

People and Their Water: Ecological Governance of the Shawnigan Community Watershed

Executive Summary

Ecological Watershed Governance: Land and water use management that is based on maintenance of ecological integrity as a primary goal, with dependent human uses consciously designed to remain within the carrying capacity of functionally intact watershed ecosystems.

The Shawnigan Basin, centered on Shawnigan Lake on the Southeast flank of Vancouver Island, is the sole domestic water source for over 7000 people. The vast majority of residents draw directly from the lake, with the remainder dependent on ground water aquifers of basin origin. The watershed is heavily committed to a mix of settlement, commercial, industrial, transport corridor and recreational use and has a growing population. The greatest influence on continued growth pressure is its location immediately adjacent to the Capital Regional District, centered on Victoria, from where population and development pressures are spilling into the basin. Shawnigan is an unincorporated electoral area, the most populated in British Columbia, lying within the Cowichan Valley Regional District (CVRD) and is represented by a single Area Director.

Management of the basin is highly fragmented among federal, provincial and local government agencies. Responsibilities for domestic water quality, fish, streams, riparian areas, lake foreshore, recreation land uses, private land forestry, settlement planning, policing, roads, subdivision approvals, public health, water and sewage systems and air quality are not integrated in any one agency. Planning and operational coordination of all these individual agency jurisdictions has not yet been attempted, leading to many accumulating issues remaining unresolved over decades. This is in high contrast to the watershed immediately to the south, which is the closely regulated water source owned and managed exclusively as the water supply for the communities of the Capital Regional District.

In recent years the local community has become increasingly concerned with the security of its water supply. University, Regional District and contracted studies have documented a falling water quality associated with gravel mining, extensive forest harvesting, stream degradation and inadequate domestic septic fields that have accompanied the conversion of summer recreation cabins to full time homes. The Capital Regional District reservoir has served as a control for studies that show the inexorable decline of the Shawnigan system arising from the many risk factors.

Given the limited ability of regulatory agencies to achieve integrated land and water use management in the Shawnigan Basin, local citizens, with the support of the CVRD Area Director, have established the **Shawnigan Basin Society** and the **Shawnigan Watershed Roundtable**. The purpose of this grass roots movement is to gain comprehensive control of the development of the basin, to encourage deep collaboration among responsible government agencies and to work toward the long-term goal of ecological governance. The ultimate goal is to ensure the security of the natural capital that provides Shawnigan people with their water supply as well as clean air and healthy, productive ecosystems.

The Shawnigan Basin Society is intended to be the fund-raising and project management arm of the citizen movement while the Roundtable is intended to be the inclusive gathering mechanism for the citizens of the community and government agency representatives.

A great deal of organizational work, land use system management and ecological restoration needs to be accomplished to achieve the Society and Roundtable goals. The funds necessary to do this work are being sought from local citizens, willing corporations, academic research bodies and government agencies. Considerable in-kind and local financial contributions have already been assembled to launch the ecological governance initiative and to demonstrate the strong local commitment.

Shawnigan in context

There are three great, intertwined resource vulnerabilities in the Cowichan Region. We are not self-sufficient in food, we are dependent on external supplies of energy and, though presently abundant, our water supplies are at risk from climate change, pollution and overuse. We may well have the inherent capacity to grow more food and we may be able to make more efficient use of our energy resources, but water is the one thing over which we have the greatest control, should we choose to exercise our options. We recognize that all of the resources used in the Cowichan Region are founded on the maintenance of healthy ecosystems and thus maintenance of ecosystem health (SERI 2004) is paramount.

SERI, 2004. The SER Primer on Ecological Restoration. Version 2. October, 2004. Science and Policy Working Group, October, 2004. Society for Ecological Restoration International. Washington DC. accessed on March 25, 2012 (http://www.ser.org/content/ecological_restoration_primer.asp).

