Salt Spring Island Watershed Protection Authority

Short presentation on formation, milestones and future goals

To: POLIS Capacity Building Workshop

By: SSIWPA Coordinator, Shannon Cowan

March 8, 2016

What?

Purpose of SSIWPA:

To cooperate on the development and implementation of policies and initiatives for improved raw water quality, and coordinated management of quantity of Salt Spring island water sources.

Why? And Where?

Salt Spring Island is currently not a municipality. It is an electoral district of the Capital Regional District and one of the Gulf Islands that is a member of the Islands Trust, which are both somewhat unique and rare systems of local government that overlap in certain aspects of watershed government and management.

To improve transparency and accountability, and due to some severe and prolonged toxic cyanobacterial algal blooms in St. Mary Lake, the SSI LTC voted in 2012 to re-structure watershed management and sought approval from Trust Council to establish an inter-governmental Steering Committee with the capacity to coordinate watershed management on Salt Spring Island.

Watersheds specs, and population on SSI:

An estimated 55% of the SSI community relies on surface water (lakes) for drinking water and the other 45% rely on groundwater from either individual property wells, or community shared wells administered by community water commissions. Some commissions are private water utility services (e.g. NSSWD which is one of the largest private utilities), and others are administered by CRD, with locals who sit on the commission in advisory roles.

There are 8 major freshwater lakes used as drinking water sources and 4 of them have both individual property-owner water withdrawal licenses, as well as licenses to water utilities and service areas who provide treatment and delivery services for raw lake water to residents on those systems.

Those water utility service areas draw from and manage four distinct watersheds. Except for one (Maxwell), the land in the watersheds is almost entirely privately-owned.

The four watersheds of interest are:

St. Mary lake (NSSWD and Fernwood-Highland Water District)
Maxwell lake (NSSWD)
Cusheon lake (Beddis Water District)
Weston lake (Fulford Water District)

And, because Salt Spring groundwater resources consist mainly of fractured bedrock, rather than large aquifers, health and supply in all of the watersheds and lakes also impact groundwater supply. SSIWPA is also concerned with coordinated study and management of the island's groundwater resources.

Other provincial ministries who uphold legislation related to aspects of watersheds have jurisdiction over aspects of watershed health on SSI, including:

- Ministry of Health
- Ministry of Environment
- Ministry of Forests, Lands and Natural Resource Operations
- Ministry of Community, Sport and Cultural Development (lakewater withdrawal licenses)
- Ministry of Transportation (ditches and road maintenance)
- Ministry of Agriculture and Lands (to a small extent)
- Federal Fisheries and Oceans Canada

Who?

Political organization of SSIWPA:

Steering Committee is the decision-making body, consisting of a representative of each member agency. Decisions are made by consensus. Steering Committee is administered by a full time Coordinator, whose contract is administered by Islands Trust, and whose duties include serving all agencies that comprise SSIWPA.

Member agencies:

Current SC: Islands Trust, CRD, FLNRO, Fernwood-Highland Water Service Area (CRD), North Salt Spring Water Service Area, and Beddis Water Service Area (CRD)

Past members 2013-2015: Ministry of Health, Island Health, Ministry of Environment

At any time, one or more technical working groups and public advisory committees may be formed to advise Steering Committee about scientific and community values, respectively. All working groups are chaired and administered by the SSIWPA Coordinator.

Current TWG member agencies: CRD Integrated Watersheds Program, Ministry of Environment (Groundwater Hydrology, Victoria), 7 members at large who are professional scientists

Past TWG member agencies: Island Health (Environmental Health Officer), and MOE (Provincial Water Quality Division, Nanaimo)

Areas of expertise:hydrogeology and geology, engineering, water chemistry, forest sciences, soil sciences, zoology, biology

SSIWPA Project Milestones and Future Goals:

Project: Main

Goals:

- To administer a coordination role for watershed management by local, regional and provincial government agencies, as well as meaningful public consultation and participation in watershed management planning and implementation by non-governmental groups and members of the public.

- To increase the workload capacity and scope of the Authority through sourcing grants and outside funds to supplement the tax requisition.

