WHEELER RIVER PROJECT ENVIRONMENTAL IMPACT STATEMENT TECHNICAL REVIEW RESPONSE

English River First Nation

Prepared by:

SHARED VALUE SOLUTIONS

Source

February 22, 2023

English River First Nation

321-2555 Grasswod Road
Saskatoon, SK
S7T 0K1

EXECUTIVE SUMMARY

Denison Mines Corp. is proposing to develop the Wheeler River project (the Project), an In-Situ Recovery (ISR) uranium mining and processing facility located in the Athabasca Basin in northern Saskatchewan, approximately 600 km north of the city of Saskatoon. Denison's proposal requires approval by the Canadian Nuclear Safety Commission (CNSC) under the *Nuclear Safety and Control Act*. Before the CNSC can make a licensing decision on this proposal, an environmental assessment conducted under the *Canadian Environmental Assessment Act*, 2012 affirming that the proposed activities will not cause significant adverse environmental effects, is required. This project is also subject to the environmental assessment requirements of the Government of Saskatchewan.

On November 21, 2022, the CNSC accepted the draft Environmental Impact Statement (EIS) from Denison, releasing the EIS for public review and comment. The EIS is intended to provide analysis on the project's potential environmental effects and measures to mitigate those potential impacts. Further, the EIS is based on the incorporation of western science and Indigenous Knowledge (IK) that includes direct input from English River First Nation (ERFN).

It is ERFN's expectation that input from ERFN and our citizens will be appropriately considered in the EIS. It is necessary that all parties recognize the potential for this project to have adverse impacts on the environment and rights, interests, and way of life of the ERFN.

A uranium mining project, like any other mining project, may result in both positive and negative impacts on the environment, including health and society. Where the Wheeler River project is unique in Canada is in respect to the many unknowns and uncertainties associated with the novel In Situ Recovery (ISR) mining technology which would be used in Canada for the first time. ISR technology poses novel factors, including risks and potential impacts, that will be considered for the first time in this assessment.

The most significant risks result from the potential for hazardous materials to escape Denison's control and contaminate the surrounding environment. While spills are a common and mitigatable risk with any mining project, the primary concern with this project is that such spills would occur below ground where contamination is not visible or always detectable. ERFN and its citizens, at multiple points through engagement with Denison, have raised concerns about the potential for mining fluids to escape beyond the project footprint and contaminate surrounding ground and surface water. **The toxic nature of mining fluids being used combined with the complex flow pathways of ground and surface water surrounding the mine site pose significant potential risks to the regional ecosystem, downstream waterbodies, and ERFN.**

ERFN's primary interest is to ensure that the potential risks are quantified, that effective mitigation measures are identified, and that the project is designed and operated to ensure that those risks are managed over the long-term.

ERFN has reviewed the draft EIS from this perspective.

We also note that the Wheeler River project is proposed in the context of significant perceived risks among ERFN members about the nuclear industry. ERFN recognizes that the nuclear industry in Canada is among the safest in the world. However, many of our members are aware of nuclear catastrophes and accidents in other parts of the world, leading to significant concerns about uranium mining. The associated psychological and perceived impacts of the Wheeler River project experienced by ERFN members may contribute to changes in the ERFN way of life, including avoidance and reduced enjoyment or connectedness to Nuhtsiye-kwi Benéne (ERFN's Ancestral Homelands). ERFN and Denison are working together to better understand the impacts of cumulative effects on ERFN and within the Ancestral Lands, and what role Denison can play in reducing the potential for impact in this area. ERFN expects that Denison and CNSC will implement appropriate and effective mitigation and accommodation measures to address cumulative impacts.

REVIEW OF THE DRAFT EIS

ERFN, with support from Shared Value Solutions and Source Environmental Associates, reviewed the draft EIS. We summarize our key findings in three general categories: (a) Project Elements that ERFN Supports, (b) Project Elements That Require Additional Information or Refinement, and (c) Project Elements where ERFN has Significant Concerns:

PROJECT ELEMENTS THAT ERFN SUPPORTS

- Denison is proposing the use of a freeze-wall as a containment system for mining fluids. While we believe there are inherent challenges in ensuring that the freeze-wall is effective, ERFN agrees that the freeze-wall is an important mitigation measure that will reduce overall project risks. It is therefore imperative that both the design of the freeze-wall and the associated emergency procedures in the unlikely event of a failure is fully considered, and that provisions for long-term maintenance are included in the licensing conditions.

- Denison is proposing the use of effluent treatment for the Wheeler River project. Treatment of contact water is essential for ensuring that effluent meet appropriate water quality guidelines prior to discharge. We support effluent treatment, but note that additional refinement is necessary. ERFN expects that all water discharged from the Wheeler River site will meet appropriate water quality guidelines.

- Denison intends to send left-over process precipitates off-site for additional processing and disposal rather than being left on site. This will reduce the environmental impacts left on site, and assuming waste materials are appropriately handled and disposed of responsibly, will reduce the overall risk to the environment. ERFN notes that Denison should continuously improve methods of minimizing the development of waste products to minimize its overall environmental footprint.

- Denison proposes to recycle significant amounts of process water that will limit both the amount of water withdrawn from and released to the environment to support processing. ERFN proposes that Denison to continue to identify efficiencies and use best technologies to further reduce external water demands.

PROJECT ELEMENTS THAT REQUIRE ADDITIONAL REFINEMENT

- The water balance associated with Denison's water recycle program is not clearly defined. ERFN believes that it is important for Denison to quantitatively describe water use in the project within the EIS, rather than waiting until the permitting phase of the project. The water balance for the project must be better understood, as it may disclose significant impacts on the aquatic environment.

- ERFN acknowledges that Denison intends to do a best available technology study to define water treatment options. Until this study is conducted, 'best' remains to be defined. We request that ERFN be fully engaged in this study and be provided with an opportunity to discuss with ERFN the best treatment option for this project in order to protect the aquatic environment.

- The water recycle program is conceptual at this stage. Denison has committed to following the "As Low as Reasonably Achievable" standard and continual improvement initiatives during each phase of the project, including the next phases of licensing. ERFN notes this commitment, and recommends quantitative assessment of water recycle as part of the EIS, as this may address the potential issue with effluent acute toxicity discussed in the comments below.

- While Denison has met the minimum standard for baseline data collection (i.e., one year of data), ERFN maintains that there are insufficient data to accurately characterize the baseline aquatic environment. Given the insufficient datasets, the present assessment of the potential impacts carries too much uncertainty. Based on the baseline characterization (Ecometrix, 2020, EIS Appendix 8-D), the majority of aquatic environment baseline data were collected in 2016 or earlier, and only one year of data (2016) was collected for aquatic biota (benthic invertebrates, plankton, fish tissues) and sediments. Most of the hydrological and fish habitat data forming the basis for those characterizations were collected prior to 2014, and there are very little winter data. Denison has not justified the limited spatial and temporal coverage of the baseline studies. ERFN recommends that Denison should collect at least one additional year of data to assess the current aquatic environment and make the necessary revisions to the baseline characterization. It's important to note that most of the previous baseline data is now over five years old, so the best practice would be to collect two more years of baseline data. This would also serve to meet the provincial TOR and EIS guidance that prescribes all biological and time-sensitive data should be less than two years old (Saskatchewan 2021).

- The EIS has analyzed the potential impacts of the project on Northern Pike and White Sucker, which are considered significant to ERFN. However, there is no evaluation of the effects on Walleye, Lake Whitefish, Lake Trout, and Arctic Grayling, which are also considered important by ERFN. Denison has used Northern Pike and White Sucker as a representation for these species, but there is no evidence provided that these species are appropriate surrogates. ERFN also notes inconsistencies in the fish presence/absence data used for the baseline and EIS. Additionally, the potential impact on food web dynamics and its implications for fish species is not thoroughly discussed.

- The EIS would also benefit from more robust efforts to identify and justify key assumptions, as well as key knowledge gaps and how such gaps will be addressed. These are requirements under CEAA 2012. Issues identified in our review and discussed below include key assumptions used in modelling, as well as gaps in data and knowledge relating to critical aspects of the EIS, including the identification of potential impacts and the assessment of significance in relation to groundwater/hydrology, the aquatic environment, local biota and other important values. ERFN has identified instances throughout the report in which such assumptions or knowledge gaps require further justification or additional detail.

- The aquatic environment section of the EIS is also missing information on how malfunctions were evaluated (as required by CEAA 2012 S.19(1)[a]), and provides limited discussion of food web dynamics and their implications to the EIS as required by CEAA 2012 REGDOC 2.9.1. Please see the comment tracking tables for some specific examples of knowledge gaps and assumptions requiring clarity from Denison.

- Denison presents a very narrow assessment of Human Health impacts as a result of the Wheeler River Project. By considering only the direct impacts of chemical and radiological elements of the project on public and worker health, Denison has failed to consider an entire suite of secondary impacts to human health, including the project's impacts on sexual health and violence, use of drugs and alcohol, and the psychological and mental health of ERFN members. Additional consideration of these factors and appropriate mitigation measures should be required in the EIS.

- Denison notes that the increased amount of contaminants of potential concern released to the environment by this project are muted in comparison to the baseline conditions. ERFN is concerned that the impacts of the Wheeler River project still result in additive or synergistic effects on the local and regional environments. As baseline contaminant levels in human health receptors are already high, any additional inputs from the Wheeler River project will serve to add additional stress to an already impacted environment. These issues should be addressed in the EIS.

- ERFN is concerned that the EIS does not sufficiently account for the cumulative effects of past projects and their impacts. Although Denison has attempted to integrate Indigenous Knowledge (IK) with western science, it is the view of ERFN that the representation of these efforts in the EIS falls well short of best practices. There are still significant gaps in the consideration of both cumulative effects and IK that will need to be addressed in the EIS.

- Denison understates the impact of the Project on the Community Well-Being by focusing only on the effects of ERFN citizens participating in the Project's rotational work schedule and related impacts to family and community cohesion. Although the employment and involvement of ERFN citizens may have an effect on certain aspects of Community Well-Being, the Project also has broader direct impacts on ERFN's Ancestral Territory, affecting the well-being of all ERFN citizens. The presence of the Project will alter how all ERFN citizens interact with Nuhtsiye-kwi Benéne, thus influencing ERFN's overall Community Well-Being and Quality of Life. This must be acknowledged and addressed in the EIS.

- Although the erosion of the traditional economy and negative impacts on harvesting activities through the Wheeler River Project was identified as a major concern by ERFN, Denison understates these potential negative impacts and concludes that traditional harvesting activities such as trapping, hunting, and fishing will not be significantly affected. It is crucial that Denison takes proactive measures to support the traditional economy and that these measures be to the satisfaction of ERFN as a condition of licensing.

- It is important to ensure that a robust monitoring and follow-up programs are developed that measures the impacts of the Project on the KIs, including traditional economy, to ensure that there are no additional negative residual effects of the Project. Additional residual adverse economic effects may likely result from the Project, such as: economic downturn associated with a boom-bust industry; economic leakage, exacerbating socio-economic disparities between the LSA, the RSA, and outside communities; income and economic disparities within the LSA and RSA based on gender, culture, or other factors; and adverse effects on the traditional economy, as the effects presented in the assessment likely underrepresent future impacts. ERFN has obtained assurances from Denison that these issues will be addressed through proactive monitoring and follow-up programs.

- The draft EIS lacks contingency plans for many potential scenarios in which failure occurs. Denison notes and ERFN agrees that failure of the freeze-wall is predicted to be an unlikely event, but ERFN notes that a response plan for this and other events must be developed as a condition of licensing.

- The draft EIS does not provide sufficiently detailed information to model the dispersion of radioactive material if it were to enter into Wheeler River in the event of a vehicular accident. While the likelihood of this scenario to occur is low, Denison must be appropriately positioned to respond in such an event as a condition of licensing.

- Denison does not adequately characterize the potential for system failure of the effluent treatment facility. As a result, the draft EIS provides no insight into how Denison may be able to store water or otherwise prevent the release of contaminated water to the environment. This scenario must be evaluated in the EIS, and emergency response procedures must be addressed as a condition of licensing.

PROJECT ELEMENTS THAT ARE SOURCES OF CONCERN

- As presented in the draft EIS, Denison is proposing to leave heavily impacted water in the leach field, with the expectation that the plume will not migrate to Whitefish Lake sufficiently to cause environmental impacts. Given the risks involved, ERFN expects Denison to take a more proactive approach to leach field decommissioning to ensure the leach field is actively remediated at the end of project life. ERFN recommends targets based on returning groundwater to near-baseline conditions by doing as much mitigation as possible while the mine is in operation/in closure in order to reduce uncertainty and risk for future generations. This is a fundamental concern for ERFN, and must be addressed in licensing conditions.

- The predicted effluent quality of the industrial wastewater treatment plant is quite saline. The quality of this water at end-of-pipe (prior to the diffuser) may cause acute toxicity to

aquatic life, meaning discharge may contravene the Fisheries Act/Canadian Metal and Diamond Mine Effluent Regulations. Ensuring that adequate measures are implemented to ensure that discharge water quality is within guidelines that are adequately protective of aquatic life is a fundamental concern for ERFN.

- One of the core challenges of using ISR is to ensure the containment of mining fluids (solvent materials injected into the ore body, as well as uranium and other ore products mobilized during recovery) to the Project area. Denison plans to use a freeze-wall to prevent lateral groundwater flow and potential contamination of groundwater and surface water. While the technology is not entirely new in Canada, the large size of the freeze-wall presents a significant operational and closure challenge. Denison's assessment largely depends on models and assumptions, but provides little supporting evidence or reference to previous studies or projects. ERFN stresses the importance of ensuring that Denison's models are shown to be conservative and that Denison is able to carefully monitor and maintain the freeze-wall to prevent the release of contaminated material. In the event of mining fluids or other contained materials being released, ERFN expects Denison to detail emergency procedures to stop the release and restore the affected environment. ERFN understands that Denison is committed to developing an emergency response procedure for this event.

- Denison has not gone far enough in terms of learning from and incorporating information from ERFN provided in the *Traditional Knowledge Study and Health and Socio-Economic Study Report*. It appears Denison put a disproportionate amount of reliance on the views and interests of one ERFN land user. While we applaud the efforts of Denison to seek feedback from ERFN land users directly and to work closely with such land users, ERFN's rights and interests in the region of the Project (and the potential of the Project to adversely impact such rights and interests) extend well beyond that of just one land user. It is important for the proponent and regulators to understand that while the rights and interests of individual ERFN members are important to consider, the Elders and elected leaders of ERFN represent the collective rights and interests of ERFN as a Nation. The results of the scoping study indicated that ERFN holds firmly established rights to the area where the planned project is located. Numerous studies conducted over several decades have examined ERFN's relationship and connection to land use and occupancy of the region where the proposed mine is located from traditional land use, subsistence harvesting, ecological, and socio-cultural and economic perspective. Denison and CNSC must continue to work with ERFN to ensure that impacts on ERFN rights are appropriately and fully considered, mitigated, and accommodated. The draft EIS should be revised to reflect the totality of ERFN TK and land use information.

ERFN is prepared to accept that ISR mining may be a better approach compared to conventional open-pit uranium projects. Other open pit operations in ERFN territory have left long-lasting damage to our Ancestral Homeland that cannot be fully remediated. However, this Project is the first of its kind in Canada. ERFN believes that it must be held to the highest standards. Denison as the proponent and CNSC as the regulator must employ strict precautionary approaches in all instances where uncertainty or potential risks cannot be resolved.

To Denison's credit, they have worked closely with ERFN in the months and years that have led up to the submission of their draft EIS to provide information to ERFN about the nature of the

proposed mine, to develop an open and trusting relationship, and to gain an understanding of ERFN knowledge, rights, practices, interests, and concerns. However, ERFN is of the view that the draft EIS does not yet currently utilize sufficiently conservative models or precautionary approaches to contingency planning or in the consideration of failure or accident scenarios. These issues will be of greatest concern to our citizens.

In situ recovery is an entirely new type of uranium mining to what we have seen within Nuhtsiye-kwi Benéne, and there are many unknowns. The onus to provide evidence that will assure our community that this project will not cause adverse environmental impacts lies directly with Denison. Unless more conservative models are used to predict impacts, and more robust environmental precautions are taken in the design of mitigation measures, ERFN may conclude that the potential risks of significant adverse environmental effects will be greater than the potential benefits of the project. We are prepared to work with Denison and the CNSC to address what we see as the current gaps.

We also recognize that this phase of the environmental assessment serves as a turning point. ERFN expects that Denison and CNSC will continue to work collaboratively with ERFN to resolve all issues identified in this review, as well as other concerns as they are identified and presented. We seek to collaborate with all parties in gaining confidence in the Project, executing opportunities to ensure appropriate participation by ERFN in the project, and working to mitigate and accommodate all impacts to rights and interests.

Additionally, as the CNSC is responsible for regulating the entire lifecycle of the Wheeler River project, CNSC's obligations extend beyond the Environmental Assessment. With these obligations is the Duty to Consult through construction, operations, closure, and post-closure through to the completion of reclamation. ERFN will require the CNSC to conclude a long-term oversight agreement with ERFN to ensure appropriate oversight of all aspects of this Project throughout its duration. Such an agreement will need to address ERFN's process, capacity and resource requirements for effective consultation and accommodation over the life of the project.

CONTENTS

TABLE OF ACRONYMS

CCME	Canadian Council of Ministers of the Environment
CEAA	*Canadian Environmental Assessment Act (2012)*
CNSC	Canadian Nuclear Safety Commission
COPC	Contaminant of Potential Concern
CSA	Canadian Standards Association
DFO	Fisheries and Oceans Canada
dw	Dry Weight
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
EMS	Emergency Management System
ERFN	English River First Nation
GBA+	Gender Based Assessment (enhanced)
GHG	Greenhouse Gas
HHRA	Human Health Risk Assessment
HRMP	Heritage Resources Management Plan
HQ	Hazard Quotient
IAA	*Impact Assessment Act (2019)*
ILRU	Indigenous Land and Resource Use a
ISR	In-Situ Recovery
KI	Key Indicator
LSA	Local Study Area
MDMER	Mineral and Diamond Mining Effluent Regulations
MP	Measurable Parameter
PAPR	Powered Air Purifying Respirator
PM_{10}	Particulate Matter (<10 µm)
RSA	Regional Study Area
SARA	*Species at Risk Act* (federal)
SEAA	Saskatchewan *Environmental Assessment Act*
SVS	Shared Value Solutions Ltd.
TDS	Total Dissolved Solids
TOR	Terms of Reference
TSP	Total Suspended Particles
TSS	Total Suspended Solids
VC	Valued Component
WMP	Water Management Plan
ww	Wet Weight

1.0 INTRODUCTION

Denison Mines Corp. is proposing to develop the Wheeler River project (the Project), an In-Situ Recovery (ISR) uranium mining and processing facility located in the Athabasca Basin in northern Saskatchewan, approximately 600 km north of the city of Saskatoon. Denison's proposal requires approval by the Canadian Nuclear Safety Commission (CNSC) under the Nuclear Safety and Control Act. Before the CNSC can make a licensing decision on this proposal, an environmental assessment conducted under the Canadian Environmental Assessment Act, 2012 affirming that the proposed activities will not cause significant adverse environmental effects, is required. This Project is also subject to the environmental assessment requirements of the Government of Saskatchewan.

On November 21, 2022, the CNSC accepted the draft Environmental Impact Statement (EIS) from Denison, releasing the EIS for public review and comment. This EIS is intended to provide analysis on the project's potential environmental effects and measures to mitigate those potential impacts. Further, the EIS is based on the incorporation of western science and Indigenous Knowledge that includes direct input from English River First Nation (ERFN). ERFN expects that input from ERFN and our citizens will be appropriately considered and influenced the outcome of the EIS. All parties must recognize the potential for this Project not only to have adverse impacts on the environment, but also on the Rights, interests, and cultural fabric of ERFN citizens that may be permanently influenced by this Project.

This report presents comments, questions, and feedback on behalf of ERFN, in response to Denison Mines' draft EIS for the Wheeler River Project.

The following review considered the background of ERFN, their Ancestral Lands, the history of their relationship with the Crown, and the development of uranium mining in their Ancestral Lands over the past 80 years. In addition to the draft EIS, information from the ERFN *Traditional Knowledge Study and Health and Socio-Economic Study Results* was considered.

Overall, the objective of this review is to determine whether Denison has accurately characterized the existing baseline conditions, understand how this Project is expected to change the baseline conditions and ERFN Valued Components, and discuss mitigations for limiting adverse impacts.

1.1 ENGLISH RIVER FIRST NATION BACKGROUND

Our main settlement area is located about 500 km north of Saskatoon at English River First Nation 192D Wapachewunak Reserve, Saskatchewan, along the Churchill River. Our Ancestral Lands (Nuhtsiye-kwi Benéne in Dene) encompass a large section of boreal forest in central northern Saskatchewan, stretching from the Churchill River in the south to Wapata Lake in the north (see Figure 1). The terms "Ancestral Lands," "Nuhtsiye-kwi Benéne" and "ERFN territory" are used interchangeably throughout this document to refer to the lands that we consider to be our home.

We have seven historical settlements located at Porter Island, Cree Lake, Elak Dase, Knee Lake, Dipper Rapids, Wapachewunak and La Plonge. Since 1992, an additional twelve reserve parcels have

been added to the land base through the Treaty Land Entitlement process, which aims to resolve outstanding Treaty land obligations (Government of Saskatchewan, 2021).

Our ancestors signed Treaty 10 in 1906. The band is currently governed by a Chief and six councillors who are elected to a four-year term, which expires in October of 2023 (First Nations Land Management Resource Centre [FNLMRC], 2021).

The English River First Nation name originates from the English River area, which was inhabited by the Poplar House people for periods during the year. Most of the families that now live at the Wapachewunak Reserve or the adjacent Métis hamlet of Patuanak traditionally lived along the Churchill River system at Primeau Lake, Knee Lake, Dipper Lake and/or Cree Lake to the north (Canada North Environmental Services, 2017). Summers were primarily spent fishing the river system. For the rest of the year, family units would spread out through the northern forests for trapping and subsistence hunting. Commonly used winter trapping areas included Haultain Lake, Costigan Lake, Foster Lake, and the area between Cree Lake and the Churchill River (Jarvenpa, 1980).

ERFN's total citizenship is 1,766, with approximately 804 citizens living on reserve lands (Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC], 2022). Comprised of both Cree and Dene people, the "people of the river," we are known for our bold and collaborative spirit and trusting and humble nature (Canada North Environmental Services, 2017).

Our community is shaped by our respected Elders who are widely consulted for decisions, wisdom, and strength. We are dedicated to stewardship of the land and the education of future generations through youth camps and other opportunities to share knowledge on the land.

1.1.1 HISTORIC RELATIONSHIP WITH THE CROWN

Prior to European contact, our ancestors relied completely on the lands and waters for survival and subsistence. Our ancestors were experts in hunting, fishing, trapping, and gathering. Along with European settlers, however, came the imposition of external knowledge and management systems (including fur conservation areas, mineral claims, and reserves) often without our citizens' input or consent (Jarvenpa, 1980).

With the introduction of fur conservation areas in the 1940s, our citizens' geographical range for trapping and seasonal hunting became restricted. New boundaries regulated by the province limited community citizens' ability to provide traditional foods to their families and community in the manner our ancestors had for generations. Government regulation also brought trappers from settler

communities into ERFN territory, leading to increased conflict over land and a decline in animal populations (Dodson, 2006).

Later, an increase in geological exploration brought prospectors to the region and the era of uranium mining began. Our trappers would find cutlines cleared through their trapping areas for mineral exploration (Jarvenpa, 1980). Around the same time, outside promoters began setting up remote fly-in outfitter camps to bring tourists in for fishing and hunting on several lakes in our territory. This sparked fears that prospecting and tourism would seriously hamper our trapping and fishing activities. This background provides important context to informing the potential impacts of this project on our rights and interests, as the impacts of the Wheeler River project must be considered both in isolation and as one which interacts with the changes which have already occurred as a result of resource extraction and colonial policies.

1.2 URANIUM MINING IN NUHTSIYE-KWI BENÉNE

Uranium ore was discovered in Saskatchewan on the north shore of Lake Athabasca in the early 1930s. The discovery of high-grade uranium deposits in the province sparked a uranium rush in the 1950s and 1960s, leading to the development of several uranium mines. Today Saskatchewan remains one of the world's top producers of uranium, providing approximately 15 percent of the globe's total (World Nuclear Association, 2015). Some of this rapid development can be attributed to the Canadian government's efforts to supply uranium oxide (U_3O_8) concentrates or "yellowcake" to the United States nuclear weapons industry (Haalboom, 2016).

Within our Ancestral Lands, three uranium mines are currently in operation, with another two just to the northeast near Wollaston Lake. Within the Ancestral Lands are Key Lake (operational in 1983) and the Key Lake Extension (2014), McArthur River (1999), and Cigar Lake (2014). To the northeast are McLean Lake (1999) and Rabbit Lake (1975). Exploration has occurred throughout the Ancestral Lands and new mine sites are currently undergoing assessment at Wheeler River and Midwest to the northeast of Waterbury Lake (Canadian Nuclear Safety Commission, 2021). Other sites, like Millennium Mine just north of the Key Lake mine, have undergone recent environmental assessment but have been paused by the proponent due to economic conditions. See Figure 1 for mine locations.

Highway 914 (locally referred to as the Key Lake highway) runs from Pinehouse north to the McArthur River mine and serves as a main transportation route for the Key Lake and McArthur River mines. Ore from McArthur River is trucked along this highway to the Key Lake mill, 80 km south. (World Nuclear Association, 2021)

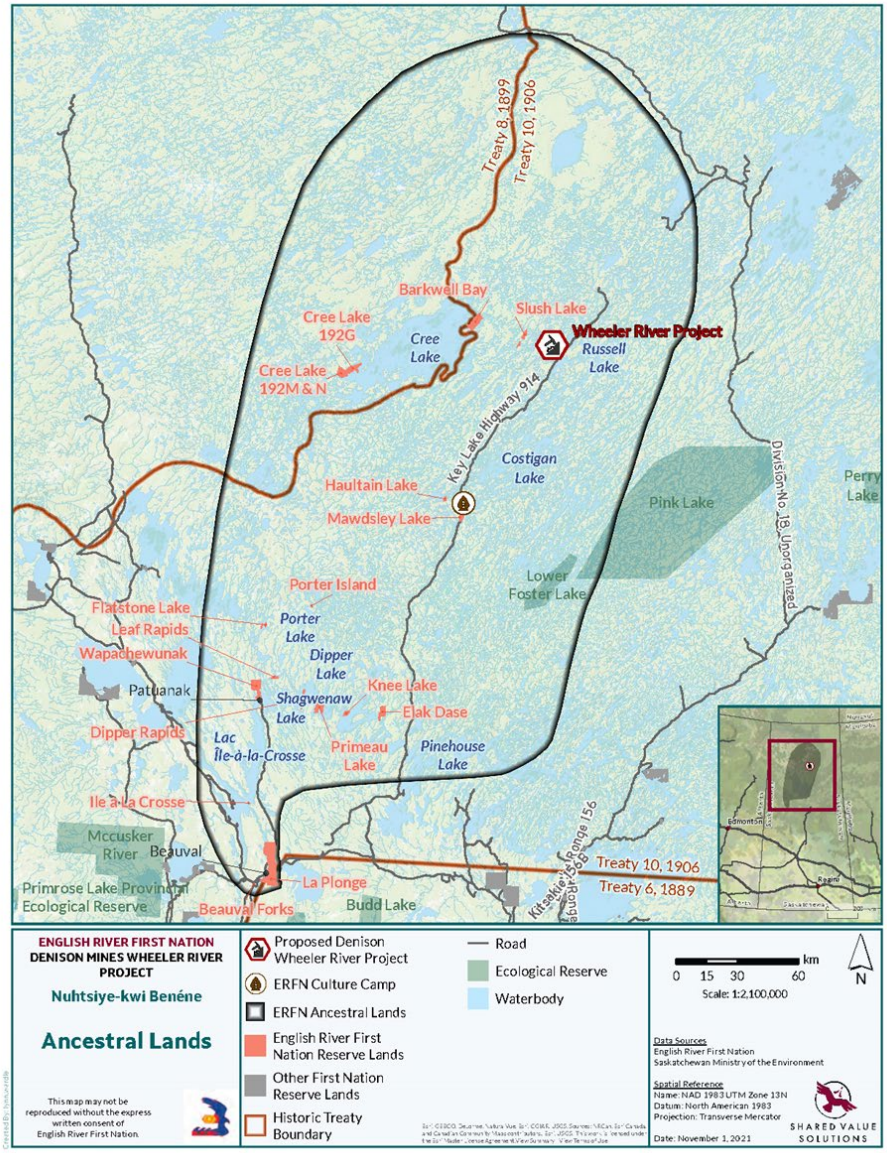

Figure 1. English River First Nation Ancestral Lands (Nuhtsiye-kwi Benéne)

The proliferation of uranium mine site activity, exploration, and the persistent mining traffic along the Key Lake highway has had effects on our Ancestral Lands and the people who occupy those lands. As with many economic developments and changes that happen, there can be both positive and negative effects. Communities can be conflicted when faced with the complexities of providing employment and growth opportunities for their family, versus protecting the land that feeds you (Trifa et al., 2019).

1.3 CONSIDERATION OF IMPACTS

A uranium mining project like other mining projects has many inherent impacts on the environment, health, and society. These factors are associated with the extraction and production of refined natural resources, which generate potentially harmful by-products such as tailings and effluent, as well as cause physical disturbance across the project footprint that disrupts fish and wildlife habitat, and prevent rights-based activities such as fishing, hunting, trapping from occurring. Depending on

how these environmental impacts manifest, they may lead to impairment to human health and mental wellness as there is greater potential for both workers and members of the public to come into contact with harmful materials, and activities which they are accustomed to pursue in their daily lives may be adversely impacted as a result of the project.

Beyond the biophysical impacts, this project, like other mining projects, presents both positive and negative socio-economic impacts. A project such as this, if operated effectively, will generate significant wealth both locally and on larger geographic scales. It may also encourage public and private investment in the region and nearby communities to the benefit of residents and businesses in those communities. However, this project will increase the number of transient and temporary workers who come to the area, taxing public resources, impacting existing social networks, and altering established community dynamics. These are all factors which have been seen in other comparable mining projects both locally and across Canada, and place a burden on our citizens and community.

Where the Wheeler River project is unique within the context of Canada is in the unknowns associated with the novel mining approach to be employed. Perhaps the greatest among these risks is the potential for hazardous materials to escape Denison's control and contaminate the surrounding environment. While spills are a common and mitigatable risk with any mining project, the primary concern with this project occurs below ground where containment is not visible or always detectable. ERFN and our citizens, at multiple points through our engagement with Denison, have raised concerns about the potential for mining fluids to escape beyond the freeze wall containment system and contaminate surrounding groundwater and surface water. The toxic nature of mining fluids being used combined with the complex flow pathways of ground and surface water surrounding the mine site present a situation in which the escape of mining fluids would have a significant adverse impact on the regional ecosystem and downstream waterbodies.

Compounding the concerns surrounding the Wheeler River project are the perceived inherent risks associated with the nuclear industry. ERFN recognizes that the nuclear industry in Canada is among the safest in the world. Further, we acknowledge that uranium ore and concentrate present relatively low risks to the environment and human health when exposure is limited. However, the perceived risks and concerns of ERFN members about biophysical impacts of this project are real, and both Denison and CNSC must acknowledge the psychological and perceived impacts which accompany the Wheeler River project. For example, while the project footprint may restrict the use of that area by ERFN citizens for the exercise of Aboriginal and Treaty Rights at the mine site itself, the nature of this project will result in ERFN citizens modifying their behaviours to avoid a much larger area around the project. Impacts are likely to include not hunting, fishing, or consuming harvested resources from both the surrounding area and waters flowing from the project area. Modified behaviour, including avoidance and reduced enjoyment or connectedness to Nuhtsiye-kwi Benéne, are just as significant as biophysical impacts. In assessing the impacts of this project, CNSC must recognize these potential impacts on Aboriginal and Treaty rights, and work with Denison and ERFN to ensure appropriate accommodations.

1.4 REVIEW OBJECTIVES

English River First Nation and Shared Value Solutions Ltd. (SVS) provide this review and assessment of Denison Mines Corp.'s draft EIS for the Wheeler River Project. Shared Value Solutions consultants and sub-consultants with expertise in water resources, aquatic ecology, terrestrial ecology, fisheries biology, wildlife biology, air quality, human health, socio-economics, and regulatory processes conducted the review. The objectives of the technical review were to:

- Determine whether ERFN rights, interests, concerns, and values are adequately considered by Denison in the EIS.
- Determine whether Denison has adequately identified and assessed potential project interactions with the environment and ERFN Rights, interests, concerns, and values in the EIS.
- Determine whether Denison has offered adequate avoidance, mitigation, and enhancements measures to reduce adverse impacts of the Project on the environment and ERFN Rights, interests, and values.
- Provide recommendations to Denison for addressing any shortcomings found through the above assessment.

Overall, this review intended to determine whether Denison has accurately characterized the existing baseline conditions, understand how this project is expected to change the baseline conditions and ERFN Valued Components, and discuss mitigations for limiting adverse impacts.

This report provides a summary of our review findings, which are also provided in the form of a Comment and Response Tracking Table in Appendix A.

1.5 REVIEW METHODOLOGY AND SCOPE

The comments and recommendations provided within this submission focus on the following values and technical areas: Indigenous Knowledge and local knowledge, quality of life and well-being, land and resource use, fish and aquatic environment, wildlife and terrestrial environment, geology and groundwater, human health, and economics. Within each key issue of concern, technical reviewers completed a high-level scan of all relevant studies in the EIS to identify potential project interactions with the environment and ERFN rights, interests, concerns, and values. Once interactions and potential impacts were identified, technical reviewers assessed whether Denison proposed adequate measures to address the impacts. Where relevant, technical reviewers identified knowledge gaps and identified potential measures or modifications that could be adopted by Denison to avoid or mitigate impacts on ERFN rights, interests, concerns, and values.

The following sections of the Draft EIS were reviewed:

- Section 1 – Project Introduction and Overview
- Section 2 – Project Description

- Section 3 – Indigenous and Local Knowledge
- Section 4 – Engagement
- Section 5 – Approach and Methodology of the Assessment
- Section 6 – Atmospheric and Acoustic Environment
- Section 7 – Geology and Groundwater
- Section 8 – Aquatic Environment
- Section 9 – Terrestrial Environment
- Section 10 – Human Health
- Section 11 – Land and Resource Use
- Section 12 – Quality of Life
- Section 13 – Economics
- Section 14 – Accidents and Malfunctions
- Section 15 – Effects of the Environment on the Project
- Section 16 – Assessment Summary and Conclusions

Appendices related to these sections were also considered. In Section 4.0, each technical reviewer provides a synopsis of their review findings.

1.5.1 SPATIAL SCOPE AND FOCUS

The spatial extent of the Draft EIS technical review was specific to ERFN's Ancestral Lands. Where appropriate, technical reviewers also discussed impacts in the context of the broader environment or in the context of ERFN Rights and interests, both of which extend beyond the spatial footprint of the Project Area, and include Local Study Area (LSA), and Regional Study Area (RSA).

2.0 PROJECT DESCRIPTION AND REGULATORY PROCESS

The Wheeler River mining project is a uranium extraction project located at the division between the Churchill River and Athabasca basins in northern Saskatchewan. This project is novel within the Canadian context as it utilizes in-situ recovery technology that involves the injection of a mining solution into the uranium deposit through a series of cased injection wells. The mining solution proposed for Wheeler is a low-pH or acidic solution. As the solution passes from the injection wells through the uranium deposit it dissolves the uranium and leaves virtually all other minerals in the

host rock in place. Once dissolved, the uranium-rich mining solution is recovered and pumped back up to the surface through another set of cased drill holes called recovery wells.

One of the primary benefits of ISR over conventional surface or subsurface mining is that this project will not require a large open pit operation or underground workers, potentially resulting in an overall safer project that can be better returned to its initial state following the life of the project. Criticism of the ISR approach primarily focuses on potential impacts associated with interactions of mining fluids with groundwater that can move vertically or laterally, degrading lands and waters in the surrounding area. To prevent this interaction, Denison has proposed the establishment of a freeze wall that will surround mine activities, effectively preventing lateral flow outside of a contained area (referred to as the mining theatre) that is controlled by Denison. The Wheeler River project will represent the first instance of ISR mining for uranium in Canada, however, ISR uranium mines do exist elsewhere in the world.

