HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

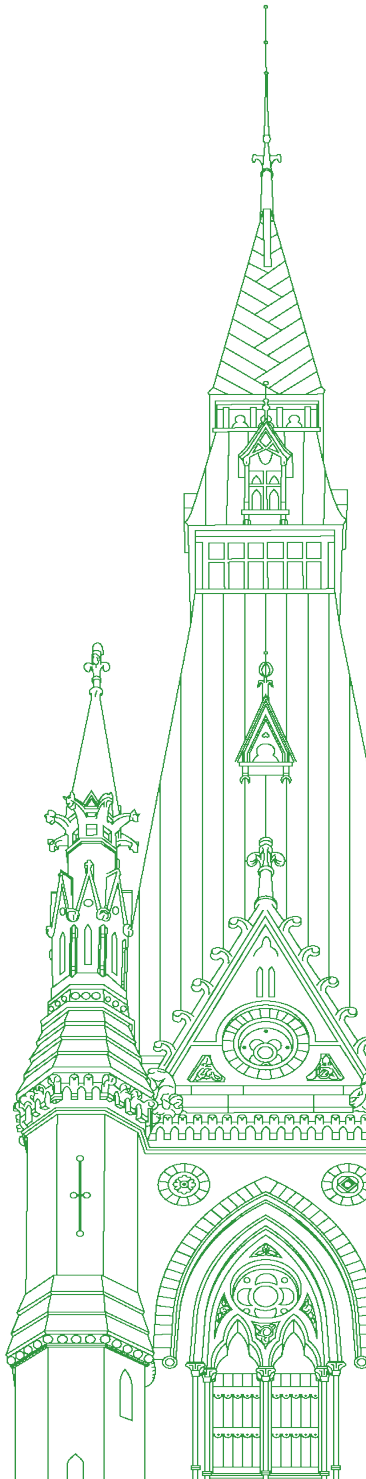
44th PARLIAMENT, 1st SESSION

Standing Committee on Environment and Sustainable Development

EVIDENCE

NUMBER 095

Tuesday, February 6, 2024



Chair: Mr. Francis Scarpaleggia

Standing Committee on Environment and Sustainable Development

Tuesday, February 6, 2024

● (1545)

[*Translation*]

The Chair (Mr. Francis Scarpaleggia (Lac-Saint-Louis, Lib.)): Good afternoon, everyone—

[*English*]

Mr. Dan Mazier (Dauphin—Swan River—Neepawa, CPC): Mr. Chair, we've been waiting over 50 days for the environment minister to submit his expenses from Dubai. I don't know if you've heard anything yet.

The Chair: Was that a motion?

Mr. Dan Mazier: No.

The Chair: On expenses from Dubai, I have not heard anything. There are staff here, so I think we've taken note.

Mr. Dan Mazier: I requested it. He said during testimony that he would submit them.

The Chair: I'll leave it to the staff to follow up.

Mr. Dan Mazier: Okay, thank you.

[*Translation*]

The Chair: Good afternoon, everyone.

Hello to Mr. Simard and Mr. Liepert, who are replacing Ms. Pauzé and Mr. Deltell, respectively.

I would like to inform the committee that the sound tests have been successfully completed.

Today we have eight witnesses divided into two groups. The first group is composed of five witnesses, some of whom are joining us by videoconference. Each witness will have five minutes to give their opening address.

We will start with Mr. Famiglietti.

[*English*]

Professor James Famiglietti (Professor, Arizona State University, As an Individual): Good afternoon and thank you very much for the opportunity to speak today.

I'm Professor Jay Famiglietti. From 2018 to 2022, I led the Global Institute for Water Security at the University of Saskatchewan, before returning to the United States and Arizona State University. My research team uses satellites to track how freshwater availability is changing around the world. Our team pioneered methods to use the NASA gravity recovery and climate experiment, or GRACE mission, to estimate groundwater storage changes from space. My comments today are based on over 25 years of experience with these data.

Our research has shown that, globally, freshwater availability has changed dramatically over the last 22 years. It is literally shrinking in the face of climate change and a growing population. In fact, the fresh water that runs off the continents from ice, permafrost and glacial melt, because of the over-exploitation of groundwater, now contributes more each year to sea level rise than the Greenland and Antarctic ice sheets.

Because roughly 80% of the world's water that is withdrawn from rivers, lakes, reservoirs and groundwater aquifers is used to produce food, this means that not only is the world's water security at risk, but so too is its food security.

In graphics submitted in the written draft of this statement, there is a satellite-based map of trends in freshwater availability. The map is a major outcome of our research and NASA's GRACE mission. Some of its key features are broad, global patterns of high- and low-latitude areas getting wetter and mid-latitude areas getting drier. The map is dotted with hot spots for water insecurity—too little or too much water. These are places where, over the past two decades, glaciers are melting and flooding has been increasing, or places experiencing more prolonged drought so groundwater is being rapidly depleted.

A second graphic highlights the world's major aquifer systems and shows that over half are past sustainability tipping points due to over-exploitation. Groundwater provides nearly half of the irrigation water that fuels food production—even more in times of drought. However, a profound lack of groundwater management around the world has allowed massive over-pumping to continue unabated. This map shows just the major aquifers. A very recent study shows that thousands of smaller aquifers are also being depleted. Both my work and the recent study show that, in some places, such as California's Central Valley, the rates of depletion are accelerating.

Canada is not immune to these changes in freshwater storage. With its rapidly rising temperatures, its glaciers are quickly disappearing and its permafrost is melting. Over the last two decades, flood and drought frequency has been on the rise. Moreover, Canada is no stranger to groundwater depletion. It is now even happening in my old home province of Saskatchewan.

A third graphic shows that most of Canada's river basins have been losing water for the last two decades. Averaging all the wetting and drying regions across Canada yields a net negative. Canada, like many nations in this warming world, has been losing water for the last 20 years.

If there is good news today, it's that Canada has everything it needs to prepare for a more variable water future, including threats to its groundwater, and implications for increasing fire severity and food production. I was proud to have led a group of dedicated researchers at the University of Saskatchewan, who continue to work with Canada's government agencies, scores of stakeholders, and indigenous communities, in order to help chart a path toward a water- and food-secure nation. Conversations around integrated river basin planning and the need for national-scale flood, groundwater and water availability forecasting continue. These dialogues should be encouraged and supported.

There remains a need, however, for inclusive and just groundwater governance and management. Changing surface water availability means that groundwater, which already supplies about one-third of Canada's drinking water, will become increasingly called upon to fill emerging gaps in surface water availability. Protection of Canada's groundwater supply is paramount as a buffer against drought, for climate adaptation and resilience, and for sustainable food production.

● (1550)

Canada currently has an opportunity to include groundwater issues in the modernization of the Canada Water Act and the activities of the Canada water agency. I urge you to plan for a future in which Canada continues to thaw and dry and in which changing surface water availability will place increasing demands on its precious groundwater resources.

Thank you.

[*Translation*]

The Chair: Thank you, Mr. Famiglietti.

I will now give the floor to Professor Marie Larocque for five minutes.

Professor Marie Larocque (Professor, Université du Québec à Montréal, As an Individual): Hello.

Thank you for giving me the opportunity to speak to you today. I do so as a professor in the earth sciences department at UQAM, but also as president of the Quebec Groundwater Network, whose mission is to share knowledge on the science of groundwater.

Today, I'd like to make three observations about groundwater and suggest three courses of action.

First of all, groundwater is still a relatively unknown resource in Quebec and Canada, and elsewhere in the world. In recent years, however, significant progress has been made in this field. We are more knowledgeable about our resources, particularly in Quebec. I want to point out the investment that the Government of Quebec has made in groundwater mapping since 2009. It has done an exceptional job.

In Canada, groundwater is used for drinking water supply, industry, agriculture and ecosystems. We do not often talk about this, but it is very important. We know that the volumes are significant, but that they are renewed in sometimes very contrasting ways from one region to another, and they are not evenly distributed over the territory.

We also know that groundwater is subject to numerous pressures, such as increased pumping, urban sprawl, agricultural intensification and climate change. These pressures can lead to drops in groundwater levels, the drying up of watercourses and wetlands in summer, and a decline in groundwater quality. We are only just beginning to quantify these impacts and their effects on human uses of groundwater and on ecosystems.

Secondly, groundwater is generally closely connected to rivers, lakes and wetlands. These interactions are generally crucial, not least in sustaining natural environments by creating habitats for many species, but they are rarely taken into account. While it is important to protect the banks of a river or the immediate surroundings of a well, for example, this is often not enough to ensure the sustainability of the resource or habitat, as groundwater often comes from very far away. The areas where groundwater infiltrates—upstream of watersheds, in wetlands, in forest massifs—must also be protected to enable the renewal of the resource, the maintenance of groundwater levels, and the natural attenuation of pollutants.

We still understand relatively little about all these connections and the resulting feedback. There is no doubt, however, that integrated management on the scale of watersheds, for example, increases the resilience of all water resources.

Thirdly, groundwater flows very slowly and can remain underground for periods ranging from a few years to several thousand years. Groundwater pumped today may have infiltrated the soil a very long time ago, and the pressures imposed on these resources now may be felt by several generations. Groundwater has the particularity of being indirectly exposed to anthropogenic pressures and climatic hazards that occur at the surface. For this reason, impacts are often delayed in time. They may occur downstream of pressures and are sometimes difficult to measure in the short term. They may also take decades to subside.

Networks for monitoring groundwater levels and quality are still too sparse and too recent to afford a long-term vision of the resource. Despite all this, development and operating authorizations continue to be based on short-term planning, sometimes for only a few years, which limits our ability to ensure the sustainability of the resource.

These three observations lead us to reflect on the priority areas for groundwater protection.

First, we are not knowledgeable enough about groundwater. It is important to continue developing knowledge to describe the resource, to map it, to quantify current uses and to monitor groundwater quantity and quality.

Second, groundwater management must be integrated with surface water management. It must take account of all interactions and consider time scales ranging from a few years to several decades, or even several centuries.

Third, it is vital to mobilize groundwater knowledge as widely as possible. Groundwater is under our feet, so we don't see it, and it is not part of the general culture to know where it is and how it works. The objective is for all users to have access to new data and understand the issues surrounding the state of the resource and emerging problems.

In conclusion, Quebec and Canada have plenty of groundwater, but the resource is unevenly distributed over the territory and is under pressure in many places. A global vision and concrete actions are needed to maintain available volumes, preserve the quality of the resource and maintain ecosystems for generations to come.

● (1555)

Thank you.

The Chair: Thank you.

I will now give the floor to Ms. Aliénor Rougeot from Environmental Defence Canada for five minutes.

[*English*]

Ms. Aliénor Rougeot (Program Manager, Climate and Energy, Environmental Defence Canada): Thank you, Mr. Chair.

Good afternoon, committee members. Thank you for inviting me.

I'm Aliénor Rougeot and I'm with Environmental Defence Canada.

I'll be discussing how oil sands mining contributes to groundwater contamination and how this relates to broader concerns about toxic tailings ponds in the oil sands.

Today actually marks the first anniversary of the large spill from Imperial Oil's Kearl mine, which revealed, as you'll remember, a separate toxic leak that had been secretly going on for over nine months. There was a lot of outrage when that spill happened, including from this committee. Not a lot has happened since. No charges have been laid under provincial or federal environmental protection laws. The tailings are still growing in volume and, as I will explain today, the tailings are still seeping toxic waste on an ongoing basis. In many ways, the Imperial Oil spill and leak were only the tip of the iceberg. The tar sands tailings ponds now contain 1.4 trillion litres of toxic waste and cover an area 2.6 times the size of the city of Vancouver.

In 2020, the Commission for Environmental Cooperation, which is an international watchdog created under the North American Free Trade Agreement, investigated the issue of leaking tar sands tailings. Their experts surveyed all publicly available peer-reviewed studies and concluded that oil sands process water, i.e., tailings, is seeping into the groundwater around tailings ponds. Industry data from major players like Suncor and Syncrude confirms these findings, showing consistent evidence of tailings seepage into groundwater, particularly close to surface water sources and tributaries to the Athabasca River.

