First Affidavit of Jennifer Nathan
No. VLC-S-S-183541
Vancouver Registry

IN THE SUPREME COURT OF BRITISH COLUMBIA

BETWEEN:

TRANS MOUNTAIN PIPELINE LLC

Plaintiff

AND:

DAVID MIVASAIR, BINA SALIMATH, MIA NISSEN, COREY SKINNER (AKA CORY SKINNER), UNI URCHIN (AKA JEAN ESCUETA), ARTHUR BROCINER (AKA ARTUR BROCINER), KARL PERRIN, YVON RAQUL, EARLE PEACH, SANDRA ANG, REUBEN GARBANZO (AKA ROBERT ARBESS), GORDON CORNWALL, THOMAS CHAN, LAUREL DYKSTRA, RUDI LEIBIK (AKA RUTH LEIBIK), JOHN DOE, JANE DOE, AND PERSONS UNKNOWN

Defendants

THE ATTORNEY GENERAL OF BRITISH COLUMBIA

Intervenor /Respondent

FIRST AFFIDAVIT OF JENNIFER NATHAN

I, Jennifer Nathan of New Westminster, British Columbia, make oath and affirmed that:

1. I have personal knowledge of the matters attested to herein except where such knowledge is based on information and belief, in which case I believe such matters to be true.

2. I have a Bachelor of Science degree in biology and a Master of Education Degree focusing on science education. I have worked as a bio-technician, interpretive naturalist, and coordinator of a *Scientists in the Schools* program in the Yukon Territory. I have provided professional development

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to teachers on science education and I have taught high school science for more than a decade.

3. As a teacher in B.C.'s public education system, which is recognized internationally as one of the top performing jurisdictions in the world in math, science and reading, my ministry-mandated role was to prepare students for the future and lay the foundation for educated citizens who can think critically.

4. As a science teacher in high school science, chemistry and the Pre-International Baccalaureate program (focusing on our top academic students), my commitment was to a discipline whose principles rely on the scientific method to provide peer-reviewed, unbiased research that typically informs, and is critical to, evidence-based policy decisions.

5. In 2008, the BC science curriculum was updated to include human activity and climate change (BC Science 10, McGraw-Hill Ryerson, pages 482-503). This included general circulation models (computer models for climate change predictions), enhanced greenhouse effect, impacts on permafrost, sea level rise, spread of disease, water conflicts, deforestation (from increased forest fire risk), decreasing crop yields, sea ice melt, the United Nations precautionary principle, global warming potential of CO2, methane, nitrous oxide and cholorfluorocarbons, albedo, risk terminology used by the IPCC, global action plans, greenhouse gas emissions scenarios (from projected business-as-usual to projected emissions with regulations in place), Canada's political response, and an activity charting Canada's carbon emissions by province and per capita.

6. A graph on page 467 showed the parts per million of CO2 from 1955 (315 ppm) to 2006 (380 ppm).

7. In order to remain informed and prepare my students for the future, I kept up with the scientific literature on climate science and followed Canada's

international commitments. My professional development involved attending climate and environmental education conferences and speakers.

8. During this time, the scientific findings in the topics I was teaching rapidly evolved. For example, the concentration of methane, a potent greenhouse gas that is roughly 30 times more harmful to the climate than carbon dioxide in the atmosphere, has risen sharply since 2006 from permafrost melt. Glacial melt and temperature increase have expanded oceans and exacerbated sea level rise.

9. By 2016, the parts per million of CO2 had passed 400 and will not fall below it in our lifetimes, a level that had not been reached for millions of years. We were on a path to pass 450 ppm in roughly 20 years without reductions in emissions, which would commit us to 2C of warming.

10. I felt obligated to point the science out to my students and to let them know it was not alarmist to describe the threat accurately. It was apparent that the there was a level of urgency in reaching this understanding.

11. At the same time I was teaching peer-reviewed science, it was more and more evident that influences were degrading the discourse that I was trying to engage in. My time was increasingly devoted to addressing the social and political context that was beginning to not only contest but subvert scientific findings.

12. The small band of climate denier scientists refused to move from their original positions over the years that I dealt with them in the classroom, despite mounting scientific evidence. They took their case to the media, newspaper, documentaries, radio, billboards, but not to peer reviewed scientific literature. I felt that they had managed very successfully to counter the thousands of researchers documenting bleaching coral reefs, loss of arctic sea ice, biome boundary movement, ocean acidification and myriad other impacts of climate disruption.

13. The campaign of disinformation has worked to discourage critical awareness and slow effective citizen action. It was my view that if industry can alter the national debate in favour of their own interests and not for the greater good, they undermine democracy itself.

14. Students had to learn not only the science, but had to become media analysts, policy analysts, and critical thinkers of how climate science had been used and manipulated for the general public.

15. As a teacher, it was my belief that students needed to connect the growing warnings from the scientific community to how actual action could be taken to transition from a fossil fuel economy. Instead of dealing with meaningful policy changes, political leaders relied solely on market solutions that gamble on undiscovered technologies that, in my view, stall action in reckless disregard for the scientific evidence.