The Project is regulated through three primary processes: federal environmental assessment under the Canadian Environmental Assessment Act (2012; CEAA, 2012), the Nuclear Safety and Control Act, and the provincial Saskatchewan Environmental Assessment Act (SEAA).

FEDERAL

The proposed Project will include the construction, operation, and decommissioning of a uranium mine, processing plant, and supporting facilities on a site that is not within the boundaries of an existing licensed uranium mine or mill. As such, the Wheeler River Project is a designated project as set out in section 31 of the Regulations Designating Physical Activities and is therefore subject to a federal environmental assessment. The CNSC will be the responsible federal authority for Wheeler's environmental assessment. At the time of initial filing, Bill C-69 which would enable the Impact Assessment Act (IAA 2019), had not yet been adopted. As a result, this Project follows the CEAA 2012 assessment process.

PROVINCIAL

Environmental Assessment in Saskatchewan is regulated by the *Environmental Assessment Act* and its application hinges on whether a project is a development, or not, based upon the criteria in Section 2(d):

2(d) "development" means any project, operation or activity or any alteration or expansion of any project, operation or activity which is likely to:

i. have an effect on any unique, rare or endangered feature of the environment;

ii. substantially utilize any provincial resource and in so doing pre-empt the use, or potential use, of that resource for any other purpose;

iii. cause the emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation;

iv. cause widespread public concern because of potential environmental changes;

v. involve a new technology that is concerned with resource utilization and that may induce significant environmental change; or

vi. have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment.

The likely applicable Section 2(d) triggers are Sections 2(d) (iv) and (v); a potential for public concern, and a new technology application in Saskatchewan (in situ recovery for uranium), respectively.

Accordingly, Denison self-declared that Wheeler is a development under SEAA.

Denison will conduct, prepare, and submit an environmental impact statement (EIS) to the Saskatchewan Ministry of Environment's Environmental Assessment and Stewardship branch that meets the requirements outlined in the Saskatchewan Environmental Assessment Act. Ultimately the Project will require the issuance of a ministerial approval under section 15 of the Saskatchewan Environmental Assessment Act before proceeding to licensing and permitting.

3.0 REVIEW FINDINGS

3.1 ATMOSPHERIC AND ACOUSTIC ENVIRONMENT

3.1.1 SUMMARY OF EIS CONTENT

Section 6 of the EIS is focused on the Atmospheric and Acoustic Environment. Air Quality was selected as a VC based on the likelihood of Project-related activities interacting with and changing the ambient air environment. Emissions are regulated for constituents of potential concern (COPC [contaminant of potential concern] – radioactive vs. non-radioactive measurable parameters [MPs]), and to address concerns raised during consultation and engagement processes for the Project. Noise was selected as a VC in general based on the likelihood of Project-related activities interacting and changing the existing sound environment, which has the potential to affect human health, and change animal behaviours (e.g., hunting activity); noise has been used historically in other environmental assessments and was also raised as a concern during consultation and engagement processes for the Project.

In the assessment of Atmospheric and Acoustic Environment, Denison evaluates two key indicators (KIs) and associated MPs:

- Air Quality – Levels of dust, combustion products, uranium, metals, and/or radionuclides
- Noise – Noise levels

Air Quality and Noise were selected as intermediate VCs (i.e., do not have an assessment endpoint), and as such a significance determination was not completed, but was integrated into the residual effects evaluation, residual effects characterization, and significance determinations for related receptor VCs (i.e., terrestrial environment, human health, and land use).

Baseline monitoring to characterize air quality and noise KIs has been conducted for the Project and includes the following, consistent with provincial and federal guidelines:

- Air Quality: since 2016, uses passive approaches to monitor select particulate matter, trace metals, and radioactive materials (in the form of dust fall), regional studies/projections, as well as estimates incorporated into modelling data for Project Activities and future climate considerations; and,
- Noise: since 2021, completed Baseline Noise Measurement Program (via Health Canada and ISO standards and best management practices), incorporating meteorological data from the nearest Environment and Climate Change Canada's (ECCC) Key Lake site to incorporate into modelling data for Project Activities and future climate considerations.

According to the EIS, an adaptive management program (including a community complaints and response procedure) is to be implemented through Denison's Environmental Management System (EMS) for the Project, with monitoring requirements directed by federal and provincial regulators, indigenous groups and interested parties, that will define sampling requirements for:

- Air Quality: at the processing plant stacks and for controlling dust, emissions monitoring (radioactive and non-radioactive releases)
- Noise: continue baseline monitoring or consider as requested in additional consultation

Short-term and/or infrequent residual Air Quality effects were predicted at receptor locations beyond the Project boundary during at least one Project phase. The predicted sound levels (Noise Effects) were below threshold values regulated by federal and provincial guidelines at all receptor locations; however, as sound level increase from baseline is predicted to be noticeable, the effect was conservatively carried forward in the EIS as a residual effect.

3.1.2 EVALUATION AND RECOMMENDATIONS

Denison appears not to have met provincial requirements for the collection of baseline data, as they required much of their assessment on passive monitoring from a single noise monitoring station. Data were only collected for 2 locations during 1 week in May 2021 and did not include a portion of Highway 914 (like atmospheric component and identified traffic impacts from Project Activities). Unrepresentative data (meteorological events – temperature, relative humidity, precipitation, wind speed) were removed prior to summarization (14 hours, or 7.5% of measurement data). One of the two monitoring locations was disturbed during the monitoring period and these data were also discarded in the analysis. Denison must provide further baseline information to support sound level criteria conclusions, project level-, residual-, and cumulative effects evaluations for modelling that links noise receptors with other VCs; as compliance determination is based on baseline measurements. Noise significance determination for receptor VCs may not be representative of actual conditions.

As KIs associated with the Air Quality VC pertain to levels of dust, combustion products, uranium, metals, and/or radionuclides; passive monitoring methods (commenced in 2016) were used to characterize the baseline air quality for the Project (included particulate matter [dustfall], NO_2, SO_2,

radon, and external gamma). Provincial regional background concentrations were used for TSP, PM_{10}, $PM_{2.5}$, NO_2, SO_2, CO; while Key Lake ECCC background data were used to represent concentrations of uranium, arsenic, and nickel; and Cigar Lake data were used for copper, lead, selenium, and zinc background concentrations. Passive methods represent averaged concentrations for deployment periods, and in some cases are not directly comparable to the regulatory criteria identified in Table 6.1-5. Conversion calculations were used on the passive monitoring data to compare the minimum requirements of averaged baseline results gathered, against identified provincial/federal criteria for use in modelling effects for the Project. Only predicted short-term (less than 3 years) and medium-term exceedances of modelled COPC concentrations of TSP, PM_{10}, uranium (24-hour), and NO_2 (1-hour) to exceed air quality criteria at receptors located outside of the Property Boundary (6.1.4.2); however, as per the Saskatchewan Air Quality Modelling Guideline (SK MOE 2012), the eight highest 1-hour predictions and the single highest 24-hour prediction at each receptor can be discarded. Similar to other sections of the EIS, Denison fails to fully support or justify assumptions made in the baseline assessment of atmospheric and acoustic effects.

3.2 GEOLOGY AND GROUNDWATER

3.2.1 SUMMARY OF EIS CONTENT

Section 7 of the EIS for the Wheeler River Project is focused on examining implications for Geology and Groundwater. The relationship between geology and groundwater and other environmental components such as surface water and project design is direct. As a result, this section focuses examining the interactions between groundwater and the biophysical and human environment.

3.2.2 EVALUATION

Denison has developed walk-away water quality targets for the leach field based on assessment of potential for impacts in Whitefish Lake. The resultant water quality targets for the leach field that are proposed in the draft EIS represents heavily impacted, acidic and metal-laden water in the leach field at closure. Based on groundwater modeling, Denison states that this water would dissipate underground over the decades/centuries following closure and would not express in sufficient quantities in Whitefish Lake to cause measurable environmental impacts. In our opinion, this approach to development of walk-away targets for the leach field is less conservative/proactive than targeting return-to-baseline conditions. We recommend targets based on returning groundwater to near baseline conditions by doing as much mitigation as possible while the mine is in operation/in closure. This would reduce uncertainty and risk of additional mitigations being required to protect future generations. This is a foundational point that goes beyond the specific technical uncertainties in Denison's groundwater model.

Water recycle is talked about but not incorporated into water quality/water balance modeling. Water recycling is fully supported and should be incorporated into the project design. Integration of water recycling into the project in a quantitative way would inform water treatment and water management planning and may help reduce the likely of acute toxicity in treated effluent at end of

pipe. A full assessment of the interactions of geology and groundwater components with other aspects of the biophysical and human environment are outlined in detain in Appendix B.

3.3 AQUATIC ENVIRONMENT

3.3.1 SUMMARY OF EIS CONTENT

Section 8 of the EIS is focused on the aquatic environment and addresses two intermediate VCs: Surface Water Quantity and Surface Water Quality; and four VCs: Fish and Fish Habitat, Sediment Quality, Benthic Invertebrates, and Fish Health. The Sediment Quality and Benthic Invertebrates VCs are addressed together because they are inherently linked.

Denison sets out the specific indicators used to measure and assess the effects of the Project (Key Indicators), characterizes existing conditions to provide context and a basis for evaluating potential changes, identifies potential interactions between the Project and each VC and KI, describes proposed mitigation measures and evaluates any residual and cumulative effects that can't be mitigated. Key interactions identified by Denison include two clear-span bridges between the proposed mine site and airstrip and treated effluent discharge to South Whitefish Lake.

Denison concludes that due to the localized, minimal nature of potential project impacts and the predicted successful mitigations, no residual or cumulative effects are anticipated for the aquatic environment VCs.

3.3.2 EVALUATION

This section provides a generalized, high-level summary of SVS concerns regarding the aquatic environment EIS section. Specific concerns are addressed in more detail in the comment tracking table (Appendix A).

As noted elsewhere, this Project would be the first ISR uranium extraction project in Canada, so there are no similar local assessments to pull from or aid in this evaluation. Other ISR mines are typically located in warmer areas of the world compared to northern Saskatchewan. Denison's assessment relies primarily on modelling and assumptions across many aspects of the Project, from effluent treatment and discharge to the freeze-wall technology proposed for groundwater containment. In the EIS, these assumptions are often presented in a "trust us" manner, with little supporting evidence or reference to previous studies or projects provided.

One of ERFN's key concerns throughout the entire EIS is the lack of sufficient data to accurately characterize the baseline aquatic environment. Denison has provided information regarding the standard protocols used for field sampling activities, but has not justified (iwith reference to guidance documents, etc) the spatial and temporal coverage of the baseline studies.

Based on the baseline characterization (Ecometrix 2020, EIS Appendix 8-D), the majority of aquatic environment baseline data were collected in 2016 or earlier, and only one year of data (2016) was collected for aquatic biota (benthic invertebrates, plankton, fish tissues) and sediments. Most of the

hydrological and fish habitat data forming the basis for those characterizations were collected prior to 2014, and there is very little winter data.

Accepted guidance from other jurisdictions (e.g., British Columbia) suggests that one year of data is the bare minimum required, but at least two years of data across multiple seasons should be collected to sufficiently characterize baseline conditions. Spatial coverage of baseline data was difficult to evaluate, given that sample location coordinates were not provided. However, some key data gaps (e.g., detailed bathymetry and habitat mapping in North Whitefish Lake but no data for South Whitefish Lake, and no benthic invertebrate community characterization at SA-6 immediately upstream of South Whitefish Lake) suggest that the spatial coverage of baseline data was not well-scoped. Saskatchewan TOR and EIS guidance (Saskatchewan 2021) suggests that all biological and time-sensitive data should be <2 years old, and CEAA 2012 (Section 8.1) requires that baseline data be of sufficient detail. The ebaseline data used for the EISs do not meet these basic requirements.

The EIS has included an examination of the potential project impacts on Northern Pike and White Sucker, two species identified as having significant importance to ERFN. However, no evaluation of potential project effects on Walleye, Like Whitefish, Lake Trout, and Arctic Grayling (also identified as important to ERFN) is provided. Denison has used Northern Pike and White Sucker as surrogates for these other species but did not provide evidence (e.g., other studies) that these species were adequate surrogates. Additionally, we note contradictions in the fish presence/absence data used for the baseline and EIS. Finally, there is little discussion regarding the implication of food web dynamics on the potential project effects on fish species.

Denison does not identify and justify their assumptions, nor do they identify knowledge gaps and steps to address the gaps. This information is required under CEAA 2012. The aquatic environment EIS is also lacking information regarding how malfunctions were considered (required under CEAA 2012 S.19(1)[a]) and provides a very minimal discussion of food web dynamics and their implications to the EIS (required under CEAA 2012 REGDOC 2.9.1). Denison acknowledges that their effluent discharge is anticipated to trigger Metal and Diamond Mining Effluent Regulations (MDMER), but provides little recognition of the requirements; there is no mention of end-of-pipe lethality testing, and the proposed water quality monitoring variables do not include pH or un-ionized ammonia.

As noted above, key assumptions and parameters associated with impact predictions are not justified or are poorly supported by evidence, which decreases the reliability of Denison's conclusions. It is unclear whether the modelling of effluent in the environment used conservative scenarios (i.e., maximum discharge rate at low flow) or average scenarios. The baseline water quality used for modelling the receiving environment (South Whitefish Lake) appears the be based on a regional mean rather than the water quality at the discharge location. The current within the mixing zone was based on upstream (SA-6) flows but resulted in an average velocity greater than was what measured at SA-6, potentially overestimating the mixing capabilities of South Whitefish Lake at the discharge point. Potential tissue concentrations in Northern Pike were modelled based only on contact with surface water with no acknowledge of the potential for transfer from food. Constituents of potential concern (COPCs) are identified but little evidence (e.g., references to other ISR projects) is provided to justify the list and there is no mention of verification or potential changes to the list through monitoring. Finally, Denison also focuses the EIS on effluent discharge to surface water (South Whitefish Lake)

but noted that deep-well pumping to the ground may also be used, yet the potential impacts of deep-well pumping are not addressed.

The control and treatment of water throughout all phases of the project is not well explained in the EIS. The creation of monitoring and management plans is noted, but no details are provided. Denison asserts that effluent will be treated but provides no examples of successful ISR effluent treatment. There are contradictory statements regarding the potential release of collected and stored water during the construction phase. Denison identified that total suspended solids (TSS) will be the criterion for determining whether treated effluent is safe for release but provided no evidence for this decision nor consideration of other water chemistry variables. Notably, there are specific prescribed requirements that effluent must meet under MDMER to be discharged into the environment. Denison has also estimated that their treated effluent ponds would hold water for 72 hours prior to discharge to provide time for testing, but no details about: (1) the testing process, timeline, or laboratory, and (2) contingency information regarding what happens if the effluent fails the testing, have been provided.

The predicted effluent quality of the industrial wastewater treatment plant is quite saline. The quality of this water at end of pipe (prior to the diffuser) may cause acute toxicity to aquatic life, meaning discharge may contravene the Fisheries Act/Canadian Metal and Diamond Mine Effluent Regulations.

3.3.3 RECOMMENDATIONS

Given that there are many uncertainties associated with the use of ISR in northern Canada, we believe that diligence, clarity of commitments, and contingency-planning are crucial to ensuring that the environment and interests and values of ERFN are protected. For the reasons summarized above and in the comment tracking table (Appendix A), we believe that the EIS (and its associated baseline and modelling) does not meet these criteria. In addition to providing clarification on specific details, as requested in the comment tracking table, we make the following recommendations.

ERFN recommends that, at minimum, Denison conduct one additional year of baseline data collection for all aquatic environment endpoints and revise the baseline characterization appropriately. It is also worth noting that nearly all previous baseline data are now over five years old, so true diligence would involve two additional years of baseline data. Baseline data collection should include (but not be limited to):

- Benthic invertebrate and sediment sampling at SA-6
- Benthic invertebrate and sediment sampling at two locations in existing baseline lakes (near the inlet and outlet) and one additional location in South Whitefish Lake (at the proposed discharge location)
- Phytoplankton and zooplankton community sampling in existing baseline lakes
- Whole-sample benthic invertebrate tissue chemistry analyses

- Repeating previous fish tissue sampling but including the retention and analysis of liver tissues
- Fish tissue (muscle) sampling from all important species identified by ERFN that are present within South Whitefish Lake. Denison should either investigate non-lethal sampling options or partner with ERFN to obtain tissue samples from multiple species
- Detailed bathymetric and habitat surveys of South Whitefish Lake
- In-situ measurement and characterization of bottom currents at the effluent discharge location during winter, at high flow, and at low flow

We recommend that Denison update the EIS to include a discussion regarding ecosystem interactions and changes that could result from effluent discharge but that is not captured within their modelling, such as eutrophication and the effect of warm effluent on the aquatic environment of South Whitefish Lake during winter.

We recommend that Denison update the EIS to include specific details, including supporting data from other projects, about the effluent treatment options that are available and that may be used on the Project. Denison should also include details about how effluent storage, testing, and discharge timelines will be met, including sample timing, the anticipated analytical laboratory, and the planned actions in case effluent fails testing.

We recommend that Denison update the EIS to include data from other projects in the region, specifically those releasing treated effluent, that support the modelling results for surface water quality, sediment chemistry, and fish tissue chemistry.

We recommend that Denison update the EIS to provide a discussion about potential malfunctions and their potential impacts, as well as steps to address both. We also recommend Denison update the EIS to include a discussion about contingency planning should their assumptions and modelling be inaccurate.

We recommend that Denison prepare a water management plan for, at minimum, the construction phase, with clear direction and commitment to updating the plan to include the operations and decommissioning phases. We expect this plan to include clarity on water storage, water release, and water treatment (where necessary). The plan should also include details on how potential impacts will be monitored, thresholds for management actions, and details regarding the actions themselves. The monitoring details should be provided either within the water management plan itself or within an attached surface water monitoring plan.

3.4 TERRESTRIAL ENVIRONMENT

3.4.1 SUMMARY OF EIS CONTENT

The Terrestrial Environment portion of the EIS (Section 9) was prepared following the Canadian Standards Association (CSA) requirements for Class 1 Nuclear Facilities and Uranium Mines and Mills

(CSA, 2012), using expected sources of emissions (i.e., atmospheric and liquid releases) to predict exposure pathways of radiological and non-radiological COPCs. Various aspects of the terrestrial environment considered in the risk assessment include KIs and measurable parameters to assess changes from baseline for the following VCs:

a. Terrain, Soils, Organic Matter/Peat

b. Vegetation and Ecosystems, Listed Plant Species and Wetlands

c. Ungulates, Furbearers, and Woodland Caribou

d. Raptors, Migratory Breeding Birds, and Species at Risk

For the Terrain, Soils, and Organic Matter/Peat VC, the following KIs and MPs, were selected for further assessment:

- Terrain morphology and stability
- Soil quantity and quality
- Organic Matter/Peat quantity

For the Vegetation and Ecosystems, Listed Plant Species and Wetlands VC, the following KIs and MPs, were selected for further assessment:

- Vegetation abundance and concentrations of COPC in vegetation
- Listed plant species quantity
- Wetland extent

For the Ungulates, Furbearers, and Woodland Caribou VC, and Raptors, Migratory Breeding Birds, and Species at Risk VC, the following KIs were selected for further assessment:

- Ungulates, Furbearers, and Woodland Caribou VC: Moose, Wolverine, Pine marten, Mink, Muskrat and Woodland Caribou; and,
- Raptors, Migratory Breeding Birds, and Species at Risk VC: Bald eagle and Osprey, Waterbirds and Waterfowl, Upland Game Birds, Migratory Songbirds, Common nighthawk, Short-eared owl, Yellow rail, Rusty blackbird, and Olive-sided flycatcher.

Measurable Parameters used to evaluate potential cumulative effects for the above select species VCs include:

- Habitat alteration or loss (i.e., direct loss of habitat [e.g., vegetation clearing], or indirect alteration of habitat that renders habitat unusable e.g., sensory disturbance])
- Change in mortalities (i.e., direct [e.g., vehicle/infrastructure collisions] or indirect [e.g., increased harvest or nest abandonment])

Baseline monitoring activities to characterize the Terrestrial Environment KIs were conducted between 2017 and 2019, and were designed to demonstrate compliance with regulatory requirements, address adaptive management measures, and outline commitments in the EIS, including the following:

- Mapping (anthropogenic, fire, and ecosites) and mapping refinements
- Ecosite characterization, plant structural diversity, and species richness assessment
- Linear feature natural regeneration assessment
- Rare Vascular Plant Surveys
- Vegetation and Soil Collection and Chemical Analysis
- Winter track count survey
- Spring ungulate pellet group/browse availability survey
- Small mammal trapping survey and tissue analysis
- Amphibian nocturnal call and visual search surveys
- Breeding Songbird Point Count Call Survey
- Semi-aquatic Furbearer Shoreline Survey
- Aerial Waterfowl and Raptor Stick Nest Survey
- Regional Ungulate Aerial Surveys
- Acoustic Bat Surveys
- Covert Camera Survey
- Regional Fur Harvest Data literature review
- Terrain and Soils literature review
- Vegetation literature review and ecosite classification corrections
- Avian species of management concern literature review
- Ungulate literature review

According to the EIS, an adaptive management program (including a community complaints and response procedure) is to be implemented through Denison's Environmental Management System (EMS) for the Project, with monitoring requirements directed by federal and provincial regulators, Indigenous groups and interested parties, that will define sampling requirements for:

- Dust monitoring

- Construction/geotechnical monitoring
- Soil Salvage monitoring
- Soil Quality monitoring
- Pre-construction Listed Plant Surveys
- Pre-construction nest surveys (prior to completing and site preparation or soil disturbance in accordance with the EMS)
- Vegetation Monitoring
- COPC in Vegetation
- Routinely monitored wildlife and avian species throughout the life of the Project in accordance with the management and monitoring plans within the EMS (including species-specific setbacks during sensitive periods)
- Progressive reclamation and revegetation monitoring in disturbed areas (in accordance with the Reclamation and Closure Plan)

Overall, potential cumulative effects for the terrestrial environment are associated with site preparation (i.e., vegetation clearing, earthworks, grading, stripping and salvaging of soils), operations (i.e., vehicle traffic, material handling, water management, waste management) and reclamation works during various Project phases and activities. Denison identifies potential changes to the Terrestrial Environment may occur as a result of Project activities after general and species-specific mitigations are implemented, but that residual effects are not considered significant.

3.4.2 EVALUATION AND RECOMMENDATIONS

Denison present baseline conditions based on several assumptions that may or may not be applicable to the use in an ISR facility. As the Wheeler River project represents a first of its kind project in Canada, there is a need to make assumptions or use appropriate proxy information from other similar type projects. However, it is necessary when making these assumptions that Denison presents evidence to justify the use of these assumptions.

Boreal woodland caribou are an important species at risk which are shown to utilize the RSA, and their habitat will be impacted by this project. However, the draft EIS does not provide adequate discussion on the impacts and residual effects of this project on seasonal differentiation and usage of caribou habitat. The timelines provided in the baseline studies do not identify the preferential habitat usage of the species during important timing windows based on the life history requirements of the species. As the draft EIS ,acknowledges, the conservative approach is used for determining Project impacts and residual effects on caribou, it is necessary to consider the impacts of the project on seasonal caribou habitat given their listing as a *threatened* species under the *Species at Risk Act*.

The Wheeler River project is located in an area of discontinuous permafrost. Climate change and other environmental factors have slowly eroded the amount of permafrost located in this area

however, the draft EIS fails to provide any relevant discussion on the potential for permafrost to influence the project. Of significant note is that if permafrost is found near the project area, slumping and heave associated with permafrost melting will result in impacts to infrastructure. Additionally, thawing permafrost has the ability to release methane and other GHGs to the atmosphere, altering the project-related emissions.

Denison in theirThe identification of terrestrial VCs in the draft EIS also fails to connect VCs to the information provided in the ERFN *Traditional Knowledge Study & Health and Socio-Economic Study Report* or information provided by others. As a result ERFN questions the appropriateness of the VCs selected as metrics of broader valued components of the biophysical environment.

3.5 HUMAN HEALTH

3.5.1 SUMMARY OF EIS CONTENT

Section 10 of the draft EIS examines the potential impacts of the project on Human Health. Human Health is assessed through two core VCs: Human Health, referring to the general public, and Worker Health and Safety. In both instances, Denison examines the impacts of the project to human health through the lens of exposure to COPCs and radiological material, though for public health this is considered as the incremental lifetime cancer risk, or radiation dose.

For both VCs, Denison the draft EIS finds that the Wheeler River project will have a negligible adverse impact on Human Health relative to background conditions. Denison suggests that for COPCs to be released into the environment and local foodweb, the background concentrations of several COPCs including cadmium, selenium, molybdenum and zinc are at or above hazard quotient levels identified for posing a risk to human health. Additionally, for members of the general public, the increase in radiation dose is suggested to be negligible compared to the healthy dosage guidelines used in the assessment.

Denison The draft EIS also identifies the use of personal protective equipment as a primary form of minimizing risk to worker health in areas where potential interactions may occur. Generally, Denison the draft EIS suggests that as a result of project design and the low concentration of radioactive material being handled, the risk to worker health can be easily mitigated.

Overall, Denison the draft EIS concludes that the overall impacts to Human Health are low, and that now residual effects were identified. It also further notes that in addition to the use of mitigation measures outlined in this section, Denison will develop a Radiation Protection Plan, as well as comply with any relevant regulatory requirements for the protection of workers' health and safety.

3.5.2 EVALUATION AND RECOMMENDATIONS

The assessment of Human Health as it relates to this project is very narrow in scope and does not appropriately consider the relationship ERFN citizens have with the lands, waters, and resources surrounding the Wheeler River project site. Notably, the draft EIS frame human health solely through the lens of biophysical health effects, however, major projects which have impacts on lands and

waters with spiritual connections to those that interact with it must also consider the psychological and mental health wellness effects. Based on the information provided by ERFN in the *Traditional Knowledge Study & Health and Socio-Economic Study Report*, the potential impacts on psychological and mental health wellness to of this project as evidenced by the impacts from other similar uranium mining projects are real and meaningful. As a result, these impacts must be considered.

Absent from the assessment of this project on human health has been the examination of project-adjacent impacts on human health. There is a growing body of evidence to suggest that there is a close correlation between the presence of mines and increased rates of sexual violence, sexual health issues, as well as drug and alcohol use (Hoogeveen, et al. 2021). While the Wheeler River EIS is governed by the terms of CEAA 2012, which doesn't specifically require analysis of gender-based issues, it does not mean that these impacts to human health aren't occurring, and further that they aren't disproportionately impacting women, girls, and members of the LGBTQ2+ community.

The draft EIS should consider not only the direct impacts of their project but also the tangible secondary impacts of the Wheeler River project in the assessment of Human Health Impacts. As the latter analysis has not been conducted, ERFN is unable to assess whether or not there will be residual impacts on our citizens.

3.6 LAND AND RESOURCE USE

3.6.1 SUMMARY OF EIS CONTENT

Section 11 of the EIS is focused on Land and Resource Use, which is considered through the lens of three VCs: Indigenous Land and Resource Use (ILRU), Other Land and Resource Use, and Heritage Resource Use. In each of these sections, the draft EIS sets out the specific indicators used to measure and assess the effects of the Project (Key Indicators), characterizes existing conditions to provide context and a basis for evaluating potential changes, identifies potential interactions between the Project and each VC and KI, describes proposed mitigation measures and evaluates any residual and cumulative effects that cannot be mitigated.

Generally, the draft EIS finds that the Wheeler River project has the potential to induce effects on ILRU, but concludes that these effects can be eliminated, reduced, or controlled through mitigation measures and that the Project will not result in any significant residual adverse effects.

3.6.2 EVALUATION AND RECOMMENDATIONS

A key issue with Section 11 of the EIS is the limited understanding of ERFN's use in the area, poor and seemingly watered-down inclusion of the information provided by ERFN in the *Traditional Knowledge Study & Health and Socio-Economic Study Report*, and a lack of understanding of collectively held rights of English River First Nation protected by section 35 of the Constitution Act and Treaty 10. Although ERFN has provided detailed information on Traditional Knowledge, land and resource and our citizens' interaction with the land, as well as providing advanced comment on EIS drafts, Denison has not adequately characterized how this project will impact ERFN rights with respect to the use and

interaction with the land and resources. Specifically, the draft EIS errors in interpreting the impacts of the project on individual vs. collectively held rights, and inappropriately focuses on mitigating and compensating individual rights at the expense of or overlooking the impacts of the project on collectively held rights. This approach is inappropriate for the purpose of understanding impacts on the ERFN as a whole.

The scoping study found that ERFN has well-established rights in the area where the proposed project is located. There have been decades of research carried out about ERFN's connection to and occupancy of the region where the proposed mine is located from traditional land use, subsistence harvesting, ecological, and socio-cultural and economic perspectives. These findings were reiterated and backed up by the *Traditional Knowledge Study & Health and Socio-Economic Study Report*.

The summary of the *Traditional Knowledge Study & Health and Socio-Economic Study Report* and subsequent effects assessment has been approached from an individualistic and narrowed lens. Frequently, Denison has used words such as "limited" or "absent" when referring to ILRU in the Study Areas. Statements like these diminish the value of the lands and indicate that Denison did not comprehend the information and statements in the *Traditional Knowledge Study & Health and Socio-Economic Study Report*. That is, the studies are limited in nature and cannot be assumed to provide a comprehensive representation of the use of the land. Rather, considering that 129 land use features were mapped within the Study Area, it can be concluded that the actual amount of use in the areas is much more extensive.

Finally, there is concern that the cumulative effects of past projects and impacts were not properly considered in the EIS. Denison asserts that "existing projects were not considered as part of CEA because they were captured and assessed within baseline conditions." However, the impact of past projects on ILRU was not adequately considered or acknowledged in the baseline summary. While Denison states that it gathered and brought Indigenous Knowledge together with western science, the reflection of such activities in the EIS is not sufficient. There is little analysis of how many ERFN members consider the impacts from past projects to have already surpassed a reasonable impact threshold, and how existing and future impacts on ERFN's rights may be additionally affected by this project.

3.7 QUALITY OF LIFE

3.7.1 SUMMARY OF EIS CONTENT

Section 12 of the EIS is focused on Quality of Life, which is considered through the lens of three VCs: Cultural Expression, Community Well-Being, and Infrastructure and Services. In each of these sections, Denison sets out the specific indicators used to measure and assess the effects of the Project (KIs), characterizes existing conditions to provide context and a basis for evaluating potential changes, identifies potential interactions between the Project and each VC and KI, describes proposed mitigation measures and evaluates any residual and cumulative effects that can't be mitigated.

Generally, the draft EIS finds that given the already considerable amount of uranium mine development in the region, the addition of the Wheeler River project will have limited impacts on Quality of Life, concluding that, other than moderate impacts caused by the rotational nature of working at the mine, the Project will not result in any significant residual adverse effects.

3.7.2 EVALUATION AND RECOMMENDATIONS

A significant problem in Section 12 of the EIS is that KIs used for the VCs of Cultural Expression and Community Well-Being are highly limited in scope and are not informed by Indigenous perspectives. For example, the indicators used to measure and assess the Project on Cultural Expression are limited to "Knowledge Transfer" and "Traditional Diet" and indicators for Community Well-Being are limited to "Population and Demographics," "Income of Local Workers" and "Community Cohesion." While these are important indicators to consider, additional KIs must be included to reflect a more holistic understanding of Cultural Expression and Community Well-Being that are informed by Indigenous perspectives, especially given the estimates in the draft EIS that communities in the LSA are predominantly (95.2%) Aboriginal (EIS Section 12.2.3.1, p. 12-56). These were concerns raised in ERFN's August 2022 submission of comments on the draft EIS provided by Denison before it was submitted to CNSC but were not addressed in this updated version of the EIS. In that August 2022 submission, ERFN provided input on additional Key Indicators that could be used for these Valued Components, informed by ERFN's use of core guiding principles such as the medicine wheel of community health and well-being, but these recommendations have been disregarded by Denison.

Another key issue is that the draft EIS minimizes the potential effects of the Project on Community Well-Being by limiting their consideration of effects to those associated with the participation of ERFN's citizens in the Project's rotational work schedule and related impacts on family and community cohesion. The Project also has broader direct impacts on ERFN's Ancestral Territory, effecting the well-being of all ERFN citizens. The existence of the Project will change how all ERFN citizens interact with Nuhtsiye-kwi Benéne and in turn ERFN's overall Community Well-Being and Quality of Life. This must be reflected in the EIS.

Finally, while the draft EIS has included consideration of some of the effects of population and demographic changes and increased income for LSA residents caused by the Project, such as increased demand for housing and substance abuse issues, the full range of impacts associated with these dynamics of a remote mining Project on Community Well-Being and Quality of Life, especially those disproportionately experienced by women and other segments of the population, have not been fulsomely considered. Denison's proposed mitigation measures to address the potential impacts of the Project on Community Well-Being and Quality of Life are also not adequate to support their conclusion that the Project will not have residual effects.

3.8 ECONOMICS

3.8.1 SUMMARY OF EIS CONTENT

The Economics Section of the Wheeler River Project Draft EIS seeks to describe the existing economic environment of the LSA and RSA, as well as determine potential Project-specific impacts (negative and positive) and cumulative effects from the Project on these areas. Traditional Economy was included as a KI for the Economy VC rather than being included as a separate VC. The Economics VC includes five KIs to capture and measure the probable effects. These KIs are:

- Employment and Training
- Income
- Traditional Economy
- Business Opportunities
- Government Revenues

The purpose of the Economics Section is to meet the Terms of Reference (EASB# 2019-005) requirements for the Project as issued by the Saskatchewan Ministry of Environment and CNSC. The Economics EIS Section is based on existing data from Statistics Canada (up to and including data from the 2016 Census of Population), other publicly available reports and data, Project data, Indigenous Knowledge, local knowledge, and engagement. The assessment seeks to respond to the following questions:

- Will the Project increase training and employment in the LSA?
- Will the Project increase income in the LSA?
- Will the Project change participation in the traditional economy?
- Will the Project increase business opportunities in the LSA?
- Will the Project increase government revenues at the provincial and federal level?

Recognizing data limitations and challenges, the assessment uses professional judgement, feedback from engagement and Knowledge Holders, as well as Project expenditures and employment estimates to determine and measure potential effects.

While the Project is anticipated to have a generally positive effect on most of the Economy KIs, there is a potential residual negative effect anticipated for the traditional economy. The draft EIS states that, because the effects of this KI are anticipated to be low in magnitude, medium-term in duration, frequent, and reversible after decommissioning, the effects are not significant.

3.8.2 EVALUATION

There were a few general issues with the report's structure and its presentation of data. A lot of the quantitative data were only presented as percentages. The understandability of the baseline and project effects would be enhanced by presenting the nominal values in the report alongside the percentages.

A greater focus on ensuring no new baseline data was introduced in the Project Effects section, and no project effects were introduced in the baseline section would help improve the understandability of the report. This issue was particularly noted in reviewing the traditional economy assessment. The quantitative baseline data only included historic data and did not forecast Measurable Parameters (MPs) without the project to match the temporal boundaries of the assessment. Forecasting baseline data to match the temporal boundaries of the assessment will help better understand the impacts of the Project on Key Indicators (KIs). Specifically, the following KIs could benefit from forecasting quantitative baseline data:

- Employment and training
- Income
- Government revenues

The historic data in the baseline could be enhanced by including the most recent 2021 census data where appropriate.

In terms of the assessment of Project-related effects, many project effects are discussed qualitatively. The results of the assessment are subjective and, recognizing limitations in available data to complete a more robust economic analysis, ongoing monitoring and reporting will be needed to ensure that LSA communities, including English River First Nation (ERFN), can realize the economic benefits of the Project, a concern already raised in the engagement sessions. Quantifying the impacts of the project on KIs where possible could add to the understanding of the project effects. Specifically, the following KIs could benefit from the quantification of Project impacts:

- Employment and training
- Income
- Business opportunity
- Government revenue

Estimating the impacts of the Project in the LSA and RSA may change the residual effects assessment for some of these KIs.

Income, Business Opportunity, and Traditional Economy KIs are missing important Measurable Parameters. For example, understanding of the Project effects on the Income KI could be enhanced by adding Income Disparity as an MP as part of Income. This could include looking at affordability and

purchasing power in the study areas. Adding this MP to the assessment of Income may impact the direction and magnitude of the residual impact of the Project on this KI.

Moreover, understanding of the Project effects on the Business Opportunity KI could be enhanced by adding existing business access to labour as an MP. This could help in understanding if the Project could have an impact on the ability of existing businesses to hire and retain the staff necessary to maintain their existing operations. Adding this MP to the assessment of Business Opportunity may impact the direction and magnitude of the residual impact of the Project on this KI.

