

9. Environment

A high quality of life is as heavily dependent upon having clean air to breathe, clean water to drink, an environment that respects sensitive ecosystems and effective waste management as having an adequate income, health, social activity and meaningful work. For centuries we've convinced ourselves that we are somehow separate from our 'environment.' The reality is that we are our environment and our environment is us. We cannot unplug ourselves from the world that sustains us and upon which we fundamentally depend. If we abuse we only harm ourselves. Sooner rather than later we need to get to a place that McDonough and Braungart suggest where waste is food. In their video called *The Next Industrial Revolution* (available on Vimeo³⁹) they argue that we can no longer afford to think in terms of 'externalities' in our economic equations. Any 'waste' that is a 'by-product' of an industrial process must be food for some other process and they argue that what goes on in the industrial cycle must not impinge on the biological cycle. (McDonough, 1998)

We are fortunate in the Comox Valley that we have not, as yet, allowed real estate, industrial or commercial development (or individuals for that matter) to irreparably damage our environment. Economic development is important, but it must not contribute to a lower quality of life for the residents of the Comox Valley and de-grade the environment to the point where tourists and potential residents would not be interested in coming here or living here. Having said that, the Comox Valley Conservation Strategy's lead document *Nature Without Borders* has identified a number of serious losses and fragmentation of sensitive ecosystems in the Valley between 1991 and 2002 along with near total loss of second growth forests and seasonally-flooded agricultural lands which were fragmented or reduced. Our watersheds, our estuary and all of our natural areas are under siege (CVCS, 2014)

That said, there have been a number of positive developments to report to you that have arisen since our last report. For one thing, the Comox Valley Conservation Strategy (CVCS), an initiative of the Comox Valley Land Trust that we noted in our 2009 report has steadily grown to include 20 partner organizations. It released its second edition of *Nature Without Borders* in 2013, essentially the CVCS manifesto. From its website, this optimistic statement:

THE GOOD NEWS: The CVCS has a plan to stop the loss of priority conservation areas through protection, restoration and in preparation for continued changes in population growth and climate change. We have 9 Priority Recommendations which guide our activities; as well as developing tools to assist these activities and have recently embarked on updating the Provincial Sensitive Ecosystem database for the Comox Valley – the first time this has been done in BC! (CVCS, 2014)

In another positive step, the City of Courtenay hired an environmental planner in 2012 and soon after produced a report card called *The State of the Environment 2013*. (Courtenay, 2013) The CVRD Sustainability Strategy was introduced in February 2010. It informed the Regional Growth Strategy (RGS), also released in 2010. In a strong endorsement of the Comox Valley Conservation Strategy you can read this in the RGS:

Although local governments have a number of initiatives underway to protect the environment, there is a strong need for a regional and coordinated approach to environmental protection and enhancement that emphasizes protection, enhancement and connectivity. In recognition of this, the CVRD board endorsed the concept of regional conservation put forward in the *Nature Without Borders Regional Conservation Strategy* (July 2008)⁴⁰. (CVRD, 2011)

39 To watch *The Next Industrial Revolution*: <http://vimeo.com/20372160>

40 The original *Nature Without Borders* was released in 2008. The second edition was released in 2013.

The RGS in turn informs the Official Community Plans of our local governments. These documents were, in fact, designed to inform local government policy decisions. However, the proof of good intentions always lies in the implementation of policy and strategic decisions.

One example of good intentions revolves around one of the important goals of the Conservation Strategy and that is a rainwater management system that is watershed based as opposed to jurisdiction based. Most of the watersheds on the Comox Valley are cross-jurisdictional making management difficult. Convening for Action on Vancouver Island (CAVI) is a partnership dedicated to pursuing a plan-with-nature approach to water sustainability. The Comox Valley regional team of CAVI is composed of representatives from the Town of Comox, the City of Courtenay, the Village of Cumberland, the CVRD and the CV Land Trust, with participating agencies and organizations including TimberWest, the Ministry of Transportation and Infrastructure and the Partnership for Water Sustainability in BC. This group is collaborating on a coordinated approach to watershed-based rainwater management in the Comox Valley and across boundaries, including the identification of tools and initiatives to achieve watershed goals.

