

Sincerely,



Ted Yuzyk
Canadian Co-Chair



Dr. Eugene Stakhiv
U.S. Co-Chair