

Counting Every Drop

THE CASE FOR WATER USE REPORTING IN BC

by Ben Parfitt

June 2013



POLIS Project
on
Ecological Governance
University of Victoria



THE WATER-ENERGY NEXUS
RESEARCH INITIATIVE



CCPA
CANADIAN CENTRE
for POLICY ALTERNATIVES
BC Office

COUNTING EVERY DROP: THE CASE FOR WATER USE REPORTING IN BC

By Ben Parfitt

June 2013

This paper is part of a series addressing the water-energy nexus in British Columbia, published in partnership between the POLIS Project on Ecological Governance at the University of Victoria and the Canadian Centre for Policy Alternatives – BC Office. The project is primarily supported by the Gordon and Betty Moore Foundation, the Bullitt Foundation, the Vancouver Foundation and the Walter and Gordon Duncan Foundation. It is also supported by the University of Victoria Eco-Research Chair of Environmental Law and Policy and the University of Victoria Centre for Global Studies.



The Bullitt Foundation



ECO-RESEARCH CHAIR



The Vancouver Foundation is gratefully acknowledged for providing funding specific to this research report.



This paper is also part of the Climate Justice Project, a five-year research project led by the CCPA-BC and the University of BC. The Climate Justice Project studies the social and economic impacts of climate change and develops innovative green solutions that are both effective and equitable. The project is supported primarily by a grant from the Social Sciences and Humanities Research Council through its Community–University Alliance program. Thanks also to Vancity and the Vancouver Foundation for their financial support of the Climate Justice Project.



Conseil de recherches
en sciences humaines
du Canada

Vancity

vancouver
foundation



a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

The opinions and recommendations in this report, and any errors, are those of the author, and do not necessarily reflect the views of the publishers and the funders of this report.

This report is available under limited copyright protection. You may download, distribute, photocopy, cite or excerpt this document provided it is properly and fully credited and not used for commercial purposes. Photographs may not be reproduced separately without permission of the photographer.

Editing and Design: Nadene Rehnby, handsonpublications.com

Photography: Garth Lenz, garthlenz.com

ISBN: 978-1-77125-073-3



CCPA
CANADIAN CENTRE
for POLICY ALTERNATIVES
BC Office



POLIS Project on Ecological Governance

watersustainabilityproject

1400 – 207 West Hastings Street
Vancouver BC V6B 1H7
604.801.5121 | ccpabc@policyalternatives.ca

policyalternatives.ca

University of Victoria PO Box 1700 STN CSC
Victoria, BC V8W 2Y2 Canada
250-721-6388 | polis@uvic.ca

polisproject.org poliswaterproject.org



Contents

SUMMARY	5
PART 1 INTRODUCTION.....	7
PART 2 THE CURRENT SORRY STATE OF WATER USE REPORTING IN BC	11
PART 3 AN EXCEPTION TO THE RULE: WATER USE REPORTING IN THE OIL AND GAS SECTOR.....	14
PART 4 WHAT A COMPREHENSIVE WATER USE REPORTING REGIME COULD LOOK LIKE	17
Seven Key Pieces of Information Needed for a Robust Water Use Reporting Regime	19
Three Initial Actions to Set the Stage for a Water Use Reporting Regime in BC	21
REFERENCES	22

ABOUT THE AUTHOR

BEN PARFITT is a research associate with the POLIS Project on Ecological Governance at the University of Victoria and the resource policy analyst with the Canadian Centre for Policy Alternatives – BC Office. He has received numerous awards for his investigative journalism, is a co-author and author of two books on forestry, and is a long-established researcher and policy analyst specializing in natural resource management and environmental issues. His most recent research report, co-written with Jesse Baltutis, Researcher and Project Coordinator with the POLIS Project on Ecological Governance, is *From Stream to Steam: Emerging Challenges for BC's Interlinked Water and Energy Resources* (November 2012). Other recent reports include: *Fracking Up Our Water, Hydro Power and Climate: BC's Reckless Pursuit of Shale Gas* (November 2011) and *Making the Case for a Carbon Focus and Green Jobs in BC's Forest Industry* (August 2011).

REVIEWERS

To ensure the accuracy of the content of the report, a thorough practitioner and expert peer review process was employed. This included reviews by a number of anonymous reviewers. We would also like to thank Oliver Brandes (POLIS Project on Ecological Governance) and Seth Klein (Canadian Centre for Policy Alternatives – BC Office) for their helpful reviews and comments.

ABOUT THE PHOTOGRAPHER

GARTH LENZ is an internationally recognized conservation photographer based on Vancouver Island. His photography of environmental issues, threatened wilderness regions, devastation, and the impacts on indigenous peoples, has appeared in many of the world's leading publications.

Summary

WATER IS ESSENTIAL to our health and well-being, our environment and our economy. Despite this, British Columbia publishes little data on the water consumed and potentially polluted by major water users.

This absence of baseline information on a critically important resource is readily explained. The provincial government, in many cases, does not have the data because it is not collecting it.