Watersheds in the Comox Valley are facing challenges such as pollution (intentional and unintentional), water level instability (low water in the summer and flooding in the winter) and water temperature issues. The Morrison Creek watershed is the only one with a more or less intact headwater (Jack Minard, 2014). Needless to say, private ownership of land can complicate protection (FCM & NRC, 2003) in watersheds, but it's also an opportunity to get property owners involved in conservation efforts. The OCPs of all of the local governments require property owners to participate in greenway initiatives and in protection of sensitive habitats and ecosystems.

There is a lot more we could write about in terms of the efforts made by many non-profit organizations and local governments in protecting and enhancing our environment and our quality of life. For a comprehensive appreciation of what the issues are around conservation in the Valley visit the Comox Valley Conservation Strategy website: <http://www.cvconservationstrategy.org/strategy/>

For the remainder of this section we focus on water use and quality, recycling, invasive species and endangered species.

9.1 Water Use (-)

“You can't manage what you don't measure,” is a common statement that illustrates the importance of water metering as a key sustainable water management practice. The implementation of water metering programs typically results in a reduction of consumption by 15-30% (FCM & NRC 2003). Water meters have now been installed in Cumberland and in the water local service areas of the CVRD. The Village and the CVRD were careful, as they implemented their new water conservation strategies, to bring residents on board. They sent reports of water usage and mock bills in 2012 and 2013 in order for residents to understand their water use before being required to pay based on their consumption. A number of objectives underlie the installation of water meters. The first is the detection of leaks in the water delivery systems on the resident's side of the meter. Many leaks have been detected and more frequent monitoring should protect residents from having to pay for costly water losses due to leaks on their properties. Reduced consumption is a second important objective as volume-based pricing tends to encourage water conservation. The Town of Comox and the City of Courtenay have installed water meters on a voluntary basis for residential properties, and as a requirement for commercial properties. As of April 16, 2014, there were approximately 1800 water meters installed in Comox and 900 in Courtenay (mostly commercial).

The CVRD's role in providing reliable, safe and high-quality drinking water includes acquiring and maintaining the water supply, water treatment, ensuring water quality meets the required standards, and water distribution. Water quality must meet standards set by the BC Ministry of Health's Drinking Water Protection Act (Ministry of Health, 2013) and the Canadian Drinking Water Guidelines (Ministry of Health, 2012) no matter how big or small the water system is.

CVRD operates and manages several water systems serving over 45,000 people. The Comox Valley Water System includes the Arden, Greaves Crescent, England Road, Marsden/Camco, and Comox Valley Water Local Service Areas, as well as the City of Courtenay and the Town of Comox. The Black Creek/Oyster Bay System has about 1200 connections and is about to install an ultraviolet treatment system. The water for that system comes from a well 65% of the time, and is taken from the Oyster River when the water table is low, about 35% of the time. The Royston System gets its water from the Village of Cumberland. The water is held in a reservoir on Royston Road and is re-treated with chlorine before entering the Royston distribution system. Denman Island mainly gets its water from private wells but there are also two water service areas: The privately managed Graham Lake Improvement District and the CVRD-managed Denman Island Water Local Service Area, together totaling approximately 100 connections, both get their water from Graham Lake.

The Comox Valley Water System gets its water from Comox Lake but the water is withdrawn via the BC Hydro penstock from an intake on the Puntledge River close to the BC Hydro diversion dam. BC Hydro owns the water rights to Comox Lake for power generation, so the CVRD purchases water for general use by residents and businesses. The CVRD plans to develop a deep water intake in Comox Lake in order to improve water quality and achieve independence from BC Hydro infrastructure. However, even with the deep water intake in place, the CVRD will still be required to pay BC Hydro for water use. The Vancouver Island Health Authority has mandated that changes to the system be in place by September 2017.

