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December 11, 2018

Dear Joint Review Panel,

**RE: Frontier Oil Sands Mine Project (Teck Resources Ltd.), reference #65505**

Keepers of the Athabasca would like to acknowledge that we are participating in this hearing on Treaty 7 territory, which is home to the Blackfoot Confederacy, Tsu T'ina, and Stoney Nakoda.

Thank you for this opportunity to make final statements for your consideration in hopefully not approving this new proposed bitumen project. As human health and environmental effects in the area are already severe, and not adequately documented, as this project is proposed to utilize the same tailings management and other techniques that have produced this situation, as Alberta's bitumen resource is currently very much overproduced and infrastructure challenges continue, as international challenges to Canada's management of tailings contrast with current work to release tailings to the environment, as industrial emissions are affecting wildlife in Wood Buffalo National Park and spurring more international investigation, as Canada's global commitments require us to produce less greenhouse gas to prevent catastrophic climate change, which is already strongly felt in the area, we call on you not to grant approval to this project. If you do approve Approval of the Frontier bitumen project, you will be *liable* responsible for throwing the entire region into an abyss of contamination and climate change; history will not be favourable to this decision.

Through our experience participating in this hearing process, Keepers of the Athabasca wishes to make sure the following points are taken into consideration:

1. The lack of Indigenous Knowledge utilized by Teck Resources– Contrary to what Mr. Ignasiac said yesterday, during the hearing, Teck Resources explained (page 588 of

hearing transcripts, by Dr. Johnstone) that they do not engage directly with Indigenous Knowledge keepers. While we understand the process of engagement is with Chief and Council, it is also true that Teck Resources could have requested community meetings with Indigenous Knowledge holders. We submit that Teck Resources has failed to incorporate all knowledge in the development of their project. By meeting specifically with Indigenous Knowledge holders, Teck Resources would have had exceptional insight into solutions to environmental and health problems that their proposal in its current form will exacerbate.

This oversight is further compounded by the passing off of every single concern raised by First Nations as described in the 'Consultation documents' provided to the Panel. First Nations are encouraged to pursue process through LARP, through the AER, and through 'forums other than the project specific consultation process'. The reason these issues were brought forward to this table is that the Joint Review Panel is responsible for reviewing concerns. The Joint Review Panel is responsible for adhering to the precautionary principle as laid out in Canada's Environmental Enhancement and Protection Act. The Joint Review Panel must consider that passing the buck for concerns raised by those closest to the land along to other processes should not be acceptable either to the Joint Review Panel, or to Teck Resources.

As an example, diverting water into man-made lakes as 'compensation lakes' is not a solution to the environmental degradation experienced regionally, as these man-made lakes are not appropriate for conducting Traditional Livelihood activities, such as trapping, hunting, and fishing, even while the traditional areas are destroyed.

Confidential 'agreements' with small numbers of First Nation leadership are not an appropriate method of gaining First Nations support, as the Supreme Court of Canada has been very clear that decision making power lies with the membership of First Nations and not the leadership. A better model is shown by Dene Nation or Akitcho Territory negotiators; they consult with the entire community about projects, the community itself meets and gives their thoughts and concerns to a negotiator, who then meets with the project proponent. Chief and Council are brought on in the final stages to ratify the agreement between project proponents and the community. Even a community referendum for projects would be preferable to the system in use in this current project, where community members, including Traditional Knowledge holders with crucial information that has bearing on the project, have no voice. It is a mistake to avoid the Indigenous Knowledge of those closest to the land, with environmental understandings passed on through generations. This lost opportunity will come back to bite us.

2. The principle of sustainable development, as defined under the Canadian Environmental Assessment Act (CEAA 2012, at ss.2 and 4) and Alberta's Environmental Protection and Enhancement Act (EPEA, at s.2(c)) is not upheld in this application, in that the project both alone and in conjunction with other projects in the region compromises the ability of future generations to meet their needs. Cumulative environmental effects and human health effects in the area are already severe as evidenced in studies we presented to this panel in Fort McMurray. Increases in contaminants in water, sediment, and fish downstream of industrial sources; significant air emissions and major pollution incidents; and the loss of over 65,040 ha of boreal ecosystems are well documented. Cumulative environmental impacts have reached a critical threshold based on recent studies. Studies we provided, and described by Co-chair Paul Belanger describe how there is no longer any ecological buffer remaining, environmental impacts affect water quality and the terrestrial animal and plant ecosystems. Additionally current and past industry air emissions are and have produced acid rain showing a clear cumulative impact to lakes and the boreal forest in a very large area. Teck Resources asks this Panel to lower standards in evaluating environmental and financial effects, and considering the fate of endangered species, and asks that this Panel "completely disregard" environmental regulations regarding Parks Canada and Environment and Climate Change Canada's studies and presentations. Teck asks this Panel to consider Parks Canada's 2014 study, instead of their most recent work, another example of backwards standards. Teck insists that everyone else has confirmation bias, when in fact, they are obviously working only in their own interest and minimizing any and all issues this proposed project will exacerbate. We ask that the Panel note the 'science wars' that Teck is instigating by denying science presented by others.

