

Notes from the Tenth Study Board Meeting

Hilton Windsor
Windsor, Ontario
24-25 February 2009

Day 1 -

1. Welcome/Attendance

Board Members:

John Boland, Jim Bredin, Jim Bruce, Jonathan Bulkley, Don Burn, Allan Chow, Kay Felt, Jon Gee, Gene Stakhiv, Ted Yuzyk

Managers:

Tony Eberhardt, Syed Moin

IJC Advisors:

Mark Colosimo, Paul Pilon

PIO:

John Nevin, Jill Wingfield

TWG & TT Leads:

David Fay, Wendy Leger, Bill Werick

Jill Wingfield, formerly of the Great Lakes Fisheries Commission in Ann Arbor, Michigan, was introduced as the Study's new Public Information Officer.

Agenda is Attachment 1.

Note: Action Items are displayed as **bold and summarized in Attachment 2.**

2. Review Status of Action Items from Notes of Meeting #9 (Syed Moin & Tony Eberhardt):

Actions:

- a. Item #6 – Jill Wingfield will look for information about the 1984 ice jam and provide to the Study Board.
- b. Item #7 – Tony Eberhardt will distribute Chris Stewart's coastal processes contextual narrative to the Study Board.
- c. Item #9 & #10 – Efforts will continue to involve First Nations in the Study and "circle of influence" meetings, but not likely until the beginning of the next Canadian fiscal year (April 2009). Ted Yuzyk and Wendy Leger to pursue.
- d. Item #11 - Ted Yuzyk will send the "Risk Management Guide for Climate Change Adaptation in Communities" which Jim Bruce prepared for Canadian government to the Study Board.

3. Updates from the Directors (Ted Yuzyk & Gene Stakhiv):

- a. **Revised St. Clair Report Schedule:** Ted briefly outlined the schedule over the next two months and mentioned the proposed Study Board meeting for March 30th in Washington, DC.

- b. Planning for Project Peer Review: Gene Stakhiv described the three peer reviews of strategies for the St Clair River work (hydraulics, hydrology and uncertainty) that have taken place to date. Project reviews will follow.
- c. Planning for Lake Superior Peer Review: Methodological reviews are being proposed – the PEG review for April 8th and economic and environmental reviews for June. How climate is being analyzed will require review and will partially be reviewed during the PEG methodological review.
- d. Financial Status Report: About \$500,000 is being targeted for carry over to the next Canadian FY. This will be added to the new FY allocation of \$2.3 million. For the US, about \$400,000 is not yet committed of the \$4 million provided to date, although these funds are earmarked for approved activities. The US FY09 amount is roughly \$1.3 million and requests for these funds will be made after Year 3 proposals are approved.

4. Report of St. Clair River Task Team, Part 1 (Syed Moin):

- a. Uncertainty Hydraulic Workshops: A workshop was held on January 6th and 7th in Burlington, Ontario to resolve outstanding issues from Peer Review, redesign work to accommodate new analyses on uncertainty, rationalize differences between Baird and Study findings, identify key resources for further studies and restrict the scope of hydraulic modelling uncertainty. Nearly 70 tasks are being completed for the entire St. Clair River and the areas upstream and downstream including itemizing different characteristics and additional model runs.
- b. Uncertainty in Hydrology: A workshop was held on January 14th and 15th near Dulles, Virginia to resolve outstanding issues, redesign work and implement further studies. A proposal from Brian Tolson (University of Waterloo) was presented by Don Burn for reviewing residual and component Net Basin Supply methods. Baseline metrics would be determined for measuring the fall between Lakes Huron and Erie from a total supply point of view. Tolson's work is to be completed by mid-March. Sensitivity analyses of components are underway in terms of both hydraulic conveyance and NBS and total supply.
- c. Compensation/ Remediation Report by Baird (Gene Stakhiv): The report on the various measures was described. Ralph Pentland has been contracted to look at the legal and regulatory steps required to implement any of these measures (e.g. required environmental assessments, etc.). Subject to further Board review, the Study Board agreed to allow the report to be placed on the IUGLS web site with the caveat that this is not an indicator that remediation/ mitigation is expected. **The Board was asked to review the report for any wording that might be misconstrued.**