16. Students were faced with a growing campaign of disinformation affecting public perception and student learning. "Astroturf" organizations, primarily conceived, created and/or funded by corporations, industry trade associations, political interests or public relations firms presented as grassroots-based citizen groups or coalitions. Students consistently encountered advertising campaigns from these groups designed to advance the agenda of the fossil fuel industry and subvert peer reviewed science. They included *Resource Works*, *Energy Citizens*, *Coal Alliance*, *Canadian Natural Resources Alliance*, *Pipeline Action*, and *Canada Action*, along with *Friends of Science*, *International Climate Science Coalition*, the *Fraser Institute* and others.

17. *Friends of Science* disseminated information that clearly contradicted my understanding of the accepted climate science, including the assertion that global temperature rise is a myth, that human-produced CO2 adding to the greenhouse effect and warming the earth is a myth, that receding glaciers and calving of the ice shelves do not show global warming and, indeed, that

the earth's poles are not warming, the polar ice caps are not breaking up and the sea level is not rising.

18. While the social and political context provided an opportunity to develop critical thinking skills in my students, public discourse was being fundamentally undermined. According to a document released by Environment Canada, Canadian media coverage of climate change science declined over 80% once new rules were introduced by the federal government in 2007 for interviews between journalists and Environment Canada scientists.

19. During the 11 years I served as a public education science teacher, the link between scientific research and political democracy in fact became increasingly contentious following a number of federal budget cuts to research facilities.

20. From 2006 to 2015, funds were cut to scientific research groups, including those collecting climate change data. Some of the cuts were directly linked to the information that had been cited in our grade 10 science curriculum. The lynx/hare predator/prey relationship cycles (BC Science 10, McGraw-Hill Ryerson, page 47) were findings generated at the Kluane Lake Research Station that saw funding cuts in 2012. Similarly, the PCB levels found in southern resident orcas (BC Science 10, McGraw-Hill Ryerson, page 95), was the work of Peter Ross at the Institute of Ocean Sciences, Canada's only marine mammal toxicologist. He and the entire group of 55 scientists, technicians and chemists were dismissed with the closure of the Department of Fisheries contaminants program in 2012.

21. I linked for students the importance of government scientific research by sharing an interview Dr. Ross gave at the time of the closure. He described the bridge between scientific research and democratic institutions that represent a broad spectrum of interests by explaining that the scientific method helps to remove bias and ensure peer-reviewed evidence is

objective, defensible and reproducible. "Not doing the research diminishes the role that science plays in contributing to the public good," he explained.

22. He noted that in identifying the mistakes of the past – whether it was dioxins, PCBs, DDT or CFC's – scientific research informed change that led to improvements in the health of marine mammals, sea birds or fish-eating birds. "Pulling back from research that identifies problems means that we are not engaging in solutions, because they go hand in hand." Given the pressing evidence for climate change, the link between problems and solutions became a critical focus of discussion in my science education classes.

23. Other cuts included the Environmental Lakes Area research facility defunded in 2012 as well as the Polar Environmental and Atmospheric Research Laboratory in Nunavut. Many of these environmental outposts were involved in climate science research. Canadian scientists at the time argued the cuts would impede the flow of timely environmental data crucial for evidence-sbased policymaking. By Jan. 2014, the federal government had dismissed 2000 scientists in the previous five years.

24. I shared with students what a counselor told me about her private practice in Victoria focusing on a clientele of scientists suffering from what she called 'eco-despair.' She said that having to abandon the wildlife or ecosystem work they had dedicated years of their life to, and the implications of their abandoned work, had taken a harsh psychological toll.

25. In July 2012, Canadian scientists concerned about the diminishing role of evidence in government decision-making, banded together in a 'Death of Evidence' rally in Ottawa and several subsequently formed the group Evidence for Democracy. I encouraged students to attend a science rally in Vancouver and make a presentation to the class. Six students attended and presented an edited video of speech highlights along with a prepared talk on the role of science in our democracy.

26. As the scientific consensus on the destabilizing effect of emissions growth grew, I felt Canada had become an obstacle to the global consensus to act. I felt compelled to share with students the numerous times Canada was awarded the "Colossal Fossil of the Year" for Canada's blocking and stalling progress at the UN climate talks by more than 500 NGO international environment groups. Although the Kyoto Accord pledged to cut emissions by 6% between 1990 and 2012, emissions had actually increased 35%.

27. In 2010, it was with great excitement that I was able to tell students that a climate bill had been passed by the majority of elected members of parliament (Bill C-311 "The Climate Change Accountability Act). Canada would commit to lowering emissions 25% by 2020 and 80% by 2050. Unfortunately, I then had to tell them that the senate vetoed the bill without taking it to committee and without discussion, a subversion of the democratic process.