Many major water users are not required to meter or report the water they withdraw from provincial lakes, rivers and streams, even though meters have been required in some sectors of the economy or industry sub-sectors without prohibitive cost.¹ A requirement that all major water users meter their water withdrawals would not only ensure that critical baseline information on water use is captured, but also act as a powerful incentive to conserve water and be more efficient in its use.

This policy paper argues that the provincial government should safeguard the public interest by creating a robust, publicly accessible water use database that covers all withdrawals from both surface and groundwater (i.e., below-ground) sources by major users. Groundwater data, in particular, is critical given that its use accounts for 23 per cent of water use in BC, there is no groundwater regulation in the province, and therefore no data collected. Such a database would provide greater assurance that our water resources are well managed and would be in keeping with long-standing government commitments to modernize BC's *Water Act*.

Canada's National Round Table on the Environment and the Economy noted in a report in 2011 that in every Canadian province failure to account for actual water withdrawals placed our most important natural resource at risk.²

1 For example, oil and gas companies in the northeast of the province are required by the provincial oil and gas industry regulator to meter their water consumption. Agricultural water users in the South East Kelowna Irrigation District are also required to have all of their water use metered. In neither case were the costs to install the meters prohibitive.

2 The National Round Table on the Environment and the Economy reported to successive Canadian governments on sustainable development issues over a 25-year period. Its work formally ended on March 31, 2013 when the federal government ended its funding of the organization.

This absence of baseline information on a critically important resource is readily explained. The provincial government, in many cases, does not have the data because it is not collecting it.



A requirement that all major water users meter their water withdrawals would ensure not only that critical baseline information on water use is captured, but act as a powerful incentive to conserve water and be more efficient in its use.

BC cannot afford to perpetuate this problem, given the mounting challenges posed by climate change, steadily rising industrial water usage, new hydro-electricity projects, and the needs of a growing population.

This paper recommends three immediate courses of action to set the stage for a robust water use reporting regime in future years:

- Grant one provincial agency sole responsibility for gathering and reporting all information on water use and have an independent auditor periodically verify the agency's performance;
- Require immediately that all major water users meter the water they consume and report that data to the provincial agency responsible for water use data collection; and
- Increase water use fees and use a portion of the revenues collected to pay for a province-wide water use database and increased environmental monitoring and enforcement efforts.

Such a regime is needed now more than ever, as the province stands on the cusp of what could be a major expansion in the exploitation of its fossil fuel resources, particularly natural gas and coal. Water used for energy should be priced high enough and tracked thoroughly enough to encourage optimum conservation.

Introduction

WATER IS OUR MOST PRECIOUS NATURAL RESOURCE. Without it human life, indeed all life, would cease to exist. It is essential for our health and well-being, for the food we eat, for fisheries and wildlife, and for much of the energy we use.

It may come as a surprise then, that in jurisdictions with the fiscal means and technical know-how to quantify water use, so little effort is made to do so.

Presently, British Columbia publishes almost no data on actual water usage, including the water used by the largest industrial users—and in some cases polluters—in the province. In many cases it does not even require that major users meter what they use or report that use to a provincial agency.

Of note, the government itself has at least indirectly acknowledged that this lack of baseline data is problematic and should be redressed through a new *Water Sustainability Act*.³ Three things are driving the need for such legislation:

- BC's population is climbing;
- Watershed lands are at increased risk of degradation due to multiple developments (cumulative effects) in watersheds and depletion of natural resources; and
- Climate change is occurring, with noticeable impacts on hydrological regimes.

The government notes that “water in some parts of BC is already under pressure from a number of competing demands, and these demands continue to increase. Urban, land and resource development, climate change and population growth all affect ecosystems, and ground and surface water quantity and quality.”⁴

Presently, BC publishes almost no data on actual water usage, including the water used by major industries that are among the single largest users—and in some cases polluters—of water in the province.

3 Province of British Columbia, 2010.

4 Ibid.

It goes on to say that a *Water Sustainability Act* would “position BC as a leader in water stewardship” by focusing on such things as:

- Water supply and water quality;
- Protecting human and environmental health;
- Protecting natural ecosystems and their goods and services;
- Water security and public safety; and
- Community, regional and economic development.⁵

An increased focus on water supply and water quality makes sense. A useful tool to assist government with its water sustainability goals would be a single authority, responsible for collecting and reporting critical information on water use.

The absence of such information is something that the National Round Table on the Environment and the Economy emphasizes is a key impediment to the sound management of water resources across Canada, including BC.

In a 2011 report on water use by Canada’s natural resource industries, which collectively account for about 86 per cent of all water use in the country, the National Round Table noted that no Canadian province does a good job of collecting water use information and that a lack of reliable, publicly available data on water quantity has negative implications for provinces across the country. The Round Table concluded:

*We need to improve our understanding of both water supplies and water demands. With increasing competition for water resources, governments need better data, not just to make sound allocation decisions today, but also to ensure there is enough water for the future.*⁶

Effective management of water resources is complicated by the fact that only a portion of the water in a given watercourse is actually the renewable component of that water supply—i.e., rainfall or melting snow.