5. Report of St. Clair River Task Team, Part 2 (Syed Moin):

- a. Lake Michigan-Huron to Lake Erie Fall:
 - i. Charts were shown from Baird comparing fall from Lakes Huron and St. Clair, Lakes Huron and Erie, and Lakes St. Clair and Erie, which they used to hypothesize that the declining head difference was between Lakes Huron and Erie, since the fall between St. Clair and Erie appears static. However, considering backwater and different time periods, the slope and difference for all pairs changes.
 - ii. Comparing the linear trend results of monthly, annual, May-August, June-September, for the period 1962-2006, Baird's range varies from 20-33 cm,

compared to Study results ranging from 26.4 – 27.3 cm (1965-2006). However, for the full historical period, from 1860 to 2006, a significant amount of the change in fall of over 80 cm can be attributed to GIA (Lake Port to Buffalo): 10.3 cm (monthly) or 10.4 cm (June-Sept.) per century.

b. Sedimentation Studies:

- i. Extensive video of the river bed has been collected between 2007 and 2008, along with acoustic surveys, concentrated in the upper reach of the St. Clair River.
- ii. Both HydroSed2D and Open FOAM (3D) models give essentially the same water velocity distribution patterns. Bottom shear stresses computed by HydroSed 2D were determined to be insufficient for bed movement from Lake Huron to above Black River. The capacity of the river to move gravel-sized material at all transects is extremely limited. Based on these calculations, the mean annual bedload transport rate obtained is essentially zero. The river appears to be armored. Similarly, for the lower river the shear stress does not appear to be high enough to move the sandy bed material now present.
- iii. The ice jam of 1984 which occurred downstream of the St Clair gauge, while in place, severely reduced the flow rate but increased the net head and it is possible that scouring of the river occurred due to the potentially high velocities under the jam. But there is no substantiation regarding channel deepening in this part of the river.
- iv. Navigation Effects – it is hypothesized that ship propeller wash may be responsible for local movement of bed sediments in some sections of the river.

c. Hydraulic Modelling Summary:

- i. Based on water level gauge analyses (Drs. Frank Quinn & Art Schmidt), hydraulic conveyance has changed (increased) with time, over the period 1971-present).
- ii. Between Dry Dock and Port Lambton, 88% of conveyance change (based on measurements of fall) occurred, based on HEC RAS (~9 cm). According to Holtschlag, river conveyance (based on changes in discharge) has increased by 5.9% from 1962 to 2007.
- iii. Frequency of rate of change in fall – the recorded change (-0.268 m) in the 20-year average fall compared to that of the previous 20 years is an extremely rare event based on 20-year intervals in the 50,000 year data stochastic data set that assumed no change in conveyance..

- d. Hydrology: Improved determination of various components of the supplies is continuing. Evaporation data are being collected in real-time through eddy covariance. Dr. DeMarchi is quantifying uncertainties of runoff estimates and over-lake precipitation.

6. Board Decision Framework for St. Clair River Findings (Wendy Leger & Bill Werick):

a. Questions:

- i. Has conveyance increased in the St. Clair River?
- ii. If it did, what caused it?
- iii. If it did, is remediation warranted?

b. Information:

- i. Comparing the cumulative differences between the residual and component supplies(1948-2006), Erie NBS is about the same with the two methods, but there are clear trends in the differences for Superior NTS and Michigan-Huron NBS. This may be due to error in the connecting flow and/or the component data.
 - ii. Steve Daly's work may be able to determine if conveyance changed as a result of the 1984 ice jam.
 - iii. Bottom shear forces necessary to erode the upper river bed are about 40 Pascals, while the actual estimated shear forces, based on velocity measurements along the entire length, are between 2 and 14 Pascals, based on work by Dr. Krishnappan.
- c. Causality:
- i. Appears that conveyance has changed, but don't know what triggered this change.
 - ii. Increased conveyance does not appear to be due to the deepening to 27 feet for commercial navigation since evidence indicates a stable channel for years after the dredging. However, this supposition is based on limited bathymetric surveys.
 - iii. Suggestion made to gather aerial photographs of Lake St. Clair to see how that lake (size, sediment load) has changed over time – if any evidence of sediment movement from upstream, but it will be difficult to determine specific contributions from local river runoff, St. Clair River, etc.
 - iv. The possibility that ship prop wash could loosen/mobilize sediment for transport by the current needs further checking, but appears unlikely given the channel depths and amounts of material under discussion
 - v. GIA had a small but significant effect in reducing the fall during the period 1962-2007. (Effect depends on gauges used in the comparison.)
 - vi. Net Basin Supply differences between the lakes affected the head difference (fall), but more notably since 2000 (drought conditions), and at times (high lake levels in the 1970's, 1980's and 1990's) counteracted the long-term trend in total conveyance decrease.
- d. Conclusions and concerns:
- i. The evidence and analysis to date does not indicate that change is directly attributable to a human action and it more probably may be a result of a sequence of episodic natural or environmental phenomena (e.g., ice jam, dramatic change in lake water levels, etc.).
 - ii. However, any increases in St. Clair River conveyance can impact Lake Michigan-Huron and downstream water levels. This, along with future climate change impacts could exacerbate the issue of continuing long-term reductions in L. Huron-Michigan levels.
- e. Round table (led by Ted Yuzyk): The Board discussed various issues as a means toward developing a framework and a familiarity with the decision process that will be used for addressing St. Clair findings and overall Study outcomes.

Day 2 -

7. Revisit Board Decision Framework for St. Clair River (Bill Werick & Wendy Leger):

- a. In order to put Board comments and opinions in the proper perspective, a decision framework and criteria will be developed in a hierarchical format and distributed to the Board, followed by a teleconference for further refinement and discussion (Tuesday, March 24th at 9:00 am). **Wendy Leger will develop the first draft.** A face-to-face meeting to discuss this further will be held in Washington, DC on Monday, March 30th.
- b. What does the Board need from researchers to nail down decision before draft goes to the public?
 - i. More information from the middle and lower reaches.
 - ii. Assessment of Frank Quinn's work and assumptions. **Syed to assess this and the previous item (i).**
 - iii. **David Fay needs to explain the apparent 300 cms increase in flow and how this change should be considered – i.e. is it a continuous increase or a one-time adjustment factor.**
 - iv. More information about the history of the Port Huron/ Sarnia area – armoring of shoreline. **May be able to award a small contract for this. Wendy to investigate.**

8. Adaptive Management (Wendy Leger):

- a. The following framework was proposed for Year 3:
 - i. Establish an AM TWG,
 - ii. Create a data inventory,
 - iii. Develop a SOW for climate variability and change warning system,
 - iv. Develop a SOW for understanding risks,
 - v. Develop a SOW for assessing climate change impacts,
 - vi. Propose rules/ guidance for future regulation, and
 - vii. Prepare a “white paper” on an AM Great Lakes network
- b. Proposed cost: \$52,500 - \$80,000 for Year 3 per country with additional costs of \$80,000 and \$60,000 per country for Years 4 and 5.
- c. A search for leads will start - possibly Scudder Mackay, Linda Mortsch or Lisa Bourget. Al Douglas of OCCIAR could also be involved. TNC also wants to be involved based on a recent meeting with them by Bill Werick.
- d. Suggest an Experts Workshop on this as a first step. **Board approved setting up a workshop to refine the strategy (\$25,000).**
- e. Final decision will be made at next meeting pending approval of other Year 3 proposals and review of overall budget.