This is highly toxic waste we are talking about. It's waste that contains naphthenic acids and heavy metals, which are respectively linked to a disruption of the reproductive system in animals, and cancer and damage to the function of the brain, lungs, kidneys, liver, blood composition and other important organs in both animals and humans. The full extent of the dangers presented by the content of the tailings on human health remains understudied, which I will point out is one of the major grievances of the communities that are impacted, most of which are indigenous communities.

Seepage from the tailings is not an accident. It's in the design. The outer walls of the oil sands tailings ponds are permeable. There are systems that are designed to collect the seepage. Yet, evidence shows that there is a noticeable movement of fluids that avoids these collection systems. As you know—it's common sense—groundwater doesn't stay in the ground. In the case of the Athabasca region, groundwater has a significant impact on the Athabasca River's quality.

Having toxic waste make its way into groundwater and surface water is a concern, of course, for fish, but also for the entire ecosystem that relies on these water bodies, especially for the indigenous nations that sustain themselves off this territory.

It is especially concerning that local communities are exposed to these heavy metals and toxic substances from tailings ponds through multiple pathways: through the water they drink, through the game and food that they harvest off the territory, and through the air. As a reminder, two weeks ago, a study found that air pollutants from the oil sands could be 20 to 64 times higher than previously reported.

All this information shouldn't be a surprise to many of you. Actually, in 2010, members of the then opposition sitting on the ENVI committee published a scathing report about the government's track record on tailings. It reads, “the story of the oil sands' relationship to water is very much a tale of denial by interested parties...and of long-standing abdication of federal leadership in an area...that is rightfully Ottawa's”.

That was 14 years ago. The federal government still has the power to address this today. Under Canada's Fisheries Act, no one is allowed to deposit a substance harmful to fish anywhere where fish may come in contact with it. Yet, no company to this day has been charged for leaking tailings. The previously mentioned Commission for Environmental Cooperation found that Canada was failing to enforce its own Fisheries Act. That, again, was several years ago.

I urge this committee to break free from the pattern of past governments and do more than shine a temporary spotlight on this issue. I hope that you will consider sustained, meaningful actions. I hope that in our conversations we can explore together what these actions may be.

Thank you for your attention.

● (1600)

The Chair: Thank you very much.

We'll go now to the Alberta Irrigation Districts Association. I believe it is Mr. Alex Ostrop who will be speaking.

Mr. Alex Ostrop (Chair, Alberta Irrigation Districts Association): Thank you.

Good afternoon, Mr. Chair, members of the committee and fellow witnesses.

Thank you for the opportunity to appear today on behalf of the Alberta Irrigation Districts Association, otherwise known as AIDA.

My name is Alex Ostrop. I'm a farmer in southern Alberta and chair of the association. I am joined by Richard Phillips, vice-chair.

When it comes to water and water management, irrigation is woven into the fabric of Alberta. Representing 11 irrigation districts that irrigate over 600,000 hectares of agricultural land, AIDA members utilize approximately 8,000 kilometres of conveyance infrastructure and 52 water storage reservoirs, which provide water across the southern region of Alberta. This supports businesses, wildlife and wetland habitat, as well as recreational opportunities throughout the region that would otherwise not exist due to the dry climate in southern Alberta.

Over 50 municipalities receive water for their community needs through irrigation conveyance infrastructure. Our industry generates approximately $5.4 billion annually towards Alberta's GDP, creates nearly 50,000 jobs and significantly contributes to Canada's agricultural production and food security.

Investments like McCain's historic $600-million expansion near Lethbridge would not be possible without irrigation and its ability to provide reliable water to producers.

Given the increasing rise and severity of extreme climatic events in Canada, which particularly impact flood and drought patterns, irrigation and its related water management activities are an increasingly vital tool for ensuring agricultural and community resiliency through monitoring, predicting, conserving and overall distribution of this important resource.

Reservoirs are used as a key climate change adaptation and mitigation measure to protect and control water supply of high variability. Every day, we see the importance of collaboration, coordination and proactive planning among all partners when it comes to water management in southern Alberta, as well as the innovative practices that the agricultural sector is continuously at the forefront of.

We also see the risks of inaction and the hardships that producers, businesses and communities face if sustainable water management and infrastructure are not prioritized. We see multiple opportunities for irrigation to be scoped into government policy, planning and programming.

Our primary recommendations are the following.

One, government should recognize irrigation for its environmental and climate change adaptation benefits and implement policy that encourages rather than inhibits its development and maintenance.

Two, the Canada water agency must work with non-apparent industries, as well as work within the unique regional considerations of water management and water issues of the provinces. A regional office in Lethbridge can support meaningful inclusion and direct consultation with partners on mutual issues and interests.

Three, Canada must bolster its regulatory competitiveness by funding research for new agricultural management products. It can also strengthen the consideration of existing approvals and data within comparative and trusted jurisdictions when evaluating applications. This includes treatment options to address aquatic invasive species and aquatic weeds. It is important that Canada's water stakeholders and stewards have access to the most effective and up-to-date tools and products to address issues specific to their region in order to avoid detrimental impacts to water systems and to the countless people who rely on them.

Four, continue to invest in irrigation infrastructure. Supporting rehabilitation, modernization and expansion projects is crucial to ensuring that water is protected and delivered to municipalities, communities, agricultural producers and more. Every dollar invested into Alberta's irrigation districts has provided a 350% return in revenue.

As managers and stewards of fresh water in southern Alberta, this precious resource is at the heart of all decisions that AIDA's members make. We believe that the success of the agricultural sector and the prairie provinces are an integral part of Canada's future. The irrigation industry is vital to advancing sustainable freshwater solutions.

Canada is in the position to develop the infrastructure, research and programs necessary to protect and future-proof its freshwater resources. It must do so before water scarcity impacts the country's agricultural industries, businesses, food security, biodiversity, municipalities, communities and, ultimately, all Canadians.

Thank you for your time. We look forward to answering the questions you may have.

● (1605)

The Chair: Thank you very much.

I'm looking forward to a very interesting round of questions and answers.

We'll start with Mr. Leslie for six minutes.

Mr. Dan Mazier: Mr. Chair, when I get the floor, I'd like to speak.

The Chair: Okay.

Go ahead, Mr. Leslie.

Mr. Branden Leslie (Portage—Lisgar, CPC): Thank you, Mr. Chair.

I would actually like to start by moving the motion that was put on notice on Friday to immediately invite Minister Guilbeault—

Mr. Adam van Koeverden (Milton, Lib.): Mr. Chair.

Mr. Dan Mazier: Sorry, Mr. Chair, to speak on that—

Mr. Adam van Koeverden: Mr. Chair, I would like to speak on that first, please, because I had my mic on before he did.

The Chair: We're just going to break here. Witnesses, please, just hold on.

Mr. Mazier, you said you wanted to speak when your turn came up.

Mr. Dan Mazier: I wanted to speak to what Mr. Leslie had to say.

Mr. Adam van Koeverden: You can't do that before he runs the motion.

Mr. Dan Mazier: He was speaking.

The Chair: No, it was before he started speaking, but I'm going to check on that. Just a second.

Apparently it's at my discretion.

I did see you. I saw him before I saw you, Mr. van Koeverden.

We'll go with Mr. Leslie, and then Mr. Mazier.

Ms. Laurel Collins (Victoria, NDP): I have a point of order, Mr. Chair.

Are you saying that Mr. Mazier spoke before him, and then he's going to...?

The Chair: No. What happened was that Mr. Mazier raised his hand right away and said he wanted to speak when his turn came up, basically. It was a bit of a strange formulation of the issue, but—

● (1610)

Ms. Laurel Collins: It was preplanned.

Mr. Adam van Koeverden: I have a point of order, Mr. Chair.

The Chair: Yes.

Mr. Adam van Koeverden: Reluctantly, I'm going to challenge you.

The Chair: Okay.

Mr. Adam van Koeverden: The convention is not that you can say, “On the rare occasion there might be a motion, hypothetically, I'd like to speak to it first.” I turned my mic on as Mr. Leslie said that he's running a motion, as they have been doing at every meeting.

That was prior to Mr. Mazier saying he would like to speak on it, and subsequent to Mr. Leslie, so I'm challenging you, and that should go to a vote.

The Chair: Okay.

Can we do the vote, Madam Clerk?

(Ruling of the chair overturned: nays 7; yeas 4)

The Chair: Okay, so we'll go to Mr. Leslie, then Mr. van Koeverden, and then Mr. Mazier, I guess.

Mr. Branden Leslie: Thank you, Mr. Chair.

I would like to start by moving the motion that I put on notice on Friday to immediately invite Minister Guilbeault to this committee to determine if there was a breach of our parliamentary privilege. Before my Liberal colleagues bemoan the fact that Conservatives raise issues they don't like, let me state that there is plenty of evidence to suggest that the Minister of Environment either misled this committee or is hiding the names of senators whom he personally lobbied to gut Bill C-234.

Regardless of your partisan stripe, it is incumbent on us as MPs to safeguard our privileges, which have been fought for and must be defended as part of our Westminster tradition. It is essential that we have proper functioning of this institution and that we be given timely access to and accurate information from ministers when requested by a committee.

As an aside, Bill C-234 is a critical piece of legislation that any member of Parliament who has farmers in their riding, such as the rural MP for Milton, should be supportive of, just as members from across party lines were, because it is an important piece of legislation not just for farmers but for all Canadians, to help alleviate the continually rising price of food.

The legislation would exempt grain farmers from paying the carbon tax on propane and natural gas to dry their grain, and livestock farmers from the same carbon tax to heat or cool their livestock barns. It would amount to $1 billion by 2030. That would mean immediate savings for Canadian producers and for buying food, as well as a meaningful impact for our farmers, who would be able to reinvest that money back into their operation to provide environmental outcomes for Canadians.

This legislation is supported by all national agriculture groups, and it made its way through Parliament, through the House of Commons, in a rather judicious manner for a private member's bill, with the support of members from the Conservative Party, the Bloc Québécois, the NDP, some Liberals and even the Green Party. They recognized that it is a good piece of legislation to fix a flaw in the fact that farmers simply cannot transition to a different fuel source when it comes to those specific activities. It is simply punishing farmers for something they have no choice but to do, and it is encouraging higher prices at the grocery store for Canadians.

Following the rather swift passage through the House of Commons, when it got to the Senate Committee on Agriculture and Forestry, there was clearly some political gamesmanship that began being played. There were a number of amendments intended to gut the bill there and to delay the bill. Thankfully, they were voted down by the larger chamber of sober second thought, the Senate, later on. However, over time, for unknown reasons, that vote count chipped away as senators procedurally brought forward the exact amendments over and over again to try to disrupt and destroy this legislation, which would save farmers $1 billion.

Those incremental vote losses ultimately led to changes, and they sent it back to the House of Commons. That has led to no-man's land, meaning that this legislation, without government support, may never get passed, because there is simply no precedent for it.

It has been an extreme frustration to Canadian farmers. It became political when this government decided that certain Canadians deserved a break on the carbon tax on their home heating oil at the same time as farmers were being denied what was a clear, good policy to prevent $1 billion leaving their pockets.

Specifically to the motion I'm moving now, when Minister Guilbeault appeared before this committee on December 14, he was asC-234ked by my Conservative colleague Dan Mazier if he had spoken to any senators about Bill . In response, the minister said, “I had conversations with five or six senators, yes.”

The reason we knew to ask this was that he had publicly declared previously that he had spoken to senators about this. In a CTV article from November 14, 2023, he was quoted as saying that he had had discussions with “half a dozen” senators in the past couple of weeks to express the federal government's opposition to the legislation.

A CBC article from November 28 of that year said, “The minister said he had spoken with about six senators to explain the government's position, but did not tell them how to vote.”

On three separate occasions, he has said “five or six senators”, including when he spoke before this very committee in this very room. It took 49 days from that appearance of the minister, who had promised to get back to my colleague with the names of the senators he had called up about Bill C-234, to our receiving them.

● (1615)

It took 49 days. It seems like an awfully long time to remember somewhere between, apparently, three and six names.