The Traditional Economy KI could also be enhanced by adding additional MPs to the assessment. Additional MPs could include, but may not be limited to things such as:

- Commercial traditional economy
- Non-commercial traditional economy
- Social and cultural benefits of traditional economy

These aspects are discussed in the baseline and effects of the project but aren't addressed explicitly as MPs , nor are the linkages to Economics KIs clearly defined.

Impacts on the Traditional Economy may be underestimated in this assessment. As noted above, the draft EIS relies on a single informant trapper for much of the data. This is not the only individual interacting with the Project area for traditional purposes. ERFN member use of the project area and the associated Traditional Economy may be affected due to potential stigma from the Project, which may affect harvesting avoidance behaviours and lad to avoidance of the Project area. The draft EIS concludes that the impacts on the Traditional Economy are negligible to low and concludes that the impacts are fully reversible. ERFN does not agree with this assessment, and expects that Denison will commit to disseminating information and knowledge sharing on the project and to implement robust mitigation measures to counteract any changes in harvesting avoidance. .

Reviewing the approach to and results of the assessment of the project's effects on the Traditional Economy with traditional users and Knowledge Holders will add to the validity of the assessment. Ensuring the assessment and compensation plans consider potential future participants in the traditional economy, as well as current participants in the traditional economy, could have an impact on the magnitude and reversibility of the residual effects of the Project on this KI.

The Government Revenues KI, as it is currently presented, does not fully capture the impact of the Project on all levels of government. Expanding the existing Government Revenues KI to be Government or Government Finance would better capture the effects of the Project on this part of the Economy VC. This change would mean including an assessment of the Project on government costs as well as government revenues. Some government costs are currently presented in the project effects section for this KI.

Using the lens of GBA+ where and when possible, could enhance the assessment. This was partially done in the baseline. The GBA+ lens may result in opportunities for Denison to enhance the magnitude of impact on Employment and Training, and Income KIs by proposing a strategy to hire

women and members of the LGBTQ2+ community along with others who are traditionally marginalized in a resource-based economy.

The assessment would be enhanced with additional information pertaining to the recommended procedures, strategies, and metrics for local recruitment, procurement, and training, as well as a human resource development plan. Nevertheless, it has come to our attention that the Proponent is presently engaged in active negotiations regarding the terms of an agreement to implement these practices, plans, and measures. It is recommended that the Proponent outline a pragmatic roadmap for ensuring that ERFN members have access to higher-quality employment opportunities beyond entry-level or general labourer roles in the mining operation. In addition, the establishment of a local recruitment, training, and procurement center in a neighboring community could prove advantageous to ERFN.

Depending on the terms of the agreement, the proposed practices, plans, and measures for local hiring, local procurement, and local training could result in material changes to the Residual Effects assessment.

Finally, in terms of monitoring, it is important to ensure that a robust monitoring program is developed that measures the impacts of the Project on the KIs and Measurable Parameters identified in this assessment. The monitoring plan should include Project effects on the Traditional Economy KI. Ongoing monitoring could help ensure that there are no additional negative residual effects of the Project on LSA or RSA communities, including ERFN. Additional residual adverse economic effects may likely result from the Project, such as:

- Economic downturn associated with a boom-bust industry
- Adverse effects on the Traditional Economy, as the effects presented in the assessment likely underrepresent future impacts
- Economic leakage, exacerbating socio-economic disparities between the LSA, the RSA, and outside communities
- Income and economic disparities within the LSA and RSA based on gender, culture, or other factors

3.8.3 RECOMMENDATIONS

It is recommended to quantify the Project-related effects on KIs where possible. Estimating and quantifying project effects in the LSA and RSA could add to the understanding of the Project effects and enhance the residual effects assessment. To better evaluate potential economic effects on LSA communities on employment, training, and income, it is recommended that the assessment review existing data and run a series of scenarios, including the best, average, and worst cases. Specifically, the following KIs could benefit from the estimation of Project effects in the LSA and RSA:

- Employment (direct, indirect, induced)
- Income (direct, indirect, induced)

- Business opportunity (% of project spend in the LSA and RSA)
- Government revenue

It is recommended that the Denison develop and share clear and targeted plans to maximize economic benefits for the LSA communities, including ERFN. These plans should be updated based on ongoing monitoring and should be communicated regularly to ERFN. These plans should include, but are not limited to:

- Outreach to schools with relevant programs, activities, and information to encourage young people to find related employment at the Project
- Working closely with ERFN leadership and community members to identify ways to grow relevant local businesses, encourage Project-related employment, and recruit and retain community members for training and employment opportunities
- Support local hiring practices through the establishment of a local recruitment and training centre within a nearby community for ensuring ERFN members have a pathway to having higher quality positions than simply general labourers or junior positions within the mine
- On-the-job training opportunities for ERFN citizens across all job types, including those that are transferrable outside of the mining sector
- Investments into local businesses, such as training, grants, and procurement preferences to encourage local businesses to benefit from Project activities
- Establishment of the local procurement centre within a nearby community
- Grants to encourage the development and growth of relevant small businesses
- Work with local Knowledge Holders to develop a community-led and informed robust compensation plan for ERFN traditional land users who may be affected in the future by the Project, either via a lack of access to the site, stigma associated with the site, or other effects of Project activities
- Undertake a GBA+ analysis of Project effects including income, training, and employment

These practices, plans, and measures would benefit from being reviewed by interested and impacted Indigenous and non-Indigenous parties. More detail in these practices, plans, and measures would help validate the residual effects assessment.

An ongoing and robust monitoring program will also be needed to ensure that there are no additional negative residual effects of the Project on ERFN. . To help maximize potential positive economic effects for the LSA, it is recommended that the Project actively monitor and report on Key Indicators such as, but not limited to:

- The number of Indigenous, non-Indigenous, local, and regional staff that are hired at the site and their average salaries

- The number and value of contracts for LSA, RSA, and outside businesses
- The type, uptake, outcomes of and feedback from training and education opportunities for LSA residents
- Progress, outcomes, and feedback from all Project-related economic development activities

3.9 ACCIDENTS AND MALFUNCTIONS

3.9.1 SUMMARY OF EIS CONTENT

In Section 14 of the EIS, Denison outlines their assessment of risk associated with accidents and malfunctions. For this assessment, accidents and malfunctions are events or conditions that are not part of any activity or normal operation of the Project as proposed by Denison. This is consistent with the definition of an accident as described in REGDOC 3.6, "any unintended event, including operating errors, equipment failures, and other mishaps, the consequences, or potential consequences of which are significant from the point of view of protection or safety" (CNSC, 2022). In contrast to the description provided n the draft EIS, accidents and malfunctions, while unplanned, in most cases should be reasonably foreseeable.

The draft EIS outlines a range of potential sources of accidents and malfunctions which may occur in relation to the Wheeler River project. This is outlined in detail in Appendix 14A, however, a total of 69 were identified, and only six are described in depth, as they are characterized to be medium to high initial risk. The draft EIS presents a preliminary screening assessment of risk based on the likelihood of occurrence and consequence of severity, with events of greater likelihood and consequence being considered of greater risk than those with lower likelihood and consequence.

For each of the seven scenarios discussed in depth, the draft EIS offers an overview of the scenario, potential consequences to environment and/or human health, possible mitigation considerations, likelihood, and an overall evaluation of risk. The draft EIS then evaluates the seven scenarios to have the following overall risk:

SCENARIO	EVALUATION OF RISK
• Vehicle Accident and Aquatic Release of Radioactivity	Low
• Vehicle Accident and Aquatic Release of Fuel and Hazardous Chemicals	Low
• Loss of Freeze Capacity	Moderate
• Failure of the Freeze Wall	Moderate

• Process Vessel and Piping System Failure	Low
• Facility Fire and/or Explosion	Low
• Vehicle Accident and Terrestrial Release of Radioactivity and Chemicals	Low

Where there remains some uncertainty is in determining the influence of the overall evaluation of risk. Specifically, it remains unclear to ERFN as to the implications of a risk being considered moderate compared to one which is considered low. Additionally, it is unclear whether the preliminary assessment indicating a high risk has any bearing on the final evaluation.

3.9.2 EVALUATION

In review of Section 14, ERFN is alarmed by the approach taken in the draft EIS to downplay and avoid meaningful dialogue regarding potential impacts as a result of accidents and malfunctions. The draft EIS has identified seven scenarios to focus the discussion of accidents and malfunctions. These scenarios include:

- Vehicle Accident and Aquatic Release of Radioactivity
- Vehicle Accident and Aquatic Release of Fuel and Hazardous Chemicals
- Loss of Freeze Capacity
- Failure of the Freeze Wall
- Process Vessel and Piping System Failure
- Facility Fire and/or Explosion
- Vehicle Accident and Terrestrial Release of Radioactivity and Chemicals

ERFN agrees that these are among the most likely sources of accident or malfunction which may result in significant environmental or human health impacts, but that overall, represent a relatively small subset of scenarios or possible sources of accidents and malfunctions, which may cause significant impacts. Other considerations include the failure of drilling equipment, well casings, wastewater treatment processes, and other process/infrastructure failure(s) resulting in the release of harmful materials. These scenarios all require full consideration in the assessment of risk and the development of mitigation measures.

ERFN was disappointed by the lack of Traditional Knowledge and local knowledge used in the assessment of risks. We acknowledge that Denison considered the concerns raised through community engagement related to accidents and malfunctions, but that knowledge, as it relates to effects pathways, monitoring, and mitigation approaches, was not fully integrated in the draft EIS.

ERFN is does not consider the accidentsi and malfunctions assessmentn the draft EIS to be supported by evidence. For example, there are instances where professional judgement rather than modelling and analysis is used to assess the likelihood of an incident, however, no insight is provided to support the rationale for this judgement. Additionally, the draft EIS does not present meaningful contingency strategies or design changes based on the assessment of accidents and malfunctions in many cases, noting that the risk of failure is sufficiently low to be effectively zero, or that contingency planning is not feasible. This is most evident in the discussion regarding the potential loss of freeze capacity. ERFN as well as others have raised concerns about the potential for groundwater contamination in the event mine fluids escape the freeze wall. The potential impacts on surrounding ground and surface water would be catastrophic, as escape may only be detected once an ecological response is observed.

> "In a very unlikely case of groundwater contamination, establishing an exposure pathway from deep contaminated groundwater to a surface waterbody is associated with large uncertainty. In addition, fate and transport of mine fluids cannot be easily quantified. However, it is recognized that, in a very unlikely case of contamination, remediation at the depth of the mining horizon would be very difficult and the spread of contamination could potentially result in effects that could be characterized as major as per the consequence scale described in Section 14.5.2. Accordingly, Denison has put great effort into making sure the structural stability of the freeze wall is maintained, and that the freeze plant is maintained in good working order." (Denison, {2022], p. 14-42)

Notably, the draft EIS recognizes the challenge that it would face not only in containing a breach of the freeze wall but also in even detecting and tracing exposure pathways.ERFN is therefore concerned that, without an additional layer of contingency planning in place, mining fluids may be able to enter the environment undetected. As part of the Environmental Assessment, Denison is responsible to present contingency strategies that clearly contemplate such events. Additionally, the draft EIS has not presented a viable method to monitor the effectiveness of the freeze wall in real-time (or near real-time). The significance of this omission is underscored by Denison's acknowledment there is no manner to truly flesh out the likelihood of failure:

> "[Denison] argued that a loss of freeze capacity resulting in freeze wall failure and the subsequent release of mining fluids from the mining theatre into the local/regional groundwater environment was very unlikely. Accordingly, and based on professional judgement, a nominal value of 1x10-7 was assigned as the annual probability of this scenario. "(Denison, {2022], p. 14-42)

The use of a nominal value in such an important risk assessment is tantamount to tailoring the outcome to fit the overall narrative. ERFN emphasizes the lack of certainty regarding potential failure, and underscores the requirement for a cautionary approach to ensuring that there are appropriate contingency plans in place. Specifically, if the loss of freeze-wall capacity is even remotely plausible, ERFN believes this should require Denison and the CNSC to fully address this low-probability but extremely high-risk event through contigency and emergency planning.

3.9.3 RECOMMENDATIONS

ERFN requests that CSNC and Denison take seriously the possible threat to the environment and by extension ERFN rights and interests associated with the failure of the freeze-wall. We cannot overstate the need to provide additional analysis of contingency measures to avoid contamination in the event the freeze wall fails to contain mining fluids and other sources of groundwater contamination associated with Wheeler River activities.

Specifically, we request that Denison provide additional information on the inputs and analysis which led to the risk assessment for all factors. This includes appropriate effects modelling, effects pathways, and rationale for all assumptions used in the analysis. The conservatism of any modelling assumptions must be clearly discussed, and where more conservative assumptions were available but not used, a rationale for these decisions must be provided. This information is essential to being able to effectively understand the potential risks to the environment, health, and ERFN Rights.

We request that Denison provide additional discussion on how the accident and malfunction risk assessment will alter design elements and how activities are to be conducted. We also request that Denison provide options for mitigations, which include ensuring appropriate anticipatory measures are in place (supported by the rationale for their use), mitigation effectiveness monitoring, and intervention triggers in the event that risk mitigations are not found to be fully effective.

Finally, we recommend that Denison demonstrate how ERFN Traditional Knowledge was considered and incorporated in the assessment of accidents and malfunctions. This must go beyond simply responding to concerns which were raised by ERFN, but rather must demonstrate that Traditional Knowledge and input from ERFN citizens is actively used in ensuring that accidents and malfunctions do not adversely impact the environment, human health, or the rights and interests of ERFN citizens.

3.10 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

3.10.1 SUMMARY OF EIS CONTENT

In the analysis of the effects of the environment on the project, the draft EIS attempts to characterize possible impacts on the project as a result of discrete environmental events such as wildfire and seismic activity, as well as longer-term-events such as the impacts of climate change over the life of the mine. The consideration of major environmental events is essential in the risk assessment of this project, given the inherent risks associated with the extraction, handling, and processing of uranium ore.

The draft EIS focuses on the potential effects of four types of environmental events: seismic activity, forest fires, extreme weather events (short-term) and climate change. We acknowledge that in drafting a section devoted to the effects of the environment on the project, it is difficult to untangle the effects of climate change with the impacts of other discrete events, therefore, with perhaps the exception of seismic activity, climate change is an underpinning factor influencing all of the potential effects of the environment on the project.

3.10.2 EVALUATION

In the review of the Effects of the Environment on the Project, the absence of several factors is noteworthy, including a lack of consideration for long-term water level rise (e.g. flooding) or fall (e.g. drought), which may impact the long-term viability of plans for water taking and effluent discharge. These two factors are discussed briefly within the extreme short-term weather effect, but analysis and mitigation measures for long-term episodes are not contemplated within the EIS. Additional, consideration and discussion should have been afforded to the potential for tornadic events and heavy snowfall/ice conditions on the project.

Overall, we find the discussion on the effects of the environment on the project to be inadequate for the purpose of predicting potential impacts or identifying appropriate mitigation measures. In many key areas, The draft EIS only provides a superficial analysis and discussion on the general conditions associated with the identified effects, and makes general or ambiguous commitments to develop effective mitigation measures in future project planning documents. In some instances, general standards are appropriate, such as in the case of seismic risk, where mitigations must be built into the detailed design of all infrastructure on site. However, for known or predicted risks such as wildfire, which poses a real, ongoing and likely threat to the project, the EIS must contain a fully fleshed-out discussion.

Specifically in relation to wildlife ERFN would expect the EIS to include information is necessary to assess measures to protect ore and radioactive by-products (waste) from fire. How the Project, ore, and other on-site materials may react to fire or become mobilized by wind, water and or materials used in fire suppression require discussion at this conceptual stage.

The above example illustrates how the effects of the environment on the Project must be considered in the interplay between Project activities and environmental effects. Many other examples could be cited, including how water withdrawal during periods of drought may further reduce the overall amount of water available for Project activities. Similarly, the use of equipment at periods of increased fire risk (e.g., drought conditions) may trigger the ignition of a wildfire. Such interplays are also present in relation to the Project's potential impacts on seismic activity where injection and extraction of material from deep wells can influence the likelihood of seismic activity. As a result, it will be necessary for the EIS to discuss how uncertainty regarding environmental effects may influence project activities, as well as how project activities may be curtailed in order to prevent further exacerbation of effects.

3.10.3 RECOMMENDATIONS

Denison must provide a complete examination of the interaction between the local and regional environment and proposed activities. This includes providing further discussion and examples of how factors such as climate, fire, flooding, drought, weather, and seismic activity have impacted in situ recovery mines elsewhere and demonstrate examples of effective use of mitigation measures appropriate for an ISR uranium mining project within the northern context.

We recommend that Denison provide additional modelling and analysis of the potential impacts related to:

- Seismic activity, including magnitude and duration
- The dispersal of particulate material associated with mine stockpiles, and dry-stacked materials in the event of an on-site fire
- Viability of water-taking and effluent discharge bodies as a result of extended or prolonged drought and flooding respectively
- GHG contributions from the Wheeler River project to local, regional, and global climate change
- Management of uncertainty in environmental predictions as a result of increased climate volatility

4.0 SUMMARY AND RECOMMENDATIONS

ERFN, with support from Shared Value Solutions, and Source Environmental Associates, performed a review of the draft EIS. Overall, through our team's review of the EIS, we uncovered concerns regarding information gaps, missing values and indicators, the accuracy of the residual effects evaluations, and adequacy of proposed mitigation and enhancement measures and monitoring and follow-up programs that challenge reviewers from undertaking a comprehensive assessment of the Project. We characterize our findings in three general categories of (a) Elements ERFN support, (b) Elements ERFN believes require additional refinement, and (c) Elements where ERFN has significant concerns. .

- **Project elements THAT ERFN SupportS**
- Denison is proposing the use of a freeze-wall as a containment system for mining fluids. While we believe there are inherent challenges in ensuring that the freeze-wall is effective, ERFN agrees that the freeze-wall is an important mitigation measure that will reduce overall project risks. It is therefore imperative that both the design of the freeze-wall and the associated emergency procedures in the unlikely event of a failure is fully considered, and that provisions for long-term maintenance are included in the licensing conditions.
- Denison is proposing the use of effluent treatment for the Wheeler River project. Treatment of contact water is essential for ensuring that effluent meet appropriate water quality guidelines prior to discharge. We support effluent treatment, but note that additional refinement is necessary. ERFN expects that all water discharged from the Wheeler River site will meet appropriate water quality guidelines.
- Denison intends to send left-over process precipitates off-site for additional processing and disposal rather than being left on site. This will reduce the environmental impacts left on site, and assuming waste materials are appropriately handled and disposed of responsibly, will reduce the overall risk to the environment. ERFN notes that Denison should continuously improve methods of minimizing the development of waste products to minimize its overall environmental footprint.

- Denison proposes to recycle significant amounts of process water that will limit both the amount of water withdrawn from and released to the environment to support processing. ERFN proposes that Denison to continue to identify efficiencies and use best technologies to further reduce external water demands.

- **PROJECT ELEMENTS THAT REQUIRE ADDITIONAL REFINEMENT**
  - The water balance associated with Denison's water recycle program is not clearly defined. ERFN believes that it is important for Denison to quantitatively describe water use in the project within the EIS, rather than waiting until the permitting phase of the project. The water balance for the project must be better understood, as it may disclose significant impacts on the aquatic environment.

  - ERFN acknowledges that Denison intends to do a best available technology study to define water treatment options. Until this study is conducted, 'best' remains to be defined. We request that ERFN be fully engaged in this study and be provided with an opportunity to discuss with ERFN the best treatment option for this project in order to protect the aquatic environment.

  - The water recycle program is conceptual at this stage. Denison has committed to following the "As Low as Reasonably Achievable" standard and continual improvement initiatives during each phase of the project, including the next phases of licensing. ERFN notes this commitment, and recommends quantitative assessment of water recycle as part of the EIS, as this may address the potential issue with effluent acute toxicity discussed in the comments below.

  - While Denison has met the minimum standard for baseline data collection (i.e., one year of data), ERFN maintains that there are insufficient data to accurately characterize the baseline aquatic environment. Given the insufficient datasets, the present assessment of the potential impacts carries too much uncertainty. Based on the baseline characterization (Ecometrix, 2020, EIS Appendix 8-D), the majority of aquatic environment baseline data were collected in 2016 or earlier, and only one year of data (2016) was collected for aquatic biota (benthic invertebrates, plankton, fish tissues) and sediments. Most of the hydrological and fish habitat data forming the basis for those characterizations were collected prior to 2014, and there are very little winter data. Denison has not justified the limited spatial and temporal coverage of the baseline studies. ERFN recommends that Denison should collect at least one additional year of data to assess the current aquatic environment and make the necessary revisions to the baseline characterization. It's important to note that most of the previous baseline data is now over five years old, so the best practice would be to collect two more years of baseline data. This would also serve to meet the provincial TOR and EIS guidance that prescribes all biological and time-sensitive data should be less than two years old (Saskatchewan 2021).

  - The EIS has analyzed the potential impacts of the project on Northern Pike and White Sucker, which are considered significant to ERFN. However, there is no evaluation of the effects on Walleye, Lake Whitefish, Lake Trout, and Arctic Grayling, which are also considered important by ERFN. Denison has used Northern Pike and White Sucker as a representation for these species, but there is no evidence provided that these species are appropriate

surrogates. ERFN also notes inconsistencies in the fish presence/absence data used for the baseline and EIS. Additionally, the potential impact on food web dynamics and its implications for fish species is not thoroughly discussed.

- The EIS would also benefit from more robust efforts to identify and justify key assumptions, as well as key knowledge gaps and how such gaps will be addressed. These are requirements under CEAA 2012. Issues identified in our review and discussed below include key assumptions used in modelling, as well as gaps in data and knowledge relating to critical aspects of the EIS, including the identification of potential impacts and the assessment of significance in relation to groundwater/hydrology, the aquatic environment, local biota and other important values. ERFN has identified instances throughout the report in which such assumptions or knowledge gaps require further justification or additional detail.

- The aquatic environment section of the EIS is also missing information on how malfunctions were evaluated (as required by CEAA 2012 S.19(1)[a]), and provides limited discussion of food web dynamics and their implications to the EIS as required by CEAA 2012 REGDOC 2.9.1. Please see the comment tracking tables for some specific examples of knowledge gaps and assumptions requiring clarity from Denison.

- Denison presents a very narrow assessment of Human Health impacts as a result of the Wheeler River Project. By considering only the direct impacts of chemical and radiological elements of the project on public and worker health, Denison has failed to consider an entire suite of secondary impacts to human health, including the project's impacts on sexual health and violence, use of drugs and alcohol, and the psychological and mental health of ERFN members. Additional consideration of these factors and appropriate mitigation measures should be required in the EIS.

- Denison notes that the increased amount of contaminants of potential concern released to the environment by this project are muted in comparison to the baseline conditions. ERFN is concerned that the impacts of the Wheeler River project still result in additive or synergistic effects on the local and regional environments. As baseline contaminant levels in human health receptors are already high, any additional inputs from the Wheeler River project will serve to add additional stress to an already impacted environment. These issues should be addressed in the EIS.

- ERFN is concerned that the EIS does not sufficiently account for the cumulative effects of past projects and their impacts. Although Denison has attempted to integrate Indigenous Knowledge (IK) with western science, it is the view of ERFN that the representation of these efforts in the EIS falls well short of best practices. There are still significant gaps in the consideration of both cumulative effects and IK that will need to be addressed in the EIS.

- Denison understates the impact of the Project on the Community Well-Being by focusing only on the effects of ERFN citizens participating in the Project's rotational work schedule and related impacts to family and community cohesion. Although the employment and involvement of ERFN citizens may have an effect on certain aspects of Community Well-Being, the Project also has broader direct impacts on ERFN's Ancestral Territory, affecting the well-being of all ERFN citizens. The presence of the Project will alter how all ERFN

citizens interact with Nuhtsiye-kwi Benéne, thus influencing ERFN's overall Community Well-Being and Quality of Life. This must be acknowledged and addressed in the EIS.

- Although the erosion of the traditional economy and negative impacts on harvesting activities through the Wheeler River Project was identified as a major concern by ERFN, Denison understates these potential negative impacts and concludes that traditional harvesting activities such as trapping, hunting, and fishing will not be significantly affected. It is crucial that Denison takes proactive measures to support the traditional economy and that these measures be to the satisfaction of ERFN as a condition of licensing.

- It is important to ensure that a robust monitoring and follow-up programs are developed that measures the impacts of the Project on the KIs, including traditional economy, to ensure that there are no additional negative residual effects of the Project. Additional residual adverse economic effects may likely result from the Project, such as: economic downturn associated with a boom-bust industry; economic leakage, exacerbating socio-economic disparities between the LSA, the RSA, and outside communities; income and economic disparities within the LSA and RSA based on gender, culture, or other factors; and adverse effects on the traditional economy, as the effects presented in the assessment likely underrepresent future impacts. ERFN has obtained assurances from Denison that these issues will be addressed through proactive monitoring and follow-up programs.

- The draft EIS lacks contingency plans for many potential scenarios in which failure occurs. Denison notes and ERFN agrees that failure of the freeze-wall is predicted to be an unlikely event, but ERFN notes that a response plan for this and other events must be developed as a condition of licensing.

- The draft EIS does not provide sufficiently detailed information to model the dispersion of radioactive material if it were to enter into Wheeler River in the event of a vehicular accident. While the likelihood of this scenario to occur is low, Denison must be appropriately positioned to respond in such an event as a condition of licensing.

- Denison does not adequately characterize the potential for system failure of the effluent treatment facility. As a result, the draft EIS provides no insight into how Denison may be able to store water or otherwise prevent the release of contaminated water to the environment. This scenario must be evaluated in the EIS, and emergency response procedures must be addressed as a condition of licensing.

• PROJECT ELEMENTS THAT ARE SOURCES OF CONCERN

- As presented in the draft EIS, Denison is proposing to leave heavily impacted water in the leach field, with the expectation that the plume will not migrate to Whitefish Lake sufficiently to cause environmental impacts. Given the risks involved, ERFN expects Denison to take a more proactive approach to leach field decommissioning to ensure the leach field is actively remediated at the end of project life. ERFN recommends targets based on returning groundwater to near-baseline conditions by doing as much mitigation as possible while the mine is in operation/in closure in order to reduce uncertainty and risk for future generations. This is a fundamental concern for ERFN, and must be addressed in licensing conditions.

- The predicted effluent quality of the industrial wastewater treatment plant is quite saline. The quality of this water at end-of-pipe (prior to the diffuser) may cause acute toxicity to aquatic life, meaning discharge may contravene the Fisheries Act/Canadian Metal and Diamond Mine Effluent Regulations. Ensuring that adequate measures are implemented to ensure that discharge water quality is within guidelines that are adequately protective of aquatic life is a fundamental concern for ERFN.

- One of the core challenges of using ISR is to ensure the containment of mining fluids (solvent materials injected into the ore body, as well as uranium and other ore products mobilized during recovery) to the Project area. Denison plans to use a freeze-wall to prevent lateral groundwater flow and potential contamination of groundwater and surface water. While the technology is not entirely new in Canada, the large size of the freeze-wall presents a significant operational and closure challenge. Denison's assessment largely depends on models and assumptions, but provides little supporting evidence or reference to previous studies or projects. ERFN stresses the importance of ensuring that Denison's models are shown to be conservative and that Denison is able to carefully monitor and maintain the freeze-wall to prevent the release of contaminated material. In the event of mining fluids or other contained materials being released, ERFN expects Denison to detail emergency procedures to stop the release and restore the affected environment. ERFN understands that Denison is committed to developing an emergency response procedure for this event.

- Denison has not gone far enough in terms of learning from and incorporating information from ERFN provided in the *Traditional Knowledge Study and Health and Socio-Economic Study Report*. It appears Denison put a disproportionate amount of reliance on the views and interests of one ERFN land user. While we applaud the efforts of Denison to seek feedback from ERFN land users directly and to work closely with such land users, ERFN's rights and interests in the region of the Project (and the potential of the Project to adversely impact such rights and interests) extend well beyond that of just one land user. It is important for the proponent and regulators to understand that while the rights and interests of individual ERFN members are important to consider, the Elders and elected leaders of ERFN represent the collective rights and interests of ERFN as a Nation. The results of the scoping study indicated that ERFN holds firmly established rights to the area where the planned project is located. Numerous studies conducted over several decades have examined ERFN's relationship and connection to land use and occupancy of the region where the proposed mine is located from traditional land use, subsistence harvesting, ecological, and socio-cultural and economic perspective. Denison and CNSC must continue to work with ERFN to ensure that impacts on ERFN rights are appropriately and fully considered, mitigated, and accommodated. The draft EIS should be revised to reflect the totality of ERFN TK and land use information.

ERFN is prepared to accept that ISR mining may be a better approach compared to conventional open-pit uranium projects. Other open pit operations in ERFN territory have left long-lasting damage to our Ancestral Homeland that cannot be fully remediated. However, this Project is the first of its kind in Canada. ERFN believes that it must be held to the highest standards. Denison as the proponent and CNSC as the regulator must employ strict precautionary approaches in all instances where uncertainty or potential risks cannot be resolved.

To Denison's credit, they have worked closely with ERFN in the months and years that have led up to the submission of their draft EIS to provide information to ERFN about the nature of the proposed mine, to develop an open and trusting relationship, and to gain an understanding of ERFN knowledge, rights, practices, interests, and concerns. However, ERFN is of the view that the draft EIS does not yet currently utilize sufficiently conservative models or precautionary approaches to contingency planning or in the consideration of failure or accident scenarios. These issues will be of greatest concern to our citizens.

In situ recovery is an entirely new type of uranium mining to what we have seen within Nuhtsiye-kwi Benéne, and there are many unknowns. The onus to provide evidence that will assure our community that this project will not cause adverse environmental impacts lies directly with Denison. Unless more conservative models are used to predict impacts, and more robust environmental precautions are taken in the design of mitigation measures, ERFN may conclude that the potential risks of significant adverse environmental effects will be greater than the potential benefits of the project. We are prepared to work with Denison and the CNSC to address what we see as the current gaps.

We also recognize that this phase of the environmental assessment serves as a turning point. ERFN expects that Denison and CNSC will continue to work collaboratively with ERFN to resolve all issues identified in this review, as well as other concerns as they are identified and presented. We seek to collaborate with all parties in gaining confidence in the Project, executing opportunities to ensure appropriate participation by ERFN in the project, and working to mitigate and accommodate all impacts to rights and interests.

Additionally, as the CNSC is responsible for regulating the entire lifecycle of the Wheeler River project, CNSC's obligations extend beyond the Environmental Assessment. With these obligations is the Duty to Consult through construction, operations, closure, and post-closure through to the completion of reclamation. ERFN will require the CNSC to conclude a long-term oversight agreement with ERFN to ensure appropriate oversight of all aspects of this Project throughout its duration. Such an agreement will need to address ERFN's process, capacity and resource requirements for effective consultation and accommodation over the life of the project.

The process of addressing ERFN concerns is through the environmental assessment and during any future licensing applications isunderstood to be iterative, however, the following recommendations outline initial considerations for developing a pathway forward:

- Although typically not contemplated in depth during the Environmental Assessment phase, it is important to consider how to determine appropriate security bonding for this project. In the event mining fluids contaminate groundwater either during the operational phase of the project or during closure and post-closure phases, remediation will present a significant technical challenge at great cost. The long-term and uncertain nature of groundwater transport for the Wheeler River project means that it is difficult to fully assess risks 50 to 100 years from now. ERFN must be assured that there is a financial backstop to guarantee resources are in place to fully remediate the site.

- ERFN expects that the freeze-wall will be maintained until groundwater contained within the mining theatre meets appropriate mutually agreed upon water quality criteria. Given that a

permanent freeze-wall is the only identified solution that could ensure harmful contaminants are not able to escape, ERFN requires assurances that an effective freeze-wall be maintained indefinitely until groundwater returns to baseline condition. Financial assurances to maintain the freeze-wall until such time as baseline conditions are restored must be a condition of licensing.

- Given the need for certainty surrounding the effectiveness of the freeze-wall as a form of mitigation against groundwater contamination by mining fluids. ERFN believes that a Freeze Wall Monitoring and Management Plan that details how the integrity of the freeze-wall will be maintained throughout the life of the project should be developed as a condition of licensing. Additionally, we request that the plan outline a method for monitoring in real-time the integrity of the freeze wall in three dimensions, and that such monitoring data be publically accessible for the duration of the freeze-wall operations. .

- Large-scale mining operations often use labour and resources from outside the area in which they are located. This can be especially true for positions and activities that require high skill or experience levels. ERFN and its citizens, with support from Des Nedhe Group, are highly skilled and experienced in working in the uranium mining field. Denison must demonstrate how it will prioritize economic opportunities for residents and businesses in Northern Saskatchewan, notably ERFN citizens and businesses. It is recommended that Denison work with ERFN to establish training and employment opportunities programming at the Wapachewunak Reserve. Programming should work to ensure that Denison proactively removes barriers to ERFN citizens and other residents or businesses in Northern Saskatchewan, allowing them to benefit from this project.

- Through baseline archaeological studies, only a handful of sites of archaeological significant were identified as sites to be impacted by project activities. However, this project is set more broadly in an area which is expected to have high archaeological potential. As a result, we request, as a condition, that Denison provides capacity for the training and employment of ERFN cultural monitors who will be present throughout project construction to ensure chance archaeological finds are recognized and impacts mitigated.

- ERFN citizens have raised significant concerns regarding Project impacts on environmental and human health through a number of pathways. Given the potential for these impacts to come to fruition, we request that, as a condition of approval, Denison should be required to establish a program examining the ongoing impacts of this project relative to the predictions outlined in this EIS and in the Human Health Risk Assessment.

- Given the potential impacts to the aquatic environment, there is a need to establish an Aquatic Effects Monitoring Program (AEMP). This program is in addition to surveillance monitoring of project discharge and focuses on understanding biological response to the project. ERFN recommends, as a condition of approval, that Denison be required to establish an AEMP for this project. Further ERFN requests that capacity be provided to ERFN to ensure the ability to be fully engaged in the development, oversight, and execution of the AEMP, both at the technical table and with boots-on-the-ground monitors. It is further necessary that Denison works with ERFN to fully identify effects pathways, valued

components, and measurable endpoints that are consistent with how ERFN citizens view and interact with the lands and waters around the project site.

- ERFN recommends that Denison conduct one additional year of baseline data collection for all aquatic environment endpoints and revise the baseline characterization appropriately. It is also worth noting that nearly all previous baseline data are now over five years old, so true diligence would involve two years of additional baseline. Baseline data collection should include (but not be limited to):
    - Benthic invertebrate and sediment sampling at SA-6
    - Benthic invertebrate and sediment sampling at two locations in existing baseline lakes (near the inlet and outlet) and one additional location in South Whitefish Lake (at the proposed discharge location)
    - Phytoplankton and zooplankton community sampling in existing baseline lakes
    - Whole-sample benthic invertebrate tissue chemistry analyses
    - Repeating previous fish tissue sampling but including the retention and analysis of liver tissues
    - Fish tissue (muscle) sampling from all important species identified by ERFN that are present within South Whitefish Lake. Denison should either investigate non-lethal sampling options or partner with ERFN to obtain tissue samples from multiple species
    - Detailed bathymetric and habitat surveys of South Whitefish Lake
    - In-situ measurement and characterization of bottom currents at the effluent discharge location during winter, at high flow, and at low flow
- ERFN has recognized that the Project will have adverse impacts on the ability for ERFN citizens to engage in some traditional practices and activities. Further, we have outlined our desire to ensure not only the maintenance but also the growth of our citizen's connectedness to the land. We request that, as a condition of this project, Denison work with ERFN to identify and support mitigation measures directed towards ensuring the growth of traditional activities by ERFN citizens, and the promotion of connectedness to the land.
- The Wheeler River Project is complex and has a range of pathways with which it will interact with ERFN's Rights and interests. Given this complexity, ERFN expects that Denison will provide appropriate capacity support for ERFN's full participation in the ongoing environmental oversight for the entire life of the Project.

5.0 BIBLIOGRAPHY

Andradóttir, H. (2017). Impact of Wind on Stormwater Pond Particulate Removal. Journal of Environmental Engineering, Vol 143 Issue 8.

Ellisworth, W.L. (2013). Injection-Induced Earthquakes. Science, Vol 341.

Government of Saskatchewan (n.d). Treaty Land Entitlements. https://www.saskatchewan.ca/residents/first-nations-citizens/treaty-land-and-entitlements

First Nations Land Management Resource Centre [FLNMRC]. (2021). https://labrc.com/first-nation/english-river

Jarvenpa, R. (1980). The Trappers of Patuanak: Toward a Spatial Ecology of Modern Hunters. Canadian Ethnology Service Paper No. 67. Ottawa: National Museums of Canada.

