

SSIWPA Agenda Package for April 17 2015

Addendum

SSIWPA IWMP – Management Action Description Table

Table 1 is intended for TAC and other SDM project team members to provide a rough description of the management actions being considered for BMPs or Actions for Further Analysis (AFA). The list of BMPs and AFA to be defined was developed through TAC's initial assessment of management actions by perceived effectiveness, technical viability, and known governance considerations.

5	Stormwater Management: Settling Ponds Lead: CRD. Primarily education. Linked to septic field maintenance. More constructed infrastructure than MA #4. Timing contingent on Completion of Runoff Assessment (Fall 2016 earliest)	Epron Creek and any feeder creeks; could be by necessity on private land (agricultural/resorts etc)	Requires private landowner participation	Depends on scope. Contingent on more work to assess Runoff characteristics during November -April	Upwards of \$10K, but unknown until scope more clear.
6	Bylaw modification – Watershed DPA – to increase water retention on land. Require all new development permits to undertake landscaping modifications. ³ Lead: Islands Trust Stefan?	Steeply sloped properties - private lands; Right of Way along North End Road	Private landowner participation	Low	?
8	Riparian Land Use bylaw – Already underway. Lead: Islands Trust. SS Local Trust Area Proposed Bylaws 480 and 482 (http://www.islandstrust.bc.ca/islands/local-trust-areas/salt-spring/projects-initiatives/riparian-areas-regulation-implementation.aspx) Stefan?	Already includes entire watershed	Med-High	Low – unlikely to have effect on P content in Stormwater Runoff due to nature of P retention in soils	None
9	Education – FARMS: promotion of Environmental Farm Planning, workshops on Keyline Design, and other Water-Wise farming methods for SML Watershed Farmers and restriction on use of inorganic fertilizer containing P. ⁴ – Ken and Susan in PAC, do you agree?	Watershed	Medium	Low	\$2K
13	Watershed Stewardship Education: a) Stormwater Management Landscape Design Promotion b) Septic Maintenance Info Campaign	Lakeshore and SML watershed residents	High!	Low in terms of P reduction in runoff, no effect on P in sediments	\$1K –?

- c) Canada Goose Egg-Addling
 - d) Stewardship Award Program
 - e) Landowner Shoreline Vegetation Campaign
 - f) Public Awareness of hydrology and limnology
- Lead: SSIWPA: Coordinator and Steering Committee, together with Water Council? WPS?

Figure 1 below outlines the overall steps in the management action screening process in the run up to the next SDM workshop.

Instructions:

1. For each BMP and AFA fill out the columns moving left to right. If unsure or unable to agree on the content of any one cell please leave blank.