The thing is, you'd expect him to have come forward with those five or six names of the people he'd said previously in the media and to our committee he had spoken with. However, for some reason, there were only three names on that list. It seems awfully odd that he guessed up and then came back and realized, “Oh, I only talked to half of those senators.” Something seems amiss. From this, we can only conclude that he either provided false testimony when he appeared as a witness before this committee, or he provided false information when providing the names of the senators who lobbied to gut Bill C-234.

In either event, the minister misled this committee, and I believe we must invite him to appear immediately before the committee for one hour to sort out the discrepancy of the information that he provided and decide if it must be reported back to the House. Without the minister's appearance to answer questions, it is impossible for the committee to determine whether he showed contempt before this committee. On the face of it, it clearly appears that he did, which should trouble every member here, regardless of their political stripe.

Successive Speakers have clearly set out three conditions that must be demonstrated in order to arrive at a finding of contempt through misleading statements or information. First, the statement needs to be misleading. Second, the member making the statement has to know that it was incorrect when made. Third, and finally, it needs to be proven that the member intended to mislead the House by making the statement.

On the first point, it was clearly a misleading statement or a misleading written response. It was one of those two. There's no denying that. On the second point, if the minister intentionally misled the committee, he would have known that his statement was incorrect when he made it on December 14. At no time did he try to reconcile his written response with the testimony he provided to this committee. On the third point, we do not know if he intended to mislead the committee, so we must investigate. Only Minister Guilbeault, not his legion across the way, can provide any clarity on this issue.

We know he has faced considerable pressure to gut Bill C-234. He even put his own reputation on the line by stating, “As long as I’m the environment minister, there will be no more exemptions to carbon pricing”. This was, of course, in the aftermath of a decision to lift the carbon tax on home heating oil for 3% of Canadians.

He had the motive to do everything in his power to stop our Conservative-led bill, which was supported across partisan lines in the duly elected House of Commons, to exempt farmers from the carbon tax. There is no question, to me, that Minister Guilbeault has misled this committee. The question is whether he intended to do so.

While I know certain members across the way enjoy running, I implore them not to run away from this matter, because if they do, it will speak volumes to how deep the rot has gotten in this government.

It is time for an investigation, Mr. Chair. I encourage all of my colleagues of all political stripes to support the motion to bring the minister to clarify whether or not he misled this committee.

The Chair: We'll go to Mr. van Koeverden.

● (1620)

Mr. Adam van Koeverden: Thank you, Mr. Chair.

First, I'd like to apologize to our witnesses. This has become a trend, unfortunately. This happens at almost every meeting. Experts travel here or appear on their own time via Zoom to help us study how we can better protect fresh water in Canada, and the Conservatives obstruct it, using this committee as their personal soapbox.

You guys have phones. You guys have the ability to make a video. Do it on your own time. This is pathetic. It's a pathetic waste of the time of people who are generous enough to come to this committee for these meetings.

We'll have time for another study after the freshwater study is concluded. It will be a democratic process. This committee will determine what to study next.

On the issue of this scandal that Mr. Leslie is trying to drum up, there's absolutely nothing wrong with having a conversation with a senator. The Conservatives on the other side have conversations with senators every Wednesday at their caucus meeting, because the only senators who are partisan are Conservative ones.

I'd like to very briefly speak to one such Conservative senator, who is Conservative leader Don Plett. Having a conversation over a coffee with a senator about how they intend to vote on a bill is totally normal. That's politics. We've all done that, and it's normal. You guys do it every single Wednesday. We don't have senators in our caucus meetings, but the Conservatives do, so they have an opportunity to liaise with them to discuss and talk about legislation that's coming to the Senate every single week.

When the minister met with senators, I guarantee there was no bullying or harassment, but when Don Plett met with senators he disagreed with—

Ms. Laurel Collins: I have a point of order, Mr. Chair.

The Chair: Yes.

Ms. Laurel Collins: Maybe you'll let me know if this is a point of order or not.

I just want to make sure that my Liberal colleagues know that if they want my vote to adjourn debate, they should probably adjourn debate.

The Chair: It's not a point of order, but I'm sure they're listening.

Mr. Adam van Koeverden: Thank you, Ms. Collins.

Senator Don Plett has been accused of bullying members of the Independent Senators Group, which is very different from meeting for coffee. I'd ask the members of the Conservative Party to look in the mirror and ask their Conservative Senate colleague on Wednesday if he thinks it's appropriate to bully people, because those senators felt, as this article here indicates, afraid for their safety.

Coffees are okay. Bullying each other is not.

I move to adjourn debate on this ridiculous motion.

The Chair: We'll do the vote.

(Motion agreed to: yeas 7; nays 4)

The Chair: Thank you.

We'll go now to Ms. Chatel for six minutes.

[*Translation*]

Mrs. Sophie Chatel (Pontiac, Lib.): Thank you, Mr. Chair.

Mr. Famiglietti, you said earlier in your opening address that food security was important. This is an issue that is particularly important to me. Many farmers in my riding tell me that even water, despite what was believed, is not an inexhaustible resource. We therefore have to prioritize it, protect it and avoid wasting it. That is why this study is so important.

Our water resources, such as groundwater, which you talked about, are used by farmers and a number of other users. For example, several witnesses have told us about the consequences of using water for oil and gas exploration in Canada.

At some point, we are going to have to decide our priorities when it comes to water use. On the one hand, it is used by oil and gas companies, and we have to get them to manage water much more efficiently and sustainably. On the other hand, water is used by our farmers, who are responsible for putting food on our tables and ensuring our food security.

I was looking at the figures. Approximately 75% of the shares of oil and gas companies in Canada are held by individuals who live outside Canada. As well, 4.7 million barrels of oil were exported to the United States in 2022.

Given this, how can we decide our priorities for using water between farmers and oil companies? Is this a problem?

● (1625)

[*English*]

Prof. James Famiglietti: Thank you for the question. I really appreciate the opportunity to share some thoughts on this with you.

When I think of water security, I think of having enough water to do all the things that we want to do. That could be a city. It could be a province. It could be the whole country. Those are things that you just talked about: water for people, water for the environment, water to produce food, water for economic growth and water to produce energy. These are priorities that must be decided nationally and must be decided by province and, again, town by town and city by city.

It's not the kind of thing that I can weigh in on. What I can do is show you—and we can follow up after this meeting with even more detail—what's happening across Canada and share that information with you, as decision-makers.

My experience in looking at the disappearance of groundwater around the world is one that really points to a need for joint surface and groundwater management and for using groundwater far more efficiently. I think that within Canada we will see increasing demand for groundwater because of climate change, because of the increasing variability and, as one of the other witnesses said, because of the very likely need to probably have to expand irrigation infrastructure to maintain sustainable food production.

There's no one solution. I'll just close by saying that I always think in terms of a portfolio of agricultural efficiency, water use efficiency, industry efficiency and accounting of water use by industry—all industries, not just agriculture and not just oil production.

[*Translation*]

Mrs. Sophie Chatel: Given this, Mr. Famiglietti, could the Canada Water Agency, which will be starting up in the near future, help in prioritizing and managing water use? As you say, surface water and groundwater have to be managed coherently. That agency can also exercise leadership.

[*English*]

Prof. James Famiglietti: I think it's appropriate for a national agency. It's the same here in the United States, by the way. There is a need for a national backstopping, for example. When provinces can't agree on what to do, in particular across provinces, sometimes you need that national level of support.

There is no national water policy or plan in the United States. At least there is one in Canada. I understand it's in the process of being revised.

I think this is a perfect topic to really think about priorities for Canada and how to balance the allocation across the competing needs for water in the face of a much more variable climate.

[*Translation*]

Mrs. Sophie Chatel: Thank you.

The Chair: Thank you, Mrs. Chatel.

Mr. Simard, the floor is yours.

Mr. Mario Simard (Jonquière, BQ): Thank you, Mr. Chair.

Ms. Larocque, I would have liked to have met you before. I don't know whether you have heard about it, but there was a little problem in my region, at the Bagotville military base, to do with PFAS, something I was not familiar with before that. I don't want to be vulgar today, but I have been told that PFAS were called "devil's piss", since it is very hard to get rid of them once they are in the environment.

Earlier, you talked about integrated management and said we had to think about both groundwater and surface water. What can we do to manage a contaminant that is as tenacious as PFAS today? In my region, I see that some people's potable well water is contaminated by these PFAS and I assume they are also spreading in the surface water, through runoff. How can we manage to contain this?

● (1630)

Prof. Marie Larocque: That is a good question and it is certainly a major concern.

I would add that these contaminants are not within my direct range of experience, but I know a bit about the problem they pose.

Yes, integrated water management is always wise. In this case, the solution would be to have no PFAS entering the resources in the first place.

I use the term eternal contaminants since these contaminants undergo very little transformation, very slowly. Once they are in the hydrosystem, in the water cycle, they stay there. This is particularly the case in groundwater, where the residence time is very long. This is a problem, and it is one of the public's biggest concerns when contaminant levels are high.

I would say that this is a fairly recent phenomenon. I might like to just propose a slightly different approach. We have only recently discovered and analyzed these concentrations. In fact, whenever we look for a contaminant in groundwater, we find it. Studies have been done where pesticides, bacteriological problems and pharmaceutical products have been found in groundwater when they were not expected. Groundwater circulates very slowly, but it is not immune to contamination.

I think the solution is prevention: taking action upstream. Now, unfortunately, we will probably have to live with these contamination problems for several decades yet.

Mr. Mario Simard: I have noticed that people unfortunately get concerned about these situations only when they impact them.

To your knowledge, have the types of contaminants that may be found in groundwater been characterized? I am thinking of the Government of Quebec, in particular.

Prof. Marie Larocque: Major efforts have been made in Quebec to learn about the aquifers, the geological formations that contain groundwater. An enormous amount of work has been done since 2009.

Additional work is being started to determine the quality of that groundwater, but it is still piecemeal. We have an overall vision of the base quality, but there is still a lot of work to do when it comes to specific contaminants like those.

Mr. Mario Simard: I would like you to tell me in a bit more detail about the direct impact of climate change on groundwater. Might it increase the concentration of contaminants?

Prof. Marie Larocque: That is a good question.

It is probably true in some cases. The impact of climate change on groundwater is felt mainly when it comes to replenishment. We are having shorter winters, less snow melt in the spring and lower levels the following summer. That can all have effects on water chemistry. When water levels are lower, the aerated zones are different and the microorganism populations that transform pollutants may therefore also be different.

To date, very little research has been done on this. In general, little research is being done on groundwater. So we still don't know a lot about how groundwater quality and pollutant content will change in the coming decades.

Mr. Mario Simard: Right. I ask you that because I know that studies are being done in the forestry sector about carbon sequestration and capture from the perspective of climate change. In the medium and long term, the forest would sequester more carbon than we think within the soil. So the impact from that leads me to assume that a similar logic could be applied to groundwater.

Prof. Marie Larocque: Yes, that's possible.

In fact, groundwater is everywhere. As a result, while it has an impact on the forest and on wetlands and the shorelines of watercourses, it also has an impact on the vegetation and thus on carbon accumulation and storage. If we alter groundwater levels, we alter the water supply to bogs and their capacity to store carbon.

I do really take an integrated view.

● (1635)

Mr. Mario Simard: Thank you.

I might have a question for Ms. Rougeot.

The Chair: You have ten seconds left.

Mr. Mario Simard: Yes, I will be very brief.

Ms. Rougeot, you spoke earlier about your concerns regarding the forestry industry and, of course, groundwater. It seems to me that something has slipped under the radar, and that is Chalk River, where there is going to be a nuclear waste repository that will potentially be located near a potable water source that supplies all—

The Chair: Yes, you're right, but we have to move on to Ms. Collins.

Mr. Mario Simard: Yes, I'm sorry.

We will come back to that.

The Chair: If Ms. Collins wants to take that up, that's up to her to decide.

[*English*]

Yes, Mr. Mazier.

Mr. Dan Mazier: I have a point of clarification.

What does PFAS stand for?

The Chair: PFAS is an emerging contaminant. I don't know the chemical term.