Water is also non-substitutable. We cannot replace it with something else.⁷

Natural variability in the timing, duration and intensity of precipitation events makes the management of water resources challenging at the best of times. With climate change, such challenges become even more complex and may affect a host of things including hydroelectric power generation, municipal water supplies, farm irrigation, floodplain management and fisheries habitat.⁸

The challenges are amplified further by regional variations in water use and water availability. For example, BC’s natural gas industry may demand access to far more water and hydroelectric power in future years due to planned increases in production in the event that the province

5 Ibid.

6 National Round Table on the Environment and the Economy, 2011.

7 Savenije, 2002. The document notes: “Water is non-substitutable. What we do with orange juice cannot be done with water. Water can only be diluted with water to turn it into water. Although other economic goods have alternatives, water has none. For fuel, one can choose between oil, gas, coal, wood, hydropower or solar power. For food one can choose between bread, pasta, rice, or maize. But what alternatives are there for water: rainwater, groundwater, surfacewater...? It is all the same water from the same system, from the same source. There is no alternative, there is no choice.”

8 Zwiers, 2011.



An increased focus on water supply and water quality makes sense. A useful tool to assist government with its water sustainability goals would be a single water use authority, responsible for collecting and reporting critical information on water use.

begins exporting natural gas to Asian markets. Should such increases occur, water-intensive hydraulic fracturing (or “fracking”) would have to be widely deployed to produce the new gas. The gas extraction would occur primarily in the northeast of the province, where droughts have become a problem in recent years.⁹

Currently, the provincial government publishes virtually no information on where major withdrawals of surface water and of groundwater occur, at what rates such withdrawals occur, where the water taken from rivers, lakes, streams and below-ground sources goes or how it is ultimately used. There are no significant cost barriers to implementing such a system, and in jurisdictions such as Denmark where rigorous water accounting takes place in tandem with higher water prices, water conservation increases (see *Water Metering in Denmark*).

BC’s lack of basic water use accounting increases the risks that shared water resources are wasted or unnecessarily degraded. As the National Round Table noted:

Sustainable water use is based on the fundamental idea that nature has a limited carrying capacity, and that society has a responsibility to alter its behaviour in a way that maintains ecosystem services and accounts for not just current needs but those of future generations.

BC has jurisdiction to manage water resources within its borders. Furthermore, the government announced in 2010 that it would improve its management of such resources through modernizing BC’s *Water Act*.

In jurisdictions such as Denmark where rigorous water accounting takes place in tandem with higher water prices, water conservation increases.

PHOTO JASON JONES/Flickr

WATER METERING IN DENMARK

In Denmark, almost all water comes from groundwater sources. Mounting concerns over pollution of shallower aquifers have led to concerted efforts to reduce contaminants in the water and curb over-withdrawals.¹⁰

The country has mandatory water metering in place with all consumers required to pay a state water meter rental fee. Data on water takings is published by the country’s state statistical agency—Statistics Denmark.¹¹

The Ministry of Environment reported that in the community of Aarhus in 2008 the average household consumed 170 cubic metres. The corresponding figure for Canadian household water consumption that year was 250 cubic metres of water. Rigorous metering requirements and across-the-board volumetric pricing explains the significant gap between the two countries.



9 Parfitt, Baltutis and Brandes, 2012.

10 Danish Ministry of Environment.

11 Olsen, 2003.

One of the most important first steps the province can take to improve water management is to create a comprehensive, publicly accessible, regularly updated database that reports on actual water usage across BC. This requires that water users fully report their water use.

The province has demonstrated its capacity to collect and disseminate such information with the highly complex government database that itemizes in great detail the volume and value of all trees logged in the province.

Not only is the database available online, but any member of the public can use it to extract detailed information based on specific information requests.¹²

Failure to create a timely, accurate water use database could undermine key provincial government objectives relating to improved management of BC's water resources, including those outlined in 2009 when the province unveiled plans to modernize BC's *Water Act*.

Those objectives include:

- Greater protection of ecological values in watersheds;
- Greater community involvement in water management decisions;
- New approaches to manage water resources based on increased risks of drought and other events associated with climate change; and
- Regulation of groundwater resources—including licensing and reporting requirements.¹³

For such objectives to be realized, it is vital that the public—and civil servants who act on the public's behalf to monitor and enforce environmental laws and regulations—have access to critical baseline information.



One of the most important first steps that the province can take to improve water management is to create a comprehensive, publicly accessible, regularly updated database that reports on actual water usage across BC.

¹² The database can be accessed at www.for.gov.bc.ca/hva/hbs/

¹³ Province of British Columbia, 2010.

The Current Sorry State of Water Use Reporting in BC

BC'S *WATER ACT* REQUIRES individuals, utilities or companies withdrawing water from surface water sources to obtain a water licence or temporary water use permit from the provincial government.¹⁴ No such authorizations are required for groundwater withdrawals.

A licence or permit authorizes the holder to withdraw water from a specific watercourse or watercourses and identifies the maximum volume of water that can be taken. It may also carry other conditions; for example, limitations on when water may be withdrawn or at what point water withdrawals must cease. Licences and permits may also require holders to meter water withdrawals and provide meter data to the provincial regulator.