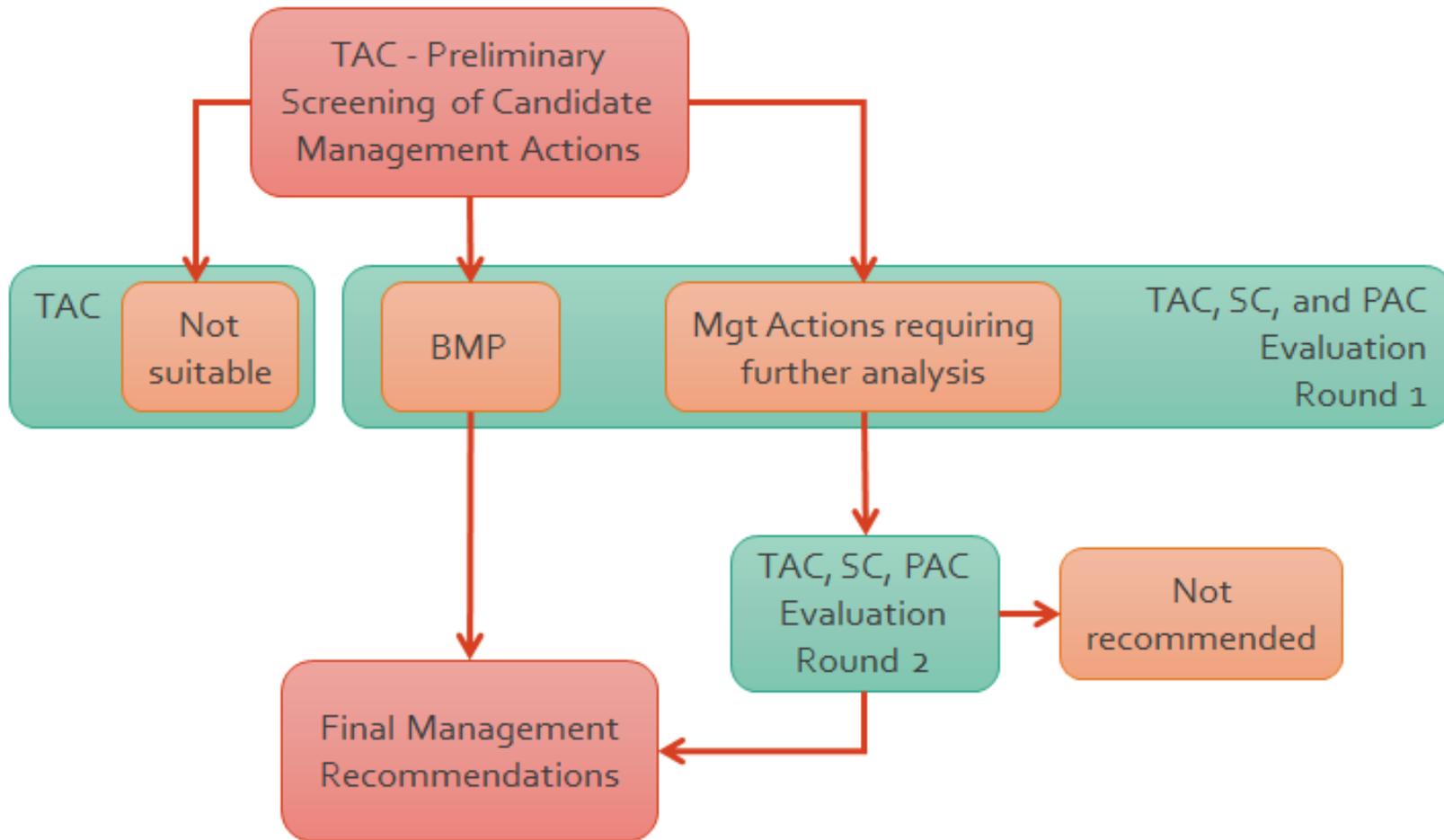
Table 1. Management action description table.

Action Ref #	Action name and description including timing and lead agency (if applicable)	Area covered	Public acceptability	Estimated effectiveness	Rough Costs (\$)
1	Shoreline riparian planting program – native tree, shrub, plant species during fall and spring. ¹ March 2016	Lake shore on WPS covenant land; private landowners with lawns or bare soil located within 50 m of lakeshore	High - Requires private landowner participation	Low	\$50K
2	Bird Deterrents on Aerators (cormorants, geese?) Lead: NSSWD. The District owns the aerators.	Aerators	Medium-High	Unknown	\$5K-up?
3	Aquatic plant removal Lead: CRD? ²	Littoral zones (0-1.5m depth all around the lake)	Medium	Low; Negative ecological effects possible (exposed sediment may release more P)	\$0-2K?
4	Stormwater Management: Source Control of Contaminants	Epron Creek and any feeder creeks;	Requires private landowner	Depends on scope. Contingent on more	\$ Unknown

	Lead: CRD Primarily education. Linked to septic field maintenance.	private land (agricultural/resorts etc.)	participation	work to assess Stormwater Runoff characteristics during November -April	
5	Stormwater Management: Settling Ponds Lead: CRD. Primarily education. Linked to septic field maintenance. More constructed infrastructure than MA #4. Timing contingent on Completion of Runoff Assessment (Fall 2016 earliest)	Epron Creek and any feeder creeks; could be by necessity on private land (agricultural/resorts etc)	Requires private landowner participation	Depends on scope. Contingent on more work to assess Runoff characteristics during November -April	Upwards of \$10K, but unknown until scope more clear.
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13	Watershed Stewardship Education: g) Stormwater Management Landscape Design Promotion h) Septic Maintenance Info Campaign i) Canada Goose Egg-Addling j) Stewardship Award Program	Lakeshore and SML watershed residents	High!	Low in terms of P reduction in runoff, no effect on P in sediments	\$1K –?

- k) Landowner Shoreline Vegetation Campaign
 - l) Public Awareness of hydrology and limnology
- Lead: SSIWPA: Coordinator and Steering Committee, together with Water Council? WPS?

