




DRAFT Issues & Alternatives Document

DATA and KNOWLEDGE SHARING & MANAGEMENT

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"To provide a common understanding of watershed values; based on sound science and local knowledge, to assist in decision making that will promote and improve the sustainability of the Chilliwack River Watershed."


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Websites such as the CRWS site (<http://www.chilliwackwatershedstrategy.ca/>), help to share information pertaining to the Chilliwack River Watershed.

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Chilliwack River Watershed Strategy Issues & Alternatives: *DATA and KNOWLEDGE SHARING & MANAGEMENT*

1.0 General Description of the Issue

The mission of the Chilliwack River Watershed Strategy is:

‘To provide a common understanding of the watershed values, based on sound science and local knowledge, to assist in decision making that will promote the sustainability of the Chilliwack River Watershed.’

Clearly, data and knowledge sharing is at the heart of the Strategy. For our purposes here, ‘data’ and ‘knowledge’ includes:

- Spatial data (e.g. maps, water quality monitoring results)
- Written reports and documents (e.g., academic studies, reports, etc.)
- Knowledge that exists in oral histories, often held by First Nation elders
- Knowledge that exists in notes and minds of local individuals

Appropriate tools (e.g., websites, reports) are key to effective management and sharing of data and knowledge. However, dynamic relationships between government and community and processes (e.g., site tours, dialogue on issues, working agreements, etc.) that facilitate a shared understanding of watershed issues are also important. A shared understanding enables government and community to work on common ground under a common vision to improve and protect the Chilliwack River Watershed.

2.0 Role of Chilliwack River Watershed Strategy

As resource development and human populations increase, pressures for resources and services have accelerated. Government agencies are under tremendous pressure to respond to land development demands. A lack of knowledge of sensitive habitats, watercourses, wetlands, species-at-risk, water supplies, and other environmental values presents challenges for effective growth management and impact mitigation.

Sound and sustainable management of fisheries, forests, land use, and ecosystems in the Chilliwack River Valley depends on access to information and knowledge that is current, reliable, and credible. It is evident that through improved knowledge management systems, organizations generate the greatest return for their investment by making accessible critical information for decision making when it is needed. Furthermore, government agencies, residents, First Nations, industry, and other users of the Valley must share an understanding of the watershed so that the actions and decisions of each are coordinated and working toward the same goals.

A major role of the Chilliwack River Watershed Strategy is to facilitate unimpeded access to natural resource information.

3.0 Specific Examples

There are many forms of data and knowledge about important values in the watershed that are not effectively managed or shared between decision makers in the Chilliwack River Watershed. Some examples include:

- Fish habitat (e.g., spawning areas, rearing areas, over wintering areas, groundwater sources, etc.)
- Habitat use by wildlife, especially species at risk
- Traditional use areas (e.g., bathing sites, gathering sites)
- Cultural sites (e.g., burial mounds)
- Resource values
- Important recreational areas
- Visual and aesthetic resources

In addition, datasets and reports developed by individual agencies or organizations may not be readily accessible by others. Some examples include:

- Reports produced by consultants
- Reports produced by academic institutions
- Datasets developed through individual research projects or monitoring programs
- Knowledge held by individuals

4.0 Contributing Factors/Causes

Numerous barriers prevent improved data and knowledge management and sharing, including:

- Existing data sets are incomplete (e.g., habitat information is either not known or has not been recorded).
- High costs and resources associated with generating complete datasets.
- Existing data sets are too broad to be useful for specific purposes (e.g., data is captured or presented at a scale that is not useful for certain types of decision making).
- Data formats may be incompatible (e.g., one agency may use one form of GIS that is not used by another agency, which makes it difficult to share files).
- Documents are difficult to access or are lost in archives (e.g., they exist in memory, but cannot be located).
- Decision makers are not always aware of the existence of data sources that will help them make more informed decisions.
- There are few established procedures, human resources, and financial resources for sharing of information and data, especially between private and public entities (e.g., developers and governments).
- Agencies traditionally develop tools in parallel and usually for internal use only rather than working in an integrated manner to develop common databases and tools.

- A lack of ongoing dialogue and relationships that facilitates the development of a shared understanding between agencies, organizations, and individuals.
- An unwillingness to share information that may lead to intentional damage to certain values (e.g., cultural sites, species at risk) – some data is sensitive in nature.
- The absence of policy at senior levels of government regarding proactive data sharing.
- The complexity of government and a lack of tools to interface (dialogue, shared tools and information exchange, multi-agency coordination).
- A lack of collaborative relationship among agencies.
- A lack of priorities and resources for data collection.
- Possible concerns that information might negatively impact planned actions.