28. On June 10, 2015, I showed students a statement signed by 110 prominent scientists and academic researchers from across North America who had pulled together scientific research on oil sands development from their various fields and reached a consensus: "We offer a unified voice, calling for a moratorium on new oil sands projects." Their first reason for the moratorium: *Continued expansion of oil sands and similar unconventional fuels in Canada and beyond is incompatible with limiting climate warming to a level that society can handle without widespread harm.*

29. When the Trudeau government was elected and signed on to the Paris Accord in December 2015, I felt hope that Canada had returned to evidence-based policy decisions and had committed to the emissions reductions the IPCC compelled countries to act on. I wanted to be able to tell students their future was not being compromised by the business as usual direction of tar sands expansion.

30. I knew the National Energy Board had not included the impact of emissions on the Paris commitments so I was hopeful that the Ministerial Panel would fill that gap. I showed students the report that came out November 1, 2016, and the first question it posed: '*Can construction of a new Trans Mountain Pipeline be reconciled with Canada's climate change commitments?*' It was with great relief that the report had stated that the question had never been answered. I was aware that the Review of Related Upstream Greenhouse Gas Emissions Estimates had not answered that question. I was confident that the Trans Mountain Pipeline Expansion project would not get the go ahead.

31. I felt that the two objectives, building a pipeline to allow for tar sands expansion, and meeting the Paris Accord, were not compatible. On November 29, 2016 Trudeau by Order in Council, approved the Trans Mountain Pipeline Expansion project and stated, without evidence, that the Paris Accord commitments would be met. I believed that this was a betrayal of the promises made in Paris. Canada would need to lower emissions in every sector while the largest single source of emissions was given permission to expand, locking Canada into polluting long after we need global emissions to reach zero. This single decision would play a critical role in preventing the world from achieving the Paris targets, which we now know are too modest to even meet the goal of not surpassing 2 degrees of warming.

32. Over the years that I taught, the science called for increasingly urgent actions, yet the political response was a commitment to tar sands development over the future health of my students and the planet. I endured seeing the work of the scientists I had so admired subverted on billboard signs, on the radio, in major newspapers, on news programs and in fossil fuel driven curriculum offered to schools. I had seen committed scientific research efforts dismantled in areas essential to our understandings of the escalating climate crisis we find ourselves in. I tried to

communicate the growing concerns of scientists by showing interviews, petitions and other calls for action from scientists and esteemed science organizations. I showed students scientists becoming activists, being arrested, running for office, forming advocacy groups. Every time I held out hope that a climate bill would be enacted, or a call for a moratorium would be listened to, or the commitment to the Paris Accord would be respected, little action was taken.

33. My spirit was broken when the Trans Mountain Pipeline was approved. The emissions growth the tar sands expansion commits us to is catastrophic. I can no longer inform students that we have chosen to place the burden on them. I had watched CO2 continually grow unabated for too many years. The efforts to communicate what the scientists are calling for will not move students and the public to action from an isolated voice in a science classroom. The efforts required are bigger than what I could do in the overworked, time-constrained curriculum-heavy time I found myself in. The curriculum has recently moved away from prescriptive knowledge but climate change is now no longer a mandatory topic in any high school in British Columbia.

34. I retired early to answer the call to action the scientists were asking of us. The approval of the Trans Mountain Pipeline Expansion Project was the single greatest roadblock to any contribution that Canada could make to move the world away from climatic tipping points. I recognized the move to reduce emissions is fraught with political and economic pressures but to succumb to those pressures abdicates our government's duty of care we try to live up to every day as teachers. It was that duty that moved me to civil disobedience on March 24th, 2014.

35. The science has clearly shown that the use of fossil fuels has moved temperatures up enough to create an unprecedented rate of extinction of species, create extreme weather events at a faster rate, led to near collapse

of the coral reefs, and set glaciers, arctic sea ice and permafrost into unprecedented rates of decline. I listened to what the science was telling us, that we must reduce emissions immediately if we are to have any hope.

36. It has become increasingly apparent that governments have not moved to respond to this crisis in time. The hope I had that we would change our direction left me when the pipeline was approved. We will not be able to keep warming to 2 degrees. This is a monstrous failure of our political system to prioritize this emergency. The cynicism of those that up hold the status quo is just unbearable to me.

37. I have never considered civil disobedience as an option before but no other kind of activity has made any difference. The willingness to forgo the world, to take away the options for life for other species and ecosystems is incomprehensible. I felt I had no choice as a concerned citizen but to make a last ditch gesture in despair and try to minimize the degree of failure.

38. When I began teaching, the textbook showed the parts per million of CO2 at 380. 450 ppm puts the world at 2 degrees C of warming over preindustrial times. On November 15, 2018 the reading for CO2 was over 409 ppm. Time is running out.

AFFIMRED BEFORE ME at Vancouver
British Columbia
this 21st day of November, 2018

A COMMISSIONER FOR
TAKING AFFIDAVITS
IN BRITISH COLUMBIA

) Jennifer Nathan

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