

From: [Zacharias, Mark ENV:EX](#)  
To: [Jardine, Kevin EAO:EX](#)  
Cc: [Morel, David P ENV:EX](#)  
Subject: Re: B.C. Using Kitimat Smelter Workers as 'Guinea Pigs' for Air Pollution Monitoring, Union Says | DeSmog Canada  
Date: Tuesday, November 7, 2017 6:58:49 PM

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Thx. Please let MGH and Caelie know this is us.

Regards, Mark

s.22

On Nov 7, 2017, at 6:56 PM, Jardine, Kevin EAO:EX <[Kevin.Jardine@gov.bc.ca](mailto:Kevin.Jardine@gov.bc.ca)> wrote:

I suspect that this for you, Mark. Although the new marine terminal for RTA underwent an EA (they transferred their existing one to LNG Canada), the expansion didn't trigger an EA.

Rgds,

K.

s.22

**\*\*Please note:** This email is intended for the addressee(s) only and may contain legally privileged information. Any unauthorized use, disclosure or reproduction is strictly prohibited.\*\*

Begin forwarded message:

**From:** "Heyman, George" <[G.Heyman@leg.bc.ca](mailto:G.Heyman@leg.bc.ca)>  
**Date:** November 7, 2017 at 6:29:51 PM PST  
**To:** "Jardine, Kevin EAO:EX" <[Kevin.Jardine@gov.bc.ca](mailto:Kevin.Jardine@gov.bc.ca)>  
**Cc:** "Frampton, Caelie ENV:EX" <[Caelie.Frampton@gov.bc.ca](mailto:Caelie.Frampton@gov.bc.ca)>  
**Subject:** B.C. Using Kitimat Smelter Workers as 'Guinea Pigs' for Air Pollution Monitoring, Union Says | DeSmog Canada

<https://www.desmog.ca/2017/11/06/b-c-using-kitimat-smelter-workers-guinea-pigs-air-pollution-monitoring-union-says>

George Heyman | 賀佐治 | MLA Vancouver-Fairview  
Community office (604) 775-2453

From: [Zacharias, Mark ENV:EX](#)  
To: [Jardine, Kevin EAO:EX](#)  
Cc: [George Heyman](#); [Frampton, Caelie ENV:EX](#); [Morel, David P ENV:EX](#); [Crebo, David GCPE:EX](#)  
Subject: Re: B.C. Using Kitimat Smelter Workers as 'Guinea Pigs' for Air Pollution Monitoring, Union Says | DeSmog Canada  
Date: Tuesday, November 7, 2017 9:24:20 PM

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Minister:

Here's the messaging on RTA from last Thursday's media request. I believe we also crafted a Minister's quote for the DeSmog article.

**Key Messages:**

- Air quality is monitored at four stations in the Kitimat valley and the data is posted by the Ministry of Environment.
- Air quality monitoring for human health is and will continue to be done to ensure that ambient sulphur dioxide (SO<sub>2</sub>) levels do not exceed acceptable levels.
- Permit amendments such as this are made by statutory decision-makers in accordance with the *Environmental Management Act*.
- Decisions are made taking into account best available science.
- Following a lengthy appeal, the EAB upheld and made recommendations on the ministry's permit decision in December, 2015; – several of those recommendations are being implemented by the ministry.
- Currently the environmental effects monitoring plan under the permit has been appealed to the EAB. As such it would be inappropriate to comment.

On Nov 7, 2017, at 7:03 PM, Jardine, Kevin EAO:EX  
<[Kevin.Jardine@gov.bc.ca](mailto:Kevin.Jardine@gov.bc.ca)> wrote:

Although the new, larger marine terminal for RTA underwent an EA (they transferred their existing one to LNG Canada), Minister, the modernization and production increase itself didn't trigger an EA.

The permit referred to in the article was provided through ENV. I've accordingly cc'd Mark.

Rgds,  
K.  
s.22

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On Nov 7, 2017, at 6:45 PM, Heyman, George <G.Heyman@leg.bc.ca> wrote:

<https://www.desmog.ca/2017/11/06/b-c-using-kitimat-smelter-workers-guinea-pigs-air-pollution-monitoring-union-says>

George Heyman | 賀佐治 | MLA Vancouver-Fairview  
Community office (604) 775-2453

From: Heather Hardcastle, Salmon Beyond Borders  
To: [Zacharias, Mark ENV:EX](#)  
Subject: Alaska/B.C. Transboundary Rivers News: new B.C. mines & more  
Date: Thursday, January 11, 2018 2:22:15 PM

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**SBB logo**



## **Alaska/B.C. Transboundary Rivers News: Joint Alaska delegation letter followed by response from U.S. Dept. of State**

July 25, 2017 – January 9, 2018

Happy New Year everyone,

Just prior to the end of 2017, the U.S. Department of State began to take action on the issue of Canadian large-scale mines in the headwaters of Alaska/British Columbia (B.C.) transboundary rivers after the State of Alaska and the Alaska congressional delegation jointly requested the federal government engage in specific ways. Below is more about this and other recent developments in this dynamic situation.

### **U.S. Dept. of State Takes Action on Alaska-B.C. (and Montana-B.C.) Transboundary Issue**

- [KRBD](#), Dec. 28<sup>th</sup> – A [response letter](#) to Alaska leaders from the U.S. Dept. of State details how they, with EPA and Global Affairs Canada, will conduct an assessment of the gaps/limitations in the current, non-binding cooperative frameworks between B.C. and U.S. states--and will present findings of this study at the next bilateral meeting of the International Joint Commission in April 2018.
- [San Francisco Chronicle](#), Dec. 30<sup>th</sup> – “Before the letter [from the Walker-Mallott administration], the State Department had said it would not get involved with the issue.”

### **Alaska and Montana Leaders Formally Request U.S. Federal Intervention**

- [Alaska Delegation Press Release](#), Nov. 16<sup>th</sup> – In a [joint letter](#) to Secretary of State Rex Tillerson, Alaska Governor Bill Walker, Lt. Governor Byron Mallott, Senators Lisa Murkowski and Dan Sullivan, and Congressman Don Young ask the U.S. federal government to address the potential downstream impacts of Canadian mining on Alaska communities and livelihoods.
- [Flathead Beacon](#), Nov. 27<sup>th</sup> – Montana Governor Steve Bullock and Montana U.S. Senator Jon Tester send a [joint letter](#) to Secretary Tillerson, requesting the U.S. Dept. of State increase the pressure on Canada to address legacy impacts of B.C. coal mines on transboundary Elk-Kootenai River system.



## **Visually Compelling Photo Essay of the Alaska-B.C. Transboundary Region**

- *DeSmog Canada*, Oct. 30<sup>th</sup> – “In Photos: The Canadian Mining Boom You’ve Never Seen Before”

## **UNEP Urges Mining Companies to Better Manage Tailings Facilities**

- *Mining.com*, Oct. 23<sup>rd</sup> – The United Nations Environmental Programme releases report, “Mine tailings storage: safety is no accident,” and urges mining companies to put safety first and avoid altogether erecting dams using methods known to be high risk.

## **Southeast Alaska Municipalities Send Updated Resolutions/Letter to U.S. Dept. of State**

- *KFSK*, Oct. 3<sup>rd</sup> – *Ketchikan*, *Sitka*, *Wrangell*, and *Petersburg* Assemblies unanimously vote to send updated resolutions to U.S. Dept. of State, requesting action under U.S.-Canada Boundary Waters Treaty of 1909 and the pursuit of enforceable protections for Alaska interests.
- *Juneau Empire*, Dec. 18<sup>th</sup> – The City and Borough of Juneau Assembly unanimously votes for Mayor Ken Koelsch to send a letter to U.S. Dept. of State, requesting U.S. federal government to engage in transboundary rivers matter, and to, “do all you can to ensure this acid mine drainage [at the Tulsequah Chief mine] in the shared Taku River watershed is stopped.”

## **Imperial Metals, Owner of Mount Polley and Red Chris Mines, in Financial Trouble**

- *Bloomberg*, Oct. 2<sup>nd</sup> – “The capital structure [at Imperial Metals] we view as highly unsustainable, they have no liquidity...,” said Abid Maredia, an analyst at S&P Global Ratings.
- *DeSmog Canada*, Dec. 5<sup>th</sup> – Alaskans are concerned the beleaguered Imperial Metals will cut corners at the Red Chris mine in the Stikine watershed and/or the company will go bankrupt before fully reclaiming mine, as has happened at the polluting Tulsequah Chief mine in the Taku watershed.

## **3<sup>rd</sup> Anniversary of Mount Polley Mine Disaster on Aug. 4<sup>th</sup>, Indigenous Leader Files Charges**

- *Vancouver Sun*, Aug. 2<sup>nd</sup> – The B.C. government says it will file no regulatory charges under B.C.’s environmental laws for disaster, though federal charges under the Fisheries Act are still possible.
- *Juneau Empire*, Aug. 4<sup>th</sup> – Dr. Sonia Nagorski discusses mining impacts on disaster anniversary.
- *CBC*, Aug. 6<sup>th</sup> - Bev Sellars, Xat’sull First Nation Chief at time of mine disaster, files 15 private charges against Mount Polley Mining Corp. (Imperial Metals) for polluting environment.

In “Fish Factor: 2017 fishing picks and pans,” *Cordova Times* columnist Laine Welch names

protecting Alaska/B.C. salmon rivers from Canadian large-scale mines the “Trickiest Fish Conundrum” of the past year. This matter is sure to stay in the spotlight, and I’ll continue to update you on the latest developments. Please let me know what improvements I can make to these press summaries so they are as helpful as possible to you.

Best regards,

Heather Hardcastle

Salmon Beyond Borders Campaign Director

heather@salmonstate.org

(907) 209-8486

\*The publications referenced above and other archived AK-B.C. transboundary-related media are [here](#).

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Salmon Beyond Borders  
201 Main Street  
Suite 202  
Juneau, Alaska 99801  
US



[Read](#) the VerticalResponse marketing policy.

**From:** Jens Wieting  
**To:** [Frampton, Caelie ENV:EX](#)  
**Cc:** [Zacharias, Mark ENV:EX](#); [Xia, Eveline ENV:EX](#); [Caitlyn Vernon](#); [Mark Worthing](#); [Tim Pearson](#)  
**Subject:** LNG and climate  
**Date:** Wednesday, January 24, 2018 9:42:17 AM  
**Attachments:** [image002.png](#)  
[image003.png](#)

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Hello Caelie,

Do you know whether Minister Heyman and his colleagues are fully aware of the warnings about the full GHG footprint of increasing fracking and building new LNG terminals? And have time to read up on latest climate change science?

New NASA Study Solves Climate Mystery, Confirms Methane Spike Tied to Oil and Gas

<https://www.desmogblog.com/2018/01/16/nasa-study-resolves-climate-mystery-confirms-methane-spike-ties-oil-gas>

Hundreds of BC Gas Wells Leak Methane

<https://thetyee.ca/News/2017/11/23/Hundreds-of-BC-Gas-Wells-Leak-Meth/>

Milestone energy expert warning in the NYT about shale gas (as bad as coal for the climate) from 2013: Gangplank to a Warm Future

<http://www.nytimes.com/2013/07/29/opinion/gangplank-to-a-warm-future.html>

Barry Saxifrage estimates of emissions enabled through new LNG terminals, including uncounted emissions from burning gas after exporting

<https://www.vancouverobserver.com/blogs/climatesnapshot/thirteen-proposed-lng-projects-equivalent-13-times-current-bc-emissions>

Economic outlook: the end of natural gas:

<https://www.greenbiz.com/article/end-natural-gas-near>

and the leaked findings from special IPCC report

<https://www.reuters.com/article/us-climatechange-draft/warming-set-to-breach-paris-accords-toughest-limit-by-mid-century-draft-idUSKBN1F02RH>

“The draft estimated that humanity could emit just 580 billion tonnes of greenhouse gases to give a better than 50 percent chance of limiting warming to 1.5C - roughly 12-16 years at current rates of emissions.”

This is a reminder that our existing targets (which we are not on track to meet) are insufficient and a blueprint for global disaster (even if we WOULD meet them)

Please share. Thank you so much.

Best

Jens

---

**From:** Jens Wieting

**Sent:** January 15, 2018 12:27 PM

**To:** 'Frampton, Caelie ENV:EX'

**Cc:** 'Zacharias, Mark ENV:EX' ; 'Xia, Eveline ENV:EX' ; Caitlyn Vernon ; Mark Worthing ; Tim Pearson

**Subject:** RE: Follow up email/material related to Dec 4 meeting with Minister Heyman

Hello Caelie,

As a follow up to our media release here are a few links to media coverage and background related to BC's GHG emissions trends and Premier Horgan's trip to Asia. We would really prefer if our new provincial government would raise awareness about our increasing emissions, the alarming climate impacts and the need for drastic climate action including the fact that it is impossible to build any LNG terminals and meet climate targets at the same time. We hope you can widely share these links within government in case there is any lack of clarity with regards to the climate crisis and the urgency to phase out fossil fuels and speed up the renewable energy revolution already underway. We hope the government will show real climate leadership and fully reject the LNG course of the previous government.

### **Sierra Club spotlight with additional context and links**

<https://sierraclub.bc.ca/noble-rhetoric-climate-change-where-the-action/>

### **Latest figures show B.C.'s carbon emissions continue to increase**

<http://vancouver.sun.com/business/energy/latest-figures-show-b-c-s-carbon-emissions-continue-to-increase>

### **B.C. Quietly Releases Emissions Update That Shows It'll Blow 2020 Climate Target**

<https://www.desmog.ca/2018/01/12/b-c-quietly-releases-emissions-update-shows-it-ll-blow-2020-climate-target>

Premier's interview on Asia trip and support for LNG (close to the end)

<http://www.alaskahighwaynews.ca/site-c/q-a-premier-john-horgan-on-site-c-trade-mission-to-asia-1.23128716>

### **B.C. Premier Horgan's LNG push at odds with NDP emissions goals**

<https://www.theglobeandmail.com/news/british-columbia/bc-premier-horgans-ling-push-at-odds-with-ndp-emissions-goals/article37600803/>

Sierra call for climate test and link to report (from 2015)

<https://sierraclub.bc.ca/new-report-calls-for-climate-test/>

Our 2015 forest emissions review looking at a full decade of carbon loss from BC's forests

<https://sierraclub.bc.ca/bcs-forests-full-decade-of-carbon-loss/>

With the limited information on forest emissions now shared in excel files in the last 2 years we are no longer able to step in and do our own Sierra Club estimate of emissions related to destructive logging practices.

Here is Pembina explaining how LNG Canada and/or Woodfibre would make it impossible to meet BC targets in coming years and decades <http://www.pembina.org/op-ed/bc-ling-climate>

And here is an older milestone NYT op-ed from 2013 from expert warning about methane leakage and fracking, describing natural gas as a

"Gangplank to a Warm Future"

<http://www.nytimes.com/2013/07/29/opinion/gangplank-to-a-warm-future.html>

(We have seen more and more evidence of methane leakage emissions higher than reported across North America over the last several years)

Barry Saxifrage estimates of full GHG impact of LNG proposals (from a few years ago, still relevant)

<https://www.vancouverobserver.com/blogs/climatesnapshot/thirteen-proposed-ling-projects-equivalent-13-times-current-bc-emissions>

# FULL CLIMATE IMPACT OF BC LNG PROPOSALS

Lifecycle GHG based on **industry-standard LNG** production methods -- millions of tonnes of CO<sub>2</sub>eq

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Jens Wieting  
Forest and Climate Campaigner



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Note: I am mostly working from Vancouver and only occasionally in Victoria

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---

**From:** Jens Wieting

**Sent:** January 11, 2018 9:54 AM

**To:** 'Frampton, Caelie ENV:EX' <[Caelie.Frampton@gov.bc.ca](mailto:Caelie.Frampton@gov.bc.ca)>

**Cc:** Zacharias, Mark ENV:EX <[Mark.Zacharias@gov.bc.ca](mailto:Mark.Zacharias@gov.bc.ca)>; Xia, Eveline ENV:EX <[Eveline.Xia@gov.bc.ca](mailto:Eveline.Xia@gov.bc.ca)>; Caitlyn Vernon <[caitlyn@sierraclub.bc.ca](mailto:caitlyn@sierraclub.bc.ca)>; Mark Worthing <[mark@sierraclub.bc.ca](mailto:mark@sierraclub.bc.ca)>

**Subject:** RE: Follow up email/material related to Dec 4 meeting with Minister Heyman

Hello Caelie,

Quick heads-up that we just sent out this press release. We are very concerned that the new BC government has not undertaken any public communication (to our knowledge) with regards to the BC greenhouse gas emissions inventory published on the government website in December to inform the public about the very concerning recent BC emission trends and the drastic steps needed to reduce emissions in the coming years.

We hope that the Premier and the Minister will speak out about the severe failure to reduce emissions and the urgent need for climate action.

Please share widely within government.

