



**CCPA**  
CANADIAN CENTRE  
for POLICY ALTERNATIVES  
BC Office

# A Dam Big Problem

## REGULATORY BREAKDOWN AS FRACKING COMPANIES IN BC'S NORTHEAST BUILD DOZENS OF UNAUTHORIZED DAMS

*Ben Parfitt, Resource Policy Analyst  
Canadian Centre for Policy Alternatives, BC Office*

May 3, 2017

---

A subsidiary of Petronas, the Malaysian state-owned petro giant courted by the BC government, has built at least 16 unauthorized dams in northern BC to trap hundreds of millions of gallons of water used in its controversial fracking operations.

The 16 dams are among “dozens” that have been built by Petronas and other companies without proper authorizations, a senior dam safety official with the provincial government told the Canadian Centre for Policy Alternatives, which began investigating the problem in late March after receiving a tip from someone with knowledge of how widespread the problem is.

Two of the dams built by Progress Energy, [a wholly owned subsidiary of Petronas](#), are towering earthen structures that exceed the height of five-storey apartment buildings. Petronas has proposed building a massive Liquefied Natural Gas plant in Prince Rupert, which if built would result in dramatic increases in fracking and industrial water use throughout northeast BC.

The two dams are so large that they should have been subject to review by BC's Environmental Assessment Office (EAO). Only if a review concluded that the projects could proceed would the EAO's office have issued a certificate, and only then could the company have moved on to get the necessary authorizations from other provincial agencies.

But nothing close to that happened because the company never submitted its plans to the EAO before the dams were built.

Now, five years after construction on the two dams began, the CCPA has learned that BC's Environmental Assessment Office has belatedly launched an investigation. Other agencies

are also scrambling to figure out what to do as evidence emerges of extensive unauthorized dam-building on their watch.

Another 13 Progress Energy dams are being retroactively reviewed by the Oil and Gas Commission (OGC).

That's because on December 23, 2016, the company applied simultaneously to the Province [for 13 water licences](#) to impound water behind dams that it had already built.

The huge challenge now before the OGC, which has authority to grant water licences to Progress Energy and other natural gas companies operating in the region, is that under BC's old *Water Act* as well as the new *Water Sustainability Act*, companies are not allowed to build dams that impound freshwater without first obtaining authorizations.

It now falls to the OGC well after the fact to decide whether the water licences will be granted. Because engineering plans for the dams were not submitted to provincial dam safety officials before the structures were built, the OGC must also retroactively determine whether the dams are structurally sound, and if they are not, whether they should be ordered shut down.

The latter is a distinct possibility. During its investigation, the CCPA uncovered evidence that one of the dams built by Progress/Petronas showed signs of failure last year, which would have sent a wall of water and mud rushing toward a gas-processing plant not far downstream. The OGC subsequently ordered the company to dewater the dam.

Complicating matters considerably, the dams are located close to natural gas industry drilling and fracking sites. Fracking involves pumping immense amounts of water under extreme pressure below ground to "liberate" gas trapped in dense rock formations. Throughout northeast BC, the intensity of that pressure-pumping has triggered numerous earthquakes, including a 4.6 magnitude tremor at a Progress/Petronas fracking operation in August 2015 that was felt 180 kilometres away.

That means in addition to assessing the general engineering integrity of dozens of unauthorized dams, the OGC must also consider how seismically sound they are.

## **Progress/Petronas dams just the beginning**

Progress/Petronas is not alone. Details on many more unpermitted dams are expected to emerge in the coming months as other natural gas companies apply retroactively for water licences.

The full extent of the unauthorized dam building is not yet publicly known. But according to Jim Mattison, a former comptroller of water rights for the provincial government, the

extensive network of energy industry dams and other water impoundment structures is vast. And, to date, largely unregulated.

During a phone interview on April 20, Mattison said there are “certainly more” than 100 large dams that have been built by or for energy companies operating in the region. At the end of the day, he says, additional fieldwork may reveal that there are “200 or more” such facilities.

Mattison has reached that conclusion after researching the problem under contract to BC’s Ministry of Forests, Lands and Natural Resource Operations (FLNRO). The research includes analysis of satellite imagery and remote sensing data.

Mattison said that work shows there are literally “thousands” of artificial water bodies across northeast BC. The list includes everything from small dams and dugouts built by landowners to capture and divert water on private farmlands that is subsequently sold to fracking companies; borrow pits used to excavate earth for roadbeds and other oil and gas company infrastructure; and, at the top of the pyramid, massive earthen dams built on crown lands by Progress/Petronas and others.