The Union Bay Improvement District operates its own water system getting water from Langley Lake. Having installed water meters (not without some controversy) has reduced water consumption from 513,000 m³ to 147,000 m³ in 2008 even with an increase in connections from 613 to 640 in 2008. The Union Bay website contains a very interesting history of the water system and makes great reading: <http://www.union-bay.ca/History%20of%20the%20System.html?0.20696382480673492>.

The Village of Cumberland also has its own water system which draws water from 5 lakes in the area, the main one being Allan Lake, and, since 2013, a new well at the Coal Creek Historical Park site. Water is currently chlorinated but a UV system is scheduled for installation in 2016 or 2017.

Related indicators: parks, incomes,

9.2 Water Quality (=)

As noted earlier, water quality must meet standards set by the BC Ministry of Health's Drinking Water Protection Act (Ministry of Health, 2013) and the Canadian Drinking Water Guidelines (Ministry of Health, 2012) no matter how big or small the water system is.

The water in Union Bay suffers from high levels of organics, turbidity and low pH. The Vancouver Island Health Authority will require improvements by 2017 in all probability as for all other parts of the province. Improved water quality is one of the main reasons that the CVRD is moving the intake of water for residential and other uses from the Puntledge River to a deep water location in Comox Lake itself. Comox Lake is an unprotected watershed which supports a lot of human activity including habitation. That creates numerous challenges for the CVRD as it balances the need for clean drinking water for residents of the Valley and the interests of private landowners on the lake as well as recreational users of the lake.

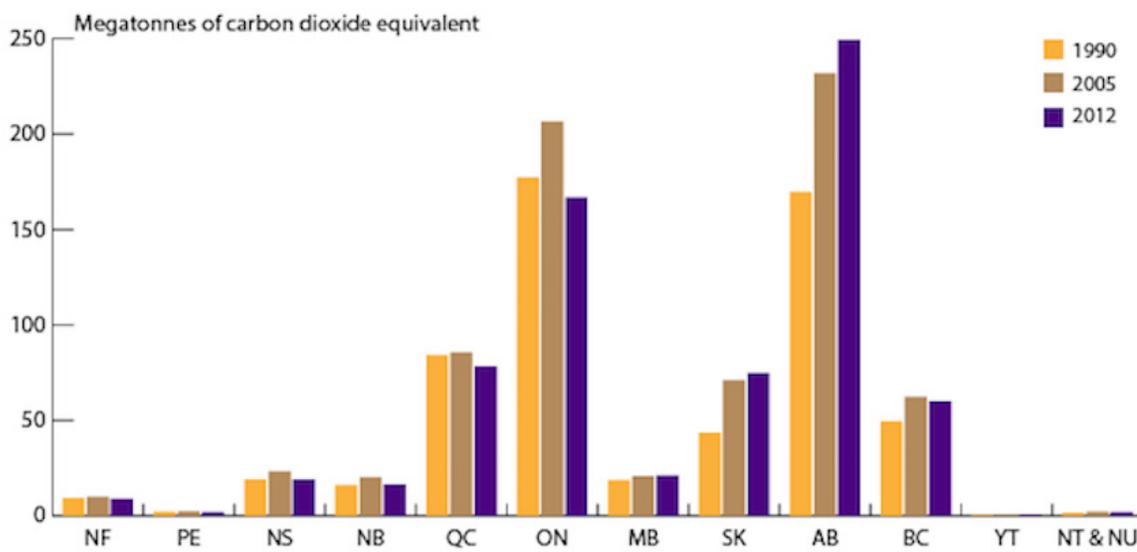
Historically, water quality in the Comox Valley has been very good. A watershed protection plan is being developed and the CVRD now has a remote monitoring system for its various stations that sends alarms to the water system operators if any of the measured parameters goes outside predetermined set points.