Best

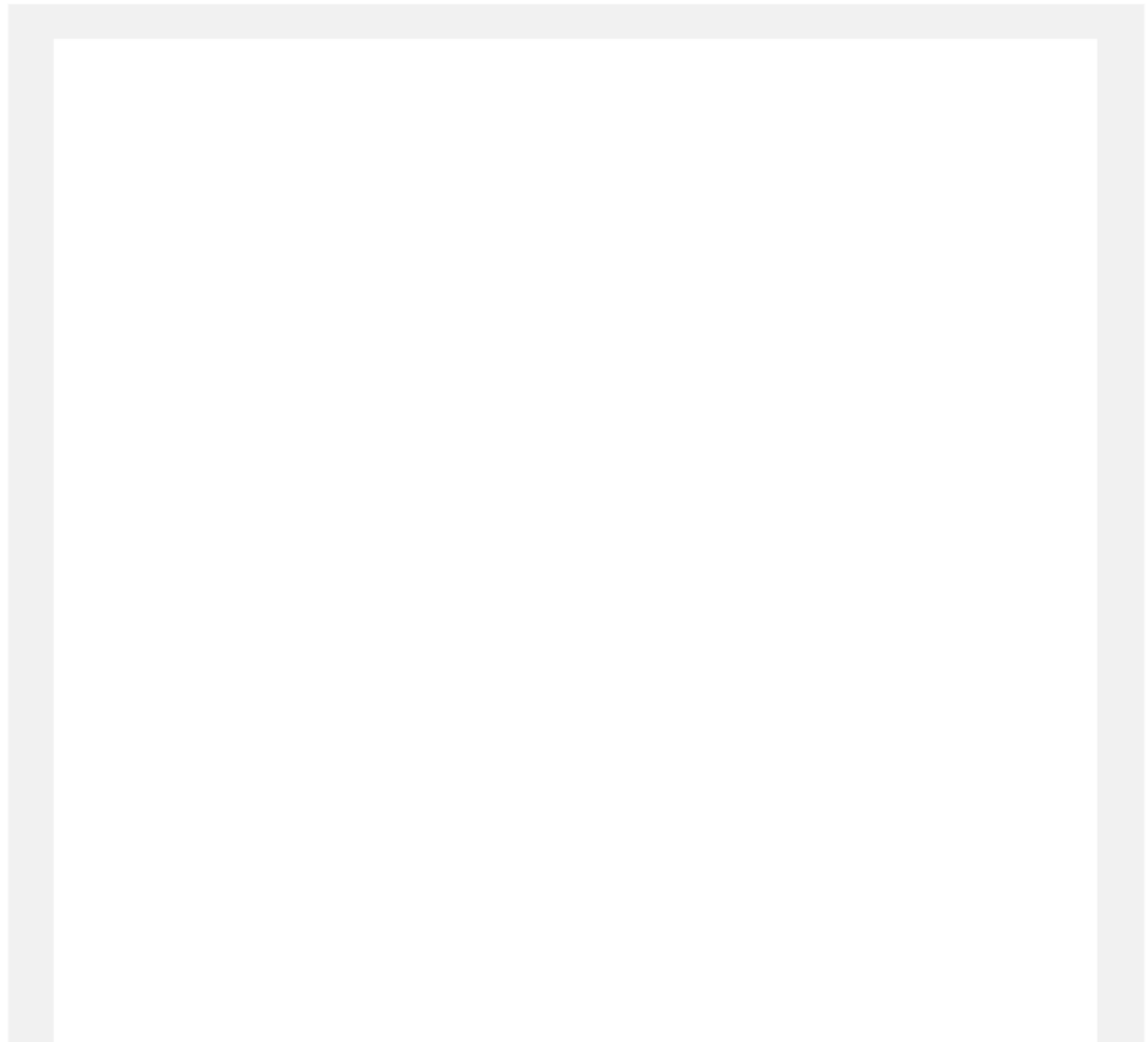
Jens

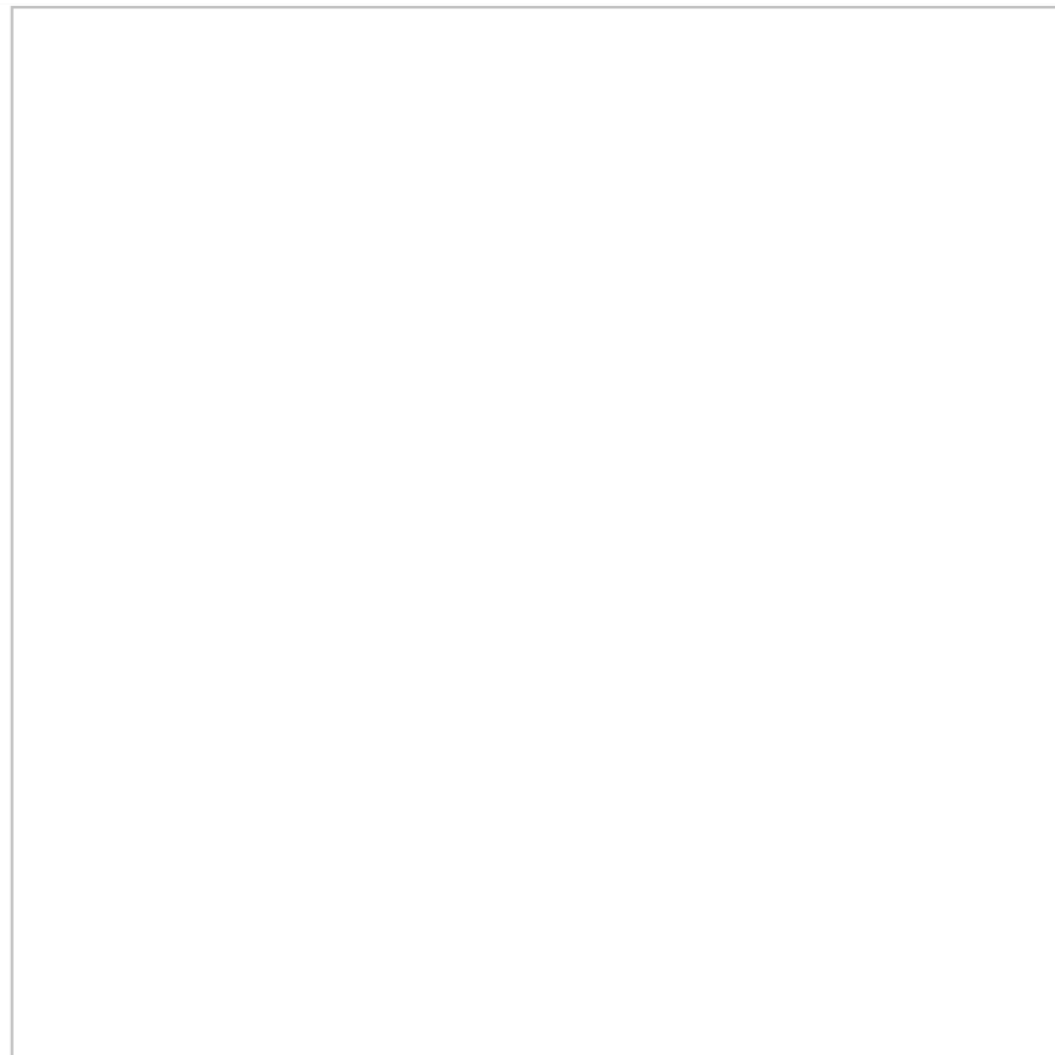
**From:** Sierra Club BC [<mailto:social=sierraclub.bc.ca@mail131.suw16.rsgsv.net>] **On Behalf Of** Sierra Club BC

**Sent:** January 11, 2018 9:29 AM

**To:** Jens Wieting <[jens@sierraclub.bc.ca](mailto:jens@sierraclub.bc.ca)>

**Subject:** MEDIA RELEASE: B.C.'s greenhouse gas emissions have risen in four of the last five years





FOR IMMEDIATE RELEASE:

January 11, 2018

**B.C.'s greenhouse gas emissions have risen in four of the last five years**

*New data mark years of failure to reduce carbon pollution*

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Page 12

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Release: <https://sierraclub.bc.ca/bcs-greenhouse-gas-emissions-risen-four-of-last-five-years>



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-----Original Message-----

From: Frampton, Caelie ENV:EX [<mailto:Caelie.Frampton@gov.bc.ca>]

Sent: December 22, 2017 9:27 AM

To: Jens Wieting <[jens@sierraclub.bc.ca](mailto:jens@sierraclub.bc.ca)>

Cc: Zacharias, Mark ENV:EX <[Mark.Zacharias@gov.bc.ca](mailto:Mark.Zacharias@gov.bc.ca)>; Xia, Eveline ENV:EX <[Eveline.Xia@gov.bc.ca](mailto:Eveline.Xia@gov.bc.ca)>;  
Caitlyn Vernon <[caitlyn@sierraclub.bc.ca](mailto:caitlyn@sierraclub.bc.ca)>; Mark Worthing <[mark@sierraclub.bc.ca](mailto:mark@sierraclub.bc.ca)>

Subject: Re: Follow up email/material related to Dec 4 meeting with Minister Heyman

Thanks Jens. I'll be sure to pass this on to the Minister.

Happy holidays,

Caelie

Sent from my iPhone

On Dec 21, 2017, at 8:32 PM, Jens Wieting <[jens@sierraclub.bc.ca](mailto:jens@sierraclub.bc.ca)>> wrote:

Hello Mark, Caelie and Eveline,

Thank you for meeting with us on December 4 and apologies for the late follow-up email, it was a rough month.

Please find attached the PDF versions of the NGO Policy Recommendations for Old-Growth Forest Protection, support for First Nations and Sustainable Forestry Jobs in BC (short and expanded).

Instead of additional briefing notes, I am also attaching the two Tyee articles we shared, one summarizing the climate urgency for protecting carbon-rich old-growth rainforest, and the second one summarizing the good news story underway in Clayoquot Sound with the Ahousaht land use vision (which will require provincial support). Also attached is the IPCC table I shared highlighting the immediate benefit of protecting carbon rich intact forest in contrast to benefits of other forest management options which require more time to show a benefit.

Here is the link to our Vancouver Island 'hotspot' map

[https://www.dropbox.com/s/kg69xmbvgl0y659/Hot\\_Spots\\_Oct17\\_2017\\_27x36.pdf?dl=0](https://www.dropbox.com/s/kg69xmbvgl0y659/Hot_Spots_Oct17_2017_27x36.pdf?dl=0)

Here is a different version of the same map without the hotspots, focusing on the state of the forest and a table showing how little productive old-growth rainforest remains on the island

[https://www.dropbox.com/s/1x8fmtzzor0pf9z/VI\\_no\\_Hot\\_Spots\\_Chart\\_Nov20\\_2017\\_18x24.pdf?dl=0](https://www.dropbox.com/s/1x8fmtzzor0pf9z/VI_no_Hot_Spots_Chart_Nov20_2017_18x24.pdf?dl=0)

This is a useful backgrounder summarizing the state of the forest on Vancouver Island and very high ecological risk for species as a result of extensive clearcutting of old-growth rainforest ecosystems

[https://sierraclub.bc.ca/wp-content/uploads/2015/08/South-Coast-Backgrounder\\_March-2016.pdf](https://sierraclub.bc.ca/wp-content/uploads/2015/08/South-Coast-Backgrounder_March-2016.pdf)

We are looking forward to working with the BC government in 2018 to identify next steps to protect highly endangered ecosystems, the species that depend on them and keeping carbon stored in endangered old-growth on the ground.

Happy holiday and best wishes

Jens

Jens Wieting

Forest and Climate Campaigner

<<http://sierraclub.bc.ca/>>

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sierraclub.bc.ca<<http://sierraclub.bc.ca/>>

Note: I am mostly working from Vancouver and only occasionally in Victoria

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Facebook<<http://www.facebook.com/SierraClubBC>>, Twitter<[http://twitter.com/Sierra\\_BC](http://twitter.com/Sierra_BC)>,

YouTube<<http://www.youtube.com/user/SierraClubofBC>> or our

newsletter<<http://sierraclub.bc.ca/#SignUp>>.

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**From:** Jens Wieting  
**To:** [Zacharias, Mark ENV:EX](#); [Plecas, Bobbi ENV:EX](#)  
**Subject:** RE: LNG and climate  
**Date:** Wednesday, January 24, 2018 4:33:31 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)

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Thanks Mark and hello Bobbi. I also hope you had a good holiday season. I have to admit that I found it difficult not to think too much about BC's increasing GHG emissions, the Premier's intention to continue support LNG development and the Site C decision.

Bobbi, I hope you will find this information useful and received our recent news releases I shared with government staff. Would it be possible to find a time for a phone call or meeting? It would be great to talk with you about some of our concerns related to how the provincial government reports emissions, particularly the recent lack of detail on emissions from forests. I will send previous emails for context.

Best regards

Jens

Jens Wieting

Forest and Climate Campaigner



*Unceded Lekwungen Territory*

C (604) 354-5312

[sierraclub.bc.ca](http://sierraclub.bc.ca)

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*Inspiring generations to defend nature and confront climate change, so families, communities and the natural world can prosper together.*

-----Original Message-----

**From:** Zacharias, Mark ENV:EX [mailto:[Mark.Zacharias@gov.bc.ca](mailto:Mark.Zacharias@gov.bc.ca)]

**Sent:** January 24, 2018 10:23 AM

**To:** Plecas, Bobbi ENV:EX

**Cc:** Jens Wieting

**Subject:** Fwd: LNG and climate

Thanks Jens

Copying Bobbi Plecas the climate deputy. Hope you had a good holiday season.

Regards, Mark

s.22

**From:** Jens Wieting

**Sent:** January 24, 2018 9:42 AM

**To:** 'Frampton, Caelie ENV:EX'

**Cc:** 'Zacharias, Mark ENV:EX' ; 'Xia, Eveline ENV:EX' ; Caitlyn Vernon ; Mark Worthing ; Tim Pearson

**Subject:** LNG and climate

Hello Caelie,

Do you know whether Minister Heyman and his colleagues are fully aware of the warnings about the full GHG footprint of increasing fracking and building new LNG terminals? And have time to read up on latest climate change science?

New NASA Study Solves Climate Mystery, Confirms Methane Spike Tied to Oil and Gas

<https://www.desmogblog.com/2018/01/16/nasa-study-resolves-climate-mystery-confirms-methane-spike-ties-oil-gas>

Hundreds of BC Gas Wells Leak Methane

<https://thetyee.ca/News/2017/11/23/Hundreds-of-BC-Gas-Wells-Leak-Meth/>

Milestone energy expert warning in the NYT about shale gas (as bad as coal for the climate) from 2013: Gangplank to a Warm Future

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Barry Saxifrage estimates of emissions enabled through new LNG terminals, including uncounted emissions from burning gas after exporting

<https://www.vancouverobserver.com/blogs/climatesnapshot/thirteen-proposed-lng-projects-equivalent-13-times-current-bc-emissions>

Economic outlook: the end of natural gas:

<https://www.greenbiz.com/article/end-natural-gas-near>

and the leaked findings from special IPCC report

<https://www.reuters.com/article/us-climatechange-draft/warming-set-to-breach-paris-accords-toughest-limit-by-mid-century-draft-idUSKBN1F02RH>

"The draft estimated that humanity could emit just 580 billion tonnes of greenhouse gases to give a better than 50 percent chance of limiting warming to 1.5C - roughly 12-16 years at current rates of emissions."

This is a reminder that our existing targets (which we are not on track to meet) are insufficient and a blueprint for global disaster (even if we WOULD meet them)

Please share. Thank you so much.

Best

Jens

**From:** Jens Wieting

**Sent:** January 15, 2018 12:27 PM

**To:** 'Frampton, Caelie ENV:EX' <[Caelie.Frampton@gov.bc.ca](mailto:Caelie.Frampton@gov.bc.ca)>

**Cc:** 'Zacharias, Mark ENV:EX' <[Mark.Zacharias@gov.bc.ca](mailto:Mark.Zacharias@gov.bc.ca)>; 'Xia, Eveline ENV:EX' <[Eveline.Xia@gov.bc.ca](mailto:Eveline.Xia@gov.bc.ca)>; Caitlyn Vernon <[caitlyn@sierraclub.bc.ca](mailto:caitlyn@sierraclub.bc.ca)>; Mark Worthing <[mark@sierraclub.bc.ca](mailto:mark@sierraclub.bc.ca)>; Tim Pearson <[tim@sierraclub.bc.ca](mailto:tim@sierraclub.bc.ca)>

**Subject:** RE: Follow up email/material related to Dec 4 meeting with Minister Heyman

Hello Caelie,

As a follow up to our media release here are a few links to media coverage and background related to BC's GHG emissions trends and Premier Horgan's trip to Asia. We would really prefer if our new provincial government would raise awareness about our increasing emissions, the alarming climate impacts and the need for drastic climate action including the fact that it is impossible to build any LNG terminals and meet climate targets at the same time. We hope you can widely share these links within government in case there is any lack of clarity with regards to the climate crisis and the urgency to phase out fossil fuels and speed up the renewable energy revolution already underway. We hope the government will show real climate leadership and fully reject the LNG course of the previous government.

**Sierra Club spotlight with additional context and links**

<https://sierraclub.bc.ca/noble-rhetoric-climate-change-wheres-the-action/>

**Latest figures show B.C.'s carbon emissions continue to increase**

<http://vancouver.sun.com/business/energy/latest-figures-show-b-c-s-carbon-emissions-continue-to-increase>

**B.C. Quietly Releases Emissions Update That Shows It'll Blow 2020 Climate Target**

<https://www.desmog.ca/2018/01/12/b-c-quietly-releases-emissions-update-shows-it-ll-blow-2020-climate-target>

Premier's interview on Asia trip and support for LNG (close to the end)

<http://www.alaskahighwaynews.ca/site-c/q-a-premier-john-horgan-on-site-c-trade-mission-to-asia-1.23128716>

**B.C. Premier Horgan's LNG push at odds with NDP emissions goals**

<https://www.theglobeandmail.com/news/british-columbia/bc-premier-horgans-lng-push-at-odds-with-ndp-emissions-goals/article37600803/>

Sierra call for climate test and link to report (from 2015)

<https://sierraclub.bc.ca/new-report-calls-for-climate-test/>

Our 2015 forest emissions review looking at a full decade of carbon loss from BC's forests

<https://sierraclub.bc.ca/bcs-forests-full-decade-of-carbon-loss/>

With the limited information on forest emissions now shared in excel files in the last 2 years we are no longer able to step in and do our own Sierra Club estimate of emissions related to destructive logging practices.

Here is Pembina explaining how LNG Canada and/or Woodfibre would make it impossible to meet BC targets in coming years and decades <http://www.pembina.org/op-ed/bc-lng-climate>

And here is an older milestone NYT op-ed from 2013 from expert warning about methane leakage and fracking, describing natural gas as a

"Gangplank to a Warm Future"

<http://www.nytimes.com/2013/07/29/opinion/gangplank-to-a-warm-future.html>

(We have seen more and more evidence of methane leakage emissions higher than reported across North America over the last several years)

Barry Saxifrage estimates of full GHG impact of LNG proposals (from a few years ago, still relevant)

<https://www.vancouverobserver.com/blogs/climatesnapshot/thirteen-proposed-lng-projects-equivalent-13-times-current-bc-emissions>

# FULL CLIMATE IMPACT OF BC LNG PROPOSALS

Lifecycle GHG based on **industry-standard LNG** production methods -- millions of tonnes of CO<sub>2</sub>eq.  
Copyright



Chart by Barry Saxifrage at [VisualCarbon.org](http://VisualCarbon.org) and [VancouverObserver.com](http://VancouverObserver.com). Version: May 29 2014. LNG projects and volume -- from NEB. Currently 11 of the 13 projects have been approved by NEB for export. Those still pending marked with asterisk. tCO<sub>2</sub>e per tLNG -- "Burn" from US EPA. "Ship" from Navius Research (includes freighter from BC to China plus re-expansion and distribution). Other stages are average of values from Pembina Institute and Clean Energy Canada reports on BC LNG. BC GHG emissions now -- "Vancouver" from City of Vancouver GHG inventory. Other BC GHG stats from BC governments GHG inventory.

Jens Wieting  
Forest and Climate Campaigner



Unceded Lekwungen Territory  
C (604) 354-5312  
[sierraclub.bc.ca](http://sierraclub.bc.ca)

Note: I am mostly working from Vancouver and only occasionally in Victoria

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Inspiring generations to defend nature and confront climate change, so families, communities and the natural world can prosper together.

**From:** Jens Wieting

**Sent:** January 11, 2018 9:54 AM

**To:** 'Frampton, Caelie ENV:EX' <[Caelie.Frampton@gov.bc.ca](mailto:Caelie.Frampton@gov.bc.ca)>

**Cc:** Zacharias, Mark ENV:EX <[Mark.Zacharias@gov.bc.ca](mailto:Mark.Zacharias@gov.bc.ca)>; Xia, Eveline ENV:EX <[Eveline.Xia@gov.bc.ca](mailto:Eveline.Xia@gov.bc.ca)>; Caitlyn Vernon <[caitlyn@sierraclub.bc.ca](mailto:caitlyn@sierraclub.bc.ca)>; Mark Worthing <[mark@sierraclub.bc.ca](mailto:mark@sierraclub.bc.ca)>

**Subject:** RE: Follow up email/material related to Dec 4 meeting with Minister Heyman

Hello Caelie,

Quick heads-up that we just sent out this press release. We are very concerned that the new BC government has not undertaken any public communication (to our knowledge) with regards to the BC greenhouse gas emissions inventory published on the government website in December to inform the public about the very concerning recent BC emission trends and the drastic steps needed to reduce emissions in the coming years.

We hope that the Premier and the Minister will speak out about the severe failure to reduce emissions and the urgent need for climate action.

Please share widely within government.