When the UNESCO World Heritage Committee made 17 recommendations to Canada in order to adequately protect Wood Buffalo National Park, recommendation number 5 asks Canada to "Conduct an environmental and social impact assessment of the proposed Teck Frontier oil sands mine project in line with the IUCN World Heritage Advice Note on Environmental Assessment, fully taking into account the Outstanding Universal Value of the property, including the Peace-Athabasca Delta." Keepers of the Athabasca asks that the Joint Review Panel carefully consider our international obligations in protecting an already endangered World Heritage Site and not approve the current project.

Approving a new bitumen project, the largest and most northerly bitumen mine yet, and very close to Wood Buffalo National Park, will push regional cumulative effects past the breaking point. To illustrate our previous point, concerns raised by all of the First Nations in their 'Consultation documents' mention cumulative effects, and all of these concerns are passed over to other venues via these 'Consultation' documents. Keepers of the Athabasca maintains that it is appropriate for the Joint Review Panel to consider the

exacerbation of already severe cumulative effects, as you are tasked with ensuring this project conforms to EPEA.

3. Health effects: this project would exacerbate current, known, while not properly documented human health effects, including rare cancers. Our expert, Dr. John O'Connor discussed the fact that residents in Fort Chipewyan, since the late 90s, had begun to experience health issues unlike any time in its 200+ years. Malignancies, auto-immune diseases, diabetes were previously foreign to residents. A spike in certain cancers especially was quite noticeable by the early 2000s. Cancers that include cancer of the biliary tract-notably cholangiocarcinoma, a particular cancer that was rare, and not expected to occur at more than 1 in 200,000 of the general population, occur in the Fort Chipewyan area at a rate of 3/850 people. The Alberta Cancer Board revealed to Fort Chipewyan that cancer was at least 30% more prevalent there, singling out specific types of cancer, including hepatobiliary cancer. The comprehensive health study, whose Terms of Reference were put together by a Scientific Team and approved by all local First Nations, was abandoned when bitumen industry representatives announced they would be part of the 'oversight committee'. Teck insists on talking about their Health Assessment, which is not anything close to a health study. The much needed comprehensive health study has never been completed, and human health impacts from existing projects continue increasing in severity.
4. Environmental and human health monitoring: As current self-reporting practices by industry are shown not to be successful in protecting either the environment or human health, the approval of yet another bitumen project will exacerbate these issues. We discussed in our presentation to the Panel the fact that government monitoring efforts have also been biased (referencing the CABIN study by Robert Brua [spelling is incorrect in the transcript] of Environment Canada – page 1849 of hearing transcript on October 4, 2018). Third party independent monitoring and community based monitoring is needed.

Funding for independent monitoring is not readily available, either for community monitoring programs or for independent third party scientists. Community monitoring programs will need development and capacity building in order to be successful, and open source data banks are needed to file, share, and compare monitoring results. There is currently no independent or non-biased scientific monitoring being done on a consistent basis, and past monitoring results from the excellent but now dissolved Cumulative Effects Management Association have been dispersed. Very many people poured their time, effort, work, and heart into the important work of this Association for over a decade, to have all of that disbanded and discontinued, and the results no longer

available. This is not acceptable, and also affects community attitude toward the current proposal, as cynicism regarding monitoring in general is setting in.

5. Financial considerations, including: potential overstating of Royalties, income, and taxes, the potential for huge costs to Canadian society in case of stranding or abandonment, and the overall economic viability of this project. As our expert witness Dr. Gerda Kits stated, a fair and full assessment of the project requires that benefits be weighed against the potential costs resulting from the project. Not only does Teck does not provide any Cost Benefit Analysis, it asks the Panel to disregard the CBA that was presented.

Teck's submission provides only part of the information necessary to determine whether the project will, in fact, yield net benefits. It does not provide an estimate of total revenues over the life of the project, necessary to determine the benefits of the project. It provides estimates of private costs (construction, operation, and reclamation costs) but does not provide any monetized estimates of social costs, such as costs associated with climate change, species loss, other environmental damages, or impacts on human health, all of which are possible to estimate.