Related indicators: health, incomes

9.3 Air Quality and Greenhouse Gas Reduction. (-)

In our last report we told you that no data are collected to evaluate the air quality in the Comox Valley. That's changed since our last report. There is now a monitoring station at Courtenay Elementary School that collects data on air quality. The City of Courtenay's 2013 State of the Environment report notes that the City has a goal of reducing greenhouse gas (GHG) emissions 20% by 2020. That may be difficult because GHG emissions increased in the City by 10.16% from 2007 to 2010 while the population increased by 4.97% during the same period. The 2012 measurements taken in Courtenay range from 1 to 39 micrograms per cubic meter (daily average mean). The World Health Organization guideline is 25 micrograms. (Courtenay, 2013) However, the City has an Action Plan to reduce GHG emissions embedded in the Official Community Plan in 2010. (Courtenay, 2014) It's not a particularly aggressive program as it's based mostly on voluntary individual action, but it's a start. Other parts of the Valley have their own air quality issues. Anecdotally, air quality in Cumberland can turn eye-watering bad when there is an air pressure inversion in the fall and winter seasons and the wood burning stoves and slash burns are at their peak smoke production. Generally, though, most people would say that most of the time air quality in the Valley is good. Figure 9 shows Ontario and Alberta account for 60% of greenhouse gas emissions in Canada. Alberta (47% since 1990) and Saskatchewan (5.1%) have both seen an increase in emissions while all the other jurisdictions in Canada have seen reductions. BC reduced its emissions by 3.5%. (Environment Canada, 2014) BC may join Alberta and Saskatchewan, however, if it pursues its LNG initiative. (Lee, 2012)

Figure 9: Greenhouse gas emissions by province and territory, Canada, 1990, 2005 and 2012



Source: Environment Canada (2014) [National Inventory Report 1990–2012: Greenhouse Gas Sources and Sinks in Canada](#).

So, the jury is out on whether the Comox Valley can help meet Courtenay's target of a 20% reduction in GHG emissions by 2020.

Related indicators: health, incomes

9.4 Recycling (+)

People now generally agree that recycling is a good idea and must be done. Putting 'waste' material into a landfill is expensive and, frankly, wasteful. There has been some progress in recent times with regard to waste management but we've got a long way to go where 'waste is food'. (McDonough, 1998) The CVRD has a website called *The Solution to Zero Waste*⁴¹ that encourages organizations and residents to sign a pledge to reduce their waste to zero.

In the Comox Valley, waste management is a service of the Comox Valley Regional District but is still controlled by a board that has members from all the jurisdictions that used to make up the Comox/Strathcona Regional District. It's a 21 member board (with 2 additional alternates) made up of elected officials with a complicated division of 75 overall votes, with some members getting as many as 5 votes, others only 1. At the March 14, 2014 board meeting, the board voted to spend over 3 million dollars to begin the closure of the waste management facility in Campbell River. (CVRD Waste Management Board, 2014) The Board is considering a number of options since the Comox Valley Waste Management Centre will be full probably by 2017. One of the options is to build a new site close to the existing one in Cumberland. The reality is that, as the CVRD, points out, "less than 10% of our landfill is real garbage!" So we could save ourselves a lot of money by diverting 'waste' away from the landfill. However, we know that glass and now wood are no longer diverted from the landfill because it's too expensive to process them and there is no market for processed goods. This situation will need to change to make any diversion strategy a success.

Since our last report came out in 2009 a number of new initiatives have been put in place including curbside pickup of recyclable and household organic materials. Comox (using Emterra as contractor as do the other jurisdictions in the Valley) has been picking up yard waste since 2012 and is now picking up kitchen waste (since June 2013) and it has a blue box program. Courtenay has a modified blue box program and a scheduled yard waste pickup. Cumberland has a garbage, recycling and organics program and is planning on an expansion of the program in May, 2014.

In fact the provincial government has created a new program known as extended producer responsibility⁴² (EPR), a concept that originated in Germany in the early 1990s, for many places in the province. It will be managed under Multi-Material BC, a non-profit industry-led organization (MMBC)⁴³ MMBC has selected a new company called Green by Nature EPR



LESS THAN 10% OF OUR LANDFILL IS REAL GARBAGE!