Mr. Dan Mazier: If I could have—

[*Translation*]

Mr. Mario Simard: Even I don't think I can pronounce the term.

The Chair: I have an idea: we're going to email it to all of the committee members.

[*English*]

It's PFAS. Can somebody send that?

Ms. Collins, go ahead.

Ms. Laurel Collins: Thank you, Mr. Chair.

I want to thank the witnesses for being here.

Ms. Rougeot, I'll first go to you.

I want to thank you for highlighting the fact that it has been one year since the Kearl tailings ponds leak became public. Scientists and experts have been talking about the impact of the tailings ponds for decades. You held up that report from 14 years ago. When the Liberals were in opposition, they published this report and seemed to understand the need to regulate big polluters.

They've been in government for eight years now. How would you characterize their action or inaction on this file, and what do you see as the tools government has to ensure we're protecting the environment and human health from the impacts of the tailings ponds?

Ms. Aliénor Rougeot: What we've observed over decades—the environmental movement, impacted indigenous communities and experts—is that, across governments, whether federal or provincial, we see this lack of desire to get deep into using their tools. I think there is a tendency to look away because these are powerful companies that we know lobby hard in order to not be regulated.

However, the federal government has two readily available tools that are squarely in its jurisdiction, which could improve the situation when it comes to tailings.

The first one is the Fisheries Act, which I mentioned earlier. It is prohibited to deposit substances said to be deleterious to fish in waters that contain fish or could contain fish, or that enter into bodies that contain fish. Right now, we are told that a key barrier to enforcing the Fisheries Act is a lack of federal information when it comes to contaminants. However, the environment minister hasn't been using all the tools he could under the Fisheries Act to get more information. Some of these could be bilateral agreements with the indigenous nations living on these territories. They are there already and monitor for their own purposes. Using bilateral agreements to share responsibilities when it comes to monitoring, reporting and enforcing would be one way. Companies also conduct a lot of their own monitoring and studies. The environment minister absolutely has the power to request those internal documents to see whether there is helpful information there for enforcing the Fisheries Act.

The last one is more frequent inspections. In 2019, the Auditor General pointed out that metal mines get inspected about every 1.5 years on average. For oil sands mines, it's every 2.5 years on average. We see that there's no proactive monitoring by the federal government. It's much harder to find a violation of the Fisheries Act if you're not looking at whether there's any violation taking place.

Ms. Laurel Collins: Thanks so much.

You mentioned some of the dramatic increases when it comes to pollution in the air, and you saw the report that the emissions from the oil sands are up 6,300%, which is shockingly higher than what had been reported by industry. Can you talk a little bit about what the impact of that level of emissions is on the environment and on water?

Ms. Aliénor Rougeot: That's right. The study you're referring to, I think, is the one that came out two weeks ago from Yale University and Environment and Climate Change Canada. It pointed out that there had been monitoring only on a section of potential air pollutants and we had not been looking for many other air pollutants that are less present in conventional oil but are very present in unconventional oil, so the oil sands. What they found is that there are 20% to 64% additional emissions compared to what was being reported, and therefore all the policies or the different ways we've been thinking about local communities' exposure were obviously ignoring a massive amount of exposure.

What struck me and really touched me when I read that report was that, for decades, local indigenous communities have flagged that they can't breathe every summer and that their children have increasing rates of asthma, and their concerns were dismissed because they were shown numbers saying, no, look, things are in order. It's actually because we weren't looking for the right things. That health concern has been shared by the nations for decades and we were just ignoring them based on false information.

I'll also point out that a lot of these emissions may actually be coming from the tailings, not the rest of the operations, and especially from the drying tailings, so in a context in which we're thinking about reclamation and drying tailings is one of the solutions on the table, we should be very concerned about drying tailings without other options to make sure emissions don't increase. We should be concerned that it isn't an actual viable solution. The question of how we reclaim the tailings hasn't been solved, and that's one of the reasons we're calling for a moratorium on tailings throughout, because we don't have a solution to the tailings problem, whether it's the volumes or the drying ones, which emit massively.

● (1640)

Ms. Laurel Collins: You mentioned a few of the impacts in frontline indigenous communities. Can you talk a little bit more about what you're hearing from these communities in terms of the health impacts?

Ms. Aliénor Rougeot: Absolutely. Of course, this committee has heard from them, and I'll invite you to continue talking to them directly, because they can speak best to it.

I think in terms of the impacts, and again, thinking back about federal jurisdiction here, one of the key impacts is actually on their rights, their treaty rights, their constitutional rights, their right, for example, to use the land for traditional practices. That is something that's being compromised when waterways and the environment are polluted and therefore harvesting is no longer an option. We're also hearing about mental and spiritual impacts, and we're hearing of course about the health impacts. You've all heard Chief Adam and Chief Tuccaro talk about that in the past in regard to rare cancers, asthma and other aspects of that.

Again, I really think we need to realize that neither the government nor industry has—

The Chair: We'll have to stop there.

Ms. Collins, if you want a signed copy of the report Ms. Rougeot held up, I can arrange that.

Ms. Laurel Collins: Can you also send it to the Prime Minister?

The Chair: We'll go to Mr. Mazier for five minutes, please.

Mr. Dan Mazier: Thank you, Chair.

Thank you, everyone, for coming out here today.

I'm going to be asking some questions of the Alberta Irrigation Districts Association.

Thank you for coming here today. Being a Manitoba farmer, I've always looked with envy at Alberta and how they go about irrigating their croplands. They were the model for western Canada. They were far ahead of the curve, partly because of industry, but also because there was a need and Alberta knew that to be sustainable, they needed water. You guys got it figured out about trapping the water, actually collecting the water when the time was good, like making hay when the sun shines. You followed all the farming practices properly and you have a great system in Alberta. I'll tell you it's the envy of Manitoba; that's for sure.

My first question is about some clarification. Mr. Ostrop, you were talking about how many billion dollars' worth of goods that are produced from irrigation?

Mr. Alex Ostrop: It's $5.6 billion annually of GDP towards Alberta's economy. What's interesting is that it seems like irrigation is really punching above its weight, because if we look at overall agricultural land, irrigation is only on 4.5% of the agricultural land, yet it produces close to 30% of the agriproduct GDP. The efficiency and the value of the land that is irrigated are disproportionate to agriculture in the rest of the province.

Mr. Dan Mazier: That's pretty amazing. It would actually add value, so those farmers would be able to produce more food at the end of the day, because they have access to water. Well done on that.

Mr. Phillips, was the Alberta Irrigation Districts Association consulted on the Canada water agency, and if so, what recommendations did you give the government?

Mr. Richard Phillips (Vice-Chair, Alberta Irrigation Districts Association): We were involved in discussions about the Canada water agency. We did provide a submission with recommendations and our thoughts about what the Canada water agency should and should not do, respecting provincial jurisdiction, of course, but there are many things that the Canada water agency could do effectively.

We're hosting a conference today. We just had a presentation on it, and we were informed of many good things they could be involved in. Our recommendations, we believe, are largely being respected with the Canada water agency coming into play here.

● (1645)

Mr. Dan Mazier: You mentioned provincial jurisdiction, and that you've been reassured. Believe me, you're probably the first in Canada who has talked like this, especially in the rural areas, when it comes to food production.

Can you expand on what you learned today? Where did you have the most concerns, especially when it comes to provincial jurisdiction? That would be the best question.

Mr. Richard Phillips: I think our concern simply is that water varies tremendously across this huge nation of ours, so there is no one-size-fits-all solution for many things. Some things within provincial jurisdiction—allocation of water within a province's boundaries—need to remain within that province. The way in which they license or allocate water is a provincial matter. When you get to transboundary issues, then there potentially is a role for federal government to play.

As we were informed by our speaker today from the Canada water agency, largely you're looking at areas of mutual concern across provincial boundaries, because there are some things that ought to stay within a province. There are other things where there certainly could be a role for a federal agency to deal with it.

Mr. Dan Mazier: You were talking about “the risks of inaction” if this is not prioritized. I wonder if you can expand on those. Adaptation really is the key to food production. I don't know a farmer out there.... We only have 100 to 110 days, at maximum, to produce a crop, take it off and put it away in a safe place, so we can market it for the rest of the year. We truly do a remarkable, modern-day type of model here in Canada every year.

What happens if we don't address the water worries and put in too many...implications like that? Can you maybe expand on those risks of inaction?

Mr. Alex Ostrop: Thank you again for that question.

The Chair: You have 15 seconds, please.

Mr. Alex Ostrop: We've done a tremendous job at increasing efficiency. We're literally irrigating twice as many acres with less overall water diversion as we did in the 1970s. However, as Mr. Famiglietti stated, we have a role to play in the variability. We need to be able to store water when it comes, because climate change will result in greater climate variability.

The Chair: Thank you.

We'll go to Mr. Ali now for five minutes.

Mr. Shafqat Ali (Brampton Centre, Lib.): Thank you, Chair.

Thank you to all the witnesses for appearing before the committee and sharing their knowledge and experience.

My first question is for professors Famiglietti and Larocque. The federal government is currently working to start up an independent Canada water agency, with legislation currently in the House. What do you think the agency's priorities should be as it builds capacity and starts to advance its work?

Prof. James Famiglietti: Thank you for the question.

I think we have touched on some of these issues in the course of our discussions this afternoon. It's imperative that the nation understand how we do these allocations among all the things we need water for. Again, that's for humans, for the environment, for energy production, for food production and for economic growth, so guidance there, I think, is very important.

I think there's a real role in ensuring that each province has adequate flood protection. There's a role there in ensuring that each province has adequate water quality protection and adequate groundwater protection. There were further issues that came up earlier with respect to transboundary issues, so there's a clear role for a water agency there.

I want to draw a parallel to what's happening in the United States. Take California, for example. California is running out of groundwater, and the reason is that it grows food for the entire nation. Within the United States, California water security is viewed as a California problem, even though it grows food for the entire nation.

When we look at our food-producing regions in Canada, we need to make sure that if we want to keep those food-producing regions there, they have adequate water supply, and that may require a national level—I don't know if we call it oversight, or policy, or planning.

Those are just some examples.

● (1650)

Mr. Shafqat Ali: That's great. Thanks.

Ms. Larocque, do you want to add something?

[*Translation*]

Prof. Marie Larocque: Thank you for the question.

Some provinces are making huge efforts to understand the state of their water resources and put in place the beginnings of integrated water management systems. There are a lot of initiatives in the provinces.

The particular role that I foresee for the Canada Water Agency deals with integrating data in Canada, making information available and transferring knowledge, which can often not be done at the project level or even the province level. The Agency would play a role as an umbrella organization by making information available and presenting it clearly, by transmitting knowledge and best practices and, as Mr. Famiglietti said, by contributing to solving transboundary problems.

[*English*]

Mr. Shafqat Ali: Thank you.

My second question is also for professors Famiglietti and Larocque.

Water policy exists in many different places within the government. With the establishment of the Canada water agency, do you think it would be beneficial for some parts of the public service that are currently responsible for water policy to be brought under the umbrella of the Canada water agency?

Prof. James Famiglietti: The degree to which certain aspects of water, the management of water, are fractured and fragmented.... Those are some of the types of things that could be brought under the umbrella of a Canada water agency.

That's just a quick thought on that. I will pass it to my colleague.

The Chair: I'm sorry, but we're more or less out of time.

We will go now to Mr. Simard for two and a half minutes.

[*Translation*]

Mr. Mario Simard: Thank you, Mr. Chair.

I am going to come back to what you said earlier, Ms. Larocque.

Nobody is going to fall off their chair if I tell you I am not a huge advocate of federal government intervention in what I consider to be Quebec jurisdictions. I see the creation of a Canadian water agency as kind of a form of interference.

You said earlier that knowledge was not very advanced. If there is a mandate that the Canada Water Agency should have, would it not be to facilitate knowledge and provide financial support for knowledge, about both groundwater and surface water?

Prof. Marie Larocque: Yes, that's a good point.

We should perhaps give priority to knowledge about aquifers or about transboundary basins between the provinces in particular.