Canada North Environmental Services. (2017). English River First Nation Country Foods Study [Final report].

Cameco Corp. (2021). Patuanak – English River First Nation Community Profile. https://www.cameconorth.com/community/community-profiles/patuanak-english-river-first-nation

Canada North Environmental Services. (2017). English River First Nation Country Foods Study [Final report].

Canadian Nuclear Safety Commission. (2021). Map of Nuclear Facilities in Canada. https://nuclearsafety.gc.ca/eng/resources/maps-of-nuclear-facilities/results.cfm?category=uranium-mines-and-mills

Crown-Indigenous Relations and Northern Affairs Canada [CIRNAC]. (2022). Registered Population English River First Nation. https://fnp-ppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=400&lang=eng&fbclid=IwAR07hpCo6Z8vaAokx8SzCsmmyST_VyR-Pz6Y7jqsRwop14zRSV_L5FdW8Mo

Dodson, P. and the Elders of Birch Narrows, Buffalo River, Canoe Lake, and English River (2006). In Their Own Land: Treaty Ten and the Canoe Lake, Clear Lake and English River Bands. http://www.otc.ca/public/uploads/resource_photo/In_Their_Own_Land1.pdf

Haalboom, B. (2016). Pursuing openings and navigating closures for aboriginal knowledges in environmental governance of uranium mining, Saskatchewan, Canada. The Extractive Industries and Society, 3(4), 1010-1017.

Hoogeveen, D., Williams, A., Hussey, A., Western, S., Gislason, M.K. (2021). Sex, mines, and pipelines: examining 'gender-based analysis plus' in Canadian impact assessment resource extraction policy. The Extractive Industries and Society. Vol 8 Issue 3.

Province of Saskatchewan. (2021). Guidelines for the Terms of Reference and Environmental Impact Statement. Prepared by the Environmental Assessment and Stewardship Branch, Ministry of Environment. November 2021. https://pubsaskdev.blob.core.windows.net/pubsask-prod/127268/TOR-and-EIS-Guidelines.pdf

Trifa, G., Labas, R., Romer, P., Campbell, T. (2019). Black Rock. [Documentary film]. CBC Short Docs. https://www.cbc.ca/shortdocs/shorts/black-rock

World Nuclear Association. (2015). Uranium in Canada. https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/canada-uranium.aspx

World Nuclear Association. (2021). Brief History of Uranium Mining in Canada. https://world-nuclear.org/information-library/country-profiles/countries-a-f/appendices/uranium-in-canada-appendix-1-brief-history-of-uran.aspx

APPENDIX A: COMMENT TRACKING TABLE

COMMENT #	EIS SECTION REFERENCE	ISSUE	QUESTION/RECOMMENDATION
ATMOSPHERIC AND ACOUSTIC ENVIRONMENT			
ERFN-001	EIS Section 6.1.1.2.3 Other Guidelines and Standards	Background radon concentrations were used for predicted concentrations for the Project without an appropriate rationale for why CNSC criteria are not used.	Provide rationale why background radon concentrations were used in favour of air quality emissions standards/criteria from CNSC for predicted radon concentrations from the Project.
ERFN-002	EIS Section 6.1.1.3 Spatial and Temporal Boundaries	For simplicity, a single criterion and time-averaging period were selected for each COPC based on the most stringent criteria or standard presented (federal/provincial). Time period effects are expected to occur in relation to project phases and activities (scenarios), and that the prediction of effects are applicable to/driven by MPs and air quality criteria (1-hour, and 24-hour – short term emissions; and, 30-day, and annual averaging periods). Average compositions from dustfall data during baseline studies was limited to two sampling events (September and October 2021) and presented as a percentage of fixed dustfall – the lowest average of measurable concentrations was used to represent background levels.	The AQ modelling assumptions used for the Project are heavily reliant on conversion calculations and average baseline measurable concentrations from passive monitoring methods, instead of a more conservative approach using maximum measurable concentrations. Denison iterates that maximum concentrations for each scenario were extracted from modelling results and compared to criteria to determine effects; however, for dustfall, the lowest average measurable baseline concentrations were used to represent background levels in the modelling.
ERFN-003	EIS Section EIS 6.1.1.2.4 Summary of Assessment Criteria (KIs and MPs); EIS	As KIs associated with the Air Quality VC pertain to levels of dust, combustion products, uranium,	Passive methods represent averaged concentrations for deployment periods, and in some cases are not directly comparable to the

	Section 6.1.3.2 Existing Environment Air Quality	metals, and/or radionuclides; passive monitoring methods (commenced in 2016) were used to characterize the baseline air quality for the Project (included particulate matter [dustfall], NO_2, SO_2, radon, and external gamma). Provincial regional background concentrations were used for TSP, PM_{10}, $PM_{2.5}$, NO_2, SO_2, CO; while Key Lake ECCC background data were used to represent concentrations of uranium, arsenic, and nickel; and Cigar Lake data were used for copper, lead, selenium, and zinc background concentrations.	regulatory criteria identified in Table 6.1-5. Conversion calculations were used on the passive monitoring data to compare the minimum requirements of averaged baseline results gathered, against identified provincial/federal criteria for use in modelling effects for the Project. Only predicted short-term (less than 3 years) and medium-term exceedances of modelled COPC concentrations of TSP, PM10, uranium (24-hour), and NO2 (1-hour) to exceed air quality criteria at receptors located outside of the Property Boundary (6.1.4.2); however, as per the Saskatchewan Air Quality Modelling Guideline (SK MOE 2012), the eight highest 1-hour predictions and the single highest 24-hour prediction at each receptor can be discarded.
ERFN-004	EIS Section EIS 6.1.1.2.4 Summary of Assessment Criteria (KIs and MPs); EIS Section 6.1.3.2 Existing Environment Air Quality	Table 6.1-15 shows 24-hour Arsenic concentrations met criteria established in Table 6.1-5 for background level comparisons (0.003 $\mu g/m^3$ - used conversion calculation due to passive sampling techniques used for baseline).	The EIS lacks clarity with respect to COPCs, as there was no discussion on the effects of 24-hour Arsenic concentrations meeting established criteria, nor was rationale included for the addition of Zinc as a COPC.
ERFN-005	EIS Section 6.1.3.2.7 Adopted Background Considerations	Ontario criteria for uranium in PM_{10} were conservatively selected as the Project criteria although particle size information for ISR stacks (main source of Project uranium emissions) remains unknown. Input data to run the dispersion modelling included meteorological data from one year (2016 - minimum under guidelines).	Information is lacking on how uranium emissions can be mitigated if ISR plant stacks demonstrate particle sizes other than inhalable particulate matter (i.e., respirable particulate matter [$PM_{2.5}$] levels). Adjustments and refinements to the modelling and thus conclusions were made, heavily based on assumptions.
ERFN-006	EIS Section 6.1.3.1 Climate (Existing Environment); EIS Section 6.1.7.1 Climate Change Considerations (Cumulative Effects)	Climate considerations within the EIS do not address the potential for permafrost in the project area or potential disruption of permafrost by the Project (i.e., contributing GHG emissions directly and indirectly	Update Section 6 to include permafrost implications from interactions with the Project.

		related to the project or as it relates to climate change).	
ERFN-007	EIS Section 6.1.3.1 Climate (Existing Environment)	Baseline wind direction blowing predominantly from the west (~10%), followed by south and east directions (Appendix 6-C) with an average wind speed of 3.5 m/s. Proponent doesn't demonstrate relative maximums and minimums of wind speed over the averaging periods and wind data are not available for the climate normals period or from baseline studies for comparison and integration into project design/seasonal mitigations.	Update baseline information to reflect seasonal wind speed maximums and minimums and integrate it into mitigations.
ERFN-008	EIS Section 6.1.4.2 Potential Project-Related Effects	"The propagation of air emissions from Project activities associated with Construction, Operation, and Decommissioning was predicted using version 7 of the CALMET/CALPUFF modelling package (Exponent 2015). ... While the Saskatchewan Air Quality Modelling Guideline identifies that the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) should be used for most assessments in Saskatchewan, Section 3.3 of the guideline does allow for the use of more sophisticated models, including CALPUFF, where justified (SK MOE 2012a)." (pp. 6-30)	From the Saskatchewan Air Quality Monitoring Guideline (Section 3.3) "The use of specialized models [CALPUFF] requires consultation… [and] may be approved by the ministry on a case-by-case basis. This justification should clearly state the reasons why the approved models are not appropriate…" (SKMOE 2012). Provide a rationale for why the approved models were not appropriate based on the limited meteorological dataset available.
ERFN-009	EIS Section 6.1.5 Mitigation Measures	Additional mitigation measures include the use of chemical dust suppressants to address Air Quality. Denison does not provide evidence discussing the potential impacts on Air Quality from the use of chemical dust suppressants.	We request that Denison provide discussion regarding the potential impacts of using chemical suppressants to mitigate dust including whether there are there any risks to air quality associated with the chemical suppressants themselves.

ERFN-010	EIS Section 6.1.6.2 Significance and Confidence (Residual Effects Evaluation)	Denison states that a gap analysis memo and model input summary was prepared as part of the draft EIS. The memo appears to be missing from the EIS appendices.	Please either provide ERFN with the memo or clearly indicate where in the appendices this information is available.	
ERFN-011	EIS Section 6.2.3.1 Baseline Noise Measurement Program (Existing Environment)	Baseline data are not sufficient to support the assessment of noise impacts. Data were only collected for 2 locations during 1 week in May 2021, and did not include a portion of Highway 914 (like atmospheric component and identified traffic impacts from Project Activities). Unrepresentative data (meteorological events – temperature, relative humidity, precipitation, wind speed) were removed prior to summarization (14 hours, or 7.5% of measurement data). One of the two monitoring locations was disturbed during the monitoring period and these data were also discarded in the analysis.	Denison must provide further baseline information to support sound level criteria conclusions, project level-, residual-, and cumulative effects evaluations for modelling that links noise receptors with other VCs; as compliance determination is based on baseline measurements. Noise significance determination for receptor VCs may not be representative of actual conditions. Per the EIS, "based on professional experience, the SK MOE has considered the Alberta Directive 038 (AER 2013) as a suitable stand in for provincial guidance..." Please clarify how the current baseline data collection for noise aligns with this recommended guidance.	
GEOLOGY AND GROUNDWATER				
ERFN-012	EIS Section 2.3.3.1.1 Mining Area Remediation	Section 2.3.3.1.1 states that "the mining area decommissioning objectives have been developed through groundwater modelling work and are achievable based on metallurgical testing." Section 7.6.2.1 refers to decommissioning objectives. The objectives are not appropriate for environmental protection. Table 2.3-3 decommissioning objectives portrays water quality that represents a substantial environmental risk and would need generations of monitoring	(i)	Further effort should be taken to define the remediation goals that are achievable with best available technology and a commitment should be made to remediate to the maximum extent possible (until baseline levels are reached or the water is deemed suitable with no risk or need to monitor further). Funds spent to remediate will reduce the need for multi-generational monitoring and an unreasonable burden and risk on

		to assess migration of this highly impacted plume. pH 4 is highly acidic and metal/radiation levels are concerning (200 Bq/l radium is 200 to 1,000 times over safe limits). For species where baseline levels are higher than safe levels, baseline levels should be used a target.	(ii)	future generations (to monitor for a very long period of time). An options assessment for decommissioning objectives should be conducted based on Best Available Technologies (BAT) for treatment of contaminated groundwater and non-degradation approaches for the decommissioning objectives. Consultation on decommissioning objectives is required. Please revise the project closure plan to reflect updated decommissioning objectives.
ERFN-013	EIS Section 2.3.3.1.1 Mining Area Remediation	To determine groundwater targets for decommissioning, the levels for groundwater protection from contaminated sites should be used for this project. This would involve use of typical numerical standards rather than the risk-based approach used in the EIS. A minimum level of protection is to define baseline groundwater levels where baseline is greater than WQGs for groundwater. It is acceptable to use the higher value as the target, with baseline being defined as 95% background.		As a point of reference, any groundwater decommissioning objective should be compared to the 95% background levels and/or numerical groundwater standards for contaminated sites at the depth of impact compared.
ERFN-014	EIS Section 2.3.3.1.1 Mining Area Remediation	Over the course of the project, a certain mass of acid will be added into solutions for injection into the formation. Use of peroxide/ferric may indirectly add acid load via oxidation of sulphide minerals or other oxidation-reduction reactions. Some of the acid used in the project will be		The mass load of alkali used during decommissioning should be commensurate with the net acid load added to the formation throughout the Project. Mitigation planning along these lines is recommended for consideration to support development of more environmentally responsible decommissioning targets.

		neutralized on surface as part of water treatment and discharge. The difference between total acid added to the formation and acid neutralized on surface through treatment represents the net acid load added to the formation and left underground. The EIS describes one mitigation for the leach area as being pumping alkali solution (i.e. caustic) into the leach formation to neutralize residual acid.	
ERFN-015	EIS Section 2.3.3.1.1 Mining Area Remediation	Section 2.3.3.1.1 on decommissioning and remediation of the mine area is vague and should be expanded. For example, certain reagents "may" be used, freshwater will be mixed with contaminated water as a remediation method, and remediation plans will be further refined.	Without prejudice to previous comments on the suitability of proposed decommissioning objectives (i.e. Table 2.3-3), the EIS requires a more specific plan on how decommissioning objectives will be achieved and how remediation targets will be assessed to be met.
ERFN-016	EIS Section 2.3.3.1.1 Mining Area Remediation	To be able to plan for decommissioning, it is essential that targets developed now, at the EIS stage. Otherwise, the project could be unacceptable to communities in the long term and there is no recourse.	Mitigation planning to meet the closure targets must be outlined conceptually so that bonding can be put in place to ensure the targets are met and the project is acceptable. With that in mind, development of targets and an approach to achieve these targets is required at the EIS level and should not be deferred.
ERFN-017	EIS Section 2.3.3.1.1 Mining Area Remediation	The EIS states that the freeze wall will be allowed to thaw once recovered water meets the proposed mining decommissioning groundwater quality objectives and has been demonstrated to be "stable over sufficient time." The freeze wall should be maintained until there is no longer a groundwater plume. It is not environmentally	(i) The approach should be to fully mitigate the groundwater zone impacted until the targets are reached. The stress on communities is too high if a groundwater plume of acidity is left in the ground. Adequate neutralization is critical for the groundwater impact zone so that a plume does not develop. Similar to

		responsible to leave the risk in the ground to monitor for many generations with the optimistic assumption that such a plume will not reach receiving environments. There is no precedent in Canada for the approach of purposefully leaving heavily impacted mine water injected underground with the expectation that it will not reach surface water. Modelling of such a plume is inherently uncertain and the highly impacted water represents a significant environmental hazard/liability.	(ii)	regulation of contaminated sites source areas and plumes, the site is not remediated until it meets this standard of care. It is unclear from the EIS how it will be determined that the freeze wall is no longer required at the site. ERFN must be engaged in decision-making for thawing of the freeze wall after Decommissioning objectives have been met.
ERFN-018	EIS Section 7.8.2.2.4 Post-Decommissioning	Section 7.8.2.2.4 groundwater monitoring, post-decommissioning outlines that monitoring will continue indefinitely, until "transfer of the site into the provincial institutional control program." This ongoing monitoring requirement and stress on communities and ongoing governance should be avoided or minimized to the extent possible by increasing the amount of remediation of the fluids to background levels. Purposely avoiding remediation efforts by passing the responsibility to ongoing monitoring adds significant uncertainty about whether objectives will be achieved, and should further mitigation be required, funds for execution would not be available from the closed project.		Monitoring should be done as a last approach after all efforts have been made to maximize remediation and minimize/remove the groundwater plume. For this project, the timelines and risks are too great to avoid mitigation measure for source control. The freeze wall, remediation pumping and treatment should continue until no further improvements are possible or targets are reached that reduce the need for long-term plume monitoring.

ERFN-019	EIS Section 7.8.2.2.3 - Decommissioning Operation; Figure 7.8-2	Please clarify what changes to the groundwater monitoring network established during Operations will be anticipated during Decommissioning, including potential pathways of water from the mine site to the receiving environment. Figure 7.8-2 on PDF p. 618 of the EIS is meant to illustrate the conceptual groundwater monitoring network during Decommissioning; however the figure does not show the proposed monitoring locations.	A conceptual map similar to Figure 7.8-1 would be valuable and aid ERFN in determining the adequacy of the monitoring network and assessing potential impacts to important water courses.
ERFN-020	EIS Section 7.8.2.2.3 Decommissioning	The EIS mentions progressive reclamation in general terms.	The concept of progressive reclamation is recommended to be applied to remediation of groundwater in the different zones of the leach field after leaching of the zone is complete. For example, progressive reclamation/remediation of the Phase 1 and 3 could be started while leaching of Phase 4 and 5 is underway.
ERFN-021	EIS Section 2.2.1.4.6 Mining Solution	The way water recycle is discussed and assessed in the EIS is inconsistent. Section 2.2.1.4.6 states *"once [Uranium Bearing Solution] UBS is recovered to surface, it will be pumped from the wellfield into the processing plant where uranium will be removed from the UBS (Section 2.2.2). The treated solution created can be refortified with reagents as required and pumped back into the mining area to maximize water recycling during the life of the mine……. No water recycling has been included in the water balances, although it is expected to occur."* Similarly, Section 2.2.3 states, *"Denison intends to recycle process water to the*	(i) The EIS should incorporate assessment of water recycling into a separate case for the water balance/water quality model (similar to the way base/upper case modeling is used for other phenomenon). The EIS should discuss limits of water recycling, such as the minimum amount of water required to operate the project or the potential for contaminant accumulation in leachate that prevents effective recycle. (ii) Further, recycling all or portion of the process water may increase the concentration of contaminants

		greatest extent possible, thereby reducing the demand for freshwater supply and volume of treated effluent. To develop a conservative assessment basis for the EA, the water recycled flows from the industrial wastewater treatment plant back into the processing plant and wellfield have not been incorporated into the estimates for freshwater withdrawal and treated effluent discharge." All models must be updated to include the operational strategy employed by Denison and actual conditions to occur during operations as best as possible. From the perspective of fresh water withdrawal from the environment, evaluating the project water balance with the assumption that no water is recycled is conservative. However, from a water management and water treatment perspective the opposite is true as use of water recycle reduces risks by reducing the total amount of solution requiring management, reducing the rate of discharge of treated effluent and associated contaminant load going to Whitefish Lake.	reporting to the IWWTP and may impact the effluent quality achievable. Accumulation of contaminants in the recycled solution and its impact on the performance of the IWWTP and effluent quality must be assessed and discussed. Incorporating water recycle may reduce the amount of process water requiring treatment and discharge and so may help ameliorate the concern with the high salinity of treated water.
ERFN-022	EIS Section 2 General	The EIS describes several water storage ponds on surface including precipitate ponds and process water ponds. The design basis for these ponds in terms of how much solution storage is required is not clear in the EIS.	The EIS should discuss the sizing basis for these ponds in more detail, including storage capacity for probable-maximum-flood, pond capacity used by precipitate, freeboard volume, and normal operations volume. This should also be discussed in the context of the total amount of solution requiring management at a given time (underground and on surface) and the extent of water recycle achievable. The ability to safely

			manage process water on surface is a critical mitigation measure for the project and so understanding the design basis for these features is required to assess risk to the environment.
ERFN-023	EIS Section 2.2.2.2.1 Radon Purge Tank	Figure 2.2-13, the Processing Plant Overview shows the 5,000 m^3 uranium solution holding area would include tanks. This is incongruent with Section 2.2.2.2.1, which states that the UBS holding area will be contained by a double composite liner system with leak detection adjacent to the processing plant and under a fabric tension building system.	It is unclear if Figure 2.2-13 shows what is currently being considered for the design.
ERFN-024	EIS Section 7.4.2 Potential Project-related Effects; EIS Section 7.6.1 Life of Mine (0 to 38 years)	Section 7.4.2 and section 7.6.2.1 describe scenarios for upward migration of acidic, impacted mining waters and include discussion of upward migration distances of 11 to 50 m. The basis for these scenarios is not made clear in the work and the rationale for why these scenarios are conservative is not sufficient. Upward migration could be a real risk for the project. For example, current and decommissioned boreholes for monitoring could be a pathway for migration of acidic, contaminated fluids to the surface.	The EIS should provide a compelling case for the conservatism of the current approach and/or more rigorously assess the impact of substantive upward migration of leach solution.
ERFN-025	EIS Section 2.2.1.3 Freeze Wall	Section 2.2.1.3 states "current plans are for the freeze wall to be a minimum of 10 m thick, be installed 25 m away from the uranium deposit, and extend 30 m into the basement rock	Please explain the rationale for the selection of a 30-m thick freeze wall and how it ensures the containment of contaminants as predicted under a variety of different site and mining conditions.

		(Figure 2.2-6).” This is 20 m smaller than the maximum extent of the area approximated to be influenced by mining around the deposit (50 m). This increases the risk of contaminants leakage from the mining affected area with potentially negative impacts on the receiving environment especially considering that the primary means of containing containment within the leaching zone relies on maintaining an inward hydraulic gradient by recovering more solution than what is being injected (1%). This is subject to planned and unplanned operational downtime due to maintenance or other reasons.		
ERFN-026	EIS Section 2.2.1.3.1 Freeze Plant	The ammoniacal solution will be used in the freeze plant to maintain the freeze wall in place for the execution of mining activities. Section 2.2.1.3.1 states that “the freeze plant will be designed with ammonia safety in mind to monitor for and minimize risks to workers and the environment from potential leakages.” However, no information is provided on potential underground leakages and assessment of potential negative impacts on water quality/balance as well as any appropriate mitigation measures. This is important because as stated in the Application, “the sandstone hosting the uranium deposit is permeable and groundwater can flow horizontally through the deposit.”	(i) (ii)	Has the freeze-wall brine been evaluated as a potential source of groundwater contamination? How would leakage of freeze-wall liquid be detected or assessed?

ERFN-027	EIS Section 2.2.6.2 Back-up Power Supply	Section 2.2.6.2 of the EIS states that "*to provide electrical service during times of utility outages, diesel generators will be installed to service the site and maintain essential functions. The generators will be used to maintain power to the processing plant and the camp, as well as to maintain other essential services as required.*". Given that maintaining the freeze wall as well as a negative water balance in the ISR area are key to the mitigation of environmental impacts, a plan must be developed for maintaining the operation of the ISR pumping and freeze systems during power outages.	The EIS should discuss the impact of short term power outages on freeze-wall operation and efficacy and on the water balance associated with solution injection/recovery.
ERFN-028	EIS Section 2.2.3.8 Industrial Wastewater Treatment Plant	An important aspect of preventing environmental impacts is the industrial wastewater treatment plant (IWWTP) that is to treat excess process water and surface runoff. The EIS provides limited information about this system, its design basis, the Project-specific testing conducted, or how the predicted effluent quality provided in Table 2.2-1 of the EIS was developed. Section 2.2.3.8 states, "*a metallurgical test program was completed at SRC to help define the IWWTP design and performance criteria.*" However, no reference is provided to this program, nor have its results or conclusions have been discussed in the Application. This is a key part of the mine design and it is important, for review, that the EIS provide the information needed to	Table 2.2-1 in Section 2.2.3.9 outlines the upper bound effluent quality proposed for the Project and states, "*the effluent quality was determined to be achievable through laboratory test results conducted by Denison at SRC.*" However, this section does not provide a comparison of the concentrations achieved at the bench scale with the upper bound limits.

		understand and evaluate the efficacy of the proposed mitigation measures.	
ERFN-029	EIS Section 2.2.3.9 Treated Effluent Monitoring and Release Ponds	The IWWTP process appears to use processes similar to those of other waste water treatment sites in the Canadian uranium mining sector. It would be useful if the EIS discussed the IWWTP relative to analogue sites in terms of the treatment technologies used and the quality of effluent achieved at other sites.	How does the predicted effluent quality shown in section 2.2.3.9 compare to effluent from analogue sites in the Canadian uranium sector, for example water treatment systems at Cameco and Orano's projects in the region?
ERFN-030	EIS Section 2.2.3.9 Treated Effluent Monitoring and Release Ponds	Table 2.2-1 of the EIS shows predicted effluent quality for the IWWTP. This table includes a prediction that the total dissolved solids in effluent is predicted to be 6,420 mg/L, with 600 mg/L chloride and 3,915 mg/L sulphate. The table also includes predicted effluent for copper of 0.042 mg/L. These levels approach the British Columbia's water quality guidelines associated with acute toxicity and so may be acutely toxic at the end-of-pipe (i.e. prior to discharge via diffuser in Whitefish Lake and subsequent dilution). Section 36.3 of the Fisheries Act specifies that, no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish."[1] The Canadian Metal and Diamond Mining Effluent Regulations (MDMER) includes a definition of deleterious substance as effluent that is acutely	Guidelines are not prescriptive and so the predicted effluent may or may not be acutely toxic, but since the levels of contaminants in predicted effluent are relatively high, it is recommended that the risk of acutely toxic effluent at end-of-pipe be assessed to support the EIS. Specifically, it is recommended that acute toxicity tests as described by MDMER be conducted on water quality matching the predicted effluent presented in the EIS.

[1] https://laws-lois.justice.gc.ca/eng/acts/F-14/page-5.html#docCont

			lethal to several commonly tested species of fish and aquatic life.		
ERFN-031	EIS Section 2.2.3.8 and 2.2.3.9	(i)	Sections 2.2.3.8 and 2.2.3.9 of the EIS describe the IWWTP and note that the design of the system is being informed by an ongoing Best Available Technology (BAT) study. The EIS is not clear if the system as described in the EIS is a reflection of application of BAT or if this is an interim design pending completion of the BAT study.	(i)	Given the predicted effluent quality in 2.2.3.9 and the relatively high predicted levels of copper, it is recommended that this BAT study include assessment of use of organosulphide reagents (i.e. trimercapto-triazine). This type of chemical is a common and inexpensive method of removing heavy metals such as copper and cadmium from water. Use of organosulphide is commonly incorporated into mine water treatment systems and is generally recognized as part of BAT treatment of mine water.[2] Copper levels in the range of single digit parts per billion (ppb) are achievable, below the 22 ppb predicted effluent quality.
		(ii)	Similarly, the EIS notes the use of zero valent iron (ZVI) as a treatment reagent but it is not apparent how this is to be used in the process. ZVI can be a very effective method for removing metals and metalloids from mine water, particularly for relatively small treatment systems.	(ii)	We support the inclusion of this reagent in the process but requests additional information on how it is to be used. The predicted level of selenium in effluent (42 ppb) can likely be improved on through better application of ZVI.
		(iii)	Finally, the impact of different treatment technologies on TDS of effluent should be considered given the	(iii)	Overall, we support the use of a BAT study to inform design of the IWWTP and recommend that further bench testing be conducted in the future following

[2] https://mend-nedem.org/wp-content/uploads/MEND3.50.1BATEAAppAD.pdf

		previous comment about potential for acute toxicity with the predicted effluent quality. Salt removal systems should be evaluated.	the BAT study to improve on the predicted effluent quality presented in the EIS.
ERFN-032	EIS Section 2.2.3.8 Industrial Wastewater Treatment Plant	According to the IWWTP flowsheet shown in section 2.2.3.8 of the EIS, treated effluent will be recycled.	Considering that the leach is acidic and the IWWTP involves acid neutralization, it is recommended that drawing water for recycle from earlier in the treatment process be considered. This would reduce reagent demands from unnecessary acidification/neutralization as well as the amount of radionuclide and metals-laden treatment by-products that will have to be used and managed.
ERFN-033	EIS Section 2.2.3.9 Treated Effluent Monitoring and Release Ponds	Section 2.2.3.9 of the EIS states, "*the effluent quality was determined to be achievable through laboratory test results conducted by Denison at SRC.*" However, Section 6.2 of Appendix 10-A (Sensitivity Analysis) states, "*If treated effluent is released at the maximum upper bound discharge rate, cadmium concentration in Whitefish Middle/South and McGowan Lake (LA-1) would exceed its surface water quality guideline of 0.00004 mg/L, and chromium concentration in Whitefish Middle/South would exceed its surface water quality guideline of 0.001 mg/L. The modelled concentrations of other COPCs are expected to be below their corresponding surface water quality guidelines.*"	Methods of preventing these exceedances should be explored and incorporated into the project. For example, alternative treatment technology may reduce metal loading with treated effluent, and greater water recycle would reduce the volume of treated water discharged, reducing the load of metal introduced to Whitefish Lake via treated effluent. More generally, these exceedances caused by a higher rate of discharge is an example of how the assumption to exclude water recycling from water balance predictions is not entirely conservative.

ERFN-034	Various	The Application lacks a clear discussion of the various source terms that were considered for water quality modelling. Most reagents utilized for the ISR process include highly soluble contents and must be considered for modelling purposes. The Application is lacking a clear discussion of the various source terms and information geochemical stability of various sources that were considered for water quality modelling.	Please clearly describe the sources of various contaminants in process water and how they inform water management/water treatment design. Distinguish between contaminants found in natural groundwater, contaminants released through leaching, and contaminants introduced as mill reagents (i.e. sulphate, TDS).
ERFN-035	EIS Section 2.2.1.4.3 Permeability Enhancement	Section 2.2.1.4.3 lists options considered for enhancing leach solution permeability in the leaching zone and includes potential for use of propellant permeability enhancement.	(i) How does this material compare to common blasting explosives (i.e. ANFO) in terms of potential for water soluble explosive residue to be left behind after use? (ii) ANFO is commonly an environmentally relevant source of ammonia, nitrite, and nitrate at mine sites. (iii) Please discuss the potential impact of propellant permeability enhancement products as a source of contaminants.
ERFN-036	EIS Section 2.2.2 Processing Plant Components	Section 2.2.2 states "Denison's processing plans are based on numerous metallurgical tests completed as part of engineering activities. A detailed metallurgical testing program was developed and implemented in collaboration with the Saskatchewan Research Council (SRC) under the supervision of several third-party consultants and Denison. Around 1,000 L of UBS was produced by leaching over 64 kg of core samples	The EIS should discuss how this work was carried out, a summary of key conclusions including estimates of freshwater and recycled water use, recoveries expected, reagents consumed, waste produced and steady-state contaminant concentrations.

		recovered from the Phoenix deposit and the UBS produced was tested using variations of several parameters to define the processing plant design and its components." This work is critical for informing levels of contaminants expected to be leached in the in-situ process which in turn require treatment and management. This work is not discussed substantially in the EIS.		
ERFN-037	EIS Section 2.2.4.8 Clean Waste Rock and Clean Waste Rock Pad	Section 2.2.4.8 states that approximately 7,800 m^3 of clean waste rock will be generated because of mining activities, and Section 2.2.3.6 states that "a pond may be constructed beside the clean waste rock pad (Section 2.2.4.8) to collect runoff if required. The pond would be a single geomembrane-lined pond (Figure 2.2-26). Water collected in the clean waste rock pond would be routed to the process water pond."	The Application however does not provide information on the geochemical stability of the waste rock and how waste rock is expected to impact water quality of runoff/pond inflow.	
ERFN-038	EIS Section 2.2.3.8 Industrial Wastewater Treatment Plant	Section 2.2.3.8 states that *"the majority of the IWWTP precipitates formed during the second stage of treatment are gypsum and these precipitates are not expected to be radioactive."*	(i) (ii)	How much radioactivity is expected in these solids? Did the metallurgical test program include testing these solids for radioactivity and, if available, have these results been considered in the long-term management strategy for these solids?
ERFN-039	EIS Section 2.2.3 Water Management	Figures 2.2-15 and 2.2-16 show that water from the IWWTP process precipitate pond will be recycled to the process pond at a rate of 5.35 m^3/h that then primarily reports back to the	The geochemical stability of the precipitates in the two ponds should be evaluated and incorporated as source terms in water quality modeling. This should be discussed in the EIS.	

		IWWTP for treatment with some used for drilling. The water from the IWWTP precipitate pond forms ~ 65% and 41% of the flow rate reporting to the IWWTP for treatment during the operations and Decommissioning phases, respectively, so this is a significant source of feed water to the IWWTP.	
ERFN-040	Various	The EIS does not provide information on the mine's plans for events of care and maintenance (C&M) or temporary closure. C&M is an important potential phase of mine life that warrant assessment of potential impacts. During C&M, changes to the site-wide water balance would be expected, potentially requiring modifications to the water management strategies at the site. In particular, it is important that a conceptual plan for how solution would be recovered/injected/managed on surface during a period of care and maintenance.	The EIS should include a conceptual description of how each major piece of mine infrastructure would be operated during C&M maintenance and how risk of environmental impact would be mitigated under these conditions. The following topics are recommended for discussion in C&M planning at the EIS level: (i) Any significant changes to the water management strategies at the site, including whether the Industrial Wastewater Treatment Plant would be expected to continue operating during C&M. (ii) Any significant changes in how the freeze wall would be operated. (iii) Discussion of how leachate and process solution would be managed, i.e. would injection/recovery continue or cease, would any recovered solution be subjected to uranium recovery, how solution would be managed on surface if re-injection ceased. (iv) If monitoring activities would change during care and maintenance. (v) If any new mitigation measures are required to address C&M specific risks. The development of the Care and Maintenance Plan must include input from ERFN.

ERFN-041	EIS Section 2.9.1 Environmental Management System Framework	Section 2.9.1 includes discussion of several environmental management plans.	As a general comment, we recommend that requirements for any project plan include the following, at a minimum, in addition to plan-specific topics: (i) Purpose and objectives of the plan; (ii) Roles and responsibilities of staff including identification of Qualified Professionals(s); (iii) Schedule for implementing the plan through relevant project phases; (iv) Means by which the effectiveness of the mitigation measures will be evaluated including the schedule for evaluating effectiveness; (v) Schedules and methods for the submission of reporting to specific regulatory agencies, ERFN, and the public and the required form and content of those reports; (vi) Process and timing for updating and revising the plan including consultation with regulatory agencies and ERFN that would occur in connection with such updates and revisions. Further, following the development of a plan, the plan should be provided to regulatory agencies and ERFN for review and consultation. Consultation should include invitation for agencies and ERFN to provide their views on the content of the plan in a reasonable timeframe. Subsequently, Denison should provide a written explanation to each party that provided comments describing how the views and information provided by the party has been considered in the revised plan or why such views and information were not addressed in a revised plan

ERFN-042	EIS Section 2.9.1 Environmental Management System Framework	Section 2.9.1 of the EIS discusses environmental management activities including emergency response. As written, this section of the EIS focuses on the roles and responsibilities of Project staff. Communication to ERFN in the event of a mine emergency is critical for ERFN to evaluate potential impacts to rights and interests. Some mines in Canada overlook the importance of this communication and erode important partnerships with their Indigenous hosts by communicating information late or without transparency.	Recommendations for inclusion in the Plan include a communication protocol based on emergency risk ratings and communications with Nation representatives for high consequence near-miss incidents (i.e. near-miss incidents that could have resulted in major environmental impacts or medical emergencies), as these can be valuable opportunities to improve training and operating practices. It is recommended that management plans and emergency response planning include communication protocols with ERFN so that ERFN is alerted to any incident in a timely fashion. Collaboration with ERFN in plan development, communication protocol, involvement of ERFN members in monitoring/response planning is recommended.
ERFN-043	EIS Section 2.2.4.5 Process Precipitate Pond	Section 2.2.4.5 states "*the precipitates generated in the processing plant will be transferred to the process precipitate pond….this pond design will allow the precipitate totes to be stacked below ground level…….any runoff collected in the pond will be directed to the process water pond and recycled through the plant.*" The Application also states that the waste stored in this pond contains 2-3% uranium rendering it potentially economic for resale and recovery.	A plan for managing this material should reprocessing not be economically viable should be prepared and discussed in the EIS.
ERFN-044	EIS Section 2.2.4.3.2 Industrial Landfill	Section 2.2.4.3.2 discusses the industrial landfill that accepts industrial waste including radiologically contaminated waste. Leachate from this landfill will be collected and sent to the leachate collection pond immediately north of	Considering the limited life of the double liner system used for the landfill area, management of radiologically contaminated waste and its impact on the receiving environment for all phases of the project must be discussed in the EIS.

		the landfill and eventually to the process water pond. Although the Application states that "upon closure of the site, the industrial landfill will be covered with an engineered impermeable liner system to minimize infiltration of precipitation into the containment system," the leachate is not expected to stop. The Application however does not provide information on the management of the leachate from the industrial landfill post-closure.		
ERFN-045	EIS Section 2.2.2.2.1 Radon Purge Tank	Section 2.2.2.2.1 states "the radon purge tank will contain a mechanical ventilation system to facilitate the aeration of the solution and the removal of radon gas from the UBS to the air outside of the plant."	(i) (ii)	Is radon stripping on the exhaust proposed or is it to be directed into the atmosphere? Has exposure outside the building been evaluated?
AQUATIC ENVIRONMENT				
ERFN-046	EIS Section 8.1.3 Existing Environment	Detailed baseline hydrology collected in 2011-2014, prior to the operation of Cameco Cigar Lake. Very little data have been collected since (~1 measurement per year 2016-2019)	Update continuous flow data to include more recent years, with emphasis on low-flow period and winter flows.	
ERFN-047	EIS Section 8 General	Surface water withdrawal	Please provide a description (of waterbody characteristics as well as the precise latitude and longitude proposed) of all water withdrawal points to be used at any point during this project.	
ERFN-048	EIS Section 8 General	Recycling of process water.	Please provide examples from existing ISR projects that support the efficacy of process water treatment and re-use.	

