St. Marys River Bi-National Public Advisory Council (BPAC)
Meeting Minutes

Place: Russ Ramsay Room, Civic Centre
Sault Ste. Marie, Ontario

When: June 20th, 2011
7:00 – 9:00 p.m.

1. Call to order/introductions

Present: Mark Chambers, Klaas Oswald, Michelle McChrisitie, Donald Marles, Corrina Barrett, Tym Garside, Greg Zimmerman, Mikw Ripley, Crystal Bole, Amanda Bosak, Corey Jerome, Paula Antunes
Regrets: Barbara Keller, Al Wright, Catherine Taddo, Loralei Premo
Guests: Marcus Scornaienchi (SSMIC Intern), Sue-Jin An (Environment Canada)

2. Approval of minutes

December 8, 2010

- Minutes not available.

March 10, 2011

- Minutes approved.

3. Business arising from previous minutes

Any information on the soil coming from the leaking underground storage tank site by Romes grocery store?

- Don talked to contractors and those hauling it away, the pile of contaminated soil remained there until June 17th when it disappeared.
- Contractors refused to say where it went, not sure where it ended up.
- Tym mentioned that the Sault Ste. Marie Landfill would have been able to take it, and that is most likely where it was approved to go.
- Tym will follow up and see where the soils were sent.

4. Presentation

Dr. Bommanna Krishnappan provided the results of a study on the stability of sediments located in the area of Bellevue Marine Park.

Slide 1

- Dr. Krishnappan has been working on the study for 2 years, which included taking video of sediments, as well as grab samples

Slide 2

- When looking at sediment deposits and their stability, one must look at the forces acting on the sediment particle.
- Forces acting on sediment particle: Tractive force (caused by the flow); Resistive force (particle itself). If the resistive force is greater than the tractive force, then the particle is stable (as the flow is not able to move the particle). If tractive force is greater than the resistive force, then the particle will be mobilized, and will be transported down the river.
- Tractive force is shear stress acting on the bed; the flow is shearing the particle.

- That shear force depends on the velocity of the water. If you can calculate the velocity, then you can calculate the tractive force. (A computer model was used to calculate the tractive force is this study)
- The resistive force depends on the size of the particle with larger particles having higher resistive forces (as the weight of the particle is causing resistance).
- Used special flumes to measure the resistive force of finer particles directly in the field. At the initial point of particle movement the Resistive Force = Tractive Force, so tractive force is measured as the particle starts to move, and call that the critical shear stress for erosion of the particle.
- Comparing the critical shear stress to the actual shear stress that the flow is exerting determines if the particle is stable or not.

Slide 3
- RMA2 model calculates flow velocity
- RMA4 model calculates sediment transport rate once the particle is mobilized

Slide 4
- Camera has a GPS system

Slide 5
- First cross section is just after the rapids, last one is near Lake George, 16 transects total
- On each transect, move from Canadian side to the U.S. side

Slide 6-10
- Cross section #2, closer to the shore on Canadian side is large rocks, while closer to the shore on American side shows finer material

Slide 11-19
- Just downstream of Topsail Island, closer to Canadian border, showing very fine, "fluffy" sediments
- Closer to the middle of the river shows rocks, cobbles and a sand layer (courser materials)

Slide 36-37
- Size distribution: rule of thumb was less than 62 microns considered fine grain, more than 62 microns was considered course grain materials
- Most were course grained

Slide 38
- Critical shear stress depends on the size of the sediment and the density of the sediment

Slide 41
- Used the flume to determine the critical shear stress of sediments below 62 microns

Slide 42
- Flume has an opening where sediments are brought in using a pump which draws water in, creating flow
- Flow rate was calibrated, and bed shear stress was then calculated
- Flume was operated at different flow rates, and the underwater video camera showed whether or not the particles were moving or not.

Slide 53
- Used maximum flow, minimum flow, and an average

Slide 61
- Eddy just by Topsail, which is a depositional zone

Questions:
Can you add disturbances at Bellevue Marine Park to include in the model?
- *Yes*

Were you able to use any of the US Fish and Wildlife data from detailed studies they did on the currents (for sea lamprey control) in the St. Marys River?
- *No, but if access is available Dr. Krishnappan would very much like to take a look at them*

This model would be useful for the little rapids project on the US side.