Climate projections for the Cowichan region show increased temperatures, decreased winter precipitation as snow, increased summer drought and growing extremes of weather. At the same time, the regional population, particularly in the south, is projected to continue its steady growth, with the attendant expansion in demand for water consumption. Traditional agricultural practices allow for fertilizer and manure runoff to waterways. Traditional industrial forestry practices

allow for clear-cutting the water conserving forest on watershed slopes. Increased road density leads to increased transport pollutants coming from petroleum products and road surface treatments. Industrial growth brings a host of chemicals, metals and plastics in its train. Increased household creation brings with it increased sewage and household chemical discharge to waterways. The hardest thing for us to grasp is the slow accumulation of all these factors as they inexorably overcome the capacity of our natural world to cleanse itself. The greatest threat to our water resource is our complacency in the face of cumulative change.

To grow more food will require more efficient use of limited water supplies. To accommodate more people will require greater efforts at water conservation in every household and changes in how we treat household wastes. To expand our agricultural base will require a revolution in farming practices and to expand our industrial base will require greater diligence over what kinds of industry we promote.

In our small Shawnigan Watershed all these factors come together in great complexity. We have private forestry, gravel extraction, waste dumping, subdivision development, small hobby farms, waterborne motorized recreation, a recreational fishery, lakeside septic fields, hundreds of wells and a fully licensed lake for domestic water supply with both public and private water purveyors. We have evidence of chemical pollution in the lake from human sources and siltation in our streams from improperly managed gravel operations. We do not yet have accurate maps of our source streams and filtering wetlands, nor do we have informed quantification of our groundwater aquifers. Our land and water resources are governed by a host of federal, provincial and local public agencies for which there is no current structure for integration. This fragmentation of interests and responsibility obscures our vision of the basin as a working whole, allowing us to bumble into the future dealing only with disassociated parts. The only mechanism that is remotely capable of dealing with such complexity is intense collaboration among all of us with interests in the watershed. That is what the launch team of the Shawnigan Watershed Roundtable began to address early in 2012.

Situation Analysis

The watershed of Shawnigan Lake illustrates the complexity of managing healthy ecosystems in a populous region. The basin lies wholly within an unincorporated Regional District electoral area with a dependent population of 8,100, the largest in British Columbia. The electoral area is also has the fastest growing population in the Cowichan Valley Regional District. The lake has a long history of recreational use, dating back to the early 20th century with hotels, railway excursions from Victoria, summer cottages on the lakeshore, organized summer camps for children, water sport regattas and intense summer boating, swimming and sailing. Superimposed on the recreational use of the lake is its use as a domestic water supply by residents,

both by direct individual withdrawal from the lake and through organized water purveyors.

The era of summer cottages is being progressively displaced by the dominance of permanent residents with many cabins being replaced with new houses or renovated for full time occupancy. With this change has come the problem of overtaxed septic fields, once adequate for two month summer use, that are now inadequate for the increased year long loading and contribute pollution to the lake. Recent water quality studies have identified traces of pharmaceuticals and caffeine in the water that can only come from leaking septic systems.

Many newly renovated houses and cabins have removed riparian trees and shrubs to create lawns, beaches and septic field retaining walls in the riparian zone. Motorcraft pressures on the lake have also escalated with the increased local population, demand from outside recreational visitors and increased size of watercraft. Large 'wakeboats' have increased the erosion of shorelines and damaged wharves. Major subdivisions have developed in tiers above the lake, each with their contribution to human impacts on the environment.

The uplands of the watershed are largely owned by private timber companies and are logged at intervals without any comprehensive attention to overall basin-wide impact. There is increasing pressure to log and then sell off the timberland for new subdivisions. Timberland management is a provincial responsibility beyond the direct control of the Regional District. Existing zoning that is within local government control does not regulate cumulative impact of logging, gravel extraction, mining, industrial processing of materials and the road infrastructure that are permitted through provincial agencies. The uplands of the basin have been extensively used for unregulated dumping of contaminated soils and the community is now dealing with an application to use an existing quarry in the headwaters of the main input stream as a site for contaminated soil arising from areas throughout lower Vancouver Island.