This vast and dispersed network of water impoundment structures is likely to have extensive effects on everything from aquifers, to ecologically unique and sensitive muskeg systems, to water levels in fish-bearing streams and rivers, to beaver ponds and wetlands, and to fish, animal and plant communities of importance to numerous First Nations.

## **Problem known – public not notified**

Records obtained by the CCPA indicate that the Oil and Gas Commission, Ministry of Forests, Lands and Natural Resource Operations and the BC Environmental Assessment Office are all aware of numerous unauthorized dams, and that they may contravene key provincial laws and regulations including the *Water Sustainability Act*, the *Environmental Assessment Act*, and provincial dam safety regulations.

Even though some of the dams may pose significant environmental, public health and safety risks, the CCPA has found no documentation that a single provincial government agency or ministry has issued a press release or safety advisory about the problem. Nor have we found any evidence that the government has charged or fined any companies for the unauthorized dams they’ve built.

Evidence that Progress Energy and other companies had built numerous unauthorized dams began to surface last spring, but without fanfare. In a rarely read quarterly report, the OGC published a 24-word “summary” of an order it had issued to Progress Energy.

The summary said:

*“Remove excess water from storage structure, and submit engineering assessment and certification of structural integrity in accordance with the Dam Safety Regulation.”*

It ended with two words: *“Compliance ongoing.”*

The offending dam’s location was vaguely listed as *“Town.”*

In mid April the CCPA requested a copy of the full order from Graham Currie, the OGC’s director of corporate affairs. Currie was also asked to comment on Progress’s water licence applications and the EAO investigation. On April 21, he refused to provide any information, saying in an email that the OGC had to “remain impartial as a government agency” during the writ period or interregnum. He recommended applying for a copy of the full order by submitting a formal Freedom of Information request, a process that typically takes months. Generally, government rules restrict the release of information during the election period, but the rules usually apply only to Cabinet documents.

In response to questions sent by email, Progress Energy communications advisor Eryn Rizzoli acknowledged that the company had been ordered to dewater the dam.

“Progress Energy has complied with all conditions as detailed in Order 2016-003 49(1)(b). Dewatering of this facility was completed in May 2016. The facility is not in use at this time,” Rizzoli wrote.

“Progress actively assesses and monitors the Company’s entire water impoundment inventory,” Rizzoli added. “This includes conducting engineering and geotechnical assessments and submission to relevant government and regulatory agencies, where required.”

Contacted by phone on April 5, Scott Morgan, head of FLNRO’s Dam Safety Section, recounted learning more about the scope of unauthorized dam building by Progress and other companies during a conference call last summer. On the call were several OGC officials, one of whom said at one point: “By the way, we have a problem.”

As the call progressed, Morgan recounted hearing there were “dozens” of dams that had been built without proper authorizations, including at least nine that were “over nine metres high.” Two of the larger dams were more than 15 metres high, which meant they should have been reviewed by the Environmental Assessment Office before being built.

## **Fracking operations driving corporate rush for freshwater**

Petronas and other companies drilling and fracking for natural gas in the Montney shale gas play in BC’s Peace River region now pressure-pump [up to 160,000 cubic metres of water](#) underground at individual gas wells.

The largest of the Progress/Petronas dams holds almost enough water to complete one major frack job, meaning it holds considerably more water than that which spilled from the Testalinden dam, a 10-metre high structure that failed near the community of Oliver in 2010, [triggering a mudslide that destroyed five homes](#) but miraculously took no lives.

In the event Petronas decides to invest in its proposed Prince Rupert LNG facility, it will need access to considerably more freshwater.

Collectively, the 13 water licence applications filed by Progress Energy on December 23, 2016 amount to a significant water grab, an attempt to corral up to 683,000 cubic metres of freshwater for use in the company's fracking operations.

Only the most basic information on the applications is publicly available. But what is clear is that Progress/Petronas intends to store stream water at each location. In many cases, the water source is unnamed. But in other cases, streams are listed including Caribou, Barker, Apsassin and Grewatch creeks. The database records say nothing to indicate that in all 13 cases, Progress Energy was applying for permission to store water behind dams that it had already built.