Grab samples were taken to a depth of 5 – 6 cm?
- *Yes, up to 10 cm*

But no core sediments, and from your conclusion on shear strength there may be layering of sediments…you are not concerned that they are going to be disturbed beyond the number of centimetres you mentioned and there is a covering/layer over those, you are not concerned about those being disturbed at the present time under the present conditions?
- *Yes that's right mainly because these are course-grained sediments, if they were fine-grained we would have a reason to be concerned*

In your conclusion you mentioned that under ice conditions reduces shear strength, which is understandable, in the last few years we have had more moderate winters than normal, and at one period of time I think there was a 4-party agreement that there would be no winter shipping after a certain date in the St. Marys River as it was frozen over, but there had been transport of oils and gases by tanker to the government dock here and the US ice breakers kept the channel open, under those conditions we know from past studies that the ice when it breaks moves under existing ice surface and scours, ripping the shoreline vegetation out and disturbs the sediments to a large extent, this hasn't happened in the last few years but who knows what can happen in the future? Are you concerned that the fines are going to be redistributed down the river further? It indicates that there is quite a bit of sedimentation moving in to the North Channel, and we already know that there is a cesspool of toxic sediments in Little Lake George because of the deposition. I don't know, there still seems to be challenges.
- *Yes, you are right, I only looked at ice cover, not ice scour, but Corrina looked at some work this spring.*
- *Yes, throughout April I took pictures and documented the ice breakup in the St. Marys at Shingwauk Island and Bellevue Marine Park*

The last two years there have been no real problem, I am just talking about 4 or 5 years ago, but who knows if we get another cold snap or not…
- *You are right, that needs to be investigated*

You mentioned that one of the photographs showed an oily substance in the grab sample, how many instances of this were there?
- *Only 2 or 3 out of 30 so about 10%*

Were those oily samples tested for contaminants?
- *No, not in this study*

Can marked particles be released and caught downstream to calculate the rate of recovery, would that be something that would be helpful in assessing how particles/sediments move in the river?
- *There are transit studies like that, but in my opinion when it comes to these fine sediment deposits, you have them on both banks and at either end of the river, the flow velocities and shear stresses indicate that there are depositional areas (low energy areas). We can model it and then follow up with some measurements to confirm it.*

Overall what you are indicating from this study is that there really isn't a contamination problem in the St. Marys River, so when it comes to sediment management, what I am gathering is that your recommendations are that the agencies to no require any remediation of the sediments?
- *Only the stability part is what I can answer, what I am saying is that the historic contamination, which is buried beneath the 5 cm levels, are not going to be disturbed by the flows of the river over say a 100 year period, that is all I can say*

Unless there is some major catastrophic event, or building of a new marina, dredging, anything of that nature, or significant changes of the water levels in the St. Marys River?
- *Right*

Can the MOE give insight into how this fits into the Sediment Matrix?
- *Sure, one of the questions on the matrix is whether the deeper contaminated sediments can pose a risk, and the work that Dr. Krishnappan has done has helped us answer that question, what we are hearing is that they don't under the conditions that are within the scope of his work, so that means that the question to answer now is how we address the surficial sediments, because we are not concerned about the deeper sediments now.*

You mentioned that there were wood particles in Bellevue Marina, did you account for that in the model in that they are probably more mobile than a grain of sand?
- *Yes, we tried to simulate velocities for those in the lab, but they are hard to quantify, as they are easily erodible.*

Do those easily movable wood particles have an impact the particles around them, if there are significant amounts of it they might cause the small particles and pebbles to move as well?
- *Pebbles wont move as their shear stress are very low, the fluff level and fine sediments will be mobile, but using the "consolidation model" the sediments that are deeper down are harder to move due to their higher density than the ones higher….causing stratification (a gradation of shear strength), lower levels need higher flow to become mobile.*

If a recommendation came to deepen channels, what impact would that have on the stability of this model?
- *It would change the entire model.*

Would sand capping be an effective method of locking the toxins in and preventing them from moving further down the river?