9. Lake Superior Regulation Task Team (David Fay & Tony Eberhardt):

- a. *Commercial Navigation, for Year 3:*
 - i. GLSAND model runs will continue in support of SVM. Could possibly use this model to support St. Clair work regarding impacts of ship movements and channel bed impacts.
 - ii. Coordination of work with Hydropower and Ecosystem TWG and Plan Formulation Group re peaking and ponding.

- iii. Finalize contextual narrative.
- iv. Funding required for TWG operations and travel.
- v. Will need a new Canadian co-lead. **Syed is looking for a replacement.**
- vi. Board approved the Year 3 proposal (\$67K US and \$33K Can).
- b. **Hydropower, for Year 3:**
 - i. Collect baseline data and information including an electricity prices study.
 - ii. Develop information on preferences and performance.
 - iii. Evaluation of: peaking and ponding; extreme hydrologies.
 - iv. Funding required for TWG operations and travel.
 - v. Board approved the Year 3 proposal (\$60K US and \$60K Can).
- c. **Water Uses, for Year 3:**
 - i. Develop database of critical levels for a sample of municipal and industrial intakes.
 - ii. **The Task Team Leads will request a SOW for the next phase of the inventory for Board consideration at the March 30th meeting.**
- d. **Plan Formulation Group, for Year 3:**
 - i. Develop rough regulation plan framework based on 8 draft plans.
 - ii. Proposed Year 3 budget: McPherson (\$34K), Watkins (\$37.1K), Fay/Caldwell/ Yin (\$81K Can). USACE Detroit District may have request.
 - iii. Board approved the Year 3 proposal (\$71.1K US and \$81K Can).
- e. **Rec. Boating, for Year 3:**
 - i. Interns have been hired for Canada, but need to be hired for the US surveys of marinas.
 - ii. Contextual narrative work and contract need to be formalized.
 - iii. Lakehead University tourism proposal deferred.
 - iv. **The Task Team Leads will request SOW for hiring US interns and the contextual narrative for the March 30th meeting for consideration by the Board.**
 - v. **Possible retirement of Canadian lead to be followed up by Moin/Yuzyk**
- f. **PEG, for Year 3:**
 - i. Finalize contracts with economic advisors.
 - ii. Conduct a review of all draft contextual narratives.
 - iii. Conduct decision framework/ workshops.
 - iv. Hold “circle of influence” workshops.
 - v. Develop the shared vision model.
 - vi. Proposed budget, \$140K US and \$115K Can, approved.
 - vii. Peer methodological review of PEG evaluation strategy planned for April 8th. **Bill Werick and Wendy Leger will prepare the necessary documents with assistance from the Task Team Leads.**
- g. **Coastal Processes, for Year 3:**
 - i. Prepare contextual narrative and summary of all reports.
 - ii. Four themes: Low water impacts, flooding, erosion and shore protection.
 - iii. Identify study sites.
 - iv. Flooding: storm surge site analyses, combine storm surge & stillwater effects.
 - v. Low level: benefits transfer study; hedonic pricing model of effect of low levels on property values
 - vi. Erosion: stable/unstable dynamic beaches, cohesive bluffs

- vii. Shore protection damage: classification and characteristics of inventory, representative designs
- viii. TWG travel and meetings
- ix. Proposed budget, \$277K US and \$182.5K Can., approved.
- h. ***Ecosystems, for Year 3:***
 - i. Contextual narrative work being negotiated.
 - ii. Develop an Integrated Ecological Response Model.
 - iii. Assess selected sensitive sites for suite of performance indicators. Proposed site study coordinators.
 - iv. Management and Coordination of Data Collection. Board questioned scope in relation to site administrators, GIS and administrative.
 - v. Set-up GIS data management.
 - vi. Fund administrative support – propose one full-time staff from Environment Canada. **Syed will talk to Sandy George regarding this person providing assistance with this and other TWGs.**
 - vii. Funds for technical workshops and TWG meetings, support for adaptive management
 - viii. Board approved the proposed budget conditionally with SOW needed for the development of the IERM and more information regarding specific individuals and sites (\$300K item) for the March 30th meeting. **Task Team Leads to request.** A condition of the IERM scope will be that the final product will be part of the public domain after the Study is complete.
- i. Peer methodological reviews of ecological and economic evaluation strategies proposed for early June.