That said, the geological formations and the environments where water systems are found are very different from one end of the country to the other. In Quebec, our aquifers and our rivers and watercourses are very different from the ones in British Columbia, just as the climate is. It is therefore very difficult to have a comprehensive formula. The provincial or local level is probably where characterization or knowledge is best acquired.

Mr. Mario Simard: For my next question, you are undoubtedly going to see me coming.

I assume that as part of your job, you are constantly looking for funding, like everybody in academia. Is there funding from the Department of Environment and Climate Change precisely for the type of research you do?

Prof. Marie Larocque: In Quebec, yes.

Mr. Mario Simard: Do you receive funding from the federal government, in Quebec, without going through the research institutes? That is what I mean.

Prof. Marie Larocque: There is a lot less from the federal government. It is really droplets. There are relatively few programs for water among the federal environment programs at present.

● (1655)

Mr. Mario Simard: That may be something our analysts can note.

Should one of the priorities of a Canadian water agency not be to provide better funding for researchers asking this type of question?

The Chair: Please give a brief answer.

Prof. Marie Larocque: Yes, undoubtedly. However, it would have to be done in a very targeted way. It should not be done with the goal of acquiring knowledge about the aquifers in the Saguenay region, for example, since there are already provincial efforts for that.

Mr. Mario Simard: We are the best at that kind of thing.

The Chair: Thank you. We have to continue.

I am now going to give Ms. Collins the floor.

[*English*]

Ms. Laurel Collins: Thank you, Mr. Chair.

Ms. Rougeot, maybe I'll start by allowing you to finish what you were saying when our time got cut off.

Ms. Aliénor Rougeot: Sure. It was just a short thought. You were asking me about the health impacts or the impacts in general on communities of the contamination that I was describing. I wanted to point out that we've observed really a limited effort by both industry and government, all levels of government, to actually seriously quantify and characterize that impact.

I think we have to ask ourselves honestly whether it's because it's mostly indigenous communities that there has been repeatedly a comfort level with not knowing how much people are exposed to heavy metals, which, again, have been tied to really serious health impacts. I just wanted to point that out, in terms of weighing the absence of data not as an absence of consequences but perhaps a deliberate looking away, because we don't really want to realize the truth.

Ms. Laurel Collins: We've seen that a lot when it comes to environmental racism, especially on indigenous communities in Canada.

I know that you followed the proceedings really closely after the leak became public. I'm curious. Listening to both the Alberta Energy Regulator and Imperial Oil, what did you take from their testimony? What did you think was missing?

Ms. Aliénor Rougeot: I think that, on the part of the Alberta Energy Regulator, we didn't see a body that seemed to take seriously its duty with regard to people. It seems like they prioritized ensuring that the industry's interests were protected. It ended up conducting a review of its own behaviour during that study and concluded that it actually did nothing wrong. I think that might be correct, because they are just not set up in their policies to actually protect communities from these sorts of contaminations. That tells us that it's a system that is dysfunctional from its root. It was not a one-time accident. It would happen again.

What I took away was a very serious need to rethink the way things are regulated there. I really want to echo what the nations have said. They have reminded us all that they have treaty rights, and that those rights include shared jurisdiction over monitoring. They are demanding shared powers when it comes to regulating and monitoring.

Again, we have to keep going back to the fact that although the federal government doesn't have jurisdiction over all aspects, and a lot is in the hands of the Alberta government, there are things that are clearly within the federal government's purview. Above the Fisheries Act and those other aspects, there is the issue of cross-boundary pollution.

The Chair: We will now have to go to Mr. Kram, I think.

Mr. Michael Kram (Regina—Wascana, CPC): Thank you, Mr. Chair.

Thank you to all the witnesses for being here today.

To Mr. Ostrop from the Alberta Irrigation Districts Association, you said in your opening statement that the government should "implement policy that encourages rather than inhibits" irrigation. Could you elaborate on what you mean by that? How has the government been inhibiting irrigation instead of encouraging it?

Mr. Alex Ostrop: Thank you very much for that question.

We do believe that we have a strong role to play in climate change adaptation. As pointed out, there will be increased variability and there will be more severe weather events. The ability to capture the water when it comes earlier and more suddenly in the season, as a result of certain climatic events, is key.

The ability to build storage reservoirs, either on stream or off stream—and it's largely off stream in our area—is an absolute key. That will help to take pressure off the river system, so that we're not using those river flows in the time when they're most sensitive, and it will really help not just from an irrigation perspective but also from a flood mitigation perspective. Anything from the government level to assist in the establishment of some storage reservoirs, which we feel are a key ingredient for climate change adaptation, is extremely important.

Mr. Michael Kram: You also mentioned that it would be beneficial for Lethbridge to have a regional office of the Canada water agency. Can you elaborate on the benefits of a regional office for Lethbridge?

● (1700)

Mr. Alex Ostrop: Absolutely, and thank you again for the question.

We appreciate what the Canada water agency is willing and able to do. We do see it as an imperative that regional considerations and regional priorities continue to be respected and, as well, that provincial jurisdiction be protected.

For those regional priorities to be communicated to the federal level, I think that having an office in what is really Canada's irrigation capital is very important. We manage fresh water here, and we believe we do so effectively, but if the idea is knowledge sharing and collaboration, then I think having a regional office in the irrigation capital is imperative.

Mr. Michael Kram: Can you share with the committee which organizations or persons you have consulted with before you came to the conclusion that a regional office in Lethbridge would be beneficial?

Mr. Alex Ostrop: We speak on behalf of our member irrigation districts. There are 11 of them.

We understand that obviously with a federal agency that collaborates with and coordinates what I believe are the 20 different agencies where the federal agencies touch on fresh water, there can be value in that, but if there isn't proper regional knowledge sharing, then that value is not what it could be.

Mr. Michael Kram: In response to an earlier question, you indicated that you had consultations about the mandate of the Canada water agency as it was coming into being. Can you share with the committee whether the request for a regional office in Lethbridge was one of the recommendations you made at that time?

Mr. Alex Ostrop: Indeed, we have communicated that as part of that collaboration process during the engagement process.

Mr. Michael Kram: Can you elaborate for the committee on the regulatory approval process for approving an irrigation project as it now stands? Is the regulatory approval process a major undertaking? Is it a minor undertaking? Could you walk us through that process?

Mr. Alex Ostrop: There are several federal departments where we touch. One is DFO. We speak with them with respect to how we maintain and operate our works, as well as how we run the water on- and off-season. We also touch, of course, with Environment and Climate Change Canada when it comes to any sort of environmental impact assessment of major works we're doing. The Department of Agriculture, of course, is a given, but there are even such things as the PMRA and Health Canada, with respect to some of the operational issues concerned. There are many points of contact at the federal level.

Having the ability to perhaps streamline some of those points of contact would be appropriate. We've had a long history of working with all levels of government, whether provincially or, more historically, federally, when it comes to the establishment of this irrigation infrastructure, and we certainly see great value in further collaboration, both provincially and federally.

The Chair: Thank you.

We'll go now to Mr. van Koeverden.

Mr. Adam van Koeverden: Thank you very much, Mr. Chair.

Thanks to the witnesses for joining us today. Again, I apologize for the disruptions you've had to endure.

Today my question will be for Ms. Rougeot from Environmental Defence.

I would like to thank you for sharing your expertise based on Ms. Collins' question regarding PFAS. I also won't do the long version of PFAS any justice by trying to pronounce that. I do know that they're "forever chemicals" and they're found in many plastics and a variety of products we use every single day, which is a challenging thing to wrap your head around, given how potentially harmful they are.

The federal government is going to go to court and defend our decision to ban some single-use plastics. In this committee and in the House of Commons, we've seen Conservatives rejoice and do backflips over the fact that the court has questioned our ability to ban those. In fact, one Conservative member from Ontario called the ban an "evil trick" by the Minister of Environment and Climate Change. We've had members in this committee also question the legitimacy of a plastics ban. I'd note that earlier there was an intervention from one such member who had never heard of PFAS. Therefore, before we go on to ridicule each other on the basis of—

Mr. Branden Leslie: Which member did a backflip? Can we get clarity?

The Chair: That's not a point of order.

● (1705)

Mr. Adam van Koeverden: I'll move on.

Again, the government passed Bill S-5. It enshrined in law, for the first time, the right to a healthy environment, which is a great step forward. There will be consultations opening on this over the next couple of days, along with separate consultations that will open regarding engaging Canadians on environmental justice and racism. This is important.

I apologize if you can't hear my questions over the noise from the other side.

I'm sure you're aware that Canadians care about the environment. Pollution does not impact all Canadians equally. In fact, it disproportionally impacts communities that are poor and racialized more than others. PFAS are just one example of a pollutant where this can be observed.

I'd like to give you a chance to finish your answer to the question that Ms. Collins raised. I would like to ensure that we're all aware of this upcoming consultation, which will inform the government's approach on this matter.

If either of our in-person guests would like to speak to the importance of limiting PFAS in our environment, I think it would be valuable for this study.

Thank you.

Ms. Aliénor Rougeot: I'll be brief on PFAS. I'll make sure my colleagues who are following the file more closely follow up with you.

We are very supportive of the government appealing the decision on plastics. It's very important for us that plastics are no longer in our waterways or bodies, especially when it comes to children, who are extremely exposed.

You mentioned CEPA and Bill S-5. There is a tool when it comes to the tailings ponds under CEPA that we could be using to better protect the communities that are impacted. As you pointed out, in this specific case, they are racialized and indigenous communities. The Minister of Environment could choose to do a risk assessment of substances of concern in the tailings. One of them is naphthenic acid. It's extremely concerning, and the main source of toxicity in the tailings. We'd really encourage this to be considered. It has long been mentioned, and no risk assessment has ever been done. We hope it's a concrete follow-up action to this study.

Mr. Adam van Koeverden: Thank you, Ms. Rougeot.

Madame Larocque, do you have anything to add on PFAS, or a single-use plastics ban and the impact on groundwater?

[*Translation*]

Prof. Marie Larocque: No, I have nothing to add.

[*English*]

Mr. Adam van Koeverden: Okay.

I'll cede the rest of my time, Mr. Chair.

[*Translation*]

The Chair: Right.

That brings our discussion with the first group of witnesses to an end.

Thank you to our witnesses. If you have anything to add to improve our knowledge, please don't hesitate to send it to us in writing. The documents you provide will be distributed to all committee members in both official languages.

We are going to take a short break for the second group of witnesses to get settled.

Thank you.

● (1705)

_____(Pause)_____

● (1710)

The Chair: Resuming the meeting.

For the second group, we have three witnesses with us by videoconference: Professor Beth Parker, from Morwick G360 Groundwater Research Institute; Mike Wei, who is an engineer; and Jillian Brown, who is the executive director of Irrigation Saskatchewan.

[*English*]

If you don't mind, we'll start with you, Dr. Parker, for five minutes.

We'll then go to Mr. Wei and Ms. Brown.

Go ahead, please.

Ms. Beth Parker (Professor, Morwick G360 Groundwater Research Institute, As an Individual): Thank you.

Good evening, Mr. Chairman and committee members. Thank you for the opportunity to speak to you today and join the conversation regarding fresh water and sustainability.

I am a hydrogeologist, and I have spent the past 27 years as a professor—currently at the University of Guelph in water resources engineering, and previously at the University of Waterloo in earth sciences—engaged in teaching and field-based research on groundwater flow systems and the behaviour of contaminants. I work with contaminated site owners and municipalities to design and build groundwater monitoring networks to inform remediation and source water protection strategies in real-world settings.

Groundwater constitutes 99% of the earth’s liquid fresh water, serves as an important link among atmosphere, soils, and surface water, and is key to freshwater resilience under climate change. Groundwater can buffer climate extremes and is therefore the most reliable source of fresh water for drinking water, sanitation and agriculture. Freshwater and ecosystem sustainability is ultimately linked to both groundwater quantity and quality issues.

It is commonly referenced that only 30% of Canadians rely directly on groundwater for water supply, including rural, remote and indigenous populations. However, two-thirds of surface water is sustained by groundwater discharge. Thus, when we account for the contribution of groundwater to surface water, groundwater is then responsible for 75% of the domestic water supply in the Canadian context, so when we're thinking about fresh water, we should be talking about groundwater.