The Oil Sands Conservation Act states that projects may be approved if they are "in the public interest", and it is not possible to determine public interest based on the information provided by Teck Resources in regards to the financial viability of the Frontier bitumen project. Canada's EPEA recognizes that "the protection of the environment is essential to the integrity of ecosystems and human health and to the well-being of society," and finally "the principle of sustainable development, which ensures that the use of resources and the environment today does not impair prospects for their use by future generations." None of these legal requirements are met by Teck Resources in their application for a new bitumen mine.

The information that we wanted to present you with in our Motion to call witnesses (that was denied by you) has now hit the news; the cost of reclaiming fossil fuel infrastructure in Alberta can be as high as \$260 billion, much more than previous estimates. This new \$260B figure is important for the Joint Review Panel to consider, following the precautionary principle in looking at worst case scenarios, as you evaluate adding yet another, largest yet potential source of liability to the already onerous list of oil gas and bitumen facilities for Alberta and Canada.

In order for regulators, including the Joint Review Panel, to properly assess the economic effect of decommissioning and restoration provisions (DRPs) and the ability of Teck to fulfill their decommissioning and restoration obligations, the following recommendations need to be fulfilled. Teck should:

- Disclose separate values for liabilities incurred and revisions to estimated cash flows.
- Identify and correct any internal control system deficiencies underlying high year-over-year rates of revision to expected cash flows.
- Establish an asset retirement savings plan to assure timely settlement of DRPs. The savings plan should account for the possibility of significant unanticipated acceleration in settlement dates.
- Include DRP payments in the obligations table reported in the annual *Management Discussion and Analysis*. If the amounts are discounted, it is important to supplement the disclosures with undiscounted figures so that analysts can see the total amount of undiscounted expected cash flows. If amounts include an inflation adjustment, this fact should be disclosed along with the un-inflated amounts. If expected cash flows are truncated (e.g., disregarded beyond  $n$  years), disclose the truncation period, the justification for the truncation, and the total period over which settlement of existing DRPs is expected to occur. If some obligations require perpetual asset retirement activities (e.g., water containment or treatment – both highly relevant to Teck’s operations), disclose the annual undiscounted and un-inflated cost of these activities.
- Recognize that DRPs are “critical accounting estimates” and provide useful, non-boilerplate MD&A disclosures that will improve forecasting.
- Disclose the following additional information, if not included elsewhere:
  - The undiscounted value of new decommissioning and restoration provisions incurred during the year. Separately disclose data for provisions assumed in business combinations.
  - The expected number of years over which Teck’s existing DRPs will be settled, the expected cash flow compounded annual growth rates (CAGRs) over that period, and the factors contributing to the anticipated cash flow CAGRs.
  - The historical and anticipated future order and pace of DRP settlement.
    - Absent information to the contrary, it is expected that similar assets will be retired on a first-in-first-out basis. If asset retirement costs related to newer assets will be incurred prior to decommissioning and restoration provisions for older assets, and the change in that order will have a significant impact on the amount and timing of expected cash flows, Teck should disclose this information.
    - Also, absent information to the contrary, it is expected that Teck would on average retire one year of DRPs (incurred 30 to 60 years ago) every year. This could be called an “equilibrium pace.”
    - To assist analysts in making projections from historical DRP payments, Teck should disclose whether recent DRP settlement costs reflect an accelerated, equilibrium, or deferred pace of retirement.
  - The undiscounted amount of market risk premium with an explanation of how this amount was determined.

- The discount rate used to calculate the present value of expected cash flows and, if the rate includes a credit adjustment, an explanation of how the credit adjustment was determined taking into consideration “the effects of all terms, collateral, and existing guarantees” specifically related to Teck’s DRPs.
- Reasons for historical trends in the rate of revisions to expected cash flows and expectations for future revision rates.
- Historical DRP/CapEx ratios, forecasted changes in this ratio, and the underlying causes of such changes.
- The amount and types of financial assurance, including restricted assets, in place to secure settlement of DRPs.
- Details about any decommissioning and restoration savings programs designed to assure the availability of sufficient resources to satisfy DRPs in a timely manner as they come due.

The above information and analysis is required in order for the Joint Review Panel to sufficiently evaluate Teck’s environmental liability management if regulators intend to make an informed decision in the public interest to add billions more to the ~\$260 billion in oil/gas/mining liabilities the Alberta public is already at severe risk of inheriting from industry. Any evaluation of the viability of Teck Resources and any cost/benefit analysis of their proposed Frontier bitumen mine both need to properly account for their current and proposed environmental liabilities, including contingent liabilities and the potential for regulatory acceleration of decommissioning and restoration obligations.