Figure 1. Preliminary screening process for management actions under the SML IWMP



Notes for Table 1.

1) To consider: Need to hire contractor. 3-4 sessions (SSI Conservancy and Water Council could help planning?) Ongoing volunteer maintenance program; CVRD example of working program on Cowichan river; Lead agency unclear: Islands Trust could be involved in permitting QEP required, waiving fees for DP application?, can do education/community engagement; CRD usually on municipal property, this is mostly private landowner; CRD can do workshops, landowner education.

2) Islands Trust could assist with hiring of any required Qualified Professional; could be combined with the riparian MA#1

3) Land Modifications under potential 'Watershed Development Permit Area Bylaw'

- a) Permaculture Earth Works (ponds, swales, settling and directing water)
- b) Infiltration management (use of gravel, paving stones and other permeable surfaces)
- c) Xeriscaping

This would affect all private landowners in the watershed, and would likely impact only new developments in the watershed.

4) Agriculture Note by Coordinator Cowan (UBC Adjunct Professor in Sustainable Agriculture): Application of any fertilizers in the watershed (manure or inorganic inputs) should happen in the proper amount, and at the proper time of year, only. Farmers in the watershed already are likely employing conservation tillage and management of livestock waste to the best of their knowledge and resources, yet a farmer education program designed to update farmers with the latest information and tools could increase P-retention on farmland and reduce P into waterways via soil erosion.

Mechanism for the Management Action: Farmers in the watershed should be encouraged to apply to EFP (Environmental Farm Plan administered by ARDCorp) in order to qualify for funding to assist with projects that will bring their operation into alignment with Agri-Environmental principles and practices (Ministry of Agricultural and Lands, 2010).

Erosion Prevention: Prevention of soil erosion phosphorus loading to waterways (and lake) may be possible also through farmer education programs about: keyline design, which includes practices like limited cultivation, contour ploughing, and cover cropping to reduce erosion in cropping zones, as well as swale construction and earthworks to direct the flow of water from high points into more diffuse land-based sinks/ponding, rather than concentrated ditched runoff to waterways. Reduction of bare soil areas (reduced soil erosion) may be more of an issue than reducing fertilizer use (because this nutrient, P, gets firmly adhered to soils, especially when applied in an organic (ie. manure) format).

Manure Nutrient Management: Management of animal waste containing P, and other nutrient management (B.C. Environmental Management Act, 1008, sec. 7), is likely the main issue in the watershed, but we should not forget the importance of reducing soil erosion. To my knowledge, St. Mary watershed farmers use of inorganic fertilizers is very low to nil: if they use any, it is one springtime application of low- or no-phosphorus types (like 4-0-4 N:P:K) and usually for hayfields; many are organic farmers, and don't apply any inorganic fertilizer, but do apply composted animal manures. Within this watershed, there are likely to be at most, half a dozen farms with animal densities above 6 large animals (e.g sheep, pig, goat, cow, horse) or above 20 smaller animals

(rabbit, poultry, other) producing manure. Phosphorus in manure, and in inorganic fertilizer, binds readily to soil particles (Brady and Weil, 1999). Phosphorus is an anion that is bound to minerals, rather than present in the soil solution.

Ask Ken and Susan on the PAC to comment

References:

Brady, NC and RR Weil. 1999. The nature and properties of soils. Prentice Hall.

British Columbia Ministry of Agriculture and Lands. (2010). *Environmental Farm Planning Guide*, from the Sustainable Agriculture Management Branch. (5th ed.) Research and Development Corporation: British Columbia. Retrieved from http://www.agf.gov.bc.ca/resmgmt/EnviroFarmPlanning/EFP_Refguide/2010_Documents/Full_EFP_Reference_Guide.pdf

British Columbia Ministry of Environment. (2007). *Total, fecal & E.coli bacteria in groundwater*, from Water Stewardship Information Series. Retrieved from http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/library/ground_fact_sheets/pdfs/coliform%28020715%29_fin2.pdf

Item 2a. List of “Not Suitable” Potential Management Actions from the “Management Action Screening Table” that was finalized in all of the March SSIWPA Committee meetings, which have been removed at this stage based on the results of that first Screening Table:

“Dredging” - not suitable, dismissed

“Sewers” - not suitable, dismissed

“Periphyton Substrate” – not suitable, dismissed

“Lake Level”– outside scope of the management plan (see the SDM Charter)

“Destratification” - not suitable, dismissed

“Dilutional flushing” - not suitable, dismissed

“Diversion” - not suitable, dismissed

“Hypolimnetic Withdrawal” - not suitable, dismissed

All “Chemical” Treatments (see list in the Management Action Screening Table) were dismissed because Ministry of Environment has cautioned against the use of any management action that would manipulate or change the lake’s inherent chemistry by the use of a chemical or physical substance.)