Despite the critical importance of groundwater for the environment and society, it is undervalued, misunderstood, mismanaged and often ignored at the policy level. The new Canada water agency is mandated to "improve freshwater management in Canada". However, its home page mentions the word "river" six times and the word "lake" nine times. There is not one mention of groundwater.

As a hydrogeologist working on contamination, I have spent my career studying human impacts on groundwater. Whether it is the intentional disposal of waste or a result of accidental leaks or spills, groundwater is a common receptor of contaminants. Since groundwater is invisible and moves much more slowly than surface water, it can take decades to discover groundwater contamination, disassociating cause from effect.

We continue to discover new contamination due to human activities occurring decades ago. Recent examples include high nutrient loading from groundwater discharge causing continual algal blooms in Lake Erie and Lake Simcoe, and the discoveries of PFAS and microplastics nearly everywhere.

Since groundwater contamination is slow to remediate, adverse water quality impacts are persistent and cumulative. With the future livelihoods of Canadians at stake, what actions are needed to improve our relationship with groundwater and freshwater resources as a whole?

Among other things, we must act now to increase publicly funded groundwater monitoring systems to holistically understand our shallow and deeper groundwater sheds. Current monitoring systems in Canada are inadequate in representing the dynamic character and complexity of the hydrologic system, especially the groundwater component. The standard practice in groundwater characterization and monitoring is old-fashioned relative to the available technology. Advanced monitoring and modelling tools—many made in Canada—are commercially available, yet they remain underused.

Groundwater expertise in Canada is waning due to retirements and a lack of younger generations entering the profession to take over these leadership roles. Geoscience and water resource engineering programs at Canadian universities are underpopulated. We need increased investment in training new Canadian expertise and research. This gap in expertise is happening at a time when climate change, increasing demand for food and energy production, and natural resource extraction are creating a global water crisis. Groundwater is at the very heart of this crisis.

Our demands for fresh water are now reaching the limits of the natural system. A commitment to changing our habits and improving water monitoring systems, especially groundwater, is needed to understand these limits and operate within them.

Thank you.

● (1715)

The Chair: Thank you very much, Dr. Parker.

We'll now go to Mr. Wei, please, for five minutes.

[*Translation*]

Mr. Mike Wei (Professional Engineer, As an Individual): Good afternoon, ladies and gentlemen.

[*English*]

Thank you for the opportunity to speak to you today.

All of my professional experience has been in British Columbia, where I live, so it's from that perspective that I speak to you.

It wasn't until 2016 that B.C. began licensing groundwater use—decades after other Canadian jurisdictions. Historical investment in groundwater science and monitoring has thus been minimal and insufficient to provide the scientific understanding needed to support the depth of decision-making required today. B.C. is in catch-up mode.

Going forward, British Columbia faces enormous pressures in land and natural resource development, population growth and the water needed to support that. At the same time, B.C. needs to reconcile with indigenous nations in unceded territory. B.C. will also suffer from year-to-year province-wide drought and limits to surface and groundwater supplies. We'll need to address the significant lack of public confidence in how water is managed. All of the above will negatively impact sustainable development in British Columbia and in Canada.

Licensing of groundwater use provides a legal framework, as well as an opportunity to achieve environmental sustainability, economic prosperity, food security and reconciliation with indigenous nations. However, a significant and sustained investment, including investment from the Government of Canada, is needed to achieve this.

The following are recommendations for your consideration.

Increase federal investment and collaboration to support water science, monitoring and planning for B.C., local governments and indigenous nations; to support water infrastructure funding for small, rural farmers and business owners to enable them to withstand chronic water shortages and keep business going—for example, by increasing water storage during drier times of the year; and to support water education initiatives in collaboration with other levels of government to help strengthen meaningful public participation in planning and decision-making processes.

Improve the working relationship between Canada and British Columbia in groundwater so that it recognizes the unique nature of B.C.'s hydrogeology, water supply limits, legislation and operating conditions. Strong and fearless leadership from Canada, as well as from B.C., is required in this endeavour.

Related to the last point, federal responsibility for water science and water infrastructure is scattered in different agencies and appears uncoordinated with provincial efforts. Reviewing ways to consolidate it where it makes sense and improve current methods of seeking meaningful provincial input and collaboration would help.

I am convinced, based on my public service experience in B.C., that when governments treat groundwater not just as a crisis issue but more as a valuable resource—i.e., as a sustained priority—trust, reconciliation and sustainable development will follow.

If you want to discuss this further, please don't hesitate to contact me or ask me questions.

[*Translation*]

Thank you.

[*English*]

The Chair: Thank you very much, Mr. Wei.

I will go now to Ms. Brown for five minutes.

Ms. Jillian Brown (Executive Director, Irrigation Saskatchewan): Good afternoon, members of the committee. Thank you for the opportunity to speak to you today.

As mentioned, my name is Jillian Brown, and I represent the Saskatchewan Irrigation Projects Association. As an organization, we sincerely appreciate the committee's recognition of the need to consider Saskatchewan irrigation in this discussion.

In my comments today, I'd like to highlight our industry's recognition of the importance of surface water sustainability and share with you a few features of irrigation that are not always considered. I'll comment on conditions of drought in Saskatchewan over this past year, substantial opportunities being lost for Canada with continued delays in development of the Lake Diefenbaker irrigation expansion project and, most importantly, the role of irrigators in solution building. I'll also highlight the critical role that the federal partnership with Saskatchewan plays in this context.

Saskatchewan irrigators and our stakeholders are focused on working proactively and collaboratively on solutions that meet the needs of managing water and food sustainability. Water-scheduling research, adoption and exploration of water-efficient technologies such as subsurface and drip irrigation, as well as high-efficiency nozzle and pivot advancements, and participation in engagement sessions with other water users are all examples of ongoing actions in Saskatchewan today by irrigators.

In addition to yield gains driving business, jobs and community sustainability, irrigation has environmental outcomes that are not always front of mind for those who are not producers. As highlighted by the academic community in journals such as Global Change Biology, Canadian Journal of Soil Science, and Agronomy for Sustainable Development, irrigation has been shown to provide producers with greater options to manage their crop rotations, meaning improved soil health and improved soil water use efficiency. In addition, irrigation is a practice that has been shown to increase soil carbon sequestration by 11% to 35% on average in semi-arid regions of Canada. No other agricultural technology provides the same land use efficiency increases as irrigation.

Despite these features, Saskatchewan still lacks sufficient infrastructure capacity to increase irrigation, and the results have meant considerable hardship to communities and costs to government.

In 2023 in Saskatchewan, there were more than 50 rural municipalities declaring agricultural state of emergency due to drought, which contributed to the nearly $2.5 billion in estimated crop insurance payouts for the year, which, as you know, is a significant tax burden to the Canadian taxpayer.

At the same time that this drought and crop loss was occurring, Lake Diefenbaker, the largest reservoir in Saskatchewan, saw more water leave from it in evaporation than from irrigation. Today, Lake Diefenbaker is one of the world's largest underutilized reservoirs, with an original yet unrealized design capacity available to irrigate more than 400,000 additional acres of cropland in the province.

To provide context, even at full buildout, if every acre of the 400,000 potential acres was developed into irrigated land, this would take four feet of water off the top of the reservoir, which has a mean depth of 22 meters.

Seeing the potential of Lake Diefenbaker be reached and Canadians capture these gains requires provincial and federal co-operative leadership and vision that just hasn't been possible since the reservoir was filled in 1967. Progress on Lake Diefenbaker is a real opportunity to take environmentally sustainable action to support national food security.

In conclusion, partnership between the federal and provincial governments to support irrigation development is vital for achieving both agricultural productivity and environmental and climate resiliency, which are both absolutely necessary for Canada. Saskatchewan currently has a vast amount of unutilized potential for solutions in this space that offers monumental opportunity.

Thank you for your time and consideration. I'm happy to take any questions or support further discussion.

● (1720)

The Chair: Thank you very much.

We'll go now to Mr. Kram for six minutes.

Mr. Michael Kram: Thank you, Mr. Chair.

Thank you to all the witnesses for being here today.

I think most of my questions will be for Ms. Brown of the Saskatchewan Irrigation Projects Association.

Ms. Brown, you talked about how irrigation has benefits regarding soil carbon sequestration. Could you elaborate on what soil carbon sequestration is and how irrigation can be beneficial?

Ms. Jillian Brown: Yes, absolutely. If you think about an additional yield that's added to a crop, as well as crop strength and crop residue and the added benefits that this applies to soil health and the capacity for soil carbon sequestration, these are all tied together.

Mr. Michael Kram: Are you aware of any federal or provincial government programs that are currently promoting this practice, through the lens of soil carbon sequestration? Is sequestering more carbon in the soil the explicit goal of any particular program?

● (1725)

Ms. Jillian Brown: Not that I'm aware of. That's why I mentioned it. It's not often something that we immediately think of when we think about irrigation, that there is an environmental aspect that really should be considered.

Really, it comes down to the tools that our producers have in their tool kit to make the best decisions. Irrigation allows the producer to bring on the best crop rotation that's going to allow him to maximize his soil health.

Mr. Michael Kram: Okay.

Maybe I should put it this way. The different levels of government have all sorts of carbon emissions goals and carbon reduction goals. Is the sequestration of carbon in the soil counted in any way in our climate change goals or emissions reduction targets that you're aware of?

Ms. Jillian Brown: Not that I'm aware of.

Mr. Michael Kram: Do you know why that is not being done?

Ms. Jillian Brown: I absolutely do not. Unfortunately, I don't know if I'm the best person to answer that question, not being a specialist in the agronomics component of this, as far as climate modelling and programming with regard to soil sequestration are concerned.

Mr. Michael Kram: Okay.

Are there any other benefits from irrigation that may not be readily apparent that you could share with the committee?

Ms. Jillian Brown: That's an excellent question. I really wish I could support that answer a little bit better, but unfortunately I would hate to start pulling that information out without having prepared notes, as it's not my area of specialty. Really, the crop residue, soil quality, increased soil carbon and operationalizing carbon sequestration as a recommended practice in the various agronomic journals are the ones I would like to draw your attention to the most.

Mr. Michael Kram: Okay, that's very good.

Let's talk a bit more specifically about the Lake Diefenbaker irrigation project, which you mentioned in your statement. You mentioned that this particular project has not been moving forward since 1967, I believe you said. What seems to be the holdup in moving a project like that forward?

Ms. Jillian Brown: That's a fascinating question.

Irrigation is particularly challenging. Like many infrastructure projects, it has a long-term investment horizon and there are considerable public spillover effects. The federal report “Prairie Prosperity”, for example, has research that has looked at the value of irrigation. Most value from irrigation is actually received outside of the farm. That's because of the jobs, the added production and the spinoff impacts that happen in the community. There's a value to the greater public. Our rationale would be that there's a value for public support and engagement in these major infrastructure projects that can develop the industry.

It's a challenging project to move forward, because it's so massive and requires such a substantial amount of upfront capital investment, requiring public support and engagement when only a few small residents are irrigators. Although the benefit impacts the greater province and the greater country, it's challenging to tell that story to those outside of the farm gate. Although there ultimately would be a major contribution from the public sector in that investment, that's a difficult story to tell and to move forward.

Since these spillover effects affect provincial outcomes and national outcomes, you're requiring partnership between the province and Canada to support a project that's transformational, such as the development of Lake Diefenbaker. We've seen this project visited a minimum of four times since 1967. It's not to say that it hasn't been worked on. Periodically, investment is discussed and we bring forward the idea that this is an important question and we see the value in it, but finding the strength to continue this project to fruition has been one of the challenges.

● (1730)

The Chair: Thank you. We're out of time.

We'll go to Mr. Longfield.

Mr. Lloyd Longfield (Guelph, Lib.): Thank you, Mr. Chair

Thank you to all the witnesses.

Dr. Parker, it's wonderful to see you at our committee. Thank you for taking the time to be with us.