Reduce waste by using the **POWER OF R**
Rethink, Refuse, Reduce, Re-use and Recycle:

- 35% Compostables
- 15% Plastics household containers marked #1-#7
- 14% Paper
- 14% Miscellaneous
- 7% Metal
- 10% C&D
- 2% Glass
- 1% Each of Beverage containers, household hazardous waste, and electronics

41 <http://www.cswm.ca/zerowaste/zeropledgehome.html>

42 In British Columbia, **Extended Producer Responsibility (EPR)** (formerly referred to as Industry Product Stewardship) is an environmental policy approach in which the producer's responsibility for reducing environmental impact and managing the product is extended across the whole life cycle of the product, from selection of materials and design to its end-of-life. (Ministry of Environment).

43 <http://multimaterialbc.ca>

(GBN) to manage the post-collection system for packaging materials and printed paper. GBN is a consortium of companies including Cascade Recovery, Emterra and Merlin Plastics. According to the MMBC website, GBN will hire 570 people and handle 185,000 tons of recyclables from curbside collection. (MMBC, 2014)

In our 2009 report we highlighted the recycling and waste management work being done on Hornby Island by the Hornby Island Residents' and Ratepayers' Association. Well, it's still doing a great job. See their website.⁴⁴

9.5 E-Waste (and other) Recycling (+)

We reported in 2009 that province-wide e-waste recycling was launched on August 1, 2007. (CVSPS, 2009, p. 91) We also noted that the program was overseen by the Electronic Stewardship Association of BC, now the Stewardship Agencies of British Columbia (SABC). SABC handles a lot of materials and products including beverage containers, beer containers, electronics, cell phones, electronic toys, small appliances and power tools, outdoor power equipment, lighting products, batteries, lead-acid batteries, paints, solvent, pesticides, gasoline, smoke and CO₂ alarms, used oil and antifreeze, tires, thermostats, and medication. (SABC, no date) The SABC website is a great resource for finding where articles can be recycled: <http://www.bcstewards.com/> Most electronics can be dropped off at the Return-It location on Puntledge Road in Courtenay. We wondered where we could recycle cell phones in the Comox Valley. There are actually 8 sites including phone sales companies, Bell, Telus, Rogers as well as Pure Wireless, FutureShop and London Drugs. Check out the website. You might be surprised at where you can take articles for recycling.

9.6 Invasive Species

Most people would be amazed at how many of the plants and animals they see every day in the Comox Valley are invasive species. Historically, individuals brought over from Europe and Asia plants and animals for various reasons including nostalgia, profit or for getting rid of local 'pests.' Of course, many invasive species just hopped aboard a ship with no one noticing or caring. I guess we could say, in a joking way, that Europeans are somewhat of an invasive human species. For now, though, we'll discuss those invasive species we are more commonly familiar with.

The early European settlers brought with them rats and mice, but later people brought over fish, clams, oysters, frogs, slugs, pheasant, quail, doves, house sparrows, starlings and others. (CVSPS, 2009, p. 93) Bullfrogs are now common on Vancouver Island as are grey squirrels, both were introduced to the island by people and both are invasive. The fire ant is a fairly recent invasive species. (Coastal ISC, 2013) The Coastal Invasive Species Committee is hard at work all over the coast dealing with invasive species. The list of species seems to be getting longer by the day. The CVRD publishes a pamphlet on Toxic invasive plants such as giant hogweed, spurge laurel, tansy ragwort, yellow flag iris and English holly. Why are these plants a threat? Hogweed for example can cause severe burns, spurge laurel is poisonous to humans, cats and dogs and yellow flag iris is toxic if ingested by livestock and so on.⁴⁵ The best source of information on invasive and noxious plants in BC is the E-Flora BC website: http://www.geog.ubc.ca/biodiversity/eflora/Invasive_species_list.htm