“Floating Reed Beds” – not suitable, dismissed

“Trophic / Biomanipulation “– not optional by MOE mandate, too many data gaps for TAC to assess in the SDM timeframe, not enough a part of the current monitoring program

“Modify water use permits – motorized bans” – this was listed as AFA in the Management Actions Screening Table, yet the entry by all three committees stated “what objective is being measured here? Gas motors already banned”. On this basis, it was dismissed from the MA Description table.

“Enforcement of Existing and Forthcoming Bylaws” – this was listed as AFA, yet the content of the management action table appeared to pertain entirely to the RAR Bylaw, and effectiveness and scope were both unclear (“Minimal effect: Proactive enforcement may lessen some impacts in the future but with little change in P in the lake. “)

“Local treatment of septic effluent – CRD bylaw for septic.” – dismissed as not suitable

“Constructed wetland to manage septic effluent “ – dismissed as not suitable

“Provide incentives (real or in kind) to improve land use practices “ – was removed because it was considered to be part of “Watershed Stewardship Education” MA, and was listed as not likely effective for P reduction in the lake, which was the criterion by which TAC assessed the actions.

“Educate and advocate septic field maintenance information.” Was removed as a standalone MA because it was considered to be part of the “Watershed Stewardship Education” MA.

“Promote reduced use of fertilizers containing P” was removed as a standalone MA because it was included within the Farm Education MA in the description table. Comment from PAC Agricultural representatives is forthcoming.

“Promote designs for storm water management” was removed because it is part of “Stormwater Management: source controls” MA.

“Recognize leadership: stewardship award” was removed as standalone MA = see stewardship education campaign

“Encourage landowners to increase shoreline vegetation” And “General public awareness campaign about hydrology and limnology” were both removed as standalone as they are part of “Watershed Stewardship Education” MA.

Item 2b. List of Potential Management Actions from the “Management Action Screening Table”, which have been removed at this stage based on TAC discussions on April 13, 2015:

“Storm Water Management – Ditches”

Rationale: This was re-worded as “source control of contaminants” by the TAC, see MA#4 above, because TAC found that the action was more than ditching.

“Habitat Modification – Littoral”

Rationale: This was thought to be the same as removal of aquatic plants from the littoral zone, which appears in the MA Description Table #3 above.

“Increase Water Retention on Land – ponds, tanks and riparian areas along ditches” was removed because its contents are represented in these two MA s: “Modify Land Use Bylaws – green infrastructure” and “Stormwater Management: Settling Ponds”

“Identify and protect GW (groundwater) and aquifer recharge areas (quantity issue)” – This was removed on the basis that it is a quantity issue, and the TAC could not see how it was related to the management plan, which has a focus on water quality and mitigation of algal blooms. As well, the septic maintenance management action, to which Groundwater is related, comes up in another MA.

“Promote best practices in onsite standard of septic field” falls under public policy, and was removed by TAC because “septic field maintenance” was added under the “Watershed Stewardship Education” package of actions, and the MA Screening Table labels this MA as “dismiss, in process already”.

1) “Pass bylaws for certain standard of septic field” and 2) “Septic Field Info Sheets as a requirement of Real Estate Transactions” were both dismissed by TAC, because TAC considered them to be a) implemented already and 2) not possible to monitor or implement.

“Promote rainwater capture and storage” was removed by TAC as it was considered to be outside of the purview of the current management plan (it pertains to water demand/quantity, and not quality).

Item 4.6 Addendum 2pp.

-----Original Message to follow-----

From: SSI WPA [mailto:ssiwatersheds@icloud.com]
Sent: Saturday, April 11, 2015 8:09 AM
To: Stefan Cermak Cc: Shannon Cowan
Hi, Stefan

A couple of suggestions re the terms of reference. If preferable, I can offer these at the SSIWPA meeting. Let me know if you'd prefer to deal with them outwith that format.