Alberta’s bitumen royalty regime was formally excluded from examination during the province’s 2010 royalty review and was effectively excluded from examination during the 2015 royalty review. Bitumen land sales and royalties currently collect much less than a nickel for every dollar generated from oilsands development. Alberta has never produced more oil or collected fewer royalties than it does today. This is simply not sustainable over the long term. A proper public interest evaluation of Teck’s proposed bitumen mine needs to appropriately account for royalty risk: the spectrum of potential royalty outcomes over the course of the Frontier mine’s life need to be weighted by probability and incorporated on an expected value basis into the cost-benefit analysis of whether the project is in the public interest.

6. Consideration of climate change in relation to this project: Teck’s stated objectives in their Application and subsequent responses to information requests are simply not achievable. Extreme weather may provide risks not listed in the Environmental Impact Statement or in Teck’s answers to information requests, as extreme winds, fires, and floods can affect facilities, production, and plans for tailings management.

Regarding the advisability of adding yet another new bitumen mine to production, after the Prosper bitumen mine and Imperial's new expansion project at Cold Lake were already approved this year, Keepers feel that your approval of the largest bitumen mine yet would be a terrible mistake. Scientists, including William Peltier, head of the University of Toronto's Centre for Global Change Science, John Smol, Canada Research Chair in Environmental Change at Queen's University, and David Schindler, professor emeritus at the University of Alberta, recently said "Strong action must be taken in the next few years (in regards to action on climate change). There is no time for the 'transitional economies' that some have touted to pacify fossil fuel interests by investing in still more fossil fuel infrastructure".

Additionally, approving this project will subtract more peatland from the mix in Northern Alberta. Current plans dictate the replacement of areas destroyed for open pit bitumen mining with upland forest and tailings storage lakes, amounting to the destruction of over 29,500 ha of peatland habitat. Peatland sequesters carbon dioxide, so this loss will increase our carbon emissions. Landscape changes caused by mines approved until 2011 will release between 11.4 and 47.3 million metric tons of stored carbon and will reduce carbon sequestration potential by 5,734–7,241 metric tons C/y, so additional bitumen development, including the current proposal for Alberta's largest bitumen yet, will decrease Canada's ability to sequester and store carbon dioxide exponentially.

Recent reports show that world carbon emissions increased substantially this past year. Canada is one out of only five countries in the world whose carbon emissions increased. Sir David Attenborough recently said "If we don't take action on climate change, the collapse of our civilizations is on the horizon". We are in a struggle to provide a sustainable future in this historic time, and approving Teck Resources' proposal for a new, largest ever bitumen mine would be far worse than fiddling while Rome burns, it would be like adding gasoline to the fire.

7. Tailings: Contrary to Mr. Ignasiac's statement yesterday, Keepers certainly does challenge Teck's tailing management plan; the proposed tailings management for this project is not acceptable, considering known impacts of current tailings management. Planning on using "the same" tailings management plans as other bitumen projects shows insufficient research and effort by Teck Resources. On page 597 and 598 of the hearing transcripts for September 27, 2018, tailings management is discussed. Mr. Chiasson admits that there is not an engineered clay liner, or any type of liner in their tailings management plan. My point is that even municipal landfills must have either engineered compacted clay or synthetic liners. Some larger landfills have a dual liner with leak detection and leachate return systems. We have this technology readily available; why is



it not already in use by industry, and required by the Alberta Energy Regulator? The Joint Review Panel needs to weigh the advisability of adding more inadequate and massive tailings into the landscape. For Teck to claim that they consider their proposed tailings to be ‘full containment’ is patently ridiculous without even a liner, never mind a single tank.

Teck Resources describes their tailing management plans, similar to other industry plans, as including seepage wells to return tailings seepage from beside the ponds. No tailings management plan, including that of Teck Resources takes vertical seepage into account, in which tailing leakage vertically enters groundwater and moves to other locations, including into the Athabasca River. The risk of infiltration of tailings and other process water has been acknowledged by industry and government since at least 1981, according to the 2008 Allen report for Natural Resources Canada.