In many cases, however, neither metering nor reporting requirements are actually in place. Of the 31 water licences issued to pulp and paper companies, for example, only one requires metering, and the data is to be provided to the provincial regulator only upon request.¹⁵

Because of the lack of metering or reporting requirements, BC publishes only estimates on water usage. The last such estimates were published in 2006 and relied on data that was in some cases almost a decade old. The estimates were developed based on allocated, not actual, use.¹⁶

Because many water licences and water permits do not have meter or reporting requirements, BC publishes only estimates on water usage. The last such estimates were published in 2006 and relied on data that was in some cases almost a decade old.

14 Water licences are longer-term authorizations and generally renewable, whereas permits carry a maximum term of one year. Licences also bestow on the holder certain preferential rights of access based on the date of issuance. If water supplies diminish, for example due to drier conditions, the rights of access of the first licence holder must be met before other licence holders are allowed to obtain their water. This "first in time, first in right" aspect of water licences does not apply to permits, because of their temporary nature.

15 Parfitt, Baltutis and Brandes, 2012.

16 Ibid.

The estimates indicate that the three sectors of the province with the highest consumptive water use are major industries, municipal water systems and farming operations.¹⁷ The estimates also indicate that the combined water usage in these three sectors is miniscule compared to the water used by BC's hydroelectric sector.

However, the water used in the hydroelectric sector is distinct from that used in the other three sectors. That is because the water stored and then run through hydro turbines is considered *flow through water*. Water is captured, but then released downstream. This is very different from *consumptive* water use such as the water diverted from a river and then pressure-pumped underground at a natural gas well. Such water becomes so toxic that it is essentially lost to the hydrological cycle forever.



The significant gap between what the provincial government currently charges industrial water users and what Dawson Creek charges for water used by the natural gas industry strongly indicates that the provincial government is foregoing revenues.

DAWSON CREEK WATER SALES

The City of Dawson Creek in northeast BC sells water from its licensed municipal water supply to natural gas companies for their hydraulic fracturing (or “fracking”) operations. The municipality charges \$4.50 for each cubic metre of treated water.

In contrast, natural gas companies obtaining water through short-term water use permits issued by BC's Oil and Gas Commission pay the province nothing for the water withdrawn under such permits, and only a token amount for water obtained under long-term water licences. For example, a natural gas company withdrawing 2,500 cubic metres of water (the amount of water in one Olympic-size swimming pool) under a water licence pays the provincial government \$2.75. If the same volume of water is purchased from Dawson Creek, it costs \$11,250.

In 2012, under a unique arrangement between the City of Dawson Creek and Shell, a new wastewater treatment facility opened. Shell paid \$16 million of the \$18 million construction cost. In return, Shell received the rights to 75 per cent of the wastewater discharged from the facility for a period of 10 years. The water is now piped to the company's natural gas operations where it is used in fracking. After the 10-year period ends, Shell will pay the same rate as all other industrial users of wastewater produced at the facility—currently \$2.50 per cubic metre, though the price could rise.

The significant gap between what the provincial government charges industrial water users and what Dawson Creek charges for water used by the natural gas industry strongly indicates that the provincial government is foregoing revenues. Higher water use charges would result in more water revenues and encourage greater water conservation.

¹⁷ BC Ministry of Environment, 2006.



Another way estimated water use is tracked is through the provincial government's Water Revenue Unit, housed within the Ministry of Forests, Lands and Natural Resource Operations (FLNRO).

Almost all of the revenues collected—\$359 million of the \$365.2 million in 2011/2012—are water use fees paid by BC Hydro and other hydro producers who are required to report the water they capture, divert through turbines and then release downstream.

The remaining \$7.2 million in fees covers all consumptive water use in the industrial, municipal and agricultural sectors combined—a stunningly low amount of revenue given the extensive use of this public resource and indications that large water users could pay more (see *Dawson Creek Water Sales*). Significantly, the Water Revenue Unit does not collect information on the actual water used in the three sectors, but bases the fees it levies on the water that these sectors are allocated to use under the terms of their licences. Hence, it neither collects nor publishes data on actual water usage.

Flow through water is very different from consumptive water use, such as the water diverted from a river and then pressure-pumped underground at a natural gas well. Such water becomes so toxic that it is essentially lost to the hydrological cycle forever.

An Exception to the Rule: Water Use Reporting in the Oil and Gas Sector

The BC Oil and Gas Commission is the only entity other than the Ministry of Environment to have powers to issue water use permits, and energy companies are the only sector of BC's economy able to obtain water rights from their own dedicated regulator.

UNTIL THE LATE 1990s, the provincial Ministry of Environment (MOE) was in charge of all water use authorizations in BC. All water users, big or small, were required to file applications with the ministry for either short-term or long-term water rights.

In 1998, the first and so far only significant deviation occurred with the creation of the BC Oil and Gas Commission, which regulates the province's energy industry. The OGC was granted powers under BC's Water Act to review and approve energy company applications for short-term water use permits, also known as Section 8 permits. The OGC was not granted authority to review or approve energy company applications for longer-term water licences, however. Such powers remained with MOE.