Best

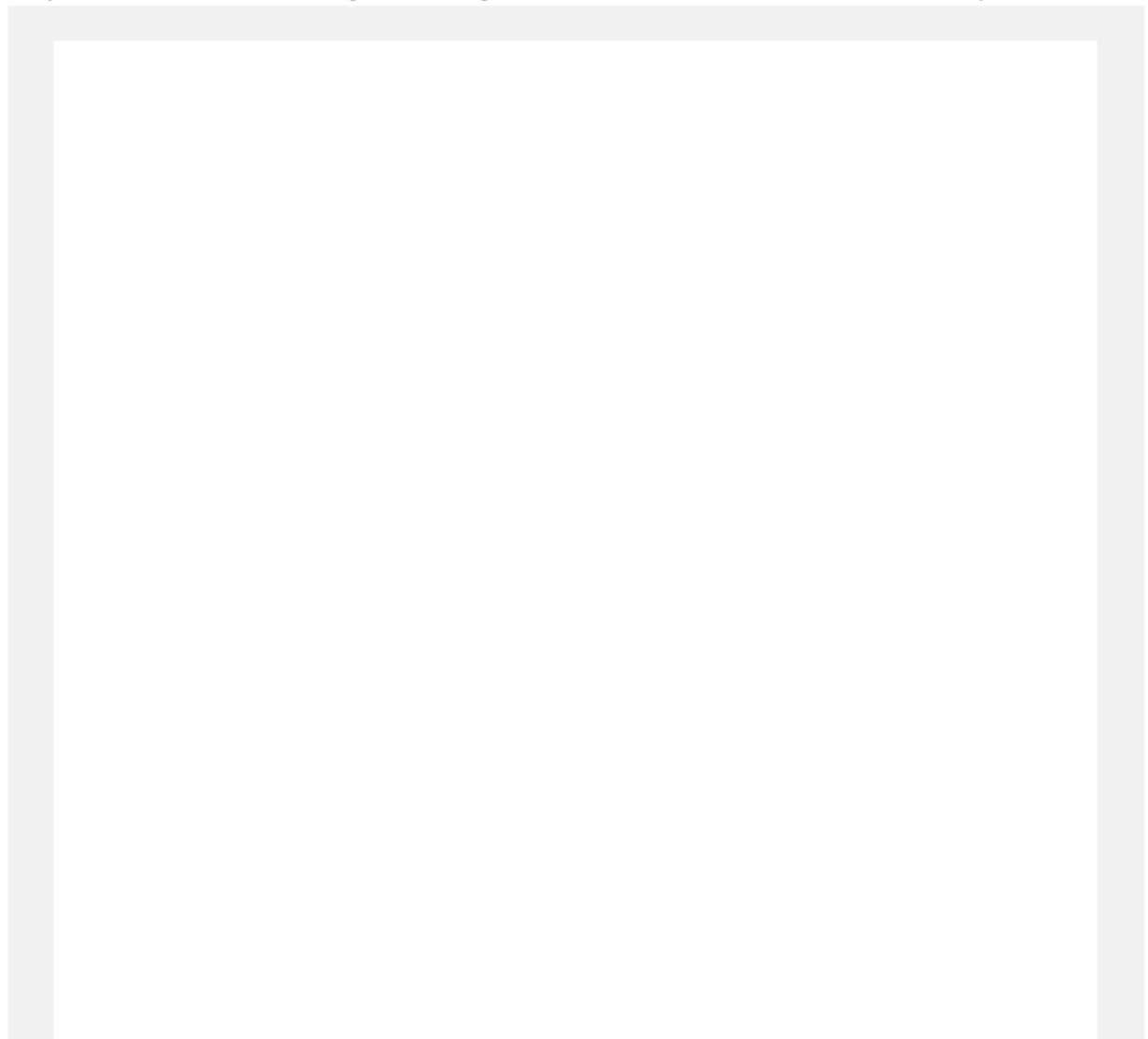
Jens

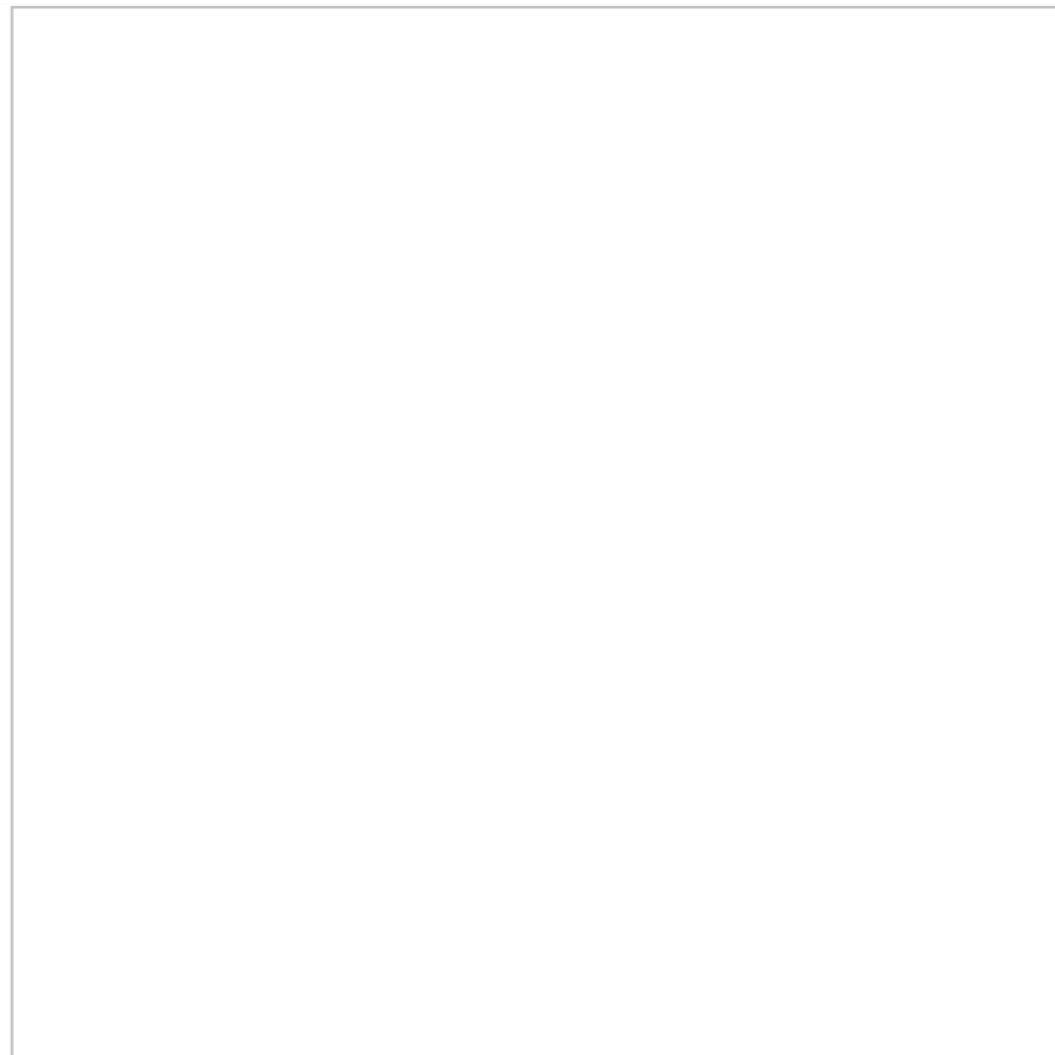
**From:** Sierra Club BC [<mailto:social=sierraclub.bc.ca@mail131.suw16.rsgsv.net>] **On Behalf Of** Sierra Club BC

**Sent:** January 11, 2018 9:29 AM

**To:** Jens Wieting <[jens@sierraclub.bc.ca](mailto:jens@sierraclub.bc.ca)>

**Subject:** MEDIA RELEASE: B.C.'s greenhouse gas emissions have risen in four of the last five years





FOR IMMEDIATE RELEASE:

January 11, 2018

**B.C.'s greenhouse gas emissions have risen in four of the last five years**

*New data mark years of failure to reduce carbon pollution*

Copyright



Page 21

Withheld pursuant to/removed as

Copyright

Release: <https://sierraclub.bc.ca/bcs-greenhouse-gas-emissions-risen-four-of-last-five-years>



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Sierra Club BC  
301 - 2994 Douglas Street  
Victoria, B.C. V8T 4N4  
Canada

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Want to change how you receive these emails?

You can [update your preferences](#) or [unsubscribe from this list](#)

-----Original Message-----

From: Frampton, Caelie ENV:EX [<mailto:Caelie.Frampton@gov.bc.ca>]

Sent: December 22, 2017 9:27 AM

To: Jens Wieting <[jens@sierraclub.bc.ca](mailto:jens@sierraclub.bc.ca)>

Cc: Zacharias, Mark ENV:EX <[Mark.Zacharias@gov.bc.ca](mailto:Mark.Zacharias@gov.bc.ca)>; Xia, Eveline ENV:EX <[Eveline.Xia@gov.bc.ca](mailto:Eveline.Xia@gov.bc.ca)>;  
Caitlyn Vernon <[caitlyn@sierraclub.bc.ca](mailto:caitlyn@sierraclub.bc.ca)>; Mark Worthing <[mark@sierraclub.bc.ca](mailto:mark@sierraclub.bc.ca)>

Subject: Re: Follow up email/material related to Dec 4 meeting with Minister Heyman

Thanks Jens. I'll be sure to pass this on to the Minister.

Happy holidays,

Caelie

Sent from my iPhone

On Dec 21, 2017, at 8:32 PM, Jens Wieting <[jens@sierraclub.bc.ca](mailto:jens@sierraclub.bc.ca)> wrote:

Hello Mark, Caelie and Eveline,

Thank you for meeting with us on December 4 and apologies for the late follow-up email, it was a rough month.

Please find attached the PDF versions of the NGO Policy Recommendations for Old-Growth Forest Protection, support for First Nations and Sustainable Forestry Jobs in BC (short and expanded).

Instead of additional briefing notes, I am also attaching the two Tyee articles we shared, one summarizing the climate urgency for protecting carbon-rich old-growth rainforest, and the second one summarizing the good news story underway in Clayoquot Sound with the Ahousaht land use vision (which will require provincial support). Also attached is the IPCC table I shared highlighting the immediate benefit of protecting carbon rich intact forest in contrast to benefits of other forest management options which require more time to show a benefit.

Here is the link to our Vancouver Island 'hotspot' map

[https://www.dropbox.com/s/kg69xmbvgl0y659/Hot\\_Spots\\_Oct17\\_2017\\_27x36.pdf?dl=0](https://www.dropbox.com/s/kg69xmbvgl0y659/Hot_Spots_Oct17_2017_27x36.pdf?dl=0)

Here is a different version of the same map without the hotspots, focusing on the state of the forest and a table showing how little productive old-growth rainforest remains on the island

[https://www.dropbox.com/s/1x8fmtzzor0pf9z/VI\\_no\\_Hot\\_Spots\\_Chart\\_Nov20\\_2017\\_18x24.pdf?dl=0](https://www.dropbox.com/s/1x8fmtzzor0pf9z/VI_no_Hot_Spots_Chart_Nov20_2017_18x24.pdf?dl=0)

This is a useful backgrounder summarizing the state of the forest on Vancouver Island and very high ecological risk for species as a result of extensive clearcutting of old-growth rainforest ecosystems

[https://sierraclub.bc.ca/wp-content/uploads/2015/08/South-Coast-Backgrounder\\_March-2016.pdf](https://sierraclub.bc.ca/wp-content/uploads/2015/08/South-Coast-Backgrounder_March-2016.pdf)

We are looking forward to working with the BC government in 2018 to identify next steps to protect highly endangered ecosystems, the species that depend on them and keeping carbon stored in endangered old-growth on the ground.

Happy holiday and best wishes

Jens

Jens Wieting

Forest and Climate Campaigner

<<http://sierraclub.bc.ca/>>

Unceded Lekwungen Territory

C (604) 354-5312

sierraclub.bc.ca<<http://sierraclub.bc.ca/>>

Note: I am mostly working from Vancouver and only occasionally in Victoria

<<http://sierraclub.bc.ca/donate/>>

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Facebook<<http://www.facebook.com/SierraClubBC>>, Twitter<[http://twitter.com/Sierra\\_BC](http://twitter.com/Sierra_BC)>,

YouTube<<http://www.youtube.com/user/SierraClubofBC>> or our

newsletter<<http://sierraclub.bc.ca/#SignUp>>.

Inspiring generations to defend nature and confront climate change, so families, communities and the natural world can prosper together.

**From:** [Karn, David GCPE:EX](#)  
**To:** [Frampton, Caelie ENV:EX](#)  
**Cc:** [Xia, Eveline ENV:EX](#); [Crebo, David GCPE:EX](#); [Cotton, Brian GCPE:EX](#)  
**Subject:** RE: Media request - DeSmog - Mt Polley private prosecution  
**Date:** Wednesday, January 17, 2018 12:09:24 PM

---

Caelie, the reporter is still seeking a response from the Ministry.  
Please advise.

---

**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, January 16, 2018 3:40 PM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Xia, Eveline ENV:EX; Crebo, David GCPE:EX; Cotton, Brian GCPE:EX  
**Subject:** RE: Media request - DeSmog - Mt Polley private prosecution  
Caelie,

Just so you're aware, PJH was asked by Carol in his scrum today.

Reporter: is the province going to intervene in this (private prosecution) case:

*"No, I did ask Minister Heyman to work as best he could within the confines of the duty of the Crown to...that's consistent from election to election, the Crown remains the Crown regardless of who forms government."*

*"I think all British Columbians were mortified that three years would pass with no consequences to the most horrific mine disaster in B.C. history. I remained concerned and I am anxious to hear what the courts say but there are other actions under the Fisheries Acts that don't have a statute of limitations you've identified that have far greater penalties for non-compliance."*

*"So this isn't the end of justice or consequences for the failure, it's just one area."*

Reporter is still seeking a comment from MGH.

---

**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, January 16, 2018 8:55 AM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Xia, Eveline ENV:EX; Crebo, David GCPE:EX; Cotton, Brian GCPE:EX  
**Subject:** Media request - DeSmog - Mt Polley private prosecution  
Caelie,

Approved by Jim Standen.

**Reporter**

Carol Linnitt, DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline** Wednesday, January 17, 2018 12:00 PM

**Request**

The courts are expected to announce whether or not a private prosecution case brought by Bev Sellars against the Mount Polley Mining Corporation will move forward in the coming days or weeks.

I wrote about Sellars' private prosecution the day it was filed:

<https://www.desmog.ca/2017/08/04/breaking-last-minute-charges-laid-against-mount-polley-private-prosecution>

Is the minister available to comment on whether or not the province has any intentions of intervening in the case?

### **Recommendation**

The BC Conservation Officer Service, Fisheries and Oceans Canada, and Environment and Climate Change Canada are jointly conducting the investigation into the tailings pond breach at the Mount Polley mine site. To date, evidence has been collected under the provincial *Environmental Management Act* and the federal *Fisheries Act*.

While the statute of limitations for the *Environmental Management Act* may have passed, the investigation continues. BC's Conservation Officer Service will continue to work actively alongside federal agencies on this complex and thorough investigation. The statute of limitations under federal law is five years. Penalties can be far more significant under federal legislation, specifically the *Fisheries Act*, than under provincial legislation and a choice of charges would have to be made in any event. The Public Prosecution Service of Canada will consider all of the information gathered during the course of this investigation, should charges be recommended under the *Fisheries Act* or other legislation.

We recognize that the timeline for this investigation is significant. In general, the length of an investigation is dependent upon the complexity of the occurrence and the amount of information that needs to be gathered and considered. Be assured that both levels of government are committed to a thorough investigation within the timeframe of the federal statute of limitations.

From: [Karn, David GCPE:EX](#)  
To: [Frampton, Caelie ENV:EX](#)  
Cc: [Xia, Eveline ENV:EX](#); [Crebo, David GCPE:EX](#); [Cotton, Brian GCPE:EX](#)  
Subject: media request - DeSmog - Mt Polley follow  
Date: Thursday, February 1, 2018 3:10:27 PM

---

Caelie,  
Approved by Jim Standen.

**Reporter**

Carol Linnitt, Editor  
DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline** ASAP

**Request**

working on a story about the private prosecution brought against Mount Polley that was recently dismissed by the Crown Prosecution Service.

In an interview with the lawyer filing the private prosecution on behalf of Bev Sellars, I was told it was possible for the Ministry of Environment to direct the B.C. Conservation Service Office to share its investigation files on the Mount Polley tailings pond collapse with the Crown Prosecution Service.

Are you able to confirm if this is in fact the case? And did the minister consider doing so?

**Background**

This is a follow-up to a media request from January 15, 2018.

*REQUEST:*

The courts are expected to announce whether or not a private prosecution case brought by Bev Sellars against the Mount Polley Mining Corporation will move forward in the coming days or weeks.

I wrote about Sellars' private prosecution the day it was filed:

<https://www.desmog.ca/2017/08/04/breaking-last-minute-charges-laid-against-mount-polley-private-prosecution>

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*RESPONSE:*

Provided Statement

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Management Act and the federal Fisheries Act.

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**Recommendation**

The Public Prosecution Service of Canada will consider all of the information gathered during the course of this investigation, should charges be recommended under the *Fisheries Act* or other legislation.

From: [Frampton, Caelie ENV:EX](#)  
To: [Karn, David GCPE:EX](#)  
Cc: [Xia, Eveline ENV:EX](#); [Crebo, David GCPE:EX](#); [Cotton, Brian GCPE:EX](#)  
Subject: RE: media request - DeSmog - Mt Polley follow  
Date: Thursday, February 1, 2018 5:43:20 PM

---

Approved.

Caelie

---

**From:** Karn, David GCPE:EX  
**Sent:** Thursday, February 1, 2018 3:10 PM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Xia, Eveline ENV:EX; Crebo, David GCPE:EX; Cotton, Brian GCPE:EX  
**Subject:** media request - DeSmog - Mt Polley follow

Caelie,

Approved by Jim Standen.

**Reporter**

Carol Linnitt, Editor

DeSmog Canada

[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

**Deadline** ASAP

**Request**

working on a story about the private prosecution brought against Mount Polley that was recently dismissed by the Crown Prosecution Service.

In an interview with the lawyer filing the private prosecution on behalf of Bev Sellars, I was told it was possible for the Ministry of Environment to direct the B.C. Conservation Service Office to share its investigation files on the Mount Polley tailings pond collapse with the Crown Prosecution Service.

Are you able to confirm if this is in fact the case? And did the minister consider doing so?

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**REQUEST:**

The courts are expected to announce whether or not a private prosecution case brought by Bev Sellars against the Mount Polley Mining Corporation will move forward in the coming days or weeks.

I wrote about Sellars' private prosecution the day it was filed:

<https://www.desmog.ca/2017/08/04/breaking-last-minute-charges-laid-against-mount-polley-private-prosecution>

Is the minister available to comment on whether or not the province has any intentions of intervening in the case?



**RESPONSE:**

**Provided Statement**

The BC Conservation Officer Service, Fisheries and Oceans Canada, and Environment and Climate Change Canada are jointly conducting the investigation into the tailings pond breach at the Mount Polley mine site. To date, evidence has been collected under the provincial Environmental Management Act and the federal Fisheries Act.

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**Recommendation**

The Public Prosecution Service of Canada will consider all of the information gathered during the course of this investigation, should charges be recommended under the *Fisheries Act* or other legislation.

From: [Frampton, Caelie ENV:EX](#)  
To: [Karn, David GCPE:EX](#)  
Cc: [Xia, Eveline ENV:EX](#); [Cotton, Brian GCPE:EX](#); [Crebo, David GCPE:EX](#)  
Subject: RE: Media request - DeSmog - Brucejack mine  
Date: Friday, February 2, 2018 12:38:06 PM

---

Approved.

Caelie

---

**From:** Karn, David GCPE:EX  
**Sent:** Friday, February 2, 2018 12:23 PM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Xia, Eveline ENV:EX; Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** Media request - DeSmog - Brucejack mine

Caelie,

Approved by EAO.

Sarah Cox, Reporter

DeSmog Canada

[sarah@desmog.ca](mailto:sarah@desmog.ca)

250-812-1762

**Deadline** Friday, February 2, 2018 12:00 PM

### **Request**

I noticed that the EAO has given a "substantial start determination" to the Brucejack gold mine. CEAA issued a non-compliance order for the Brucejack mine in July, and it does not appear to have been lifted. Did that order have any bearing on the substantial start determination from the EAO or are matters of federal compliance entirely separate?

And are there any outstanding orders to Brucejack from the EAO? The latest information I can find on your website is from 2016.

### **Recommendation:**

#### **Background Context**

- Section 18 of the *Environmental Assessment Act* requires that projects that have received an Environmental Assessment Certificate (EAC) be substantially started within 5 years of the issuance of the certificate. Certificate holders may seek a one-time extension to this date of up to 5 years.
- After considering the degree of Project development, including that all infrastructure was completed to allow commercial operations to commence, and after seeking the views of First Nations and the Nisga'a Nation, the Environmental Assessment Office (EAO) determined that the Brucejack Mine was substantially started on December 21, 2017.