10. Report from PIAG & Communications Plan/ Strategy (John Nevin & Jill Wingfield):

- a. Points raised by Jim Bruce and Kay Felt:
 - i. Important to know when PIAG member terms will expire.
 - ii. PIAG members need to be better engaged and aware of all meetings.
 - iii. Need to continue to pursue opportunities to engage First Nation and aboriginal groups.
- b. Public Meetings:
 - i. Developing an “introductory” video.
 - ii. At the public meetings, what type of feedback from the public are we expecting regarding Study findings?
 - 1. Do you question the science?
 - 2. Do you agree with findings?
 - 3. Don’t include recommendations since they may change.
 - 4. Be prepared to address the 3-D issue.
 - iii. Locations:
 - 1. Cleveland on May 20th
 - 2. Sarnia week of June 15th
 - 3. Other locations hosted by individual PIAG member meetings around the Great Lakes to be linked by live videoconference to Cleveland and Sarnia meetings. Propose 6 satellite locations per meeting.
 - iv. Live webcast. John and Jill will monitor and send questions received to Study Board or others for answers.

- c. Journalists to visit St. Clair River on May 2nd. Gene and Ted may attend the event.
- d. Develop/improve communication products.
- e. Hire an intern from CILER
- f. Total budget: \$30,290 US. Approved by the Board.

11. Communication Plan/ Strategy (covered in Item #10).

12. St. Clair Report (Ted Yuzyk):

- a. Board agreed to provide draft report with technical findings (but too early for conclusions/recommendations) for PIAG input and discussion at its April 7th meeting in Ypsilanti, Michigan.
- b. Chapters 1 and 2 – complete but being refined by TWGs and finished by end of this week.
- c. Chapter 3 – available to Board by the end of next week.
- d. Chapters 4 – 6 – available to Board by mid-March.
- e. Chapter 7 – remove “Uncertainty” from chapter title.
- f. Chapters will have to go out to Peer Review.
- g. Chapter 8 – removed and included as an Annex. Will include Baird and Ralph Pentland assessments..
- h. May revise report title.
- i. **Board was requested to review the chapters and specifically identify whether any important info is missing.**

13. Board Round Table and other Business (All):

- a. Teleconference: March 24, 9:00 to 11:00 am
- b. Meetings: Monday, March 30th – full day (Embassy Suites); Tuesday, March 31st – part day; Wednesday, April 1st – appearance with IJC from 8:30 – 10:30 am; possible afternoon meeting; reception in evening (location to be determined).



Study Board Meeting #10

The Great Lakes Ballroom – Ontario

Hilton Windsor

277 Riverside Drive West, Windsor, ON N9A 5K4

http://www1.hilton.com/en_US/hi/hotel/WINHIHF-Hilton-Windsor-Ontario/

Tuesday, February 24 – Wednesday, February 25, 2009

Agenda

Day 1 – Tuesday, February 24, 2009

Item	Time	Topic	Lead
1	0900 - 0910	Welcome/ Review & Approve Agenda	Stakhiv / Yuzyk
2	0910 - 0930	Review Status of Action Items from Minutes of Meeting #9	Eberhardt/Moin
3	0930 - 1015	Updates from the Directors <ul style="list-style-type: none"> ▪ Revised St. Clair report schedule ▪ Planning for product peer review ▪ Planning for Lake Superior Peer Reviews ▪ Financial status report 	Yuzyk/Stakhiv
	1015 - 1030	Health Break	
4	1030 - 1200	Report of St. Clair River Task Team (Part 1) <ul style="list-style-type: none"> ▪ Uncertainty Hydraulic workshop ▪ Uncertainty Net Basin Supply workshop ▪ Schedule of work 	Moin/Yuzyk
	1200 - 1245	Lunch	
5	1245 - 1430	Report of St. Clair River Task Team (Part 2) (includes Hydroclimatology) <ul style="list-style-type: none"> ▪ Preliminary findings ▪ Implications ▪ Integration & synthesis of results 	Moin/Yuzyk
	1430-1445	Health Break	