5.0 Overall Level of Community Concern

The public expects that government agencies communicate with one another, proactively share information and resources (while respecting privacy), coordinate actions and decisions, work together to achieve mutual efficiencies, and avoid duplication. Moreover, the public expects that decisions are made with consideration of the best available information. For many, it would be particularly unacceptable for a decision to be made by one agency without the benefit of directly relevant and sharable information that is housed in another agency or in the community. Although the phrase “knowledge management” may not resonate with the community, most would understand its principles as central to effective watershed management and, more broadly, efficient government.

6.0 Past and Current Policies or Actions to Address the Issue

Over the years, various levels of government and other organizations in BC have developed knowledge management and sharing tools. Table 1 contains some examples of web-based tools that have been developed to both manage and share spatial and non-spatial information. These sources all provide useful information about resources and land uses in the Chilliwack River Watershed, but often at different scales, formats, and classifications.

In addition to these web-based tools, a variety of programs and initiatives have been undertaken by the various agencies to facilitate knowledge management and sharing amongst agencies. The Chilliwack River Watershed Strategy is one such initiative.

Table 1. Examples of data and knowledge sharing web resources

Name/Source	Responsible Agency	Web Address	Information Provided
BC Water Resources Atlas	Province of BC	http://srmapps.gov.bc.ca/apps/wrbc/	An interactive web-based map of British Columbia with watersheds, aquifer, floodplain, flood protection works, wells, base mapping (TRIM), and other data.
Chilliwack Forest District Maps	BC Ministry of Forests	http://www.for.gov.bc.ca/dck/Lim/DCK_Maps.html#dd	A description of data available for purchase through third-party supplier and from other government sources.
Chilliwack River Watershed Strategy	Developed by the FVRD/ DFO and hosted by FVRD	www.shim.bc.ca/atlas/atlas.html#chilliwack www.chilliwackwatershedstrategy.ca	An interactive, web-based mapping application with a variety of data such as forestry data, water licenses, salmon stock status, base mapping, satellite and orthophoto imagery plus numerous individual maps, including an orthophoto image, watercourses, aquifers, historical drainage patterns, topography, geology, fish presence, spawning locations and distribution, species at risk, old growth areas, deer winter range, wildfire history, floodplain, land use designations, forest tenures, recreation sites, and habitat restoration sites. Also includes a searchable database of documents pertaining to the Chilliwack River Watershed.
Community Mapping Network	DFO/MOE	www.cmnbc.ca	A comprehensive collection of web-based atlases for British Columbia and beyond.
Conservation Data Centre	BC Ministry of Environment	www.env.gov.bc.ca/cdc/	Data and information about species-at-risk in BC.
Fisheries and Oceans Spatial Data (e.g., Mapster)	Fisheries and Oceans Canada	http://www-heb.pac.dfo-mpo.gc.ca/maps/maps-data_e.htm	An interactive, web-based mapping application with data related to the fisheries resources of the Pacific region. The site also contains links to other resources such as the Fisheries Project Registry, Habitat Wizard, habitat inventory reports, Fisheries Inventory Data Query Tool, etc.
Fraser Valley Regional District Habitat Atlas	FVRD	http://www.shim.bc.ca/atlas/fvrd/main.htm	A web-based interactive mapping of the Fraser Valley Regional District including cadastral data, hydrology, stream classification, wetlands, and orthophotos.
EcoCat: The	BC Ministry of	http://srmapps.gov.bc.ca/apps/acat/js	A searchable catalogue of ecological reports on file at the