#### **Compliance and Enforcement Context in relation to Substantial Start Determination**

- In August and December of 2016 the EAO C&E issued 2 Orders to remedy under S.34 of the *Act*. These orders related to temporary construction related activities in an area ("Troy Laydown") not authorized under the EAC, and the management of anthropogenic wildlife attractants.
- The Certificate Holder has complied with the wildlife attractant order and this order will remain in

effect for the life of the project to ensure continued compliance. Compliance status with the “Troy Laydown” order is currently under review, and this order remains in effect.

- The Canadian Environmental Assessment Agency (CEAA) issued an Order under the *Canadian Environmental Assessment Act* on July 21, 2017, regarding noncompliance with requirements to implement measures to protect migrating amphibians. This Order is still in effect, pending completion of all requirements specified in that order.
- When considering a substantial start determination, the decision maker may consider project compliance status, where noncompliance may have a bearing on the substantial start decision. For example, the construction of key, permanent project infrastructure in an area not authorized under the EAC or in a manner not otherwise compliant with the EAC may be an element considered during a substantial start decision.
- The outstanding enforcement issued by EAO C&E and CEAA C&E were not a key element of the decision, given that the noncompliant activity had a minimal impact on the overall development of the Project.
- Further information regarding the substantial start decision process can be found here: <http://www.eao.gov.bc.ca/files/EAO-Guidance-Certificate-Holder-Substantially-Started-Determinations.pdf>

**From:** [Karn, David GCPE:EX](#)  
**To:** [Xia, Eveline ENV:EX](#); [Frampton, Caelie ENV:EX](#)  
**Cc:** [Cotton, Brian GCPE:EX](#); [Crebo, David GCPE:EX](#)  
**Subject:** RE: Media request - DeSmog - fish test results  
**Date:** Wednesday, February 7, 2018 8:51:37 AM  
**Attachments:** [2017-12-06 Lions Gate Process Water and Boat Hold Effluent L2032198 XLR.XLS](#)  
[2017-12-04 Brown's Bay Effluent L2032197 XLR.XLS](#)  
[CSAP Aquaculture Emergency Response.pdf](#)

---

Eveline, with attachments as discussed.

---

**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, February 6, 2018 1:27 PM  
**To:** Xia, Eveline ENV:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Just so you know, program is proposing to post these results online.  
We've asked them to hold for now.

---

**From:** Xia, Eveline ENV:EX  
**Sent:** Tuesday, February 6, 2018 12:42 PM  
**To:** Karn, David GCPE:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Please hold on this. We're working on it ☺

---

**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, February 6, 2018 11:20 AM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Xia, Eveline ENV:EX; Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** Media request - DeSmog - fish test results  
Caelie,

The attached results have already been provided by ENV to Alexandra Morton.

**Reporter**

Carol Linnitt, Editor  
DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline** Wednesday, February 7, 2018 4:00 PM

**Request**

Yesterday we published a story on government's findings that bloodwater effluent from two BC fish processing plants contained piscine reovirus.

I'm hoping to view the results of that laboratory testing. We've also received requests from our readers to view the test results.

Is this something you could provide to us?

**Background**

**Recommendation**



**Report To** Laura Hunse, BC MINISTRY OF ENVIRONMENT - Compliance - Surrey  
200-10470 152 Street  
  
Surrey, BC V3R 0Y3  
  
**Client Phone** 604-582-5216

**Date Received**  
**Report Date**  
**Report Revision**  
**Version**

## Certificate of Analysis

**Lab Work Order #** L2032198  
**Project P.O. #** 50233908  
**Job Reference** 7952  
**Legal Site Description**  
**C of C Numbers**

**Case Narrative/Comments**

A handwritten signature in black ink, appearing to read "Dean Watt", with a long horizontal line extending to the right.

**Dean Watt, B.Sc.**  
**Account Manager**

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**Report To** Laura Hunze, BC MINISTRY OF ENVIRONMENT - Compliance - Surrey  
200-10470 152 Street  
  
Surrey, BC V3R 0Y3  
  
**Client Phone** 604-582-5216

**Date Received**  
**Report Date**  
**Report Revision**  
**Version**

## Certificate of Analysis

**Lab Work Order #** L2032197  
**Project P.O. #** 50233907  
**Job Reference** 8124  
**Legal Site Description**  
**C of C Numbers**

**Case Narrative/Comments**

A handwritten signature in black ink, appearing to read "Dean Watt", with a long horizontal line extending to the right.

**Dean Watt, B.Sc.**  
**Account Manager**

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# Centre for Science Advice Pacific

## FPP non-CSAS Request for Rapid Science Response

### REQUEST INFORMATION

Request Contact:	Kristi Miller Saunders	Project Type: Aquaculture-Emergency response
Date of request:	November 29, 2017	Project footprint:
Region of proposed impact:	Tofino and Browns Bay, British Columbia	Habitat Type: Coastal
Purpose of request:	Information for Ministry of Environment / Environment and Climate Change Canada investigation	
Potential affected species:	Pacific salmon	
Date required:	December 15, 2017	Request #:2017AQU01
Timeline rationale:	Required for ongoing inspection of fish processing facilities as conducted by Province of BC	

### PROJECT OVERVIEW

In Canada, the regulation of processing of fish products is a shared Provincial – Federal responsibility. BC Ministry of Environment & Climate Change Strategies (ENV) supports marine fisheries and aquaculture and seafood industry development, issuing licenses to businesses involved in the aquaculture sector - including permits for seafood processing facilities - under the *BC Fisheries Act and Fish Inspection Act*. Thus, as a function of normally-operating fish processing plants, fish waste effluent is released back into the marine ecosystem subject to conditions of license.

Environment and Climate Change Canada (ECCC) administers section 36 of DFO's *Fisheries Act*, the key pollution prevention provision, prohibiting the deposit of deleterious substances into waters frequented by fish, unless authorized by regulations under the *Fisheries Act* or other federal legislation. A deleterious substance can be any substance that, if added to any water, would degrade or alter its quality such that it could be harmful to fish, fish habitat or the use of fish by people.

Following the public release of a video showing fish waste effluent being released into the marine environment, and subsequent related news articles and public interest, ENV initiated an inspection of two fish processing plants that were the subject of the videos. ENV has also initiated a compliance audit for fish processing plants.

The BC Ministry of Environment & Climate Change Strategies (ENV), Environmental Protection Regional Operations Branch requested assistance from DFO to support the collection of water samples at two fish processing facilities and to test collected effluent for the presence of the Piscine OrthoReovirus (PRV), as part of the ongoing inspection. Other labs contacted at the time did not have the capacity to perform the necessary diagnostics on water samples.

### <sup>ST</sup> 1 QUESTION

#### Background:

Piscine OrthoReovirus (PRV) is known to be present in Norway, Japan, the United Kingdom, Ireland, Chile, the United States and Canada (Biering and Garseth 2012; Kibenge et al. 2013; Siah et al. 2015). Farmed and wild Atlantic Salmon (*Salmo salar*), Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon (*Oncorhynchus tshawytscha*), and Rainbow trout (*Oncorhynchus mykiss*), and wild Cutthroat Trout (*Oncorhynchus clarkii*), Steelhead Trout (*Oncorhynchus mykiss*),

Sockeye Salmon (*Oncorhynchus nerka*), Chum Salmon (*Oncorhynchus keta*) and Pink Salmon (*Oncorhynchus gorbuscha*) have all tested positive for PRV through molecular testing. However, around the world, PRV prevalence has been substantially higher in farmed populations, most showing 60-90+% prevalence, than in wild populations.

PRV is causative of Heart and Skeletal Muscle Inflammation (HSMI) disease in farmed Atlantic Salmon (Wessell et al. 2017) and EIBS disease in farmed Coho salmon in Japan (Takano et al. 2016). As well, it has been implicated in other diseases of farmed Rainbow Trout, Coho and Chinook Salmon in Chile (Godoy et al. 2016), Norway (Hauge et al. 2017) and Canada (Miller et al. 2017). HSMI disease occurs in farmed Atlantic salmon in Norway (Kongtorp et al. 2004), Scotland (Ferguson et al. 2005), Chile (Godoy et al. 2016), and Canada (Di Cicco et al. 2017).

Red blood cells (RBCs) are the primary infective tissue for PRV (Finstad et al. 2014). Not all salmon carrying the virus, even at high loads, are diseased. Given the high prevalence of PRV in farmed populations and presence of the virus in the blood, it is expected that blood effluent from processing plants would contain PRV.

#### Request:

As part of an inspection conducted at two fish processing facilities, ENV requested DFO expertise to:

- ☐ Accompany 1 ENV and 1 ECCC inspector to two fish processing facilities and support the collection of water samples;
- ☐ Analyze effluent samples collected from two fish processing plants on December 4 and 5, 2017; and
- ☐ Assess the PVR data results of presence/absence

#### Importance:

☒ Essential

☐ Important

☐ Desirable

### SCIENCE RESPONSE

#### Sample Collection:

##### Methods:

A DFO Molecular Genetics technician accompanied two inspectors (from ENV and ECCC) to each of the fish processing facilities to provide guidance for the appropriate collection of water samples to allow for viral analysis. Inspectors were the Senior Enforcement Officer - Enforcement Branch Environment and Climate Change Canada, and the Environmental Protection Officer - Compliance Section, Environmental Protection Division, BC Ministry of Environment and Climate Change Strategy.

At the Browns Bay Packing Co, Campbell River, BC, effluent was collected from one source – at the plant itself, after it had been passed over a roto-screen of 0.5 mm and 0.25 mm (as per the permit), and immediately prior to discharge out of the facility into the environment. This sample was the combination of discharge from the fish transport vessel (a mixture of saltwater, ice-water and blood from the fish being processed) and the liquid discharge from the plant used in the processing of the fish. The sample was red in colour, with very small particulates visible. This is MGL sample **2017-0017-J3205**.

At the Lions Gate Fish Co, Tofino, BC, effluent was collected from two sources;

- 1) Discharge from the fish harvest vessel (a mixture of saltwater, ice-water and blood from the fish being processed). The vessel discharge is un-treated and enters the fish plant discharge pipe after the plant discharge is screened, and so



was considered a separate sample by the accompanying inspectors. The sample was bright red in colour, and fairly clear with very little particulate matter visible. This is MGL sample **2017-0017-J3231**;

2) Discharge from the processing plant that was used in the processing and cleaning of fish. This sample was collected after it had passed over a fine-meshed screen (as per the permit) and prior to discharge out into the environment. This sample was had a cloudy, white appearance, with visible particulate matter. This is MGL sample **2017-0017-J3232**

Note – one additional discharge from this site was unable to be accessed for sampling. In this case the discharge was liquid from the processing plant floor which is passed over a 6mm screen, and then joins directly into the pipe for discharge.

#### **Sample Analysis:**

#### **Laboratory Sample Handling**

Samples were collected in new 2L sample bottles, and were transported to the DFO Molecular Genetics Lab on ice and in a locked truck. They arrived at the lab within 3-6 hours of collection.

Samples from the Fish Plant discharge inspections (MGL AQ# 2017-0017) were processed in the Molecular Genetics Forensics Lab at the Pacific Biological station, a laboratory space in the Molecular Genetics Section of DFO Science that is dedicated to highly sensitive and/or legal samples. This room is kept locked at all times, and has tightly-controlled access. All personnel accessing this lab are required to sign in/out. Samples processed in this lab are either of a legal nature, or are highly sensitive or degraded DNA (e.g. eDNA/Scat samples). Only one sample file/type can be processed at one time in this lab, and the laboratory processing stations are sterilized with bleach and UV between samples. Any processing steps requiring use of equipment outside of this laboratory are carried out with samples constrained to sealed containers (e.g. centrifugation, PCR amplification).

Details of sample processing methodologies are presented in Appendix 1.

---

#### **Results:**

PRV was detected in all samples tested. The number of viruses per mL of water was calculated to allow total viral burden to be assessed based on discharge estimates. Technical controls confirmed that equipment was performing appropriately and results were of high integrity.

Detailed results are presented in Appendix 2A (raw data containing results for all technical replicates) and 2B (synthesized data).

#### **Context:**

The high prevalence of PRV in farmed BC Salmon is well documented. The presence of the virus in facility effluent was therefore expected. Further Science studies would be required to determine and evaluate any associated marine environmental or public health risks associated with such effluent discharges.

## References:

- Biering E., Garseth A.H. 2012. Heart and Skeletal Muscle Inflammation (HSMI) of farmed Atlantic Salmon (*Salmo salar* L.) and the associated Piscine Reovirus (PRV). In: Feist S, editor. ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish. Copenhagen: International Council for the Exploration of the Sea; p. 6.
- Di Cicco, E., Ferguson, H.W., Schulze, A.D., Kaukinen, K.H., Li, S., Vanderstichel, R., Wessel, O., Rimstad, E., Gardner, I.A., Hammell, K.L., 2017, Heart and skeletal muscle inflammation (HSMI) disease diagnosed on a British Columbia salmon farm through a longitudinal farm study. PLoS ONE 12, 843 e0171471.
- Ferguson, H.W., Kongtorp, R.T., Taksdal, T., Graham, D. and Falk, K., 2005. An outbreak of disease resembling heart and skeletal muscle inflammation in Scottish farmed salmon, *Salmo salar* L., with observations on myocardial regeneration. Journal of fish diseases, 28(2), pp.119-123.
- Finstad, Ø.W., Dahle, M.K., Lindholm, T.H., Nyman, I.B., Løvoll, M., Wallace, C., Olsen, C.M., Storset, A.K. and Rimstad, E., 2014. Piscine orthoreovirus (PRV) infects Atlantic salmon erythrocytes. Veterinary research, 45(1), p.35.
- Godoy M.G., Kibenge M.J., Wang Y., Suarez R., Leiva C., Vallejos F., Kibenge F.S. 2016. First description of clinical presentation of piscine orthoreovirus (PRV) infections in salmonid aquaculture in Chile and identification of a second genotype (Genotype II) of PRV. Virology journal 13(1): p.98.
- Hauge H., Vendramin N., Taksdal T., Olsen A.B., Wessel Ø., Mikkelsen S.S., Alencar A.L.F., Olesen N.J., Dahle M.K. 2017. Infection experiments with novel Piscine orthoreovirus from rainbow trout (*Oncorhynchus mykiss*) in salmonids. PLoS one 12(7), p.e0180293.
- Kibenge M.J.T., Iwamoto T., Wang Y., Morton A., Godoy M.G., Kibenge F. 2013. Whole-genome analysis of Piscine Reovirus (PRV) shows PRV represents a new genus in Family Reoviridae and its genome segment S1 sequences group it into two separate sub-genotypes. Virology Journal 10:230.
- Kongtorp R.T., Taksdal T., Lyngøy A. 2004. Pathology of heart and skeletal muscle inflammation (HSMI) in farmed Atlantic salmon *Salmo salar*. Diseases of Aquatic Organisms 59:217-224.
- Miller, K.M., Günther, O.P., Li, S., Kaukinen, K.H. and Ming, T.J., 2017. Molecular indices of viral disease development in wild migrating salmon. Conservation Physiology 5(1).
- Siah A., Morrison D.B., Fringuelli E., Savage P., Richmond Z., Johns R., Purcell M.K., Johnson S.C, Saksida S.M. 2015. Piscine reovirus: Genomic and molecular phylogenetic analysis from farmed and wild salmonids collected on the Canada/US Pacific Coast. PLoS ONE 10(11):e0141475.
- Takano T., Nawata A., Sakai T., Matsuyama T., Ito T., Kurita J., Terashima S., Yasuike M., Nakamura Y., Fujiwara A., Kumagai A. 2016. Full-Genome sequencing and confirmation of the causative agent of Erythrocytic inclusion body syndrome in Coho Salmon identifies a new type of Piscine Orthoreovirus. PLoS one 11(10), p.e0165424.
- Wessel Ø., Braaen S., Alarcon M., Haatveit H., Roos N., Markussen T., Tengs T., Dahle M.K., Rimstad E. 2017. Infection with purified Piscine orthoreovirus demonstrates a causal relationship with heart and skeletal muscle inflammation in Atlantic salmon. PLoS one 12(8), p.e0183781.

Responder: Kristi Miller Saunders, Science

Responder: Amy Tabata, Science

Responder: Nathan Taylor, Science

#### REVIEW INFORMATION

This response does not constitute delivery of peer – reviewed Science advice; it is intended as a rapid response to an immediate requirement for Science input.

Reviewed by: Lesley MacDougall, Coordinator, Centre for Science Advice Pacific Region

Date: Dec 18, 2017

Comments:

Approved by:

Date:

Comments:

**From:** [Xia, Eveline ENV:EX](#)  
**To:** [Karn, David GCPE:EX](#); [Frampton, Caelie ENV:EX](#)  
**Cc:** [Crebo, David GCPE:EX](#); [Cotton, Brian GCPE:EX](#)  
**Subject:** Media request - DeSmog - fish test results  
**Date:** Wednesday, February 7, 2018 8:59:14 AM  
**Attachments:** [CSAP Aquaculture Emergency Response.pdf](#)  
[Appendix 1.docx](#)  
[Appendix 2A.XLSX](#)  
[Appendix 2B.XLSX](#)

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Hi Dave,

Please send these results instead (these ones are PRV specific).

Thanks!

Eveline

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**From:** Karn, David GCPE:EX  
**Sent:** Wednesday, February 7, 2018 8:52 AM  
**To:** Xia, Eveline ENV:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Eveline, with attachments as discussed.

---

**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, February 6, 2018 1:27 PM  
**To:** Xia, Eveline ENV:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Just so you know, program is proposing to post these results online.  
We've asked them to hold for now.

---

**From:** Xia, Eveline ENV:EX  
**Sent:** Tuesday, February 6, 2018 12:42 PM  
**To:** Karn, David GCPE:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Please hold on this. We're working on it ☺

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**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, February 6, 2018 11:20 AM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Xia, Eveline ENV:EX; Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** Media request - DeSmog - fish test results  
Caelie,

The attached results have already been provided by ENV to Alexandra Morton.

**Reporter**

Carol Linnitt, Editor

DeSmog Canada

[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

**Deadline** Wednesday, February 7, 2018 4:00 PM

**Request**

Yesterday we published a story on government's findings that bloodwater effluent from two BC fish processing plants contained piscine reovirus.

I'm hoping to view the results of that laboratory testing. We've also received requests from our

readers to view the test results.

Is this something you could provide to us?

**Background**

**Recommendation**

# Centre for Science Advice Pacific

## FPP non-CSAS Request for Rapid Science Response

### REQUEST INFORMATION

Request Contact:	Kristi Miller Saunders	Project Type: Aquaculture-Emergency response
Date of request:	November 29, 2017	Project footprint:
Region of proposed impact:	Tofino and Browns Bay, British Columbia	Habitat Type: Coastal
Purpose of request:	Information for Ministry of Environment / Environment and Climate Change Canada investigation	
Potential affected species:	Pacific salmon	
Date required:	December 15, 2017	Request #:2017AQU01
Timeline rationale:	Required for ongoing inspection of fish processing facilities as conducted by Province of BC	

### PROJECT OVERVIEW

In Canada, the regulation of processing of fish products is a shared Provincial – Federal responsibility. BC Ministry of Environment & Climate Change Strategies (ENV) supports marine fisheries and aquaculture and seafood industry development, issuing licenses to businesses involved in the aquaculture sector - including permits for seafood processing facilities - under the *BC Fisheries Act and Fish Inspection Act*. Thus, as a function of normally-operating fish processing plants, fish waste effluent is released back into the marine ecosystem subject to conditions of license.

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The BC Ministry of Environment & Climate Change Strategies (ENV), Environmental Protection Regional Operations Branch requested assistance from DFO to support the collection of water samples at two fish processing facilities and to test collected effluent for the presence of the Piscine OrthoReovirus (PRV), as part of the ongoing inspection. Other labs contacted at the time did not have the capacity to perform the necessary diagnostics on water samples.