ERFN-049	EIS Section 8.1 General	Recycling of process water appears to not be meaningfully incorporated into water balance modelling.	Please clarify and justify how recycled process water was incorporated into surface water quantity / water balance modelling.
ERFN-050	EIS Section 8.1.5 Mitigation Measures	Denison makes "loose" promises with regard to maintenance and monitoring of water control structures, and avoiding sedimentation in local waterbodies/watercourses	Provide a water management plan (WMP) that addresses each phase of the project. Denison notes high confidence in assessments, implying few/no unknowns that would inhibit the creation of a sufficient WMP.
ERFN-051	EIS Section 8.1.9 Surface Water Quality	Notable lack of winter data for stream and lake sites.	Conduct at least 1 winter field visit to verify/refine field data. The focus should be on watercourses adjacent to and directly interacting with the project, and the proposed discharge zone in South Whitefish Lake.
ERFN-052	EIS Section 8.2.3.3; Tables 8.2-2 to 8.2-4 Existing Surface Water Quality	Note these tables use different benchmark/guideline compared to the Water Quality baseline study for Molybdenum and Zinc.	Proponent to provide justification for use of different Water Quality guidelines, or else adjust tables to reflect guidelines used in baseline study.
ERFN-053	Table 8.2-5 Existing Surface Water Quality	Potential project interactions during construction.	(i) What about the potential for a grout/cement spill to the environment? (ii) Proponent should include recognition of potential deleterious interaction of construction materials (notably grout/cement) with the aquatic environment, and appropriate mitigation.
ERFN-054	EIS Section 8.2.4.1.1Site Water Management	It is noted that the treated effluent holding ponds are designed to hold water for 72 hr. prior to discharge.	What laboratory will be used to test treated effluent samples to provide results within 72 hr? What if the water is deemed unfit to discharge? Please provide a surface water quality monitoring plan that includes clear information regarding sampling and analysis timelines to ensure discharge water is sufficiently tested prior to release. "Emergency release" due to pond capacity overage is unacceptable.

ERFN-055	EIS Section 8.2.4.1.1Site Water Management	"Loose" commitment to Water Quality monitoring – "Treated water…will be monitored prior to release."	At what locations? How often? Which parameters? Recommend the creation of a draft surface water monitoring plan to ensure appropriate actions are in place.
ERFN-056	EIS Section 8.2.4.1.1Site Water Management	"Prior to release to a surface waterbody or injected into groundwater via deep well injection." Treated water discharge to South Whitefish Lake, where sufficient dilution of effluent would be anticipated, was the prior commitment. This is the first instance mentioned of deep well injection of effluent. No other aspect of this EIS discusses deep well injection of effluent.	Clarify the proposed effluent discharge method, and if Denison intends to use deep well injection, then the EIS should be updated to reflect the potential interactions associated with this method.
ERFN-057	EIS Section 8.2.4.2 Potential Project-related Effects	(applies elsewhere as well) Section notes that "Whitefish Lake" will receive discharge during operation and decommissioning, however, EIS separates into North and South Whitefish Lake.	Clarify throughout which Whitefish Lake (north or south) will be the receiving environment for effluent discharge.
ERFN-058	EIS Section 8.2.4.2.1 Mobilization of Suspended Materials	"acceptable levels" of TSS is noted as the deciding factor for safe discharge of treated water.	(i) What about other chemical constituents? All COPCs in the effluent are predicted to exceed long-term Water Quality Guidelines (CCME). (ii) What about MDMER requirements for the effluent to pass toxicity testing at end-of-pipe? (iii) Clarify whether Denison intends TSS to be the only factor contributing to the safety of effluent for discharge, and how the MDMER requirements for toxicity testing will be met.

ERFN-059	EIS Section 8.2.4.2.1 Mobilization of Suspended Materials	Salinity does not appear to be included as a factor for considering effluent safe for discharge.	Predicted salinity of effluent is sufficiently high as to possibly result in failure of the acute toxicity testing required under MDMER. (i) Please justify the exclusion of salinity as a factor for considering effluent safe for discharge. (ii) Please ensure the potential impacts of salinity on aquatic VCs are recognized and discussed.
ERFN-060	Table 8.2-10	Sulphate is given 2 different values in the table in the LA-5 well-mixed column (633 and 63.83), but not in other columns.	(iii) Clarify whether this is a typo, or whether these rows are referring to different constituents. (iv) Clarify why predicted sulphate is anticipated to be lower for the lower screening concentration.
ERFN-061	EIS Section 8.2.4.2.3; Table 8.2-11 Near-Field Water Quality Model	Mixing zone modelling.	(i) Why is plume formation in South Whitefish Lake modelled based on mixing zones in rivers? (ii) Justify the use of a lentic mixing model to represent effluent plume formation in a lotic environment.
ERFN-062	EIS Section 8.2.4.2.3 Near-Field Water Quality Model	Mixing zone modelling in winter; there are very minimal data for the receiving waterbody in the winter, other than 1 shallow sampling event in April. Assumption is under-ice temperatures at the diffuser will be 3-4°C, with effluent emerging at 5°C. April sampling event suggests that under-ice temperatures may be closer to 0.5°C.	(i) How much effect will temperature differences between effluent and surrounding water have on mixing? (ii) Please clarify how mixing changes if input current from Icelander R. drops to near zero. (iii) Please clarify the effect of effluent salinity on mixing during winter.
ERFN-063	Table 8.2-11	Average current velocity predicted in South Whitefish Lake at the discharge location is 0.23 m/s. However, in S. 4.3 of the Ecometrix aquatic baseline, average current velocity at S-6 (the	(i) Why are the current velocities used to model the discharge mixing greater than the measured inflow velocities? (ii) Justify the disconnect between the current velocities measured

		channel feeding South Whitefish Lake) is 0.2 m/s.	upstream of the discharge location, and the velocities used to model the mixing zone.
ERFN-064	EIS Section 8.2.7 Cumulative Effects	Meeting Water Quality benchmarks	ERFN recognizes and appreciates Denison's commitment to meeting Water Quality benchmarks within and downstream of South Whitefish Lake. How will "appropriate benchmarks" be determined?
ERFN-065	EIS Section 8.2.8 Monitoring and Follow-up	Monitoring program expectations, guidance, and commitment.	The proposed monitoring seems, on its surface, reasonable. However, as noted above it is important to see a water quality monitoring plan integrated with a water management plan grounded in guidance and regulatory requirements (e.g., MDMER) that includes appropriate triggers, actions, and safeguards.
ERFN-066	EIS Section 8.2.9 Surface Water Quality Summary	Site-specific effluent treatment: the EIS overall is vague about the treatment planned for effluent prior to discharge.	Please provide examples of successful existing effluent treatment, preferably from ISR projects, which will form the basis for the site-specific treatment.
ERFN-067	EIS Section 8.3.1.1 Valued Component Selection	MDMER requirements and deleterious substances.	Per MDMER guidance, please include a recognition that testing for Ammonia (un-ionized) is required under MDMER, and the requirement that effluent (at end-of-pipe, prior to dilution) must pass lethality testing.
ERFN-068	EIS Section 8.3.3.1 Fish Habitat	Fish habitat characterization.	(i) What fish habitat characterization standards were used during field surveys? (ii) Were members of the field teams environmental professionals experienced in the assessment of fish habitat?
ERFN-069	Table 8.3-5	Burbot spawning habitat	What criteria were used to identify Burbot spawning habitat? Based on Burbot habitat preferences, SA-6 (at minimum) should be suitable for spawning.

ERFN-070	Table 8.3-5	Fish species distribution and spawning habitat. Table 8.3-4 suggests the presence of Lake Whitefish in South Whitefish Lake (LA-5).	Clarify fish presence in South Whitefish Lake, specifically Lake Whitefish and Lake Trout. ERFN would like to emphasize the importance of Northern Pike, Lake Whitefish, Lake Trout, Walleye, and White/Longnose Sucker to community members.
ERFN-071	Figure 8.3-8	The proposed effluent discharge point appears to be extremely close to Northern Pike spawning habitat at the north/upstream end of South Whitefish Lake.	Please clarify the measures proposed to ensure effluent discharge does not affect Northern Pike spawning habitat, recognizing that Northern Pike spawning occurs shortly after ice-off, before high water.
ERFN-072	EIS Section 8.3.4.2.1 Construction	First mention of potentially "necessary" releases to the environment during the construction phase.	(i) What defines a situation where the release of collected/stored water is "necessary" during construction? (ii) Are there any other parameters other than TSS that will be measured to determine that water collected during construction is "safe"? (iii) Where will the collected water be discharged in the event of a "necessary" release during construction? ERFN would like to emphasize that a water management plan would address many of these questions.
ERFN-073	EIS Section 8.3.4.2.1 (and elsewhere) Mobilization of Suspended Materials	TSS as the parameter measured to determine the "safety" of effluent prior to discharge. Note that MDMER also requires that effluent at end-of-pipe must pass lethality testing	(i) Please provide justification for only considering TSS with respect to the safety of effluent for discharge. (ii) If multiple parameters will be considered, please update the text to reflect this; at minimum, "e.g.," should be used rather than "i.e.,".
ERFN-074	EIS Section 8.3.4.2 Potential Project-related Effects	Consideration of overprinting as the only potential effect to fish habitat. Defining harm to fish habitat based solely on area.	Effects to the quality/usability of fish habitat should be considered as part of the EIS, rather than simply the surface area covered by project structures.

ERFN-075	EIS Section 8.3.4.2.3 Controlled Discharge to Receiving Environments	"Discharge to the environment is not expected during construction." This directly contradicts the statements in other sections regarding the potential for necessary water releases during construction.	Provide clarification regarding potentially necessary releases during construction.
ERFN-076	EIS Section 8.3.4.2.3 (and elsewhere) Controlled Discharge to Receiving Environments	"Effluent rates during Decommissioning are expected to be less than during Operation." Denison commonly uses "expected" but does not provide elaboration.	Please provide clarity and justification (e.g., examples) for expectations regarding effluent rates.
ERFN-077	EIS Section 8.3.5 Mitigation Measures	Adherence to DFO *Interim Code of Practice for Temporary Stream Crossings*. The proposed crossings are clear span bridges, which do not classify as temporary crossings.	Based on DFO code of practice guidance, the proposed crossings do not meet the requirements for being "temporary." Please update this section to include adherence to: *Code of Practice for Clear Span Bridges* and *Code of Practice for Culvert Maintenance*.
ERFN-078	EIS Section 8.3.5 Mitigation Measures	Monitoring and management of effluent.	Given that discharge is anticipated to trigger MDMER, adherence to the requirements for effluent quality within MDMER should be explicitly recognized as part of mitigation measures.
ERFN-079	EIS Section 8.3.5 Mitigation Measures	Preparation of an environmental code of practice.	(i) Please provide clarification regarding a timeline for the preparation of an environmental code of practice. It is ERFN's preference that this document be in place prior to construction. (ii) Will the environmental code of practice include consideration and planning in the event of malfunctions, as required under S19 of CEAA 2012? (iii) Will the environmental code of practice include and adaptive management plan for effluent discharge and treatment?

ERFN-080	EIS Section 8.3.6.1 Construction	Determination of effluent safety for release to environment.	Note again that earlier sections had asserted that contact water during construction would not be released to environment. Please revise the final sentence of paragraph 2 to be relevant to the fish & fish habitat section, as it currently refers to sediment chemistry and benthic invertebrate communities.
ERFN-081	EIS Section 8.3.6.1 Construction	Upgrading two stream crossings to clear-span bridges.	ERFN would like to re-emphasize the above comment related to adherence to DFO's *Code of Practice for Clear Span Bridges*.
ERFN-082	EIS Section 8.3.6.1 Operation	Continued reference to deep-well injection of effluent.	Provide clarity throughout document on whether effluent will be discharged to South Whitefish Lake, or, to ground via deep well injection. If deep well injection is proposed, please revise EIS to reflect the potential interactions of this method.
ERFN-083	EIS Section 8.3.6.1 Operation (and elsewhere)	The effluent discharge will be heated to avoid freezing during winter.	(i) What are the implications for mixing during winter, given effluent will likely be considerably warmer than the surrounding water? (ii) How has Denison accounted for the potential for the warmer effluent creating an attractant effect, a reduction in DO, or other interaction that increases the risk of impacts to aquatic biota? (iii) Has Denison collected under-ice thermocline/isocline and in-situ WQ data during winter to support any assertions?
ERFN-084	EIS Section 8.3.6.1 Operation (and elsewhere)	Effluent discharge point.	Bottom-feeding fish such as White Sucker are in extended contact with and will often ingest sediments. Effects on White Sucker were modelled based on sufficient dilution of effluent. What protections will be built into the effluent discharge outlets to ensure bottom-

			feeding fish such as White Sucker are sufficiently excluded from the mixing zone?
ERFN-085	Table 8.3-9	The magnitude of residual effect. ERFN disagrees that the parameters and decisions that form the basis for the mixing model and the IMPACT model are sufficient to reliably predict that constituents introduced by project activities will remain below applicable guidelines.	Mixing zone calculations should be revisited to account for actual hydrological conditions at the discharge point in South Whitefish Lake. IMPACT model calculations should be revisited to examine worst-case scenarios (e.g., maximum potential discharge of 81 m^3/hr. during low-flow and winter) and use more accurate starting points for water quality (existing baseline conditions in South Whitefish Lake rather than a region-wide geometric mean).
ERFN-086	Table 8.3-9	Reversibility. The assertion of fully reversible Water Quality effects relies on the assumption that all COPCs in the effluent are well-mixed and eventually exit South Whitefish Lake.	Please provide clarification and justification for the assumption that COPCs in effluent remains in solution and exit South Whitefish Lake, rather than concentrating over time and/or sequestering in sediments with the potential for future release.
ERFN-087	Table 8.3-10	Magnitude. This row mentions changes to benthic invertebrate habitat.	This table is supposed to be discussing residual effects to fish habitat. Please ensure the residual effect tables include the correct information.
ERFN-088	Table 8.3-10	Magnitude. The assertion of low magnitude relies on defining a change to fish habitat based solely on % of surface area affected.	Recommend revising this table and the associated written section to include discussion relating to potential changes to the *quality* of fish habitat in addition to the *amount*.
ERFN-089	EIS Section 8.3.6.2 Significance and Confidence	The judgement of not significant is reliant on successful mitigation measures, and that ecological integrity won't be altered beyond "an acceptable level."	(i) Recommend updating this section upon revision of the mitigation section, per above comments. (ii) What does "ecological integrity" mean? How is it measured? How will it be monitored? (iii) How will "an acceptable level" be determined? Acceptable to whom? ERFN requests that any

				determination of acceptability include consideration of the rights and values of Indigenous Peoples.
ERFN-090	EIS Section 8.3.6.2 Significance and Confidence	"The predicted confidence with respect to the Fish and Fish Habitat VC is high as the mobilization of suspended materials can be readily mitigated."	Please clarify the justification for not considering other Water Quality-related factors (e.g., chemistry) and focusing on TSS mitigation.	
ERFN-091	EIS Section 8.3.6.2 Significance and Confidence	Conservative nature and accuracy of Water Quality modelling. Despite assumptions being conservative, the discharge model cannot produce conservative predictions if the inputs are inaccurate.	See above comments for concerns regarding model inputs.	
ERFN-092	EIS Section 8.3.6.2 (and elsewhere) Significance and Confidence	Focus on suspended materials. Sulphate in the effluent is predicted to be exceptionally high (almost 4,000 mg/L), with baseline values in South Whitefish Lake <1 mg/L.	Why were potential cascading effects of Water Quality not considered in the residual effects assessment? Very high sulphate in effluent has the potential to instigate eutrophication and/or cyanobacterial blooms through sulphate reduction pathways.	
ERFN-093	EIS Section 8.3.6.2 Significance and Confidence	Assertion of conservative assumptions for Water Quality modelling. Year-round discharge at the average rate (36.5 m^3/hr.) is not conservative.	Please revisit the modelling with sufficiently conservative assumptions, such maximum potential discharge (81 m^3/hr.) during low-flow and/or winter.	
ERFN-094	EIS Section 8.3.6.2 Significance and Confidence	Use of conservative 95th percentile for baseline Water Quality. According to the model documentation provided in the EIS appendices, the geometric mean condition across all regional waterbodies was used to define baseline WQ.	Recommend revisiting the Water Quality modelling using the 95th percentile specifically for South Whitefish Lake (LA-5) as the baseline.	
ERFN-095	Table 8.4-2	Based on baseline data, 3 of 5 samples from LA-5 are >75% clay, and 2 of 5 are >70% sand. With only one year of	(i)	ERFN recommends Denison collect additional sediment

		data and without knowing where samples were collected in the lakes, it is unlikely that the classifications are truly representative of the average condition and variation of bottom sediments in study lakes.	(ii)	samples to create a sufficient baseline. ERFN recommends that Denison ensure future sediment sampling stations are located such that, at a minimum, sediments at the inlet, outlet, and potential discharge location of South Whitefish Lake are characterized.
ERFN-096	Table 8.4-3	Sediment chemistry tables.	Why is there no standard deviation or standard error associated with the mean values in this table? Note that for LA-5, 3 of 5 samples have chemistry much more similar to the ”maximum” values in Table 8.4-3 than the ”mean” values.	
ERFN-097	Table 8.4-4	Benthic invertebrate endpoints. Note that diversity, evenness, and Bray-Curtis for the 2 of 5 sand-dominated samples from LA-5 are considerably higher than for the 3 of 5 clay-dominated samples. This seems to suggest that some areas in LA-5 are especially sensitive to stressors, as suggested in the above paragraph.	(i) (ii)	Why is there no standard deviation or standard error associated with the mean values in this table? ERFN recommends Denison consider the potentially sensitive areas within the proposed receiving environment (LA-5) in addition to the average condition.
ERFN-098	Table 8.4-4	Benthic invertebrate endpoints for LA-5 appear to be miscalculated. Based on raw benthos baseline data, **total family richness** at LA-5 across all reps is 22 (however, **mean** is 13). %Cladocera, the dominant taxon (water fleas) is 65% across all reps (58% avg).	(i) (ii)	Please revisit and confirm the summary calculations for Table 8.4-4. Why were more typically pelagic taxa, such as Cladocera, not excluded from benthic invertebrate community characterizations as is often recommended in analytical guidance?
ERFN-099	EIS Section 8.4.3.2.5 Benthic Invertebrate Chemistry	Use of caddisfly larvae to characterize benthos tissue. Caddisflies are rare across the LSA, and extremely rare in South Whitefish	(i)	Why were caddisfly larvae selected for benthic invertebrate tissue characterizations when they

		Lake (LA-5) based on baseline data (only 4 individuals across all 5 replicates).	(ii) do not appear to be representative of the community? ERFN recommends Denison revisit the characterization of baseline benthic invertebrate tissue using taxa that are more relevant to the project or whole-community samples.
ERFN-100	Table 8.4-5	Benthic invertebrate tissue chemistry summary.	Please include any available tissue chemistry guidelines in this table.
ERFN-101	Table 8.4-5	Benthic invertebrate tissue chemistry summary. One sample per lake, representing only one year of baseline data, is insufficient to characterize baseline conditions.	ERFN recommends Denison conduct at least one additional year of baseline data collection, including the collection of multiple benthic invertebrate tissue samples from South Whitefish Lake.
ERFN-102	EIS Section 8.5.3 Existing Environment	Fish tissue collection.	Why were Lake Whitefish and Walleye not collected for tissue analyses? These species were also identified by ERFN citizens as important resources.
ERFN-103	EIS Section 8.5.3 Existing Environment	Fish tissue collection.	Please provide additional justification for only using 5 fish in a single sample year for the characterization of baseline fish tissue chemistry.
ERFN-104	EIS Section 8.5.3 Existing Environment	Fish tissue collection.	Why were organs, such as livers, discarded? Liver chemistry analyses are commonly recommended in fish tissue characterization guidance.
ERFN-105	EIS Section 8.5.4.2.2 Construction	"Discharge to the environment is not expected during Construction." There appear to be contradictions across sections regarding whether discharge during construction will not occur, or whether it would occur "if necessary." Any discharge, even emergency discharge, would have	Please provide clarity throughout the document with regards to the anticipated effects from discharge (including "if necessary" emergency discharge) during construction.

		implications for the fish health VC and should be considered in this section.	
ERFN-106	EIS Section 8.5.4.2.2 Operation and elsewhere	"The Project was assessed as having…a continuous effluent discharge rate of 81.0 m^3/hr." This statement appears to contradict earlier assertions (see comment regarding S 8.3.6.2, above) that the conservative WQ model was based on average discharge of 36.5 m^3/hr.	Please provide clarification throughout document on whether the assessments were based on the greatest potential effects at a discharge rate of 81 m^3/hr., or a reduced potential effect at a discharge rate of 36.5 m^3/hr. If assessments were not conducted based on discharge at 81 m^3/hr., please provide additional justification for using less-conservative estimates.
ERFN-107	EIS Section 8.5.4.2.2 Operation	"Sediment baseline concentrations were predicted from surface water concentrations."	Why were sediment baseline concentrations not based on actual sediment baseline data?
ERFN-108	EIS Section 8.5.4.2.2 Operation	"The dw to ww ratio of 0.25 to 1 from CSA N288.1-20 was used." Note that the recommended ww criterion after conversion, if site-specific data were used, would be closer to 2.28 mg/kg (ww) and White Sucker tissue predictions would exceed this criterion.	Why were site-specific %moisture data not used for this conversion? It would likely be closer to 0.2 to 1 based on actual fish tissue baseline data.
ERFN-109	Figure 8.5-5	Predicted tissue concentrations of selenium in Northern Pike and White Sucker. Based on the IMPACT model report, Northern Pike were exposed to COPCs through water only (despite being used to represent piscivorous predator), and White Sucker were exposed through water and sediments (as it is a bottom-feeder).	Please justify the use of the IMPACT model data for Northern Pike tissue, given that it excludes any pathway related to piscivory. Please justify the use of the IMPACT model data for White Sucker tissue, given that is excludes any pathway related to the consumption of benthic invertebrates in addition to exposure to sediment. Note that studies on the toxicity of effluent to fish at the nearby Cameco Key Lake mine directly implicated dietary selenium.
ERFN-110	EIS Section 8.5.5 Mitigation Measures	"Implement Project-specific monitoring programs…that	Please remove the "if necessary" qualifier; ERFN considers the monitoring mentioned in 8.5.5 and the application of adaptive

		include…and applying adaptive management, if necessary."	management to be necessary for the successful mitigation of residual effects.
ERFN-111	EIS Section 8.5.6.2 Significance and Confidence in the Assessment	Average effluent discharge rate of 36.5 m^3/hr.	Please refer to previous comments regarding the clarification of the discharge rate used in the assessment.
ERFN-112	EIS Section 8.5.6.2 Significance and Confidence in the Assessment	"A high degree of confidence was assumed."	ERFN does not echo the high degree of confidence in this assessment, for multiple reasons including (but not limited to): apparent contradictions in the assessment methods and parameters, distinctly lacking baseline data, unsupported selection of modelling parameters, numerous assumptions without evidence for their validity, no references to contingency planning.
ERFN-113	EIS Section 8.5.8 Monitoring and Follow-Up	Regulatory criteria for monitoring data comparison.	ERFN requests including comparisons to any applicable human health guidelines and/or screening criteria in all monitoring programs.
ERFN-114	EIS Section 8.5.8 Monitoring and Follow-Up	Monitoring locations	ERFN requests the addition of a monitoring site for (at minimum) aquatic sediments, located within the Northern Pike spawning habitat north of the proposed discharge location.
ERFN-115	EIS Section 8.5.8 Monitoring and Follow-Up	"It is recognized that additional collection of pre-mining fish tissue concentrations in Whitefish Lake and a reference area is needed." ERFN acknowledges and appreciates this recognition, but notes that the majority of baseline data for aquatic biota and sediments is extremely lacking. This also appears to be the only recognition of insufficient baseline data throughout the entire EIS.	Please update the other EIS sections to reflect the data gaps in the baseline sections, and an outline of the plan to address these gaps.
ERFN-116	EIS Appendix 8-D	High-level sample locations are provided, but an appropriate evaluation and characterization of	Please update Table 1-2 to include sampling site coordinates (and replicate coordinates, if

	Baseline Aquatic Environment Study Table 1-2	baseline conditions require targeted sampling in specific areas.	they are different), or, please provide a separate list of precise sample coordinates.
ERFN-117	EIS Appendix 8-D Baseline Aquatic Environment Study Figure 1-7	Based on this figure, neither bathymetry nor habitat surveys were completed on South Whitefish Lake (LA-5). Bathymetry and fish habitat are crucial to evaluating potential project impacts in the receiving environment.	(i) If these surveys have been completed, please update Figure 1-7 and provide the location of these data. (ii) If these surveys represent a data gap, ERFN recommends that Denison complete bathymetry and habitat surveys on South Whitefish Lake to sufficiently characterize the effluent discharge receiving environment.
ERFN-118	EIS Appendix 8-D Baseline Aquatic Environment Study Figure 1-8	Although benthic invertebrate sampling was completed in South Whitefish Lake, based on this figure, the potential inputs from upstream have not been characterized.	ERFN recommends collecting benthic invertebrate samples at SA-6 to characterize the potential upstream inputs to the benthic invertebrate community of the receiving environment.
ERFN-119	EIS Appendix 8-D Baseline Aquatic Environment Study Section 2.0	ERFN recognizes that Denison followed standardized or recommended field methodology during the collection of baseline information.	(i) What guidance did Denison follow to determine the frequency of baseline sampling? (ii) What guidance did Denison follow to determine the number of years that would provide sufficient characterization of the aquatic baseline? (iii) What guidance did Denison follow to determine the sampling locations and the number of samples?
ERFN-120	EIS Appendix 8-D Baseline Aquatic Environment Study Section 3.5.1	The hydrological baseline data are now 8-10 years old. These data are too old to sufficiently characterize the current baseline conditions, especially given that development has occurred in the Project area within that time.	Denison should collect updated hydrological baseline data for South Whitefish Lake, including (but not limited to) water level, ice thickness, and bathymetry.

ERFN-121	EIS Appendix 8-D Baseline Aquatic Environment Study Section 3.5.1.3	The South Whitefish Lake bathymetric baseline data collected by Golder in 2012 suggests that the average depth was 1.1 m. This appears to contradict the depth used in the mixing model (~3 m).	Please clarify the data and decisions that contributed to the depth parameter used for the mixing model.
ERFN-122	EIS Appendix 8-D Baseline Aquatic Environment Study Section 3.5.4	Section suggests a collection of habitat data in South Whitefish Lake was completed in 2012 by Golder, and observations were made during the 2016 field program.	(i) Where are these data? Does Denison have a detailed characterization of the aquatic habitat in South Whitefish Lake available? (ii) ERFN does not agree that high-level observations made during 2016 are sufficient to confirm that aquatic habitat has remained unchanged for the last 10 years.
ERFN-123	EIS Appendix 8-D Baseline Aquatic Environment Study Section 3.5.5	As referenced in an above comment, the baseline phytoplankton community for South Whitefish Lake is nearly 30% Cyanophyceae, the highest proportion of cyanobacteria in any Project waterbody except Russel Lake. This is likely to influence the risk of eutrophication in the receiving environment.	Please confirm whether the risk of eutrophication in South Whitefish Lake has been considered and justify its exclusion from the EIS.
ERFN-124	EIS Appendix 8-D Baseline Aquatic Environment Study Section 3.5.7	Fish spawning habitat.	ERFN recognizes the inclusion of Indigenous Knowledge in confirming local fish spawning habitat.
ERFN-125	EIS Appendix 8-D Baseline Aquatic Environment Study Table 3-7C	Caddisflies comprise <1% of the benthic invertebrate community in the receiving environment.	Please justify the specific selection of caddisflies for characterizing the baseline benthic invertebrate tissue chemistry.

ERFN-126	EIS Appendix 8-D Baseline Aquatic Environment Study Table 3-8	No tissue chemistry guidelines are provided for benthic invertebrates.	ERFN recommends the inclusion of any available tissue chemistry guidelines for benthic invertebrates, including those from other Canadian jurisdictions, to provide sufficient context for evaluating the baseline data.	
ERFN-127	EIS Appendix 8-D Baseline Aquatic Environment Study Table 3-10	There appears to be a disagreement between the *n*'s provided in this table, and the description of fish tissue collection methods in the baseline and EIS. The methods section implies that 5 total samples were collected per waterbody, with some samples representing more than 1 fish.	Please clarify the fish tissue collection and analysis methods. Were all fish analyzed separately? Were tissues for each "sample" aggregated if multiple fish were required?	
ERFN-128	EIS Appendix 8-D Baseline Aquatic Environment Study Table 3-10	The table presents the average concentration of parameters, but no indication of variation/accuracy.	Please provide standard deviation and/or standard error for fish tissue chemistry average values.	
ERFN-129	EIS Appendix 8-D Baseline Aquatic Environment Study Figures 3-10 and 3-11	The inclusion of bathymetric and habitat survey data for North Whitefish Lake (LA-6) from 2018 highlights the lack of similar surveys on South Whitefish Lake (LA-5), which is the actual receiving environment.	(i) (ii)	Please justify the lack of current bathymetric and habitat survey data for South Whitefish Lake. Denison should conduct multibeam sonar surveys on South Whitefish Lake, the receiving environment, to sufficiently characterize bathymetry and aquatic habitat.
ERFN-130	EIS Appendix 8-D Baseline Aquatic Environment Study Section 4.6.1	Paragraph two notes that stage-discharge curves were updated in 2019 to account for greater discharge measured during manual surveys in 2019.	(i) (ii)	Were stage-discharge curves adjusted for flows measured in recent years, other than 2019? Were manual measurements collected in any other recent years? If not, please justify the adjustment of stage-discharge curves based on a single year that had a higher-than-average discharge. How does

			Denison know that flows in 2019 were not abnormally high?
ERFN-131	EIS Appendix 8-D Baseline Aquatic Environment Study Section 4.6.1.2 and Table 4-1	"In May-early June 2018, the flow at SA-6 was fluctuating around 0.7 m^3/s until end of May before decreasing." This appears to imply that freshet flows in 2018 (assumedly high flows for that year) were near the minimum discharge measured from Sept 2016 to Aug 2019 (0.717 m^3/s).	Were stage-discharge curves updated to reflect the flows in 2018? Please clarify the decisions and data used for updating stage-discharge curves.
ERFN-132	EIS Appendix 8-D Baseline Aquatic Environment Study Section 4.6.3	"Mean channel wetted width, water depth and water velocity were 14 m, 0.7 m and 0.2 m/s, respectively."	How does a wide, slow, low-gradient inflow translate to the current velocities used for mixing modelling? Please refer to the earlier comment and justify the assumptions made for the mixing model.
ERFN-133	EIS Appendix 8-D Baseline Aquatic Environment Study Section 4.6.3	"Snails (Gastropoda), mayfly nymphs (Hexagenia sp.) and dragonfly nymphs were observed." Field observations do not substitute for sample collection and taxonomy.	As noted in an above comment, ERFN recommends benthic invertebrate sampling at SA-6 to sufficiently characterize the benthic invertebrate community upstream of South Whitefish Lake.
ERFN-134	EIS Appendix 8-D Baseline Aquatic Environment Study Section 4.6.4	Burbot were recovered at SA-6 but were considered not present in South Whitefish Lake.	Please justify the assertion that burbot are not present in South Whitefish Lake, despite recovering them shortly upstream at SA-6.
ERFN-135	EIS Appendix 10-A, Appendix A: Wheeler River Project IMPACT Model Figure 2-1	This figure illustrates that absorption from surface water was only source of COPCs investigated for Northern Pike as part of the IMPACT model. Northern Pike was intended to represent piscivorous predators for the purpose of this modelling.	Please justify the results of the IMPACT model for Northern Pike despite not accounting for piscivory or any other feeding. Note that studies on the toxicity of effluent to fish at the nearby Cameco Key Lake mine directly implicated dietary selenium.
ERFN-136	EIS Appendix 10-A, Appendix A: Wheeler	The "Water Baseline" used for the IMPACT model integrates surface water quality from multiple regional	Please revisit the IMPACT model using surface water quality data accurate to the South Whitefish Lake receiving environment.

	River Project IMPACT Model Table 3-4	waterbodies. This results in baseline chemistry that is lower (sometimes 10x lower) than the chemistry of South Whitefish Lake, the receiving environment.		
TERRESTRIAL ENVIRONMENT				
ERFN-137	EIS Section 9.2.1, 9.3.1, and 9.4.1: Influence of IK, LK and Engagement on VC selection.	Concerns raised by the ERFN during August 2022 engagement sessions (e.g., for subsistence/harvestable foods, important vegetation communities, and wildlife habitat) do not appear to have been considered during VC selection.	Update Section 9 to incorporate concerns raised in the August 2022 submission and demonstrate how these comments have been addressed or considered in the assessment as VCs, or KIs for existing VCs (i.e., wetlands, woodland caribou).	
ERFN-138	EIS Section 9.2.1, 9.3.1, and 9.4.1: Influence of IK, LK and Engagement on MP considerations.	Relevant criteria for VC selection according to the EIS includes: "'contributing roles to biodiversity, ecosystem function, and maintenance of wildlife habitat," and "contributions to environmental, socio-economic, and cultural values of Indigenous groups, the public and other Interested Parties" (EIS 9.2.1, 9.3.1, and 9.4.1), among others.	Overall changes in habitat for wildlife and plants of cultural importance within the Project area, LSA and RSA must be considered as a measurable parameter.	
ERFN-139	EIS Section 9: Influence of IK, LK and Engagement on Mitigation and Monitoring considerations.	Wetlands were recognized in the EIS as important for multiple reasons and designated a VC. However, the potential impacts and their mitigation and monitoring were not adequately characterized or discussed.	(i)	Changes in aerial extent of wetlands as the single MP for this VC is insufficient to monitor all changes in these habitats – they are key lifecycle habitat (breeding/foraging/cover) areas for species of management concern as they relate to both the EIS and ERFN (e.g., small furbearers such as beaver, mink; large ungulates such as moose; game birds/species at risk; supports growth of subsistence foods such as cranberries).