Milestones:

- Formation December 2012, research on correct organizational model by Islands Trust CAO Linda Adams
- June 2013 – unprecedented delegated powers awarded by Islands Trust Council to permit Local Trust Committee to undertake coordination role of the several agencies in regard to coordinated co-management of water, land use and other watershed resources.
- Nov 2013 – Sept 2015 Technical Advisory Committee established

- February 2015: Added groundwater and surface water quantity to the SSIWPA mission statement.
- Nov 2015: Technical Working Group membership changes (2 remain, 7 new)

Project: Watershed #1: St Mary Lake

Goals: To preserve and protect ecological functions of St. Mary Lake watershed that impact raw water quality, to maintain and enhance water-based recreation, to provide cost-effective and equitable solutions to water quality issues (such as cyanotoxins, algal blooms).

- Watershed area: 645 ha, lake surface area 182 ha, volume 16,000 dam3
- Outflow stream (Duck Creek) is salmon-bearing

- June 2014 – October 2015: REFBC Grant for SDM Process awarded
- July 2014 – July 2015 (And extension to spring 2016): SML Monitoring Program (enhanced water quality parameters, stormwater nutrient input and flow, septic nutrient input, plankton assessment) – see reports and public presentations list Appendix 1

- Sept 2014: Compass Resource Management appointed for SDM process
- November 2014 – October 2015: SDM Process for St. Mary Lake (multiple stakeholder voices as part of the process to design a strategy for improvement to respond to project objectives; inspire broad public support and engagement)
- SML Public Advisory Committee November 2014 – July 2015 (and reconvene as necessary for feedback on implementation and review of IWMP)
- October 2014 – current: Moratorium on new water connections within NSSWD (includes 2500 connections, and raw water sourced from both SML and Maxwell)
- Sept 2015 - riparian area restoration, and stewardship group research field trip with Lake Cowichan partners

- October 2015: SML IWMP publication and adoption

IWMP - Major findings:

- minimal septic phosphorus inputs,
- greater than estimated runoff from watershed P inputs,
- unclear P release from sediments at turnover but likely less than previously published values, no constant increase in P over time despite great fluctuations year to year, and seasonally

Planned Actions:

- Coordinated IWMP implementation November 2015 – spring 2017
- Review every 2-5 years, or as needed
- see IWMP actions and measures Appendix 2

Project: Watershed #2: Cusheon Lake (and Roberts Lake and Blackburn Lake)

Goals: To restore and protect sources of water in Cusheon Lake watershed
(reduced algal bloom negative effects, reasonable treatment for potable water, improvement to fish and wildlife habitat; to reduce phosphorus loading annually from 117kg to 100kg)

Plan obj:
1. Define and map Cusheon's watershed, its land uses, creeks, wetlands and the status of riparian

vegetation.

2. Undertake a scientific analysis of the phosphorus sources in the watershed.

3. Reduce inputs of phosphorus from land management activities.

4. Reduce inputs of phosphorus from water management activites.

5. Monitor springtime concentrations of phosphorus.

Specs:
- watershed area = 1065 ha, 3 lakes and numerous feeder creeks and streams, C lake area = 26.9 ha

- outflow Cusheon Creek is salmon-bearing - increased stormwater flow from land development and climate change causes destructive peak flows that damage spawning beds; fish ladders built in 1990s; MOE covenant on the outflow stream and the stream between lakes 2-3 in the watershed.

Milestones:

- CW Community meeting September 2015 – science, technical and environmental groups such as the Salmon Enhancement Group (like a local streamkeepers) presented to SSIWPA to start the process of a review of the 2007 Management plan for this watershed.

- January – April 2016: TWG working on review and recommendations

Planned Actions:

Integrated Management Planning, multistakeholder process of review of existing plan and outcomes of last six years of actions.

Watershed survey to determine how residents use and treat groundwater and lake water, for potable and non-potable uses, as well as to determine the best management practices that are in place for land use and water resource conservation strategies in order to update and

implement the watershed management plan for the area. To test Outcomes of the last 6 years of action to meet 2007 Plan Objective 3 “reduce inputs of P from land mgmt. activities”.