At the start of the document, possibly leading the Objectives, include some statement that would reflect the preserve and protect mandate as it relates to natural resources?

Include an objective of promoting resource efficiency to further the aim of lowering our ecological footprint?

Scope of work: is it possible to prioritize the various items, or is this already suggested by the structure? Can we also provide a suggested list of who does what? Or is it all done by a consultant?

Is it possible to section out the tasks so perhaps some of them can be allocated on island, for example to the Water Council?

On Resources, page 2, Don Hodgins suggested we target some of the 30k towards assessing the shortfall in supply from SML were build out to occur. Is there a need to do this or is the OCP figure accurate enough?

Separate issues: The OCP calls for the densification of Ganges and we have various affordable housing initiatives. Should there not be an item to address whether the OCP needs to be revised or whether other measures can be brought to bear to achieve the vision in the OCP?

George

Reply Message -----Sent to George Grams (ssiwatersheds@icloud.com) April 14 2015
from Stefan Cermak (scermak@islandstrust.bc.ca)
Re: SSIWPA Water Quality Terms of Reference Revisions
Hi George,

Thanks for the great review of the draft terms of reference. The format evolved simply out of my approach to developing the Terms. Certainly the final product will require some contextual narrative which I will draft. Included in the narrative must be a background section detailing the history of the Water Council and SSIWPA, followed by contact information for respective people. I will ensure this gets into the RFP to set the stage for efficient cooperation.

Scope of Work:

You ask some great questions.

We can certainly prioritize items but I would seek both SSIWPA and LTC resolution to identify (LTC being the most important for directing purposes). Perhaps NSSWD's recent letter can help spur the NSSWD area as a priority. Perhaps we could also start with prioritizing the Objectives.

In general, I believe that a consultant would be best at gathering the background data with assistance from the relevant agencies and groups. Clearly the time spent doing research and communications will eat into the relatively small budget for such a holistic project. Hopefully they write efficiently.

Water Quality Terms of Reference Revisions – SSIWPA

It may be wise to have a resolution, after SSIWPA members consider the draft ToR, to commit to working with a consultant to provide timely response to research questions including the supplying of data and meeting person to person as required (terrible resolution language but you get the idea)

I believe Don's suggestion is captured in the ToR to: "review and updating Community Surface Water Systems Remaining Supply Capacity" (this is the OCP water table) followed by "research and recommend potable water demand standards for different types of users (Res, comm, indus, instit, etc.), and finally, by research projected water demand for undeveloped lands based on current permitted uses and projected rate of growth. Not only should we have a better idea of how much water for full build out would be required based on current data, but when. This will help with prioritization and setting of conservation targets.

Regarding Water Council, they could be included as an agency/group for the consultant to work with. I did run the Terms of Reference by Peter Lamb for his insight but we never discussed their potential involvement of Water Council in any way. I could follow up with them to see if they are interested in providing volunteer time for any of the items in the Terms of Reference.

I believe your comments regarding densification of Ganges and affordable housing initiatives is captured in the research "estimate projected demand for build-out of undeveloped lands based on projected rate of growth, including density transfer potential and amenity zoning..." followed by the drafting of recommendations...I will include "consider community water supply deficit impacts on other OCP policies such as amenity and density transfers to village cores" as examples of feasible amendments to SSI LTC bylaws.

Take Care, Stefan Cermak

Item 4.7

Addendum 2 pp.

SSIWPA Correspondence Protocol

Draft for discussion

April 14, 2015

- SSIWPA is a coordinating body created under delegated authority from Trust Council Bylaw 154.
- Islands Trust has an Incoming Local Trust Committee Correspondence: General Policy (Policy 7.4.i)(
<http://www.islandstrust.bc.ca/media/246778/74iincomingltccorrespondence.pdf>), which best applies to the issues SSIWPA is addressing.

Islands Trust staff recommend **SSIWPA consider using Policy 7.4.i** by:

1. replacing “local trust committees” with “SSIWPA”, “trustees” with “SSIWPA members” and “staff” including the “Legislative Services Manager” and “Planner” with “SSIWPA Coordinator”
2. striking out or ignoring irrelevant policy sections including B.2.a and section D.
3. Update SSIWPA Terms of Reference to refer to the above policy noting the appropriate reference changes.