This brings to question ‘self-reporting’ by industry regarding the massive tailings leakage into groundwater that we are currently experiencing. There has been much obfuscation around ‘seepage wells’, which does not examine the issue of vertical seepage whatsoever, but actively avoids it. From our knowledge, there has never yet been a report of tailings leakage into groundwater. While we have a NAFTA (USMCA?) challenge regarding Canada’s current management of tailings, and tailings ponds are known to be leaking down into the groundwater and then back up into the Athabasca River, no company has specifically reported this, to our knowledge. With this state of affairs, it is not appropriate for this Panel to grant approval to a new bitumen mine that intends to maintain the same poor tailings management and reporting options as other bitumen facilities. Approval of this project would be an embarrassment to Canada, and especially to this Panel.

Regarding groundwater tailings leakage, as Dr. Wendling’s study points out, the hydrogeological units at the Teck site may have different hydrological behaviours than similar units at other oil sands project sites, located tens of kilometres away. Also, Teck has used assumptions in their conceptual and numerical models (eg. assuming the presence of impermeable layers that create a barrier to groundwater flow near and under the Athabasca River) that have not been confirmed by field investigations. These assumptions, while convenient for Teck, are inaccurate and show the bias of their expertise in this area. Poor definition of the piezometric conditions also affects the reliability and validity of both the conceptual and the numerical models provided by Teck. Teck refers to outdated studies published as far back as 1979 (38 years old) in this scientific field of surface water and groundwater interaction, that has evolved drastically in the last 10 to 20 years. Currently available tools and protocols should have been used by Teck in their application, to adequately assess the surface water and groundwater integration in the affected region.

Keepers note the lack of any full containment options for tailings (page 606 to page 614 on the transcript from September 27, 2018). This technology is available; pond liners, dual liners with leak detection and return, tanks, and other infrastructure, and because of the lack of innovation, (contrary to Teck's claims of 'innovation') and lack of resources put into tailings management and reporting, grave environmental and health effects are taking place without being appropriately measured, incurring international challenges to Canada's approach to tailings management. Long term tailings approaches threaten to undermine sustainable development, as risks are deferred and placed on future generations.

8. Aerial emissions: particulate matter affects human health. Studies on the effects of particulate matter experienced by humans show that effects can vary from irritation (eye, nose and throat), headaches, nausea, dizziness, and the worsening of asthma symptoms, to more severe effects like damage to the liver, kidneys, and central nervous system, to increasing the risk of cancer. Studies show that the evaporation and atmospheric oxidation of low-volatility organic vapours from the mined oil sands material is directly responsible for the majority of observed secondary organic aerosol mass. The resultant production rates of **45–84 tonnes per day** make the oil sands one of the largest sources of anthropogenic secondary organic aerosols in North America. While these regional exceedances in particulate matter are well documented, their specific effects on local human health and the environment have not been well documented at all.

Traditional Knowledge holders in our membership have raised the possibility of increased forest flammability. With over 50 tonnes of hydrocarbon related particulate matter emissions landing on the Northern Alberta boreal forest every day, the addition of yet more emissions with this largest yet bitumen mine, and even placed further north, would be a disaster. What kind of disaster could depend on ingredients such as lightening and wind. As we have seen during the Slave Lake (2011) and Fort McMurray (2016) fire, our increasing wind speeds make forest fires literally unstoppable. While 'forest flammability' may be a new idea for many, it deserves to be researched and treated seriously. The northerly aspect of the current project demands that the Joint Review Panel think about the tons of hydrocarbon particulate matter released every day, and in the absence of research on forest flammability, take these aerial emissions into consideration in your decision. We are changing the world around us, and this dynamic situation we have created affects us as well.

## In Conclusion

An Overview is necessary to make the best decision possible.

It is with the distress of local communities that we are here today to offer statements that will assist in your decision regarding the proposed “Frontier” bitumen project. The ultimate outcome of your decision will soon be exposed and affect us long into the future. This decision will have impacts for all of life on our planet for the next seven generations, whether it is built or not. It is our understanding based on our experience with Teck Resources in this hearing, that the preconditioned need to maintain current consultation process, combined with the ill informed inadequacy of the project plan does not meet best interests and well-being. We are considering a whole world approach. Teck misrepresents global interests and needs in a fully biased and self serving way. As the Joint Review Panel we hold you responsible for a full overview of the “Frontier Oil Sands Mine Project.” The name itself is a fallacy and presents a perspective that is very misleading. “Frontier” is a word meaning international boarder, edge of settlement, or limit of knowledge, and this word was used to colonize Canada. The word “Frontier” perpetuates the disproven and discriminatory concept of *Terra Nullius*, that there can be ‘vacant’ or ‘unproductive’ land, and that Christians have the right to remove others who are there and remove the resources for their own benefit. Keepers of the Athabasca hereby register our objection to this concept, and encourage you not to offer Approval of this project.