Project #3: Island-wide supply and demand (ground and surface water) for human use (commercial, residential, agricultural, etc.)

Goals:
Document current groundwater knowledge and assess hydrological models as applied to both surface and groundwater.
Determine how to incorporate climate change into water quantity assessment and prediction.

Planned Actions:
- Same survey to go island-wide
- TWG study of provincial wells database and other sources

Media and Outreach milestones:

Fall Fair booth 2014
Fall Fair booth 2015
Earth Day 2014
Water Fair 2015 – World Water Day in March
Water Fair 2016 - World Water Day in March
St. Mary Lake Integrated Watershed management public participation – 8 public events summer 2015

Gulf Islands Driftwood newspaper – an average of an article per month, or more, on activities, research, outreach, education, and water issues on the island since inception of SSIWPA.

Partnership of Water Sustainability in BC - January 2016 article

Funders:

Islands Trust
Capital Regional District
Island Health
BC Real Estate Foundation
Province of British Columbia
Philip and Muriel Berman Foundation via Vancouver Foundation

Other stakeholders

Conservation Interests and Non-Governmental Organizations

Salt Spring Island Conservancy promotes the protection of the sources of potable water on Salt Spring Island for the benefit of the general public through the preservation and restoration of watershed lands, by supporting scientific research into water resources and by providing public information on how to protect Salt Spring's potable water resources.

Salt Spring Island Stream and Salmon Enhancement Society has an interest in the protection of fish-bearing streams, riparian areas, wetlands and the removal of invasive species in riparian areas.
SSISSES has already conducted a salmonid enhancement project in Duck Creek, as well as wetland restoration surveys of other watercourses in SML watershed (Reimer, 2003).

Salt Spring Island Water Preservation Society is a non-profit organization founded in 1982 to protect Salt Spring Islands' drinking water sources. SSIWPS owns and manages a 110 hectare watershed preserve on the western slopes above St. Mary Lake, and thus is likely one of the largest land owners within the SML watershed.

Salt Spring Island Water Council is a forum for sharing information on the quantity and quality of Salt Spring's surface and groundwater resources, including research and education about potable water quality and supply issues and related programs.

More from Terms of Reference:

Guiding Principles

To consider the interrelationships of the various values of the watershed towards maintaining a balance of the natural, cultural, social and economic values of the community;

to establish and respect the ecological limits of surface water and ground water watersheds;

to use a consensus-based decision-making model;

to ensure that all discussions and dialogue promote a proactive, respectful and cooperative approach towards all issues;

to respect each participant's commitment to professional associations or responsibilities to individual employers or self;

to consult and engage the community in stewardship initiatives;

to include all stakeholders that wish to be involved;

to operate in an open, transparent and accountable manner

decisions made by SSIWPA are non-binding on any member agencies.

Aims and Objectives

To develop and update Watershed Management Plans for Salt Spring Island with the purpose of improving source water quality and to manage quantity;

to integrate policy development and implement strategies that will lead to the long-term health, protection and stewardship of fresh water resources;

to remediate surface water quality and address root causes of watershed ecosystem decline;

to determine sustainable water quantity limits to allow agencies to undertake integrated community planning that respects those limits

to cooperate with other agencies and groups having jurisdiction or interests within the Salt Spring Island Local Trust Area watersheds;

to draw on the expertise and experience of groups and individuals that have a history of working to protect and restore Salt Spring Island's water resources;

to engage the community in consultation processes that enable consideration of proposed actions according to multiple values and objectives;

to provide advice to other agencies or groups where appropriate;

to support outreach and education that enhances and encourages watershed care and protection and to increase understanding of water science, stewardship and management activities;

to seek funding for priority actions.

Scope and Geographical Areas

The capacity of SSIWPA and its ability to be effective is linked to time and resources. Initially, SSIWPA will focus its efforts on protection of the St. Mary Lake watershed and remediation of the raw water quality in St. Mary Lake. Details of the St. Mary Lake Watershed are attached in schedule A.