#### FIELD VISIT CONFIRMS: DAM FIRST, WATER APPLICATION SECOND

The information is contained in a searchable database maintained by FLNRO's Water Allocation Section. The Ministry retains powers to issue water licences to all applicants except fossil fuel companies, which apply to the OGC for such authorizations. BC's oil and gas industry is the only entity in the province that has its own dedicated regulator when it comes to water authorizations.

The CCPA asked the Water Allocation Section for the precise geographical coordinates for Progress Energy's new water licence applications. The coordinates were then used to locate one of the sites, about a half-hour helicopter's journey northwest of Charlie Lake, near Fort St. John.

Eventually, after flying over brown stubbly hayfields, ranging cattle and remote farms, dusty grey aspen forests, dark spruce trees and myriad natural gas company operations, a distinct rectangular structure with large earthen berms was spotted in the distance.

Closing in on the site, it was clear that massive amounts of earth had been excavated to make walls that topped out at about nine metres in height. The sloped walls or berms had trapped an enormous amount of freshwater that was coated in a thin sheet of ice on a cool mid-April afternoon. Water could be seen trickling into the reservoir along a dark brown muddy industrial road down which a large yellow excavator was making its way.

The dam had been strategically built to create a new reservoir that would capture freshwater flowing downhill. Clearly as far as Progress Energy’s “application” for Water Licence 9000226 was concerned, the dam was already built and the water already impounded.

According to the scant information available on the government’s website on water licence applications, the dam is capable of supplying 135,475 cubic metres of freshwater. It is the single largest application for water storage of the 13 Progress Energy has retroactively applied for approval.

Following the field visit, Progress confirmed in an email to the CCPA that there are “existing fresh water storage structures” at the 13 locations and that last year’s passage of the new Water Sustainability Act “necessitated” that the company now apply for water licences at those locations.

Progress did not elaborate on why it felt that under the old Water Act it was unnecessary for the company to apply to the government before building its dams.

## **First Nations consultation?**

Almost all of BC’s natural gas deposits are located in the northeast of the province, where First Nations live and are signatories to the historic Treaty 8. Signatories to the treaty include the Blueberry River First Nation (BRFN). The Nation is currently before the courts in a potentially precedent-setting lawsuit in which it is seeking compensation for the “cumulative” environmental damages to its traditional lands and waters from a host of industrial developments including natural gas drilling and fracking operations, hydroelectric dams, mines and logging activities.

Given that so many dams were built without proper oversight, First Nations including BRFN are unlikely to have been properly notified or consulted about what the companies intended to do on their traditional lands. For example, had proper protocols been followed, water license applications would have been turned over to First Nations for review and consultation well in advance of such licences being granted, let alone dams being built.

## **Conflicting accounts**

During a short telephone conversation in early April, EAO project assessment manager Teresa Morris confirmed that the two massive Progress Energy dams are being investigated, that Progress is aware that the unauthorized dams are under scrutiny, and that the company had indicated to the EAO that it would apply to have the projects “exempt” from the EAO process.

At present, there is nothing publicly available on the EAO website indicating that the unpermitted dams are being looked into by the agency.

Morris said the Progress dams would be listed on an EAO registry of projects if and when Progress Energy applies to have them retroactively exempted from EAO review.

Asked if the EAO had received such an exemption request, Morris said in early April and reconfirmed on April 18: “No we have not. When we do, a public webpage will be established.” She referred all further questions to David Karn, a senior communications officer in government communications and public engagement with the Ministry of Environment. Contacted on April 28, Karn said that the interregnum period prevented him from commenting.

A listing by the EAO would be the first indication that a provincial environmental agency was reviewing dams built by one of the biggest Liquefied Natural Gas proponents in the province.

According to Progress Energy, however, the company has already filed its exemption applications. In response to questions from the CCPA, Progress Energy’s Eryn Rizzoli wrote:

“The British Columbia Environmental Assessment Office is reviewing two project descriptions submitted by Progress in accordance with the Environmental Assessment Act and Reviewable Projects Regulation.

“Progress Energy has requested an exemption from the full review process for two existing fresh water storage structures that have been in service for several years without any incident or failure.”

The CCPA has yet to receive a response from the province explaining why the EAO’s office is saying one thing and Progress is saying another.

## **Late in game OGC to decide safety of gas industry dams**

Until recently, responsibility for the safety of all dams in the province, including any built by fracking companies, rested with dam safety officials in FLNRO. Proper procedure required the companies to first apply to the OGC for a water licence, and then for dam-design and building plans to be submitted to FLNRO for review and approval.