Federal, provincial and local government agencies that have separate pieces of regulatory jurisdiction in the basin include those dealing with public health, water management, riparian area conservation, subdivision development, building by-laws, highways, fisheries, water safety, sewage treatment and public water supply systems. There is no single agency with a mandate to provide comprehensive oversight and management of all the aspects of the basin that are held by the various government agencies. Amidst the complex of agencies there is a local residents association that has concerns for the management of the lake and its watershed and a salmon enhancement society that manages a Coho salmon fishery in the lake and stream system. One of the greatest challenges facing the Shawnigan community is addressing the fragmentation of management accountability that makes integrated environmental, social and economic planning difficult to achieve.

Added to this civic complexity is the march of climate change on the east coast of Vancouver Island. Regional estimates of the impacts of climate change suggest that the basin will experience increasingly volatile conditions, with increased extremes of winter rainstorm events and lengthened summer droughts. The winter storm impacts are superimposed on industrial developments in the uplands, bring pressure to bear on the hydrologic integrity of streams, exacerbate the flooding of low-lying septic systems around the lake and overwhelm rudimentary storm water drainage infrastructure. The summer droughts have impacts on the viability of upland forests and their recovery from logging as well as implications for adequacy of the domestic water supply, maintenance of late summer stream flows for fish and vulnerability to wildfire.

The Shawnigan Basin represents a civic management situation reflective of water issues faced all over the world. Population growth and land use pressures, fragmentation of jurisdictions, climate change impacts and growing public realization of the limitations on fresh water supplies are increasingly common. Devising comprehensive responses to the complexity of the associated problems is the challenge that everyone faces, regardless of location. Ironically, the Shawnigan Basin is one valley over from the highly protected and intensively managed Sooke Lake Basin, the watershed that supplies domestic water to the Capital Regional District centered in Victoria. On one side of the hill is a protected lake system in very good condition while just over the divide is a heavily impacted lake system. Both watersheds are heavily committed to providing water to growing communities, one providing a uniquely stable control to the experiment that is the Shawnigan watershed.

Integrated stewardship of the Shawnigan Watershed is a matter of great urgency. The Shawnigan Basin Society and the Shawnigan Watershed Roundtable have been sponsored by the elected Regional District Area Director to begin the process of integration. The Basin Society, a non-profit organization, is intended to provide for the acquisition and management of financial resources necessary to support watershed research, landscape level master planning, stewardship project development and project implementation. The Roundtable, an open membership gathering, is intended to provide for broad community engagement with all of the basin interests and with the complex of agencies that have regulatory jurisdiction over different aspects of the watershed. The Cowichan Valley Regional District supports these two organizational devices but they are essentially a grass roots initiative by the residents of the Shawnigan Community with voluntary local leadership.

Shawnigan Spring: Ecological Governance of the Shawnigan Basin

The Shawnigan Basin needs to be governed by ecological considerations that define and conserve ecosystem service assets as a primary consideration before development, habitation and administrative needs are considered. The reason for this is that our long-term economic and social welfare is dependent on a fully functioning set of local ecosystems. This means ensuring that maintaining the “proper functioning condition” of our streams, wetlands, forests, soils and lake is the criterion that should govern assessment of all human uses of the Shawnigan Basin.

Currently, we are a long step away from this ideal. Indeed, we are on the knife-edge of an irreversible pattern of land development from which we may not be able to retreat. We could go down the path toward a traditional industrialized future or we could reverse track and head for an ecologically sound one that is characterized by a focus on maintaining natural capital as the basis of our economy. This is an urgent choice as is evidenced by the currently active proposal to use the Shawnigan headwaters for siting of a very large dump for contaminated soil from out of region. If that contaminated soil project were to receive government approval we will have passed over the threshold onto the downward slope to a brown-field future.

We are essentially governed by a complex of administrative and legal rules designed to promote and authorize continuing human consumptive use of our natural assets, a holdover from a pioneer era of perceived abundance that is long gone. The least useful antidote to this obsolete system is to attempt to lock up the landscape by preventing any development at all or, alternatively, leaving in place the rudimentary land use plans and zoning by-laws invented to facilitate our industrial consumption history. What we have zoned in the past as “forest land”, for instance, is also open to mining, gravel extraction and industrial material processing, all with potentially irreversible footprints on the land. If it were only the practice of eco-forestry that was permitted, that would be another matter. Mining and gravel extraction are the jurisdiction of the provincial government and largely beyond local control. The most useful control on land use impacts would be to require ecologically sensitive design for all developments, regardless of zonal location or industrial/commercial/residential/recreational type, so that stewardship is active and universal rather than passive and area restricted in nature.