SSIWPA Research References for St. Mary Lake Monitoring 2014-15
Updated March 7, 2016

Please see library.ssiwatersheds.ca for many more references.

Hodgins, D.O. February 2016. DRAFT FOR DISCUSSION ONLY. “Assessment of Phosphorus Inputs to St. Mary Lake from Septic Systems”. (When final, will replace next item).

Hodgins, D. O. 2015. (July) *Update on the assessment of phosphorus inputs to St. Mary Lake from septic systems*. A report prepared for Salt Spring Island Watershed Protection Authority Technical Advisory Committee. (Available at: http://library.ssiwatersheds.ca/?mdocs-posts=septic-results-st-mary-lake-july-2015-summary)

Hodgins, D.O. 2015. *Water Balance Analysis of St. Mary Lake, B.C*. A report submitted to Salt Spring Island Watershed Protection Authority, October, 2015. (http://library.ssiwatersheds.ca/?mdocs-posts=water-balance-analysis-of-st-mary-lake-bc)

Hodgins, D.O. 2015. Preliminary estimates for stormwater phosphorus loads to St. Mary Lake, British Columbia. A report submitted to Salt Spring Island Watershed Protection Authority, November 2015. (http://library.ssiwatersheds.ca/?mdocs-posts=twg-report-st-mary-lk-runoff_dohodgins-september-2015)

Sprague, J. B. 2015. *St. Mary Lake Dynamics*. A report prepared for Salt Spring Island Watershed Protection Authority, August, 2015. (http://library.ssiwatersheds.ca/?mdocs-posts=st-mary-lake-dynamics_jbsprague-august-2015)

Squires, M. and TAC colleagues. 2015. P-Internal Brief. “SSIWPA-TAC is at work to understand in-lake phosphorus sources”. 6 Jan 2015.

Squires, M. 2016. *Can biomanipulation reduce algal biomass in St. Mary Lake. An assessment of trophic levels & potential interactions in the context of physical, chemical and biological regimes in St. Mary Lake, Salt Spring Island, British Columbia*. A report submitted to Salt Spring Island Watershed Protection Authority January 16, 2016. SSIWPA acknowledges financial support from the province for this project. (http://library.ssiwatersheds.ca/?mdocs-posts=can-biomanipulation-reduce-algal-biomass-in-st-mary-lake_squires-2015)

Technical Advisory Committee to SSIWPA. *Field Study Proposal for St. Mary Lake Monitoring Program 2014-15.*Public Summary March 2014.

Technical Advisory Committee to SSIWPA. *Septic Load Estimate at St. Mary Lake.* Public Report of the SSIWPA TAC. August 2014.

SSIWPA Research References for St. Mary Lake Monitoring 2014-15
Updated March 7, 2016

Presentations:

Hodgins, D.O. “Update on phosphorus input to St. Mary Lake from Septic Systems: A Synopsis”. Presentation given to the public, hosted by SSIWPA. July 7, 2015.

Squires, M. “St. Mary Lake: Three Common Perceptions Challenged by the SSI Watershed Protection Authority’s 2014-15 Sampling Program”. A public presentation hosted by SSIWPA, 7 October 2015. Presentation slides.

Other reports preceding (and replaced by) those listed in the top list:

Hodgins, D.O. “Update of Septic Loading to St. Mary Lake: A Summary Report.” April 2014. A report of the SSIWPA TAC.

Previous research on St. Mary Lake watershed, before SSIWPA:

Nordin, R.N., C.J.P. McKean and W.J. Wiens. 1983. *St. Mary Lake Water Quality: 1979-1981*. Province of British Columbia, Ministry of Environment, Victoria, B.C. Report 120. [File 64.080302]

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And others. Please see online library at library.ssiwatersheds.ca.

SSIWPA Research References for St. Mary Lake Monitoring 2014-15
Updated March 7, 2016

Related publications by researchers associated with SSIWPA that were not part of the TAC, or TWG publication agreements.

Hodgins, D.O. 2015. Drought Analysis and Implications for Salt Spring Island, British Columbia. November 21, 2015.