### <sup>ST</sup> 1 QUESTION

#### Background:

Piscine OrthoReovirus (PRV) is known to be present in Norway, Japan, the United Kingdom, Ireland, Chile, the United States and Canada (Biering and Garseth 2012; Kibenge et al. 2013; Siah et al. 2015). Farmed and wild Atlantic Salmon (*Salmo salar*), Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon (*Oncorhynchus tshawytscha*), and Rainbow trout (*Oncorhynchus mykiss*), and wild Cutthroat Trout (*Oncorhynchus clarkii*), Steelhead Trout (*Oncorhynchus mykiss*),

Sockeye Salmon (*Oncorhynchus nerka*), Chum Salmon (*Oncorhynchus keta*) and Pink Salmon (*Oncorhynchus gorbuscha*) have all tested positive for PRV through molecular testing. However, around the world, PRV prevalence has been substantially higher in farmed populations, most showing 60-90+% prevalence, than in wild populations.

PRV is causative of Heart and Skeletal Muscle Inflammation (HSMI) disease in farmed Atlantic Salmon (Wessell et al. 2017) and EIBS disease in farmed Coho salmon in Japan (Takano et al. 2016). As well, it has been implicated in other diseases of farmed Rainbow Trout, Coho and Chinook Salmon in Chile (Godoy et al. 2016), Norway (Hauge et al. 2017) and Canada (Miller et al. 2017). HSMI disease occurs in farmed Atlantic salmon in Norway (Kongtorp et al. 2004), Scotland (Ferguson et al. 2005), Chile (Godoy et al. 2016), and Canada (Di Cicco et al. 2017).

Red blood cells (RBCs) are the primary infective tissue for PRV (Finstad et al. 2014). Not all salmon carrying the virus, even at high loads, are diseased. Given the high prevalence of PRV in farmed populations and presence of the virus in the blood, it is expected that blood effluent from processing plants would contain PRV.

#### Request:

As part of an inspection conducted at two fish processing facilities, ENV requested DFO expertise to:

- ☐ Accompany 1 ENV and 1 ECCC inspector to two fish processing facilities and support the collection of water samples;
- ☐ Analyze effluent samples collected from two fish processing plants on December 4 and 5, 2017; and
- ☐ Assess the PVR data results of presence/absence

#### Importance:

☒ Essential

☐ Important

☐ Desirable

### SCIENCE RESPONSE

#### Sample Collection:

##### Methods:

A DFO Molecular Genetics technician accompanied two inspectors (from ENV and ECCC) to each of the fish processing facilities to provide guidance for the appropriate collection of water samples to allow for viral analysis. Inspectors were the Senior Enforcement Officer - Enforcement Branch Environment and Climate Change Canada, and the Environmental Protection Officer - Compliance Section, Environmental Protection Division, BC Ministry of Environment and Climate Change Strategy.

At the Browns Bay Packing Co, Campbell River, BC, effluent was collected from one source – at the plant itself, after it had been passed over a roto-screen of 0.5 mm and 0.25 mm (as per the permit), and immediately prior to discharge out of the facility into the environment. This sample was the combination of discharge from the fish transport vessel (a mixture of saltwater, ice-water and blood from the fish being processed) and the liquid discharge from the plant used in the processing of the fish. The sample was red in colour, with very small particulates visible. This is MGL sample **2017-0017-J3205**.

At the Lions Gate Fish Co, Tofino, BC, effluent was collected from two sources;

- 1) Discharge from the fish harvest vessel (a mixture of saltwater, ice-water and blood from the fish being processed). The vessel discharge is un-treated and enters the fish plant discharge pipe after the plant discharge is screened, and so

was considered a separate sample by the accompanying inspectors. The sample was bright red in colour, and fairly clear with very little particulate matter visible. This is MGL sample **2017-0017-J3231**;

2) Discharge from the processing plant that was used in the processing and cleaning of fish. This sample was collected after it had passed over a fine-meshed screen (as per the permit) and prior to discharge out into the environment. This sample was had a cloudy, white appearance, with visible particulate matter. This is MGL sample **2017-0017-J3232**

Note – one additional discharge from this site was unable to be accessed for sampling. In this case the discharge was liquid from the processing plant floor which is passed over a 6mm screen, and then joins directly into the pipe for discharge.

#### **Sample Analysis:**

#### **Laboratory Sample Handling**

Samples were collected in new 2L sample bottles, and were transported to the DFO Molecular Genetics Lab on ice and in a locked truck. They arrived at the lab within 3-6 hours of collection.

Samples from the Fish Plant discharge inspections (MGL AQ# 2017-0017) were processed in the Molecular Genetics Forensics Lab at the Pacific Biological station, a laboratory space in the Molecular Genetics Section of DFO Science that is dedicated to highly sensitive and/or legal samples. This room is kept locked at all times, and has tightly-controlled access. All personnel accessing this lab are required to sign in/out. Samples processed in this lab are either of a legal nature, or are highly sensitive or degraded DNA (e.g. eDNA/Scat samples). Only one sample file/type can be processed at one time in this lab, and the laboratory processing stations are sterilized with bleach and UV between samples. Any processing steps requiring use of equipment outside of this laboratory are carried out with samples constrained to sealed containers (e.g. centrifugation, PCR amplification).

Details of sample processing methodologies are presented in Appendix 1.

---

#### **Results:**

PRV was detected in all samples tested. The number of viruses per mL of water was calculated to allow total viral burden to be assessed based on discharge estimates. Technical controls confirmed that equipment was performing appropriately and results were of high integrity.

Detailed results are presented in Appendix 2A (raw data containing results for all technical replicates) and 2B (synthesized data).

#### **Context:**

The high prevalence of PRV in farmed BC Salmon is well documented. The presence of the virus in facility effluent was therefore expected. Further Science studies would be required to determine and evaluate any associated marine environmental or public health risks associated with such effluent discharges.



## References:

- Biering E., Garseth A.H. 2012. Heart and Skeletal Muscle Inflammation (HSMI) of farmed Atlantic Salmon (*Salmo salar* L.) and the associated Piscine Reovirus (PRV). In: Feist S, editor. ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish. Copenhagen: International Council for the Exploration of the Sea; p. 6.
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- Ferguson, H.W., Kongtorp, R.T., Taksdal, T., Graham, D. and Falk, K., 2005. An outbreak of disease resembling heart and skeletal muscle inflammation in Scottish farmed salmon, *Salmo salar* L., with observations on myocardial regeneration. Journal of fish diseases, 28(2), pp.119-123.
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- Kongtorp R.T., Taksdal T., Lyngøy A. 2004. Pathology of heart and skeletal muscle inflammation (HSMI) in farmed Atlantic salmon *Salmo salar*. Diseases of Aquatic Organisms 59:217-224.
- Miller, K.M., Günther, O.P., Li, S., Kaukinen, K.H. and Ming, T.J., 2017. Molecular indices of viral disease development in wild migrating salmon. Conservation Physiology 5(1).
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- Wessel Ø., Braaen S., Alarcon M., Haatveit H., Roos N., Markussen T., Tengs T., Dahle M.K., Rimstad E. 2017. Infection with purified Piscine orthoreovirus demonstrates a causal relationship with heart and skeletal muscle inflammation in Atlantic salmon. PLoS one 12(8), p.e0183781.

Responder: Kristi Miller Saunders, Science

Responder: Amy Tabata, Science

Responder: Nathan Taylor, Science

#### REVIEW INFORMATION

This response does not constitute delivery of peer – reviewed Science advice; it is intended as a rapid response to an immediate requirement for Science input.

Reviewed by: Lesley MacDougall, Coordinator, Centre for Science Advice Pacific Region

Date: Dec 18, 2017

Comments:

Approved by:

Date:

Comments:

## Appendix 1. Detailed methods of sample processing of effluent from fish processing plants

Multiple replicates of 1.7 mL aliquots of each sample were immediately preserved (within 5 hours of collection) by flash freezing 2 mL cryovials in liquid nitrogen, and then storing at -80 °C (**LN2 Cryovial**) (**Table 1**). These samples were preserved in case there is a future need to establish viability of any detected virus through infectivity trials.

Within 72 hours of sample collection, an additional 40 mL aliquots of each sample were frozen and stored at -80 °C in 50 mL centrifuge tubes (**-80C Direct**). As well, 40mL of sample was aliquoted into 50 mL centrifuge tubes, spun at 2500g for 10 minutes, and the supernatant separated from the pellet. Supernatant was filtered using a Millipore Express 0.22um bottle-top filter (volume depended on the sample). Filters were removed from the filter apparatus using a sterile scalpel and forceps. Each filter was divided into 4 pieces, and each piece put into a 5mL Eppendorf tube. Filters were used immediately or stored at -80C for storage or until further processing (**Filter at -80C**). An aliquot of the filtrate was frozen in a 50mL centrifuge tube and stored at -80C in case further precipitation of virus was necessary (as only cellular-bound virus will be captured on the 0.22 ul filter). The pellet was re-suspended using a small amount of remaining supernatant, and transferred to a 1.5 mL Eppendorf tube. Pellets from 2- 40mL aliquots were combined, and this was then analyzed immediately or frozen at -80 for storage or until further processing (**Pellet -80 C**). (Note J3231 had little to no visible pellet)

Table 1. Samples processed and stored from effluents collected at salmon processing plants.

Sample	LN2 Cryovial	-80C Direct	Filter at -80C	Filtrate	Pellet -80 C
J3205	22 x 1.7ml (5 aliquoted onsite, 17 in lab)	10x40ml	Filter A–250ml total/4=62.5ml/piece Filter B–200ml total/4=50ml/piece	40 mLs	2
J3231	28 x 1.7 mL	5x40ml	Filter A–200ml total/4=50ml/piece Filter B–160ml total/4=40ml/piece	40 mLs	2
J3232	28 x 1.7 mL	5x40ml	Filter A–400ml total/4 =100ml/piece	40 mLs	2

### RNA Extraction Method

RNA was extracted from the filters and the pellet (in table below) using the MoBio PowerWater RNA Extraction Kit (Cat#14700-50-NF) according to the manufacturer's directions. Adjustments from the protocol were to include the suggested 10 min incubation at 55C during the initial lysis step. RNA was eluted in 75uL volume. RNA was quantified using the Invitrogen Qubit fluorometer, with either the RNA HS or BR assay kit. An extraction control was processed in-step with the samples.

RNA Sample Name	Description	RNA concentration (ng/uL)
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J3205 BB Filter 1	¼ of filter A = 62.5mL sample volume	130
J3205 BB Filter 2	¼ of filter A = 50mL sample volume	88.3
J3205 BB Filter 3	¼ of filter A = 62.5mL sample volume	1181
J3205 BB Pellet 1	Pellet from 2x40mL=80mL sample column	3531
J3205 BB Pellet 2	Pellet from 2x40mL=80mL sample column	421
J3231 LG-V Filter 1	¼ of filter A = 50mL sample volume	45
J3231 LG-V Filter2	¼ of filter A = 40mL sample volume	31.5
J3231 LG-V Filter3	¼ of filter A = 50mL sample volume	58.5
J3231 LG-V Pellet 1	Pellet from 2x40mL=80mL sample volume	Below detection limit
J3232 LG-P Filter 1	¼ of filter A = 100mL sample volume	Below detection limit
J3232 LG-P Pellet 1	Pellet from 2x40mL=80mL sample column	116
J3232 LG-P Pellet 2	Pellet from 2x40mL=80mL sample column	27.5
Extraction Control (EC)	Extraction using blank filter and sddH2O	Below detection limit

### cDNA synthesis

cDNA synthesis was performed using Invitrogen Superscript Vilo according to manufacturer's protocol, using a 20uL reaction containing 4uL of Vilo Enzyme Master Mix and 16 uL of RNA. RNA was diluted to 62.5 ng/uL, so that 16uL of input equals 1ug of RNA input. Where [RNA] was below 62.5ng/uL, 16uL of the undiluted RNA extraction was used. 16 uL of sddH2O was used as a cDNA synthesis negative control.

### qRT-PCR

Real-time quantitative polymerase chain reaction (qRT-PCR) was used to test for PRV on the Applied Biosystems 7900ht platform using a validated TaqMan assay for the PRV L1 segment. Primers and probes were diluted fresh from stock solutions. 1uL of cDNA or control material was used in each reaction mixture. Sterile water was used for a No Template Control (NTC). A set of standards for PRV was run and used to generate a standard curve. Each sample was run six times for the PRV assay, and each control was run 4x. Each sample and control was also run with a No Assay Control (NAC) assay using sddH2O in place of primers and probes.

Forward Reverse Primer Mix (10pmol/uL each)	0.2
Probe (10uM)	0.3
AB Gene Expression Master Mix 2x	4.5

Sterile water	6.0
cDNA	1.0
Total Volume	12.0

Thermocycling conditions were:

Step 1	50C/2 min
Step 2	95C/10 min
Cycle x 45	95C/15 sec
	60C/60 sec

Results were analyzed using the ABI SDS software designed for the ABI7900ht platform.

Copy number calculation (abundance of virus) for each qPCR replicate was calculated by the ABI SDS software based on the standards curve generated by the known clone standards. Copy number per mL sample was calculated by:

$$\frac{((\text{Copies per Reaction} \times 20 \text{ uL total cDNA}) / \text{uL RNA input into cDNA synthesis}) \times (75 \text{ uL RNA Extraction})}{\text{Volume Sample used for extraction}}$$

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Appendix 2A. Raw molecular data from the ABI 7900ht quantitative PCR analysis of samples fr

Well	Sample Name	Detector Name	Reporter	Task	Ct
73	J3205 BB Filter 1	Microbe_PRV	FAM	Unknown	33.451073
121	J3205 BB Filter 1	Microbe_PRV	FAM	Unknown	33.612473
49	J3205 BB Filter 1	Microbe_PRV	FAM	Unknown	33.632385
97	J3205 BB Filter 1	Microbe_PRV	FAM	Unknown	33.89007
169	J3205 BB Filter 1	Microbe_PRV	FAM	Unknown	33.970394
145	J3205 BB Filter 1	Microbe_PRV	FAM	Unknown	34.472557
170	J3205 BB Filter 2	Microbe_PRV	FAM	Unknown	32.877113
50	J3205 BB Filter 2	Microbe_PRV	FAM	Unknown	33.166363
146	J3205 BB Filter 2	Microbe_PRV	FAM	Unknown	33.259842
98	J3205 BB Filter 2	Microbe_PRV	FAM	Unknown	33.652264
122	J3205 BB Filter 2	Microbe_PRV	FAM	Unknown	33.78728
74	J3205 BB Filter 2	Microbe_PRV	FAM	Unknown	37.38357
51	J3205 BB Filter 3	Microbe_PRV	FAM	Unknown	32.529835
99	J3205 BB Filter 3	Microbe_PRV	FAM	Unknown	32.637978
147	J3205 BB Filter 3	Microbe_PRV	FAM	Unknown	32.719837
123	J3205 BB Filter 3	Microbe_PRV	FAM	Unknown	32.780693
171	J3205 BB Filter 3	Microbe_PRV	FAM	Unknown	32.827774
75	J3205 BB Filter 3	Microbe_PRV	FAM	Unknown	33.00591
148	J3205 BB Pellet 1	Microbe_PRV	FAM	Unknown	33.186848
124	J3205 BB Pellet 1	Microbe_PRV	FAM	Unknown	33.245872
76	J3205 BB Pellet 1	Microbe_PRV	FAM	Unknown	33.26082
172	J3205 BB Pellet 1	Microbe_PRV	FAM	Unknown	33.33252
100	J3205 BB Pellet 1	Microbe_PRV	FAM	Unknown	35.26841
52	J3205 BB Pellet 1	Microbe_PRV	FAM	Unknown	35.3359
77	J3205 BB Pellet 2	Microbe_PRV	FAM	Unknown	32.28063
173	J3205 BB Pellet 2	Microbe_PRV	FAM	Unknown	32.730484
53	J3205 BB Pellet 2	Microbe_PRV	FAM	Unknown	32.8996
149	J3205 BB Pellet 2	Microbe_PRV	FAM	Unknown	32.901104
125	J3205 BB Pellet 2	Microbe_PRV	FAM	Unknown	32.97145
101	J3205 BB Pellet 2	Microbe_PRV	FAM	Unknown	36.56757
126	J3231 LG-V Filter 1	Microbe_PRV	FAM	Unknown	27.832628
150	J3231 LG-V Filter 1	Microbe_PRV	FAM	Unknown	27.88189
174	J3231 LG-V Filter 1	Microbe_PRV	FAM	Unknown	28.009035
102	J3231 LG-V Filter 1	Microbe_PRV	FAM	Unknown	28.083916
78	J3231 LG-V Filter 1	Microbe_PRV	FAM	Unknown	28.09153
54	J3231 LG-V Filter 1	Microbe_PRV	FAM	Unknown	28.345526
79	J3231 LG-V Filter2	Microbe_PRV	FAM	Unknown	27.431557
127	J3231 LG-V Filter2	Microbe_PRV	FAM	Unknown	27.530262
151	J3231 LG-V Filter2	Microbe_PRV	FAM	Unknown	27.576757
103	J3231 LG-V Filter2	Microbe_PRV	FAM	Unknown	27.605307
175	J3231 LG-V Filter2	Microbe_PRV	FAM	Unknown	28.14646
55	J3231 LG-V Filter2	Microbe_PRV	FAM	Unknown	28.395777
152	J3231 LG-V Filter3	Microbe_PRV	FAM	Unknown	26.262278

176	J3231 LG-V Filter3	Microbe_PRV	FAM	Unknown	26.397976
80	J3231 LG-V Filter3	Microbe_PRV	FAM	Unknown	26.406752
128	J3231 LG-V Filter3	Microbe_PRV	FAM	Unknown	26.414228
104	J3231 LG-V Filter3	Microbe_PRV	FAM	Unknown	27.5558
56	J3231 LG-V Filter3	Microbe_PRV	FAM	Unknown	30.416897
105	J3231 LG-V Pellet 1	Microbe_PRV	FAM	Unknown	33.00868
153	J3231 LG-V Pellet 1	Microbe_PRV	FAM	Unknown	33.37962
57	J3231 LG-V Pellet 1	Microbe_PRV	FAM	Unknown	33.881546
177	J3231 LG-V Pellet 1	Microbe_PRV	FAM	Unknown	34.647316
81	J3231 LG-V Pellet 1	Microbe_PRV	FAM	Unknown	34.824726
129	J3231 LG-V Pellet 1	Microbe_PRV	FAM	Unknown	37.98188
58	J3232 LG-P Filter 1	Microbe_PRV	FAM	Unknown	37.30227
130	J3232 LG-P Filter 1	Microbe_PRV	FAM	Unknown	37.977753
178	J3232 LG-P Filter 1	Microbe_PRV	FAM	Unknown	40.44094
82	J3232 LG-P Filter 1	Microbe_PRV	FAM	Unknown	40.978184
106	J3232 LG-P Filter 1	Microbe_PRV	FAM	Unknown	41.10104
154	J3232 LG-P Filter 1	Microbe_PRV	FAM	Unknown	44.233986
179	J3232 LG-P Pellet 1	Microbe_PRV	FAM	Unknown	28.420832
131	J3232 LG-P Pellet 1	Microbe_PRV	FAM	Unknown	28.487473
83	J3232 LG-P Pellet 1	Microbe_PRV	FAM	Unknown	28.618547
155	J3232 LG-P Pellet 1	Microbe_PRV	FAM	Unknown	28.647537
59	J3232 LG-P Pellet 1	Microbe_PRV	FAM	Unknown	28.75599
107	J3232 LG-P Pellet 1	Microbe_PRV	FAM	Unknown	28.781767
156	J3232 LG-P Pellet 2	Microbe_PRV	FAM	Unknown	30.466227
180	J3232 LG-P Pellet 2	Microbe_PRV	FAM	Unknown	30.481619
108	J3232 LG-P Pellet 2	Microbe_PRV	FAM	Unknown	30.93573
84	J3232 LG-P Pellet 2	Microbe_PRV	FAM	Unknown	31.524736
60	J3232 LG-P Pellet 2	Microbe_PRV	FAM	Unknown	31.529716
132	J3232 LG-P Pellet 2	Microbe_PRV	FAM	Unknown	32.436165
109	Extraction Control	Microbe_PRV	FAM	Unknown	Undetermined
133	Extraction Control	Microbe_PRV	FAM	Unknown	Undetermined
157	Extraction Control	Microbe_PRV	FAM	Unknown	Undetermined
181	Extraction Control	Microbe_PRV	FAM	Unknown	Undetermined
111	NTC	Microbe_PRV	FAM	NTC	Undetermined
135	NTC	Microbe_PRV	FAM	NTC	Undetermined
159	NTC	Microbe_PRV	FAM	NTC	39.391422
183	NTC	Microbe_PRV	FAM	NTC	Undetermined
110	cDNA Synth Neg	Microbe_PRV	FAM	Unknown	Undetermined
134	cDNA Synth Neg	Microbe_PRV	FAM	Unknown	Undetermined
158	cDNA Synth Neg	Microbe_PRV	FAM	Unknown	Undetermined
182	cDNA Synth Neg	Microbe_PRV	FAM	Unknown	Undetermined
112	Std PRV 1e6	Microbe_PRV	FAM	Standard	19.633066
136	Std PRV 1e6	Microbe_PRV	FAM	Standard	20.281843
160	Std PRV 1e6	Microbe_PRV	FAM	Standard	20.326166
184	Std PRV 1e6	Microbe_PRV	FAM	Standard	21.443268
113	Std prv 1e5	Microbe_PRV	FAM	Standard	24.710117
137	Std prv 1e5	Microbe_PRV	FAM	Standard	24.670063