The main question we face is how to make progress toward ecological governance given the thorough dominance of the current paradigm with its barnacle encrusted administrative institutions. It will require deep knowledge of the ecological structure of our landscape. It will require the formulation of ecologically conservative criteria by which to assess development proposals. It will require the local capacity to measure and apply the criteria. It will require a herculean effort at public education and consultation. And, it will require the development of local institutions that are capable of the necessary governance, articulating with but not

dominated by the existing regime. One such institution should be an “ecological design panel”, modeled after architectural design panels common to urban settings, that assists developers to prepare proposals for land use that meet the criteria, by seeking innovations that bring the management of ecosystem services forcefully into the equation. Such a panel could precede the work of the existing Advisory Planning Commission that is bound by the more rigid traditional model of Official Community Plan and zoning by-law requirements. In this manner developments within the basin could be assessed first on their ecological merits, and subsequently on their compliance with traditional zoning requirements.

Could the Shawnigan Watershed Roundtable be the nucleus of an institution to promote ecological governance? The Shawnigan Basin is a distinct and easily bounded socio-geographic unit. The Roundtable takes as its mandate the ecological health of the basin and its people. It is an initiative designed to bring about extensive collaboration among our currently fragmented community and agency interests. It has an open, consensus seeking membership. It has access to the scientific and technical information systems of local government, land, water, fishery, public health and infrastructure agencies. It is open to developing the “Basin Society” legal form that would be capable of receiving and accounting for funds, both public and private. It has a core of willing volunteers who manage its launching activity and provide it with the ecological expertise necessary to influence development design.

The Shawnigan Basin Society

Purpose of the Society

The purpose of the Shawnigan Basin Society is to establish a model of participatory ecological governance of the Shawnigan Community Watershed.

Goal

To ensure that the ecosystems, streams, wetlands and lakes of the Shawnigan Community Watershed are maintained in a healthy condition to provide, in perpetuity, ecological goods and services that will ensure a sufficient quantity and quality of water for domestic, agricultural, commercial and industrial needs of basin residents.

Objectives

Establish and maintain a Shawnigan Watershed Roundtable designed to bring together all interested residents, businesses and industries who wish to support the purpose and goal of the Shawnigan Basin Society.

Engage all Federal, Provincial and Local Government agencies with formal responsibilities for functions within the Shawnigan Basin to integrate their stewardship and management efforts among themselves and with the Watershed Roundtable.

Conduct and support scientific, economic, social and governance studies necessary to understand the functions of the basin in relation to society's needs for ecological goods and services, including water and to develop the concept of ecological governance as an innovative process of basin management

Educate the basin public about the ecological processes and functions of the basin and their role in ensuring the maintenance of healthy ecosystems (SERI 2004) for the Shawnigan Community Watershed is achieved.

Prepare a Shawnigan Basin Management Plan, incorporating ecological governance principles and practice, to guide future development, management and restoration of the ecosystems of the Shawnigan Community Watershed.

Establish a design panel to advise those undertaking development within the basin on how to incorporate ecological principles consistent with maintenance of healthy ecosystems.

The Shawnigan Watershed Roundtable

Draft Terms of Reference

The overall purpose of the Roundtable is to promote active stewardship of the Shawnigan Watershed, along with its forests, wetlands, streams and the lake, so that its ecosystems remain healthy (or are restored) for ecological goods and services including domestic water supply, natural resource management, recreation and wildlife long into the future.

The underlying philosophy is that the watershed is shared by many and should continue to be shared, but needs to be ecologically sound to continue to provide its full range of ecological goods and services into succeeding generations.