			(ii) Drawdown effects on wetlands were not identified as a potential effect, even though water withdrawal requirements exist for majority of Project timeline, and Project design incorporates an inward hydraulic gradient. (iii) Overall changes in habitat for wildlife and plants of cultural importance within the Project area, LSA and RSA must be considered as a measurable parameter.
ERFN-140	EIS Section 9.1.4, (9.2.4, 9.3.4 and 9.4.4): Influence of IK, LK and Engagement on Mitigation and Monitoring considerations.	"Reclamation design planning is at a conceptual or pre-feasibility stage. Presently, most Project features are planned to be reclaimed by re-instating (to the extent practical) predominant topographical contours and drainage features, and preparing the site (e.g., via grading, and scarifying and/or other surface preparations) in a manner that promotes natural revegetation.... Certain Project features (e.g., the clean waste rock pile) may be integrated into the end-landscape… to create a safe, stable, and self-sustaining landscape." (pp. 9-28) Concerns were raised in engagement sessions about documenting caribou calving locations and participating in mitigating possible effects (SVS, 2022). The loss of wetland areas may reduce the amount of habitat available for moose and caribou calving, as well as other stages of their respective life histories. This interaction will directly	Section 9 and Table 3.5-1 should be updated to reflect recommendations for reclamation priorities identified in the ERA and ERA-annex, in addition to federal recovery strategies (i.e., Woodland caribou, wolverine) mitigations and management recommendations for species at risk, and species-specific IK and LK. Denison must consider all pathways of effects, including those which are indirect, such as the loss or conversion of lands used as habitat by species of cultural importance.

		impact the availability of this important resource.	
ERFN-141	EIS Section 9.1.3.3: Influence of IK, LK and Engagement on VC selection.	Permafrost was investigated but not adequately characterized to support conclusions made in the EIS. Potential presence is established and engagement concerns were raised "specifically referencing cumulative effects through mention of climate change and the vulnerability of northern environments," "potential effect of exploration on various characteristics of the biophysical environment" (pp. 4-25); and "possible changes to permafrost on the Wheeler River" (pp. 4-33).	Sections 6 and 9 should be updated to include verification of the presence/absence/extent of permafrost within the Project Area or permafrost interactions with the Project within the CEA.
ERFN-142	EIS Section 9.1.4: Assessment of Project-related Effects.	"Activities during Post-Decommissioning (comprising site inspections, monitoring and on-site engagement with interested parties) were deemed to have no interaction because they do not involve any land clearing, surface preparations or major earthworks" (EIS 9.1.4). Post-Decommissioning activities should incorporate changes issued by regulatory bodies, required mitigations or actions identified through the Denison Environmental Monitoring System/adaptive management process, and/or Indigenous/third party engagement recommendations.	Update Section 9 to include further detail regarding post-decommissioning activities resulting in earthworks for: changes issued by regulatory bodies, required mitigations or actions identified through the Denison Environmental Monitoring System/adaptive management process, and/or Indigenous/third party engagement recommendations.
ERFN-143	EIS Section 9.1.1.1 VC Selection (Terrain, Soil, and Organic Matter/Peat)	Baseline studies for the Terrestrial Environment component of the EIS were conducted from 2017-2019 and were refined in 2019 with a focus on	We appreciate the recognition of a data deficiency and concur that additional rare vascular plant surveys are required in ecosites not sampled previously to fully investigate the

	and 9.2.3.2 Listed Plant Species VC	the Phoenix development only. Soil and terrain baseline data was presented at broad scale and coarse resolution (1:20,000) in the original investigations (Appendix 9-B), and baseline vegetation data categorized disturbed forest stands as novel regenerating forest types. This was defined and corrected further by the literature review and mapping contained in Appendix 9-C. Vegetation/wildlife habitat characterization were completed over two surveys in July-Aug 2017 (Appendix 9-B; with no sampling completed for waterbodies/disturbed non-vegetated lands), before the project footprint was altered – in consultation with the SK MOE, the EIS can carry forward with existing information with the condition that additional rare plant pre-disturbance surveys would accompany project approval.	terrestrial environment component of the project and related effects. As baseline survey efforts focused on mid- and late-season rare vascular species, and further information on wetlands in the RSA is proposed to better characterize wildlife habitat and availability of subsistence harvestable food/medicinal plant resources, early-season surveys that also target wetland habitats are recommended.
ERFN-144	EIS Section 9.2.4.2.2 Change in the Concentrations of COPC in Vegetation	Per the ERA, vegetation and soil collection and chemistry were completed at 10 permanent sample plots in August 2017 – terrestrial lichens, current year's growth of blueberry (leaf, stem, berries), and soil samples were collected. Radionuclide levels are relatively consistent (lichen, blueberry and soils); however, several metal/elemental parameters were elevated when compared to Rio Rinto's Roughrider Project.	The EIS identified Labrador tea and browse as also being estimated for metals/radionuclides COPCs in the ERA – this was not included in the ERA; however, red-backed voles were also tested during the small mammal baseline program (Appendix 9-B). Update section to reflect same.
ERFN-145	EIS Section 9.3.1.1 VC Selection (Ungulates,	This VC list omits several species which have been identified by ERFN as commercially important for trapping	Presence of all ERFN-identified traditionally important species were observed in the baseline winter tracking studies (Appendix 9-

	Furbearers, and Woodland Caribou)	purposes, including Lynx, Muskrat, Fisher, Fox, Otter, and Mink. As noted in the ERFN Traditional Knowledge Study, concern was raised about the impacts of the mine and associated infrastructure on the ability to trap and trapping success. Presence of lynx, fisher, fox, otter, muskrat, beaver and mink were identified in the baseline winter tracking studies (Appendix 9-B).	B). Overall changes in habitat for wildlife and plants of cultural importance within the Project area, LSA and RSA must be considered as a measurable parameter.
ERFN-146	EIS Section 9.4.3 Existing Environment (Raptors, Migratory Breeding Birds, and Bird Species at Risk)	Appendix 9-C identifies knowledge gaps for information to fully describe the wildlife assemblage in the RSA, including avian species of management concern. Species Detection Survey Protocols (SK MOE 2021) were not implemented for the baseline avian surveys. Recommendations for sensitive timing windows and setback distances from high disturbance activities should be considered for rusty blackbird, which may also use the RSA. The baseline survey did not account for early-season breeding species of management concern (i.e., owls, woodpeckers, game birds).	Additional surveys are recommended utilizing appropriate species detection survey protocols to account for VCs and additional species of management concern with the potential to occur in the project area.
ERFN-147	EIS Section 9 (General) VC Selection	Some small mammals were shown to observe elevated levels of select COPCs during baseline studies (Appendix 9-B) but were not discussed in the EIS. Bats and Amphibians were also not considered in the EIS as VC or KIs, even though both bat species and one amphibian species are listed under SARA. Traditional species of cultural importance for gathering and subsistence were also not included.	Provide a rationale why these components were not considered.

ERFN-148	EIS Section 9 (General) VC Selection	Several iterations in the EIS state baseline studies were not designed to establish relative abundance estimates for furbearer VCs, whereas certain baseline surveys (Appendix 9-B) were designed to provide quantitative data on the occurrence and relative abundance (i.e., semi-aquatic furbearer shoreline study, winter track count).	Provide rationale for not incorporating relative abundance.
ERFN-149	EIS Section 9.3.3 Existing Environment; EIS Section 9.3.5 Mitigation Measures	Appendix 9-C identifies knowledge gaps for information to fully describe the wildlife assemblage in the RSA, including ungulates (woodland caribou and moose), but there is no recognition of the implications of these gaps or suggestions to address them.	ERFN notes if recent aerial ungulate survey data are unavailable, the Proponent should consider management and development recommendations available for the region and management areas, in addition to the federal recovery strategy for caribou, as part of the EIS.
ERFN-150	EIS Section 9.3.5 Mitigation Measures	The mitigations for linear disturbances identify ongoing research into the effectiveness of disrupting predator-prey dynamics along linear disturbances. Appendix 9-B includes recommendations for reclamation of linear disturbances around the Project Area.	ERFN acknowledges the efforts by Denison and the recommendations provided in Appendix 9-B for the reclamation of linear disturbances, and requests the Proponent to consider prioritizing progressive reclamation in these areas as a commitment within the EIS, in addition to utilizing ongoing research data to adjust and inform reclamation planning and implementation.
ERFN-151	EIS Section 9.1.5, 9.2.5, 9.3.5, 9.4.5 (General) Mitigation Measures	Spill response plan	It is recommended that monitoring during Project Activities occur to minimize discrete spills wherever possible, per the Spill Response Plan. Spill Response Plan should include reportable quantities, spills report line directly to proponent, and specific procedures for documenting and reporting spills to regulatory bodies.
ERFN-152	EIS Section 9.2.5.2.4 Invasive Plant Management	Additional mitigation measures include use of herbicides or other bio-controls to address invasive species	Denison must provide information on how impacts will be mitigated if herbicides or other bio-controls are used.

		establishment. Denison does not provide evidence discussing the potential impacts to the Terrestrial Environment VCs from the use of herbicides or other bio-controls.	
ERFN-153	EIS Section 9 (General) Wildlife mitigations	Fencing for deterrence of entrapment in certain Project areas	Fencing should be buried deep enough to prevent potential interactions with burrowing animals, and high enough to prevent wildlife movement over the fence. Fencing should be monitored for entrapped wildlife at regular intervals identified within the EMS, and a plan should be in place for the non-lethal removal of trapped wildlife if required.
HUMAN HEALTH			
ERFN-154	EIS Section 10.1.1.2 Key Indicators and Measurable Parameters	Public Health is Identified as a Key Indicator and is informed by Measurable Parameters which include: "Evaluation of risk of exposure to COPCs through use of hazard quotient, incremental lifetime cancer risk, or radiation dose," is a very narrow view of human health as it is affected by this project. This ignores a wide range of physical and psychological factors which may influence the health and wellbeing of ERFN citizens.	Denison should provide additional analysis of the Public Health Key Indicator which includes Measurable Parameters to qualitatively or quantitatively assess mental health, psycho-social factors and wellness as it may be influenced by this project.
ERFN-155	EIS Section 10.1.1.3 Spatial and Temporal Boundaries	The spatial boundaries for the assessment of Human Health are not appropriate as it ignores the many persons who use the area surrounding the project but do not reside within the LSA or RSA catchment area. Most ERFN land users live further south in Patuanak/ Wapachewunak Reserve but use the area around the project to harvest and exercise rights, therefore	Denison reassesses the Public Health KI to include Patuanak/ Wapachewunak Reserve, as the closest population centre.

		must be considered within the geographic scope of the assessment.	
ERFN-156	EIS Section 10.1.3.2 Traditional Foods Diet	Denison note that Walleye and Lake Whitefish are the most commonly consumed fish within the study area to inform the HHRA. While these are important species, they may not be fully representative of the full risks posed by fish. For example, longer-living fish such as Lake Trout are consumed, and as top predators are at a greater risk for bioaccumulation.	Denison should consider bioaccumulation risks associated with other country foods consumed. This includes considering and incorporating species which are both consumed in the greatest quantities, but also are representative of the greatest risk for use in the HHRA.
ERFN-157	EIS Section 10.1.4.1 Potential Interactions Between the Project and Valued Component/Key Indicators	Table 10.1-3 Outlines a list of project phases/activities and an indication of whether they are likely to interact with Public Health. This table, however, fails to provide information about the effects of pathways or how the proposed activities may result in impacts on public health.	We request Denison provide a breakdown of the effects pathways and predicted or plausible impacts for each of the project activities which may influence public health.
ERFN-158	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning	As outlined in Appendix 6A, elevated levels of NO2 and Radon are expected to be observed outside of the area established as the LSA and in some cases the RSA to assess human health. Therefore, the assessment of potential project-related effects associated with air emissions during construction, operation, and decommissioning should be considered in complete.	Denison provides a revised assessment of Potential project-related effects as a result of air emissions during construction, operation, and decommissioning in areas beyond the geographical scope of elevated atmospheric emissions are predicted.
ERFN-159	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning	Denison note that there are several instances in which exceedances of air quality criteria for NO2, PM10 and uranium are expected, they were not identified for further assessment in the human health risk assessment, "as these COPCs are unlikely to be	We are confused as to why Denison has chosen to dismiss the consideration of COPCs which exceed air quality criteria from further human health risk assessment. By removing these potential risk sources, Denison appears to be picking and choosing which factors are important prior to carrying out any analysis.

		associated with a human health or environmental risk.".= The adequate rationale is not provided to dismiss these potential contributors to human health risk, and air quality exceedance of any COPC, should be sufficient rationale within itself to carry forward any factor.	We recommend that Denison amend the Human Health Risk Assessment and include No2, PM10 and uranium as possible human health risk factors until appropriate evidence can be presented to demonstrate that these will not present harm.
ERFN-160	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning	Denison notes that "a pond may be constructed beside the clean waste rock pad to collect runoff if required. Any runoff from the clean waste rock pond will be directed to the process water pond". This statement contradicts itself, as in the first sentence, Denison indicates that they may establish a water collection pond to collect runoff from the clean waste rock pile, however, this is followed by stating that runoff will be directed to the process water pond. It is unclear the purpose of this additional pond that may be constructed.	Denison should provide additional information on the rationale for the construction of this additional pond and what role it will play in both mitigating risk to human health and providing overall contact water management.
ERFN-161	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning	It is unclear under which circumstances effluent may be discharged to Whitefish Lake as Denison states they intend to process water by circulating it through the injection and recovery wells.	Please provide additional information regarding the source of water to be discharged to Whitefish Lake.
ERFN-162	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning	Denison appears to be confusing the application of multiple water quality applications. Specifically, they state: “The most restrictive federal or provincial guidelines for surface water quality, based on Canadian drinking water quality	Denison must be clear as to the guidelines which are being used at all times during the analysis to ensure that they are applied appropriately.

		guidelines, are the CCME water quality guidelines for the protection of freshwater aquatic life, the federal environmental quality guidelines, and the Saskatchewan environmental quality guidelines." These are all separate water quality guidelines and apply to different aspects of water quality management.	
ERFN-163	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning	Denison notes that effluent was assessed using a benchtop model simulation of the material processing and effluent treatment process. Using the derived effluent, a handful of constituents were assessed including cadmium, chromium, selenium, and lead. Other COPCs exist beyond these parameters and should be assessed appropriately.	Denison should perform additional broad-suite analysis of all parameters as set by CCME water quality guidelines for the protection of freshwater aquatic life and the MDMERs.
ERFN-164	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning	TDS within itself is not known to be detrimental to the aquatic environment, however, can have adverse aesthetic impacts. That said, TDS is comprised of many other dissolved constituents, such as chloride, calcium, sodium, potassium, fluoride, and others, which may be harmful in elevated concentrations. Given TDS is expected to exceed the water quality guideline by more than 10-fold, it is necessary to identify the contributing factors before TDS can be ruled out as a potential risk.	Denison should provide an analysis of the constituents which contribute to high TDS and propose a method of reducing TDS to meet water quality guidelines.
ERFN-165	EIS Section 10.1.4.2.1 Air Emissions During Construction, Operation, and Decommissioning; Table 10.1-4	Molybdenum is concerningly high. CCME note that the long-term concentration of molybdenum for the protection of aquatic life is 0.073 ug/L which is several orders of magnitude	Denison must demonstrate how it plans to minimize the source effluent of molybdenum and sulphate associated with this project.

		less than what was observed in effluent tests. Similarly, sulphate is also very high, which once released into the environment may influence pH and acidification of the downstream environment.	
ERFN-166	EIS Section 10.1.6.1.1 Human Receptors Selection and Characterization; Table 10.1-6	The human receptors outlined in Table 10.1-6 are not fully representative of land users and those who may be impacted. There is a need to consider other more vulnerable human receptor groups such as youth, Elders, and pregnant females who interact with the land and consume high levels of traditional foods similar to Fisher/Trapper. Similarly, other human health receptors should be considered for permanent residents.	Denison should reanalyze their human health risk assessment including the use of vulnerable personas such as youth, pregnant female, and Elder.
ERFN-167	EIS Section 10.1.6.1.3 Exposure Assessment and Pathway Modelling	In assessing exposure pathways, it is noted that COPCs may travel through multiple ecological receptors before being consumed or otherwise taken up by humans. However, it is unclear whether Denison has considered the potential for bioaccumulation, additive, or synergistic effects when viewing the exposure pathway through a cumulative effects lens.	Denison should provide clarity into all assumptions which went into the pathway modelling including considerations for cumulative effects and bioaccumulation of COPCs en route to human end points.
ERFN-168	EIS Section 10.1.6.1.4 Human Health Risk Assessment Results; Table 10.1-8	Denison does not provide a Hazard Quotient (HQ) for Aquatic Plants. However, aquatic plants may be directly consumed by ERFN land users. As a result, this represents a knowledge gap within the assessment.	Denison should assess the hazard quotients associated with aquatic plant consumption. If no information related to the TVR is available use available proxy (e.g., terrestrial plants) to estimate a conservative hazard quotient.
ERFN-169	EIS Section 10.1.6.1.4 Human Health Risk	Although in most cases project incremental HQ is not on its own a key	For all COPCs where individual or total HQs are above benchmarks, Denison must

	Assessment Results; Table 10.1-8	driver in Project Total HQ exceeding individual or total benchmarks, the high baseline emphasizes the need to minimize additional inputs. ERFN does not accept arguments that suggest that since the baseline is already elevated, any additional inputs are negligible. Rather, any additional inputs only worsen the risks which are already present.	proactively identify solutions for minimizing additional inputs.
ERFN-170	EIS Section 10.2.1.1 Valued Component Selection	Denison notes that unwanted constituents, specifically iron and radium, will be removed from the recovered lixiviant material prior to uranium precipitation. This unwanted precipitate does however contain a valuable amount of uranium and therefore will be stored and shipped to be processed at an eligible licensed facility. It is unclear where this facility may be located, and furthermore, it is unclear whether the impacts of transportation of this material and the potential for accidents or malfunctions has been considered elsewhere in this EIS.	Denison must provide additional information about its plans to move waste products containing radium and uranium offsite for additional processing.
ERFN-171	EIS Section 10.2.4 Mitigation Measures	Mitigation measures should ensure there are redundant protections in place to minimize risk to worker health. Specifically, in any instance where the use of PAPR will be effective in reducing radiation exposure, it should be applied. This then can be made redundant through the use of personal protective equipment such as the use of N95 or a self-contained breathing system.	Denison should take an additive approach rather than an either/or approach to identifying and applying mitigations for limiting radiation exposure to workers.

LAND AND RESOURCE USE

ERFN-172	Table 3.5-1: How Indigenous Knowledge was Incorporated into Existing Environment and Effects Assessment Sections	Not all of the information in this table explains how the knowledge was incorporated or used to inform the effects assessment sections. Rather, in many instances, it states what the knowledge was instead of how it was used.	Provide a reference table identifying and acknowledging all of the information that was provided by ERFN and indicates how the information was incorporated and weighted into the assessment of the effects. If needed, ERFN can support by providing this information if the TK report is not clear enough.
ERFN-173	4.1.2 Denison's Indigenous Peoples Policy and Investment and Sustainability Philosophy	The EIS states that "Denison is committed to operating the Project in a fully sustainable manner, considering not only the maintenance of high standards of safety and environmental compliance." (p.4-3). It is not clear what "fully sustainable" means or how the definition was informed.	Provide clear definition, with backed-up literature and evidence, as to what "fully sustainable" means. Further, clarify how ERFN values were included in the understanding of "fully sustainable." That is, has this definition been informed by Indigenous Knowledge and worldviews, and if so, then how have project planning and activities adjusted and if not, then provide an explanation as to why.
ERFN-174	General comment	Denison has separated out the quality of life, land and resource use, economics and other VCs as if they can be considered separately.	Provide an explanation as to how land and resource use was considered in quality of life effects assessment.
ERFN-175	11 Land and Resource Use	Repeatedly, Denison states that there is "limited amount of Indigenous uses in proximity to the Project" and it appears these conclusions have been made from Denison's interpretation of ERFN's TK report. It was made clear to Denison that there is extensive use in the area and that the report is limited in scope and is not statistically representative of ERFN rights holders. Further, Denison has failed to frame the EIS from a rights-based approach. The rights of the Indigenous peoples of Canada recognized and affirmed by section 35 of the Constitution Act, 1982 (Section 22(1)(c)) are collective rights, and assuming minimal impact based on the inaccurate understanding of a few land users	ERFN made it clear in their submissions that the information provided was not statistically representative and does not include the entire IK or land use of ERFN members. ERFN's *Traditional Knowledge Study & Health and Socio-Economic Study Report* states: "the results in this Study showcase the information shared by some of ERFN's land users, trappers and Elders and cannot be considered a complete representation of ERFN knowledge and use in the Study Area. Nevertheless, these results demonstrate that the Project is likely to have significant impacts on ERFN's Aboriginal and Treaty Rights and Interests without appropriate and effective measures including mitigation, accommodation, monitoring/follow-up, environmental management and protection planning, along with an ongoing role in environmental oversight. ERFN continues to

does not adequately assess impacts to Indigenous Rights.

Other instances of inaccurate wording of use include:

- "Overall, given the limited use of the ILRU LSA, adverse effects that are low in magnitude, the limited geographic extents of effects, and the reversibility of effects, the conclusion relative to changes to ILRU is not significant."
- "The absence of the Key Lake gate and the removal of the process of providing identification will provide recreational users and local Indigenous communities with greater access to the ILRU LSA, **which is not currently used intensively**"(p. 11-70 – emphasis added)
- "Overall, given limited use of the ILRU LSA, adverse effects that are low in magnitude, the limited geographic extents of effects, and the reversibility of effects, the conclusion relative to changes to ILRU is **not significant**." (p. 11-74)
- "Big game hunting is absent in the Project Area and is sparse and infrequent in the ILRU LSA. Indigenous harvests of terrestrial species are primarily conducted south of the Key Lake gate and/or

assert that it is only through a collaborative and co-production approach to the EA that these measures will be appropriately designed and implemented."

There remains a disconnect between Denison's conclusions of impacts and the results that were provided in ERFN's Traditional Knowledge Study & Health and Socio-Economic Study Report.

Denison must ensure that it considers the collectively held rights of ERFN protected by section 35 of the Constitution Act and Treaty 10. Individual ERFN land users have important interests to be considered, and in some instances, they exercise rights held by the collective. However, such users do not represent the constitutional interests of the collective; the elected Chief and Council bear that critical and all-encompassing responsibility Denison must recognize that inherent Aboriginal rights or Treaty Rights must not be infringed upon, and where impacts cannot be avoided, accommodation measures must be complete.

(i) Provide reasoning as to why these statements were made and evidence that Denison understands the impact that these statements have. That is, they belittle the information provided and misrepresent potential impacts on the collective rights of ERFN.

(ii) Provide adequate funding for ERFN to undertake a comprehensive Rights Impact

		closer to communities." (p. 11-49)	(iii) Assessment that is led independently by ERFN. It is expected that Denison will remove all of these inaccurate statements, and all other similar statements in the EIS, and re-evaluate impacts based on an understanding of collective rights and recognition of the cumulative impacts of past activities.
ERFN-176	EIS Section 11.1.7 Cumulative Effects	The EIS states, "existing projects were not considered as part of the CEA because they were captured and assessed within baseline conditions" (p. 11-69). However, Denison has not shown how CE from past projects was acknowledged within the baseline of ILRU. Rather, in many instances, as noted above, Denison has misinterpreted ERFN's *Traditional Knowledge Study & Health and Socio-Economic Study Report*. There is limited recognition of the discussion on impacts from past projects and how this has altered current baseline conditions, including the likelihood that current baseline conditions have moved beyond ERFN's acceptable threshold of impact.	Until Section 11.1.7, and Section 11 in general, adequately considers cumulative effects of past projects and impacts to ERFN's harvesting activities, and ability to access ancestral lands as they were prior to contact from a rights-impacts lens, Section 11.1.7 is considered inadequate and incomplete.
ERFN-177	EIS Section 11.1.5 Mitigation Measures	Denison has stated that there will be no further mitigation or monitoring for Resource Availability, Availability of Lands/Waters, and in general ILRU monitoring. This is unsatisfactory as ERFN is in disagreement that impacts to ILRU will not be significant.	Prior to approval, Denison needs to work with ERFN to develop a program that monitors changes to ERFN's relationship and use of the area. This needs to be led by ERFN and occur with frequency across all phases of the project. It will provide relevant and useful information to Denison and ERFN to monitor potential changes and impacts from the project and any additional monitoring activities that may need to occur.

ERFN-178	EIS Section 11.1.4.5.1 Aesthetic Experience	Denison states that "to control road dust during summer (May to October), water and/or chemical dust suppressant will be applied to all site roads (Section 6.1.5 in Section 6)." p. 11-56. There is no description of chemical dust suppressant and Section 6.1.5 only indicates that water will be used twice daily as a dust suppressant.	(i) Confirm how dust will be managed – is it water or chemical dust suppressant? (ii) If the latter, provide information on the product that will be used and all impacts to plants and wildlife.
ERFN-179	EIS Section 11.1.4.3 Resource Availability for Subsistence Harvesting	With respect to furbearer habitat, Denison states "effects are predicted to be long-term but reversible because the alteration of available furbearer habitat is expected to be reversed as sensory disturbances diminish with the end of Project Operation activities and subsequent Decommissioning of Project components." p. 11-50. While there is recognition that this impact may be reversible to furbearing animals, it is not clear how this is a reversable to the used of the area by ERFN. This long-term impact will last for at least a generation. It is clear from past projects, settlements, and colonial activities that a lot of knowledge can be lost within a generation when you remove the access and ability for knowledge transfer.	Provide an explanation as to how predictions across all of section 11.1.4 considered potential for contribution to the degradation of cultural practices and knowledge transfer. Provide analysis on the potential impacts of project activities on knowledge transfer and land use for ERFN citizens who have rights across their entire ancestral territory. This needs to be done with the assumption that removal of an area for land use will result in an impact to ERFN's collectively held section 35 rights.
ERFN-180	EIS Section 11.1.3.2.1 English River First Nation/Patunuak	There is concern as to how well Denison reviewed the reports from ERFN. For example, in Section 11.1.3.2.1 English River First Nation/Patunuak on p. 11-30 Denison states "no access routes or culture/historical trails were identified as intersecting with the Project site	Denison will need to do a more carefully review of ERFN's reports and include all information provided in the EIS. That is, all information summarized will need to be confirmed for accuracy and gaps in the information summarized will need to be filled.

		(ERFN and SVS 2022b)." We dispute this statement and urge Denison to re-review ERFN's report and remind Denison of the information provided in this report: "Participants spoke of using the Fox Lake Road, which runs through the Wheeler River Project site, as an access route for harvesting activities throughout an area stretching from the Key Lake mine to McArthur River mine … One participant expressed concerns that this route (1018-14) may be blocked by Project activity. Another participant stressed how this entire area (1004-18) is used by ERFN people as a contemporary gathering place."	
ERFN-181	EIS Section 11.1.3 Existing Environment	This section does not adequately discuss or highlight the history and experience of ERFN. Additional valuable information that frames the existing environment and impacts to land use was provided in ERFN's Traditional Knowledge Study & Health and Socio-Economic Study Report.	Provide ERFN with the capacity and opportunity to edit and add to this section so that the EIS is framed with additional and relevant information.
ERFN-182	EIS Section 16.6.3 Heritage Resources	Heritage Resource Management Plan	In Section 16.6.3 Denison states that a "Heritage Resources Management Plan (HRMP) has been developed by Denison and outlines the steps that will be taken should anymore archaeological sites be identified Even though they say that these steps include "discussions with local indigenous leadership." this is not evident. Prior to this document being approved, ERFN requests the opportunity to complete a third-party review and provide feedback to Denison.
ERFN-183	EIS Section 16.6.3	Cultural Heritage Monitors	Prior to the approval of the project, Denison must commit to hiring ERFN Cultural Heritage

			Monitors who will be present during any construction and/or land disturbance work. This area is still considered to have high potential for archeological sites even if Denison was not able to locate many sites during their assessments.
QUALITY OF LIFE			
ERFN-184	EIS Section 12.1.2.1, 12.2.2.1, 12.3.2.1 Influence of Indigenous Knowledge, Local Knowledge and Engagement on the Assessment, English River First Nation	EIS Section 12.1.2.1, 12.2.2.1, and 12.3.2.1 sets out a list of the submissions and reports provided by ERFN that included Traditional Knowledge and perspectives that have informed Section 12.1, 12.2 and 12.3 of the assessment respectively. ERFN notes that these lists do not include ERFN's submission of comments to Denison on a draft of the EIS provided to ERFN before its submission to CNSC, despite this submission including important information regarding our Traditional Knowledge and perspectives that was meant to inform changes to these sections of the Draft EIS. ERFN notes that as a result, numerous comments on this section of the EIS below are a restatement of concerns raised in our August 2022 submission that remain unaddressed. ERFN also notes that the contents of ERFN's August 2022 submission are also not reflected in Table 4.3-2 which is meant to outline Key Issues and Concerns raised English River First Nation in previous engagements and submissions and demonstrate how these comments have been addressed or considered in the Draft EIS.	Section 12 must be updated to incorporate the concerns raised in the August 2022 submission and restated in the comments below. In addition, Table 4.3-2 should be updated to reflect the Key Issues and Concerns raised in ERFN's August 2022 submission and demonstrate how these comments have been addressed or considered in Section 12 of the EIS.

ERFN-185	EIS Section 12.1.1.2 Key Indicators and Measurable Parameters	Section 12.1.1.2 states that a Key Indicator (KI) "is an important aspect of a VC that may be affected by the Project and its activities" and that a measurable parameter "is the metric associated with the KI that can be used to characterize changes to attributes of the environment that may change as a result of the Project and/or other human developments and natural factors" (p. 12-7). For the valued component of Cultural Expression and this section of the assessment, Table 12.1-1 sets out Denison's selection of KIs to include: 1. Knowledge Transfer 2. Traditional diet While ERFN is supportive of Cultural Expression being included as an important facet of Quality of Life and identified as a key value component included in the scope of the effects assessment, the KIs and measurable parameters selected by Denison in Section 12.1.1.2 are insufficient and do not reflect a holistic consideration of Cultural Expression, even by Denison's own definition set out in Section 12.1. ERFN notes that concerns have been raised in previous engagement with ERFN and in our August 2022 submission of comments on the Draft EIS regarding the limited scope of these KIs and that additional KIs and measurable parameters must be included to reflect a more holistic understanding of Cultural Expression informed by Indigenous perspectives. Because the selection of these KIs and measurable parameters is a	Section 12.1 should be revised to include an analysis of additional KIs and measurable parameters of Cultural Expression more closely related to values identified for protection by ERFN citizens. These may include: • Ability to practice traditional activities • Cultural Identity • Connection to ERFN Traditional Territory • Ability to speak ERFN dialects of Dene and Cree • Intergenerational knowledge transfer • Collecting, processing, using, and sharing traditional medicines • Spiritual and cultural vitality

		foundational step in the assessment that informs the scope and approach to the subsequent characterization of existing conditions, assessment of project-related effects, identification of mitigation measures and assessment of residual effects and cumulative effects, the insufficient scope of KIs and measurable parameters selected by Denison therefore results in a fundamental deficiency of Section 12.1 of the assessment of the effects.	
ERFN-186	EIS Section 12.1.4.1 Potential Project – Valued Component and Key Indicator Interactions	Table 12.1-2 outlines potential interactions between project phases and activities, and KIs for Cultural Expression. ERFN notes that Employment and Expenditures are not identified to have potential interactions. ERFN disagrees with this assessment as employment may alter the ability for ERFN citizens to engage in traditional activities and intergenerational knowledge transfer, as citizens will be unable to engage in on-the-land activities and cultural knowledge sharing during rotational work periods.	Denison should revise Table 12.1-2 to recognize potential interactions between employment and KIs for Cultural Expression
ERFN-187	EIS Section 12.1.6 Residual Effects Evaluation	Section 12.1.6 of the EIS defines a significant adverse residual effect on Cultural Expression as "an effect that is highly different from baseline conditions and trends and cannot be managed or mitigated through adjustments to existing programs, policies, or other mitigation." The EIS goes on to state that "because residual adverse effects on Cultural Expression	Until Section 12.1 is revised to include a more holistic consideration of Kis and measurable parameters for Cultural Expression that ERFN has set out above, Denison's assessment of the nature of potential Residual Effects should be considered incomplete and deficient. In addition, until ERFN confirms CNSC that Denison and ERFN have reached mutually agreed-upon terms of mitigation and accommodation that address the effects of the

		are not expected to result in this level of change, effects are expected to be not significant for the Project." ERFN does not agree with this assessment of the potential residual effects of the Project, which is fundamentally deficient based on the limited scope of Kis and measurable parameters that were selected for analysis. ERFN also does not agree that the mitigation measures presented in Section 12.1.5 are sufficient to address effects of the Project on Cultural Expression that will be highly different from baseline conditions.	Project on Cultural Expression, this EIS should not be considered complete or approved by CNSC.
ERFN-188	EIS Section 12.2.1.2 Key Indicators and Measurable Parameters	Section 12.2.1.2 states that a Key Indicator (KI) "is an important aspect of a VC that may be affected by the Project and It's activities" and that a measurable parameter "Is the metric associated with the KI that can be used to characterize changes to attributes of the environment that may change as a result of the Project and/or other human developments and natural factors" (p. 12-44). For the valued component of Community Well-Being and this section of the assessment, Table 12.2-1 sets out Denison's selection of Kis to include: 1. Population and Demographics (from in/out migration as people seek employment opportunities), 2. Income of local workers (from participation in employment and/or contracting activities), and	ERFN has shared with Denison (ERFN and SVS 2022a), that the four components of ERFN health and well-being, often referred to as the "the medicine wheel," is the core guiding principle to overall ERFN health and well-being, and include: • Physical health • Mental health • Spiritual health • Emotional health The KIs selected by Denison and subsequent steps of the assessment of the effects must be amended to include more holistic Kis and parameters relevant to these ERFN determinants of Community Well-Being, in collaboration with ERFN and based on the results of studies and submissions provided by ERFN to date. Potential Kis/parameters could include, but are not limited to: • Food security • Access to traditional foods • Psychosocial Impacts • Spiritual and cultural vitality

3. Community cohesion (from changes in income and participation in a commuter rotation system).

While ERFN is supportive of Community Well-Being being identified as a key value component and included in the scope of the effects assessment, the KIs and measurable parameters selected by Denison are insufficient and do not reflect a holistic consideration of well-being informed by Indigenous determinants of well-being, despite Denison's acknowledgment that communities in the LSA are predominantly (95.2%) Aboriginal (Section 12.2.3.1, p. 12-56). ERFN notes that concerns have been raised in previous engagement with ERFN and in our August 2022 submission of comments on the Draft EIS regarding the limited scope of these Kis and that additional Kis and measurable parameters must be included to reflect a more holistic understanding of Community Well-Being informed by Indigenous perspectives.