161 Std prv 1e5	Microbe_PRV	FAM	Standard	26.158005
185 Std prv 1e5	Microbe_PRV	FAM	Standard	25.714512
115 std PRV 1 e 3	Microbe_PRV	FAM	Standard	32.246254
139 std PRV 1 e 3	Microbe_PRV	FAM	Standard	32.66701
163 std PRV 1 e 3	Microbe_PRV	FAM	Standard	32.38283
187 std PRV 1 e 3	Microbe_PRV	FAM	Standard	33.385696
116 std prv 1e2	Microbe_PRV	FAM	Standard	34.290398
140 std prv 1e2	Microbe_PRV	FAM	Standard	37.54395
164 std prv 1e2	Microbe_PRV	FAM	Standard	33.79007
188 std prv 1e2	Microbe_PRV	FAM	Standard	Undetermined

Well	Detector Name	Reporter	Task	Ct
337 3205 Filter 1	NAC	FAM	Unknown	Undetermined
346 3232 Filter 1 100mL	NAC	FAM	Unknown	Undetermined
347 3232 Pellet 1 80mL	NAC	FAM	Unknown	Undetermined
348 3232 Pellet 2 80mL	NAC	FAM	Unknown	Undetermined
349 Extraction Control	NAC	FAM	Unknown	Undetermined
350 cDNA Synth Neg	NAC	FAM	Unknown	Undetermined
351 NTC	NAC	FAM	Unknown	Undetermined
352 PRV Std 1e6	NAC	FAM	Unknown	Undetermined
353 PRV Std 1e5	NAC	FAM	Unknown	Undetermined
354 PRV Std 1e4	NAC	FAM	Unknown	Undetermined
355 PRV Std 1e3	NAC	FAM	Unknown	Undetermined
338 3205 Filter 2	NAC	FAM	Unknown	Undetermined
356 PRV Std 1e2	NAC	FAM	Unknown	Undetermined
339 3205 Filter 3	NAC	FAM	Unknown	Undetermined
340 3205 Pellet 1 80ml	NAC	FAM	Unknown	Undetermined
341 3205 Pellet 2 80ml	NAC	FAM	Unknown	Undetermined
342 3231 Filter 1 50mL	NAC	FAM	Unknown	Undetermined
343 3231 Filter 2 40mL	NAC	FAM	Unknown	Undetermined
344 3231 Filter 3 50mL	NAC	FAM	Unknown	Undetermined
345 3231 Pellet 1 80mL	NAC	FAM	Unknown	Undetermined
361 3205 Filter 1	NAC	FAM	Unknown	Undetermined
370 3232 Filter 1 100mL	NAC	FAM	Unknown	Undetermined
371 3232 Pellet 1 80mL	NAC	FAM	Unknown	Undetermined
372 3232 Pellet 2 80mL	NAC	FAM	Unknown	Undetermined
373 Extraction Control	NAC	FAM	Unknown	Undetermined
374 cDNA Synth Neg	NAC	FAM	Unknown	Undetermined
375 NTC	NAC	FAM	Unknown	Undetermined
376 PRV Std 1e6	NAC	FAM	Unknown	Undetermined
377 PRV Std 1e5	NAC	FAM	Unknown	Undetermined
378 PRV Std 1e4	NAC	FAM	Unknown	Undetermined
379 PRV Std 1e3	NAC	FAM	Unknown	Undetermined
362 3205 Filter 2	NAC	FAM	Unknown	Undetermined
380 PRV Std 1e2	NAC	FAM	Unknown	Undetermined
363 3205 Filter 3	NAC	FAM	Unknown	Undetermined
364 3205 Pellet 1 80ml	NAC	FAM	Unknown	Undetermined



365	3205 Pellet 2 80ml	NAC	FAM	Unknown	Undetermined
366	3231 Filter 1 50mL	NAC	FAM	Unknown	Undetermined
367	3231 Filter 2 40mL	NAC	FAM	Unknown	Undetermined
368	3231 Filter 3 50mL	NAC	FAM	Unknown	Undetermined
369	3231 Pellet 1 80mL	NAC	FAM	Unknown	Undetermined

om salmon processing plant effluent. Six technical qRT-PCR replicates were run on each of three

NAW (Non Amplified Well)	Quantity	Qty Mean (1 uL)	Qty StdDev	Ct Median	Ct Mean	Ct StdDev
	454.51	365.07	75.66	33.76	33.84	0.36
	411.38	365.07	75.66	33.76	33.84	0.36
	406.35	365.07	75.66	33.76	33.84	0.36
	346.56	365.07	75.66	33.76	33.84	0.36
	329.79	365.07	75.66	33.76	33.84	0.36
	241.84	365.07	75.66	33.76	33.84	0.36
	647.90	418.67	210.92	33.46	34.02	1.68
	541.89	418.67	210.92	33.46	34.02	1.68
	511.49	418.67	210.92	33.46	34.02	1.68
	401.39	418.67	210.92	33.46	34.02	1.68
	369.28	418.67	210.92	33.46	34.02	1.68
	40.05	418.67	210.92	33.46	34.02	1.68
	802.91	703.65	70.46	32.75	32.75	0.16
	751.03	703.65	70.46	32.75	32.75	0.16
	714.00	703.65	70.46	32.75	32.75	0.16
	687.66	703.65	70.46	32.75	32.75	0.16
	667.95	703.65	70.46	32.75	32.75	0.16
	598.35	703.65	70.46	32.75	32.75	0.16
	535.08	390.17	190.56	33.30	33.94	1.06
	515.92	390.17	190.56	33.30	33.94	1.06
	511.18	390.17	190.56	33.30	33.94	1.06
	489.04	390.17	190.56	33.30	33.94	1.06
	147.92	390.17	190.56	33.30	33.94	1.06
	141.88	390.17	190.56	33.30	33.94	1.06
	936.51	600.11	287.45	32.90	33.39	1.58
	709.32	600.11	287.45	32.90	33.39	1.58
	638.96	600.11	287.45	32.90	33.39	1.58
	638.37	600.11	287.45	32.90	33.39	1.58
	611.22	600.11	287.45	32.90	33.39	1.58
	66.30	600.11	287.45	32.90	33.39	1.58
	14611.58	12915.95	1416.49	28.05	28.04	0.18
	14173.68	12915.95	1416.49	28.05	28.04	0.18
	13103.15	12915.95	1416.49	28.05	28.04	0.18
	12510.90	12915.95	1416.49	28.05	28.04	0.18
	12452.21	12915.95	1416.49	28.05	28.04	0.18
	10644.16	12915.95	1416.49	28.05	28.04	0.18
	18719.10	15435.71	3404.88	27.59	27.78	0.39
	17611.94	15435.71	3404.88	27.59	27.78	0.39
	17113.35	15435.71	3404.88	27.59	27.78	0.39
	16814.21	15435.71	3404.88	27.59	27.78	0.39
	12036.80	15435.71	3404.88	27.59	27.78	0.39
	10318.86	15435.71	3404.88	27.59	27.78	0.39
	38543.05	27437.90	14200.02	26.41	27.24	1.63

	35444.17	27437.90	14200.02	26.41	27.24	1.63
	35252.56	27437.90	14200.02	26.41	27.24	1.63
	35090.14	27437.90	14200.02	26.41	27.24	1.63
	17336.32	27437.90	14200.02	26.41	27.24	1.63
	2961.17	27437.90	14200.02	26.41	27.24	1.63
	597.33	310.01	206.36	34.26	34.62	1.79
	475.02	310.01	206.36	34.26	34.62	1.79
	348.39	310.01	206.36	34.26	34.62	1.79
	217.09	310.01	206.36	34.26	34.62	1.79
	194.56	310.01	206.36	34.26	34.62	1.79
	27.68	310.01	206.36	34.26	34.62	1.79
	42.12	14.15	16.82	40.71	40.34	2.49
	27.75	14.15	16.82	40.71	40.34	2.49
	6.06	14.15	16.82	40.71	40.34	2.49
TRUE	4.35	14.15	16.82	40.71	40.34	2.49
	4.03	14.15	16.82	40.71	40.34	2.49
	0.58	14.15	16.82	40.71	40.34	2.49
	10160.40	9021.10	804.89	28.63	28.62	0.14
	9750.66	9021.10	804.89	28.63	28.62	0.14
	8992.34	9021.10	804.89	28.63	28.62	0.14
	8832.76	9021.10	804.89	28.63	28.62	0.14
	8260.46	9021.10	804.89	28.63	28.62	0.14
	8129.98	9021.10	804.89	28.63	28.62	0.14
	2872.30	1950.06	814.92	31.23	31.23	0.76
	2845.12	1950.06	814.92	31.23	31.23	0.76
	2149.24	1950.06	814.92	31.23	31.23	0.76
	1493.77	1950.06	814.92	31.23	31.23	0.76
	1489.18	1950.06	814.92	31.23	31.23	0.76
	850.73	1950.06	814.92	31.23	31.23	0.76
TRUE	0					
TRUE	0					
TRUE	0					
TRUE	0					
TRUE	0					
TRUE	0					
TRUE	11.58865					
TRUE	0					
TRUE	0					
TRUE	0					
TRUE	0					
TRUE	0					
	1000000					
	1000000					
	1000000					
	1000000					
	100000					
	100000					

100000  
100000  
1000  
1000  
1000  
1000  
100  
100  
100  
100

Quantity	Qty Mean	Qty StdDev	Ct Median	Ct Mean	Ct StdDev
----------	----------	------------	-----------	---------	-----------

TRUE  
TRUE  
TRUE  
TRUE  
TRUE

filters and two pellets. Standard serial dilutions of a control sample were run to facilitate calculations

Copies (Mean) in 20uL cDNA	RNA input (uL) for cDNA synth	Copies/uL RNA	uL RNA extracted	Copies /total extraction	Vol Sample used
7,301	7.69	949	75	71,189	62.5
7,301	7.69	949	75	71,189	62.5
7,301	7.69	949	75	71,189	62.5
7,301	7.69	949	75	71,189	62.5
7,301	7.69	949	75	71,189	62.5
7,301	7.69	949	75	71,189	62.5
8,373	11.33	739	75	55,453	50.0
8,373	11.33	739	75	55,453	50.0
8,373	11.33	739	75	55,453	50.0
8,373	11.33	739	75	55,453	50.0
8,373	11.33	739	75	55,453	50.0
8,373	11.33	739	75	55,453	50.0
14,073	5.52	2,547	75	191,040	62.5
14,073	5.52	2,547	75	191,040	62.5
14,073	5.52	2,547	75	191,040	62.5
14,073	5.52	2,547	75	191,040	62.5
14,073	5.52	2,547	75	191,040	62.5
14,073	5.52	2,547	75	191,040	62.5
7,803	2.85	2,739	75	205,426	80.0
7,803	2.85	2,739	75	205,426	80.0
7,803	2.85	2,739	75	205,426	80.0
7,803	2.85	2,739	75	205,426	80.0
7,803	2.85	2,739	75	205,426	80.0
7,803	2.85	2,739	75	205,426	80.0
12,002	2.38	5,053	75	378,972	80.0
12,002	2.38	5,053	75	378,972	80.0
12,002	2.38	5,053	75	378,972	80.0
12,002	2.38	5,053	75	378,972	80.0
12,002	2.38	5,053	75	378,972	80.0
12,002	2.38	5,053	75	378,972	80.0
258,319	16.00	16,145	75	1,210,870	50.0
258,319	16.00	16,145	75	1,210,870	50.0
258,319	16.00	16,145	75	1,210,870	50.0
258,319	16.00	16,145	75	1,210,870	50.0
258,319	16.00	16,145	75	1,210,870	50.0
258,319	16.00	16,145	75	1,210,870	50.0
308,714	16.00	19,295	75	1,447,098	40.0
308,714	16.00	19,295	75	1,447,098	40.0
308,714	16.00	19,295	75	1,447,098	40.0
308,714	16.00	19,295	75	1,447,098	40.0
308,714	16.00	19,295	75	1,447,098	40.0
308,714	16.00	19,295	75	1,447,098	40.0
548,758	16.00	34,297	75	2,572,303	50.0

548,758	16.00	34,297	75	2,572,303	50.0
548,758	16.00	34,297	75	2,572,303	50.0
548,758	16.00	34,297	75	2,572,303	50.0
548,758	16.00	34,297	75	2,572,303	50.0
548,758	16.00	34,297	75	2,572,303	50.0
6,200	16.00	388	75	29,064	80.0
6,200	16.00	388	75	29,064	80.0
6,200	16.00	388	75	29,064	80.0
6,200	16.00	388	75	29,064	80.0
6,200	16.00	388	75	29,064	80.0
6,200	16.00	388	75	29,064	80.0
283	16.00	18	75	1,326	100.0
283	16.00	18	75	1,326	100.0
283	16.00	18	75	1,326	100.0
283	16.00	18	75	1,326	100.0
283	16.00	18	75	1,326	100.0
283	16.00	18	75	1,326	100.0
180,422	8.62	20,929	75	1,569,672	80.0
180,422	8.62	20,929	75	1,569,672	80.0
180,422	8.62	20,929	75	1,569,672	80.0
180,422	8.62	20,929	75	1,569,672	80.0
180,422	8.62	20,929	75	1,569,672	80.0
180,422	8.62	20,929	75	1,569,672	80.0
39,001	16.00	2,438	75	182,818	80.0
39,001	16.00	2,438	75	182,818	80.0
39,001	16.00	2,438	75	182,818	80.0
39,001	16.00	2,438	75	182,818	80.0
39,001	16.00	2,438	75	182,818	80.0
39,001	16.00	2,438	75	182,818	80.0

of viral copy number (abundance). "Quantity" represents the copy number of the virus in the well, which w

Copies per mL replicates	Mean Copies/mL sample
1,139	<b>1,768 J3205 BB Filter</b>
1,139	
1,139	
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2,568	<b>3,652 J3205 BB Pellet</b>
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24,217	<b>37,280 J3231 LG-V Filter</b>
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363	<b>363 J3231 LG-V Pellet</b>
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13	<b>13 J3232 LG-P Filter</b>
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19,621	<b>10,953 J3232 LG-P Pellet</b>
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was used to calculate copy number per mL for the sample. All replicate sample unknowns were positive 1

for PRV.

Appendix 2B. Synthesis of results of PRV molecular tests of samples processed from salmon processing plant effluent. Viral Copies/ml is a measure of the abundance of the virus in the sample. Whereas for water samples, this number accurately reflects the number of copies of the virus per ml of water, for pelleted tissue samples, this number would represent both the copies of the virus and transcriptional products from the virus.

Sample Name	PRV Detected	Viral Copies/ml	Location	Sample Description	Treatment	Sample Notes
J3205 BB Filter	Yes	1769	Browns Bay Packing Co, Campbell River	Combined Vessel "Bloodwater" and Fish Plant Discharge	0.5mm and 0.25 mm Rotoscreen	Sample very red, and a lot of suspended solids (unable to pass through filter at all w/o spin).Pellet after spin ~sm pea size. Est Discharge rate ~500m3/day (500,000 L/day)
J3205 BB Pellet	Yes	3647	Browns Bay Packing Co, Campbell River	Combined Vessel "Bloodwater" and Fish Plant Discharge	0.5mm and 0.25 mm Rotoscreen	
J3231 LG-V Filter	Yes	37280	Lions Gate Fish Co, Tofino	Fish Transport Vessel "Bloodwater" discharge	None	Sample very red. No to Very little pellet visible after spin. Total Est discharge Vessel + plant = ~30 m3 (30,000 L) /day x 3 days /week
J3231 LG-V Pellet	Yes	363	Lions Gate Fish Co, Tofino	Fish Transport Vessel "Bloodwater" discharge	None	
J3232 LG-P Filter	Yes	13	Lions Gate Fish Co, Tofino	Water discharge from fish processing plant	Fine mesh screen	Sample cloudy white in color. SN much clearer and more able to pass through filter. Pellet ~ pea size. Unable to sample "Floor grate" discharge (6mm grate). Total Est discharge Vessel + plant = ~30 m3 (30,000 L) /day x 3 days /week
J3232 LG-P Pellet	Yes	10954	Lions Gate Fish Co, Tofino	Water discharge from fish processing plant	Fine mesh screen	

From: [Karn, David GCPE:EX](#)  
To: [Frampton, Caelie ENV:EX](#)  
Cc: [Xia, Eveline ENV:EX](#); [Cotton, Brian GCPE:EX](#); [Crebo, David GCPE:EX](#)  
Subject: Media request - Seawestnews.com - fish processing review  
Date: Thursday, February 8, 2018 9:24:10 AM

---

Caelie,  
Previously approved lines.

**Reporter**

Fabian Dawson, Reporter  
Seawestnews.com

s.22

s.22

**Deadline** Thursday, February 8, 2018 5:00 PM

**Request**

Can someone tell me if the following story is accurate or call me at s.22 to discuss.

<https://www.desmog.ca/2018/02/05/bloodwater-released-b-c-s-coastal-water-contains-deadly-fish-virus-government-tests-confirm>

Laboratory testing by the B.C. government has confirmed tens of thousands of litres of bloody effluent released into the ocean from two fish processing plants contained a dangerous virus prevalent in farmed Atlantic salmon in B.C.

Two fish processing facilities that service the farmed fish industry, the Brown's Bay Packing plant near Campbell River and the Lions Gate Fisheries plant in Tofino, were inspected by the province in early December and laboratory results confirmed the presence of piscine reovirus (PRV), the B.C. Ministry of Environment told DeSmog Canada.

Also, will the review underway look into the veracity of the video shot that started this whole thing?

**Background**

**Recommendation**

- Ministry compliance staff conducted site visits to both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected, and lab results showed the presence of PRV.
- The Ministry will continue to monitor these facilities to ensure compliance with their permits and provincial regulations.
- Following an announced review of fish processing plants on December 20, the provincial government has initiated inspections of the 28 fish processing plants with provincial permits. The inspections will review whether:

- Effluent discharge is potentially causing harmful pollution
- Current authorizations contain strong environmental protection provisions.
- Current authorization holders in the fish processing sector are in compliance with their permit.
- Best achievable technology (BAT) is being used in the treatment of effluent from fish processing plants.
- Once inspections and data collection is complete, Ministry staff will be reviewing permits and/or regulations to require that best available technology is used in the treatment of effluent from fish processing plants to protect wild salmon stocks.