I have a few questions for you. We've known each other for many years now—you can almost say decades. The work that you've done on our water cluster in Guelph—Guelph having its source water coming from the ground instead of from the rivers or lakes—and the importance of groundwater.... Now that you have the Morwick G360 Groundwater Research Institute, you're doing a lot of work internationally. I'm thinking of the work in the Netherlands around the filtering of groundwater and around using groundwater in heat exchange systems for ground-source geothermal heat pumps in shallow or deep wells.

We're focusing on water as something we consume. Could you maybe comment on water as another way we can heat and cool buildings, and on possibly using groundwater in a different way in terms of filtering the systems or improving our management of groundwater?

Ms. Beth Parker: As you pointed out, I've been working for a few decades now on groundwater systems in bedrock aquifers, which Canada is very familiar with. Many of our groundwater basins and watersheds are bedrock-relevant, and this has brought us to understand not just how contaminants move through the system, but how heat is transported through the bedrock system. I think what comes to light is the importance of groundwater in many ways or facets, and the multiple uses of groundwater.

In our community here in Guelph, we're actively extracting aggregate and building stone from quarries. That's an example of how we use our aquifers or our subsurface system not just for the water and the conveyance of water or purification of water but also for the materials that we extract from the subsurface.

However, linking to energy or sources of heating and cooling, I think that low-temperature geothermal is possibly capable of providing.... Up to 67% or 70% of our energy needs are for heating and cooling our buildings, so the concept of being able to essentially use the groundwater, which is, more or less, at a constant temperature in the subsurface, to support heating in the winter and cooling in the summer is something that can be managed, perhaps, within a known volume of the subsurface. We would be able to share that groundwater use not just for drinking water but also for offsetting some of our carbon footprint, something that we so desperately want to do. It's a viable technology, and it's being used in many places around the globe.

I guess what we might need to do is invest in infrastructure to know how we can optimize the use of our subsurface system for multiple purposes.

Mr. Lloyd Longfield: Thank you.

It's not just our subsurface system. Under the surface, we connect across provinces and territories and across national and international boundaries. The work that's being done in Israel is something that I saw. One of the witnesses mentioned the drip irrigation systems, and I saw those used extensively in Israel. I know that we're using them in the wine industry and in apple orchards.

Is it fair to say that groundwater has the potential to do some of what surface water is doing currently, if surface water was to go away?

Ms. Beth Parker: It is. First of all, it's important to think of groundwater and surface water as one resource. As I mentioned in my statement, groundwater discharges to surface water and sustains those flows throughout the seasons. Surface water can discharge back to groundwater. They're inextricably linked.

I guess the holistic view of fresh water is something I have heard mentioned many times today, and I think that's a really important concept. Whether it's transboundary issues or how we need to share the uses of these freshwater resources for multiple applications in a viable society or healthy community, I think that's the important concept that we're hearing over and over again.

● (1735)

Mr. Lloyd Longfield: Thank you.

I'm trying to sneak in a final question on the Canada Water Act. It hasn't been renewed since 1970. We have new understanding of water through groundwater in some of the research you're doing. We do have a national water policy that's under review.

What about the Canada Water Act? Could you maybe encourage us...? Is that something we should put in our report as a recommendation?

The Chair: You have about 15 seconds.

Ms. Beth Parker: One of the things we need to think about as human beings is that our habits have perhaps deleterious impacts on our water quality and quantity aspects. I think it's certainly something that has to be kept fresh.

Thank you.

The Chair: Thank you very much.

[*Translation*]

Mr. Simard, you have the floor.

Mr. Mario Simard: I am going to have a question for Professor Parker, who talked about PFAS in her opening address.

Before doing that, however, I want to come back to what my colleague Mr. van Koeverden said earlier, that the government wanted to ban certain plastics and PFAS. That is a good thing, but the real problem is that the small municipalities dealing with PFAS-related problems are being left on their own. We know, for example, that military bases use firefighting foams with a high concentration of PFAS. Wherever there are military bases we will probably find these same problems. And yet the government is having trouble acknowledging this problem.

The costs associated with this are substantial. For the city of Saguenay alone, an $11 million agreement was made with the federal government. However, that money is not enough to solve the problem; it will simply give the people affected temporary access to potable water.

Apart from acknowledging the need to ban plastics and PFAS, the government has to be able to acknowledge its responsibility when it is itself involved in events that cause PFAS to be introduced into potable water sources.

With that said, I come back to my question for Professor Parker.

Does she know of any technologies that would let us get rid of PFAS-type contaminants?

[*English*]

Ms. Beth Parker: I think that was aimed at me. Is that correct?

[*Translation*]

Mr. Mario Simard: Yes.

[*English*]

Ms. Beth Parker: I'm not directly involved in.... I have a minimal amount of specific research going on with PFAS contaminants. It's a relatively new contaminant, so my entire discipline is on a very steep learning curve.

The engineering colleagues who are focused on remediation are advancing several types of technologies for treatment. From what I understand at conferences and so on, they are making excellent progress with water treatment technologies—above-ground treatment, so what we would maybe refer to as traditional water treatment technologies.

In situ technologies for the treatment of PFAS plumes in the subsurface are lagging behind, but mainly because in situ technologies are more complicated in terms of being able to work with the natural environment and the complexities of the natural environment. However, progress is also being made on that front.

The bigger issue is preventing the contamination, because remediation is expensive, delayed, and complicated. We're learning ways, perhaps, in which we should be managing the use of those substances and trying to minimize or prevent them from getting into the natural environment.

[*Translation*]

Mr. Mario Simard: I understand that the best solution is to ban these substances. However, as we know, when these substances are in ecosystems, it is hard to get rid of them, unfortunately.

What concerns me is knowing that small municipalities are facing problems like this and do not have the resources to solve them. From what I have been able to see, pretty substantial sums are needed to be able to decontaminate potable water sources contaminated by PFAS. I don't know whether you have an idea of the costs associated with decontamination technologies for eliminating PFAS. I think that is a responsibility that should rest with both the federal government and the provincial governments, since the costs associated with it are much too high for small municipalities.

I would like to hear what you have to say about the decontamination technologies you are familiar with. This may not be precisely your field of expertise, but I would like you to tell us about the decontamination technologies you are familiar with. Do you have an idea of the costs associated with them?

● (1740)

[*English*]

Ms. Beth Parker: Unfortunately, I don't know the specific technologies by name or their cost in particular.

I can make an analogy to 40 years ago, or more, when we discovered extensive contamination by chlorinated solvents, which were widely distributed in our society in large and small communities. They're commonly used in tool and dye manufacturing and by dry cleaners. It meant that small communities would have these chlorinated solvent-type plumes.

Once you discover the nature and the extent of the problem with these very toxic chemicals, and that they're in your drinking water supply, the first thing is to stop using them or mitigate their use. Then, I suppose, you need to immediately worry about the quality of the water that's being purveyed to the individuals as a drinking water source and those treatment technologies.

[*Translation*]

The Chair: Thank you.

Ms. Collins, you have the floor.

[*English*]

Ms. Laurel Collins: Thank you, Mr. Chair.

Thank you to all our witnesses.

My first question is for Mike Wei.

There's a massive multi-year drought happening in B.C., Alberta and western Canada. Can you talk a little bit about the impact of that on groundwater and what it means for communities? What can the federal government be doing to address this?

Mr. Mike Wei: Thank you, Ms. Collins.

Yes, there have been multi-year droughts. It's problematic for water users in British Columbia. Last year, there were three or four watersheds where farmers had to stop irrigating at a time when they'd already planted and fertilized.

I think one issue is allocating more water than what we have for supply, maybe over-allocating water. The other is lack of storage, so that during freshet, when there's lots of water, users are not able to collect it and store it for later use.

I also think that maybe people are taking water without any authorization, at least in British Columbia. Many people do not know that water is a common-pool resource. Rather, they think that if they live on the land, they own all the water underneath it. That is just not the way water is managed in British Columbia or indeed across Canada.

Ms. Laurel Collins: Thank you so much.

The oil and gas industry used nearly 12% of water diverted from Alberta's rivers and lakes in 2020.

With respect to the witnesses—I don't want to take any time away from them—I will use my time just to put on notice this motion:

> Given that,
>
> The climate crisis is exacerbating drought conditions in western Canada,

Southern Alberta's agriculture sector is suffering economically from multi-year droughts, with impacts to our food supply chains,

Much more must be done by the federal government to ensure healthy watersheds and resilience to droughts,

The oil and gas industry used nearly 12% of water diverted from Alberta's rivers and lakes in 2020,

Droughts are likely to become more frequent and severe as global temperatures rise,

The committee express its concerns over the continuous expansion of the oil and gas sector with seemingly no plans to scale down activity and urges the federal government to do more to build drought resilience through watershed investments, and phase out fossil fuels while transitioning workers to sustainable, unionized, and well-paying jobs.

● (1745)

The Chair: You are just giving notice. You're not moving it.

Ms. Laurel Collins: I'm just giving notice, absolutely.

The Chair: Mr. Wei, your hand is up. I don't know if that means you have a comment that you want to make.

Mr. Mike Wei: Yes. I didn't totally answer Ms. Collins' question about where Canada would fit.

I think that if Canada, through the Canada water agency or through other agencies, is able to help British Columbia and other provinces build their capacity, and if we have provinces that are more capable, we will in return have a more capable Canada.

As a British Columbian, I am not so nervous about interference from the federal government. I think we're all part of a team, if we look at it in the best sense of the word. If Canada can help us, even when we're leading in our role in water allocation and protecting water quality, and if it is done in the right way, it will be of benefit to the provinces, the territories and the nation.

Ms. Laurel Collins: Thank you so much.

I also have a question for Ms. Parker.

We heard from our witnesses in the previous session about the Kearl tailings pond site. It's been one year since news of that leak was made public. Can you talk a little bit about how, when tailings ponds containment systems fail, that affects groundwater and what you see as some of the solutions?

Ms. Beth Parker: I think the issue with tailings ponds would be the hydrochemistry of the water and how that can mobilize certain heavy metals or trace constituents into the groundwater system. I think the release of water from these ponds becomes a major recharge event, and that water can enter into the system, contaminate these freshwater systems and cause toxic effects, I suppose, to the ecosystem that is being impacted.

The concern is with the situation of the hydraulics of this tailings pond. The nature and extent of that impact would be associated with both the quantity of the water and the water chemistry and all the reactions that are going to be happening along those transport pathways. Those can happen over multiple time and distance scales.

The Chair: Thank you.

We're going to a second round, which I'm going to reduce by 25% so that we don't go over too much.

Mr. Leslie, you have four minutes.

Mr. Branden Leslie: Thank you, Mr. Chair.

Ms. Brown, I'd just like to ask a few questions regarding the irrigation in Saskatchewan. I appreciate that you have recognized the obvious benefits, such as yield gains, but I think some of the less obvious ones that we'll see are the expansion of crop rotation, the availability of new varieties to be produced and the improvements in soil health, which in turn allow for even further continued benefits from that.

I wasn't familiar with the numbers you mentioned, so I'd just like to clarify. You said there was somewhere between 11% and 35% increase in carbon sequestration from non-irrigated to irrigated lands.

Ms. Jillian Brown: Trost, in 2013, in the journal Agronomy for Sustainable Development, reviewed 22 studies looking at carbon sequestration and rotation that considered irrigated versus dry land and found that the irrigated land, given the capacity for improved crop rotation and the resulting soil health and stubble development, resulted in an average of 11% to 35% increase in soil carbon sequestration capacity in semi-arid regions such as Canada.

Mr. Branden Leslie: It makes sense, and I think that, from the agricultural perspective, the cropping sector is one of the areas in which we can enhance our sequestration and reduce our overall net emissions.

It's something that, from my perspective, is certainly worthy of government investment. Being from Manitoba, we saw major ones with Premier Duff Roblin way back in the day. I think we're at a point in time where we're going to see more of that, probably similar to the Lake Diefenbaker project, which, as you mentioned, is obviously underutilized.

My understanding is that it will cost hundreds of millions of dollars to expand that. What is the cost? It's something that's very cost-prohibitive to the farmers individually. What is the cost per mile, or on whatever basis you'd like, to lay pipe? Obviously, Saskatchewan is 60 million acres. It's a massive area you'd have to lay pipe for, so what would be the cost to a producer to do a major project like that?