The membership of the Roundtable is open to all interested parties, its meetings are public and its proceedings are published through articles in the Shawnigan press and documented on the roundtable website: shawniganwatershedroundtable.ca

The task of the Roundtable is:

1. To stimulate and support the necessary scientific and technical studies to determine the condition of the watershed, streams and lake and to monitor that condition so that we understand the trends that are taking place
2. To educate the Shawnigan public about the geography, climate, and land uses that contribute to the current ecological condition of the watershed and what it will take to keep it in good condition where it is healthy or restore critical functions in the future where it is threatened

3. To prepare a Watershed Master Plan designed to respond to our scientific knowledge of the state of the basin, to engage the Shawnigan public in its ongoing stewardship and to foster the actions necessary to maintain and enhance its ecological health
4. To integrate the work of the many agencies that have regulatory responsibility for aspects of the watershed, streams and the lake so that we are able to implement the Watershed Master Plan effectively
5. To engage members of the Shawnigan public in active collaboration with the regulatory agencies

Some of the start-up activities and strategies that are being employed by the launching members of the Roundtable:

1. A "State of the Basin" Workshop to begin the process of engaging the public in assessing the condition of the watershed and to determine concerns
2. Field trips to parts of the basin to familiarize ourselves with the terrain, the location and state of the aquifers, wetlands and streams, the sources of potential or actual threats to basin health and the overall land uses that are already happening
3. Discussions with scientific, resource professional and technical experts about the basin and how to interpret what we see on the ground
4. Collaboration with the Cowichan Water Board, which is ten years ahead of us with their work in the Cowichan watershed
5. Collaboration with the South Cowichan Water Study being conducted by the CVRD, including the lake water quality studies of Dr. Asit Mazumder of the University of Victoria, and with the Ministry of Environment and the Shawnigan Residents Association on water quality monitoring of Shawnigan Lake
6. Collaboration with the Ministry of Environment in dealing with the numerous dump sites in the basin with imported soils and other wastes that are potentially or actually contaminated leading to threats to water quality
7. Planning for a conference of Shawnigan resident members of the roundtable with representatives of the regulatory agencies that have watershed responsibilities
8. Maintenance of a Shawnigan Watershed Roundtable web site for communication with the public

9. Establishment of a founding executive group to do the organizational work necessary to launch the roundtable
10. Joint appointments of three members of the Shawnigan Advisory Planning Commission to the core team of the roundtable to ensure that land use applications are reviewed with watershed implications in mind

Establishing a Base Line for Assessing the Health of the Shawnigan Basin Ecosystems

Objective

To maintain, and where necessary restore, the ecosystems and the natural hydrologic functions of the Shawnigan Basin that are necessary for a sustainable water supply.

Fundamental Studies

Five fundamental studies of functional condition need to be assembled to provide the information necessary to manage the Shawnigan Basin in an ecologically appropriate manner.

1. The ecological condition of all streams and wetlands that form the surface waterways of the basin
2. The location and status of all aquifers that arise from the basin and that feed the lakes and streams
3. The ecological health of Shawnigan Lake as a natural ecological system
4. The ecological health of the upland forests of the basin in their hydrologic role
5. The trends to be expected from climate change and their influence on the hydrologic functions of the basin

Human Influence

With these five basic sets of information, the human influence on the ecological health of the watershed can be assessed.

1. Current human impacts and the foreseeable future impacts of industrial, commercial and settlement activity that influences the functional condition of upland forest, streams, wetlands, aquifers and lakes
2. The pattern of human impacts on the basin that are predictable on the basis of growth pressures and the current South Cowichan Official Community Plan and its zoning regulations
3. The pattern of land uses that are predictable from the current suite of federal and provincial regulations that govern activities within watersheds and riparian areas
4. The current governance structure of the human interventions in the basin and its capacity to maintain, or where necessary restore, the proper functioning condition of the physiographic and biological basin elements

Taking Management Control

With an understanding of the current ecological health of the watershed, the pattern of human interventions and the land use regulations that apply, it will be possible to determine how to begin the process of ecological management of the basin – the shaping of human intervention, the evolution of ecologically based land use regulation and the locally focused governance of the basin to ensure that the upland forests, streams, wetlands and lakes are maintained in a healthy condition.