Quote attributable to George Heyman, Minister of Environment and Climate Change Strategy:

“British Columbians expect their government to ensure any discharge into the water is safe, and does not threaten wild salmon. The previous government ignored the issue and failed to update regulations or even regularly conduct inspections. That isn’t good enough, and that is why, in December I announced an immediate review of fish processing plants, which will include audits of 28 facilities, as well as strengthening requirements to ensure wild salmon are protected.”

**From:** [Xia, Eveline ENV:EX](#)  
**To:** [Karn, David GCPE:EX](#); [Frampton, Caelie ENV:EX](#)  
**Cc:** [Crebo, David GCPE:EX](#); [Cotton, Brian GCPE:EX](#)  
**Subject:** RE: Media request - DeSmog - fish test results  
**Date:** Thursday, February 8, 2018 9:34:33 AM

---

Yes, pls post everything (all spreadsheets, pdfs, Appendices).

I spoke to Mark about it yesterday. My understanding is that all results from the audits will be posted as results come in.

---

**From:** Karn, David GCPE:EX  
**Sent:** Thursday, February 8, 2018 9:32 AM  
**To:** Xia, Eveline ENV:EX; Frampton, Caelie ENV:EX  
**Cc:** Crebo, David GCPE:EX; Cotton, Brian GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Apologies if I missed a response to this? Can program post the test results?

---

**From:** Karn, David GCPE:EX  
**Sent:** Wednesday, February 7, 2018 9:17 AM  
**To:** Xia, Eveline ENV:EX; Frampton, Caelie ENV:EX  
**Cc:** Crebo, David GCPE:EX; Cotton, Brian GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Caelie and Eveline, with the PRV results now sent to reporter we can expect other media will be looking for the same and we'd program to post the materials on the dedicated page here:  
<https://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/reporting/environmental-enforcement-reporting/e-p-compliance-audit-reports/fish-processing-compliance-audit>

dk

---

**From:** Xia, Eveline ENV:EX  
**Sent:** Wednesday, February 7, 2018 8:59 AM  
**To:** Karn, David GCPE:EX; Frampton, Caelie ENV:EX  
**Cc:** Crebo, David GCPE:EX; Cotton, Brian GCPE:EX  
**Subject:** Media request - DeSmog - fish test results

Hi Dave,

Please send these results instead (these ones are PRV specific).

Thanks!

Eveline

---

**From:** Karn, David GCPE:EX  
**Sent:** Wednesday, February 7, 2018 8:52 AM  
**To:** Xia, Eveline ENV:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Eveline, with attachments as discussed.

---

**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, February 6, 2018 1:27 PM  
**To:** Xia, Eveline ENV:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** RE: Media request - DeSmog - fish test results  
Just so you know, program is proposing to post these results online.  
We've asked them to hold for now.

---

**From:** Xia, Eveline ENV:EX  
**Sent:** Tuesday, February 6, 2018 12:42 PM  
**To:** Karn, David GCPE:EX; Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Crebo, David GCPE:EX

**Subject:** RE: Media request - DeSmog - fish test results

Please hold on this. We're working on it 😊

---

**From:** Karn, David GCPE:EX

**Sent:** Tuesday, February 6, 2018 11:20 AM

**To:** Frampton, Caelie ENV:EX

**Cc:** Xia, Eveline ENV:EX; Cotton, Brian GCPE:EX; Crebo, David GCPE:EX

**Subject:** Media request - DeSmog - fish test results

Caelie,

The attached results have already been provided by ENV to Alexandra Morton.

**Reporter**

Carol Linnitt, Editor

DeSmog Canada

[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

**Deadline** Wednesday, February 7, 2018 4:00 PM

**Request**

Yesterday we published a story on government's findings that bloodwater effluent from two BC fish processing plants contained piscine reovirus.

I'm hoping to view the results of that laboratory testing. We've also received requests from our readers to view the test results.

Is this something you could provide to us?

**Background**

**Recommendation**



**From:** [Frampton, Caelie ENV:EX](#)  
**To:** [Karn, David GCPE:EX](#)  
**Cc:** [Xia, Eveline ENV:EX](#); [Cotton, Brian GCPE:EX](#); [Crebo, David GCPE:EX](#)  
**Subject:** RE: Media request - DeSmog - Throne Speech env initiatives  
**Date:** Tuesday, February 13, 2018 1:04:19 PM

---

Hi David,  
Please let her know the Minister is not available today for media.  
Thanks,  
Caelie

---

**From:** Karn, David GCPE:EX  
**Sent:** Tuesday, February 13, 2018 1:00 PM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Xia, Eveline ENV:EX; Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
**Subject:** Media request - DeSmog - Throne Speech env initiatives  
Caelie,

**Reporter**

Sarah Cox, Reporter  
DeSmog Canada  
[sarah@desmog.ca](mailto:sarah@desmog.ca)  
250-812-1762

**Deadline** Tuesday, February 13, 2018 5:00 PM

**Request**

I'm covering the Speech from the Throne this afternoon and hoping to arrange a quick interview with Minister Heyman right afterwards (as long as it doesn't conflict with the Premier's media availability at 3:15) to get a few more details about environmental initiatives.

**Background**

**Recommendation**

From: [Frampton, Caelie ENV:EX](#)  
To: [Holmwood, Jen PREM:EX](#)  
Subject: Fwd: Media request - Global National - fish plants PRV  
Date: Monday, February 19, 2018 12:40:15 PM

---

Sent from my iPhone

Begin forwarded message:

**From:** "Karn, David GCPE:EX" <[David.Karn@gov.bc.ca](mailto:David.Karn@gov.bc.ca)>  
**Date:** February 19, 2018 at 9:14:17 AM PST  
**To:** "Frampton, Caelie ENV:EX" <[Caelie.Frampton@gov.bc.ca](mailto:Caelie.Frampton@gov.bc.ca)>  
**Cc:** "Xia, Eveline ENV:EX" <[Eveline.Xia@gov.bc.ca](mailto:Eveline.Xia@gov.bc.ca)>, "Crebo, David GCPE:EX" <[David.Crebo@gov.bc.ca](mailto:David.Crebo@gov.bc.ca)>, "Cotton, Brian GCPE:EX" <[Brian.Cotton@gov.bc.ca](mailto:Brian.Cotton@gov.bc.ca)>  
**Subject:** Media request - Global National - fish plants PRV

Caelie,

**Reporter**

Paul Johnson, Global TV | BC  
[paul.johnson@globalnews.ca](mailto:paul.johnson@globalnews.ca)  
360-224-8166

**Deadline** ASAP

**Request**

Global National is following up on the fish processing inspections and results that found PRV as reported by other media (DeSmog). Global hasn't done a story on this to date and wants to clip the minister on-camera - to basically reiterate what he's said previously (below).

**Background**

**Recommendation**

Re: Fish effluent.

<!--[if !supportLists]-->•<!--[endif]-->Ministry compliance staff conducted site visits to both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.

<!--[if !supportLists]-->•<!--[endif]-->The facilities were inspected and samples collected, and lab results showed the presence of PRV.

<!--[if !supportLists]-->•<!--[endif]-->The Ministry will continue to monitor these facilities to ensure compliance with their permits and provincial regulations.

<!--[if !supportLists]-->•<!--[endif]-->Following an announced review of fish processing plants on December 20, the provincial government has initiated inspections of the 28 fish processing plants with provincial permits. The

inspections will review whether:

<!--[if !supportLists]-->•<!--[endif]-->Effluent discharge is potentially causing harmful pollution

<!--[if !supportLists]-->•<!--[endif]-->Current authorizations contain strong environmental protection provisions.

<!--[if !supportLists]-->•<!--[endif]-->Current authorization holders in the fish processing sector are in compliance with their permit.

<!--[if !supportLists]-->•<!--[endif]-->Best achievable technology (BAT) is being used in the treatment of effluent from fish processing plants.

<!--[if !supportLists]-->•<!--[endif]-->Once inspections and data collection is complete, Ministry staff will be reviewing permits and/or regulations to require that best available technology is used in the treatment of effluent from fish processing plants to protect wild salmon stocks.

Quote attributable to George Heyman, Minister of Environment and Climate Change Strategy:

“British Columbians expect their government to ensure any discharge into the water is safe, and does not threaten wild salmon. The previous government ignored the issue and failed to update regulations or even regularly conduct inspections. That isn’t good enough, and that is why, in December I announced an immediate review of fish processing plants, which will include audits of 28 facilities, as well as strengthening requirements to ensure wild salmon are protected.”

From: [Frampton, Caelie ENV:EX](#)  
To: [Howlett, Tim GCPE:EX](#)  
Subject: FW: Media request - DeSmog - Site C EAO  
Date: Wednesday, February 21, 2018 1:31:49 PM

---

From: Karn, David GCPE:EX  
Sent: Wednesday, February 21, 2018 12:04 PM  
To: Frampton, Caelie ENV:EX  
Cc: Xia, Eveline ENV:EX; Cotton, Brian GCPE:EX; Crebo, David GCPE:EX  
Subject: Media request - DeSmog - Site C EAO  
Caelie,

Approved by EAO and EMPR.

**Reporter**

Sarah Cox, DeSmog Canada  
[sarah@desmog.ca](mailto:sarah@desmog.ca)  
250-812-1762

**Deadline** Wednesday, 4pm.

**Request**

back taking a look at BC Hydro's Site C EAO application today and hoping you can help with a few questions.

From what I understand, this application represents a fairly substantial change to a major design component of Site C.

**1. How many months will it take for the EAO to consider BC Hydro's request for an amendment to Site C's environmental certificate?**

There is no legislated timeline prescribed for amendments. The EAO will establish a review schedule once an application is received. The amendment review process and duration of review will depend on the nature and magnitude of the proposed change and the issues that are identified during the process.

**2. Given that neither the BCUC nor the Joint Review Panel had a chance to look at the design changes, will there be any independent review of the changes, particularly with an eye to their cost and timeline?**

EAO has not yet received the Application for an amendment from BC Hydro, but has reviewed a draft. Once the formal application is received, the EAO will review the proposed changes. The amendment review process will depend on the nature and magnitude of the proposed changes. Once it has reviewed the Application, the EAO may convene an advisory working group of federal, provincial, local government, and First Nation representatives to assist EAO with review of the amendment application. The advisory working group would include subject matter experts from relevant provincial ministries and federal departments to provide a technical review of the amendment application.

**3. Does the government's review of the professional reliance model include BC Hydro and other**

## **Crown corporations?**

Crown Corporations, including BC Hydro are not directly included in the PR review, however the regulatory processes that these crown corporations operate under are within scope of this review. In addition, the oversight of qualified professionals and their professional associations are in scope for this review. The terms of reference for the PR review can be found here:

<https://engage.gov.bc.ca/professionalreliance/terms-of-reference/>

### **4. Will any independent professionals be evaluating the proposed changes? AND 5. Will provincial conservation scientists be commenting on the proposed changes in terms of fish and other species? If so, will the ministry make their comments available?**

Although, EAO has reviewed a draft of the Application for an amendment, a formal application has not yet been made to the EAO from BC Hydro. Once received, the EAO will review the proposed changes. The amendment review process will depend on the nature and magnitude of the proposed changes. Once it has reviewed the Application, the EAO may convene an advisory working group of federal, provincial, local government, and First Nation representatives to assist EAO with review of the amendment application. The advisory working group would include subject matter experts from relevant provincial ministries and federal departments to provide a technical review of the amendment application. If an advisory working group was convened, its comments, and the responses from BC Hydro would be posted publicly on EAO's EPIC website.

### **6. BC Hydro's application to the EAO says the new design will be better able to handle water flows. Is there new information that suggests water flow will be higher than anticipated, because of climate change or other factors? If not, why the need for a change from the previous design?**

EAO has reviewed a draft of the Application for an amendment; a formal application has not yet been made to the EAO from BC Hydro.

**From:** [Hoffman, Edward A ENV:EX](#)  
**To:** [Morel, David P ENV:EX](#)  
**Subject:** Re: B.C. Using Kitimat Smelter Workers as 'Guinea Pigs' for Air Pollution Monitoring, Union Says | DeSmog Canada  
**Date:** Wednesday, November 8, 2017 9:33:28 AM

---

Thank you David,

We are working on a reply to Liz Stannus' letters to the minister and should have it to you early next week.

Ed

Sent remotely

On Nov 8, 2017, at 7:45 AM, Morel, David P ENV:EX <[David.Morel@gov.bc.ca](mailto:David.Morel@gov.bc.ca)> wrote:

FYI  
David

---

**From:** Zacharias, Mark ENV:EX  
**Sent:** Tuesday, November 7, 2017 6:59 PM  
**To:** Jardine, Kevin EAO:EX  
**Cc:** Morel, David P ENV:EX  
**Subject:** Re: B.C. Using Kitimat Smelter Workers as 'Guinea Pigs' for Air Pollution Monitoring, Union Says | DeSmog Canada  
Thx. Please let MGH and Caelie know this is us.

Regards, Mark  
s.22

On Nov 7, 2017, at 6:56 PM, Jardine, Kevin EAO:EX  
<[Kevin.Jardine@gov.bc.ca](mailto:Kevin.Jardine@gov.bc.ca)> wrote:

I suspect that this for you, Mark. Although the new marine terminal for RTA underwent an EA (they transferred their existing one to LNG Canada), the expansion didn't trigger an EA.

Rgds,  
K.  
s.22

**\*\*Please note:** This email is intended for the addressee(s) only and may contain legally privileged information. Any unauthorized use, disclosure or reproduction is strictly prohibited.\*\*

Begin forwarded message:

**From:** "Heyman, George" <[G.Heyman@leg.bc.ca](mailto:G.Heyman@leg.bc.ca)>  
**Date:** November 7, 2017 at 6:29:51 PM PST  
**To:** "Jardine, Kevin EAO:EX"

<Kevin.Jardine@gov.bc.ca>

Cc: "Frampton, Caelie ENV:EX"

<Caelie.Frampton@gov.bc.ca>

**Subject: B.C. Using Kitimat Smelter Workers as  
'Guinea Pigs' for Air Pollution Monitoring, Union  
Says | DeSmog Canada**

<https://www.desmog.ca/2017/11/06/b-c-using-kitimat-smelter-workers-guinea-pigs-air-pollution-monitoring-union-says>

George Heyman | 賀佐治 | MLA Vancouver-Fairview  
Community office (604) 775-2453

From: [Jackson, Vickie ENV:EX](#)  
To: [Morel, David P ENV:EX](#)  
Cc: [Karn, David GCPE:EX](#); [Jonker, Jennifer B ENV:EX](#)  
Subject: FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
Date: Friday, January 19, 2018 10:02:59 AM  
Importance: High

---

David – Please approve this wording to David Karn. Tessa has approved. Both Tessa and GCPE indicate staff should not be made available.

- Ministry compliance staff conducted site visits to both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.

s.13

- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

**Reporter**

Carol Linnitt, Editor  
DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline** ASAP

**Request**

Reporter has asked again to speak with ministry staff who attended the fish processing facilities and took samples. She indicated that not being able to speak with them seems to be a story in itself.

Wants to ask them how many plants were inspected?

How often?

How many inspectors are there?



**Background**

This is a follow-up to a media request from January 8, 2018.

**REQUEST:**

Contacted AGRI staff directly, looking for status of govt inspections of facility, and names of inspectors (interview requests with them as follow up?).

**RESPONSE:**

Provided Statement

- Ministry compliance staff conducted site visits to the both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.
- Samples were sent to the Pacific Biological Station in Nanaimo for analysis and we are still awaiting final results.
- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

**Recommendation**

**From:** [Karn, David GCPE:EX](#)  
**To:** [Morel, David P ENV:EX](#); [Jackson, Vickie ENV:EX](#)  
**Cc:** [Jonker, Jennifer B ENV:EX](#); [Cotton, Brian GCPE:EX](#); [Nelless, Brady ENV:EX](#)  
**Subject:** RE: FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
**Date:** Friday, January 19, 2018 10:24:31 AM

---

Thanks, David. We'll answer the harms question.

---

**From:** Morel, David P ENV:EX  
**Sent:** Friday, January 19, 2018 10:22 AM  
**To:** Jackson, Vickie ENV:EX  
**Cc:** Karn, David GCPE:EX; Jonker, Jennifer B ENV:EX  
**Subject:** RE: FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
See Qs and changes in text. LETS take out reference to expected. Not sure what it adds.  
David

---

**From:** Jackson, Vickie ENV:EX  
**Sent:** Friday, January 19, 2018 10:03 AM  
**To:** Morel, David P ENV:EX  
**Cc:** Karn, David GCPE:EX; Jonker, Jennifer B ENV:EX  
**Subject:** FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
**Importance:** High  
David – Please approve this wording to David Karn. Tessa has approved. Both Tessa and GCPE indicate staff should not be made available.

- Ministry compliance staff conducted site visits to both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.

s.13

- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

**Reporter**

Carol Linnitt, Editor  
DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

**Deadline** ASAP

**Request**

Reporter has asked again to speak with ministry staff who attended the fish processing facilities and took samples. She indicated that not being able to speak with them seems to be a story in itself.

Wants to ask them how many plants were inspected?

How often?

How many inspectors are there?

**Background**

This is a follow-up to a media request from January 8, 2018.

*REQUEST:*

Contacted AGRI staff directly, looking for status of govt inspections of facility, and names of inspectors (interview requests with them as follow up?).

*RESPONSE:*

Provided Statement

- Ministry compliance staff conducted site visits to the both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.
- Samples were sent to the Pacific Biological Station in Nanaimo for analysis and we are still awaiting final results.
- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

**Recommendation**

From: Jackson, Vickie ENV:EX  
To: Morel, David P ENV:EX  
Cc: Nelles, Brady ENV:EX; Graham, Tessa ENV:EX; Jonker, Jennifer B ENV:EX  
Subject: URGENT APPROVAL: Media request - DeSmog - Fish processing inspections -your question and changes  
Date: Friday, January 19, 2018 1:59:41 PM  
Importance: High

---

David-

See Brady's comment below re: "harmful". New text in **bolded blue**. Suggested removals in **bolded red**. Tessa is fine with this moving forward to you.

Vickie

---

From: Nelles, Brady ENV:EX  
Sent: Friday, January 19, 2018 12:29 PM  
To: Graham, Tessa ENV:EX; Jackson, Vickie ENV:EX  
Cc: Jonker, Jennifer B ENV:EX  
Subject: RE: URGENT REQUESTL: Media request - DeSmog - Fish processing inspections - David M's question and changes  
Didn't answer the question of "are they harmful" it is not easy to answer that in a few bullets.

---

- Ministry compliance staff conducted site visits to both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.

s.13

- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

**Brady Nelles RPBio**

Director, Compliance

**Regional Operations Branch**

Environmental Protection Division

Ministry of Environment and Climate Change Strategy

Office: 250 565-6401

Cell: 778 349-6051

24-hour Spill/Environmental Emergency Reporting: 1-800-663-3456 (Provincial Emergency)

Program)

24-hour RAPP (Report All Poachers and Polluters) tip-line: 1-877-952-7277 (Conservation Officer Service)

[www.gov.bc.ca/env](http://www.gov.bc.ca/env)

---

**From:** Morel, David P ENV:EX  
**Sent:** Friday, January 19, 2018 10:22 AM  
**To:** Jackson, Vickie ENV:EX  
**Cc:** Karn, David GCPE:EX; Jonker, Jennifer B ENV:EX  
**Subject:** RE: FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
See Qs and changes in text. s.13 Not sure what it adds.  
David

---

**From:** Jackson, Vickie ENV:EX  
**Sent:** Friday, January 19, 2018 10:03 AM  
**To:** Morel, David P ENV:EX  
**Cc:** Karn, David GCPE:EX; Jonker, Jennifer B ENV:EX  
**Subject:** FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
**Importance:** High  
David – Please approve this wording to David Karn. Tessa has approved. Both Tessa and GCPE indicate staff should not be made available.