The changes made the OGC the only entity other than MOE to have powers to issue water use permits, and energy companies became the only sector of BC's economy able to obtain water rights from their own dedicated regulator.

The OGC was designed as a "single window" regulatory agency for energy companies. Rather than companies having to deal with numerous agencies for permit reviews and approvals (the Ministry of Forests for logging permits, the Ministry of Energy and Mines for pipeline approvals, etc.), all relevant functions set out in various acts and regulations were transferred to the OGC, including powers to issue short-term water use permits.

For some time after the OGC's creation, water use in BC's energy sector was not regarded as a major public policy concern. But in recent years, energy sector water usage has accelerated as companies have begun drilling in shale rock formations. To get gas trapped in the tightly bound shale rock out, companies have turned increasingly to hydraulic fracturing technology, which

involves pressure-pumping large quantities of water down wellbores and out into the surrounding rock to fracture it, allowing the trapped gas to flow out.

In 2011, in response to public questioning about the amount of water used at fracking operations and other concerns relating to possible ground and surface water contamination, the OGC required that all energy companies meter and report their water use. In August 2011, the OGC published its first quarterly water use report for the energy sector, covering the January–March period.¹⁸

This and subsequent reports have provided information on: the total number of water use permits issued by the OGC on a watershed by watershed or river valley by river valley basis; the total volume of water approved for withdrawal as well as the total actually withdrawn; and comparative information such as the volume of water approved or used versus the mean annual runoff of the watercourse on which the water withdrawals occur.¹⁹

The report had its limitations. It focused only on the water used by the industry under Section 8 permits. However, it highlighted that the companies were generally using far less water than they were entitled to take—a finding that sets the stage for the OGC placing limits on unnecessarily large water allocations. The report also noted that some companies failed to supply any water withdrawal data—a problem rectified in subsequent reporting periods.

In March 2013, FLNRO gave the OGC powers to review and approve long-term water licence applications.²⁰ (FLNRO had earlier taken over responsibility for issuing all short-term water permits and long-term water licences from MOE.) The change means that most, but not all, water used by the oil and gas industry will require OGC approval.²¹

Shortly after the OGC was granted these new powers, OGC hydrologist Allan Chapman said the first order of business would be consultations between FLNRO and the OGC over the status of 20 separate water licence applications before FLNRO.²² A second priority, Chapman said, would be to discuss how to amend existing water licences to require the metering and reporting of water withdrawals.

Chapman said the OGC intends to ensure that future water use reports issued by the Commission include all licensed or approved water used by the industry, regardless of source or authorization.

Currently, the information published by the OGC is not refined enough in scope that the public can determine which company, operating under what specific permit or licence, withdrew water from where and at what volume. The information is also not publicly available in a searchable database format that allows for independent analysis (as exists in forestry).

Despite these shortcomings, the OGC water use reports are at present the only example of a provincial regulator requiring large-scale, industrial water users to disclose their water use and the regulator actually publishing some data on a regular basis that outlines where water withdrawals occur and at what volume.



Currently, the information published by the OGC is not refined enough in scope that the public can determine which company, operating under what specific permit or licence, withdrew water from where and at what volume.

18 BC Oil and Gas Commission, 2011(b).

19 Ibid.

20 Konkin, 2013.

21 Some notable exceptions not covered by the OGC include: unregulated groundwater withdrawals, water sourced from dugouts on private land and sold by private landowners, and bulk water sales to the energy industry by local governments or municipalities.

22 Chapman, 2013.



With the OGC having demonstrated that water use data can easily be collected and disseminated, political will is all that stands between the current lax reporting environment and a more comprehensive, province-wide water use reporting regime.

With the OGC having demonstrated that water use data can easily be collected and disseminated, political will is all that stands between the current lax reporting environment and a more comprehensive, province-wide water use reporting regime. All that would be needed is for the province to require that major water users install water meters, if they don't already have water meters in place (an added cost of perhaps a few hundred dollars at installations where large volumes of water are withdrawn—a minor amount when viewed against the investments in water pumps, pipes and water storage facilities), and for the province to design and maintain a database where information from meters was regularly uploaded and available for public consumption.

Two examples of databases maintained by the provincial government that allow members of the public to independently analyze resource information are discussed in the next section.

What a Comprehensive Water Use Reporting Regime Could Look Like

TWO DATABASES OVERSEEN by provincial government agencies show that highly detailed information on resource use can readily be collected and publicized. Such information provides a valuable platform for government regulators and members of the public alike to conduct investigations that are in the public interest.

The first is a database that itemizes various hazardous wastes in BC.