Purpose: To establish guidelines for processing incoming correspondence addressed to SSIWPA in a consistent, efficient and transparent manner, including the delegation of content to appropriate agencies or organizations within SSIWPA.

In particular, to address the communications protocol issues discussed at the SSIWPA Steering Committee meeting of March 20, 2015, please refer to these sections:

7.4.i 2c)

All incoming correspondence received [by the Coordinator] that is addressed to [SSIWPA] is opened and forwarded electronically to the relevant [SSIWPA Committee] email address or to the appropriate recipient(s) [which may be one of the SSIWPA Member Agencies], with the exception of correspondence marked private and/or confidential, correspondence that is misaddressed, or unsolicited commercial correspondence unrelated to [SSIWPA] business.

7.4.i 2d)

If individual [SSIWPA Members] receive correspondence described in 2(c) directly, including via email, they forward it immediately to the [Coordinator, who] ensures that the correspondence is distributed to the appropriate [SSIWPA committee] via email.

7.4.i 2e)

Provided that the subject of such correspondence falls within the jurisdiction of the [SSIWPA], the original correspondence is forwarded to [the Coordinator] who ensures that the appropriate follow-up action is undertaken as follows:

i. When correspondence requires SSIWPA action, the matter is brought forward on the next [SSIWPA] agenda, provided it is received before the agenda deadline.

- ii. Correspondence specific to an active ongoing project is generally received on a SSIWPA agenda when that application or project is also on the agenda for consideration. Such correspondence may also be sent to the SSIWPA Steering Committee group email address for information in the interim, depending on when the matter will next appear on an agenda.
- iii. ignore. n/a
- iv. With the exception of correspondence referenced in 2(e)(vii), (f) and (g), where the [Coordinator] determines that correspondence should be received by the [relevant SSIWPA committee] for information, and it is received within the deadlines for agenda package preparation, it is placed on the next SSIWPA committee agenda. Correspondence received after the agenda deadline for the [relevant SSIWPA committee] meeting is placed on the following agenda unless the SSIWPA committee agrees to consider it as a late agenda item, because it is of an urgent nature.
- v. Misaddressed correspondence, for example to "Islands Trust" or [to any member agency of SSIWPA] but is, in the opinion of the [Coordinator], intended for [SSIWPA] is handled in accordance with 2(e) (i) – (iv).
- vi. Correspondence of a general operational nature, including general inquiries and routine requests for information, where a decision or action of the [SSIWPA] is not required, is answered directly by the [Coordinator]. The [Coordinator] response is copied to the [SSIWPA] committee for information, if the incoming correspondence was addressed to [SSIWPA].
- vii. ignore n/a

7.4.i 2j)

With the exception of correspondence referenced in 2(e) (vii), (f) and (g), correspondence submitted to the [SSIWPA] is a public record and may be published in a meeting agenda that is available for viewing by the public, and on the SSIWPA website.

7.4.i 2k)

Personal information supplied by the sender in correspondence to the [SSIWPA] is also part of the public record and may have contact information (email address, house number, phone number) and signature severed before being included in an open meeting agenda package.

- Note: Island Trust also has a Communications Policy (Policy 6.10.ii), which is only distantly relevant to the issues SSIWPA is addressing, and so has not been included here.

Item 4.9 Addendum
3 pp incl. Reply from Coordinator

On Apr 14, 2015, at 9:33 AM,
To: SSIWPA Chair Grams and Coordinator Cowan

From: Maggie Squires <squires.maggie@gmail.com>

At yesterday's TAC meeting, Don's reference to my 'pulling the plug' did not reflect very well, I think, the willingness to wind-up work on SML that I tried to express in my letter to SSIWPA. [dated February 20, 2015]
In addition, the last two meetings (Aerator discussion and yesterday's TAC meeting) demonstrated (to me) a need for my voice to keep the group [TAC] on track with interpretation of the lake data.

My purpose in writing:

First, I would like one of you to share with SSIWPA that my plans remain to see the SML work through to a somewhat loosely defined 'end'.
Is that clear? Although it might be better if I were to speak for myself, I am off-island on Friday (at a family wedding in Edmonton) so cannot attend the SSIWPA meeting.