- That is mostly correct, the sand itself will cause some turbulence which can bring some of the fines out (displacement), but our study here shows that the layer below 5 cm has got enough strength to withstand even the highest flow, so even without the sand layer it is stable, but if you want insurance, the sand layer would work

5. Public Comments
None.

6. Office Reports
SPAC update:

- SPAC Spring legislative briefing in Lansing, met with legislators and educated them / brought them up to date. State representative, Frank Foster, is very conservation oriented and concerned with water quality, so he should be a useful advocate.

New RAP Coordinator:

- Christine Aiello is Michelle Selzer's new replacement. She has a couple other AOCs that she deals with and is already communicating new grants opportunities.

Lakehead University's PAC Workshop – Sept 17-18 in Thunder Bay:

- Corrina sent out invitation to everyone prior to meeting. If anyone is interested in attending please contact Corrina.

St. Marys Paper Open House on June 22 4-8 pm, focusing on co-gen facility:

- Might be of interest to BPAC members.

7. Agency Reports
4 – Agency Update:

- Attached. Answer to the "Question to BPAC": talk about the delisting criteria at the September meeting, but should email the ones that are ready during to summer as well.

Implementation Committee Update:

- First meeting was the afternoon of June 20th at the local MOE office.
- For sometime there has been a need to reengage other government agencies on the ON side of the river to work on some of the ON specific actions in the Stage 2 report. Would like to have their input (MOE, EC, DFO, APH, SSMRCA, MNR, City) on the Implementation Annex and have them take some ownership over the actions that are relevant to them and their mandates.
- First meeting was just an introduction, outlining the broad objectives of this committee, and see the committee as reporting to BPAC what the discussions and outcomes are, and share any products that are produced (such as the Implementation Annex).
- RAP Coordinator will report to the BPAC on meetings of the IC, but representatives from the respective agencies will be invited to participate in BPAC meetings more regularly to discuss projects that are underway.
- RAP Coordinator will also send out meeting minutes, and share the Terms of Reference once the final draft is available.

8. Memberships

- Susan Hamilton-Beach will be introducing her replacement, Catherine Taddo: postponed, as Catherine was not present.
- For new members, applications must be received & prospective members present for confirmation – standard procedure.

9. New Business

- Mike Ripley mentioned that the Journal of Great Lakes Research has dedicated a special June issue to the St. Marys River
- BPAC was present at the SSM Mich Spring Show, with Corrina, Amanda and Greg representing
- Engineering Days, can visit the Aquatic Research Lab
- BPAC summer activities
- Little Rapids Grant: NOAA recommended to their grants office that the little rapids project be looked at, thought is was an exceptionally well written proposal
- St. Marys River Fisheries Task Group recent presentations – great update on current fish population dynamics
- GLRI funding – US Rep is hard to acquire help from, would not send a letter of support for the little rapids project (Congressional letter from Michigan's Areas of Concern)
- CANUSLAK will being undergoing an exercise in Sept to simulate a tanker oil spill
- GLWQA Renegotiation Consultation for BPAC's Letter – Lake Superior Binational Forum looked into – postponed it for a full year, looking at chemicals of emerging concern etc. so are pretty much re-writing it which is taking longer than expected
- Grotto At BMP: official position was to not get involved
- Discussion as a group reinforcing BPAC's role as an advisory group and to follow the mandate / BPAC goals for the year – to be discussed next meeting
- Michigan PAC support grant for the LSSU BPAC resource office approval – another round of annual funding approved. Writing-the-st-marys-river has been started and is becoming popular. Klaas would like to see his accepted and up soon! 2nd Lunch on the River was successful and would like to continue it throughout the parks located along the St. Marys River. Talked about renovation plans for Rotary Park. Next one will be at Ashmun Bay Park. Also the City Council of Sault Mich. just recently approved a feasibility study for a waterfront walkway along the power canal.

10. Next Meeting

- On the U.S. side, near the end of August focusing on next years work plan.

11. Adjourn

Additional: The IJC is planning a presentation for the Upper Great Lakes Study on August 11th from 7-9 pm @ Algoma University. Visit http://www.iugls.org/ for more info.

Four Agency Report to the St. Marys River BPAC Meeting

June 20, 2011
Civic Centre – Sault Ste. Marie, Ontario

Michigan Department of Environmental Quality

- May 30 was the date for completing the tasks outlined in the grant supporting the review and development, where appropriate, of specific strategies for removing the BUIs in Michigan's portion of the Area of Concern.