Under the *Environmental Management Act's* Hazardous Waste Regulation, the generators, carriers and receivers of listed hazardous wastes in BC (wastes ranging from old transformer coolant fluids laced with polychlorinated biphenyls, to biomedical wastes from hospitals and clinics, to the oily bilge water from cruise ships) must report the volume of waste generated, who picks up the waste, and where the waste is delivered for treatment and/or disposal.²³

Each year, a new dataset is produced consisting of tens of thousands of entries that itemize the volume and types of waste handled on a shipment-by-shipment basis. The information originates with the waste generators and licensed waste handlers themselves, who are required by law to fill out paper waste manifest forms that they must then submit to MOE. From there, a provincial data entry clerk faces the time-consuming task of inputting all of the information from the manifests into a computer database.²⁴ Once completed, the data is available to the public at a cost of \$100 for each year's worth of information.

If a mandatory water use reporting regime is developed in the province, it will require that all major water users meter and account for the water they use.

23 Province of British Columbia, 2009.

24 Parfitt, 2007(a). In 2005, the provincial Ministry of Environment acknowledged that its hazardous waste reporting regime could be dramatically improved by requiring all hazardous waste generators and handlers to electronically file information on waste movement and waste treatment. At the time, it was acknowledged that the electronic filing would allow for speedier dissemination of information and more effective analysis of the information by public servants. Paper filing of manifest data remains in place, however.

The information contained in the spreadsheet can be sorted numerous ways including by waste type, waste carrier, and waste destination point. The database has in years past been used to expose the illegal activities of certain waste handlers, including instances where companies failed to report the waste they handled²⁵ or where companies improperly stored or disposed of toxic wastes, placing human health and the environment at risk.²⁶

As noted previously, an even more detailed dataset is maintained by FLNRO and freely available to members of the public, with a somewhat more detailed database containing proprietary information that members of the provincial government and forest industry may access.

The database, known as the Harvest Billing System, provides timely information on the volume and value of all trees logged in BC. This includes information on:

- Species of trees logged;
- Grade or value of the trees logged;
- Revenues (stumpage fees) generated from the trees logged;
- Logging data by company, by region or district, or by logging authorization;
- Whether the trees originated on public or private lands; and
- Volume of trees left behind at logging sites and deemed to be waste.

Database users can customize searches allowing for analysis at a fine level of detail. Data on the logging activities of a major corporation can be accessed as well as data on the activities of very small companies or landowners, such as woodlot owners. Once users of the database have input the information they seek, they make an electronic request via email and almost immediately receive a searchable spreadsheet or PDF with the information requested.

Information obtained through this database has been used by members of the public and by non-governmental organizations to help inform public debate on key issues relating to logging trends²⁷ and related wood waste issues.²⁸ This is important because BC's forests are overwhelmingly publicly owned (only about 6 per cent of the provincial land base is private land; the rest is Crown or public land).

25 Parfitt, 2002. In an investigative feature in *The Georgia Straight*, the author used data from provincial waste manifests and other sources to show that approximately 8,000 tonnes of toxic oily waste offloaded from cruise ships in the Port of Vancouver failed to be reported by one waste handler. The waste handler was subsequently barred from operating in the port.

26 Parfitt, 2005. In a 2005 investigative feature in *The Georgia Straight*, the author used data from provincial waste manifests to show that up to 400,000 kilograms of hazardous wastes were unaccounted for as a result of actions taken by a waste handler in the Abbotsford area that subsequently filed for bankruptcy. The manifests and other information from the provincial environment ministry indicated that waste was improperly identified, stored and disposed.

27 Parfitt, 2007(b). In June 2007, research of the Harvest Billing System's database revealed that over a five-year period, during which interior logging companies were meant to be targeting dead pine trees for harvesting due to the extensive damage caused by the mountain pine beetle infestation, large numbers of healthy non-pine trees were logged as well. The data set the stage for all three of the province's leading forest industry unions and some of the province's leading environmental organizations jointly calling on the province for changes to forest policy.

28 Parfitt, 2009. Research of the Harvest Billing System's database was used in this case to quantify the very large, escalating volumes of usable logs being left behind at logging operations across the province. The release of the analysis prompted a review by the province's independent forest watchdog, the BC Forest Practices Board.



FLNRO's Harvest Billing System database is far more detailed and publicly accessible than MOE's hazardous waste data. This is understandable given the historic economic importance of BC's forests. Significantly, for purposes of this paper, water revenues are also of increasing economic importance. In fact, in recent years water revenues have approached or even nominally exceeded the fees that the government collects from companies logging public forests.

Given the prospect for increased industrial water usage and higher water revenues in future years, the financial case for a comprehensive, province-wide, water use database grows.

With precedent for the provincial government investing funds in gathering information on resource use in other sectors, and with the government acknowledging the need for more responsible water stewardship, what would an effective water use reporting regime for BC look like?

SEVEN KEY PIECES OF INFORMATION NEEDED FOR A ROBUST WATER USE REPORTING REGIME

If a mandatory water use reporting regime is developed in the province, it will require that all major water users meter and account for the water they use. For purposes of this report, major water users are defined as all industrial water users, agricultural water users, and large municipal utilities.

This requirement would be fairly straightforward and easy to implement as far as temporary water use permits are concerned, since the maximum duration of such permits is one year. Furthermore, the OGC decided in early 2011 that, even with existing water use permits in place, it would make reporting requirements mandatory from then on, without waiting until existing permits expired and new permits were issued.