Second, since I'll be around to wind up SML work, I'd like to emphasize to the each of you my interest in having addressed at least some of the issues brought up in the letter. Among those issues, the two I feel most strongly about are as follows:

1) That having a dominant person as chair has held back TAC progress, especially over the long-term, and promoted a bit of an 'old boy's club' flavour. Further, the present 'chair' situation does not, I think, promote collaboration, and adheres not to the model of rotating chair and not to a model of facilitated meetings. From my perspective, possibly this is something that could be addressed at the SSIWPA level. For reasons I won't list here, a strong arm is needed, I think, to keep the group on track and working toward an appropriate end point. Shannon, I thought you did a good job of overseeing yesterday's meeting. George, your presence can, I think, from time-to-time promote better meeting decorum. At the same time, I'll acknowledge my skill in navigating difficult topics in group meetings is not very well developed.

2) I strongly disagree with what seems to be 'habitual' production of TAC 'products' with a single author. This is inconsistent with the 'not owning ideas' TAC ground rule, which I believe we adopted. As an example, from the beginning, ideas have been introduced by all members and in my case a few ideas have guided TAC work including early recognition of the importance of precipitation-runoff as a driver of inter-annual variability in water chemistry, introducing the idea that SML is over the long term in dynamic P-equilibrium, and a persistent claim, now backed-up by data, that previous estimates of P-internal

were way too high. It is my strong suggestion that SSIWPA provide some ground rules for the authoring of TAC presentations and reports, just as any research group might have. Perhaps Jeff could provide some guidance in this based on his many years of work with a DFO research group.

In the event you think there may be some value in it, I'd be pleased to discuss any or all of the above topics with each or both of you.

Maggie

On Tue, Apr 14, 2015 at 10:34 AM, Shannon Cowan <ssiwpacoord@gmail.com> wrote:

Hello Maggie and George,

Thanks for writing, Maggie.

I think I understand your points, and since you will be absent, but you have a message to deliver to SSIWPA, I wonder if the best way is via another letter to reflect what has happened since your February letter?

Note on item 1) Chair duties, reporting out to SSIWPA:

- Your February letter was discussed in the March 9 meeting of TAC.
- I suggested the following to address that to improve Chair functions:
 - a) TAC meetings would end with creating a list of what was to be reported out to SSIWPA
 - b) These reporting/progress items would be generated in the meeting by all present, and circulated the next day in minutes (if TAC member disagrees, they could communicate to the TAC member who is reporting to indicate what would better reflect the discussion once minutes come out).
 - c) option now goes out to TAC in each meeting: Who will do the reporting out, on behalf of TAC, at upcoming SSIWPA meeting?
[A rotating Chair has essentially been created, and the emphasis is on the group. Meetings are also more tightly facilitated by the Coordinator.]

This time, [Maggie], it just so happens that you are away, Don is willing, and John does not seem interested [In reporting out to SSIWPA]...I do see willingness by Don to step away from this role if another TAC member wishes to do it. Do you have a suggestion about how to do it differently rather than asking at the end of the meeting who will report, and what will be reported to SSIWPA? If you do, perhaps this is what you could suggest to TAC first, not to SSIWPA, unless your suggestion is not being heard by TAC. So far, you are not making an alternative suggestion, that I can hear.

Note in reply to your item 2) re: Habitual production of single author TAC products.

- Each TAC product that appears on the website (either a TAC presentation in public - Nov 2013, June 2014, November 2014 and March 2, 2015) was sent around to all TAC members for review and revisions were accommodated/included, and where possible, it was discussed and finalized consensually in a TAC meeting prior to public release.

- Single author working papers are the mechanism TAC has created to bring forth "proposals" within its own group, not as "products" going outside of the group.

Other groups might call these one pagers or proposals or ideas. In TAC, due to the complex nature of data analysis, these have taken the form of slide presentations, journal articles and supporting evidence being shared in email and in person/meetings, and written documentation of the ideas in some form. They have varied depending on the TAC author from emails by Michelle, verbal proposals by Chris to 30 page documents and multiple presentations by yourself (and others in between like a great number of one pagers by John). None of these has left the TAC table prior to TAC consenting to it, except for the monthly reports by the Chair on the TAC progress.
for you, and the three suggestions:

Thanks for hearing my perspective on your items, Maggie. I wish you luck in effecting the change you wish to see.

I am happy to deliver your comments to SSIWPA if you do not have time, wish to make a formal letter.