Because the selection of these Kis and measurable parameters is a foundational step in the assessment that informs the scope and approach to the subsequent characterization of existing conditions, assessment of project related effects, identification of mitigation measures and assessment of residual effects and cumulative effects, the insufficient scope of Kis and measurable parameters selected by Denison therefore results in a fundamental

- Ability to practice traditional activities
- Cultural Identity
- Connection to ERFN Traditional Territory
- Ability to speak ERFN dialects of Dene and Cree
- Intergenerational knowledge transfer
- Collecting, processing, using, and sharing traditional medicines

		deficiency of Section 12.1 of the assessment of the effects.	
ERFN-189	EIS Section 12.2.4.1 Potential Interactions Between the Project and Valued Components/Key Indicators	In Section 12.2.4.1, Denison sets out the assessment of potential interactions between the Project and VC/Kis, based on "IK, LK, discussions with Indigenous groups, government agencies, and the public, KPIs for the Project, the professional judgment of members of the Project team, and consideration of existing conditions in the study areas for the VCs and KIs" (Page 12-73). ERFN notes the only project activities Denison has determined will interact with the VC/Kis considered in this section of the assessment are employment and expenditures, and Denison states that no other construction activities, operation activities, or decommissioning activities are anticipated to have any interactions with Community Well-Being. ERFN does not agree with this assessment of the Project's potential interactions with Community Well-Being, and it is ERFN's position that numerous other Project activities will have potential adverse effects on ERFN's Community Well-Being.	This assessment should be considered incomplete and fundamentally deficient. The assessment must be redone with a more holistic consideration of Kis and pathways to effects developed in collaboration with ERFN and based on the results of studies completed by ERFN to date.
ERFN-190	EIS Section 12.2.4.2 Potential Project Related Effects	While Section 12.2.4.2.1 does consider the effects of population changes related to the Project on demand for housing and general concerns with the in-and-out migration of LSA residents, it doesn't address the full range of potential impacts associated with a transient workforce.	Section 12.2.4.2 must include an assessment of all potential effects of a transient workforce and changes to population dynamics, including those disproportionately experienced by women and other segments of the population. This should incorporate findings of research like the 2017 study completed by Lake Babine Nation and Nak'azdli Whut'en (*Indigenous Communities and Industrial Camps*), and/or

			related research in the context of the LSA.
ERFN-191	EIS Section 12.2.4.2 Potential Project Related Effects	While Section 12.2.4.2.2 does include consideration of the effects of increased income on existing issues for LSA residents including substance abuse and domestic violence, corresponding mitigation measures in Section 12.2.5 are limited to training and programming on the Project site, which is not sufficient to address these potential impacts and should not be considered sufficient to prevent residual effects.	Section 12.2.5 must also include Denison's commitments to support the establishment and improvement of social services and wellness programs located in, led and implemented by each of the Indigenous communities in the LSA through the provision of funding and other resources.
ERFN-192	EIS Section 12.2.4.2 Potential Project-Related Effects	Despite acknowledging in its characterization of the existing environment for income of local workers in Section 12.2.3.2 that "the traditional economy in the LSA provides important non-cash income to citizens and contributes to the overall sense of well-being for communities" (p. 12-64), and that "Wheeler River is a culturally and economically important area for ERFN and a place where fishing, hunting, and trapping occur throughout the year" (p. 12-65), the assessment of potential project related effects for this KI in Section 12.2.4.2 only considers effects on personal income for residents of the LSA through employment on the Project.	The assessment of effects for income and financial well-being must be expanded to include participation in the traditional and subsistence economy, the Project's potential effects on ERFN's fishing, hunting and trapping and the relationship between participation in the traditional economy and the overall sense of well-being for communities, which Denison acknowledges in Section 13.3.2.3.
ERFN-193	EIS Section 12.2.4.2 Potential Project-Related Effects	Despite acknowledging in its characterization of the existing environment for community cohesion in Section 12.2.3.3 that ERFN's practice of traditional activities such as hunting, fishing, trapping and gathering is a crucial component of	The assessment of effects for community cohesion must be expanded to include all the Project's potential effects on ERFN's practice of traditional activities, including fishing, hunting and trapping.

		community cohesion and well-being (p. 12-70), Denison's assessment of effects for this KI in Section 14.2.4.2.3 only considers time spent by LSA residents employed by the Project away from their communities and families during work rotation. While employment and participation in the Project by ERFN citizens is optional, the Project has broader direct impacts on the Ancestral Territory, effecting all ERFN citizens. Therefore, regardless of whether employment interferes with aspects of Community Well-Being, the existence of the Project will change the manner in which all ERFN citizens interact with Nuhtsiye-kwi Benéne, and in turn ERFN's overall community cohesion, Community Well-Being and Quality of Life.	
ERFN-194	EIS Section 12.2.6 Residual Effects Evaluation	Section 12.1.6 of the EIS defines a significant adverse residual effect on Cultural Expression as "an effect that is highly different from baseline conditions and trends and cannot be managed or mitigated through adjustments to existing programs, policies, or other mitigation." The EIS goes on to state that "because residual adverse effects on Cultural Expression are not expected to result in this level of change, effects are expected to be not significant for the Project." ERFN does not agree with this assessment of the potential residual effects of the Project, which is fundamentally deficient based on the limited scope of Kis and measurable	Until Section 12.2 is revised to include a more holistic consideration of Kis and measurable parameters for Community Well-Being that ERFN has set out above, Denison's assessment of the nature of potential Residual Effects should be considered incomplete and deficient. In addition, until ERFN provides confirmation to CNSC that Denison and ERFN have reached mutually agreed upon terms of mitigation and accommodation that address the effects of the Project on Community Well-Being, this EIS should not be considered complete or approved by CNSC.

		parameters that were selected for analysis. ERFN also does not agree that the mitigation measures presented in Section 12.2.5 are sufficient to address effects of the Project on Cultural Expression that will be highly different from baseline conditions.	
ERFN-195	EIS Section 12.3.3.1 Methods and Limitations	Traffic volume data for Highways 914 and 165 are based on short term traffic counts conducted over a 48-hour counting period, however, continuous traffic monitoring data and subsequent average daily traffic volume reports are not produced for these highways. This traffic data is infrequently updated and only provides a snapshot of actual traffic conditions which may not be representative of actual conditions. The impacts of the Project to ERFN's rights and interests related to increased traffic and access to the Project area is a crucial concern, and an accurate baseline of traffic data is vital to the integrity of the subsequent assessment of potential effects, development of mitigation measures, residual effects evaluation and characterization of cumulative effects.	Denison should establish long-term traffic monitoring stations along Highway 914 and 165 to provide a more accurate description of existing traffic conditions along these key access routes for the Project.
ERFN-196	EIS Section 12.3.6.1 Residual Effects Characterization	Denison states a significant effect on the Infrastructure and Services VC (including the measurable parameters of traffic and community infrastructure and services, and emergency services) would result if projected demands are above the current capacity, are routinely above the current levels for an extended	Denison must demonstrate plans to be largely self-reliant on internal emergency response measures, and able to sustain emergency management until transportation is available to or from the Project area either by air or ground.

		period of time, are unlikely to return to existing conditions, and cannot be mitigated through adjustments to programs, policies, plans, or through other mitigations. Local and regional emergency services are limited and could be easily overwhelmed by even moderate scale emergencies.	
ERFN-197	EIS 12.3.4.2.1 Potential Effect 1 – Change in Traffic	While Section 12.3.4.2.1 describes Denison's assessment of changes to traffic volume during Project construction, operation and decommissioning, this section of the EIS does not go on to describe how the effects of increased traffic may interact with traditional land use and Quality of Life, which is the overall valued component considered in Section 12 of the EIS.	Section 12.3.4.2.1 should be modified to include an analysis of how the Project's change to traffic conditions and road use will result in effects to traditional land use and Quality of Life, and include mitigation measures to address these potential effects.
ECONOMICS			
ERFN-198	EIS Section 13.1 Scope of the Assessment	The guiding questions are narrowly focused and could be expanded to understand impacts from a GBA+ perspective. The questions do not ask how the Project will help to retain economic benefits for LSA communities.	The assessment could be enhanced by reviewing the findings from a GBA+ perspective. The assessment should make clear recommendations to help LSA maximize potential economic effects.
ERFN-199	EIS Section 13.1 Scope of the Assessment	"Characterize existing conditions"; This could be enhanced by forecasting the baseline conditions without the project to match the temporal boundaries of the project, as well as characterizing existing conditions.	Forecasting key indicators and measurable parameters without the project based on trends and existing conditions could enhance the assessment.
ERFN-200	EIS Section 13.1.2 Key Indicators and Measurable Parameters	Based on the Terms of Reference, the Traditional Economy could be a separate VC. However, the Draft EIS	Given the importance of the Traditional Economy to ERFN, selecting it as a separate VC with a set of Key Indicators could enhance the

		considers Traditional Economy as a Key Indicator (KI).	assessment and monitoring of the potential Project's effects.
ERFN-201	EIS Section 13.1.2 Key Indicators and Measurable Parameters	Typo, the Economy VC is comprised of five, not four KIs.	Fix typo.
ERFN-202	EIS Section 13.1.2 Key Indicators and Measurable Parameters	Direct/Indirect/Induced for employment and income – Direct employment/income could be outside of the LSA or RSA.	Acknowledge that Direct employment in this assessment is limited to the direct employment by Denison and contractors in the Study areas
ERFN-203	EIS Section 13.1.2 Key Indicators and Measurable Parameters	Indirect/Induced for employment; the suggested measure for indirect and induced employment is aggregated employment and unemployment rates; Input-output modelling could be used to estimate indirect and induced employment.	Enhance measurement of indirect and induced employment through input-output modelling. This would help understand the other enabled employment impacts of the project.
ERFN-204	Table 13.1-1: Key Indicators and Measurable Parameters for Economy	Measurable parameters employment and training; employment is limited to direct project-related employment opportunities. There are 2 issues: 1. It is implied that many of these opportunities will be captured by fly-in/fly-out workers that won't impact the LSA. 2. There's no estimating of the quantity of indirect and induced employment. Indirect and induced employment can often represent the same number of jobs provincially as direct employment. The question for all these jobs is how many of them will be captured in the LSA and RSA.	Recommendations 1. Estimate indirect and induced employment impacts using input-output modelling. Recommendation 2. Estimate the number of direct and indirect jobs that will be captured in the LSA and RSA vs. out of the study area. Induced jobs in the study areas could be proportional to the percentage of total direct and indirect jobs captured in the study areas. Regardless of the methodology Denison uses, an estimate of the economic impact on local employment in the LSA and RSA would add to the assessment.
ERFN-205	Table 13.1-1: Key Indicators and Measurable Parameters for Economy	Measurable parameters – Income; Wages and salaries paid by Denison are only part of the income impact in the study areas. Not all the income	Income impacts in the community should be based on the same employment capture assumptions that are used for capturing employment.

		will be captured in the study areas, and some income will be generated through indirect and induced activities.	
ERFN-206	Table 13.1-1: Key Indicators and Measurable Parameters for Economy	Measurable parameters – Income; Income disparity is not included in the measurable parameters; Projects that can create relatively high-paying jobs for some of the residents in a community can create income disparity. This can result in increases in household costs for all residents. The impact of the project on income disparity could be important.	Consider adding income disparity as a measurable parameter of the Income key indicator.
ERFN-207	Table 13.1-1: Key Indicators and Measurable Parameters for Economy	Business opportunities does not look at the impact of the project on the labour supply for existing businesses. Relatively high-paying jobs associated with the project could result in existing businesses not being able to hire and retain the employees necessary to operate their businesses.	The assessment could be enhanced by including impact on labour for existing businesses as a measurable parameter for the Business Opportunities Key Indicator.
ERFN-208	Table 13.1-1: Key Indicators and Measurable Parameters for Economy	Measurable parameters: Doesn't specify that measurable parameters will be looked at in a disaggregated fashion.	The assessment could be enhanced by collecting disaggregated data on these measurable parameters when it was available. Project impacts of the key indicators are likely not homogeneous across all demographic factors.
ERFN-209	EIS Section 13.1.3.2 Temporal Boundaries	The existing environment focuses on the past three census periods (2006, 2011, 2016). The assessment would benefit from reviewing and incorporating data from the latest census.	Incorporate demographic and economic data from the 2021 Census.
ERFN-210	EIS Section 13.1.3.2 Temporal Boundaries	The temporal boundaries seem appropriate, but the existing conditions without the project do not	Forecast baseline measurable indicators without the project for the temporal boundaries presented in the assessment.

		forecast what the measurable indicators will be without the project.	
ERFN-211	EIS Section 13.2 Existing Environment	Most of the data presented in 13.2.1.4/13.2.1.5/13.2.1.6 only shows percentages of participation. The associated nominal values are unclear. .	Because the nominal values are important for understanding the scale of impact of the project, add nominal values throughout the sections. This is important because the entire LSA has only 875 people in their labour force. How is that spread across the different communities? Small changes in these variables could be material to the different communities.
ERFN-212	EIS Section 13.2.1 Key Indicator: Employment and Training	The Draft EIS stated, "due to the small populations of La Plonge and Patuanak, data from Statistics Canada have been suppressed to protect confidentiality. Accordingly, data for the LSA are not fully representative, but the effect on reported statistics is believed to be minimal at the LSA level, given the low population of those two localities" (p. 13-18).	The random rounding for small populations makes the census data unreliable as an absolute indicator. Denison has done a good job using qualitative interview data to add to the baseline understanding of unemployment. Given the challenges in the census at capturing unemployment for these small populations, specific details for measuring unemployment as part of the monitoring plan would be valuable.
ERFN-213	EIS Section 13.2.1 Key Indicator: Employment and Training (all indicators)	The data are not presented from a GBA+ perspective, limiting the assessment's estimate of the Project adverse or disproportionate impacts separated based on gender, sexual orientation, race, or other factors which have historically been used to disadvantage populations interacting with mining projects.	Complete the assessment using a GBA+ framework.
ERFN-214	EIS Section 13.2.1.5 Employment by Sector	The employment by industry sector shows that the LSA has a higher concentration of employment in mining than the RSA and the province as a whole. This suggests that not all the jobs associated with the project will go to a fly-in/fly-out work force. Employment in the LSA could be	Do not rule out effects due to the fly-in/fly-out nature of the project (municipal revenue, indirect and induced employment, and income).

		impacted by the project: Many workers are already in the mining industry.	
ERFN-215	Figure 13.2-5: Employment by Industry Sectors for the Local Study Area by Sex, 2016	Participation in the industry by gender was presented. This aids in understanding employment in a disaggregated manner.	Good addition to help understand the potential for disproportionate effects of the project on different genders in the LSA.
ERFN-216	EIS Section 13.2.2.1 Total Personal Income	Personal Income data is presented for the LSA for Indigenous and non-Indigenous individuals, but the make-up of the population (Indigenous vs non-Indigenous) was not presented.	Include nominal values to show the size of the Indigenous and non-Indigenous populations in the LSA.
ERFN-217	EIS Section 13.2.2.1 Total Personal Income	Income disparity was discussed and presented (average to median income assessment). This was positive as it set up the potential for estimating the impacts of the project on income disparity.	This was a good addition to help understand baseline income disparity.
ERFN-218	EIS Section 13.2.3 Key Indicator: Traditional Economy	Some baseline data is missing from this section. Traditional economy baseline data is presented in the project's effects section for the first time. Specifically, the commercial harvester who had traplines near the project site was not identified in this section, nor was the typical locations of non-commercial harvesting identified . These are referenced in the effects section. It would be helpful if they were previously introduced.	Add the baseline elements of the Traditional Economy referenced in the effects section to the baseline section.
ERFN-219	EIS Section 13.2.3 Key Indicator: Traditional Economy	Kineepik M é tis Local and Pinehouse Lake member concerns and thoughts about the impact of the project should likely be in the effects section, not the baseline.	Move information related to the effects of the project to the project effects section.

ERFN-220	EIS Section 13.2.4 Key Indicator: Business Opportunities	There is no discussion on challenges local businesses have in finding labour to operate their businesses.	Adding the challenges of local businesses to finding labour would enhance this section.
ERFN-221	Table 13.3-1: Potential Project Interactions for Economy	The Traditional Economy may have interactions with other phases/activities of the Project, and the interactions are not limited to only employment and expenditures. Project activities and the presence of the Project may interact with current and future Traditional users.	Work with traditional users and Knowledge Holders to review the approach of outcomes of the assessment to the Traditional Economy.
ERFN-222	EIS Section 13.3.2 Potential Project-related Effects	The assessment does not quantify anticipated effects for LSA communities and relies on a qualitative and subjective assessment.	Review existing baseline data and run scenarios (best, likely, worst case) to estimate potential capture with the LSA for economic benefits. Denison should conduct an analysis to estimate KI changes in LSA and RSA.
ERFN-223	EIS Section 13.3.2.1 Potential Effect 1 – Employment and Training (p.13-61)	The Draft EIS states, "training programming will be determined in consultation with COI and are anticipated to involve existing training facilities and programs (Process Operation Technical [SIIT] Meadow Lake, Chemical Technology [Saskatchewan Polytechnic]) as well as specific ISR training, where required. Denison will initially prioritize Indigenous and non-Indigenous communities in the LSA in terms of employment and training opportunities" (p. 13-61). However, Denison has not made firm commitments as of now.	(i) Clarify how Denison plans to prioritize Indigenous and non-Indigenous local communities in terms of employment and training. (ii) Establishing a local recruitment and training centre within a nearby community would enhance the positive impacts of the Project on Employment and Training.
ERFN-224	EIS Section 13.3.2.1 Potential Effect 1 – Employment and Training	Presentation of historic baseline participation and employment rates in the effects section. The effects of the project on these measurable indicators are missing.	Remove the presentation of baseline data of these indicators. Add the estimated effects of the project on these indicators

ERFN-225	EIS Section 13.3.2.1 Potential Effect 1 – Employment and Training	The draft EIS states, "training opportunities are anticipated to be delivered by institutions in northern Saskatchewan or Saskatchewan more broadly and will be determined in consultation with LSA communities" (p. 13-64)	Supporting local hiring practices through the establishment of a local recruitment and training centre within a nearby community for ensuring Indigenous and non-Indigenous members have a pathway to having higher quality positions than general labour or junior positions. This would enhance the positive Project impact on Employment and Training.
ERFN-226	EIS Section 13.3.2.3 Potential Effect 3- Traditional Economy	The potential effects on the Traditional Economy are likely underestimated. . The erosion of traditional economic practices resulting from the cumulative effects of resource projects is a concern voiced by ERFN.	Work with traditional users and Knowledge Holders to develop a robust compensation plan, considering future users.
ERFN-227	EIS Section 13.3.2.4 Potential Effect 4 – Business Opportunities	The economic impact of the sustaining capital and operating spending in the LSA and RSA is not estimated.	Forecast the economic impact of the sustaining capital and operating spending in the LSA and RSA using input-output modelling, or other techniques based on assumptions about the percentage of spending captured by local businesses in the LSA and RSA.
ERFN-228	EIS Section 13.3.2.4 Potential Effect 4 – Business Opportunities	The impact of the project on business to hire and retain labour to support existing business operations has not been addressed.	Forecast the impact of the project on existing businesses access to labour to support existing operations.
ERFN-229	EIS Section 13.3.2.4 Potential Effect 4 – Business Opportunities	The Draft EIS states, "Denison has established an internal procurement approach that requires the procurement of all goods and services for the Project to first consider businesses based within the LSA communities prior to looking elsewhere in northern Saskatchewan, southern Saskatchewan, and/or outside of Saskatchewan throughout all phases of the Project" (p. 13-68). There were limited specifics associated with this commitment.	Clarify how Denison plans to develop procurement strategies that favour local works and businesses. Engage Indigenous and non-Indigenous businesses in the development of these procurement strategies.

ERFN-230	EIS Section 13.4 Mitigation and Enhancement Measures	Mitigation measures are vague and require more clarity. How Indigenous and local hiring will be prioritized and maximized, the likelihood and type of local procurement and training opportunities should be clearly outlined.	Develop a robust and clear set of actions to maximize potential benefits to LSA.
ERFN-231	EIS Section 13.4 Mitigation and Enhancement Measures	The workforce transition plan will be a key mitigation measure to protect the LSA communities against any boom-bust effects of the Project. More clarity on this plan, including financial commitments to ensure the long-term economic benefits for the LSA, are needed. This plan should also address transition planning for any local businesses working with the Project.	Provide details with financial commitments in the workforce transition plan. This should be developed prior to Project approvals and should be revisited on an ongoing basis.
ERFN-232	EIS Section 13.5.1 Residual Effects Characterization	The residual impacts on employment are said to be positive and low to moderate, without quantifying the impact. At points in the analysis, it is said that there will be little impact on employment and residency due to the fly-in/fly-out nature of the project. Then in this section it is said that the impact on employment could have a moderate effect on the economy. This could cascade to a moderate impact on income disparity, business access to labour, and municipal government cost driven by community growth.	Quantify the impacts on employment. Cascade the impacts on employment to impacts on income, business opportunity and government finance.
ERFN-233	EIS Section 13.5.1.2 Income	The residual impact on Income is seen as positive and moderate. This analysis does not consider the impact on income inequality and how that could impact the LSA and RSA. This might change to direction of the impact.	Include income disparity as a measurable impact in the analysis and determine if it changes the direction of the impact of the project on Income.

ERFN-234	EIS Section 13.5.1.3 Traditional Economy	The residual impact of the project on the traditional economy is seen as having a magnitude of negligible to low. The characterization of the ability of the workforce to participate in the traditional economy as being minimal or low does not seem to be supported by the evidence presented. Evidence presented indicated that some workers at other similar facilities felt that their ability to participate in the traditional economy had been negatively impacted (13-67).	Provide additional evidence to support the magnitude of the impact as being negligible to low or adjust the magnitude of the impact. The magnitude of the negative impact could potentially be reduced if Denison proposed additional time off be granted to workers to participate in traditional seasonal harvesting activities.
ERFN-235	EIS Section 13.5.1.3 Traditional Economy	The residual impact of the project on the traditional economy is seen as having a reversibility as fully reversible. The assessment doesn't address the contribution of participating in the traditional economy's impact on social customs and relationships. This effect was identified in the baseline (p. 13-51), but not assessed in section 13.3.2.3. If there is a more than low impact on the traditional economy, this could have a lasting impact on social customs and relationships. This might make return to the traditional economy not as fully reversible as the analysis proposes.	Provide additional evidence as to how impacts to the traditional economy won't impact the social customs and relationships, or how if it does these will be able to be reversed after decommissioning.
ERFN-236	EIS Section 13.5.1.4 Business Opportunities	The residual impact of the project on business opportunities has a direction of positive. The assessment does not include the impact of the project of existing businesses' access to labour to support ongoing business operations. If the project negatively impacts existing businesses' access to labour the direction of the impact on business opportunity could change.	Assess the impact of the project on existing businesses access to labour. Re-assess the direction of the residual impact if necessary.

ERFN-237	EIS Section 13.5.1.4 Business Opportunities	The residual impact of the project on business opportunities has a direction of positive. The assessment doesn't include the impact of the project of existing businesses' access to labour to support ongoing business operations. If the project negatively impacts existing businesses' access to labour the direction of the impact on business opportunity could change.	Assess the impact of the project on existing businesses access to labour. Re-assess the direction of the residual impact if necessary.
ERFN-238	EIS Section 13.5.2. Summary of Project-related Residual Adverse Effects on Economy	The effects of the Traditional Economy are likely underestimated. The effects from a GBA+ perspective are unknown. The potential boom-bust effects of the Project are not considered.	See above
ERFN-239	EIS Section 13.5.2 Summary of Project-related Residual Adverse Effects on Economy	The residual adverse effects and economy summary may need to be updated if some of the additional analysis is done.	Re-assess the residual adverse effects on the economy after updating the residual effects on the other key indicators. Revise as necessary the Economy Summary.
ERFN-240	EIS Section 13.7 Monitoring and Follow-up	There is very little information on how the economic environment will be monitored.	Develop a clear monitoring and follow-up plan with ERFN, addressing each of the Key Indicators and outlining the measurements and reporting that will be undertaken.
ACCIDENTS AND MALFUNCTIONS			
ERFN-241	EIS Section 14.2 Scope, Scale, and Objectives of the Assessment	Denison notes that the overall objective of Section 14 Accidents and Malfunctions is to "evaluate the potential effects to human health or the biophysical environment resulting from radiological and conventional accidents and malfunctions in consideration of proposed environmental protection measures" however, continue to state that "some hazards related to work safety were identified; however, worker safety	Denison must include assessment and consideration of all worker safety risks and consequences associated with accidents and malfunctions for this section to be considered complete. Without this section reviewers are unable assess the broader impacts of the projects and the overall risks to both the environment and society in which this project is set. This request is in alignment with REGDOC-2.9.1 Section A.3.4 which notes that "[t]he applicant should provide an assessment of potential health and environmental effects

		(i.e., risks and consequences) is beyond the scope of this assessment." The lack of full consideration of worker safety with respect to radiological hazards suggests that Denison have failed to identify and consider the full range of accidents, as many of the greatest risks with this project are directly related to worker health and safety, and expand well beyond the health of any one individual (e.g., impacts to worker health and safety may have direct impacts on aquatic or terrestrial conditions, as well as socio-economic perceptions of the mine).	resulting from postulated radiological and conventional malfunctions or accidents." Our interpretation of this wording is that it applies to both environmental and human health which includes both public and worker health.
ERFN-242	EIS Section 14.4 Influence of Indigenous Knowledge, Local Knowledge, and Engagement on the Assessment	Examples of Influence of Indigenous Knowledge, Local Knowledge, and Engagement on the Assessment outlined in section 14.4 only demonstrate that concerns were raised during engagement activities, however, Denison fails to demonstrate how it included specific Traditional Knowledge both in the assessment of Accidents and Malfunctions, as well as how Traditional Knowledge would be used in monitoring and or response in the event of an accident or malfunction. As a result, we assert that Denison has done a poor job of meaningfully considering the input from ERFN and others.	Denison must demonstrate how Traditional Knowledge, not only community concerns, was considered in the assessment of accidents and malfunction including risks, monitoring, and proposed interventions and mitigations.
ERFN-243	EIS Section 14.4 Influence of Indigenous Knowledge, Local Knowledge, and Engagement on	Table 14.4-1 outlines a summary of engagement records related to accidents and malfunctions; however, Denison does not provide sufficient information regarding the concern	Denison must provide complete engagement records outlining full comments/concerns with the context in which they were presented in order to demonstrate that these concerns were

	the Assessment; Table 14.4-1	which was actually raised and context in which it was raised. Specifically, in many cases, Denison only present a handful of words as the "comment" and then speaks to assessment consideration, but reviewers are unable to identify the concern which is actually being raised in most cases. As a result, Denison is able to present a solution for assessment consideration to a concern which is not identified.	indeed appropriately considered in relation to the assessment of accidents and malfunctions.
ERFN-244	EIS Section 14.4 Influence of Indigenous Knowledge, Local Knowledge, and Engagement on the Assessment; Table 14.4-1	Table 14.4-1 outlines many of the concerns raised through engagement with ERFN and others, however, Denison only point to these concerns being addressed and considered in the Emergency Response Plan and other documents which have not yet been drafted. We find it inappropriate for Denison to continue to defer meaningful discussions about potential impacts and ability to respond beyond the EIS stage. It is necessary to fully understand Denison's mitigation and response for all foreseeable events at this stage in order to evaluate possible residual effects of this project.	Denison must provide a draft version of the Emergency Response Plan which outlines all foreseeable effects pathways associated with accident or malfunction, monitoring options to ensure accidents or malfunctions are appropriately detected, and possible consequences and interventions as a result of an accident or malfunction.
ERFN-245	EIS Section 14.5.1 Overview	Denison has identified several risk scenarios as part of the accidents and malfunctions analysis; however, it has not conducted an effects pathway assessment with ERFN directly, allowing Denison and ERFN citizens to communicate concerns associated with the project and potential accidents and malfunctions. As a result, we see that Denison's accidents and malfunctions assessment to be	Denison should provide appropriate capacity and support to enable ERFN to engage Denison in establishing an effects pathway assessment to ensure that monitoring, mitigation, and intervention associated with all potential environmental impacts appropriately consider ERFN TK and input, based on how the land is used and the societal impacts of this project.

		narrow in scope and only speak to western science perspectives.	
ERFN-246	EIS Section 14.5.2 Process Hazards Analysis	Denison note that while there are standards and regulatory documents which govern the assessment of risk and probability for an accident or malfunction associated with a reactor facility, similar REGDOCs do not exist for a mining environment. ERFN agree that REGDOCS focusing on risk and probability assessment for a reactor facility is not overly appropriate to a uranium mine facility. However, there remain additional hazards which do not occur at non-nuclear facilities (e.g., non-uranium metal mines), that should be considered.	Denison should demonstrate how it utilized lessons learned from other uranium mines in the regional context (e.g., McClean Lake, Cigar Lake, and McArthur River), as well as other ISR facilities in the United States and elsewhere to ground the Hazards Analysis.
ERFN-247	EIS Section 14.5.2 Process Hazards Analysis; Figure 14.5-2	Denison outlines in Figure 14.5-2 a matrix considering likelihood and consequence severity of an accident or malfunction. This approach is used widely in environmental assessment, however, the definitions used to delineate consequence are not appropriately framed through the lens of ERFN land users who live near the facility and use the lands resources which would be affected to exercise rights and traditional practices. As a result, we find the term consequence severity to be superficial.	Denison must consider, in its hazard analysis risk matrix, not only the potential impacts to human and environmental health, but also consider by extension the impacts to society, land use, traditional and non-traditional economic factors, and importantly, perceptions in the event of an accident or malfunction. For example, while an accident or malfunction may only have a narrow physical footprint in which the environment is impacted, this incident ,especially if associated with a radiological event, could have a much larger perceived area of impact. As a result, the consequence severity may be much greater when viewed through the perspective of ERFN land users rather than what is measurable through western scientific methods.
ERFN-248	EIS Section 14.5.4 General Design and Mitigation Considerations	Section 14.5.4 outlines general design and mitigation considerations for the project. In the preface for this subsection, Denison outline intentions and commitments to "setting high	Denison must do more to appropriately identify, assess, and proactively propose meaningful options for mitigations to be considered. Specifically, ERFN expects that Denison outline specific hazards, and

		standards for various aspects of its operations, which will serve to mitigate potential Project-related effects." However, only provide a generic overview of measures and features which they are considering. They do not present options and analysis for the consideration of these measures and therefore ERFN are unable to conduct any sort of meaningful assessment of whether they will be effective.	discussion on measures which will proactively prevent impact and alternative measures to serve as contingency.
ERFN-249	EIS Section 14.5.4 General Design and Mitigation Considerations	Denison note that "the processing plant will be designed with expert consideration of potential environmental and health and safety effects to mitigate interactions to the extent possible." While we do not suspect that this wording implies that other aspects of the project will not be designed with expert consideration of potential environmental and health and safety effects in mind, this statement perfectly exemplifies the frustration ERFN faces in meaningfully evaluating the potential mitigation measures, which are absent.	ERFN requests that Denison provide detailed design and activity options based on each identified risk such that the effectiveness and appropriateness of each measure can be adequately assessed.
ERFN-250	EIS Section 14.5.6 Definition of Bounding Scenarios	Denison notes that "the processing plant will be designed with expert consideration of potential environmental and health and safety effects to mitigate interactions to the extent possible." While we do not suspect that this wording implies that other aspects of the project will not be designed with expert consideration of potential environmental and health and safety effects in mind, this statement perfectly exemplifies the	We request that Denison provide detailed design and activity options based on each identified risk such that the effectiveness and appropriateness of each measure can be adequately assessed.

		frustration ERFN faces in meaningfully evaluating the potential mitigation measures, which are absent.	
ERFN-251	EIS Section 14.5.6 Definition of Bounding Scenarios; Table 14.5-2	Loss of freeze capacity is identified as High Risk. Based on the risk matrix outlined in Figure 14.5-2 the overall risk is based on both likelihood and consequence severity. It is however unclear the circumstance which led the loss of the freeze capacity to be evaluated as high risk (similarly, failure of the freeze wall is identified as moderate risk, however, again the factors which led to this initial risk characterization are not discussed). ERFN agrees that the consequence severity for loss of freeze capacity and failure of freeze wall to be amongst the greatest for this project, however, what is unclear is whether Denison is suggesting the likelihood is also elevated.	ERFN requests that Denison provides an overview of factors which led them to the characterization of risk as presented, including both likelihood, consequence severity, and rational for why those risks were determined to fall within each respective likelihood and consequence severity levels.
ERFN-252	EIS Section 14.6.1.1.1 Release Characterization	ERFN questions the approach used to assess the dissolution rate of uranium on a number of factors. a) Denison uses concentrate samples from the McClean Lake operation as a proxy for yellow cake produced at the Wheeler River project, without providing discussion as to whether these are truly interchangeable for the purposes of assessing solubility. Given the significant differences in processing, it is unclear whether McClean Lake samples are an appropriate proxy.	Denison must provide additional information regarding the methods used to model possible uranium flow, including providing a particle dispersion map of the downstream environment to illustrate expected movement and areas which could be effected in the event of an accident and spill.

		b) The information provided outlining the rate at which uranium will come out solution is not clear. Specifically, we raise concerns that solubility (4,800 ug/L) is used directly to measure the rate of dissolution. Solubility and dissolution rate should have an inversely proportionate relationship. c) Denison make an assumption that only dissolved (soluble) uranium will be mobilized by water. This is not accurate as flowing water can mobilized material which is not dissolved either as bed load or as suspended load, which may travel significantly downstream. d) Denison indicates that "that most (98% of the mass) of the uranium concentrate is expected to settle within a short distance of the release (i.e., within approximately 20 m of the release point), even under high flow conditions in the Wheeler River due to a relatively slow water velocity (<0.8 m/s)." This is a very narrow range of expected impacts; however, insufficient information has been made available to understand the spatial modelling that has been conducted to support this assertion.	
ERFN-253	EIS Section 14.6.1.3 Evaluation of Probability	Generalized national or provincial transportation accident statistics is not an appropriate proxy given the unique conditions which face transportation of material from the Wheeler River site. Specifically,	Denison must consider the additive or interactive effects of the road conditions unique to the Wheeler River project, which may increase accident rates beyond that of conventional roadway accident statistics.

		generalize statistics do not consider the increased risks of driving on a remote roadway, that is poorly lit and has frequent encounters with wildlife.	
ERFN-254	EIS Section 14.6.1.4.2 Exposure Assessment	The assessment of risk associated with a vehicular accident in which uranium is spilled into Wheeler River does not consider either the psychological/ perceived impacts of the spill, in which ERFN citizens may be less likely to want to interact with the river following an accident regardless of whether the spill was appropriately cleaned up, or the impacts to fish and aquatic habitat as a result of cleanup efforts. Given the need to clean the physical substrate significant amounts of fish habitat would be destroyed in order to effectively remediate a spill site.	Denison must consider the secondary implications of mitigation measures and interventions in the event there is an accident resulting in a spill.
ERFN-255	EIS Section 14.6.3.1 Scenario Description	Denison note that the freeze wall will require a minimum of 12 months to thaw in the event of freezing system failure. It is unclear where this value originated from and the factors which contribute to such a slow thawing cycle.	ERFN requests that Denison provide modelling data for the thawing rates of freeze wall based on the geological properties to be encountered by the freeze wall.
ERFN-256	EIS Section 14.6.3.3 Evaluation of Probability	Denison notes that a probability value of 1 x10-7 was established for the likelihood of loss of freeze capacity based on professional judgement. ERFN contests this value as entirely speculative and offered without substance. There are a wide range of factors that may contribute to short and long-term reductions or losses in freeze capacity (e.g., power failure, equipment failure, maintenance), which are not discussed.	Denison must provide a more meaningful assessment of specific factors which could lead to the loss or reduction of freeze capacity, demonstrating how they may contribute to an overall likelihood of loss of freeze capacity.

ERFN-257	EIS Section 14.6.3.4 Evaluation of Consequences	Denison argues in sections 14.6.3.1, 14.6.3.3 and14.6.3.4 without substance that the risk of groundwater contamination due to the loss of freeze capacity is very unlikely. The lack of evidence presented to substantial these claims is alarming to ERFN. We agree that under normal circumstances the likelihood of the freeze wall failing allowing for groundwater contamination is on the lower end of the likelihood spectrum, however, we are not currently assessing effectiveness under normal circumstances, but rather as a result of accident or malfunction. Based on the discussion provided in section 14.6.3.4, there is great concern to ERFN that Denison would be a) able to detect the failure of a freeze wall and b) identify the exposure pathway to enable Denison to take appropriate action before catastrophic environmental impacts are observed.	ERFN is gravely concerned about the information put forward by Denison in section 14.6.3 regarding the risk assessment associated with likelihood and consequences of failure by the freeze wall. Denison has not presented a viable method to monitor the effectiveness of the freeze wall. Additionally, Denison indicates that there are no viable methods of detecting impacts or intervening until they are observed, indicating failure of the freeze wall. Finally, when speaking to the likelihood of an accident or malfunction, Denison only offer a best guess. ERFN requests that CSNC and Denison take seriously the possible threat to the environment and by extension ERFN Rights and interests associated with the failure of the freeze wall. We cannot overstate the need to provide additional analysis of contingency measures to avoid containment in the event the freeze wall fails to contain mining fluids and other sources of groundwater contamination associated with Wheeler River activities.
ERFN-258	EIS Section 14.6.4.1 Scenario Description	Denison suggests that the "low temperature of the formation in and around the compromised section of the freeze wall would most likely cause the fluids to freeze and seal or partially seal the opening, further reducing the rate of contamination." It is unclear how mining fluids may influence the freezing point of groundwater, and therefore allow mining fluids to either thaw the freeze wall or be immune to subsequent freezing by surrounding materials.	We request Denison provide a breakdown of expected freezing points for mining fluids or other liquids within the mining theatre which may interact with the freeze wall.

ERFN-259	EIS Section 14.6.4.1 Scenario Description	Denison speculates that migration of fluids from the mining theatre beyond a compromised freeze wall section would be slow due to low temperatures. a) This assertion is not supported by ground water modelling or other evidence accounting for groundwater flow, especially as liquids are being injected and extracted via ISR mine operations. b) If migration is indeed slow, it would imply that the detection of impacts would also be slow. This may mean that impacts from a compromised freeze wall may not be observed until after the mine has completed its production life. ERFN is therefore concerned that the inability to detect impacts may result in a legacy of contamination which may not be the responsibility of Denison if they are not detected until after the mine has completed closure and reclamation activities.	(i) Denison should provide detailed scenario based modelling to demonstrate expected flow rather beyond a compromised freeze wall. (ii) Denison should include an appropriate groundwater monitoring program surrounding the project to run throughout the entire lifecycle of the mine to best capture potential contamination and migration of mining fluids.
ERFN-260	EIS Section 14.6.5.2 Design and Mitigation Considerations	Radon is an odorless, colourless gas. While a burst pipe of vessel under pressure may result in obvious signs of a leak, leaky valves and or fittings may allow for radon to escape undetected.	Denison should identify measures to ensure that valves and fittings are inspected and maintained in routine intervals. Also, we recommend that radon detectors be installed and monitored near all enclosed infrastructure where radon gas may escape.
ERFN-261	EIS Section 14.6.6.1.1 Release Characterization	Denison assumes that in the event of an explosion 90% of the uranium would be trapped within the damaged dryer unit, however, fail to substantiate this assumption.	Denison should base assumptions on maximum risk scenarios rather than minimum or probable risk scenarios. As a result, we request that the LPF be equated to 1 rather than 0.1.