U.S. Environmental Protection Agency (U.S. EPA)

- Phase 2 of the sediment cleanup project at the former Manufactured Gas Plant is anticipated to commence in late Summer or Fall 2011. It is expected to remove an additional 15-20,000 cubic yards of PAH contaminated sediments, as well as creating nearshore habitat restoration features. Phase 1 in 2010 removed approximately 6,000 cubic yards of contaminated sediment.

Environment Canada (EC)

- The two projects recommended for funding under the *Great Lakes Sustainability Fund* are still pending Ministerial approval; a delay due to the federal election. The projects are: 1) supporting the City of Sault Ste. Marie's (Ontario) efforts in urban stormwater management; and 2) extending support for the RAP Coordinator position until March 2015. The MOE currently has a contribution agreement in place with Algoma U (the host organization) effective until March 2012.

- With the help of the RAP Coordinator, EC and the MOE will be soon be forwarding for BPAC's review two documents:

    1. Draft "framework" of the RAP Implementation Annex for the Ontario side of the river. We hope to get BPAC's input on the overall structure and content of the actual Implementation Annex, which is to be developed this year.
    2. Updated set of delisting criteria for fish & wildlife-related BUIs, which have been revised from last year's workshop and subsequent expert and peer review. Question to BPAC: interest in reviewing these over the summer via email, or wait for entire package for a meeting in Fall?

- The two-year study to assess deformities, reproductive health, and chemical contamination of birds is off to a good start, with EC biologists having a successful week in the SMR area in late April; erecting enclosures, retrieving Herring gull eggs to monitor embryonic development, and conducting clutch distributions. The team revisited the area in late May to do the same for Common terns, and to assess the birds for physical deformities. This is a specific study identified under the Stage 2 RAP to confirm whether or not there is impairment to the beneficial uses related to bird/animal deformities and population health (body burdens) within the AOC.

- Also underway is a multi-year study by EC's Canadian Wildlife Service to assess baseline wildlife habitat condition and to evaluate the degree of impairment within breeding marsh bird and amphibian communities. An assessment of wildlife habitat and population within the AOC has long been identified as a need under the AOC/RAP process. This 4-year study will involve acquiring and reviewing imagery and determining baseline conditions and habitat availability within the AOC in 2011; carrying out a reconnaissance survey for site selection based on geophysical parameters in 2012; and conducting breeding bird and amphibian surveys (as key indicator species) at selected sites in 2013 and 2014. A final summary report will come in 2015.

Ontario Ministry of Environment (MOE)

- In May, Tara George began working as the Senior Great Lakes Scientist assigned to the northern Areas of Concern and Lake Superior Lakewide Management. Tara is working for the Environmental Monitoring and Reporting Branch out of the regional office in Thunder Bay. Her term ends on March 31, 2012.

EC/MOE Sediment Technical Team [includes other stakeholders]

- The assessment of sediment stability for the area encompassing Bellevue Marine Park is complete. On June 20, Dr. Krishnappan will present his work on the sediment transport and fate model and report used to assess the stability of surface sediments within the area that determined if the deeper, more contaminated sediments could be exposed under various scenarios.

- With funding support from EC, the Sault Ste. Marie Innovation Centre hired *Environ* to complete a Conceptual Site Model, which is a narrative and pictorial tool to better understand the current conditions with respect to contaminated sediment in the SMR. It illustrates sources of contaminants, migration pathways, and impacts. It will be shared with BPAC when finalized.

- EC also provided financial support for the Innovation Centre to retain a contractor to write a Literature Review on the toxicity of petroleum hydrocarbons on benthic organisms. *Environ* was selected and has produced an initial draft. The objective is to gain a better general understanding of the negative effects of oils and grease and PAHs on benthic organisms, and to prompt discussion and insights into what is being observed within the SMR sediment. It too will be shared with BPAC when finalized.

- Results from sediment quality and benthic health studies (both surface and core samples) for east of Bellevue Marine Park and the Lake George Channel are expected in the coming weeks. These were collected in late 2010 to better delineate the areas. Core samples were taken from these areas to assess contamination levels at depth to obtain a vertical profile of contamination, and an analysis was conducted to assess potential impacts from contaminants present in porewater. A presentation on the final results will be made to BPAC at its November meeting.