Squires, M. “St. Mary Lake: Three Common Perceptions Challenged by the SSI Watershed Protection Authority’s 2014-15 Sampling Program: A synopsis of 2014-15 In-lake Studies at St. Mary Lake and Implications for Interpretation of the Long Term Phosphorus Record.” October 7 2015.

Table 6. Management Actions and Implementation Measures

	Action	Dates	Lead Agencies	Measure of Success
1	Stormwater Quality Monitoring Phase 1: Inventory	October 2015 - April 2016	SSIWPA CRD	P load in stormwater from major sources; identification of hotspots that exceed avg load
2	Verification of Septic Nutrients - SSIWPA TAC research study	November 2015 - Spring 2016	SSIWPA CRD	Verify evidence that septic load to groundwater entering lake from 3 representative septic fields is nil. Confirm that P does not reach the lake using dye tracer.
3	Water Quality Monitoring	October 2015 - April 2016	SSIWPA	Improve understanding of the amount of P loaded into the lake at overturn and of the re-complexation and sedimentation of P with Fe after overturn.
4	Water Quality Best Management Practices (BMPs)	Fall 2015 (deferred)	SSIWPA	Web page created and reviewed
5	Survey of Quality / Quantity Improvement Activities by St. Mary Lake Residents & Property Owners	Fall - Winter 2015 - 2016	SSIWPA	Public results of community action survey; Web page created and reviewed.
6	Watershed Stewardship Workshops [Shoreline stewardship, water quality and resiliency, others]	Fall - Winter 2015 - 2016	SSIWPA CRD Islands Trust	Feedback by community received for at least 2 workshops or field trips before Fall 2016. SML stewardship actions that relate to workshop(s) are evident.
7	Environmental Farm Plan (EFP) - Group Plan Island-wide workshop	Spring 2016	SSIWPA SSIA ARDCorp	A group of farmers in a watershed undertakes application for EFP to receive funding assistance from the program; BMPs related to runoff implemented within 3-5 years of application.
8	Install Water Quality Information Signage	Fall 2015 - Winter 2016	SSIWPA	Signage installed at SML public beach Signage Winter 2016access points; brochures disseminated
9	Island-wide Water Fair (annual)	Spring 2016	SSIWPA, WPS WC, local sponsors	>200 participants in second annual Water Fair.

	Action	Dates	Lead Agencies	Measure of Success
10	Youth Watershed Stewardship Education [partner with existing programs]	2015-16 (ongoing)	SSIWPA WPS WC	Watershed expertise and coordination added to youth programs about watershed stewardship; more than 1000 youth/children reached.
11	Residential Septic Maintenance Education in SML [with existing materials]	Winter 2015 start	SSIWPA CRD	Baseline survey to establish septic pump out frequency in 2015 (follow-up in 3 years)
12	Biodiversity Inventory at SML	2016 - 17	SSIWPA CRD other local organizations	Create GIS habitat maps (focus on rare, endangered, invasive, including fish); management planning for invasives; measure community volunteers and engagement.
13	Watershed Stewardship Grant Writing Assistance	Fall 2015 ongoing	SSIWPA (in kind)	Grants received for water stewardship programs by SSI groups.
The following actions or research will only be implemented pending necessity, funding and/or partnering with agencies outside of SSIWPA				
14	SML Sediment Pore Water Profiling	1 year	SSIWPA (unconfirmed)	Confirmation that iron is major mechanism to sequester P in sediment; quantification of P sequestered within sediment over time.
15	Stormwater Quality Monitoring Phase 2: Design	2017 or later	CRD (unconfirmed)	Design of stormwater capital works; agreements for implementation of designs with landowners in place.
16	Subsidized Permaculture Water Management Program (Island-wide)	2016 or later contingent on SSIAA involvement	Unconfirmed	Landowners with potential for nutrient-rich runoff in watersheds implement keyline design on their properties
17	Farm Water Planning Toolkits – (SML Pilot)	2016 or later contingent on SSIAA involvement	Unconfirmed	Farm Water Management Program Pilot implemented (SML watershed properties only)