ERFN-262	EIS Section 14.6.6.2 Design and Mitigation Considerations	In speaking to design and mitigation considerations Denison only make hypothetical or aspirational commitments (e.g. "Denison would make sure that the design of the plant includes control measures to reduce exposure levels to workers and members of the public to levels that are as low as achievable.") These are not specific design considerations or hard commitments.	Denison should commit to best practices, including the implementation of specific measures rather than simply stating plans to commit the implementation of design and mitigation considerations.
ERFN-263	EIS Section 14.8 Key Findings and Conclusions	Denison has presented an accidents and malfunctions assessment that speaks only to a handful of concerns, while presenting in many cases minimal evidence to substantiate its assertions and assumptions. ERFN is very concerned by the lack of consideration for contingency planning associated with the identified risks.	ERFN does not consider section 14 sufficiently comprehensive or meaningful for the purposes of assessing risks.
EFFECTS OF THE ENVIRONMENT ON THE PROJECT			
ERFN-264	EIS Section 15.2.1. Existing Environmental Conditions	We agree that the probability of a significant seismic event effecting the project site is low, however, it is not zero. Further, given the inherent design of the project, which relies on the establishment of multiple closely spaced deep wells to be drilled for injection and extraction, well design must be such that it can withstand significant sheer forces associated with horizontal movement. Denison presents an inconclusive outline of design considerations to be incorporated to minimize risks to well structures, and the freeze wall as a result of a significant seismic event.	We request Denison provide an analysis looking at other similar projects to identify specific design considerations to mitigate risks to below-ground infrastructure as a result of seismic activity.

ERFN-265	EIS Section 15.2.1. Existing Environmental Conditions	Human induced seismic activity has been observed in association with the use of injection wells. This have been most notably observed in association with. hydraulic fracturing in the extraction of shale gas, where high-pressure fluid liquid is forced into geological formations with the intention of fracturing the rock to release trapped gasses. However, similar human induced seismic activity has been observed in other instances where injection wells are used, resulting in large changes of water or gas form underground reservoirs, creation of voids space, changes in pore-pressure, all have been associated with increases in seismic activity (Ellsworth, 2013). ERFN is concerned that similar human induced seismic activity may increase as a result of the extraction process being proposed by Denison.	We request that Denison provide evidence using examples of other in situ recovery uranium mines around the world to discuss the potential risks of increased seismic activity as a result of the proposed activity.
ERFN-266	EIS Section 15.2.2. Effects on the Project	Although seismic activity is unlikely, it is still possible. Given the inherent hazards associated with this project there is a need to ensure that project infrastructure can withstand all likely seismic events.	We request that Denison provide information on the magnitude and duration of a seismic event for which infrastructure will be designed to withstand. Included should be an analysis of the likelihood of such and event to occur at the project site.
ERFN-267	EIS Section 15.3.2 Effects on the Project	Denison notes that although potential exists for forest fires to occur during the life of the Project, fire is not expected to have a detrimental effect on the Project given the design features and mitigation measures that Denison with have in place with the Fire Protection Program, which will be developed specifically for the Project and based on proven programs at	(i) We request that Denison provide additional information on fire mitigation and suppression measures that are to be established and maintained to minimize the risk of fire to the project. Specifically, more information is needed to describe how infrastructure used in the extraction, handling, processing, and storage of uranium ore and products will be

		existing northern sites. Denison does not provide additional information on what mitigations will be included int he Fire Protection Program, nor does it provide information on which existing programs they will be based on. Forest fires present perhaps one of the greatest environmental threats to the safe operation of this project, as fires are frequent in the region, inherently difficult to control, and likely to increase as a result of climate change.	safeguarded against fire (such as the use of fire proof building materials). (ii) Additional information is requested on the existing northern sites used to inform the development of the Fire Protection Program. (iii) Denison does not contemplate risks or consequences of an uncontrolled fire affecting the project site. We request that additional information be provided modelling atmospheric dispersal potential of radioactive material from stockpiles and facilities in the event fire were to impact the project footprint.
ERFN-268	EIS Section 15.3.2 Effects on the Project	Denison notes that the potential for increased forest fire frequency and severity due to climate change in the coming decade, referencing Section 15.3.2. However, no additional information about the potential interplay between forest fires and climate change is discussed in this section beyond this sentence.	ERFN requests that Denison revise this section to either accurately cite the appropriate section reference or provide additional discussion on the potential impacts of increase forest fire frequency and severity on the project as a result of climate change.
ERFN-269	EIS Section 15.4.2 Effects on the Project Table 15.4-1	Denison notes that in response to major precipitation events, suitable equipment and design systems will be selected for the project to operate under heavy precipitation conditions, however, do not specific what design standard will be selected.	Given that climate change has the potential to increase the frequency and severity of heavy precipitation events, we request that Denison specify a design standard which outlines the return period for an event (e.g., 1 in 100, 1 in 500 event).
ERFN-270	EIS Section 15.4.2 Effects on the Project Table 15.4-1	Non-contact surface runoff may include water which contains elevated amounts of suspended solids or other water quality constituents which are greater than allowable for discharge	Please provide an outline of how Denison plans to monitor and appropriately intervene in instances where non-contact surface water runoff does not meet appropriate water quality

		to the environment as a result of contact with roadway surfaces, or modified landcover. The likelihood of poor water quality is greater in surface runoff during extreme and prolonged precipitation or melt events.	standards as a result of an extreme or prolonged precipitation or melt event.
ERFN-271	EIS Section 15.4.2 Effects on the Project Table 15.4-1	While it is logical for the water management infrastructure to be designed to allow for water to be transferred from pond to pond as required, during a significant or prolonged precipitation or melt event, water storage ponds are likely to all rise proportionately, making this mitigation potentially fruitless.	Please identify design considerations including maximum storage capacity, operational freeboard, spillway location and design, and excess treatment capacity which may allow for additional treated effluent discharge to environment in the event total pond capacity is exceeded.
ERFN-272	EIS Section 15.4.2 Effects on the Project Table 15.4-1	Denison notes that the system as proposed is designed to recycle a significant amount of the process water encountered, minimizing the amount of water that is needed to be withdrawn from Whitefish Lake. However, it is unclear from the description provided whether or not operational plan to be developed include considerations for minimum or maximum water levels within the storage ponds.	Please outline whether water storage ponds require a minimum amount of water to maintain operations of mine processes and function of the ponds themselves.
ERFN-273	EIS Section 15.4.2 Effects on the Project Table 15.4-1	Water takings and recycle may be effected during periods of extended drought. Increased water taking from Whitefish Lake may impact the water level in the lake, fish habitat, and use.	Please outline total water balance including maximum expected water takings from Whitefish Lake.
ERFN-274	EIS Section 15.4.2 Effects on the Project Table 15.4-1	The use of additional energy generation on site as a result of air conditioning will increase the carbon footprint of the project.	(i) Please provide analysis of how increased air temperatures will alter the overall carbon emissions to be produced by this project. (ii) In the event that diesel generators are required as a result of a power

			outage, please provide a synopsis of how operations may be impacted, including a reduction in operations to minimize carbon emissions associated with running generators. (iii) It is recommended that during summer months, alternative energy options are utilized rather than diesel generators to provide backup power. This will minimize the carbon and nitrogen dioxide footprint. Please provide information on how the use of emergency diesel backup generators has been included into the predicted nitrogen dioxide and carbon emissions/air quality assessment.
ERFN-275	EIS Section 15.4.2 Effects on the Project Table 15.4-1	Denison do not provide a discussion on the potential impacts of wind erosion on stockpiles or other dry-stacked materials during an extremely high wind event.	(i) We recommend that PM15, metals, and radioactive material be modelled under extreme wind conditions, demonstrating potential dispersal, and associated implications. (ii) We request that Denison develop appropriate mitigation plans for minimizing dust from roadways, stockpiles, and dry-stacked materials as a result of extremely high winds - including those associated with tornadic events.
ERFN-276	EIS Section 15.5 Climate Change	Denison notes that concerns related to climate change were raised during engagement and consultation activities, however, these concerns pertain to climate change rather than GHG emissions specifically. While this may be technically accurate, climate change and the release of GHG	Denison must recognize the inherent connectedness between its operation and climate change. Further, it is necessary that Denison implement meaningful and realistic approaches to minimizing its GHG emissions and contributions to climate change.

		emissions should be considered as synonymous as the cause-and-effect relationship is well established. Denison will be responsible for the emission of significant amounts of GHG, which although are difficult to quantify in their impact on the local and regional environment, contribute to climate change which is experienced at local, regional, and global levels.		
ERFN-277	EIS Section 15.5.3 Effects on the Project	Throughout much of the assessment on the effects of the environment on the project, Denison downplays the potential uncertainty due to natural events. This includes providing minimal discussion on the potential for flooding, excess snowfall, and tornadic events, as well as insufficient discussion on planned mitigation options for addressing effects of the environment identified.	(i) (ii)	Denison should provide analysis of potential effects of the environment on the project as a result of surface water flooding, excess snowfall events, and tornados on the project. Denison should provide additional information linking mitigation measures to possible effects of the environment, including specific design standards to demonstrate the project will be designed to minimize risks.
ERFN-278	EIS Section 15 General	The Wheeler River project is located in an area of discontinuous permafrost. This aspect is not identified or examined with respect to the potential impacts of the environment on this project. (i) We see this as a potential significant oversight as works conducted and infrastructure constructed on discontinuous permafrost may be impacted by	(i) (ii)	Denison must provide discussion on the presence or absence of discontinuous permafrost in RSA, and whether that permafrost will be impacted by project activities. Where permafrost may be impacted, Denison must quantify the amount of GHG that will be released from melting or disturbed permafrost areas.

			permafrost melt. As frost heave and slumping may adversely impact the project site.
		(ii)	Permafrost has an ability to trap methane and other GHGs from escaping into the environment. Permafrost which is melted or disturbed may release those gases. If permafrost will be disrupted by project activities, Denison must consider GHGs to be released as part of its impacts on the environment.

APPENDIX B: TECHNICAL MEMORANDUM – COMMENTS ON WHEELER RIVER PROJECT ENVIRONMENTAL IMPACT STATEMENT FROM SOURCE ENVIRONMENTAL ASSOCIATES

TECHNICAL MEMORANDUM

Date: **February 12, 2023**

To: **Cheyenna Campbell, English River First Nation**

From: **Patrick Littlejohn, Ph.D., P.Eng., Rina Freed, Ph.D., P.Eng., Farzad Mohamm, Ph.D., P.Eng., Pauline Mengote, B.A.Sc., EIT, Mike Lapointe**

Subject: **Comments on Wheeler River Project Environmental Impact Statement**

Source Environmental Associates (Source) was requested to review the Draft Environmental Impact Statement for the Wheeler River Project (hereafter, the EIS) on behalf of English River First Nation (ERFN). Source was requested to focus on mine water management of the Project as well as issues related to groundwater and groundwater contamination.

The main EIS document and associated appendices were retrieved from the Impact Assessment Agency of Canada's portal in January 2023[3].

The most critical topics identified through this review are what in Source's opinion is use of inappropriate groundwater remediation targets to allow for safe decommissioning of the project, the lack of incorporation of water recycle into quantitative water balance/water quality modeling, and the potential for predicted effluent of the Industrial Wastewater Treatment Plant to contravene the Fisheries Act/Canadian Metal and Diamond Mine Effluent Regulations.

Comments are divided by subject area but do not reflect an order of priority.

Freeze-wall/Leach Decommissioning

1. **Decommissioning Objectives**

Section 2.3.3.1.1 states that "the mining area decommissioning objectives have been developed through groundwater modelling work and are achievable based on metallurgical testing," Section 7.6.2.1 refers to decommissioning objectives. The objectives are not appropriate for environmental protection. Table 2.3-3 decommissioning objectives represents water quality that represents a substantial environmental risk and would need generations of monitoring to assess migration of this highly impacted plume. pH 4 is highly acidic and metal/radiation levels are concerning (200 Bq/l radium is 200 to 1000 times safe

limits). For species where baseline levels are higher than safe levels, baseline levels should be used a target.

[3] https://iaac-aeic.gc.ca/050/evaluations/proj/80178?culture=en-CA

Further effort should be taken to define the remediation goals that are achievable with best available technology and a commitment should be made to remediate to the maximum extent possible (until baseline levels are reached or the water is deemed suitable with not risk or need to monitor further). Funds spent to remediate will reduce the need for multi-generational monitoring and an unreasonable burden and risk on future generations (to monitor for a very long period of time).

An options assessment for decommissioning objectives should be conducted based on Best Available Technologies (BAT) for treatment of contaminated groundwater and non-degradation approaches for the decommissioning objectives. Consultation on decommissioning objectives is required. Please revise the project closure plan to reflect updated decommissioning objectives.

2. Groundwater Protection – Decommissioning Targets for Groundwater Remediation

To determine groundwater targets for decommissioning, the levels for groundwater protection from contaminated sites should be used for this project. This would involve use of typical numerical standards rather than the risk-based approach used in the EIS. A minimum level of protection is to define baseline groundwater levels where baseline is greater than WQGs for groundwater. It is acceptable to use the higher value as the target, with baseline being defined as 95% background.

As a point of reference, any groundwater decommissioning objective should be compared to the 95% background levels and/or numerical groundwater standards for contaminated sites at the depth of impact compared.

3. Groundwater Remediation by Replacement of Alkali

Over the course of the project, a certain mass of acid will be added into solutions for injection into the formation. Use of peroxide/ferric may indirectly add acid load via oxidation of sulphide minerals or other oxidation-reduction reactions. Some of the acid used in the project will be neutralized on surface as part of water treatment and discharge. The difference between total acid added to the formation and acid neutralized on surface through treatment represents the net acid load added to the formation and left underground. The EIS describes one mitigation for the leach area as being pumping alkali solution (i.e. caustic) into the leach formation to neutralize residual acid. The mass load of alkali used during decommissioning should be commensurate with the net acid load added to the formation throughout the Project. Mitigation planning along these lines is recommended for consideration to support development of more environmentally responsible decommissioning targets.

4. Achievability of Proposed Decommissioning Objectives

Section 2.3.3.1.1 on decommissioning and remediation of the mine area is vague and should be expanded. For example, certain reagents “may” be used, freshwater will be mixed with contaminated water as a remediation method, and remediation plans will be further refined.

Without prejudice to previous comments on the suitability of proposed decommissioning objectives (i.e. Table 2.3-3), the EIS requires a more specific plan on how decommissioning objectives will be achieved and how remediation targets will be assessed to be met.

5. Timing of Development of Decommissioning Targets

To be able to plan for decommissioning, targets are essential to be developed now at the EIS stage. Otherwise, the project could be unacceptable to communities in the long term and there is no recourse. Mitigation planning to meet the closure targets must be outlined conceptually so that bonding can be put in place to ensure the targets are met and the project is acceptable. With that in mind, development of targets and an approach to achieve these targets is required at the EIS level and should not be deferred.

6. Freeze Wall Decommissioning

The EIS states that the freeze wall will be allowed to thaw once recovered water meets the proposed mining decommissioning groundwater quality objectives and have demonstrated to be "stable over sufficient time". The freeze wall should be maintained until there is no longer a groundwater plume. It is not environmentally responsible to leave the risk in the ground to monitor for many generations with the optimistic assumption that such a plume will not reach receiving environments. There is no precedent in Canada for the approach of purposefully leaving heavily impacted mine water injected underground with the expectation that it will not reach surface water. Modeling of such a plume is inherently uncertain and the highly impacted water represents a significant environmental hazard/liability. The approach should be to fully mitigate the groundwater zone impacted until the targets are reached. The stress on communities is too high if a groundwater plume of acidity is left in the ground. Adequate neutralization is critical for the groundwater impact zone so that a plume does not develop. Similar to regulation of contaminated sites source areas and plumes, the site is not remediated until it meets this standard of care.

It is unclear from the EIS how it will be determined that the freeze wall is no longer required at the site. ERFN must be engaged in decision-making for thawing of the freeze wall after Decommissioning objectives have been met.

7. Risks of Reliance on Long Term Monitoring Post-Decommissioning

Section 7.8.2.2.4 groundwater monitoring, post-decommissioning outlines that monitoring will continue indefinitely, until "transfer of the site into the provincial institutional control program…" This ongoing monitoring requirement and stress on the communities and ongoing governance should be avoided or minimized to the extent possible by increasing the amount of remediation of the fluids to background levels. Purposely avoiding remediation efforts by passing the responsibility to ongoing monitoring adds significant uncertainty that objectives will be achieved, and should further mitigation be required, funds for execution would not be available from the closed project. Monitoring should be done as a last approach after all effort have been made to maximize remediation and minimize/remove the groundwater plume. For this project, the timelines and risks are too great to avoid mitigation measure for source control. The freeze wall, remediation pumping and treatment should continue until no further improvements are possible or targets are reached that reduce the need for long-term plume monitoring.

8. Groundwater Monitoring Locations

Please clarify what changes to the groundwater monitoring network established during Operations will be anticipated during Decommissioning, including potential pathways of water from the mine site to the receiving environment. Figure 7.8-2 on PDF page 618 of the EIS is meant to illustrate the conceptual groundwater monitoring network during Decommissioning; however the figure does not show the proposed monitoring locations. A conceptual map similar to Figure 7.8-1 would be valuable and aid ERFN in determining the adequacy of the monitoring network and assessing potential impacts to important water courses.

9. Application of Progressive Reclamation to Groundwater

The EIS mentions progressive reclamation in general terms. The concept of progressive reclamation is recommended to be applied to remediation of groundwater in the different zones of the leach field after leaching of the zone is complete. For example, progressive reclamation/remediation of the Phase 1 and 3 could be started while leaching of Phase 4 and 5 is underway.

Water Management

10. Incorporation of Water Recycle into Project Planning

The way water recycle is discussed and assessed in the EIS is inconsistent.

Section 2.2.1.4.6 states *"Once [Uranium Bearing Solution] UBS is recovered to surface, it will be pumped from the wellfield into the processing plant where uranium will be removed from the UBS (Section 2.2.2). The treated solution created can be refortified with reagents as required and pumped back into the mining area to maximize water recycling during the life of the mine……. No water recycling has been included in the water balances, although it is expected to occur."*.

Similarly, Section 2.2.3 states, *"Denison intends to recycle process water to the greatest extent possible, thereby reducing the demand for freshwater supply and volume of treated effluent. To develop a conservative assessment basis for the EA, the water recycled flows from the industrial wastewater treatment plant back into the processing plant and wellfield have not been incorporated into the estimates for freshwater withdrawal and treated effluent discharge."*. All models must be updated to include the operational strategy employed by Denison and actual conditions to occur during operations as best as possible.

From the perspective of fresh water withdrawal from the environment, evaluating the project water balance with the assumption that no water is recycled is conservative. However, from a water management and water treatment perspective the opposite is true as use of water recycle reduces risks by reducing the total amount of solution requiring management, reducing the rate of discharge of treated effluent and associated contaminant load going to Whitefish Lake.

The EIS should incorporate assessment of water recycling into a separate case for the water balance/water quality model (similar to the way base/upper case modeling is used for other phenomenon). The EIS should discuss limits of water recycling, such as the minimum amount of water

required to operate the project or the potential for contaminant accumulation in leachate that prevents effective recycle.

Further, recycling all or portion of the process water may increase the concentration of contaminants reporting to the IWWTP and may impact the effluent quality achievable. Accumulation of contaminants in the recycled solution and its impact on the performance of the IWWTP and effluent quality must be assessed and discussed. Incorporating water recycle may reduce the amount of process water requiring treatment and discharge and so may help ameliorate the concern with the high salinity of treated water as discussed in comment 19 of this document.

11. Process Water Pond Design Basis

The EIS describes several water storage ponds on surface including precipitate ponds and process water ponds. The design basis for these ponds in terms of how much solution storage is required is not clear in the EIS. The EIS should discuss the sizing basis for these ponds in more detail, including storage capacity for probable-maximum-flood, pond capacity used by precipitate, freeboard volume, and normal operations volume. This should also be discussed in the context of the total amount of solution requiring management at a given time (underground and on surface) and the extent of water recycle achievable. The ability to safely manage process water on surface is a critical mitigation measure for the project and so understanding the design basis for these features is required to assess risk to the environment.

12. Process Water Storage Methods

Figure 2.2-13, the Processing Plant Overview shows the 5000 m^3 uranium solution holding area would include tanks. This is incongruent with Section 2.2.2.2.1, which states that the UBS holding area will be contained by a double composite liner system with leak detection adjacent to the processing plant and under a fabric tension building system.It is unclear if Figure 2.2-13 shows what is currently being considered for the design.

Leachfield Design and Operation

13. Upwards Migration of Leach Solution

Section 7.4.2 and section 7.6.2.1 describe scenarios for upward migration of acidic, impacted mining waters and include discussion of upward migration distances of 11 to 50 m. The basis for these scenarios is not made clear in the work uncertain and the rationale for why these scenarios are conservative is not sufficient. Upward migration could be a real risk for the project. For example, current and decommissioned boreholes for monitoring could be a pathway for migration of acidic, contaminated fluids to the surface. The EIS should provide a compelling case for the conservatism of the current approach and/or more rigorously assess the impact of substantive upward migration of leach solution.

14. Freeze-wall Geometry

Section 2.2.1.3 states “Current plans are for the freeze wall to be a minimum of 10 m thick, be installed 25 m away from the uranium deposit, and extend 30 m into the basement rock (Figure 2.2-6).” This is

20 m smaller than maximum extent of the area approximated to be influenced by mining around the deposit (50 m). This increases the risk of contaminants leakage from the mining affected area with potentially negative impacts on the receiving environment especially considering that the primary means of containing containment within the leaching zone relies on maintaining an inward hydraulic gradient by recovering more solution than what is being injected (1%). This is subject planned and unplanned operational downtime due to maintenance or other reasons. Please explain the rationale for the selection of a 30-m thick freeze wall and how it ensures the containment of contaminants as predicted under a variety of different site and mining conditions.

15. Leakage of Freeze-wall Solution

The ammoniacal solution will be used in the freeze plant to maintain the freeze wall in place for the execution of mining activities. Section 2.2.1.3.1 states that "The freeze plant will be designed with ammonia safety in mind to monitor for and minimize risks to workers and the environment from potential leakages". However, no information is provided on potential underground leakages and assessment of potential negative impacts on water quality/balance as well as any appropriate mitigation measures. This is important because as stated in the Application, "the sandstone hosting the uranium deposit is permeable and groundwater can flow horizontally through the deposit." Has the freeze-wall brine been evaluated as a potential source of groundwater contamination? How would leakage of freeze-wall liquid be detected or assessed?

16. Impact of Power Outages on Freeze-wall, Solution Injection/Recovery

Section 2.2.6.2 of the EIS states that "*to provide electrical service during times of utility outages, diesel generators will be installed to service the site and maintain essential functions. The generators will be used to maintain power to the processing plant and the camp, as well as to maintain other essential services as required.*". Given the importance of maintaining the freeze wall as well as a negative water balance in the ISR area are key to the mitigation of environmental impacts, a plan must be developed for maintaining the operation of the ISR pumping and freeze systems during power outages. The EIS should discuss the impact of short term power outages on freeze-wall operation and efficacy and on the water balance associated with solution injection/recovery.

Water Treatment

17. Water Treatment Discussion

An important aspect of the project to prevent environmental impacts is the industrial wastewater treatment plant (IWWTP) that is to treat excess process water and surface runoff. The EIS provides limited information about this system, its design basis, the Project specific testing conducted, or how the predicted effluent quality provided in Table 2.2-1 of the EIS was developed. Section 2.2.3.8 states, "*A metallurgical test program was completed at SRC to help define the IWWTP design and performance criteria.".* However, no reference is provided to this program, nor its results or conclusions have been discussed in the Application. This is a key part of the mine design and is important for review to understand and evaluate the efficacy of the proposed mitigation measures.

Table 2.2-1 in Section 2.2.3.9 outlines the upper bound effluent quality proposed for the Project and states, "*the effluent quality was determined to be achievable through laboratory test results conducted by Denison at SRC.*". However, this section does not provide a comparison of the concentrations achieved at the bench scale with the upper bound limits.

18. Water Treatment Analogue Sites

The IWWTP process appears to use similar process as other waste water treatment sites in the Canadian uranium mining sector. It would be useful if the EIS discussed the IWWTP relative to analogue sites in terms of the treatment technologies used and the quality of effluent achieved at other sites. How does the predicted effluent quality shown in section 2.2.3.9 compare to effluent from analogue sites in the Canadian uranium sector, for example water treatment systems at Cameco and Orano's projects in the region?

19. Water Treatment Objectives and the Fisheries Act, MDMER

Table 2.2-1 of the EIS shows predicted effluent quality for the IWWTP. This table includes a prediction that the total dissolved solids in effluent is predicted to be 6,420 mg/L, with 600 mg/L chloride and 3,915 mg/L sulphate. The table also includes predicted effluent for copper of 0.042 mg/L. These levels approach the BC's water quality guidelines associated with acute toxicity and so may be acutely toxic at the end-of-pipe (i.e. prior to discharge via diffuser in Whitefish Lake and subsequent dilution). Section 36.3 of the Fisheries Act specifies that, "…no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish…"[4] The Canadian Metal and Diamond Mining Effluent Regulations (MDMER) includes a definition of deleterious substance as effluent that is acutely lethal to several commonly tested species of fish and aquatic life.

Guidelines are not prescriptive and so the predicted effluent may or may not be acutely toxic, but since the levels of contaminants in predicted effluent are relatively high, it is recommended that the risk of acutely toxic effluent at end-of-pipe be assessed to support the EIS. Specifically, it is recommended that acute toxicity tests as described by MDMER be conducted on water quality matching the predicted effluent presented in the EIS.

20. Use of Best Available Technology for Water Treatment

Sections 2.2.3.8 and 2.2.3.9 of the EIS describe the IWWTP and note that the design of the system is being informed by an ongoing Best Available Technology (BAT) study. The EIS is not clear if the system as described in the EIS is a reflection of application of BAT or if this is an interim design pending completion of the BAT study.

Given the predicted effluent quality in 2.2.3.9 and the relatively high predicted levels of copper, it is recommended that this BAT study include assessment of use of organosulphide reagents (i.e. trimercapto-triazine). This type of chemical is a common and inexpensive method of removing heavy metals such as copper and cadmium from water. Use of organosulphide is commonly incorporated into

[4] https://laws-lois.justice.gc.ca/eng/acts/F-14/page-5.html#docCont

mine water treatment systems and is generally recognized as part of BAT treatment of mine water[5]. Copper levels in the range of single digit part per billion (ppb) are achievable, below the 22 ppb predicted effluent quality.

Similarly, the EIS notes the use of zero valent iron (ZVI) as a treatment reagent but it is not apparent how this is to be used in the process. ZVI can be a very effective method for removing metals and metalloids from mine water, particularly for relatively small treatment systems. Source supports the inclusion of this reagent in the process but requests additional information on how it is to be used. The predicted level of selenium in effluent (42 ppb) can likely be improved on through better application of ZVI.

Finally, the impact of different treatment technologies on TDS of effluent should be considered given the previous comment about potential for acute toxicity with the predicted effluent quality. Salt removal systems should be evaluated.

Overall, Source supports the use of a BAT study to inform design of the IWWTP and recommends that further bench testing be conducted in the future following the BAT study to improve on the predicted effluent quality presented in the EIS.

21. Integration of Water Treatment with Water Recycle

According to the IWWTP flowsheet shown in section 2.2.3.8 of the EIS, treated effluent will be recycled. Considering that the leach is acidic and the IWWTP involves acid neutralization, it is recommended that considering drawing water for recycle from earlier in the treatment process be considered. This would reduce reagent demands from unnecessary acidification/neutralization as well as the amount of radionuclide and metals-laden treatment by-products that will have to be used and managed.

22. Environmental Exceedances at Upper Bound Discharge Rate

Section 2.2.3.9 of the EIS states, "*The effluent quality was determined to be achievable through laboratory test results conducted by Denison at SRC.*". However, Section 6.2 of Appendix 10-A (Sensitivity Analysis) states, "*If treated effluent is released at the maximum upper bound discharge rate, cadmium concentration in Whitefish Middle/South and McGowan Lake (LA-1) would exceed its surface water quality guideline of 0.00004 mg/L, and chromium concentration in Whitefish Middle/South would exceed its surface water quality guideline of 0.001 mg/L. The modelled concentrations of other COPCs are expected to be below their corresponding surface water quality guidelines.*" Methods of preventing these exceedances should be explored and incorporated into the project. For example, alternative treatment technology may reduce metal loading with treated effluent, and greater water recycle would reduce the volume of treated water discharged, reducing the load of metal introduced to Whitefish Lake via treated effluent.

[5] https://mend-nedem.org/wp-content/uploads/MEND3.50.1BATEAAppAD.pdf

More generally, these exceedances caused by a higher rate of discharge is an example of how the assumption to exclude water recycling from water balance predictions is not entirely conservative.

Geochemistry and Water Quality Source Terms

23. Geochemical Source Terms

The Application lacks a clear discussion of the various source terms that were considered for water quality modelling. Most reagents utilized for the ISR process include highly soluble contents and must be considered for modelling purposes. The Application is lacking a clear discussion of the various source terms and information geochemical stability of various sources that were considered for water quality modelling. Please clearly describe the sources of various contaminants in process water and how they inform water management/water treatment design. Distinguish between contaminants found in natural groundwater, contaminants released through leaching, and contaminants introduced as mill reagents (i.e. sulphate, TDS).

24. Propellant Permeability Enhancement

Section 2.2.1.4.3 lists options considered for enhancing leach solution permeability in the leaching zone and includes potential for use of *propellant permeability enhancement*. How does this material compare to common blasting explosives (i.e. ANFO) in terms of potential for water soluble explosive residue to be left behind after use? ANFO is commonly an environmentally relevant source of ammonia, nitrite and nitrate at mine sites. Please discuss the potential impact of propellant permeability enhancement products as a source of contaminants.

25. Leach Testing Program

Section 2.2.2 states “Denison’s processing plans are based on numerous metallurgical tests completed as part of engineering activities. A detailed metallurgical testing program was developed and implemented in collaboration with the Saskatchewan Research Council (SRC) under the supervision of several third-party consultants and Denison. Around 1,000 L of UBS was produced by leaching over 64 kg of core samples recovered from the Phoenix deposit and the UBS produced was tested using variations of several parameters to define the processing plant design and its components.” This work is critical for informing levels of contaminants expected to be leached in the in-situ process which in turn require treatment and management. This work is not discussed substantially in the EIS. The EIS should discuss how this work was carried out, a summary of key conclusions including estimates of freshwater and recycled water use, recoveries expected, reagents consumed, waste produced and steady-state contaminant concentrations.

26. Waste Rock Geochemistry

Section 2.2.4.8 states that approximately 7,800 m3 of clean waste rock will be generated because of mining activities and Section 2.2.3.6 states that “a pond may be constructed beside the clean waste rock pad (Section 2.2.4.8) to collect runoff if required. The pond would be a single geomembrane-lined pond (Figure 2.2-26). Water collected in the clean waste rock pond would be routed to the process water

pond.". The Application however does not provide information on the geochemical stability of the waste rock and how waste rock is expected to impact water quality of runoff/pond inflow.

27. Process and Treatment Precipitate

Section 2.2.3.8 states that *"the majority of the IWWTP precipitates formed during the second stage of treatment are gypsum and these precipitates are not expected to be radioactive."*. How much radioactivity is expected in these solids? Did the metallurgical test program include testing these solids for radioactivity and if available have these results been considered in the long-term management strategy for these solids?

28. Geochemical Stability of Precipitates

Figures 2.2-15 and 2.2-16 show that water from the IWWTP process precipitate pond will be recycled to the process pond at a rate of 5.35 m3/h that then primarily reports back to the IWWTP for treatment with some used for drilling. The water from the IWWTP precipitate pond forms ~ 65% and 41% of the flow rate reporting to the IWWTP for treatment during the operations and Decommissioning phases, respectively, so this is a significant source of feed water to the IWWTP. The geochemical stability of the precipitates in the two ponds should be evaluated and incorporated as source terms in water quality modeling. This should be discussed in the EIS.

Environmental Management Planning

29. Care and Maintenance

The EIS does not provide information on the mine's plans for events of care and maintenance (C&M) or temporary closure. C&M is an important potential phase of mine life that warrant assessment of potential impacts. During C&M, changes to the site-wide water balance would be expected, potentially requiring modifications to the water management strategies at the site. In particular, it is important that a conceptual plan for how solution would be recovered/injected/managed on surface during a period of care and maintenance.

The EIS should include a conceptual description of how each major piece of mine infrastructure would be operated during C&M maintenance and how risk of environmental impact would be mitigated under these conditions. The following topics are recommended for discussion in C&M planning at the EIS level:

(vi) Any significant changes to the water management strategies at the site, including whether the Industrial Wastewater Treatment Plant would be expected to continue operating during C&M.
(vii) Any significant changes in how the freeze wall would be operated.
(viii) Discussion of how leachate and process solution would be managed, i.e. would injection/recovery continue or cease, would any recovered solution be subjected to uranium recovery, how solution would be managed on surface if re-injection ceased.
(ix) If monitoring activities would change during care and maintenance.
(x) If any new mitigation measures are required to address C&M specific risks.

The development of the Care and Maintenance Plan should include input from ERFN.

30. Environmental Management Plan Minimum Content

Section 2.9.1 includes discussion of several environmental management plans. As a general comment, Source recommends that requirements for any project plan, include the following at a minimum in addition to plan specific topics:

(vii) purpose and objectives of the plan;
(viii) roles and responsibilities of staff including identification of Qualified Professionals(s);
(ix) schedule for implementing the plan through relevant project phases;
(x) means by which the effectiveness of the mitigation measures will be evaluated including the schedule for evaluating effectiveness;
(xi) schedules and methods for the submission of reporting to specific regulatory agencies, ERFN, and the public and the required form and content of those reports;
(xii) process and timing for updating and revising the plan including consultation with regulatory agencies and ERFN that would occur in connection with such updates and revisions.

Further, following the development of a plan, the plan should be provided to regulatory agencies and ERFN for review and consultation. Consultation should include invitation for agencies and ERFN to provide their views on the content of the plan in a reasonable timeframe. Subsequently, the Proponent should provide a written explanation to each party that provided comments describing how the views and information provided by the party has been considered in the revised plan or why such views and information were not addressed in a revised plan.

31. Emergency Response Planning

Section 2.9.1 of the EIS discusses environmental management activities including emergency response. As written, this section of the EIS focuses on the roles and responsibilities of Project staff. Communication to ERFN in the event of a mine emergency is critical for ERFN to evaluate potential impacts to rights and interests. Some mines in Canada overlook the importance of this communication and erode important partnerships with their Indigenous hosts by communicating information late or without transparency. Recommendations for inclusion in the Plan include a communication protocol based on emergency risk ratings and communications with Nation representatives for high consequence near miss incidents (i.e. near miss incidents that could have resulted in major environmental impacts or medical emergencies), as these can be valuable opportunities to improve training and operating practices. It is recommended that management plans and emergency response planning include communication protocol with ERFN so that ERFN is alerted to any incident in a timely fashion. Collaboration with ERFN in plan development, communication protocol, involvement of ERFN members in monitoring/response planning is recommended.

Radiation and Waste Potentially Containing Radionuclides

32. Contingency Planning for Process Precipitates

Section 2.2.4.5 states "*The precipitates generated in the processing plant will be transferred to the process precipitate pond….this pond design will allow the precipitate totes to be stacked below ground level…….any runoff collected in the pond will be directed to the process water pond and recycled through the plant.*". The Application also states that the waste stored in this pond contains 2-3% uranium rendering

it potentially economic for resale and recovery. A plan for managing this material should reprocessing it not be economically viable should be prepared and discussed in the EIS.

33. Industrial Landfill

Section 2.2.4.3.2 discusses the industrial landfill that accepts industrial waste including radiologically contaminated waste. Leachate from this landfill will be collected and sent to the leachate collection pond immediately north of the landfill and eventually to the process water pond. Although the Application states that "upon closure of the site, the industrial landfill will be covered with an engineered impermeable liner system to minimize infiltration of precipitation into the containment system", the leachate is not expected to stop. The Application however does not provide information on the management of the leachate from the industrial landfill post-closure. Considering the limited life of the double liner system used for the landfill area, management of radiologically contaminated waste and its impact on the receiving environment for all phases of the project must be discussed in the EIS.

34. Radon Purge Tank

Section 2.2.2.2.1 states "The radon purge tank will contain a mechanical ventilation system to facilitate the aeration of the solution and the removal of radon gas from the UBS to the air outside of the plant.". Is radon stripping on the exhaust proposed or is it to be directed into the atmosphere? Has exposure outside the building been evaluated?

Conclusion

Thank you for the opportunity to provide technical review on the Wheeler River project on behalf of English River First Nation. To discuss further please contact the undersigned.

Yours sincerely,

Source Environmental Associates Inc.
per:

Signature Redacted

Patrick Littlejohn, Ph.D., P.Eng
Senior Chemical Engineer, Mining