● (1750)

Ms. Jillian Brown: It's really challenging to pin down a number. I've reviewed several studies that have estimated costs. Since COVID, we've seen a substantial increase in costs. Obviously, the cost of pipe has experienced significant inflation.

For a producer without pipe, if they have water right up to the edge of their yard, it's upwards of $2,000 per acre to invest on the farm. Every mile of pipe that's in the ground can cost thousands and thousands of dollars per acre for irrigation. It can be astronomical. With some of the numbers, it would just not be feasible. It would be really challenging to try to pin that down. Obviously, the cost would increase with every mile you are away from the water.

We're seeing a lot of development in Saskatchewan through private and individual irrigators who are doing smaller projects closer to a water source, but without that cohesive and co-operative larger project development, there is greater environmental impact. Having 17 different farmers putting pipe in the lake, versus having one coordinated project that's working to develop and optimize the number of acres, ultimately just means additional inefficiencies.

Mr. Branden Leslie: Thank you for that. I understand that it will be difficult to quantify. It is a major investment.

I appreciate that you mentioned the need for partnerships with the federal government, in this case for Saskatchewan. When you look at it collectively, because you also touched on the drought and flood control that can emerge from this, I think that investment towards adaptation and resiliency to climate change is one of the best things we could be doing, particularly in prairie Canada, on that privately owned farm landscape. Combine that with, of course, the yield gains, the speciality crops that can emerge and all the value-added opportunities for some of those smaller communities that are at times struggling, and the opportunity for them to thrive.

I know that there were some deliberations between the Province of Saskatchewan and the federal government in terms of possible investments and through which avenues. I'm wondering if you could explain where that process was, where it is, and where you think it's going, because it's my understanding that it would be a forced loan rather than any sort of actual investment from the federal government.

The Chair: Unfortunately, we have five seconds left, and that would be a long answer. Maybe you could save it for the next questioner.

Ms. Taylor Roy, you have four minutes, please.

Ms. Leah Taylor Roy (Aurora—Oak Ridges—Richmond Hill, Lib.): Thank you very much.

Thank you to the witnesses for being here.

There are two elements that I'd like to address. One is the use or the allocation of scarce resources, in this case water. The second is how we reduce the demand for water.

While we've talked a lot about irrigation and increasing irrigation, we know that there are some environmental costs to irrigation as well. Earlier in our committee, there was a professor who was very impassioned about the impacts on the hydrological cycle and the fact that rainfall can be impacted for quite a large area, beyond the area that is being changed through irrigation.

While that is a necessary thing to have, and the gains that have been made in reducing the use of water I think are laudable, in that there have been great reductions, we haven't really looked at changing the way we eat. I'm wondering if you could comment on how an increase in plant-based diets actually reduces the demand for water in agriculture.

Either of you, I suppose, could answer that question. I'm not sure who would know most about that. I've just been looking at some research. It takes an average of 1,800 gallons of water to produce a single pound of beef, whereas for tofu it's 300 gallons. If we're looking at feeding the world, world hunger and scarce water resources, I'm wondering whether there's been a conversation about actually trying to move more to plant-based diets.

Does anyone have any comments on that?

Ms. Jillian Brown: I could provide a little bit of a comment on that, I guess from a producer perspective.

The focus has not necessarily been on shifting diets so much, or changing how we eat.

One additional dimension to this conversation with regard to our food system is that in Saskatchewan particularly, our system is exporters and processors. When we're talking about water use, I guess the first note is that pulse crops are significant ones that are grown on irrigated land. You need the irrigation and the water sustainability for most varieties of pulse crops.

Two, in Saskatchewan we've consistently, for the last 10 years, exported 70% of what we produce. Obviously, we produce more than we can eat, but we are exporting it, processing it and then bringing it back. We have no oversight into the regulatory environments or environmental environments that we're sending that away into.

Irrigation allows for higher-value crop development and attracts processors. We've seen that in Alberta with potato processing. It allows us to bring that home and have real impact on our industry producers and their utilization of water or their regulatory stances on various—

● (1755)

Ms. Leah Taylor Roy: Thank you. I think the processing part is important too. I just wanted to get to Mike Wei with that before my time is up.

You talked about the licensing of groundwater use, Mike. I'm wondering if you could talk a little bit about how you see that being done and whether you see that as something that the Canada water agency would be involved in.

Mr. Mike Wei: Thank you so much for the question.

I don't know about the actual decision on the licensing, but as other researchers have said, our understanding of groundwater in Canada and in British Columbia is pretty minimal. Do we know what the extraction limits are for the aquifers? We don't. Do we know why water levels are falling? Well, maybe.

I think where the federal government can really give us a hand is in increasing scientific and monitoring infrastructure and helping us with things like sustainability indicators.

The Chair: Thank you.

Yes, and the permitting is definitely provincial.

Ms. Brown, before I go to Mr. Simard, if you could provide a written answer to Mr. Leslie's last question, it would be helpful. That's what he's requested.

[*Translation*]

Mr. Simard, you have two minutes.

Mr. Mario Simard: That's too generous, thank you.

Professor Parker, Ms. Larocque was asked earlier what the priority mandates of the Canada Water Agency should be and she talked about compiling certain data and about knowledge transfer.

I would like to ask you the same question: what should the priority mandates of the Canada Water Agency be?

[*English*]

Ms. Beth Parker: That's a very broad question.

I also listened to Jay Famiglietti making a comment about the fact that there's perhaps an important role at the federal level to set a certain minimum standard. It can be very useful, because it's a shared resource and water doesn't know these provincial or territorial boundaries in the way the natural system works and so on. I think there's value in a nested approach in managing a public resource like fresh water.

There was the mention, though, of infrastructure for monitoring and being able to understand the quantity and quality of our freshwater resources more holistically. The relationship between our ground watersheds and our surface watersheds is a very important unknown. It's well within technology's ability to understand that more fully, and I suppose these abilities to monitor and track the dynamic nature of these systems so that we can react and adapt to the things that are being learned from monitoring those systems are key.

The Chair: Thank you.

We'll go to Ms. Collins for two minutes.

Ms. Laurel Collins: Thank you, Mr. Chair.

Again, I direct this question to Dr. Parker.

You mentioned in your opening statement that we need increased training and expertise in these areas. One of the things I've been pushing for in Parliament is a youth climate corps, and the Climate Emergency Unit has done a lot of work on this. It's about engaging young people in the kinds of jobs we know are going to be needed now and in the future. One of the things it talks about is ensuring that these people are being trained up in monitoring, tracking, groundwater management and ecosystem restoration.

Can you speak to the need to ensure that young people are joining these fields and getting the right training, and that we're doing everything we can to support them moving into this work?

● (1800)

Ms. Beth Parker: Yes. It's a really important issue.

I'm struggling to find graduate students from Canada interested in doing the research that I have excellent funding for. A lot of my students are international students, but I'm wondering where all the Canadians are. Meanwhile, we have empty positions that need to be filled by these young people. That's a challenge.

I was awarded a synergy award from NSERC, and there were some passionate discussions about the importance of implementing increased funding for the research that's much needed. I think the funding also serves to encourage youth to join the professions that are currently undersupported. I think of the University of Guelph as an example, and at Waterloo we have underpopulated undergraduate programs in water resources.

Our youth aren't going into these professions right now.

The Chair: Thank you.

Mr. Mazier, you have four minutes.

Mr. Dan Mazier: Thank you, Chair.

Professor Parker, in your opening statements, you talked about how 30% of Canadians rely on groundwater for drinking. Was that just a number—like, there were so many million Canadians and it was just rounded off by population—or do you have specific studies of how many people in rural Canada are actually reliant on groundwater for drinking?

Ms. Beth Parker: That's a very old number. It's the only number we have. It's one reported by Environment Canada and hasn't changed since 1999, I think, when it was first reported. I don't think the number is very well informed.

Mr. Dan Mazier: So you're not aware of how many people in rural Canada are drinking.... Is it 100% or 90% of rural Canada? You're not aware of any studies on that. Is that correct?

Ms. Beth Parker: There is a number, but I can't recall it off the top of my head. It's somewhere higher than 30%, but I don't think it's 100%. It's somewhere closer to 45% or 50% getting their drinking water supplied directly from groundwater.

Mr. Dan Mazier: Can you refer to...? I don't want to get into semantics here, but you said that this is what you think. Are you aware of any studies that particularly talk about rural Canada and who is reliant on groundwater for drinking? If you are aware of any of those studies and have them, could you please supply them to the committee?

Ms. Beth Parker: I'm not aware of any that I can cite off the top of my head, but I will check with colleagues and get back to you.

Mr. Dan Mazier: That would go for the other witnesses, as well. If you're aware of any studies for rural Canada, it would be appreciated.

Groundwater monitoring is the other thing, Professor Parker. Is there a standard set across Canada for groundwater monitoring as far as the collection of data is concerned? I know that many years ago, when I was on different committees for water and stuff like that, this was the biggest obstacle—trying to get the data in all the same format so we could go from province to province or watershed to watershed. Is there now a standard set across Canada?

Ms. Beth Parker: There's no modern standard. In terms of water quality, I think we mostly monitor total coliforms and indicator-type parameters, in terms of groundwater quality or private water supplies. There are standards that municipalities use to verify the quality, but not necessarily for emerging contaminants or contaminated site-type contaminants.

Mr. Dan Mazier: That is probably something very helpful to study right across Canada. That's perhaps a role the federal government could play.

Ms. Beth Parker: Exactly.

Mr. Dan Mazier: Mr. Wei, you were saying there were no studies done for aquifers and the usage of them.

I know that, in Manitoba.... I was on a board about 20 years ago. I think it was for the Assiniboine aquifer. It's huge. It's about the size of P.E.I. and we irrigate off it. There have been studies. I think the kicker of that whole thing was that it was provincially run. I would suggest that this is where we get into what is provincial jurisdiction versus federal jurisdiction. I think, if you're going to study an aquifer that's all on B.C. territory, it's probably B.C. jurisdiction.

If you have input into how the water agency could help out with that, it would be appreciated, as well. You can submit those comments.

● (1805)

Mr. Mike Wei: Do you want me to submit them or speak on them?

The Chair: Submit them in writing, please, if you have them.

[*Translation*]

Ms. Chatel, you have the floor.

Mrs. Sophie Chatel: Thank you, Mr. Chair.

I know I have very little time, but I would like to get more details from all the witnesses.

At the committee, we have been studying the Canada Water Agency and its future mandate at some length. What are your recommendations for this new agency? Do you have a wish list to present to us?

The Chair: Whom are you asking the question?

Mrs. Sophie Chatel: I'm asking all the witnesses.

[*English*]

The Chair: Briefly, can you give us your wish list for the Canada water agency, in 20 seconds or so?

We'll start with Dr. Parker, perhaps.

Ms. Beth Parker: I think there needs to be public funding to support a much more modern, technology-based monitoring infrastructure for the entire freshwater cycle. What we need to think about is a whole new relationship with water. Our relationship with fresh water and our old habits are creating more problems, both for quantity and quality, in the distribution of water, so it's valuable for us to rethink how our communities' reliance on water is being used and affected by its use.

The Chair: Thank you.

Ms. Brown.

Ms. Jillian Brown: I think one of the most important parts is recognizing the value of the regional perspective or regional component of this. When it comes to adaptation and adoption of changing needs around water security, I really feel that we need to have the water users involved in solution building, right at the ground floor.

The Chair: Mr. Wei.

Mr. Mike Wei: The first thing is to talk to the provinces and territories about what their needs are. That would be really appreciated. Align your policies within your federal programs to provincial priorities. I think we need funding and collaboration to strengthen our monitoring and scientific capabilities. It doesn't mean the Canada water agency has to do them, but it can help support the provinces and territories in doing them.

[*Translation*]

Mrs. Sophie Chatel: Thank you very much for your answers.

[*English*]

The Chair: Thank you to the panellists and to the members for their excellent questions.

This wraps up our segment on groundwater. It's been very interesting. Your input will be very valuable for the final committee report.

Thank you, and have a wonderful rest of the day.