The requirement might be somewhat more difficult with longer-term water licences, many of which would have to be amended to require that meters be installed and meter data be reported on a regular basis—quarterly if the OGC's existing water-reporting requirements were followed.

Even in the event that the provincial government elected *not* to produce a water use database, amending all water licences to make metering and reporting a requirement makes sense if for no other reason than that of consistency. A review of water licences held by companies engaged in fracking shows that the government has been inconsistent in attaching conditions to such licences. In some cases, companies are required upon request by the regulator to provide an account of the water they have used. In other cases, no such requirement exists.

Once such requirements are in place, questions arise about how to effectively gather and report out information on water use. Given the ecological and economic benefits associated with maintaining sufficient supplies of clean water, it makes sense that one provincial ministry be assigned responsibility for collecting and reporting baseline data on water use across the province.

Historically, the ministry responsible for provincial water resources was MOE, so it would make some sense for new water-reporting responsibilities to be vested with it. Currently, the ministry has responsibility for water policy, but operational powers (reviewing and approving water licence applications among them) rests with FLRNO. FLRNO might also be a strong candidate to run such a database, because of its demonstrated expertise running the Harvest Billing System. Regardless

Even in the event that the provincial government elected *not* to produce a water use database, amending all water licences to make metering and reporting a requirement makes sense if for no other reason than that of consistency.



Given the ecological and economic benefits associated with maintaining sufficient supplies of clean water, it makes sense that one provincial ministry be assigned responsibility for collecting and reporting baseline data on water use across the province.

of which ministry was tasked with overseeing a water use reporting program, certain key pieces of information would be critical to ensure the effectiveness of such a database.

Seven key pieces of information needed for an effective water use reporting regime for both surface and groundwater sources are:

- Water licence or permit numbers and the names of licence or permit holders;
- How much water licence or permit holders are allowed to withdraw under each licence or permit;
- How much water is actually withdrawn from what water body over what period of time (water bodies to include all surface sources, all groundwater sources and any engineered works) and under what licence or permit;
- Proper geographical coordinates to pinpoint where water withdrawals occur, so that the impacts of water withdrawals can be assessed at a watershed or drainage scale;
- Where the water withdrawn is used and for what purpose;
- Where any wastewater is subsequently treated and/or disposed; and
- What water use fees, if any, are charged.

These key pieces of information, which would be gathered from the water users themselves, could then be augmented with key data on a watershed by watershed basis on annual water flows, water recharge rates, and how the overall number of water withdrawals compared to such flows and rates.

THREE INITIAL ACTIONS TO SET THE STAGE FOR A WATER USE REPORTING REGIME IN BC

Three things should immediately be done to improve our understanding of water use in the province and to set the stage for more effective management of our shared water resources in future years.

The following recommended policy changes will only be effective, however, if they are part of a broader package of reforms that do more than just account for who uses our water resources and how much they use. While water accounting is of vital importance, truly effective accounting serves a higher purpose.

At the outset of this report, it was noted that government has acknowledged the long overdue need to reform the province's century-old *Water Act*. This commitment has taken on added urgency in light of the potential for substantial increases in water withdrawals and increased demands for hydroelectricity in the province's natural gas sector.²⁹ A political commitment to see a new *Water Sustainability Act* enacted in BC would be instrumental in giving the following proposed structural changes the weight they need to be truly effective.

With a new *Water Sustainability Act*, a more comprehensive reporting and management regime could emerge. One where:

- Estimates of available water resources are made before water resources are allocated;
- Water use plans are drawn up before water resources are allocated; and
- Actual water usage is tracked and compared to water use plans, and there is an ability to modify plans, including changes to approved withdrawal rates, based on circumstances.

The following three recommendations then, are viewed as an essential starting point as the province moves forward with overdue *Water Act* reforms.

The three recommended immediate policy actions are:

- Grant one provincial agency sole responsibility for gathering and reporting all information on water use and have an independent auditor periodically verify the agency's performance;
- Require immediately that all major water users meter the water they consume and report that data to the provincial agency responsible for water use data collection; and
- Increase water use fees and use a portion of the revenues collected to pay for a province-wide water use database and increased environmental monitoring and enforcement efforts.

For these recommended policy changes to have the desired effect, however, broader changes are required. How we use water and how we manage our watershed lands are ultimately political issues requiring political will and commitment.

The government has acknowledged the long overdue need to reform the province's century-old *Water Act*. This commitment has taken on added urgency in light of the potential for substantial increases in water withdrawals

²⁹ Parfitt, Baltutis and Brandes, 2012. The report notes that there is significant prospect for increased water withdrawals and escalating hydroelectric consumption in the face of an expanding natural gas industry in BC. The report recommends increases in water pricing to encourage conservation in the energy sector and other sectors that are major water consumers.