**Reporter**

Carol Linnitt, Editor  
DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline** ASAP

**Request**

Reporter has asked again to speak with ministry staff who attended the fish processing facilities and took samples. She indicated that not being able to speak with them seems to be a story in itself.  
Wants to ask them how many plants were inspected?  
How often?  
How many inspectors are there?

**Background**

This is a follow-up to a media request from January 8, 2018.

**REQUEST:**

Contacted AGRI staff directly, looking for status of govt inspections of facility, and names of inspectors (interview requests with them as follow up?).

**RESPONSE:**

Provided Statement

- Ministry compliance staff conducted site visits to the both the Browns

Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.

- The facilities were inspected and samples collected.
- Samples were sent to the Pacific Biological Station in Nanaimo for analysis and we are still awaiting final results.
- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

### **Recommendation**

**From:** [Karn, David GCPE:EX](#)  
**To:** [Morel, David P ENV:EX](#); [Jackson, Vickie ENV:EX](#)  
**Cc:** [Jonker, Jennifer B ENV:EX](#); [Cotton, Brian GCPE:EX](#)  
**Subject:** RE: FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
**Date:** Friday, January 19, 2018 2:08:22 PM

---

David, Tessa approved the following.

- Ministry compliance staff conducted site visits to both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.

s.13

- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

---

**From:** Morel, David P ENV:EX  
**Sent:** Friday, January 19, 2018 10:22 AM  
**To:** Jackson, Vickie ENV:EX  
**Cc:** Karn, David GCPE:EX; Jonker, Jennifer B ENV:EX  
**Subject:** RE: FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
See Qs and changes in text. s.13 Not sure what it adds.  
David

---

**From:** Jackson, Vickie ENV:EX  
**Sent:** Friday, January 19, 2018 10:03 AM  
**To:** Morel, David P ENV:EX  
**Cc:** Karn, David GCPE:EX; Jonker, Jennifer B ENV:EX  
**Subject:** FOR APPROVAL: Media request - DeSmog - Fish processing inspections  
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250-858-1329

**Deadline** ASAP

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### **Recommendation**

From: [Zacharias, Mark ENV:EX](#)  
To: [Xia, Eveline ENV:EX](#)  
Cc: [Morel, David P ENV:EX](#); [Frampton, Caelie ENV:EX](#)  
Subject: Re: Media request - DeSmog - Fish processing inspections  
Date: Friday, January 19, 2018 4:10:26 PM

---

Let's hold off on providing these until after Monday's MGH briefing. I have some quick edits.

Regards, Mark  
s.22

On Jan 19, 2018, at 3:40 PM, Xia, Eveline ENV:EX <[Eveline.Xia@gov.bc.ca](mailto:Eveline.Xia@gov.bc.ca)> wrote:

Hi Mark,  
Could we please chat when you're able?

---

**From:** Karn, David GCPE:EX  
**Sent:** Friday, January 19, 2018 2:58 PM  
**To:** Frampton, Caelie ENV:EX  
**Cc:** Cotton, Brian GCPE:EX; Xia, Eveline ENV:EX; Crebo, David GCPE:EX  
**Subject:** Media request - DeSmog - Fish processing inspections

Caelie,  
Approved by ADM Morel.

**Reporter**

Carol Linnitt, Editor  
DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline ASAP**

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### **Recommendation**

- Ministry compliance staff conducted site visits to both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.
- Samples sent for lab analysis included many parameters such as settleable solids, total suspended solids, biological oxygen demand, coliform bacteria and others.
- While there is no set limits for these parameters due to the older nature of the permits, these results will be used to inform the industry audit currently underway, and help set baselines for future requirements and permit conditions.
- Lab results also showed the presence of PRV.
- Given the high prevalence of PRV in farmed salmon populations it is expected that effluent containing blood water from farmed fish processing is likely to contain PRV.
- The Ministry will continue to monitor these facilities to ensure compliance with the regulations.
- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

From: [Karn, David GCPE:EX](#)  
To: [Murai, Launa Y ENV:EX](#)  
Cc: [Bell, Danielle L GCPE:EX](#)  
Subject: Media request - DeSmog - Mt Polley private prosecution  
Date: Monday, January 15, 2018 4:03:01 PM

---

Launa,  
Please run past Jim.

**Reporter**

Carol Linnitt, DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline** Wednesday, January 17, 2018 12:00 PM

**Request**

The courts are expected to announce whether or not a private prosecution case brought by Bev Sellars against the Mount Polley Mining Corporation will move forward in the coming days or weeks.

I wrote about Sellars' private prosecution the day it was filed:

<https://www.desmog.ca/2017/08/04/breaking-last-minute-charges-laid-against-mount-polley-private-prosecution>

Is the minister available to comment on whether or not the province has any intentions of intervening in the case?

**Recommendation**

The BC Conservation Officer Service, Fisheries and Oceans Canada, and Environment and Climate Change Canada are jointly conducting the investigation into the tailings pond breach at the Mount Polley mine site. To date, evidence has been collected under the provincial *Environmental Management Act* and the federal *Fisheries Act*.

While the statute of limitations for the *Environmental Management Act* may have passed, the investigation continues. BC's Conservation Officer Service will continue to work actively alongside federal agencies on this complex and thorough investigation. The statute of limitations under federal law is five years. Penalties can be far more significant under federal legislation, specifically the *Fisheries Act*, than under provincial legislation and a choice of charges would have to be made in any event. The Public Prosecution Service of Canada will consider all of the information gathered during the course of this investigation, should charges be recommended under the *Fisheries Act* or other legislation.

We recognize that the timeline for this investigation is significant. In general, the length of an investigation is dependent upon the complexity of the occurrence and the amount of information that needs to be gathered and considered. Be assured that both levels of government are committed to a thorough investigation within the timeframe of the federal statute of limitations.

From: [Murai, Launa Y ENV:EX](#)  
To: [Standen, Jim ENV:EX](#)  
Cc: [Airey, David ENV:EX](#); [Forsdick, Doug O ENV:EX](#); [Karn, David GCPE:EX](#); [Bell, Danielle L GCPE:EX](#)  
Subject: ADM Approval Required - Media request - DeSmog - Mt Polley private prosecution  
Date: Tuesday, January 16, 2018 7:27:00 AM  
Importance: High

---

Jim, approval required for response below, please. Thanks.

**Reporter**

Carol Linnitt, DeSmog Canada

[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

**Deadline** Wednesday, January 17, 2018 12:00 PM

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**From:** [Standen, Jim ENV:EX](#)  
**To:** [Murai, Launa Y ENV:EX](#)  
**Cc:** [Airey, David ENV:EX](#); [Forsdick, Doug O ENV:EX](#); [Karn, David GCPE:EX](#); [Bell, Danielle L GCPE:EX](#)  
**Subject:** RE: ADM Approval Required - Media request - DeSmog - Mt Polley private prosecution  
**Date:** Tuesday, January 16, 2018 8:47:21 AM  
**Attachments:** [image001.png](#)

---

approved

**Jim Standen**

Assistant Deputy Minister

BC Parks | Ministry of Environment

Telephone: 250-387-1288

[jim.standen@gov.bc.ca](mailto:jim.standen@gov.bc.ca)

[www.bcparks.ca](http://www.bcparks.ca)



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---

**From:** Murai, Launa Y ENV:EX  
**Sent:** Tuesday, January 16, 2018 7:27 AM  
**To:** Standen, Jim ENV:EX  
**Cc:** Airey, David ENV:EX; Forsdick, Doug O ENV:EX; Karn, David GCPE:EX; Bell, Danielle L GCPE:EX  
**Subject:** ADM Approval Required - Media request - DeSmog - Mt Polley private prosecution  
**Importance:** High  
Jim, approval required for response below, please. Thanks.

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[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

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Page 5 of 17



From: [Karn, David GCPE:EX](#)  
To: [Airey, David ENV:EX](#)  
Cc: [Bell, Danielle L GCPE:EX](#); [Murai, Launa Y ENV:EX](#); [Andrews, Sarah ENV:EX](#)  
Subject: media request - DeSmog - Mt Polley investigation  
Date: Thursday, February 1, 2018 11:17:53 AM

---

David,  
Follow up questions below.

**Reporter**

Carol Linnitt, Editor  
DeSmog Canada  
[carol@desmog.ca](mailto:carol@desmog.ca)  
250-858-1329

**Deadline** ASAP

**Request**

working on a story about the private prosecution brought against Mount Polley that was recently dismissed by the Crown Prosecution Service.

In an interview with the lawyer filing the private prosecution on behalf of Bev Sellars, I was told it was possible for the Ministry of Environment to direct the B.C. Conservation Service Office to share its investigation files on the Mount Polley tailings pond collapse with the Crown Prosecution Service.

Are you able to confirm if this is in fact the case? And did the minister consider doing so?

I know the minister has his hands full today, but is there a chance he could provide comment on the crown prosecutor's decision to quash the private prosecution?

**Background**

This is a follow-up to a media request from January 15, 2018.

*REQUEST:*

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*RESPONSE:*

#### **Provided Statement**

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#### **Recommendation**

From: [Karn, David GCPE:EX](#)  
To: [Airey, David ENV:EX](#)  
Cc: [Bell, Danielle L GCPE:EX](#); [Murai, Launa Y ENV:EX](#); [Andrews, Sarah ENV:EX](#)  
Subject: RE: media request - DeSmog - Mt Polley investigation  
Date: Thursday, February 1, 2018 11:25:17 AM

---

David, would a line like this work....

. The Public Prosecution Service of Canada will consider all of the information gathered during the course of this investigation, should charges be recommended under the *Fisheries Act* or other legislation.

---

**From:** Karn, David GCPE:EX  
**Sent:** Thursday, February 1, 2018 11:18 AM  
**To:** Airey, David ENV:EX  
**Cc:** Bell, Danielle L GCPE:EX; Murai, Launa Y ENV:EX; Andrews, Sarah ENV:EX  
**Subject:** media request - DeSmog - Mt Polley investigation

David,

Follow up questions below.

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**Deadline** ASAP

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From: [Karn, David GCPE:EX](#)  
To: [Standen, Jim ENV:EX](#)  
Cc: [Bell, Danielle L GCPE:EX](#); [Andrews, Sarah ENV:EX](#); [Murai, Launa Y ENV:EX](#)  
Subject: media request - DeSmog - Mt Polley follow  
Date: Thursday, February 1, 2018 1:51:35 PM

---

Jim,

Approved by Doug Forsdick.

**Reporter**

Carol Linnitt, Editor

DeSmog Canada

[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

**Deadline** ASAP

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**To:** [Karn, David GCPE:EX](#)  
**Cc:** [Bell, Danielle L GCPE:EX](#); [Andrews, Sarah ENV:EX](#); [Murai, Launa Y ENV:EX](#)  
**Subject:** RE: media request - DeSmog - Mt Polley follow  
**Date:** Thursday, February 1, 2018 3:08:37 PM  
**Attachments:** [image001.png](#)

---

approved

**Jim Standen**

Assistant Deputy Minister

BC Parks | Ministry of Environment

Telephone: 250-387-1288

[jim.standen@gov.bc.ca](mailto:jim.standen@gov.bc.ca)

[www.bcparks.ca](http://www.bcparks.ca)



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**From:** Karn, David GCPE:EX  
**Sent:** Thursday, February 1, 2018 1:52 PM  
**To:** Standen, Jim ENV:EX  
**Cc:** Bell, Danielle L GCPE:EX; Andrews, Sarah ENV:EX; Murai, Launa Y ENV:EX  
**Subject:** media request - DeSmog - Mt Polley follow  
Jim,

Approved by Doug Forsdick.

**Reporter**

Carol Linnitt, Editor

DeSmog Canada

[carol@desmog.ca](mailto:carol@desmog.ca)

250-858-1329

**Deadline** ASAP

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Page 14 of 17

**From:** [Standen, Jim ENV:EX](#)  
**To:** [Karn, David GCPE:EX](#)  
**Cc:** [Bell, Danielle L GCPE:EX](#); [Andrews, Sarah ENV:EX](#); [Murai, Launa Y ENV:EX](#)  
**Subject:** RE: media request - DeSmog - Mt Polley follow  
**Date:** Thursday, February 1, 2018 3:08:38 PM  
**Attachments:** [image001.png](#)

---

approved

**Jim Standen**

Assistant Deputy Minister

BC Parks | Ministry of Environment

Telephone: 250-387-1288

[jim.standen@gov.bc.ca](mailto:jim.standen@gov.bc.ca)

[www.bcparks.ca](http://www.bcparks.ca)



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**Sent:** Thursday, February 1, 2018 1:52 PM  
**To:** Standen, Jim ENV:EX  
**Cc:** Bell, Danielle L GCPE:EX; Andrews, Sarah ENV:EX; Murai, Launa Y ENV:EX  
**Subject:** media request - DeSmog - Mt Polley follow  
Jim,

Approved by Doug Forsdick.

**Reporter**

Carol Linnitt, Editor

DeSmog Canada

[carol@desmog.ca](mailto:carol@desmog.ca)

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**Deadline** ASAP

**Request**

working on a story about the private prosecution brought against Mount Polley that was recently dismissed by the Crown Prosecution Service.

In an interview with the lawyer filing the private prosecution on behalf of Bev Sellars, I was told it was possible for the Ministry of Environment to direct the B.C. Conservation Service Office to share its investigation files on the Mount Polley tailings pond collapse with the Crown Prosecution Service.

Are you able to confirm if this is in fact the case? And did the minister consider doing so?

**Background**

This is a follow-up to a media request from January 15, 2018.

**REQUEST:**

The courts are expected to announce whether or not a private prosecution case brought by Bev

Sellars against the Mount Polley Mining Corporation will move forward in the coming days or weeks.

I wrote about Sellars' private prosecution the day it was filed:

<https://www.desmog.ca/2017/08/04/breaking-last-minute-charges-laid-against-mount-polley-private-prosecution>

Is the minister available to comment on whether or not the province has any intentions of intervening in the case?

**RESPONSE:**

**Provided Statement**

The BC Conservation Officer Service, Fisheries and Oceans Canada, and Environment and Climate Change Canada are jointly conducting the investigation into the tailings pond breach at the Mount Polley mine site. To date, evidence has been collected under the provincial Environmental Management Act and the federal Fisheries Act.

While the statute of limitations for the Environmental Management Act may have passed, the investigation continues. BC's Conservation Officer Service will continue to work actively alongside federal agencies on this complex and thorough investigation. The statute of limitations under federal law is five years. Penalties can be far more significant under federal legislation, specifically the Fisheries Act, than under provincial legislation and a choice of charges would have to be made in any event. The Public Prosecution Service of Canada will consider all of the information gathered during the course of this investigation, should charges be recommended under the Fisheries Act or other legislation.

We recognize that the timeline for this investigation is significant. In general, the length of an investigation is dependent upon the complexity of the occurrence and the amount of information that needs to be gathered and considered. Be assured that both levels of government are committed to a thorough investigation within the timeframe of the federal statute of limitations.

**Recommendation**

The Public Prosecution Service of Canada will consider all of the information gathered during the course of this investigation, should charges be recommended under the *Fisheries Act* or other legislation.



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**From:** Karn, David GCPE:EX  
**Sent:** Thursday, January 11, 2018 5:34 PM  
**Subject:** Media Report for Thursday, January 11, 2018

**Media Report for Thursday, January 11, 2018**

**Awaiting MO Approval**

n/a

**Today's calls**

**Vancouver Sun (Gordon Hoekstra) Globe and Mail (Justine Hunter) DeSmog (Judy Lavoie)** – the reporters are seeking comment regarding Sierra Club release on GHG's: <https://sierraclub.bc.ca/bcs-greenhouse-gas-emissions-risen-four-of-last-five-years>

Van Sun: Is this a concern to government?

And when will we see an updated climate action plan?

I know the province announced 61.7 tonnes — as a result of 1.7 tonnes in forest offsets.

What are these offsets?

The offsets included in calculating BC's net GHG emissions are validated emission reductions from forest management projects.

Where and from whom?

These offsets include those generated by forest conservation and forest management projects located in areas such as the Great Bear Rainforest, Cheakamus Community Forest and Quadra Island forestland.

And if they are on Crown land, how can the province claim them?

The reductions achieved by these forest sequestration offsets projects have been achieved by reducing emissions and/or avoiding emissions that would otherwise have occurred under baseline forest management practices. To be recognized as an offset the emission reductions must be real, measurable, permanent and incremental to the 'business as usual' case. When calculating BC's net GHG emissions, the province only uses offsets from forest projects, not from offset projects that reduce emissions in other sectors. Forestry offsets are included because BC's forest management emission sinks and sources are outside the scope of the provincial inventory, meaning the GHG emission reductions from these projects are additional to the sources and sinks covered in the provincial inventory. Reductions from, for example, an industry switching to a lower carbon fuel would already be counted in a facilities reported emissions, and therefore already included in the provincial inventory totals.

**GCPE responded**

- We recognize the challenge in front of us to reduce GHG emissions and are taking meaningful steps to tackle this issue while at the same time investing in a sustainable economy.
- By law, we are required to reduce GHG emissions by 80% from 2007 levels by 2050.
- We know serious work is needed to accomplish these emissions reductions which is why we are already taking real leadership on the climate file.
- For example, our government will introduce a legislated target of 40% by 2030 to give us a benchmark on the way to the 2050 target.
- Additionally, we will establish sectoral targets and plans for the built environment, industry and transportation sectors.

- We are also implementing a carbon tax increase of \$5 per tonne per year until 2021, beginning April 1, 2018.
- And we are working with industry and the Federal Government to address the competitiveness of emissions-intensive trade-exposed sectors, to help them reduce their emissions and continue to thrive.
- Underscoring these actions, is the appointment of the new Climate Solutions and Clean Growth Advisory Council which is advising government on how to achieve our climate objectives efficiently and effectively while growing our clean economy and helping British Columbians come out ahead.
- With their advice and feedback we will prioritize and gradually introduce new climate actions to ensure we get on course to achieve our climate commitments.
- The strategy will evolve over time and various policies and measures will be announced and implemented over the coming months and years. We want to make sure it is a strategy that works for British Columbians.

**Vancouver Sun (Gordon Hoekstra)** - looking for an update on Mt Polley investigation.

GCPE responded

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I understand that the timeline for this investigation is significant. In general, the length of an investigation is dependent upon the complexity of the occurrence and the amount of information that needs to be gathered and considered. I assure you that both levels of government are committed to a thorough investigation within the timeframe of the federal statute of limitations.

**Ha-Shilth-Sa Newspaper (Eric Plummer)** -doing an update on the province's monitoring of effluent from fish processing plants on the West Coast. Do you know when any information will be available from the officers who were sent to processing plants in Brown's Bay and Tofino to ensure that these operations follow discharge regulations? Are there any results from water samples taken from the sites?

GCPE responded

- Ministry compliance staff conducted site visits to the both the Browns Bay Packing (Campbell River) and Lions Gate Fisheries (Tofino) facilities the week of December 4, 2017.
- The facilities were inspected and samples collected.
- Samples were sent to the Pacific Biological Station in Nanaimo for analysis and we are still awaiting final results.
- On December 20, the Province announced an immediate review of fish processing plants to ensure provincial regulations and permits governing waste discharge from fish processing are informed by the best available science and best practices in other jurisdictions, and fish processing discharge is free of contaminants and pathogens.

**Easy Rock FM (Jane Garay)** - seeking CO comment regarding aggressive coyotes in Trail.

CO Ben Beetlestone responded

Social Media blowing up about the coyote in trail, BC. Garay wanted to get update from COS. CO provided updated information the coyote is still at large in Trail, unknown how many, COS believes only one, habituated and unafraid, coyote will walk up to people in hopes of being fed, people have been feeding coyote, coyote accessing garbage, COS encourages people to be aware of their surroundings, carry a walking stick and bear spray, keep pets and children close and secure attractants.

**Previous calls completed**

n/a

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Withheld pursuant to/removed as

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