We have lots of reasons to be concerned about invasive species according to Coastal ISC. They attack biodiversity, can cause rashes, skin burns or even death. They can damage crops and forests and severely impact pollination patterns. (Coastal ISC, 2013)

44 <http://hirra.ca/>

45 From the CVRD pamphlet: Toxic Invasive Plants in the Comox Valley

A particularly visible invasive species in the Valley is Scotch broom. There is an organization called Broombusters⁴⁶ dedicated to controlling this species. Last year Broombusters spent many hours of volunteer time cutting down Scotch broom along Ryan Road. The organization has also been active around the airpark in Courtenay and on the new Rotary trail along the railroad line. A new strategy for the organization is not just cutting down broom, but replanting areas where broom has been removed with native species that hopefully will discourage its spread. Purple loosestrife has also been the target of special eradication efforts in the estuary, efforts that have largely been successful although constant vigilance is required to keep it at bay.

Coastal ISC has put together a list of priority species for eradication, contain and control. The list is long. Visit their website: <http://www.coastalisc.com>. Another very cool thing you can do is download an app to report sightings of invasive species, also available by visiting the website.

9.7 Endangered Species

Since June 2004, the Canadian Species at Risk Act became fully operational. (CVSPS, 2009, p. 95) Canada and British Columbia signed an agreement in 2005 to deal with endangered species. A public registry is available at: <http://www.registrelep-sararegistry.gc.ca> courtesy the Canadian Government. There you can look at all the species on the list. There are many.

We have two high profile endangered species of animal in the Valley. One, the Vancouver Island Marmot, has its own Foundation to help it out. The Foundation's website reports good news for 2013. Twenty-six litters were born in the wild totaling 75 to 80 pups. (Marmot Recovery Foundation, 2014) Unfortunately, all these pups were born on a very small area within their historic range.

The other is the Morrison Creek Lamprey which grows to 15-18 centimetres long and lives exclusively in the Morrison Creek watershed. Morrison Creek is the only Valley creek with an intact headwater. Very little is known about this species. It can live in larval form for seven years or so. Nobody knows what it feeds on. Questions remain about why this species lives only in this particular watershed, but that fact alone makes it highly vulnerable to human development and disturbance. (Penner, 2014)

To end this section we can say that there is a heightened environmental awareness on the part of many residents of the Valley. Most people take drinking water for granted and complain when they have to pay more for it because of metering or enhanced purification requirements, but, like for most other change in our lives, we get used to it and we eventually stop complaining. We generally understand the concept of water conservation but many people can still be seen power-washing their driveways. That behaviour may change with the advent of metering. That's been the story in other places. We recycle because there is more information about how to do it and our school age children badger us into it because they learn about it at school. Now we are more inclined to use blue boxes and to put household organics in the right bucket for pickup on the right day, but it's a struggle for many people. People are aware of the concept of invasive species but being able to recognize one and report it is another story. Still, many people work as volunteers for many environmental organizations in the Valley, all determined to make our environment a more biodiverse, more enriching place for us but also for other species of animals and plants. We applaud their efforts and their tenacity.

46 Broombusters website: <http://www.broombusters.org/contact.html>

Good News Story! Abandoned Mount Washington copper mine restoration leads to Tsolum River revival

Copper (and other heavy metals) leaching into the Tsolum River from a copper mine on Mount Washington that operated for only two years from 1964 to 1966 virtually killed the river's production of life. Decades of hard work by a number of people lead to a partnership in 2003 between the provincial Ministry of the Environment, Environment Canada, the Department of Fisheries, the Tsolum River Restoration Society, the Pacific Salmon Foundation and TimberWest and the start of the river restoration project.

After a lot of detective work figuring out why the river had died, and finding the cause to be leachate from the mine, work began on a series of measures the last of which was capping the mine site with a membrane topped with organic matter. The photos show the mine site before, during and after site restoration. Visit the Tsolum River Restoration website at: <http://tsolumriver.org/>

Thanks to Jack Minard, Comox Valley Land Trust, for this information and photos.