Ecological Reports Catalogue	Environment	p/index_public.jsp	BC Ministry of Environment.
Fisheries Inventory Data Queries	Province of BC	http://srmapps.gov.bc.ca/apps/fidq/	A searchable database of fish distribution and related reports, stream and lake surveys, escapement information, etc. for the Province of BC.
Fish Wizard	Freshwater Fisheries Society of BC	http://www.fishwizard.com/	An interactive, web-based map of the Province of BC including base mapping and land features.
Habitat Wizard	BC Ministry of Environment	http://www.env.gov.bc.ca/habwiz/	An Interactive, web-based map of the Province of BC with fish information and base mapping.
Integrated Land and Resource Registry	Integrated Land Management Bureau (BC Ministry of Agriculture and Lands)	http://ilmbwww.gov.bc.ca/ilrr/ILRR.htm	An interactive, web-based map of the Province of BC with comprehensive base-mapping, imagery, and physical infrastructure.
Land and Resource Data	Province of BC	www.lrdw.ca/	A portal for accessing land and resource data for the Province of BC.
Mt. Baker-Snoqualmie National Forest GIS data	USDA Forest Service	http://www.fs.fed.us/r6/mbs/maps/gis.shtml	Individual maps outlining the administrative boundaries, hydrology, soils, major developments, land designations, and infrastructure of the Mt. Baker Snoqualmie National Forest (Washington State, US).
Species and Ecosystems Explorer	BC Ministry of Environment	http://srmapps.gov.bc.ca/apps/eswp/	A searchable catalogue of species-at-risk data and reports for the Province of BC.
South Coast Conservation Program	Community Mapping Network/ BC Ministry of Environment	http://www.sccp.ca/	A collection of spatial and non-spatial data, best practices, guidelines, etc. related to species-at-risk in BC.
WAVES	Fisheries and Oceans Canada	http://inter01.dfo-mpo.gc.ca/waves2/search.html?_SID=ed5e2c90ef889378ac376e16916c0cbc&_LANG=en	A searchable catalogue of the libraries of Fisheries & Oceans Canada.

7.0 Vision and Goals

7.1 VISION:

Knowledge and information relating to the Chilliwack River Watershed - including science, local, traditional knowledge, and 'knowledge' within the landscape - will be broadly shared, agreed upon, and used to make informed decisions that promote watershed sustainability.

7.2 GOALS:

1. To develop a website that is an effective, comprehensive, and accessible source of user-friendly information and knowledge regarding the Chilliwack River Watershed.
2. To develop a shared understanding of the watershed including priorities for action.
3. To establish processes that assist agencies to collect, use, and share information.
4. To provide a forum for ongoing discussion, dialogue, and information sharing relating to the Chilliwack River watershed.
5. To encourage decision makers to acknowledge and utilize all types of knowledge to inform actions within the Chilliwack River Watershed.
6. To inspire passion for, and commitment to, the watershed in all users and decision-makers.

8.0 Analysis

An effective and operational knowledge management system must be created through the combined efforts of senior agency staff, local government, local communities, and First Nations. No single database such as Fish Wizard or the Fisheries Information Summary System can capture all the pertinent fish and fish habitat information necessary for planning purposes. Other information such as wildlife habitat, aquifers, and water quality is also critical and no single agency is responsible for integrating all sources of knowledge for planning into a useable knowledge management system.

In many cases, human relationships are at the centre of effective knowledge management. Knowledge is frequently and effectively shared through direct interpersonal communications. Not only does interpersonal communication provide a conduit for information exchange, it provides an opportunity to build a deeper understanding about the meaning of the information being exchanged. CRWS has provided, and should continue to provide, a forum for relationship building and information exchange amongst government agencies, First Nations, and community groups.

Finally, it must be acknowledged that knowledge takes many forms and it is not static. Not only does knowledge exist within written documents and databases, oral histories,

and the minds of locals, ‘knowledge’ exists within the landscape in the form of species composition, shapes of roots, tree stumps, species use patterns, physical processes, and other observable phenomenon. The challenge is to recognize and incorporate all forms of knowledge in information gathering and decision-making. In addition, the acquisition of new knowledge and data is ongoing and dynamic. Therefore, decision making must make best use of existing information while remaining open to new discoveries.

9.0 Recommendations

CRWS Website

1. Data and information from various agencies and sources related to the Chilliwack River Watershed should be compiled, digitized, and made broadly available through the Chilliwack River Watershed Strategy website.
2. A thematic atlas of the watershed should be developed and made available in accessible formats through the CRWS website. The website should also provide links to comprehensive mapping of the watershed on the Community Mapping Network and other mapping resources (e.g., see Table 1).
3. Wherever possible, the CRWS website should utilize URL linkages to data sources rather than hosting copies of data obtained from elsewhere in order to ensure the currency of the data and minimize space requirements for the website.
4. A survey of potential CRWS website users should be conducted to both raise awareness of the website and collect input from users regarding how the website can be improved.
5. The CRWS website and the resources therein should be advertised to raise awareness of it and facilitate its use.

Collaborative knowledge management

6. Priorities for the type and location of new data and knowledge collection should be developed.
7. Government agencies, First Nations, researchers, and community groups should be encouraged to actively share information. Organizations should develop formal structures to facilitate knowledge sharing.
8. Successes in data/knowledge sharing should be promoted and celebrated.
9. CRWS and/or the Fraser Valley Regional Watersheds Coalition should provide a forum for ongoing dialogue about the Chilliwack River Watershed to inspire passion and commitment; facilitate a common understanding of the watershed; and, improve decision making.