Shannon

TAC Preliminary Results of St Mary Lake Monitoring Program
Comments from Rick Nordin re: January 7, 2015 review of the data

(Nordin is one of the authors of the 1979-1981 study of St. Mary Lake and Ministry of Environment publication)

This is a telephone transcript from a conversation with SSIWPA Coordinator Shannon Cowan on April 10, 2015:

Dr. Nordin began the conversation acknowledging the vacuum that existed for new, thorough St. Mary Lake data, and expressed that SSIWPA Technical Advisory Committee volunteers had made wonderful progress. He found the choice to study lake chemistry in more detail, and to include more recent methods for modeling the contribution of stormwater runoff to the phosphorus nutrient enrichment of the lake were both necessary, and brought new insights compared with his previous work. He acknowledged that the lower measurement of phosphorus attributed to septic loading represented a major shift, in comparison with what was previously estimated as septic source phosphorus load contributions to St. Mary Lake.

Dr. Nordin still thinks that internal loading mechanisms (phosphorus released from sediments at turnover, and factors impacting the amount of phosphorus remaining in the epilimnion through winter and early spring) are key aspects that could be addressed by management actions. He acknowledged the difficulty with the number of assumptions that are required in estimating internal loading. He also maintained that while export coefficients for modeling stormwater runoff P contributions are more accurate now than 30 years ago, it is unlikely that runoff or weather alone were the major contributors to higher than average P concentrations in some years: he still thought the internal P loading mechanisms were ~~the~~ major processes controlling these anomalous years, and thus, the greater than average cyanobacterial blooms.

At the time of the January 7, 2015 meeting of TAC Research Group, one of the key summary points from the data analysis suggested that over time, P concentration in the lake was not generally increasing, despite significant annual variability (within and between years). Dr. Nordin assessed this claim and found that while this lake may not show overall increases in average P content during the past 30 years, on the whole there appear to be spikes in the overall P concentration that have occurred at significant times (for example, in other lakes in the region such as Elk Lake, the data show a spike and shift to significantly higher average P concentration both in the 1860s, and again in the 1950s/60s). Nordin cites that if historical P concentrations were approx. 16 ug/L (based on the Cumming core data), and now appear to be 30ug/L as evidence of this episodic trend (rather than a gradual increase year to year).

Finally, Dr. Nordin asserted that he finds the St. Mary Lake study to be an incremental process, that will be much assisted by the current monitoring program results, including the Runoff modeling yet to be finalized by Lisa Rodgers (U. Victoria M.Sc. student), and the work of Dr. Hodgins on the septic data collection and assessment. He asserted that

gathering data about the biological factors (fish assemblages, and more information about phyto- and zoo-plankton assemblages and changes over time and in relation to the changes in total phosphorus and other factors) could yield even better detail on the situation and aid in ongoing adaptive management planning. He suggested contacting Scott Silvestri (the regional fisheries biologist from FLNRO in Nanaimo) to get some data about the fish inventory in the lake. Dr. Nordin has spoken with fishermen who have been fishing St. Mary Lake over past years, and as far as what was reported to him, there has been a significant change to the quantity and quality of the fish being caught, and the illegal stocking of perch that was intended to serve as food for the smallmouth bass populations in the lake may have resulted in negative food chain consequences – increased zooplankton predation by perch and subsequent diminished grazing by zooplankton on phytoplankton – ie more intense algal blooms. He acknowledged that there seemed to be a significant drop in zooplankton that coincided with the introduction of perch, and that a more clear analysis of the fish inventory over time was warranted. (Coordinator's note: The Public Advisory Committee has some people in its membership who fish on this lake, and they have not reported being willing to eat the flesh of fish they have caught in the past two years, although there may not be enough of a history to their efforts to make a good comparison and this is qualitative at best.)

Dr. Nordin also pointed out that from the data he saw on January 7th, 2015, the current Aerators seem to have stirred up the sediments and not been able to deal with the high oxygen demand in the bottom waters, perhaps due to over-perturbation of the sediments. He suggested that it while keeping aerators turned off is warranted, in future, it may be logical to consider the possibility to use for the aerators both as a tool for hypolimnetic oxygen supply and to potentially assist in delivery/distribution of another material that could bind excess phosphorus ions (e.g. Calcium or Iron additions to the lake), should the Ministry of Environment be willing to consider this possibility.

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