6	1445 – 1730	Board Decision Framework for St. Clair River findings <ul style="list-style-type: none"> ▪ Mandates, goals and decision guidelines ▪ St. Clair Decision Tree/Matrix 	Leger/Werick
	1730	End of Day 1	

Day 2 – Wednesday, February 25, 2009

Item	Time	Topic	Lead
7	0830 – 0930	Revisit Board Decision Framework for St. Clair River	Leger/Werick
8	0930 –1000	Adaptive Management <ul style="list-style-type: none"> ▪ Discussion regarding future economic and environmental conditions 	Eberhardt/ Fay
	1000 – 1015	Health Break	
9	1015 - 1200	Report of the Lake Superior Regulation Task Team <ul style="list-style-type: none"> ▪ Status of activities ▪ Approval of new projects ▪ Schedule of Methodology Peer Review <ul style="list-style-type: none"> ○ Plan evaluation ○ Economic evaluation ○ Environmental evaluation 	Eberhardt/ Fay
	1200 - 1245	Lunch	
10	1245 – 1345	Report from PIAG <ul style="list-style-type: none"> ▪ PIAG members & Task Team meetings ▪ Strategy for summer events ▪ Members 	Bruce/Felt
11	1345 – 1430	Communication Plan/ Strategy <ul style="list-style-type: none"> ▪ Need for new poster & brochure 	Nevin/Wingfield
	1430 - 1445	Health Break	
12	1445-1530	St. Clair Report <ul style="list-style-type: none"> ▪ Status of chapters ▪ Discussion on the review schedule 	Yuzyk/Shillington
13	1530 - 1600	Board member round table, other business and next meeting(s)	All
	1600	Departures	

Action Items from 10th Study Board Meeting – Windsor, Ontario

No.	Description of Action Item:	Action Lead:	Due by:
1	Information about the 1984 ice jam	Jill Wingfield	March 15 th
2	Chris Stewart's coastal contextual narrative to the Study Board	Tony Eberhardt	March 6 th
3	Pursuit of tribal/ first nation Study involvement and additional "circle of influence" meetings	Ted Yuzyk/ Wendy Leger	Open
4	"Risk Management Guide for Climate Change Adaptation in Communities" which Jim Bruce prepared for Canadian government to the Study Board	Ted Yuzyk	March 6 th
5	Review of Baird's report on remedial measures	Study Board	March 15 th
6	Review of Frank Quinn's investigations of NBS trends	Syed Moin	March 20 th
7	Explanation of the significance of an estimated 300 cms St. Clair River conveyance increase on lake levels and L Superior regulation	David Fay	March 20 th
8	Decision framework and criteria	Wendy Leger	March 15 th
9	Assessment of middle and lower reaches in terms of evidence of conveyance change	Syed Moin	March 30 th
10	Collection of aerial information and assessment of changes in Lake St. Clair – SOW for contract.	Wendy Leger	March 30 th
11	Adaptive management workshop	Wendy Leger	Unspecified
12	SOW for next phase of water intake assessment	Tony Eberhardt and David Fay	March 20 th
13	SOW for US recreational boating interns and contextual narrative	Tony Eberhardt and David Fay	March 20 th
14	Determination of secretariat/admin support role assisting the Ecosystem and other TWGs	Syed Moin	March 20 th
15	SOW for IERM model and addition information regarding Study area coordinators and work groups	Tony Eberhardt and David Fay	March 20 th
16	Develop PEG strategy documents for April 8 th independent peer review	Wendy Leger and Bill Werick	March 20 th
17	Replacements for Canadian Recreational Boating and Commercial Navigation Leads	Syed Moin and David Fay	April 15 th
18	Review of St. Clair report chapters	Study Board	On-going