REFERENCES

- BC Ministry of Environment. *Surface Water Allocated for Consumptive Use by Sector*. March 14, 2006.
- BC Oil and Gas Commission. "Changes in Section 8 Short Term Water Use Approvals." Directive 2011-02. March 2, 2011(a).
- BC Oil and Gas Commission. *Quarterly Report on Short-Term Water Approvals and Use: January to March, 2011*. 2011(b).
- Chapman, Allan. Personal Communication. Allan Chapman, hydrologist, BC Oil and Gas Commission. April 15, 2013.
- Danish Ministry of Environment. *Water supply in Denmark*. geus.dk/program-areas/water/denmark/vandforsyning_artikel.pdf
- Konkin, Doug. "Designation of Regional Water Managers Section 1 of the Water Act, R.S.B.C. 1996, c. 483." Doug Konkin, Deputy Minister on behalf of the Minister of Forests, Lands and Natural Resource Operations. 2013.
- National Round Table on the Environment and the Economy. *Charting a Course: Sustainable Water Use by Canada's Natural Resource Sectors*. 2011.
- Olsen, Thomas. *The Danish NAMEA Water Accounts – with examples of its use*. Paper prepared for the London group meeting, Rome, November 5–7, 2003. Statistics Denmark. 2003.
- Parfitt, Ben. *Fracking Up Our Water, Hydro Power and Climate: BC's Reckless Pursuit of Shale Gas*. Canadian Centre for Policy Alternatives. November 2011.
- Parfitt, Ben. *Shortchanged: Tallying the Legacy of Waste in BC's Logging Industry*. Canadian Centre for Policy Alternatives. March 2009.
- Parfitt, Ben. "Untracked toxic waste seeps out of sight." *The Georgia Straight*. January 18, 2007(a).
- Parfitt, Ben. *Over-cutting and Waste in BC's Interior: A Call to Rethink BC's Pine Beetle Logging Strategy*. Canadian Centre for Policy Alternatives. June 2007(b).
- Parfitt, Ben. "Deadly brew: Millions of litres of toxic waste in the Fraser Valley are unaccounted for." *The Georgia Straight*. March 24, 2005.
- Parfitt, Ben. "Where Does It All Go? Our system for tracking toxic wastes is showing cracks." *The Georgia Straight*. June 27, 2002.
- Parfitt, Ben, Jesse Baltutis and Oliver M. Brandes. *From Stream to Steam: Emerging Challenges for BC's Interlinked Water and Energy Resources*. Canadian Centre for Policy Alternatives – BC Office and Polis Project on Ecological Governance. November 2012. policyalternatives.ca/water-energy
- Province of British Columbia. *Environmental Management Act Hazardous Waste Regulation* [includes amendments up to B.C. Reg. 63/2009]. April 1, 2009.
- Province of British Columbia. *British Columbia's Water Act Modernization: Policy Proposal on British Columbia's New Water Sustainability Act*. December 2010.
- Savenije, Hubert. "Why water is not an ordinary economic good, or why the girl is special." *Physics and Chemistry of the Earth* 27, 741-744. 2002.
- Zwiers, Francis, Markus Schnorbus and Greg Maruszeczka. *Hydrologic Impacts of Climate Change on BC Water Resources: Summary Report for the Campbell, Columbia, and Peace River Watersheds*. Pacific Climate Impacts Consortium. July 2011.



THE CLIMATE JUSTICE PROJECT

The Climate Justice Project is a multi-year initiative led by CCPA and the University of British Columbia in collaboration with a large team of academics and community groups from across BC. The project connects the two great “inconvenient truths” of our time: climate change and rising inequality. Its overarching aim is to develop a concrete policy strategy that would see BC meet its targets for reducing greenhouse gas emissions, while simultaneously ensuring that inequality is reduced, and that societal and industrial transitions are just and equitable.

climatejustice.ca



CCPA
CANADIAN CENTRE
for POLICY ALTERNATIVES
BC Office

The Canadian Centre for Policy Alternatives is an independent, non-partisan research institute concerned with issues of social and economic justice. Founded in 1980, it is one of Canada’s leading progressive voices in public policy debates. The CCPA is a registered non-profit charity and depends on the support of its more than 10,000 members across Canada.

policyalternatives.ca



POLIS Project on Ecological Governance

watersustainabilityproject

The POLIS Water Sustainability Project is an action-based research group that recognizes water scarcity is a social dilemma that cannot be addressed by technical solutions alone. The project focuses on four themes crucial to a sustainable water future:

- Water Conservation and the Water Soft Path;
- The Water-Energy Nexus;
- Watershed Governance; and
- Water Law and Policy.

The WSP works with industry, government, civil society, environmental not-for-profits, and individuals to develop and embed water conservation strategies that benefit the economy, communities, and the environment. The WSP is an initiative of the POLIS Project on Ecological Governance at the University of Victoria.

poliswaterproject.org



POLIS Project
on
Ecological Governance
University of Victoria

Created in 2000, the POLIS Project on Ecological Governance is a research-based organization housed at the University of Victoria, British Columbia. Researchers who are also community activists work to make ecological thinking and practice a core value in all aspects of society and dismantle the notion that the environment is merely another sector. Among the many research centres investigating and promoting sustainability worldwide, POLIS represents a unique blend of multidisciplinary academic research and community action.

polisproject.org