But that has recently changed. Last year, former provincial water comptroller, Glen Davidson, granted an OGC request for one of its staff to be designated a dam safety officer.

The only two dams that may fall outside the OGC’s purview are the two massive structures currently under investigation by the EAO.

Three years ago, Davidson appeared before the Joint Review Panel, which had been convened to review the Site C hydroelectric project. During his presentation, Davidson

noted that all dams “are inherently dangerous structures” but that risks “can be minimized and managed.”

“I think surprisingly to most folks, on average, we get about one dam failure a year in BC, but most of these are very, very low consequence and they probably don’t even make the papers, so most people are not aware of them,” Davidson said.

One tool to minimize risks that higher consequence dams could fail, Davidson said, is for dam safety officials to review engineering specifications on dams before they are built. Davidson noted that provincial dam safety officials have internal capacity to do that, but that there is also precedent when dam safety officials feel it is warranted to hire independent engineers to do more rigorous assessments.

Davidson noted that when his office had to deal with many independent power producers and their plans to build run-of-river dams, the office hired “an independent engineer that reported to the Province. And we asked that independent engineer to review the designs, the design drawings and give the Province advice on subsequent approvals.”

The precedent is there, then, for the OGC to insist that independent engineers be brought in to advise on the quality and the safety of the dozens of dams built by Progress/Petronas and others.

## Implications

As investigations continue on at least three fronts, provincial government officials must now decide just how many companies may have broken rules and what the consequences of breaking those rules should be. They must also determine how government regulation of the industry could have broken down as badly as it did.

Under the provincial *Environmental Assessment Act*, a company breaks the law when it builds anything that is a “reviewable project” under the Act, without first obtaining permits to do so. A first offence can trigger [a \\$100,000 fine](#). All subsequent offences can trigger fines of up to \$200,000.

Penalties for companies found guilty of “general offences” of the provincial *Water Sustainability Act* can be far more severe. If a company “without lawful authority . . . diverts water from a stream or aquifer” or if it “constructs, maintains, operates or uses works” that have not been authorized, it can be fined up to [\\$200,000 and personnel can be jailed for up to 6 months](#). If the company is found guilty of an “ongoing offence” the penalty may be a \$200,000 fine per day.

The consequences for “high penalty offences” under the act are even more severe. If a company “constructs, places, maintains or makes use of an obstruction in the channel of a stream without authority to do so”, the penalty can be up to a \$1 million fine and one-year



prison sentence. The fine for a continuing high penalty offence can be as much as \$1 million per day.

The Province's *Dam Safety Regulation* also itemizes numerous requirements for companies building dams to ensure their safe operation following construction, the violation of which can result in fines of up to \$200,000 for general offences and up to \$1 million for major offences.

"The problem here goes way beyond whether or not one company broke the law," Calvin Sandborn, legal director of the University of Victoria's Environmental Law Centre says. "The problem is that vast swathes of the landscape – of entire ecosystems, of entire hydrological systems – are disrupted, likely permanently."

"The Province still doesn't have a handle on the scope of the risks. And they are making feeble attempts to deal with this region-wide disaster," Sandborn added.

Knowledge that so many dams have been built across northeast BC raises many questions. In the coming weeks, the CCPA will strive to obtain answers to these questions.

How widespread is the construction of unauthorized dams by energy companies?

Which companies are engaged in building unauthorized dams?

Where are these dams, and how large are they?

Which dams are now under retroactive review by the Environmental Assessment Office and/or Oil and Gas Commission?

Why have these reviews and investigations not been made more public? (Only following a tip by a person with inside knowledge did the CCPA begin this investigation and gain information needed to complete this report.)

Why do no fines or penalties appear to have been levied to date?

How many dams have been decommissioned and where are they?

Does it make sense for the OGC to both issue permits to oil and gas companies allowing them to drill and frack for natural gas and to be the public's environmental and public health and safety watchdog as well?

Or has the time come to turn that important monitoring and enforcement role over to an arms-length agency?

With at least dozens of unpermitted dams already built in the province's northeast fracking fields, the time has come for answers to such questions and a whole host more.

*This investigation was undertaken as part of the [Corporate Mapping Project](#) (CMP). The CMP is a six-year research and public engagement initiative jointly led by the University of Victoria, the Canadian Centre for Policy Alternatives' BC and Saskatchewan Offices, and the Alberta-based Parkland Institute. This research was supported by the Social Science and Humanities Research Council of Canada (SSHRC).*